

Number: 9049

Date: November 15, 2018

Approved: Hon. Luis G. Rivera Marín  
Secretary of State



By: Eduardo Arosemena  
Assistant Secretary  
Department of State

Permits Management Office (OGPe-DDEC)  
Department of Economic Development and Commerce

# Puerto Rico Codes 2018

- Puerto Rico Building Code
- Puerto Rico Residential Code
- Puerto Rico Mechanical Code
- Puerto Rico Plumbing Code
- Puerto Rico Fire Code
- Puerto Rico Fuel Gas Code
- Puerto Rico Energy Conservation Code
- Puerto Rico Existing Building Code
- Puerto Rico Private Sewage Disposal Code
- Puerto Rico Swimming Pool and Spa Code



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PUERTO RICO CODES





**GOBERNADOR DE PUERTO RICO**

**Ricardo Rosselló Nevares**

### CERTIFICACIÓN

De conformidad con las disposiciones de la Sección 2.13 de la Ley Núm. 38 de 30 de junio de 2017, según enmendada, conocida como "Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico", por la presente certifico que el interés público que Códigos de Construcción aprobado el 15 de noviembre de 2018 por la Oficina de Gerencia de Permisos comience a regir inmediatamente.

Los Códigos de Construcción, aprobados luego de haber establecido un Comité de Códigos de Construcción y haber recibido enmiendas técnicas de parte de la ciudadanía, necesitan ser puestos en vigor de forma inmediata para garantizar que los proyectos de reconstrucción subvencionados por fondos federales así como todos los demás proyectos, sean construidos bajo nuevos estándares para poder resistir fenómenos atmosféricos de gran magnitud. Por tanto, el interés público requiere la vigencia inmediata de dicho reglamento.

En San Juan, Puerto Rico, hoy día 15 de noviembre de 2018.

A handwritten signature in blue ink, appearing to read "RRN", with a long horizontal stroke extending to the right.

Ricardo Rosselló Nevares  
Gobernador



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**PARTE I: DISPOSICIONES GENERALES**  
[“PART I: GENERAL PROVISIONS”]

**REGLA 100 -TÍTULO - [“RULE 100- TITTLE”]**

Este reglamento se conocerá como *Puerto Rico Codes 2018*.

- [These rules will be known as “Puerto Rico Codes 2018”.]

**REGLA 101 - AUTORIDAD LEGAL - [“RULE 101- LEGAL  
AUTHORITY”]**

A. Este reglamento es promulgado al amparo de la autoridad conferida a la Oficina de Gerencia de Permisos del Departamento de Desarrollo Economico y Comercio mediante el Artículo 2.3 (g) de la Ley Núm. 161-2009, según enmendada, mejor conocida como “Ley para la Reforma del Proceso de Permisos de Puerto Rico” y de conformidad con lo dispuesto en la Ley Núm. 38 -2017, según enmendada, conocida como “Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico”.

- [“This Regulation is promulgated pursuant to the authority conferred upon the Permits Management Office of the Department of Economic Development and Commerce of Puerto Rico by virtue of Article 2.3 (g) of Act No. 161-2009, as amended, known as the “Puerto Rico Permit Process Reform Act; and as ordered in Act No. 38- 2017, as amended, known as “Uniform Administrative Procedure Act of Commonwealth of Puerto Rico Act”.]

B. Las disposiciones contenidas en este Reglamento están relacionadas a determinaciones finales y permisos para proyectos de construcción y usos de terrenos, así como certificaciones en Puerto Rico, incluyendo licencias, permisos y/o certificaciones, reguladas por la Oficina de Gerencia de Permisos de conformidad con en la Ley para la Reforma del Proceso de Permisos de Puerto Rico. Disponiéndose que, todas las determinaciones de la Oficina de Gerencia de Permisos deben estar en cumplimiento con los estándares de diseño contenidas en este Reglamento, las cuales buscan garantizar la salud y seguridad de toda construcción y/u ocupación en Puerto Rico. Este Reglamento es cónsono con la política pública establecida en la Ley para la Reforma del Proceso de Permisos de Puerto Rico y la búsqueda de garantías para construcciones y usos seguros y resilientes.

- **[“The provisions contained in this Regulation are related to final determinations and permits for construction and land use projects, as well as certifications in Puerto Rico, including licenses, permits and/or certifications, regulated by the Permits Management Office in accordance with Puerto Rico Permit Process Reform Act. Provided that, all Permits Management Office determinations must be in compliance with the design standards contained in this Regulation, which seek to ensure the health and safety of all construction and/or occupation in Puerto Rico This regulation is in harmony with the public policy established in Puerto Rico Permit Process Reform Act that guarantees safe and resilient constructions and occupancies.”]**

C. Este Reglamento deroga el Reglamento Núm. 8222 del 20 de junio de 2012, conocido como *Puerto Rico Building Code 2011*.



- **[“This Regulation repeals the Regulation No. 8222 of June 20, 2012, known as the “Puerto Rico Building Code”].**

D. Este Reglamento surge de la adopción de diez (10) de los códigos de la familia del Concilio Internacional de Códigos (ICC, por sus siglas en inglés) junto con con las enmiendas realizadas a los mismos, para conformarlo a los requisitos de leyes y regulaciones de la construcción y usos en Puerto Rico. Los códigos del ICC adoptados son:

- **[“This regulation arises from the adoption of ten (10) of the International Codes Council (ICC) family with its amendments to conform to the requirements of laws and regulations of construction and occupancies in Puerto Rico. The ICC codes adopted are:”]**

**International Building Code (IBC) 2018**

**International Residential Code (IRC) 2018**

**International Mechanical Code (IMC) 2018**

**International Plumbing Code (IPC) 2018**

**International Fire Code (IFC) 2018**

**International Fuel Gas Code (IFGC) 2018**

**International Energy Conservation Code (IECC) 2018**

**International Existing Building Code (IEBC) 2018**

**International Private Sewage Disposal (IPSD) 2018**

**International Swimming Pool and Spa Code (ISPSC) 2018**

E. La adopción de los códigos del ICC y las enmiendas a estos aquí adoptadas, han sido diseñadas específicamente para Puerto Rico, y establecen las regulaciones mínimas para los sistemas de construcción, incluyendo disposiciones detalladas relacionadas con el diseño y desarrollo de un proyecto. Estos códigos están basados en conceptos que hacen posible la innovación en el uso de materiales y diseños de construcción. Estos se conocerán y se publicarán como:

- **[“The adoption of the ICC codes and its amendments thereto adopted, have been specifically designed for Puerto Rico, and establish minimum regulations for construction systems, including prescriptive and performance-related provisions. These codes are based on concepts that make it possible to innovate in the use of materials and construction designs. These will be known and published as:”]**

**Puerto Rico Building Code (PRBC)**

**Puerto Rico Residential Code (PRRC)**

**Puerto Rico Mechanical Code (PRMC)**

**Puerto Rico Plumbing Code (PRPC)**

**Puerto Rico Fire Code (PRFC)**

**Puerto Rico Fuel Gas Code (PRFGC)**

**Puerto Rico Energy Conservation Code (PRECC)**

**Puerto Rico Existing Building Code (PREBC)**

**Puerto Rico Private Sewage Disposal Code (PRPSDC)**

**Puerto Rico Swimming Pool and Spa Code (PRSPSC)**

## **REGLA 102 - PROPÓSITO - [“RULE 102 - PURPOSE”]**

Este Reglamento se promulga para cumplir con los siguientes propósitos:

- **[“This rule is enacted in order to fulfill the following purposes”]:**
  - A. Actualizar los códigos de construcción en Puerto Rico de manera que contemplen las regulaciones mínimas necesarias para el diseño y construcción y ejecución de un proyecto.
    - **[“Update building codes in Puerto Rico so as to contemplate the minimum regulations necessary for the design, construction and execution of a project”]**
  - B. Regular mediante códigos los requisitos de planificación, diseño, construcción, inspección y el mantenimiento de todo tipo de edificios y estructuras.
    - **[“Regulate by code the requirements of planning, design, construction, inspection and maintenance of all types of buildings and structures”].**
  - C. Establecer los requisitos mínimos y estándares de construcción para salvaguardar la vida y la seguridad de los ciudadanos, con la intención de contar con las mejores y más actualizadas prácticas de diseño y construcción dentro de la jurisdicción de Puerto Rico.
    - **[“Establish the minimum requirements and construction standards to safeguard life and safety, with the intention of having the best and most up-to-date design and construction practices within the jurisdiction of Puerto Rico”].**

## **REGLA 103 - ALCANCE, APLICABILIDAD - [“RULE 103- SCOPE, APPLICABILITY”]**

A. Este Reglamento aplica a toda persona natural o jurídica o entidad gubernamental estatal, federal o municipal, que diseñe, planifique, instale, construya, inspeccione o desarrolle una estructura o equipo en Puerto Rico que se encuentre comprendido dentro de los límites establecidos en este Reglamento.

- **[“This Regulation applies to any natural or legal person or state, federal or municipal government entity, who designs, plans, installs, constructs, inspects or develops a structure or equipment in Puerto Rico that is that is within the limits set out in this Regulation”].**

B. Toda persona natural o jurídica o entidad gubernamental estatal, federal o municipal que realice cualquier actividad aquí regulada; incluyendo sus oficiales, agentes o empleados, estará sujeto y obligado a cumplir con todos los requisitos contenidos en este Reglamento.

- **[“Any natural or legal person or governmental state, federal or municipal entity that performs any activity herein regulated; including any of its officicers, agents or employees, shall be subject and obliged to comply with all requirements contained in this Regulation”].**

## **REGLA 104 - CLÁUSULA DE SEPARABILIDAD - [“RULE 104 - SEPARABILITY CLAUSE”]**

En caso de que alguna disposición de este Reglamento fuera declarada ilegal o inconstitucional mediante dictamen de un tribunal con jurisdicción y competencia, el mismo no afectará el resto de las disposiciones de este Reglamento, ya que cada una se considera separada de las demás.

- **[“Should any provision of this Regulation be declared unlawful or unconstitutional by an opinion of a court with jurisdiction, it will not affect the rest of the provisions of these Regulations, since each is considered separate from the others”].**

## **REGLA 105 - INTERPRETACIÓN DEL REGLAMENTO - [“RULE 105 -INTERPRETATION OF THE REGULATION”]**

A. La interpretación de las disposiciones contenidas en este Reglamento se hará de modo que se asegure la implementación eficaz de la política pública contenida en la Ley para la Reforma del Proceso de Permisos de Puerto Rico.

- **[“The interpretation of the provisions contained in this Regulation shall be done in a manner that ensures the effective implementation of the “Puerto Rico Permit Process Reform Act”].**

B. Las palabras y frases utilizadas en este Reglamento deberán interpretarse según el contexto en el que sean utilizadas y de no estar aquí definidas, tendrán el significado reconocido por el uso común y corriente.

- **["The words and phrases used in this Regulation shall be interpreted according to the context in which they are used and if not defined herein, shall have the meaning recognized by common usage"]**.

C. Toda palabra utilizada en singular, se entenderá que también incluye el plural, cuando así lo justifique su uso; y de igual forma, el masculino incluirá el femenino, o viceversa.

- **["Any word used in the singular, will be understood that also includes the plural, when it justifies its use; and in the same way, the masculine will include the feminine, or vice versa"]**.

D. De existir discrepancia entre dos o más disposiciones de este Reglamento, o una disposición de este Reglamento y cualquier otra disposición legal estatal o federal aplicable a la misma situación de hechos, prevalecerá la más restrictiva. No obstante lo anterior, nada de lo dispuesto por esta Regla deberá interpretarse como que se exime de tener que cumplir con las reglas y los requisitos que le sean exigibles por otras agencias y otras disposiciones legales, aun cuando dichas reglas o requisitos sean menos restrictivos que las disposiciones de este Reglamento.

- **["If there is a discrepancy between two or more provisions of this Regulation, or a provision of this Regulation and any other state or federal law applicable to the same situation, the most restrictive rule shall prevail. Notwithstanding the foregoing, nothing in this Rule shall be construed as exempting from having to comply with the rules and requirements as may be required by other agencies and**

other legal provisions, even if such rules or requirements are less restrictive than the provisions of this Regulation”].

## **REGLA 106 - VIGENCIA DEL REGLAMENTO - [“RULE 106 - VALIDITY OF THIS REGULATION”]**

A. De conformidad con la Sección 2.13 de la Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico y la Certificación fechada 15 de noviembre de 2018 emitida por el Gobernador de Puerto Rico, Hon. Ricardo Rosselló Nevares, este Reglamento entrará en vigor de manera inmediata a partir de su radicación en el Departamento de Estado.

- **[“In accordance with Section 2.13 of the Uniform Administrative Procedure Act of the Government of Puerto Rico and the Certification dated November 15, 2018 issued by the Governor of Puerto Rico, Hon. Ricardo Rosselló Nevarez, this Rules will enter into force immediately once it has been filed in the Puerto Rico State Department”].**

B. Una vez el presente Reglamento sea radicado en el Departamento de Estado, la Oficina de Gerencia de Permisos dará cumplimiento con lo dispuesto en el Capítulo II de la Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico.

- **[“Once this Rules has been filed in the Puerto Rico State Department, the Office of Permits Management shall comply with the provisions of Chapter II of the Puerto Rico Government Uniform Administrative Procedure Act”].**

C. Este Reglamento será revisado como mínimo cada tres (3) años a partir de la fecha de adopción, según establecido en la Ley para la Reforma del Proceso de Permisos de Puerto Rico. No obstante lo anterior, su revisión y enmiendas podría ocurrir antes de la fecha establecida o de ocurrir cambios a través de los ciclos de desarrollo del Código ICC.

- **[“This Regulation shall be revised at least every three (3) years from the date of adoption, as set forth in the Puerto Rico Permit Process Reform Act.**

**Notwithstanding the foregoing, its revision and amendments could occur before the established date or changes occur through the development cycles of the ICC code”].**

D. Con excepción de las disposiciones contenidas en el inciso E de esta Regla, todo trámite radicado, en o antes del 15 de febrero del 2019, ante la Oficina de Gerencia de Permisos de Puerto Rico o un Municipio Autónomo con Jerarquía de la I a la V, podrá certificar el proyecto utilizando el Puerto Rico Building Code 2011 o este código. En el caso de que se utilice el PRBC 2011, el proyecto debe haber obtenido el permiso de construcción final en o antes de noviembre 15 del 2019.

- **[“ With the exception of the provisions contained in subsection E of this Rule, all permit applications filed, on or before February 15, 2019, submitted to the Permits Management Office of Puerto Rico or an Autonomous Municipality with Hierarchy from I to V, may certify the project using the Construction Code of Puerto Rico 2011 or this code. In the event that PRBC 2011 is used, the project must have obtained the final construction permit on or before November 15 to 2019.”].**



E. Independientemente de la fecha de su radicación en la Oficina de Gerencia de Permisos o en un Municipio Autónomo con Jerarquía I a la V, a partir de la aprobación del presente Reglamento, los proyectos que abajo se detallan tendrán que cumplir con las disposiciones del presente Reglamento:

1. proyectos financiados por el gobierno federal;
  2. instalaciones de primera prioridad que se pueden utilizar como refugio;
  3. equipo anclado en la azotea;
  4. proyectos en áreas de riesgo de inundaciones.
- **["Regardless of the date of its filing in the Permits Management Office or an Autonomous Municipality with hierarchy from I to V, as of the approval of this Regulation, the projects listed below will have to comply with the provisions of this Regulation:**
    - 1. Projects financed by the federal government;**
    - 2. First-priority installations that can be used as shelter;**
    - 3. Equipment anchored on the roof;**
    - 4. Projects in flood-risk areas."}]**

F. Todo proyecto presentado después del 15 de febrero de 2019, se regirá por las disposiciones del presente Reglamento.

- **["Any project submitted after February 15th 2019 shall be governed by the provisions of this Regulation"]**

## **REGLA 107- RELEVO DE RESPONSABILIDAD - [“RULE 107- DISCLAIMER”]**

La aprobación de este Reglamento asegura el más alto grado de atención por parte de los miembros que participaron en el desarrollo del mismo. Estos, ni el Gobierno de Puerto Rico, la Oficina de Gerencia de Permisos ni sus funcionarios, serán responsables de modo alguno por cualquier situación resultante del cumplimiento o incumplimiento de la disposiciones de este Reglamento.

- **[“ The approval of this Rules assures the highest degree of attention on the part of its members who participated in its development. These, neither the Government of Puerto Rico, the Permits Management Office nor its officials, will be responsible in any way for any situation resulting from the fulfillment or breach of the provisions of this Rules”].**

## **PARTE II: CODIGOS DE PUERTO RICO 2018**

### **PARTE II: PUERTO RICO CODES 2018**

#### **USE AND FORMAT**

The Puerto Rico Codes 2018 and the 2018 International Codes® (I-Codes®) provide minimum requirements to safeguard the public health, safety and general welfare of the occupants of new and existing buildings and structures. Alternative materials, designs and methods not specifically addressed in the codes can be approved by the code official where the proposed materials, designs or methods comply with the intent of the provisions of the code. This format of the Puerto Rico Codes is a compilation of amendments for each of the pertaining International Codes to be applied in Puerto Rico. The use of this format (as described below), shall be temporary until a final version of the Puerto Rico Codes 2018 are released by OGPE-DDEC.

In this document, all chapters, sections, sub-sections, appendices, and referenced standards added, deleted, or amended shall be used together with the unaltered sections of the I-Codes® to regulate planning, design, construction, inspection and maintenance of all types of buildings and structures unless exempted.

Appendices are provided in the ICC Codes to offer optional or supplemental criteria to the provisions in the main chapters of the codes. Appendices provide additional information as well as standards not typically administered by all building departments. Appendices have the same force and effect as the chapters of the ICC Codes only when explicitly adopted or referenced in the Puerto Rico Codes.

The following shall apply for using this edition *Puerto Rico Codes* properly:

1. Where written on the PRBC, “no amendments”, “adopted”, it signifies that the Chapter, section, sub-section, or Appendix of the particular ICC Code is unaltered and shall apply to Puerto Rico.
2. Where written in a chapter, section, sub-section, or appendix in the PRBC, “delete”, “replace”, “not applicable to Puerto Rico”, “not adopted”, it shall mean that the original corresponding chapter, section, sub-section, or appendix of the ICC Code does not apply to Puerto Rico.
3. Where written on the PRBC, an amendment to a specific chapter section, sub-section, or appendix of the ICC Code said amendment shall replace the specific chapter, section, sub-section or appendix of the ICC Code. The remaining portions of the chapter, section, sub-section, or appendix of the pertaining ICC Code shall be enforced in Puerto Rico, unless specifically written otherwise.
4. Where incorporated in the PRBC new chapters, sections, sub-sections or appendices to the pertaining ICC Codes, chapter, section, sub-section or appendix of the original ICC Code shall be enforced in Puerto Rico unless specifically amended, delete, replaced, not adopted or otherwise written in the PRBC.

This edition of the Puerto Rico Codes, like the other codes published by ICC, is arranged and organized to follow sequential steps that generally occur during a plan review or inspection and must be used with the corresponding code of the I-Codes® family, as follows:

- *PUERTO RICO BUILDING CODE* 2018, as amended from the 2018 International Building Code® (IBC)
- *PUERTO RICO RESIDENTIAL CODE* 2018, as amended from the 2018 International Residential Code® (IRC)
- *PUERTO RICO MECHANICAL CODE* 2018, as amended from the 2018 International Mechanical Code® (IMC)
- *PUERTO RICO PLUMBING CODE* 2018, as amended from the 2018 International Plumbing Code® (IPC)
- *PUERTO RICO FIRECODE* 2018, as amended from the 2018 International Fire Code® (IFC)
- *PUERTO RICO FUEL AND GAS CODE* 2018, as amended from the 2018 International Fuel and Gas Code® (IFGC)
- *PUERTO RICO ENERGY CONSERVATION CODE* 2018, as amended from the 2018 International Energy Conservation Code® (IECC)
- *PUERTO RICO EXISTING BUILDING CODE* 2018, as amended from the 2018 International Existing Building Code® (IEBC)
- *PUERTO RICO PRIVATE SEWAGE DISPOSAL CODE* 2018, as amended from the 2018 International Private Sewage Disposal Code® (IPSDC)
- *PUERTO RICO SWIMMING POOL AND SPA CODE* 2018, as amended from the 2018 International Swimming Pool and Spa Code® (ISPSC)

# PREFACE

Puerto Rico recognizes the need for a modern, up-to-date building codes addressing the design and installation of building systems through requirements emphasizing performance. The *Puerto Rico Codes* is the adoption of ten (10) of the ICC Codes 2018 tailored to Puerto Rico’s laws and regulations, and construction idiosyncrasies. The *Puerto Rico Codes* are designed to meet these needs through regulations that safeguard the public health and safety in all communities, large and small.

This comprehensive family of codes establishes minimum regulations for building systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new building designs. This edition is specifically designed for Puerto Rico and fully compatible with all the 2018 International Codes® (I-Codes®) published by the International Code Council (ICC)®.

These include:

Puerto Rico Building Code	(PRBC)
Puerto Rico Residential Code	(PRRC)
Puerto Rico Mechanical Code	(PRMC)
Puerto Rico Plumbing Code	(PRPC)
Puerto Rico Fire Code	(PRFC)
Puerto Rico Fuel Gas Code	(PRFGC)
Puerto Rico Energy Conservation Code	(PRECC)
Puerto Rico Existing Building Code	(PREBC)
Puerto Rico Private Sewage Disposal Code	(PRPSDC)
Puerto Rico Swimming Pool and Spa Code	(PRSPSC)

The following is a synopsis of the scope and intent of the provisions of the *Puerto Rico Codes*.

The *Puerto Rico Building Code* addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety in regards to new and existing buildings, facilities and systems. The PRBC also establishes requirements for high hazard, fire-resistance-rated construction, interior finish, fire protection systems, means of egress, emergency and standby power, and temporary structures are directly correlated with the requirements of the PRFC and its amendments. Requirements for smoke control systems, and smoke and fire dampers are directly correlated to the requirements of the PRMC. PRBC Chapter 28 is a reference to the PRMC and the PRFGC for chimney, fireplaces and barbeques, and all aspects of mechanical systems. In addition, requirements for plumbing fixtures and toilet rooms are directly correlated to the requirements of the PRPC.

PRBC applies to all occupancies, including one- and two-family dwellings and townhouses that are not within the scope of the PRRC. The PRRC is referenced for coverage of detached one- and two-family dwellings and townhouses. It applies to all types of buildings and structures unless exempted.

The *Puerto Rico Residential Code* establishes minimum requirements for one- and two-family dwellings and townhouses using prescriptive and performance-related provisions. It contains coverage for all components of a house or townhouse, including structural components, fireplaces and chimneys, energy conservation requirements, thermal insulation, mechanical systems, fuel gas systems, plumbing systems and electrical systems. It is meant to be all inclusive for typical residential construction and it relies on other codes only where alternatives are desired or where the code lacks coverage for the uncommon aspect of residential construction.

The *Puerto Rico Mechanical Code* regulates the design and installation of mechanical systems, appliances, appliance venting, duct and ventilation systems, combustion air provisions, hydronic systems and solar systems. The purpose of the code is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the installation and operation of mechanical systems. The code also protects the personnel that install, maintain, service and replace the systems and appliances addressed by this code. The code relies heavily on product specifications and listings to provide much of the appliance and equipment installation requirements.

The *Puerto Rico Plumbing Code* regulates the design and installation of plumbing systems including the plumbing fixtures in all types of buildings except for detached one- and two-family dwellings and townhouses that are not more than three stories above grade in height. The regulations for plumbing systems in one- and two-family dwellings and townhouses are covered the PRRC. It addresses general plumbing regulations, fixture requirements, water heater installations and systems for water distribution, sanitary drainage, special wastes, venting, storm drainage and medical gases.

The PRPC does not address fuel gas piping systems as those systems are covered by PRFGC. It also does not regulate swimming pool piping systems, process piping systems, or utility-owned piping and systems. The purpose of the PRPC is to establish the minimum acceptable level of safety to protect life and property from the potential dangers associated with supplying potable water to plumbing fixtures and outlets and the conveyance of bacteria-laden waste water from fixtures are carried away from a building.

The *Puerto Rico Fire Code* establishes minimum requirements for fire prevention and fire protection systems using prescriptive and performance-related provisions. It contains fire safety requirements for new and existing buildings, facilities, storage and processes. It addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities and processes. It also provides a total approach of controlling hazards in all buildings and sites, regardless of the hazard being indoors or outdoors.

The *Puerto Rico Fuel and Gas Code* regulates the design and installation of fuel gas distribution piping and systems, appliances, appliance venting systems, combustion air provisions, gaseous hydrogen systems and motor vehicle gaseous-fuel-dispensing stations. The definition of fuel gas includes natural, liquefied petroleum and manufactured gases and mixtures of these gases. The purpose of the PRFGC, is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the storage, distribution and usage of fuel

gases and the byproducts of combustion of such fuels. The code also protects the personnel that install, maintain, service and replace the systems and appliances addressed by this code.

The PRFGC applies to all occupancies including one- and two-family dwellings and townhouses. The PRRC is referenced for coverage of one- and two-family dwellings and townhouses; however, in effect, the PRFGC provisions are still applicable because the fuel gas chapter in the PRRC (Chapter 24) is composed entirely of text extracted from the PRFGC.

The *Puerto Rico Energy Conservation Code* regulates minimum energy conservation requirements for new buildings. The PRECC addresses energy conservation requirements for all aspects of energy uses in both commercial and residential construction, including heating and ventilating, lighting, water heating, and power usage for appliances and building systems.

The *Puerto Rico Existing Building Code* establishes minimum requirements for existing buildings using prescriptive and performance-related provisions. The PREBC allow for options for controlled departure from full compliance with the *Puerto Rico Codes* dealing with new construction, while maintaining basic levels for fire prevention, structural and life safety features of the rehabilitated building.

The PREBC provides three main options for a designer in dealing with rehabilitation of existing buildings:

OPTION 1: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with the Prescriptive Compliance Method given in Chapter 4. It should be noted that this same method is provided in Chapter 34 of the *Puerto Rico Building Code*.

OPTION 2: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with the Work Area Compliance Method given in Chapters 6 through 12.

OPTION 3: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with the Performance Compliance Method given in Chapter 13. It should be noted that this option is also provided in Chapter 34 of the *Puerto Rico Building Code*.

The *Puerto Rico Private Sewage Disposal Code* regulates minimum requirements for the installation of new or the alteration of existing private sewage disposal systems. Where a building cannot be served by a public sewer system, the building site must be provided with a system for treating the waste water generated from the use of plumbing fixtures in the building. The PRPSDC addresses site evaluations, materials, various soil absorption systems, holding tanks, cesspools and onsite waste water treatment systems. The PRPSDC provides a total approach for the onsite, safe disposal of the waste flow discharged to the plumbing fixtures in a building.

The PRPSDC is a specification-oriented code with very few occurrences of performance-oriented text. The site soil must be evaluated in a prescribed manner to determine its ability to accept the

waste flow. The chosen waste treatment method must be designed in a prescribed manner for the soil conditions at the building site, constructed using prescribed materials and installed according to prescribed dimensions. The PRPSDC sets forth the minimum acceptable requirements for private sewage disposal systems in order to protect humans and the environment from insanitary conditions that would develop if waste flows were not rendered harmless.

The *Puerto Rico Swimming Pool and Spa Code* establishes minimum requirements for the design, construction, alteration, repair and maintenance of swimming pools, spas, hot tubs and aquatic facilities.

This includes public swimming pools, public spas, public exercise spas, aquatic recreation facilities, on-ground storable residential pools, permanent in-ground residential pools, permanent residential spas, permanent residential exercise spas, portable residential spas and portable residential exercise spas.

## **DEVELOPMENT**

The first edition of the building codes for Puerto Rico, known as Puerto Rico Building Code 2011, was compiled and adopted in 2011 when the Permit Management Office formally established by Administrative Order 2011-16 the Construction Codes Committee, composed of representatives from the Construction Council of Puerto Rico, and Regulatory Government Agencies, to review and implement a transition from the existing 1997 Uniform Building Code to the family of the International Codes® of the ICC (I-Codes® 2009). The Puerto Rico Building Code 2011 was comprised of the amendments to the family of codes of the ICC (I-Codes® 2009), together with the original 2009 code.

For the second edition of the Codes, Administrative Order 2017-11, formally established the Construction Codes Committee, composed of representatives from the Construction Council of Puerto Rico, and Regulatory Government Agencies. The Committee was responsible for the review of the I-Codes 2018 and transition from the previous 2009 ICC Family of codes to the 2018 edition, with the addition of International Swimming Pool and Spa Code. The intention was to have a complete set of codes published under the name of Puerto Rico incorporating each of the 10 ICC adopted codes, hereafter known as ***Puerto Rico Codes 2018***.

## **MAINTENANCE**

The codes will be revised and promulgated every three (3) years, from the date of adoption, as established in Act 161-2009, as amended. This 3-year cycle will allow for new construction methods and technologies to be incorporated into the codes.

As in previous editions, the contents of the Puerto Rico Codes are subject to change through the revision process established by law in Puerto Rico.



While the development procedure of the Puerto Rico Construction Code Committee assures the highest degree of care, its members and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions. Only the governmental body that enacts the code into law has such authority.

## **LETTER DESIGNATION USED IN THE CODE REVIEW PROCESS:**

In each International Code Council code development cycle, proposed changes to the code are considered at the Technical Hearings by the applicable Code Development Sub-Committee, whose action constitutes a recommendation to the voting membership for final action on the proposed change.

The content of proposed changes to sections in this code shall begin with a letter designation in accordance with the following:

- [B] = International Building Code Development Committee.
- [R] = International Residential Code Development Committee.
- [M] = International Mechanical Code Development Committee.
- [P] = International Plumbing Code Development Committee.
- [F] = International Fire Code Development Committee.
- [FG] = International Fuel Gas Code Development Committee.
- [E] = International Energy Conservation Code Development Committee.
- [EB] = International Existing Building Code Development Committee.
- [PSD] = International Private Sewage Disposal Code Development Committee.
- [SP] = International Swimming Pool and Spa Committee.



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PUERTO RICO CODES

# PRBC

Puerto Rico Building Code





# **PUERTO RICO BUILDING CODE 2018**

## **As amended from INTERNATIONAL BUILDING CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## PART 1 - SCOPE AND APPLICATION

### SECTION 101 - GENERAL

**[A]101.1 Title.** These regulations shall be known as the *Puerto Rico Building Code*, hereinafter referred to as “this code.”

**[A]101.2 Scope.** The provisions of this code shall apply to the construction, *alteration*, relocation, enlargement, replacement, *repair*, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

**Exception:** Detached one- and two-family *dwelling*s and *townhouses* not more than three *stories above grade plane* in height with a separate *means of egress*, and their accessory structures not more than three *stories above grade plane* in height, shall comply with this code or the *Puerto Rico Residential Code*.

**[A]101.2.1 Appendices.** Provisions in the appendices shall not apply unless specifically adopted.

**[A]101.3 Intent.** The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, public health and general welfare through structural strength, *means of egress* facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire, explosion and other hazards, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

**[A]101.4 Referenced codes.** The other codes listed in Sections 101.4.1 through 101.4.7 and referenced elsewhere in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference.

**[A]101.4.1 Gas.** The provisions of the *Puerto Rico Fuel Gas Code* shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

**[A]101.4.2 Mechanical.** The provisions of the *Puerto Rico Mechanical Code* shall apply to the installation, *alterations*, *repairs* and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

**[A]101.4.3 Plumbing.** The provisions of the *Puerto Rico Plumbing Code* shall apply to the installation, *alteration*, *repair* and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system. The provisions of the *Puerto Rico Private Sewage Disposal Code* shall apply to private sewage disposal systems.

**[A]101.4.4 Property maintenance.** The provisions of the *International Property Maintenance Code* are not adopted.

**[A]101.4.5 Fire prevention.** The provisions of the *Puerto Rico Fire Code* shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, *repair*, *alteration* or removal of fire suppression, *automatic sprinkler systems* and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.

**[A]101.4.6 Energy.** The provisions of the *Puerto Rico Energy Conservation Code* shall apply to all matters governing the design and construction of buildings for energy efficiency.

**[A]101.4.7 Existing buildings.** The provisions of the *Puerto Rico Existing Building Code* shall apply to matters governing the *repair*, *alteration*, change of occupancy, *addition* to and relocation of existing buildings.

**[A]101.4.8 Swimming Pool and SPA.** The provisions of the *Puerto Rico Swimming Pool and Spa Code* shall apply to matters governing the design, construction, alteration, repair and maintenance of swimming pools, spas, hot tops and aquatic facilities.

## **SECTION 102 - APPLICABILITY**

**[A]102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**[A]102.2 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**[A]102.3 Application of references.** References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

**[A]102.4 Referenced codes and standards.** The codes and standards referenced in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.



**[A]102.4.1 Conflicts.** Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

**[A]102.4.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the Puerto Rico Codes listed in Section 101.4, the provisions of this code or the Puerto Rico Codes listed in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.

**[A]102.5 Partial invalidity.** In the event that any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

**[A]102.6 Existing structures.** The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the *Puerto Rico Existing Building Code*, or the *Puerto Rico Fire Code*.

**[A]102.6.1 Buildings not previously occupied.** A building or portion of a building that has not been previously occupied or used for its intended purpose in accordance with the laws in existence at the time of its completion shall comply with the provisions of the *Puerto Rico Building Code* or *Puerto Rico Residential Code*, as applicable, for new construction or with any current permit for such occupancy.

**[A]102.6.2 Buildings previously occupied.** The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the *Puerto Rico Fire Code*, or as is deemed necessary by the *building official* for the general safety and welfare of the occupants and the public.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation*.

### **SECTION 103 - BUILDING ENFORCEMENT AGENCIES**

**[A]103.1 Creation of enforcement agency.** Act 161 – 2009, as amended, designated the *Permit Management Office*, *Puerto Rico Planning Board*, and Autonomous Municipalities with I to V granted Hierarchy, as building enforcement authorities.

**103.1.1** The appointed Auxiliary Secretary of the Permits Management Office shall be known as the *building official*.

**[A]103.2 Appointment.** The *building official* shall be appointed by the chief appointing authority of Puerto Rico.

**[A]103.3 Deputies.** In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the *building official* shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the *building official*.

## **SECTION 104 - DUTIES AND POWERS OF BUILDING OFFICIAL**

**[A]104.1 General.** The *building official* is hereby authorized and directed to enforce the provisions of this code. The *building official* shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

**[A]104.2 Applications and permits.** The *building official* shall receive applications, review *construction documents* and issue *permits* for the erection, and *alteration*, demolition and moving of buildings and structures, inspect the premises for which such *permits* have been issued and enforce compliance with the provisions of this code.

**[A]104.2.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas.** For applications for reconstruction, rehabilitation, *repair*, *alteration*, *addition* or other improvement of existing buildings or structures located in *flood hazard areas*, the *building official* shall determine if the proposed work constitutes substantial improvement or *repair of substantial damage*. Where the *building official* determines that the proposed work constitutes *substantial improvement* or *repair of substantial damage*, and where required by this code, the *building official* shall require the building to meet the requirements of Section 1612.

**[A]104.3 Notices and orders.** The *building official* shall issue necessary notices or orders to ensure compliance with this code.

**[A]104.4 Inspections.** The *building official* shall make the required inspections or receive certified reports of inspections made by the *designated inspector*, and the *building official* shall have the authority to accept reports of inspection by *approved agencies* or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such *approved agency* or by the responsible individual. The *building official* is authorized to engage such expert opinion as deemed necessary to report on unusual technical issues that arise, subject to the approval of the appointing authority.

**[A]104.5 Identification.** The *building official* or *code official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

**[A]104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *building official* has reasonable cause to believe that there exists in a

structure or on a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the *building official* is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the *building official* shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the *building official* shall have recourse to the remedies provided by law to secure entry.

**[A]104.7 Department records.** The *building official* shall keep official records of applications received, *permits* and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

**[A]104.8 Liability.** The *building official*, member of the *interpretive advisory board of code revisions* or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be civilly or criminally rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**[A]104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representatives of the jurisdiction until the final termination of the proceedings. The *building official* or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**[A]104.9 Approved materials and equipment.** Materials, equipment and devices *approved* by the *building official* as established in the construction documents shall be constructed and installed in accordance with such approval.

**[A]104.9.1 Used materials and equipment.** Materials that are reused shall comply with the requirements of this code for new materials. Used equipment and devices shall not be reused unless *approved* by the *building official*, as established in the construction documents.

**[A]104.10 Modifications.** Where there are practical difficulties involved in carrying out the provisions of this code, the *building official* shall have the authority to grant modifications for individual cases, upon application of the *owner* or with the approval of the registered design professional, provided that the *building official* shall first find that special individual reason makes the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, *accessibility*, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the *OGPe-DDEC*

**[A]104.10.1 Flood hazard areas.** The *building official* shall not grant modifications to any provision required in *flood hazard areas* as established by Section 1612.3 unless a determination has been made that:

1. A showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section 1612 inappropriate.
2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable.
3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, cause fraud on or victimization of the public, or conflict with existing laws or ordinances.
4. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard.
5. Submission to the applicant of written notice specifying the difference between the *design flood elevation* and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation, and stating that construction below the *design flood elevation* increases risks to life and property.

**[A]104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, *fire resistance*, durability and safety. Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons why the alternative was not *approved*.

**[A]104.11.1 Research reports.** Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from *approved* sources.

**[A]104.11.2 Tests.** Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the *building official* shall have the authority to require tests as evidence of compliance to be made without expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the *building official* shall approve the testing procedures. Tests shall be performed by an *approved agency*. Reports of such tests shall be retained by the *building official* for the period required for retention of public records.

## SECTION 105 - PERMITS

**[A]105.1 Required.** Any *owner* or owner's authorized agent who intends to construct, enlarge, alter, *repair*, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, *repair*, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the *building official* and obtain the required *permit*.

**[A]105.1.1 Annual permit.** Instead of an individual *permit* for each *alteration* to an already *approved* electrical, gas, mechanical or plumbing installation, the *building official* is authorized to issue an annual *permit* upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the *permit*.

**[A]105.1.2 Annual permit records.** The person to whom an annual *permit* is issued shall keep a detailed record of *alterations* made under such annual *permit*. The *building official* shall have access to such records at all times or such records shall be filed with the *building official* as designated.

**[A]105.2 Work exempt from permit.** Exemptions from *permit* requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction. *Permits* shall not be required for the works detailed in Rule 3.2.4 of the *Joint Regulation*.

**[A]105.2.1 Emergency repairs.** Where equipment replacements and repairs must be performed in an emergency situation, the *permit* application shall be submitted within the next working business day to the *building official*.

**[A]105.2.2 Public service agencies.** A *permit* shall not be required for the installation, *alteration* or repair of generation, transmission, distribution or metering or other related equipment that is under the ownership and control of public service agencies by established right.

**[A]105.3 Application for permit.** To obtain a *permit*, the applicant shall first file an application, as established by the *Joint Regulation*. Such application shall:

1. Identify and describe the work to be covered by the *permit* for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by *construction documents* and other information as required in Section 107.
5. State the valuation of the proposed work.
6. Be signed by the applicant, or the applicant's authorized agent.
7. Give such other data and information as required by the *building official*.

**[A]105.3.1 Action on application.** The *building official* shall examine or cause to be examined applications for *permits* and amendments thereto within the time established by the *Joint Regulation*. If the application or the *construction documents* do not conform to the requirements of pertinent laws, the *building official* shall reject such application in writing, stating the reasons therefor. If the *building official* is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the *building official* shall issue a *permit* therefor as soon as practicable.

**[A]105.3.2 Time limitation of application.** An application for a *permit* for any proposed work shall be deemed to have been abandoned as established by the *Joint Regulation*, unless such application has been pursued in good faith or a *permit* has been issued; except that the *building official* is authorized to grant one or more extensions of time. The extension shall be requested in writing and justifiable cause demonstrated.

**[A]105.4 Validity of permit.** The issuance or granting of a *permit* shall not be construed to be a *permit* for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of Puerto Rico. *Permits* presuming to give authority to violate or cancel the provisions of this code or other ordinances shall not be valid. The issuance of a *permit* based on *construction documents* and other data shall not prevent the *building official* from requiring the correction of errors in the *construction documents* and other data. The *building official* is authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances.

**[A]105.5 Expiration.** Every *permit* issued shall become invalid unless the work on the site authorized by such *permit* is commenced, or if the work authorized on the site by such *permit* is suspended or abandoned as established by the *Joint Regulation*. The *building official* is authorized to grant, in writing, one or more extensions of time. The extension shall be requested in writing through the digital system and justifiable cause demonstrated.

**[A]105.6 Suspension or revocation.** The *building official* is authorized to suspend or revoke a *permit* issued under the provisions of the Act 161-2009, as amended and as established by the *Joint Regulation*

**[A]105.7 Placement of permit.** The building *permit* or copy shall be kept on the site of the work until the completion of the project, as established by the *Joint Regulation*.

## **SECTION 106 - FLOOR AND ROOF DESIGN LOADS**

**[A]106.1 Live loads posted.** In commercial or industrial buildings, for each floor or portion thereof designed for *live loads* exceeding 50 psf (2.40 kN/m<sup>2</sup>), such design *live loads* shall be conspicuously posted by the owner or the owner's authorized agent in that part of each *story* in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.

**[A]106.2 Issuance of certificate of occupancy.** A certificate of occupancy required by Section 111 shall not be issued until the floor load signs, required by Section 106.1, have been installed.

**[A]106.3 Restrictions on loading.** It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by this code.

## **SECTION 107 - SUBMITTAL DOCUMENTS**

**[A]107.1 General.** Submittal documents consisting of *construction documents*, statement of *special inspections*, geotechnical report and other data shall be submitted in digital form with each *permit* application. The *construction documents* shall be prepared by a *registered design professional* where required by the statutes of Puerto Rico in which the project is to be constructed. Where special conditions exist, the *building official* is authorized to require additional *construction documents* to be prepared by a *registered design professional*.

**Exception:** The *building official* is authorized to waive the submission of *construction documents* and other data not required to be prepared by a *registered design professional* if it is found that the nature of the work applied for is such that review of *construction documents* is not necessary to obtain compliance with this code, as established by the *Joint Regulation*.

**[A]107.2 Construction documents.** *Construction documents* shall be in accordance with Sections 107.2.1 through 107.2.8.

**[A]107.2.1 Information on construction documents.** *Construction documents* shall be dimensioned and drawn on suitable material. Electronic media documents are permitted to be submitted where *approved* by the *building official*. *Construction documents* shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the *building official*, as established by the *Joint Regulation*.

**[A]107.2.2 Fire protection system shop drawings.** Shop drawings for the *fire protection system(s)* shall be submitted to indicate conformance to this code and the *construction documents* and shall be *approved* prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.

**[A]107.2.3 Means of egress.** The *construction documents* shall show in sufficient detail the location, construction, size and character of all portions of the *means of egress* including the path of the *exit discharge* to the *public way* in compliance with the provisions of this code. In other than occupancies in Groups R-2, R-3, and I-1, the *construction documents* shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces.

**[A]107.2.4 Exterior wall envelope.** *Construction documents* for all buildings shall describe the *exterior wall envelope* in sufficient detail to determine compliance with this code. The *construction documents* shall provide details of the *exterior wall envelope* as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings. The *construction documents* shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening

details described in the *construction documents* maintain the weather resistance of the *exterior wall envelope*. The supporting documentation shall fully describe the *exterior wall* system that was tested, where applicable, as well as the test procedure used.

**[A]107.2.5 Exterior balconies and elevated walking surfaces.** Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the *construction documents* shall include details for all elements of the impervious moisture barrier system. The *construction documents* shall include manufacturer's installation instructions.

**[A]107.2.6 Site plan.** The *construction documents* submitted with the application for *permit* shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances from *lot lines*, the established street grades and the proposed finished grades and, as applicable, *flood hazard areas*, *floodways*, and *design flood elevations*; and it shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot as established by the *Joint Regulation*.

**[A]107.2.6.1 Design flood elevations.** Where *design flood elevations* are not specified, they shall be established in accordance with Section 1612.3.1.

**[A]107.2.7 Structural information.** The *construction documents* shall provide the information specified in Section 1603.

**[A]107.2.8 Relocatable buildings.** *Construction documents* for relocatable buildings shall comply with Section 3112.

**[A]107.3 Examination of documents.** The *building official* shall examine or cause to be examined the accompanying submittal documents and shall ascertain by such examinations whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

**[A]107.3.1 Approval of construction documents.** When the *building official* issues a *permit*, the *construction documents* shall be *approved*, in writing or by digital stamp, as "Reviewed for Code Compliance." One set of *construction documents in digital format*, so reviewed, shall be retained by the *building official* and a copy returned to the applicant. A printed copy shall be kept at the site of work and shall be open to inspection by the *building official* or a duly authorized representative.

**[A]107.3.2 Previous approvals.** This code shall not require changes in the *construction documents*, construction or designated occupancy of a structure for which a lawful *permit* has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith with this Code, and the *Joint Regulation*.



**[A]107.3.3 Phased approval.** The *building official* is authorized to issue a *permit* for the construction of foundations or any other part of a building or structure before the *construction documents* for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such *permit* for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a *permit* for the entire structure will be granted.

**[A]107.3.4 Design professional in responsible charge and *Designated Inspector*.** Registered Design Professionals and *Designated Inspectors* shall comply with all applicable laws in Puerto Rico, including Act 135 of June 15, 1967 with amendments and Act 7 of July 19, 1985 with amendments in the certification process and the *Joint Regulation*. Where it is required that documents be prepared by a *registered design professional*, the *building official* shall be authorized to require the *owner* or the *owner's* authorized agent to engage and designate on the building *permit* application a *registered design professional* who shall act as the *registered design professional in responsible charge*. If the circumstances require, the *owner* or the *owner's* authorized agent shall designate a substitute *registered design professional in responsible charge* who shall perform the duties required of the original *registered design professional in responsible charge*. The *building official* shall be notified in writing by the *owner* or the *owner's* authorized agent if the *registered design professional in responsible charge* is changed or is unable to continue to perform the duties and the *owner* and the new registered design professionals shall comply with the requirements established in the *Joint Regulation*. The *registered design professional in responsible charge* shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

**[A]107.3.4.1 Deferred submittals.** Deferral of any submittal items shall have the prior approval of the *building official*. The *registered design professional in responsible charge* shall list the deferred submittals on the *construction documents* for review by the *building official*. Documents for deferred submittal items shall be submitted to the *registered design professional in responsible charge* who shall review them and forward them to the *building official* with a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance to the design of the building. The deferred submittal items shall not be installed until the deferred submittal documents have been *approved* by the *building official*.

**[A]107.4 Amended construction documents.** Work shall be installed in accordance with the *approved construction documents*, and any changes made during construction that are not in compliance with the *approved construction documents* shall be resubmitted for approval as an amended set of *construction documents*.

**[A]107.5 Retention of construction documents.** A digital set of *approved construction documents* shall be retained by the *building official*, as established by the *Joint Regulation*.

## SECTION 108 - TEMPORARY STRUCTURES AND USES

**[A]108.1 General.** The *building official* is authorized to issue a *permit* for temporary structures and temporary uses. Such *permits* shall be limited as to time of service as established by the *Joint Regulation*. The *building official* is authorized to grant extensions for demonstrated cause.

**[A]108.2 Conformance.** Temporary structures and uses shall comply with the requirements in Section 3103 and the *Joint Regulation*.

**[A]108.3 Temporary power.** The *building official* is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**[A]108.4 Termination of approval.** The *building official* is authorized to terminate such *permit* for a temporary structure or use and to order the temporary structure or use to be discontinued.

## SECTION 109 - FEES

**[A]109.1 Payment of fees.** A *permit* shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a *permit* be released until the additional fee, if any, has been paid.

**[A]109.2 Schedule of permit fees.** On buildings, structures, electrical, gas, mechanical, and plumbing systems or *alterations* requiring a *permit*, a fee for each *permit* shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

**[A]109.3 Building permit valuations.** The applicant for a *permit* shall provide an estimated *permit* value at time of application, as established by the *Joint Regulation*. *Permit* valuations shall include total value of work, including materials and labor, for which the *permit* is being issued, such as electrical, gas, mechanical, plumbing equipment and permanent systems. If, in the opinion of the *building official*, the valuation is underestimated on the application, the *permit* shall be denied, unless the applicant can show detailed estimates to meet the approval of the *building official*. Final building *permit* valuation shall be set by the *building official*.

**[A]109.4 Work commencing before permit issuance.** Any person who commences any work on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary *permits* shall be subject to a fee established by the *building official* that shall be in addition to the required *permit* fees.

**[A]109.5 Related fees.** The payment of the fee for the construction, *alteration*, removal or demolition for work done in connection to or concurrently with the work authorized by a building *permit* shall not relieve the applicant or holder of the *permit* from the payment of other fees that are prescribed by law.

[A]109.6 **Refunds.** The *building official* is authorized to establish a refund policy.

## SECTION 110 - INSPECTIONS

[A]110.1 **General.** Construction or work for which a *permit* is required shall be subject to inspection by the *designated inspector* and the *building official* and such construction or work shall remain visible and able to be accessed for inspection purposes until *approved*. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the *owner* or the owner's authorized agent to cause the work to remain visible and able to be accessed for inspection purposes. Neither the *building official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

[A]110.2 **Preliminary inspection.** Before issuing a *permit*, the *building official* is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.

[A]110.3 **Required inspections.** The *designated inspector* and the *building official*, upon notification, shall make the inspections set forth in Sections 110.3.1 through 110.3.11.

[A]110.3.1 **Footing and foundation inspection.** Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C94, the concrete need not be on the job.

[A]110.3.2 **Concrete slab and under-floor inspection.** Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories and other ancillary equipment items are in place, but before any concrete is placed or floor sheathing installed, including the subfloor.

[A]110.3.3 **Lowest floor elevation.** In *flood hazard areas*, upon placement of the lowest floor, including the *basement*, and prior to further vertical construction, the elevation certification required in Section 1612.4 shall be submitted to the *building official*.

[A]110.3.4 **Frame inspection.** Framing inspections shall be made after the roof deck or sheathing, all framing, *fire-blocking* and bracing are in place and pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are *approved*.

[A]110.3.5 **Lath, gypsum board and gypsum panel product inspection.** Lath, gypsum board and gypsum panel product inspections shall be made after lathing, gypsum board and gypsum panel products, interior and exterior, are in place, but before any plastering is applied or gypsum board and gypsum panel product joints and fasteners are taped and finished.

**Exception:** Gypsum board and gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly.

**[A]110.3.6 Weather-exposed balcony and walking surface waterproofing.** Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and *approved*.

**Exception:** Where *special inspections* are provided in accordance with Section 1705.1.1, Item 3.

**[A]110.3.7 Fire- and smoke-resistant penetrations.** Protection of joints and penetrations in *fire-resistance rated* assemblies, *smoke barriers* and smoke partitions shall not be concealed from view until inspected and *approved*.

**[A]110.3.8 Energy efficiency inspections.** Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope insulation *R-* and *U-*values, fenestration *U-*value, duct system *R-*value, and HVAC and water-heating equipment efficiency.

**[A]110.3.9 Masonry wall inspections.**

Inspections shall be made after masonry wall is in place with required reinforcements, conduit piping accessories and other ancillary equipment items are in place, but before any plastering or architectural specified coverings are placed.

**[A]110.3.10 Rough In inspections.**

Rough-in inspection shall be made after the roof, framing systems, fire blocking, fire stopping draft stopping and bracing is in place and all sanitary, storm and water distribution piping is roughed-in and prior to the installation of wall or ceiling membranes.

**[A]110.3.11 Underground Utilities**

Underground utilities inspections shall be made after trenches or ditches are excavated and bedded piping installed and before any backfill is put in place.

**[A]110.3.12 Other inspections.** In addition to the inspections specified in Sections 110.3.1 through 110.3.8, the *building official* is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the building enforcement agencies.

**[A]110.3.13 Special inspections.** For *special inspections*, see Chapter 17.

**[A]110.3.14 Final inspection.** The final inspection shall be made after all work required by the building *permit* is completed.

**[A]110.3.14.1 Flood hazard documentation.** If located in a *flood hazard area*, documentation of the elevation of the lowest floor as required in Section 1612.4 shall be submitted to the *building official* prior to the final inspection.

**[A]110.4 Inspection agencies.** The *building official* is authorized to accept reports of *approved* inspection agencies, provided that such agencies satisfy the requirements as to qualifications and reliability, as established by the *Joint Regulation*.

**[A]110.5 Inspection requests.** It shall be the duty of the holder of the building *permit* or their duly authorized agent to notify the *building official* and the *designated inspector* when work is ready for inspection. It shall be the duty of the *permit* holder to provide access to and means for inspections of such work that are required by this code.

**[A]110.6 Approval required.** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the *building official*. The *building official* and/or the *designated inspector*, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the *permit* holder or his or her agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the *building official*.

## **SECTION 111 - CERTIFICATE OF OCCUPANCY**

**[A]111.1 Change of occupancy.** A building or structure shall not be used or occupied, and a change of occupancy of a building or structure or portion thereof shall not be made, until the *building official* has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction.

**Exception:** Certificates of occupancy are not required for work exempt from *permits* in accordance with Section 105.2. and the *Joint Regulation*.

**[A]111.2 Certificate issued.** After the *building official* inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the *OGPe-DDEC* and the *Puerto Rico Planning Board*, the *building official* shall issue a certificate of occupancy that contains the following:

1. The *permit* number.
2. The address of the structure.
3. The name and address of the *owner* or the owner's authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
6. The name of the *building official*.

7. The edition of the code under which the *permit* was issued.
8. The use and occupancy, in accordance with the provisions of Chapter 3.
9. The type of construction as defined in Chapter 6.
10. The design *occupant load*.
11. Any special stipulations and conditions of the *permit*.

**[A]111.3 Temporary occupancy.** The *building official* is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the *permit*, provided that such portion or portions shall be occupied safely. The *building official* shall set a time period during which the temporary certificate of occupancy is valid.

**[A]111.4 Revocation.** The *building official* is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code and the *Joint Regulation*.

## **SECTION 112 - SERVICE UTILITIES**

**[A]112.1 Connection of service utilities.** A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a *permit* is required, until released by the *building official*.

**[A]112.2 Temporary connection.** The *building official* shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel or power.

**[A]112.3 Authority to disconnect service utilities.** The *building official* and the government agencies with jurisdiction shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section 101.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 112.1 or 112.2. The *building official* shall notify the government agencies with jurisdiction and wherever possible the *owner* and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the *owner* or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.

## **SECTION 113 – INTERPRETIVE ADVISORY BOARD**

**[A]113.1 General.** An interpretive advisory board is created to advise the *building official* and/or the *administrative judge*. This interpretive advisory board shall be appointed by the Auxiliary Secretary of *OGPe-DDEC* to issue and handle binding recommendations on interpretive matters relating to aspects of this code, including its application and implementation.

The *administrative judge* may also require an interpretation from the board when a revision is requested where the application of the required code is in question.

**[A]113.2 Limitations on authority.** Request for interpretative revision shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

**[A]113.3 Qualifications.** The interpretive advisory board of code revisions shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction.

## **SECTION 114 - VIOLATIONS**

**[A]114.1 Unlawful acts.** It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, *repair*, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

**[A]114.2 Notice of violation.** The *building official* is authorized to serve a notice of violation or order on the person responsible for the erection, construction, *alteration*, extension, *repair*, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a *permit* or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

**[A]114.3 Prosecution of violation.** If the notice of violation is not complied with promptly, the *building official* is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

**[A]114.4 Violation penalties.** Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the *approved construction documents* or directive of the *building official*, or of a *permit* or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

## **SECTION 115 - STOP WORK ORDER**

**[A]115.1 Authority.** Where the *building official* finds any work regulated by this code being performed in a manner either contrary to the provisions of this code or dangerous or unsafe, the *building official* is authorized to issue a stop work order, as stated in the Act 161-2009, as amended.

**[A]115.2 Issuance.** The stop work order shall be in writing and shall be given to the *owner* of the property involved, the owner's authorized agent or the person performing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work will be permitted to resume.

**[A]115.3 Unlawful continuance.** Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by law.

## **SECTION 116 - UNSAFE STRUCTURES AND EQUIPMENT**

**[A]116.1 Conditions.** Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate *means of egress* facilities, inadequate light and ventilation, or that constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as the *building official* deems necessary and as provided for in this section. A vacant structure that is not secured against entry shall be deemed unsafe.

**[A]116.2 Record.** The *building official* shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.

**[A]116.3 Notice.** If an unsafe condition is found, the *building official* shall serve on the *owner*, agent or person in control of the structure, a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the *building official* acceptance or rejection of the terms of the order.

**[A]116.4 Method of service.** Such notice shall be deemed properly served if a copy thereof is: delivered to the *owner* personally; sent by certified or registered mail addressed to the *owner* at the last known address with the return receipt requested; or delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner on the owner's agent or on the person responsible for the structure shall constitute service of notice on the *owner*.

**[A]116.5 Restoration.** Where the structure or equipment determined to be unsafe by the *building official* is restored to a safe condition, to the extent that repairs, *alterations* or *additions* are made or a change of occupancy occurs during the restoration of the structure, such *repairs, alterations, additions* and change of occupancy shall comply with the requirements of the *Puerto Rico Existing Building Code*.



## CHAPTER 2 – DEFINITIONS

### SECTION 201 - GENERAL

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the Puerto Rico Energy Conservation Code, Puerto Rico Fuel Gas Code, Puerto Rico Fire Code, Puerto Rico Mechanical Code or Puerto Rico Plumbing Code, such terms shall have the meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### SECTION 202 - DEFINITIONS

**[BG]24-HOUR BASIS.** The actual time that a person is an occupant within a facility for the purpose of receiving care. It shall not include a facility that is open for 24 hours and is capable of providing care to someone visiting the facility during any segment of the 24 hours.

**[BS]AAC MASONRY.** *Masonry* made of autoclaved aerated concrete (AAC) units, manufactured without internal reinforcement and bonded together using thin- or thick-bed *mortar*.

**[BE]ACCESSIBLE.** A *site, building, facility* or portion thereof that complies with Chapter 11.

**[BE]ACCESSIBLE MEANS OF EGRESS.** A continuous and unobstructed way of egress travel from any *accessible* point in a *building* or *facility* to a *public way*.

**[BE]ACCESSIBLE ROUTE.** A continuous, unobstructed path that complies with Chapter 11.

**[BE]ACCESSIBLE UNIT.** A *dwelling unit* or *sleeping unit* that complies with this code and the provisions for Accessible units in ICC A117.1.

**[BS]ACCREDITATION BODY.** An *approved*, third-party organization that is independent of the grading and inspection agencies, and the lumber mills, and that initially accredits and subsequently monitors, on a continuing basis, the competency and performance of a grading or inspection agency related to carrying out specific tasks.

[A]**ADDITION.** An extension or increase in floor area, number of stories or height of a building or structure.

[BS]**ADHERED MASONRY VENEER.** *Veneer* secured and supported through the adhesion of an *approved* bonding material applied to an *approved backing*.

[A]**ADMINISTRATIVE JUDGE.** The director of the Administrative Revisions Division, as established by Act 161-2009, as amended.

[BS]**ADOBE CONSTRUCTION.** Construction in which the exterior *load-bearing* and *no-load-bearing walls* and partitions are of unfired clay *masonry units*, and floors, roofs and interior framing are wholly or partly of wood or other *approved* materials.

**Adobe, stabilized.** Unfired clay *masonry units* to which admixtures, such as emulsified asphalt, are added during the manufacturing process to limit the units' water absorption so as to increase their durability.

**Adobe, unstabilized.** Unfired clay *masonry units* that do not meet the definition of "Adobe, stabilized."

[F]**AEROSOL CONTAINER.** A metal can or plastic container up to a maximum size of 33.8 fluid ounces (1000 ml), or a glass bottle up to a maximum size of 4 fluid ounces (118ml), designed and intended to dispense an aerosol.

[F]**AEROSOL PRODUCT.** A combination of a container, a propellant and a material that is dispensed. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.

**Level 1 aerosol products.** Those with a total chemical heat of combustion that is less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

**Level 2 aerosol products.** Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

**Level 3 aerosol products.** Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30kJ/g).

[BS]**AGGREGATE.** In roofing, crushed stone, crushed slag or water-worn gravel used for surfacing for *roof coverings*.

[BG]**AGRICULTURAL BUILDING.** A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products. This structure shall not be a place of human habitation or a place of employment where agricultural products are processed, treated or packaged, nor shall it be a place used by the public.

**[BF]AIR-IMPERMEABLE INSULATION.** An insulation having an air permeance equal to or less than  $0.02 \text{ l/s} \times \text{m}^2$  at 75 pa pressure differential tested in accordance with ASTM E2178 or ASTM E283.

**[BG]AIR-INFLATED STRUCTURE.** A structure that uses air-pressurized membrane beams, arches or other elements to enclose space. Occupants of such a structure do not occupy the pressurized area used to support the structure.

**[BG]AIR-SUPPORTED STRUCTURE.** A structure wherein the shape of the structure is attained by air pressure and occupants of the structure are within the elevated pressure area. Air-supported structures are of two basic types:

**Double skin.** Similar to a single skin, but with an attached liner that is separated from the outer skin and provides an airspace which serves for insulation, acoustic, aesthetic or similar purposes.

**Single skin.** Where there is only the single outer skin and the air pressure is directly against that skin.

**[BE]AISLE.** An unenclosed *exit access* component that defines and provides a path of egress travel.

**[BE]AISLE ACCESSWAY.** That portion of an *exit access* that leads to an *aisle*.

**[F]ALARM NOTIFICATION APPLIANCE.** A *fire alarm system* component such as a bell, horn, speaker, light or text display that provides audible, tactile or visible outputs, or any combination thereof.

**[F]ALARM SIGNAL.** A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.

**[F]ALARM VERIFICATION FEATURE.** A feature of *automatic* fire detection and alarm systems to reduce unwanted alarms wherein *smoke detectors* report alarm conditions for a minimum period of time, or confirm alarm conditions within a given time period, after being *automatically* reset, in order to be accepted as a valid alarm-initiation signal.

**[BS]ALLOWABLE STRESS DESIGN.** A method of proportioning structural members, such that elastically computed stresses produced in the members by *nominal loads* do not exceed *specified* allowable stresses (also called “working stress design”).

**[A]ALTERATION.** Any construction or renovation to an *existing structure* other than *repair* or *addition*.

**[BE]ALTERNATING TREAD DEVICE.** A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

**[BG]AMBULATORY CARE FACILITY.** Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to persons who are rendered *incapable of self-preservation* by the services provided or staff has accepted responsibility for care recipients already incapable.

**[BG]ANCHOR BUILDING.** An exterior perimeter building of a group other than H having direct access to a *covered or open mall building* but having required *means of egress* independent of the mall.

**[BS]ANCHORED MASONRY VENEER.** *Veneer* secured with *approved* mechanical fasteners to an *approved backing*.

**[BF]ANNULAR SPACE.** The opening around the penetrating item.

**[F]ANNUNCIATOR.** A unit containing one or more indicator lamps, alphanumeric displays or other equivalent means in which each indication provides status information about a circuit, condition or location.

**[A]APPROVED.** Acceptable to the *building official*.

**[A]APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification where such agency has been *approved* by the *building official*.

**[BS]APPROVED FABRICATOR.** An established and qualified person, firm or corporation *approved* by the *building official* pursuant to Chapter 17 of this code.

**[A]APPROVED SOURCE.** An independent person, firm or corporation *approved* by the *building official*, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.

**[BS]AREA (for masonry).**

**Gross cross-sectional.** The *area* delineated by the out-to-out *specified* dimensions of *masonry* in the plane under consideration.

**Net cross-sectional.** The *area* of *masonry units*, grout and *mortar* crossed by the plane under consideration based on out-to-out *specified* dimensions.

**[BG]AREA, BUILDING.** The area included within surrounding *exterior walls*, or *exterior walls* and *fire walls*, exclusive of vent *shafts* and *courts*. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

**[BE]AREA OF REFUGE.** An area where persons unable to use *stairways* can remain temporarily to await instructions or assistance during emergency evacuation.

**[BE]AREA OF SPORT ACTIVITY.** That portion of an indoor or outdoor space where the play or practice of a sport occurs.

**[BG]AREAWAY.** A subsurface space adjacent to a building open at the top or protected at the top by a grating or *guard*.

**ASSEMBLY SEATING, MULTILEVEL.** See “Multilevel assembly seating.”

**[BG]ATRIUM.** An opening connecting two or more *stories* other than enclosed *stairways*, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall.

*Stories*, as used in this definition, do not include balconies within assembly groups or *mezzanines* that comply with Section 505.

**[BG]ATTIC.** The space between the ceiling framing of the top story and the underside of the roof.

**[F]AUDIBLE ALARM NOTIFICATION APPLIANCE.** A notification appliance that alerts by the sense of hearing.

**[F]AUTOMATIC.** As applied to fire protection devices, a device or system providing an emergency function without the necessity for human intervention and activated as a result of a predetermined temperature rise, rate of temperature rise or combustion products.

**[F]AUTOMATIC FIRE-EXTINGUISHING SYSTEM.**

An *approved* system of devices and equipment which *automatically* detects a fire and discharges an *approved* fire-extinguishing agent onto or in the area of a fire.

**[F]AUTOMATIC SMOKE DETECTION SYSTEM.** A *fire alarm system* that has initiation devices that utilize *smoke detectors* for protection of an area such as a room or space with detectors to provide early warning of fire.

**[F]AUTOMATIC SPRINKLER SYSTEM.** An *automatic sprinkler system*, for fire protection purposes, is an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards. The system includes a suitable water supply. The portion of the system above the ground is a network of specially sized or hydraulically designed piping installed in a structure or area, generally overhead, and to which *automatic* sprinklers are connected in a systematic pattern. The system is usually activated by heat from a fire and discharges water over the fire area.

**[F]AUTOMATIC WATER MIST SYSTEM.** A system consisting of a water supply, a pressure source and a distribution piping system with attached nozzles, which, at or above a minimum operating pressure defined by its listing, discharges water in fine droplets meeting the requirements

of NFPA 750 for the purpose of the control, suppression or extinguishment of a fire. Such systems include wet-pipe, dry-pipe and preaction types. The systems are designed as engineered, pre-engineered, local-application or total-flooding systems.

**[F]AVERAGE AMBIENT SOUND LEVEL.** The root mean square, A-weighted sound pressure level measured over a 24-hour period, or the time any person is present, whichever time period is less.

**[BG]AWNING.** An architectural projection that provides weather protection, identity or decoration and is partially or wholly supported by the building to which it is attached. An awning is comprised of a lightweight *frame structure* over which a covering is attached.

**[BF]BACKING.** The wall or surface to which the *veneer* is secured.

**[BE]BALANCED DOOR.** A door equipped with double-pivoted hardware so designed as to cause a semi-counterbalanced swing action when opening.

**[F]BALED COTTON.** A natural seed fiber wrapped in and secured with industry accepted materials, usually consisting of burlap, woven polypropylene, polyethylene or cotton or sheet polyethylene, and secured with steel, synthetic or wire bands or wire; also includes linters (lint removed from the cottonseed) and motes (residual materials from the ginning process).

**[F]BALED COTTON, DENSELY PACKED.** Cotton made into banded bales with a packing density of not less than 22 pounds per cubic foot (360 kg/m<sup>3</sup>), and dimensions complying with the following: a length of 55 inches (1397 mm), a width of 21 inches (533.4 mm) and a height of 27.6 to 35.4 inches (701 to 899 mm).

**[BS]BALLAST.** In roofing, ballast comes in the form of large stones or paver systems or light-weight interlocking paver systems and is used to provide uplift resistance for roofing systems that are not adhered or mechanically attached to the *roof deck*.

**[F]BARRICADE.** A structure that consists of a combination of walls, floor and roof, which is designed to withstand the rapid release of energy in an *explosion* and which is fully confined, partially vented or fully vented; or other effective method of shielding from explosive materials by a natural or artificial barrier.

**Artificial barricade.** An artificial mound or revetment a minimum thickness of 3 feet (914 mm).

**Natural barricade.** Natural features of the ground, such as hills, or timber of sufficient density that the surrounding exposures that require protection cannot be seen from the magazine or building containing explosives when the trees are bare of leaves.

**[BS]BASE FLOOD.** The *flood* having a 1-percent chance of being equaled or exceeded in any given year.

**[BS]BASE FLOOD ELEVATION.** The elevation of the *base flood*, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the *Flood Insurance Rate Map (FIRM)*.

**[BS]BASEMENT (for flood loads).** The portion of a building having its floor subgrade (below ground level) on all sides. This definition of “Basement” is limited in application to the provisions of Section 1612.

**[BG]BASEMENT.** A *story* that is not a *story above grade plane* (see “*Story above grade plane*”). This definition of “Basement” does not apply to the provisions of Section 1612 for *flood loads*.

**[BS]BEARING WALL STRUCTURE.** A building or other structure in which vertical *loads* from floors and roofs are primarily supported by walls.

**[BS]BED JOINT.** The horizontal layer of *mortar* on which a *masonry unit* is laid.

**[BE]BLEACHERS.** Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element (see “*Grandstand*”).

**[BG]BOARDING HOUSE.** A building arranged or used for lodging for compensation, with or without meals, and not occupied as a single-family unit.

**[F]BOILING POINT.** The temperature at which the vapor pressure of a *liquid* equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D86 shall be used as the boiling point of the *liquid*.

**[BS]BRACED WALL LINE.** A straight line through the building plan that represents the location of the lateral resistance provided by the wall bracing.

**[BS]BRACED WALL PANEL.** A full-height section of wall constructed to resist in-plane shear loads through interaction of framing members, sheathing material and anchors. The panel’s length meets the requirements of its particular bracing method and contributes toward the total amount of bracing required along its *braced wall line*.

**[BE]BREAKOUT.** For revolving doors, a process whereby wings or door panels can be pushed open manually for *means of egress* travel.

**[BS]BRICK.**

**Calcium silicate (sand lime brick).** A pressed and subsequently autoclaved unit that consists of sand and lime, with or without the inclusion of other materials.

**Clay or shale.** A solid or hollow *masonry unit* of clay or shale, usually formed into a rectangular *prism*, then burned or fired in a kiln; brick is a ceramic product.

**Concrete.** A concrete *masonry unit* made from Portland cement, water, and suitable aggregates, with or without the inclusion of other materials.

**[A]BUILDING.** Any structure utilized or intended for supporting or sheltering any occupancy.

**BUILDING AREA.** See “Area, building.”

**[BG]BUILDING ELEMENT.** A fundamental component of building construction, listed in Table 601, which may or may not be of fire-resistance-rated construction and is constructed of materials based on the building type of construction.

**BUILDING HEIGHT.** See “Height, building.”

**[BS]BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) PRODUCT.** A building product that incorporates photovoltaic modules and functions as a component of the building envelope.

**[BS]BUILDING-INTEGRATED PHOTOVOLTAIC ROOF PANEL (BIPV ROOF PANEL).** A photovoltaic panel that functions as a component of the building envelope.

**[BG]BUILDING LINE.** The line established by law, beyond which a building shall not extend, except as specifically provided by law.

**[A]BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**[BS]BUILT-UP ROOF COVERING.** Two or more layers of felt cemented together and surfaced with a cap sheet, mineral aggregate, smooth coating or similar surfacing material.

**[BG]CABLE-RESTRAINED, AIR-SUPPORTED STRUCTURE.** A structure in which the uplift is resisted by cables or webbings which are anchored to either foundations or dead men. Reinforcing cable or webbing is attached by various methods to the membrane or is an integral part of the membrane. This is not a cable-supported structure.

**[BG]CANOPY.** A permanent structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration. A canopy is permitted to be structurally independent or supported by attachment to a building on one or more sides.

**[F]CAPACITOR ENERGY STORAGE SYSTEM.** A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby



or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

**Pre-engineered capacitor energy storage system.** A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that are produced in a factory, designed to constitute the system when assembled and shipped to the job site for assembly.

**Prepackaged capacitor energy storage system.** A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that is factory assembled and then shipped as a complete unit for installation at the job site.

**[F]CARBON DIOXIDE EXTINGUISHING SYSTEMS.** A system supplying carbon dioxide (CO<sub>2</sub>) from a pressurized vessel through fixed pipes and nozzles. The system includes a manual- or automatic-actuating mechanism.

**[F]CARBON MONOXIDE ALARM.** A single- or multiple- station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

**[F]CARBON MONOXIDE DETECTOR.** A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

**[BG]CARE SUITE.** In Group I-2 occupancies, a group of treatment rooms, care recipient sleeping rooms and the support rooms or spaces and circulation space within the suite where staff are in attendance for supervision of all care recipients within the suite, and the suite is in compliance with the requirements of Section 407.4.4.

**[BS]CAST STONE.** A building stone manufactured from Portland cement concrete precast and used as a trim, veneer or facing on or in buildings or structures.

**[F]CEILING LIMIT.** The maximum concentration of an airborne contaminant to which one may be exposed. The ceiling limits utilized are those published in DOL 29 CFR Part 1910.1000. The ceiling Recommended Exposure Limit (REL-C) concentrations published by the U.S. National Institute for Occupational Safety and Health (NIOSH), Threshold Limit Value—Ceiling (TLV-C) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), Ceiling Workplace Environmental Exposure Level (WEEL-Ceiling) Guides published by the American Industrial Hygiene Association (AIHA), and other approved, consistent measures are allowed as surrogates for hazardous substances not listed in DOL 29 CFR Part 1910.1000.

**[BF]CEILING RADIATION DAMPER.** A listed device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening. Ceiling radiation dampers include air terminal units, ceiling dampers and ceiling air diffusers.

**[BG]CELL (Group I-3 occupancy).** A room within a housing unit in a detention or correctional facility used to confine inmates or prisoners.

**[BS]CELL (masonry).** A void space having a gross cross-sectional area greater than 11/2 square inches (967 mm<sup>2</sup>).

**[BG]CELL TIER.** Levels of cells vertically stacked above one another within a housing unit.

**[BS]CEMENT PLASTER.** A mixture of Portland or blended cement, Portland cement or blended cement and hydrated lime, masonry cement or plastic cement and aggregate and other approved materials as specified in this code.

**[BF]CERAMIC FIBER BLANKET.** A high-temperature mineral wool insulation material made of alumina-silica ceramic or calcium magnesium silicate soluble fibers and weighing 4 to 10 pounds per cubic foot (pcf) (64 to 160 kg/ m<sup>3</sup>).

**[BS]CERTIFICATE OF COMPLIANCE.** A certificate stating that materials and products meet specified standards or that work was done in compliance with approved construction documents.

**[A]CHANGE OF OCCUPANCY.** A change in the use of a building or a portion a building which results in one of the following:

1. A change of occupancy classification.
2. A change from one group to another group within an occupancy classification.
3. Any change in use within a group for which there is a change in application of the requirements of this code.

**[BG]CHILDREN'S PLAY STRUCTURE.** A structure composed of one or more components, where the user enters a play environment.

**[M]CHIMNEY.** A primarily vertical structure containing one or more flues, for the purpose of carrying gaseous products of combustion and air from a fuel-burning appliance to the outdoor atmosphere.

**Factory-built chimney.** A listed and labeled chimney composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

**Masonry chimney.** A field-constructed chimney composed of solid masonry units, bricks, stones, or concrete.

**Metal chimney.** A field-constructed chimney of metal.

**[M]CHIMNEY TYPES.** High-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, high-heat appliances producing combustion gases in excess of 2000°F (1093°C) measured at the appliance flue outlet (see Section 2113.11.3).

**Low-heat appliance type.** An approved chimney for removing the products of combustion from fuel-burning, low-heat appliances producing combustion gases not in excess of 1000°F (538°C) under normal operating conditions, but capable of producing combustion gases of 1400°F (760°C) during intermittent forces firing for periods up to 1 hour. Temperatures shall be measured at the appliance flue outlet.

**Masonry type.** A field-constructed chimney of solid masonry units or stones.

**Medium-heat appliance type.** An approved chimney for removing the products of combustion from fuel-burning, medium-heat appliances producing combustion gases not exceeding 2000°F (1093°C) measured at the appliance flue outlet (see Section 2113.11.2).

**[BE]CIRCULATION PATH.** An exterior or interior way of passage from one place to another for pedestrians.

**[F]CLEAN AGENT.** Electrically nonconducting, volatile or gaseous fire extinguishant that does not leave a residue upon vaporation.

**[BF]CLIMATE ZONE.** A geographical region that has been assigned climatic criteria as specified in Chapters 3CE and 3RE of the Puerto Rico Energy Conservation Code.

**[BG]CLINIC, OUTPATIENT.** Buildings or portions thereof used to provide medical care on less than a 24-hour basis to persons who are not rendered incapable of self-preservation by the services provided.

**[F]CLOSED SYSTEM.** The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

**[BS]COASTAL A ZONE.** Area within a special flood hazard area, landward of a V zone or landward of an open coast without mapped coastal high-hazard areas. In a coastal A zone, the principal source of flooding must be astronomical tides, storm surges, seiches or tsunamis, not riverine flooding. During the base flood conditions, the potential for breaking wave height shall be greater than or equal to 11/2 feet (457 mm). The inland limit of the coastal A zone is (a) the Limit of Moderate Wave Action if delineated on a FIRM, or (b) designated by the authority having jurisdiction.

**[BS]COASTAL HIGH-HAZARD AREA.** Area within the special flood hazard area extending from offshore to the inland limit of a primary dune along an open coast and any other area that is subject to high-velocity wave action from storms or seismic sources, and shown on a Flood Insurance Rate Map (FIRM) or other flood hazard map as velocity Zone V, VO, VE or V1-30.

**[A]CODE OFFICIAL.** The officer or other designated authority of the government agency having jurisdiction responsible for the enforcement of the pertaining code, or a duly authorized representative.

**[BS]COLLAR JOINT.** Vertical longitudinal space between wythes of masonry or between masonry wythe and backup construction that is permitted to be filled with mortar or grout.

**[BS]COLLECTOR.** A horizontal diaphragm element parallel and in line with the applied force that collects and transfers diaphragm shear forces to the vertical elements of the lateral force-resisting system or distributes forces within the diaphragm, or both.

**[BF]COMBINATION FIRE/SMOKE DAMPER.** A listed device installed in ducts and air transfer openings designed to close automatically upon the detection of heat and resist the passage of flame and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a fire command center.

**[BS]COMBINED PILE RAFT.** A geotechnical composite construction that combines the bearing effect of both foundation elements, raft and piles, by taking into account interactions between the foundation elements and the subsoil.

**[F]COMBUSTIBLE DUST.** Finely divided solid material that is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a U.S. No. 40 standard sieve.

**[F]COMBUSTIBLE FIBERS.** Readily ignitable and free-burning materials in a fibrous or shredded form, such as cocoa fiber, cloth, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials. This definition does not include densely packed baled cotton.

**[F]COMBUSTIBLE LIQUID.** A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

**Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB.** Liquids having a closed cup flash point at or above 200°F (93°C).

The category of combustible liquids does not include compressed gases or cryogenic fluids.

**[F]COMMERCIAL MOTOR VEHICLE.** A motor vehicle used to transport passengers or property where the motor vehicle meets one of the following:

1. Has a gross vehicle weight rating of 10,000 pounds (4540 kg) or more.

2. Is designed to transport 16 or more passengers, including the driver.

**[BE]COMMON PATH OF EGRESS TRAVEL.** That portion of *exit access* travel distance measured from the most remote point of each room, area or space to that point where the occupants have separate and distinct access to two *exits* or *exit access* doorways.

**[BE]COMMON USE.** Interior or exterior *circulation paths*, rooms, spaces or elements that are not for public use and are made available for the shared use of two or more people.

**[F]COMPRESSED GAS.** A material or mixture of materials that meets both of the following:

1. Is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure.
2. Has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, non-liquefied or in solution, except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C).

The states of a compressed gas are categorized as follows:

1. Non-liquefied compressed gases are gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C).
2. Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C).
3. Compressed gases in solution are non-liquefied gases that are dissolved in a solvent. Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

**[BS]CONCRETE.**

**Carbonate aggregate.** Concrete made with aggregates consisting mainly of calcium or magnesium carbonate, such as limestone or dolomite, and containing 40 percent or less quartz, chert or flint.

**Cellular.** A lightweight insulating concrete made by mixing a preformed foam with Portland cement slurry and having a dry unit weight of approximately 30 pcf (480 kg/m<sup>3</sup>).

**Lightweight aggregate.** Concrete made with aggregates of expanded clay, shale, slag or slate or sintered fly ash or any natural lightweight aggregate meeting ASTM C330 and possessing equivalent fire-resistance properties and weighing 85 to 115 pcf (1360 to 1840 kg/m<sup>3</sup>).

**Perlite.** A lightweight insulating concrete having a dry unit weight of approximately 30 pcf (480 kg/m<sup>3</sup>) made with perlite concrete aggregate. Perlite aggregate is produced from

a volcanic rock which, when heated, expands to form a glass-like material of cellular structure.

**Sand-lightweight.** Concrete made with a combination of expanded clay, shale, slag, slate, sintered fly ash, or any natural lightweight aggregate meeting ASTM C330 and possessing equivalent fire-resistance properties and natural sand. Its unit weight is generally between 105 and 120 pcf (1680 and 1920 kg/m<sup>3</sup>).

**Siliceous aggregate.** Concrete made with normal-weight aggregates consisting mainly of silica or compounds other than calcium or magnesium carbonate, which contains more than 40-percent quartz, chert or flint.

**Vermiculite.** A light weight insulating concrete made with vermiculite concrete aggregate which is laminated micaceous material produced by expanding the ore at high temperatures. When added to a Portland cement slurry the resulting concrete has a dry unit weight of approximately 30 pcf (480 kg/m<sup>3</sup>).

**[BG]CONGREGATE LIVING FACILITIES.** A building or part thereof that contains *sleeping units* where residents share bathroom or kitchen facilities, or both.

**[F]CONSTANTLY ATTENDED LOCATION.** A designated location at a facility staffed by trained personnel on a continuous basis where alarm or supervisory signals are monitored and facilities are provided for notification of the fire department or other emergency services.

**[A]CONSTRUCTION DOCUMENTS.** Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building *permit*.

**[BG]CONSTRUCTION TYPES.** See Section 602.

**Type I.** See Section 602.2.

**Type II.** See Section 602.2.

**Type III.** See Section 602.3.

**Type IV.** See Section 602.4.

**Type V.** See Section 602.5.

**[BF]CONTINUOUS INSULATION (ci).** Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior, or is integral to any opaque surface of the building envelope.

**[F]CONTROL AREA.** Spaces within a building where quantities of *hazardous materials* not exceeding the maximum allowable quantities per control area are stored, dispensed, *used* or handled. See the definition of “Outdoor control area” in the *Puerto Rico Fire Code*.

**[BS]CONTROLLED LOW-STRENGTH MATERIAL.**

A self-compacted, cementitious material used primarily as a backfill in place of compacted fill.

**[BS]CONVENTIONAL LIGHT-FRAME CONSTRUCTION.**

Construction whose primary structural elements are formed by a system of repetitive wood-framing members. See Section 2308 for conventional light-frame construction provisions.

**[BG]CORNICE.** A projecting horizontal molded element located at or near the top of an architectural feature.

**[BE]CORRIDOR.** An enclosed *exit access* component that defines and provides a path of egress travel.

**CORRIDOR, OPEN-ENDED.** See “Open-ended corridor.”

**[BF]CORRIDOR DAMPER.** A *listed* device intended for use where air ducts penetrate or terminate at horizontal openings in the ceilings of fire-resistance-rated corridors, where the corridor ceiling is permitted to be constructed as required for the corridor walls.

**[BS]CORROSION RESISTANCE.** The ability of a material to withstand deterioration of its surface or its properties when exposed to its environment.

**[F]CORROSIVE.** A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR, Part 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.

**[BG]COURT.** An open, uncovered space, unobstructed to the sky, bounded on three or more sides by exterior building walls or other enclosing devices.

**[BG]COVERED MALL BUILDING.** A single building enclosing a number of tenants and occupants, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices and other similar uses wherein two or more tenants have a main entrance into one or more malls. *Anchor buildings* shall not be considered as a part of the covered mall building. The term “covered mall building” shall include *open mall buildings* as defined below.

**Mall.** A roofed or covered common pedestrian area within a *covered mall building* that serves as access for two or more tenants and not to exceed three levels that are open to each other. The term “mall” shall include open malls as defined below.

**Open mall.** An unroofed common pedestrian way serving a number of tenants not exceeding three levels. Circulation at levels above grade shall be permitted to include open exterior balconies leading to *exits* discharging at grade.

**Open mall building.** Several structures housing a number of tenants, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and

other similar uses, wherein two or more tenants have a main entrance into one or more open malls. *Anchor buildings* are not considered as a part of the open mall building.

**[BS]CRIPPLE WALL.** A framed stud wall extending from the top of the foundation to the underside of floor framing for the lowest occupied floor level.

**[F]CRITICAL CIRCUIT.** A circuit that requires continuous operation to ensure safety of the structure and occupants.

**[BS]CROSS-LAMINATED TIMBER.** A prefabricated engineered wood product consisting of not less than three layers of solid-sawn lumber or *structural composite lumber* where the adjacent layers are cross oriented and bonded with structural adhesive to form a solid wood element.

**[F]CRYOGENIC FLUID.** A *liquid* having a *boiling point* lower than -150°F (-101°C) at 14.7 pounds per square inch atmosphere (psia) (an absolute pressure of 101 kPa).

**[BG]CUSTODIAL CARE.** Assistance with day-to-day living tasks; such as assistance with cooking, taking medication, bathing, using toilet facilities and other tasks of daily living. Custodial care includes persons receiving care who have the ability to respond to emergency situations and evacuate at a slower rate and/or who have mental and psychiatric complications.

**[BS]DALLE GLASS.** A decorative composite glazing material made of individual pieces of glass that are embedded in a cast matrix of concrete or epoxy.

**DAMPER.** See “*Ceiling radiation damper,*” “*Combination fire/smoke damper,*” “*Corridor damper,*” “*Fire damper*” and “*Smoke damper.*”

**[BS]DANGEROUS.** Any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:

1. The building or structure has collapsed, has partially collapsed, has moved off its foundation or lacks the necessary support of the ground.
2. There exists a significant risk of collapse, detachment or dislodgment of any portion, member, appurtenance or ornamentation of the building or structure under service loads.

**[F]DAY BOX.** A portable magazine designed to hold explosive materials constructed in accordance with the requirements for a Type 3 magazine as defined and classified in Chapter 56 of the *Puerto Rico Fire Code*.

**[BS]DEAD LOAD.** The weight of materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, *stairways*, built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, and the weight of fixed service equipment, such as cranes, plumbing stacks and risers, electrical feeders, heating, ventilating and air-conditioning systems and *automatic sprinkler systems*.



**[BS]DECORATIVE GLASS.** A carved, leaded or *Dalle glass* or glazing material whose purpose is decorative or artistic, not functional; whose coloring, texture or other design qualities or components cannot be removed without destroying the glazing material and whose surface, or assembly into which it is incorporated, is divided into segments.

**[F]DECORATIVE MATERIALS.** All materials applied over the building *interior finish* for decorative, acoustical or other effect including, but not limited to, curtains, draperies, fabrics and streamers; and all other materials utilized for decorative effect including, but not limited to, bulletin boards, artwork, posters, photographs, batting, cloth, cotton, hay, stalks, straw, vines, leaves, trees, moss and similar items, foam plastics and materials containing foam plastics. Decorative materials do not include wall coverings, ceiling coverings, floor coverings, ordinary window shades, *interior finish* and materials 0.025 inch (0.64 mm) or less in thickness applied directly to and adhering tightly to a substrate.

**[BS]DEEP FOUNDATION.** A deep foundation is a foundation element that does not satisfy the definition of a *shallow foundation*.

**[BE]DEFEND-IN-PLACE.** A method of emergency response that engages building components and trained staff to provide occupant safety during an emergency. Emergency response involves remaining in place, relocating within the building, or both, without evacuating the building.

**[A]DEFERRED SUBMITTAL.** Those portions of the design that are not submitted at the time of the application and that are to be submitted to the *building official* within a specified period.

**[F]DEFLAGRATION.** An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

**[BF]DELAYED-ACTION CLOSER.** A self-closing device that incorporates a delay prior to the initiation of closing. Delayed-action closers are mechanical devices with an adjustable delay.

**[F]DELUGE SYSTEM.** A sprinkler system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same areas as the sprinklers. When this valve opens, water flows into the piping system and discharges from all sprinklers attached thereto.

**DESIGNATED INSPECTOR.** An individual who is licensed to practice the profession of Architecture or Engineering as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); appointed by the owner to make periodic inspections of the construction work for which a permit was issued by the building official to ascertain compliance with the approved construction documents and permit issued. The professional shall certify the required inspections before the building official issue the certificate of occupancy.

**[BS]DESIGN DISPLACEMENT.** See Section 1905.1.1.

**[BS]DESIGN EARTHQUAKE GROUND MOTION.** The earthquake ground motion that buildings and structures are specifically proportioned to resist in Section 1613.

**[BS]DESIGN FLOOD.** The *flood* associated with the greater of the following two areas:

1. Area with a flood plain subject to a 1-percent or greater chance of *flooding* in any year.
2. Area designated as a *flood hazard area* on a community's flood hazard map, or otherwise legally designated.

**[BS]DESIGN FLOOD ELEVATION.** The elevation of the “*design flood*,” including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

**DESIGN PROFESSIONAL, REGISTERED.** See “Registered design professional.”

**DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, REGISTERED.** See “Registered design professional in responsible charge.”

**[BS]DESIGN STRENGTH.** The product of the nominal strength and a *resistance factor* (or strength reduction factor).

**[BS]DESIGNATED SEISMIC SYSTEM.** Those nonstructural components that require design in accordance with Chapter 13 of ASCE 7 and for which the component importance factor,  $I_p$ , is greater than 1 in accordance with Section 13.1.3 of ASCE 7.

**[F]DETACHED BUILDING.** A separate single-story building, without a basement or crawl space, used for the storage or *use of hazardous materials* and located an *approved* distance from all structures.

**[BS]DETAILED PLAIN CONCRETE STRUCTURAL WALL.** See Section 1905.1.1.

**[BE]DETECTABLE WARNING.** A standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired persons of hazards on a *circulation path*.

**[F]DETECTOR, HEAT.** A fire detector that senses heat—either abnormally high temperature or rate of rise, or both.

**[F]DETONATION.** An exothermic reaction characterized by the presence of a shock wave in the material which establishes and maintains the reaction. The reaction zone progresses through the material at a rate greater than the velocity of sound. The principal heating mechanism is one of shock compression. Detonations have an explosive effect.

**[BG]DETOXIFICATION FACILITIES.** Facilities that provide treatment for substance abuse, serving care recipients who are *incapable of self-preservation* or who are harmful to themselves or others.

**[BS]DIAPHRAGM.** A horizontal or sloped system acting to transmit lateral forces to vertical elements of the lateral force resisting system. When the term “diaphragm” is used, it shall include horizontal bracing systems.

**Diaphragm, blocked.** In *light-frame construction*, a diaphragm in which all sheathing edges not occurring on a framing member are supported on and fastened to blocking.

**Diaphragm boundary.** In *light-frame construction*, a location where shear is transferred into or out of the diaphragm sheathing. Transfer is either to a boundary element or to another force-resisting element.

**Diaphragm chord.** A diaphragm boundary element perpendicular to the applied load that is assumed to take axial stresses due to the diaphragm moment.

**Diaphragm, unblocked.** A diaphragm that has edge nailing at supporting members only. Blocking between supporting structural members at panel edges is not included. Diaphragm panels are field nailed to supporting members.

**[BS]DIMENSIONS (for Chapter 21).**

**Nominal.** The *specified dimension* plus an allowance for the *joints* with which the units are to be laid. Nominal dimensions are usually stated in whole numbers. Thickness is given first, followed by height and then length.

**Specified.** Dimensions specified for the manufacture or construction of a unit, *joint* or element.

**[BE]DIRECT ACCESS.** A path of travel from a space to an immediately adjacent space through an opening in the common wall between the two spaces.

**[F]DISPENSING.** The pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases are liberated to the atmosphere.

**DOOR, BALANCED.** See “Balanced door.”

**DOOR, LOW-ENERGY POWER-OPERATED.** See “Low-energy power-operated door.”

**DOOR, POWER-ASSISTED.** See “Power-assisted door.”

**DOOR, POWER-OPERATED.** See “Power-operated door.”

**DOORWAY, EXIT ACCESS.** See “Exit access doorway.”

**[BG]DORMITORY.** A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group, under joint occupancy and single management, as in college dormitories or fraternity houses.

**[BF]DRAFTSTOP.** A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and *attics*.

**DRAG STRUT.** See “Collector.”

**[BS]DRILLED SHAFT.** A cast-in-place deep foundation element, also referred to as a caisson, drilled pier or bored pile, constructed by drilling a hole (with or without permanent casing or drilling fluid) into soil or rock and filling it with fluid concrete after the drilling equipment is removed.

**Socketed drilled shaft.** A drilled shaft with a permanent pipe or tube casing that extends down to bedrock and an uncased socket drilled into the bedrock.

**[F]DRY-CHEMICAL EXTINGUISHING AGENT.** A powder composed of small particles, usually of sodium bicarbonate, potassium bicarbonate, urea-potassium-based bicarbonate, potassium chloride or monoammonium phosphate, with added particulate material supplemented by special treatment to provide resistance to packing, resistance to moisture absorption (caking) and the proper flow capabilities.

**[BS]DRY FLOODPROOFING.** A combination of design modifications that results in a building or structure, including the attendant utilities and equipment and sanitary facilities, being water tight with walls substantially impermeable to the passage of water and with structural components having the capacity to resist *loads* as identified in ASCE 7.

**[A]DWELLING.** A building that contains one or two *dwelling units* used, intended or designed to be used, rented, leased, let or hired out to be occupied for living purposes.

**[A]DWELLING UNIT.** A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**DWELLING UNIT OR SLEEPING UNIT, MULTISTORY.** See “Multistory unit.”

**[BE]EGRESS COURT.** A *court* or *yard* which provides access to a *public way* for one or more *exits*.

**[BF]ELECTRICAL CIRCUIT PROTECTIVE SYSTEM.** A specific construction of devices, materials, or coatings installed as a fire-resistive barrier system applied to electrical system components, such as cable trays, conduits and other raceways, open run cables and conductors, cables, and conductors.

**[F]ELEVATOR GROUP.** A grouping of elevators in a building located adjacent or directly across from one another that responds to common hall call buttons.

**[F]EMERGENCY ALARM SYSTEM.** A system to provide indication and warning of emergency situations involving *hazardous materials*.

**[F]EMERGENCY CONTROL STATION.** An *approved* location on the premises where signals from emergency equipment are received and which is staffed by trained personnel.

**[BE]EMERGENCY ESCAPE AND RESCUE OPENING.** An operable window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

**[F]EMERGENCY POWER SYSTEM.** A source of automatic electric power of a required capacity and duration to operate required life safety, fire alarm, detection and ventilation systems in the event of a failure of the primary power. Emergency power systems are required for electrical loads where interruption of the primary power could result in loss of human life or serious injuries.

**[F]EMERGENCY VOICE/ALARM COMMUNICATIONS.** Dedicated manual or *automatic* facilities for originating and distributing voice instructions, as well as alert and evacuation signals pertaining to a fire emergency, to the occupants of a building.

**[BG]EMPLOYEE WORK AREA.** All or any portion of a space used only by employees and only for work. *Corridors*, toilet rooms, kitchenettes and break rooms are not employee work areas.

**[BS]ENGINEERED WOOD RIM BOARD.** A full-depth structural composite lumber, wood structural panel, structural glued laminated timber or prefabricated wood I-joist member designed to transfer horizontal (shear) and vertical (compression) loads, provide attachment for diaphragm sheathing, siding and exterior deck ledgers, and provide lateral support at the ends of floor or roof joists or rafters.

**ENTRANCE, PUBLIC.** See “Public entrance.”

**ENTRANCE, RESTRICTED.** See “Restricted entrance.”

**ENTRANCE, SERVICE.** See “Service entrance.”

**[BG]EQUIPMENT PLATFORM.** An unoccupied, elevated platform used exclusively for mechanical systems or industrial process equipment, including the associated elevated walkways, stairways, alternating tread devices and ladders necessary to access the platform (see Section 505.3).

**[BS]ESSENTIAL FACILITIES.** Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from *flood*, wind, snow or earthquakes.

**[F]EXHAUSTED ENCLOSURE.** An appliance or piece of equipment that consists of a top, a back and two sides providing a means of local exhaust for capturing gases, fumes, vapors and mists. Such enclosures include laboratory hoods, exhaust fume hoods and similar appliances and equipment used to locally retain and exhaust the gases, fumes, vapors and mists that could be released. Rooms or areas provided with general *ventilation*, in themselves, are not exhausted enclosures.

**[A]EXISTING BUILDING.** A building erected prior to the date of adoption of the appropriate code, or one for which a legal building *permit* has been issued.

**[BS]EXISTING STRUCTURE.** A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building *permit* has been issued.

**[BE]EXIT.** That portion of a *means of egress* system between the *exit access* and the *exit discharge* or *public way*. Exit components include exterior exit doors at the *level of exit discharge*, *interior exit stairways* and *ramps*, *exit passageways*, *exterior exit stairways* and *ramps* and *horizontal exits*.

**[BE]EXIT ACCESS.** That portion of a *means of egress* system that leads from any occupied portion of a building or structure to an *exit*.

**[BE]EXIT ACCESS DOORWAY.** A door or access point along the path of egress travel from an occupied room, area or space where the path of egress enters an intervening room, *corridor*, *exit access stairway* or *ramp*.

**[BE]EXIT ACCESS RAMP.** A *ramp* within the exit access portion of the means of egress system.

**[BE]EXIT ACCESS STAIRWAY.** A *stairway* within the exit access portion of the means of egress system.

**[BE]EXIT DISCHARGE.** That portion of a *means of egress* system between the termination of an *exit* and a *public way*.

**[BE]EXIT DISCHARGE, LEVEL OF.** The *story* at the point at which an *exit* terminates and an *exit discharge* begins.

**EXIT, HORIZONTAL.** See “Horizontal exit.”

**[BE]EXIT PASSAGEWAY.** An *exit* component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a horizontal direction to an *exit* or to the *exit discharge*.

**[BF]EXPANDED VINYL WALL COVERING.** Wall covering consisting of a woven textile backing, an expanded vinyl base coat layer and a nonexpanded vinyl skin coat. The expanded base coat layer is a homogeneous vinyl layer that contains a blowing agent. During processing, the

blowing agent decomposes, causing this layer to expand by forming closed cells. The total thickness of the wall covering is approximately 0.055 inch to 0.070 inch (1.4 mm to 1.78 mm).

**[F]EXPLOSION.** An effect produced by the sudden violent expansion of gases, which may be accompanied by a shock wave or disruption, or both, of enclosing materials or structures. An explosion could result from any of the following:

1. Chemical changes such as rapid oxidation, *deflagration* or *detonation*, decomposition of molecules and runaway polymerization (usually *detonations*).
2. Physical changes such as pressure tank ruptures.
3. Atomic changes (nuclear fission or fusion).

**[F]EXPLOSIVE.** A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to: dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, and igniters.

The term “explosive” includes any material determined to be within the scope of USC Title 18: Chapter 40 and also includes any material classified as an explosive other than consumer fireworks, 1.4G by the *hazardous materials* regulations of DOTn 49 CFR Parts 100-185.

**High explosive.** Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap when unconfined.

**Low explosive.** Explosive material that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low explosives include, but are not limited to: black powder; safety fuse; igniters; igniter cord; fuse lighters; fireworks; and propellants, 1.3C.

**Mass-detonating explosives.** Division 1.1, 1.2 and 1.5 explosives alone or in combination, or loaded into various types of ammunition or containers, most of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, severe concussion, impact, the impulse of an initiating agent or the effect of a considerable discharge of energy from without. Materials that react in this manner represent a mass explosion hazard. Such an explosive will normally cause severe structural damage to adjacent objects. Explosive propagation could occur immediately to other items of ammunition and explosives stored sufficiently close to and not adequately protected from the initially exploding pile with a time interval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

**UN/DOTn Class 1 explosives.** The former classification system used by DOTn included the terms “high” and “low” explosives as defined herein. The following terms further define explosives under the current system applied by DOTn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (i.e., the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

**Division 1.1.** Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.

**Division 1.2.** Explosives that have a projection hazard but not a mass explosion hazard.

**Division 1.3.** Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

**Division 1.4.** Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

**Division 1.5.** Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard, but that are so insensitive there is very little probability of initiation or of transition from burning to *detonation* under normal conditions of transport.

**Division 1.6.** Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

**[BE]EXTERIOR EXIT RAMP.** An *exit* component that serves to meet one or more *means of egress* design requirements, such as required number of *exits* or *exit access* travel distance, and is open to *yards, courts* or *public ways*.

**[BE]EXTERIOR EXIT STAIRWAY.** An *exit* component that serves to meet one or more *means of egress* design requirements, such as required number of *exits* or *exit access* travel distance, and is open to *yards, courts* or *public ways*.

**[BF]EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS).** EIFS are nonstructural, no-load-bearing, *exterior wall* cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat and a textured protective finish coat.

**[BF]EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE.** An EIFS that incorporates a means of drainage applied over a *water-resistive barrier*.

**[BF]EXTERIOR SURFACES.** Weather-exposed surfaces.

**[BF]EXTERIOR WALL.** A wall, bearing or nonbearing, that is used as an enclosing wall for a building, other than a *fire wall*, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.



**[BF]EXTERIOR WALL COVERING.** A material or assembly of materials applied on the exterior side of *exterior walls* for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, *veneers*, siding, *exterior insulation and finish systems*, architectural *trim* and embellishments such as *cornices*, soffits, facias, gutters and leaders.

**[BF]EXTERIOR WALL ENVELOPE.** A system or assembly of *exterior wall* components, including *exterior wall* finish materials, that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space, from the detrimental effects of the exterior environment.

**[BF]F RATING.** The time period that the *through-penetration firestop system* limits the spread of fire through the penetration when tested in accordance with ASTM E814 or UL 1479.

**[BF]FABRIC PARTITION.** A partition consisting of a finished surface made of fabric, without a continuous rigid backing, that is directly attached to a framing system in which the vertical framing members are spaced greater than 4 feet (1219 mm) on center.

**[BS]FABRICATED ITEM.** Structural, load-bearing or lateral load-resisting members or assemblies consisting of materials assembled prior to installation in a building or structure, or subjected to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, *masonry units* and *wood structural panels*, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not “fabricated items.”

**[F]FABRICATION AREA.** An area within a semiconductor fabrication facility and related research and development areas in which there are processes using hazardous production materials. Such areas are allowed to include ancillary rooms or areas such as dressing rooms and offices that are directly related to the fabrication area processes.

**[A]FACILITY.** All or any portion of buildings, structures, *site* improvements, elements and pedestrian or vehicular routes located on a *site*.

**[BS]FACTORED LOAD.** The product of a *nominal load* and a *load factor*.

**[BS]FENESTRATION.** Products classified as either vertical fenestration or skylights and sloped glazing, installed in such a manner as to preserve the weather-resistant barrier of the wall or roof in which they are installed. Fenestration includes products with glass or other transparent or translucent materials.

**[BS]FENESTRATION, VERTICAL.** Windows that are fixed or movable, opaque doors, glazed doors, glazed block and combination opaque and glazed doors installed in a wall at less than 15 degrees from the vertical.

**[BS]FIBER-CEMENT (BACKER BOARD, SIDING, SOFFIT, TRIM AND UNDERLAYMENT) PRODUCTS.** Manufactured thin section composites of hydraulic cementitious matrices and discrete nonasbestos fibers.

**[BF]FIBER-REINFORCED POLYMER.** A polymeric composite material consisting of reinforcement fibers, such as glass, impregnated with a fiber-binding polymer which is then molded and hardened. Fiber-reinforced polymers are permitted to contain cores laminated between fiber-reinforced polymer facings.

**[BS]FIBERBOARD.** A fibrous, homogeneous panel made from lignocellulosic fibers (usually wood or cane) and having a density of less than 31 pounds per cubic foot (pcf) (497 kg/m<sup>3</sup>) but more than 10 pcf (160 kg/m<sup>3</sup>).

**FIELD NAILING.** See “Nailing, field.”

**FIRE ALARM BOX, MANUAL.** See “Manual fire alarm box.”

**[F]FIRE ALARM CONTROL UNIT.** A system component that receives inputs from *automatic* and manual *fire alarm* devices and may be capable of supplying power to detection devices and transponders or off-premises transmitters. The control unit may be capable of providing a transfer of power to the notification appliances and transfer of condition to relays or devices.

**[F]FIRE ALARM SIGNAL.** A signal initiated by a *fire alarm-initiating device* such as a *manual fire alarm box*, *automatic fire detector*, waterflow switch or other device whose activation is indicative of the presence of a fire or fire signature.

**[F]FIRE ALARM SYSTEM.** A system or portion of a combination system consisting of components and circuits arranged to monitor and annunciate the status of *fire alarm* or *supervisory signal-initiating devices* and to initiate the appropriate response to those signals.

**[BF]FIRE AREA.** The aggregate floor area enclosed and bounded by *fire walls*, *fire barriers*, *exterior walls* or *horizontal assemblies* of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal projection of the roof or floor next above.

**[BF]FIRE BARRIER.** A fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained.

**[F]FIRE COMMAND CENTER.** The principal attended or unattended location where the status of detection, alarm communications and control systems is displayed, and from which the systems can be manually controlled.

**[BF]FIRE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to close *automatically* upon detection of heat and resist the passage of flame. Fire dampers are classified for use in either static systems that will *automatically* shut down in the event of a fire, or in dynamic

systems that continue to operate during a fire. A dynamic fire damper is tested and rated for closure under elevated temperature airflow.

**[F]FIRE DETECTOR, AUTOMATIC.** A device designed to detect the presence of a fire signature and to initiate action.

**[BF]FIRE DOOR.** The door component of a *fire door assembly*.

**[BF]FIRE DOOR ASSEMBLY.** Any combination of a *fire door*, frame, hardware and other accessories that together provide a specific degree of fire protection to the opening.

**FIRE DOOR ASSEMBLY, FLOOR.** See “Floor fire door assembly.”

**[BF]FIRE EXIT HARDWARE.** *Panic hardware* that is *listed* for use on *fire door assemblies*.

**[F]FIRE LANE.** A road or other passageway developed to allow the passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than fire apparatus.

**[BF]FIRE PARTITION.** A vertical assembly of materials designed to restrict the spread of fire in which openings are protected.

**[BF]FIRE PROTECTION RATING.** The period of time that an opening protective will maintain the ability to confine a fire as determined by tests specified in Section 716. Ratings are stated in hours or minutes.

**[F]FIRE PROTECTION SYSTEM.** *Approved* devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof.

**[BF]FIRE-RATED GLAZING.** Glazing with either a *fire protection rating* or a *fire-resistance rating*.

**[BF]FIRE RESISTANCE.** That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

**[BF]FIRE-RESISTANCE RATING.** The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703.

**[BF]FIRE-RESISTANT JOINT SYSTEM.** An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E1966 or UL 2079 to resist for a prescribed period of time the passage of fire through *joints* made in or between fire-resistance-rated assemblies.

**[F]FIRE SAFETY FUNCTIONS.** Building and fire control functions that are intended to increase the level of life safety for occupants or to control the spread of harmful effects of fire.

**[BF]FIRE SEPARATION DISTANCE.** The distance measured from the building face to one of the following:

1. The closest interior *lot line*.
2. To the centerline of a street, an alley or *public way*.
3. To an imaginary line between two buildings on the lot.

The distance shall be measured at right angles from the face of the wall.

**[BF]FIRE WALL.** A fire-resistance-rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

**[BF]FIRE WINDOW ASSEMBLY.** A window constructed and glazed to give protection against the passage of fire.

**[BF]FIREBLOCKING.** Building materials, or materials *approved* for use as fireblocking, installed to resist the free passage of flame to other areas of the building through concealed spaces.

**[M]FIREPLACE.** A hearth and fire chamber or similar prepared place in which a fire may be made and which is built in conjunction with a chimney.

**[BS]FIREPLACE THROAT.** The opening between the top of the firebox and the smoke chamber.

**FIRESTOP, MEMBRANE-PENETRATION.** See “Membrane penetration firestop.”

**FIRESTOP, PENETRATION.** See “Penetration firestop.”

**FIRESTOP SYSTEM, THROUGH-PENETRATION.** See “Through-penetration firestop system.”

**[F]FIREWORKS.** Any composition or device for the purpose of producing a visible or audible effect for entertainment purposes by combustion, *deflagration* or *detonation* that meets the definition of 1.4G fireworks or 1.3G fireworks.

**Fireworks, 1.3G.** Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, *deflagration* or *detonation*. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition, and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as fireworks, UN0335 by the DOTn.

**Fireworks, 1.4G.** Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for fireworks, UN0336, and the U.S. Consumer Product Safety Commission (CPSC) as set forth in CPSC 16 CFR: Parts 1500 and 1507.

**[BG]FIXED BASE OPERATOR (FBO).** A commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services, such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance and flight instruction.

**[BE]FIXED SEATING.** Furniture or fixture designed and installed for the use of sitting and secured in place including bench-type seats and seats with or without backs or armrests.

**[BF]FLAME SPREAD.** The propagation of flame over a surface.

**[BF]FLAME SPREAD INDEX.** A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84 or UL 723.

**[F]FLAMMABLE GAS.** A material that is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa)], which also meets one of the following:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air.
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

**[F]FLAMMABLE LIQUEFIED GAS.** A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

**[F]FLAMMABLE LIQUID.** A *liquid* having a closed cup *flash point* below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

**Class IA.** *Liquids* having a *flash point* below 73°F (23°C) and a *boiling point* below 100°F (38°C).

**Class IB.** *Liquids* having a *flash point* below 73°F (23°C) and a *boiling point* at or above 100°F (38°C).

**Class IC.** *Liquids* having a *flash point* at or above 73°F (23°C) and below 100°F (38°C). The category of flammable liquids does not include *compressed gases* or *cryogenic fluids*.

**[F]FLAMMABLE MATERIAL.** A material capable of being readily ignited from common sources of heat or at a temperature of 600°F (316°C) or less.

**[F]FLAMMABLE SOLID.** A *solid*, other than a blasting agent or *explosive*, that is capable of causing fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable *solid* as determined in accordance with the test method of CPSC 16 CFR; Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis.

**[F]FLAMMABLE VAPORS OR FUMES.** The concentration of flammable constituents in air that exceeds 25 percent of their *lower flammable limit (LFL)*.

**[F]FLASH POINT.** The minimum temperature in degrees Fahrenheit at which a *liquid* will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a *liquid* shall be determined by appropriate test procedure and apparatus as specified in ASTM D56, ASTM D93 or ASTM D3278.

**[BE]FLIGHT.** A continuous run of rectangular treads, *winders* or combination thereof from one landing to another.

**[BS]FLOOD or FLOODING.** A general and temporary condition of partial or complete inundation of normally dry land from:

1. The overflow of inland or tidal waters.
2. The unusual and rapid accumulation or runoff of surface waters from any source.

**[BS]FLOOD DAMAGE-RESISTANT MATERIALS.** Any construction material capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic *repair*.

**FLOOD, DESIGN.** See “Design flood.”

**FLOOD ELEVATION, DESIGN.** See “Design flood elevation.”

**[BS]FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of *flooding* in any year.
2. The area designated as a flood hazard area on a community’s flood hazard map, or otherwise legally designated.

**FLOOD HAZARD AREAS, SPECIAL.** See “Special flood hazard area.”

**[BS]FLOOD INSURANCE RATE MAP (FIRM).** An official map of a community on which the Federal Emergency Management Agency (FEMA) has delineated both the *special flood hazard areas* and the risk premium zones applicable to the community.

**[BS]FLOOD INSURANCE STUDY.** The official report provided by the Federal Emergency Management Agency containing the Flood Insurance Rate Map (FIRM), the Flood Boundary and Floodway Map (FBFM), the water surface elevation of the *base flood* and supporting technical data.

**[BS]FLOODWAY.** The channel of the river, creek or other watercourse and the adjacent land areas that must be reserved in order to discharge the *base flood* without cumulatively increasing the water surface elevation more than a designated height.

**[BE]FLOOR AREA, GROSS.** The floor area within the inside perimeter of the *exterior walls* of the building under consideration, exclusive of vent *shafts* and *courts*, without deduction for *corridors*, *stairways*, *ramps*, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding *exterior walls* shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include *shafts* with no openings or interior *courts*.

**[BE]FLOOR AREA, NET.** The actual occupied area not including unoccupied accessory areas such as *corridors*, *stairways*, *ramps*, toilet rooms, mechanical rooms and closets.

**[BF]FLOOR FIRE DOOR ASSEMBLY.** A combination of a *fire door*, a frame, hardware and other accessories installed in a horizontal plane, which together provide a specific degree of fire protection to a through-opening in a fire-resistance-rated floor (see Section 712.1.13.1).

**[F]FOAM-EXTINGUISHING SYSTEM.** A special system discharging a foam made from concentrates, either mechanically or chemically, over the area to be protected.

**[BF]FOAM PLASTIC INSULATION.** A plastic that is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic containing voids consisting of open or closed cells distributed throughout the plastic for thermal insulating or acoustical purposes and that has a density less than 20 pounds per cubic foot (pcf) (320 kg/m<sup>3</sup>).

**[BE]FOLDING AND TELESCOPIC SEATING.** Tiered seating having an overall shape and size that is capable of being reduced for purposes of moving or storing and is not a building element.

**[BG]FOOD COURT.** A public seating area located in the *mall* that serves adjacent food preparation tenant spaces.

**[BG]FOSTER CARE FACILITIES.** Facilities that provide care to more than five children, 21/2 years of age or less.

**[BS]FOUNDATION PIER (for Chapter 21).** An isolated vertical foundation member whose horizontal dimension measured at right angles to its thickness does not exceed three times its thickness and whose height is equal to or less than four times its thickness.

**[BS]FRAME STRUCTURE.** A building or other structure in which vertical *loads* from floors and roofs are primarily supported by columns.

**[F]FUEL CELL POWER SYSTEM, STATIONARY.** A stationary energy-generation system that converts the chemical energy of a fuel and oxidant to electric energy (DC or AC electricity) by an electrochemical process.

**Field-fabricated fuel cell power system.** A *stationary fuel cell power system* that is assembled at the job site and is not a pre-engineered or prepackaged factory-assembled fuel cell power system.

**Pre-engineered fuel cell power system.** A *stationary fuel cell power system* consisting of components and modules that are produced in a factory and shipped to the job site for assembly.

**Prepackaged fuel cell power system.** A *stationary fuel cell power system* that is factory assembled as a single, complete unit and shipped as a complete unit for installation at the job site.

**FULL CUTOFF:** A luminaire light distribution where zero candela intensity occurs at or above an angle of 90° above nadir. Additionally, the candela per 1000 lamp lumens does not numerically exceed 100 (10%) at or above a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.

**[BS]GABLE.** The triangular portion of a wall beneath the end of a dual-slope, pitched, or mono-slope roof or portion thereof and above the top plates of the story or level of the ceiling below.

**[BE]GAMING.** To deal, operate, carry on, conduct, maintain or expose for play any game played with cards, dice, equipment or any mechanical, electromechanical or electronic device or machine for money, property, checks, credit or any representative of value except where occurring at private home or operated by a charitable or educational organization.

**[BE]GAMING AREA.** Single or multiple areas of a building or facility where gaming machines or tables are present and gaming occurs, including but not limited to, primary casino gaming areas, VIP gaming areas, high-roller gaming areas, bar tops, lobbies, dedicated rooms or spaces such as in retail or restaurant establishments, sports books and tournament areas.

**[BE]GAMING MACHINE TYPE.** Categorization of gaming machines per type of game played on them, including, but not limited to, slot machines, video poker and video keno.



**[BE]GAMING TABLE TYPE.** Categorization of gaming tables per the type of game played on them, including, but not limited to, baccarat, bingo, blackjack/21, craps, pai gow, poker, roulette.

**[F]GAS CABINET.** A fully enclosed, ventilated noncombustible enclosure used to provide an isolated environment for *compressed gas* cylinders in storage or *use*. Doors and access ports for exchanging cylinders and accessing pressure regulating controls are allowed to be included.

**[F]GAS DETECTION SYSTEM.** A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

**[F]GAS ROOM.** A separately ventilated, fully enclosed room in which only *compressed gases* and associated equipment and supplies are stored or *used*.

**[F]GASEOUS HYDROGEN SYSTEM.** An assembly of piping, devices and apparatus designed to generate, store, contain, distribute or transport a nontoxic, gaseous hydrogen-containing mixture having not less than 95-percent hydrogen gas by volume and not more than 1-percent oxygen by volume. Gaseous hydrogen systems consist of items such as *compressed gas* containers, reactors and appurtenances, including pressure regulators, pressure relief devices, manifolds, pumps, compressors and interconnecting piping and tubing and controls.

**[BF]GLASS FIBERBOARD.** Fibrous glass roof insulation consisting of inorganic glass fibers formed into rigid boards using a binder. The board has a top surface faced with asphalt and kraft reinforced with glass fiber.

**GOVERNMENT AGENCIES WITH JURISDICTION.** Defined as “Entidad Gubernamental Concernida” in the *Joint Regulation*.

**[BS]GRADE (LUMBER).** The classification of lumber in regard to strength and utility in accordance with American Softwood Lumber Standard DOC PS 20 and the grading rules of an *approved* lumber rules-writing agency.

**[BE]GRADE FLOOR OPENING.** A window or other opening located such that the sill height of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.

**[BG]GRADE PLANE.** A reference plane representing the average of finished ground level adjoining the building at *exterior walls*. Where the finished ground level slopes away from the *exterior walls*, the reference plane shall be established by the lowest points within the area between the building and the *lot line* or, where the *lot line* is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

**GRADE PLANE, STORY ABOVE.** See “Story above grade plane.”

**[BE]GRANDSTAND.** Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element (see “*Bleachers*”).

**[BG]GREENHOUSE.** A structure or thermally isolated area of a building that maintains a specialized sunlit environment used for and essential to the cultivation, protection or maintenance of plants.

**[BG]GROSS LEASABLE AREA.** The total floor area designed for tenant occupancy and exclusive use. The area of tenant occupancy is measured from the centerlines of joint partitions to the outside of the tenant walls. All tenant areas, including areas used for storage, shall be included in calculating gross leasable area.

**[BG]GROUP HOME.** A facility for social rehabilitation, substance abuse or mental health problems that contains a group housing arrangement that provides *custodial care* but does not provide medical care.

**[BE]GUARD.** A building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level.

**[BG]GUESTROOM.** A room used or intended to be used by one or more guests for living or sleeping purposes.

**[BS]GYPSUM BOARD.** The generic name for a family of sheet products consisting of a noncombustible core primarily of gypsum with paper surfacing. Gypsum wallboard, gypsum sheathing, gypsum base for gypsum veneer plaster, exterior gypsum soffit board, predecorated gypsum board and water resistant gypsum backing board complying with the standards listed in Tables 2506.2, 2507.2 and Chapter 35 are types of gypsum board.

**[BS]GYPSUM PANEL PRODUCT.** The general name for a family of sheet products consisting essentially of gypsum.

**[BS]GYPSUM PLASTER.** A mixture of calcined gypsum or calcined gypsum and lime and aggregate and other *approved* materials as specified in this code.

**[BS]GYPSUM VENEER PLASTER.** *Gypsum plaster* applied to an *approved* base in one or more coats normally not exceeding 1/4 inch (6.4 mm) in total thickness.

**[BG]HABITABLE SPACE.** A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

**[F]HALOGENATED EXTINGUISHING SYSTEM.** A fire-extinguishing system using one or more atoms of an element from the halogen chemical series: fluorine, chlorine, bromine and iodine.

**[F]HANDLING.** The deliberate transport by any means to a point of storage or *use*.

**[BE]HANDRAIL.** A horizontal or sloping rail intended for grasping by the hand for guidance or support.

**[BS]HARDBOARD.** A fibrous-felted, homogeneous panel made from lignocellulosic fibers consolidated under heat and pressure in a hot press to a density not less than 31 pcf (497 kg/m<sup>3</sup>).

**HARDWARE.** See “Fire exit hardware” and “Panic hardware.”

**[F]HAZARDOUS MATERIALS.** Those chemicals or substances that are *physical hazards* or *health hazards* as classified in Section 307 and the *Puerto Rico Fire Code*, whether the materials are in usable or waste condition.

**[F]HAZARDOUS PRODUCTION MATERIAL (HPM).** A *solid, liquid* or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or instability of Class 3 or 4 as ranked by NFPA 704 and which is *used* directly in research, laboratory or production processes which have as their end product materials that are not hazardous.

**[BS]HEAD JOINT.** Vertical *mortar joint* placed between *masonry units* within the *wythe* at the time the *masonry units* are laid.

**[F]HEALTH HAZARD.** A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term “health hazard” includes chemicals that are *toxic* or *highly toxic*, and *corrosive*.

**HEAT DETECTOR.** See “Detector, heat.”

**[BG]HEIGHT, BUILDING.** The vertical distance from *grade plane* to the average height of the highest roof surface.

**[BS]HELICAL PILE.** Manufactured steel deep foundation element consisting of a central shaft and one or more helical bearing plates. A helical pile is installed by rotating it into the ground. Each helical bearing plate is formed into a screw thread with a uniform defined pitch.

**[F]HELIPAD.** A structural surface that is used for the landing, taking off, taxiing and parking of helicopters.

**[F]HELIPORT.** An area of land or water or a structural surface that is used, or intended for use, for the landing and taking off of helicopters, and any appurtenant areas that are used, or intended for use, for heliport buildings or other heliport facilities.

**[F]HELISTOP.** The same as “heliport,” except that no fueling, defueling, maintenance, repairs or storage of helicopters is permitted.

**[F]HIGHER EDUCATION LABORATORY.** Laboratories in Group B occupancies used for educational purposes above the 12th grade. Storage, use and handling of chemicals in such

laboratories shall be limited to purposes related to testing, analysis, teaching, research or developmental activities on a nonproduction basis.

**[F]HIGHLY TOXIC.** A material which produces a lethal dose or lethal concentration that falls within any of the following categories:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each. Mixtures of these materials with ordinary materials, such as water, might not warrant classification as *highly toxic*. While this system is basically simple in application, any hazard evaluation that is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

**[BF]HIGH-PRESSURE DECORATIVE EXTERIORGRADE COMPACT LAMINATE (HPL).** Panels consisting of layers of cellulose fibrous material impregnated with thermosetting resins and bonded together by a high-pressure process to form a homogeneous nonporous core suitable for exterior use.

**[BF]HIGH-PRESSURE DECORATIVE EXTERIORGRADE COMPACT LAMINATE (HPL) SYSTEM.** An *exterior wall covering* fabricated using HPL in a specific assembly including *joints*, seams, attachments, substrate, framing and other details as appropriate to a particular design.

**[BG]HIGH-RISE BUILDING.** A building with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

**[A]HISTORIC BUILDINGS OR PROPERTY.** Any building or structure site, object, place, location, district or zone, or collection of structures and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal governmental jurisdiction and as defined by the “*Reglamento Conjunto para la Evaluación y Expedición de Permisos Relacionados al Desarrollo, Uso de Terrenos y Operación de Negocios (Reglamento Conjunto), según la Ley Número 161 De 2009, según enmendada*”. This includes historical buildings or properties:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.

2. Designated as historic or having historic significance under an applicable state or local law, ordinance or resolution.
3. Designated as historic or having historic significance by the *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly.
4. Certified as a contributing or eligible resource within a National Register, state designated or locally designated historic district or zone.

**[BF]HORIZONTAL ASSEMBLY.** A fire-resistance-rated floor or *roof assembly* of materials designed to restrict the spread of fire in which continuity is maintained.

**[BE]HORIZONTAL EXIT.** An *exit* component consisting of fire-resistance-rated construction and opening protectives intended to compartmentalize portions of a building thereby creating refuge areas that afford safety from the fire and smoke from the area of fire origin.

**[BG]HOSPITALS AND PSYCHIATRIC HOSPITALS.** Facilities that provide care or treatment for the medical, psychiatric, obstetrical, or surgical treatment of care recipients who are *incapable of self-preservation*.

**[BG]HOUSING UNIT.** A *dormitory* or a group of *cells* with a common dayroom in Group I-3.

**HPM.** See “Hazardous Production Material.”

**[F]HPM ROOM.** A room used in conjunction with or serving a Group H-5 occupancy, where *HPM* is stored or *used* and which is classified as a Group H-2, H-3 or H-4 occupancy.

**[BS]HURRICANE-PRONE REGIONS.** Areas vulnerable to hurricanes defined as:

1. The U. S. Atlantic Ocean and Gulf of Mexico coasts where the ultimate design wind speed, *Vult*, for Risk Category II buildings is greater than 115 mph (51.4 m/s);
2. Hawaii, Puerto Rico, Guam, Virgin Islands and American Samoa.

**[F]HYDROGEN FUEL GAS ROOM.** A room or space that is intended exclusively to house a *gaseous hydrogen system*.

**[BS]ICE-SENSITIVE STRUCTURE.** A structure for which the effect of an atmospheric ice *load* governs the design of a structure or portion thereof. This includes, but is not limited to, lattice structures, guyed masts, overhead lines, light suspension and cable-stayed bridges, aerial cable systems (e.g., for ski lifts or logging operations), amusement rides, open catwalks and platforms, flagpoles and signs.

**[F]IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).** The concentration of airborne contaminants which poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment. This contaminant concentration level is established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by

volume (ppmv/v) or milligrams per cubic meter (mg/m<sup>3</sup>). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source *approved* by the *building official* shall make such determination.

**[BS]IMPACT LOAD.** The *load* resulting from moving machinery, elevators, craneways, vehicles and other similar forces and kinetic *loads*, pressure and possible surcharge from fixed or moving *loads*.

**[BG]INCAPABLE OF SELF-PRESERVATION.** Persons who, because of age, physical limitations, mental limitations, chemical dependency or medical treatment, cannot respond as an individual to an emergency situation.

**[F]INCOMPATIBLE MATERIALS.** Materials that, when mixed, have the potential to react in a manner that generates heat, fumes, gases or byproducts which are hazardous to life or property.

**[F]INERT GAS.** A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health hazard properties as defined (other than acting as a simple asphyxiant) or hazard properties other than those of a *compressed gas*. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen and xenon.

**[F]INITIATING DEVICE.** A system component that originates transmission of a change-of-state condition, such as in a *smoke detector*, *manual fire alarm box* or supervisory switch.

**[BE]INTENDED TO BE OCCUPIED AS A RESIDENCE.** This refers to a *dwelling unit* or *sleeping unit* that can or will be used all or part of the time as the occupant's place of abode.

**[BE]INTERIOR EXIT RAMP.** An *exit* component that serves to meet one or more *means of egress* design requirements, such as required number of *exits* or *exit access* travel distance, and provides for a protected path of egress travel to the *exit discharge* or *public way*.

**[BE]INTERIOR EXIT STAIRWAY.** An *exit* component that serves to meet one or more *means of egress* design requirements, such as required number of *exits* or *exit access* travel distance, and provides for a protected path of egress travel to the *exit discharge* or *public way*.

**[BF]INTERIOR FINISH.** Interior finish includes *interior wall and ceiling finish* and *interior floor finish*.

**[BF]INTERIOR FLOOR FINISH.** The exposed floor surfaces of buildings including coverings applied over a finished floor or *stair*, including risers.

**[BF]INTERIOR FLOOR-WALL BASE.** *Interior floor finish trim* used to provide a functional or decorative border at the intersection of walls and floors.

**[BF]INTERIOR SURFACES.** Surfaces other than weather exposed surfaces.

**[BF]INTERIOR WALL AND CEILING FINISH.** The exposed *interior surfaces* of buildings, including but not limited to: fixed or movable walls and partitions; toilet room privacy partitions; columns; ceilings; and interior wainscoting, paneling or other finish applied structurally or for decoration, acoustical correction, surface insulation, structural fire resistance or similar purposes, but not including *trim*.

**[BS]INTERLAYMENT.** A layer of felt or nonbituminous saturated felt not less than 18 inches (457 mm) wide, shingled between each course of a wood-shake *roof covering*.

**[BF]INTUMESCENT FIRE-RESISTANT COATINGS.** Thin film liquid mixture applied to substrates by brush, roller, spray or trowel which expands into a protective foamed layer to provide fire-resistant protection of the substrates when exposed to flame or intense heat.

**[BS]JOINT.** The opening in or between adjacent assemblies that is created due to building tolerances, or is designed to allow independent movement of the building in any plane caused by thermal, seismic, wind or any other loading.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)” as established by the Act No. 161 of December 1, 2009, “Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended”.

**[A]JURISDICTION.** The governmental unit that has adopted this code.

**[BF]L RATING.** The air leakage rating of a *through penetration firestop system* or a fire-resistant *joint* system when tested in accordance with UL 1479 or UL 2079, respectively.

**[A]LABEL.** An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material and the name and identification of an *approved agency*, and that indicates that the representative sample of the product or material has been tested and evaluated by an *approved agency* (see Section 1703.5, “Manufacturer’s designation” and “Mark”).

**[A]LABELED.** Equipment, materials or products to which has been affixed a *label*, seal, symbol or other identifying *mark* of a nationally recognized testing laboratory, *approved agency* or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**[F]LABORATORY SUITE.** A fire-rated, enclosed laboratory area providing one or more laboratory spaces within a Group B educational occupancy that includes ancillary uses such as

offices, bathrooms and corridors that are contiguous with the laboratory area, and are constructed in accordance with Section 428.

**LEVEL OF EXIT DISCHARGE.** See “Exit discharge, level of.”

**[BF]LIGHT-DIFFUSING SYSTEM.** Construction consisting in whole or in part of lenses, panels, grids or baffles made with light-transmitting plastics positioned below independently mounted electrical light sources, skylights or light transmitting plastic roof panels. Lenses, panels, grids and baffles that are part of an electrical fixture shall not be considered as a light-diffusing system.

**[BS]LIGHT-FRAME CONSTRUCTION.** A type of construction whose vertical and horizontal structural elements are primarily formed by a system of repetitive wood or cold-formed steel framing members.

**[BF]LIGHT-TRANSMITTING PLASTIC ROOF PANELS.** Structural plastic panels other than skylights that are fastened to structural members, or panels or sheathing and that are used as light-transmitting media in the plane of the roof.

**[BF]LIGHT-TRANSMITTING PLASTIC WALL PANELS.** Plastic materials that are fastened to structural members, or to structural panels or sheathing, and that are used as light-transmitting media in *exterior walls*.

**[BS]LIMIT OF MODERATE WAVE ACTION.** Line shown on FIRMs to indicate the inland limit of the 11/2-foot (457 mm) breaking wave height during the base flood.

**[BS]LIMIT STATE.** A condition beyond which a structure or member becomes unfit for service and is judged to be no longer useful for its intended function (serviceability limit state) or to be unsafe (strength limit state).

**[F]LIQUID.** A material that has a melting point that is equal to or less than 68°F (20°C) and a *boiling point* that is greater than 68°F (20°C) at 14.7 pounds per square inch absolute (psia) (101 kPa). When not otherwise identified, the term “liquid” includes both *flammable* and *combustible liquids*.

**[F]LIQUID STORAGE ROOM.** A room classified as a Group H-3 occupancy used for the storage of *flammable* or *combustible liquids* in a closed condition.

**[F]LIQUID USE, DISPENSING AND MIXING ROOM.** A room in which Class I, II and IIIA *flammable* or *combustible liquids* are used, dispensed or mixed in open containers.

**[A]LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the *building* official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.



**[BG]LIVE/WORK UNIT.** A *dwelling unit* or *sleeping unit* in which a significant portion of the space includes a nonresidential use that is operated by the tenant.

**[BS]LIVE LOAD.** A *load* produced by the use and occupancy of the building or other structure that does not include construction or environmental *loads* such as wind load, snow load, rain load, earthquake load, flood load or *dead load*.

**[BS]LIVE LOAD, ROOF.** A *load* on a roof produced:

1. During maintenance by workers, equipment and materials;
2. During the life of the structure by movable objects such as planters or other similar small decorative appurtenances that are not occupancy related; or
3. By the use and occupancy of the roof such as for roof gardens or assembly areas.

**[BS]LOAD AND RESISTANCE FACTOR DESIGN (LRFD).** A method of proportioning structural members and their connections using load and *resistance factors* such that no applicable *limit state* is reached when the structure is subjected to appropriate *load* combinations. The term “LRFD” is used in the design of steel and wood structures.

**[BS]LOAD EFFECTS.** Forces and deformations produced in structural members by the applied *loads*.

**[BS]LOAD FACTOR.** A factor that accounts for deviations of the actual *load* from the *nominal load*, for uncertainties in the analysis that transforms the *load* into a *load effect*, and for the probability that more than one extreme *load* will occur simultaneously.

**[BS]LOADS.** Forces or other actions that result from the weight of building materials, occupants and their possessions, environmental effects, differential movement and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude, such as *dead loads*. All other loads are variable loads (see “*Nominal loads*”).

**[BG]LODGING HOUSE.** A one-family dwelling where one or more occupants are primarily permanent in nature and rent is paid for guest rooms.

**[A]LOT.** A portion or parcel of land considered as a unit.

**[A]LOT LINE.** A line dividing one lot from another, or from a street or any public place.

**[BE]LOW-ENERGY POWER-OPERATED DOOR.** A swinging, sliding or folding door that opens automatically upon an action by a pedestrian such as pressing a push plate or waving a hand in front of a sensor. The door closes automatically, and operates with decreased forces and decreased speeds (see “Power-assisted door” and “Power-operated door”).

**[F]LOWER FLAMMABLE LIMIT (LFL).** The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as “LEL” or “lower explosive limit.”

**[BS]LOWEST FLOOR.** The lowest floor of the lowest enclosed area, including *basement*, but excluding any unfinished or flood-resistant enclosure, usable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the structure in violation of Section 1612.

**[BS]MAIN WINDFORCE-RESISTING SYSTEM.** An assemblage of structural elements assigned to provide support and stability for the overall structure. The system generally receives wind loading from more than one surface

**MALL BUILDING, COVERED and MALL BUILDING, OPEN.** See “Covered mall building.”

**[F]MANUAL FIRE ALARM BOX.** A manually operated device used to initiate an *alarm signal*.

**[A]MANUFACTURER’S DESIGNATION.** An identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules (see “*Label*” and “*Mark*”).

**[A]MARK.** An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material (see “*Label*” and “Manufacturer’s designation”).

**[BG]MARQUEE.** A *canopy* that has a top surface which is sloped less than 25 degrees from the horizontal and is located less than 10 feet (3048 mm) from operable openings above or adjacent to the level of the marquee.

**[BS]MASONRY.** A built-up construction or combination of building units or materials of clay, shale, concrete, glass, gypsum, stone or other *approved* units bonded together with or without *mortar* or grout or other accepted methods of joining.

**Glass unit masonry.** Masonry composed of glass units bonded by *mortar*.

**Plain masonry.** Masonry in which the tensile resistance of the masonry is taken into consideration and the effects of stresses in reinforcement are neglected.

**Reinforced masonry.** Masonry construction in which reinforcement acting in conjunction with the masonry is used to resist forces.

**Solid masonry.** Masonry consisting of solid masonry units laid contiguously with the *joints* between the units filled with *mortar*.

**Unreinforced (plain) masonry.** Masonry in which the tensile resistance of masonry is taken into consideration and the resistance of the reinforcing steel, if present, is neglected.

**[BS]MASONRY UNIT.** *Brick, tile, stone, glass block or concrete block conforming to the requirements specified in Section 2103.*

**Hollow.** A masonry unit whose net cross-sectional *area* in any plane parallel to the load-bearing surface is less than 75 percent of its gross cross-sectional *area* measured in the same plane.

**Solid.** A masonry unit whose net cross-sectional *area* in every plane parallel to the load-bearing surface is 75 percent or more of its gross cross-sectional *area* measured in the same plane.

**[BF]MASTIC FIRE-RESISTANT COATINGS.** Liquid mixture applied to a substrate by brush, roller, spray or trowel that provides fire-resistant protection of a substrate when exposed to flame or intense heat.

**[BE]MEANS OF EGRESS.** A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a *public way*. A means of egress consists of three separate and distinct parts: the *exit access*, the *exit* and the *exit discharge*.

**[BG]MECHANICAL-ACCESS OPEN PARKING GARAGES.** *Open parking garages* employing parking machines, lifts, elevators or other mechanical devices for vehicles moving from and to street level and in which public occupancy is prohibited above the street level.

**[BF]MECHANICAL EQUIPMENT SCREEN.** A rooftop structure, not covered by a roof, used to aesthetically conceal plumbing, electrical or mechanical equipment from view.

**[BG]MEDICAL CARE.** Care involving medical or surgical procedures, nursing or for psychiatric purposes.

**[BG]MEMBRANE-COVERED CABLE STRUCTURE.** A non-pressurized structure in which a mast and cable system provides support and tension to the membrane weather barrier and the membrane imparts stability to the structure.

**[BG]MEMBRANE-COVERED FRAME STRUCTURE.** A non-pressurized building wherein the structure is composed of a rigid framework to support a tensioned membrane which provides the weather barrier.

**[BF]MEMBRANE PENETRATION.** A breach in one side of a floor-ceiling, roof-ceiling or wall assembly to accommodate an item installed into or passing through the breach.

**[BF]MEMBRANE-PENETRATION FIRESTOP.** A material, device or construction installed to resist for a prescribed time period the passage of flame and heat through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

**[BF]MEMBRANE-PENETRATION FIRESTOP SYSTEM.** An assemblage consisting of a fire-resistance-rated floor-ceiling, roof-ceiling or wall assembly, one or more penetrating items installed into or passing through the breach in one side of the assembly and the materials or devices, or both, installed to resist the spread of fire into the assembly for a prescribed period of time.

**[BE]MERCHANDISE PAD.** A merchandise pad is an area for display of merchandise surrounded by *aisles*, permanent fixtures or walls. Merchandise pads contain elements such as nonfixed and moveable fixtures, cases, racks, counters and partitions as indicated in Section 105.2 from which customers browse or shop.

**[BF]METAL COMPOSITE MATERIAL (MCM).** A factory-manufactured panel consisting of metal skins bonded to both faces of a solid plastic core.

**[BF]METAL COMPOSITE MATERIAL (MCM) SYSTEM.** An *exterior wall covering* fabricated using MCM in a specific assembly including *joints*, seams, attachments, substrate, framing and other details as appropriate to a particular design.

**[BS]METAL ROOF PANEL.** An interlocking metal sheet having a minimum installed weather exposure of 3 square feet (0.279 m<sup>2</sup>) per sheet.

**[BS]METAL ROOF SHINGLE.** An interlocking metal sheet having an installed weather exposure less than 3 square feet (0.279 m<sup>2</sup>) per sheet.

**[BG]MEZZANINE.** An intermediate level or levels between the floor and ceiling of any *story* and in accordance with Section 505.

**[BS]MICROPILE.** A micropile is a bored, grouted-in-place *deep foundation* element that develops its load-carrying capacity by means of a bond zone in soil, bedrock or a combination of soil and bedrock.

**[BF]MINERAL BOARD.** A rigid felted thermal insulation board consisting of either felted *mineral fiber* or cellular beads of expanded aggregate formed into flat rectangular units.

**[BF]MINERAL FIBER.** Insulation composed principally of fibers manufactured from rock, slag or glass, with or without binders.

**[BF]MINERAL WOOL.** Synthetic vitreous fiber insulation made by melting predominately igneous rock or furnace slag, and other inorganic materials, and then physically forming the melt into fibers.

**[BS]MODIFIED BITUMEN ROOF COVERING.** One or more layers of polymer-modified asphalt sheets. The sheet materials shall be fully adhered or mechanically attached to the substrate or held in place with an *approved* ballast layer.

**[BS]MORTAR.** A mixture consisting of cementitious materials, fine aggregates, water, with or without admixtures, that is used to construct unit masonry assemblies.

**[BS]MORTAR, SURFACE-BONDING.** A mixture to bond concrete *masonry units* that contains hydraulic cement, glass fiber reinforcement with or without inorganic fillers or organic modifiers and water.

**[BE]MULTILEVEL ASSEMBLY SEATING.** Seating that is arranged in distinct levels where each level is comprised of either multiple rows, or a single row of box seats accessed from a separate level.

**[F]MULTIPLE-STATION ALARM DEVICE.** Two or more single-station alarm devices that can be interconnected such that actuation of one causes all integral or separate audible alarms to operate. A multiple-station alarm device can consist of one single-station alarm device having connections to other detectors or to a *manual fire alarm box*.

**[F]MULTIPLE-STATION SMOKE ALARM.** Two or more single-station alarm devices that are capable of interconnection such that actuation of one causes the appropriate *alarm signal* to operate in all interconnected alarms.

**[BE]MULTISTORY UNIT.** A *dwelling unit* or *sleeping unit* with *habitable space* located on more than one *story*.

**[BS]NAILING, BOUNDARY.** A special nailing pattern required by design at the boundaries of *diaphragms*.

**[BS]NAILING, EDGE.** A special nailing pattern required by design at the edges of each panel within the assembly of a *diaphragm* or *shear wall*.

**[BS]NAILING, FIELD.** Nailing required between the sheathing panels and framing members at locations other than *boundary nailing* and *edge nailing*.

**[BS]NATURALLY DURABLE WOOD.** The heartwood of the following species except for the occasional piece with corner sapwood, provided 90 percent or more of the width of each side on which it occurs is heartwood.

**Decay resistant.** Redwood, cedar, black locust and black walnut.

**Termite resistant.** Redwood, Alaska yellow cedar, Eastern red cedar and Western red cedar.

**[BS]NOMINAL LOADS.** The magnitudes of the *loads* specified in Chapter 16 (dead, live, soil, wind, snow, rain, *flood* and earthquake).

**[BS]NOMINAL SIZE (LUMBER).** The commercial size designation of width and depth, in standard sawn lumber and glued-laminated lumber *grades*; somewhat larger than the standard net size of dressed lumber, in accordance with DOCPS 20 for sawn lumber and with the ANSI/AWC NDS for glued-laminated lumber.

**[BG]NONCOMBUSTIBLE MEMBRANE STRUCTURE.** A membrane structure in which the membrane and all component parts of the structure are noncombustible.

**[BS]NONSTRUCTURAL CONCRETE.** Any element made of plain or reinforced concrete that is not part of a structural system required to transfer either gravity or lateral loads to the ground.

**[F]NORMAL TEMPERATURE AND PRESSURE (NTP).** A temperature of 70°F (21°C) and a pressure of 1 atmosphere  
[14.7 psia (101 kPa)].

**[BE]NOSING.** The leading edge of treads of *stairs* and of landings at the top of *stairway flights*.  
**NOTIFICATION ZONE.** See “Zone, notification.”

**[F]NUISANCE ALARM.** An alarm caused by mechanical failure, malfunction, improper installation or lack of proper maintenance, or an alarm activated by a cause that cannot be determined.

**[BG]NURSING HOMES.** Facilities that provide care, including both intermediate care facilities and skilled nursing facilities where any of the persons are *incapable of self-preservation*.

**[BE]OCCUPANT LOAD.** The number of persons for which the *means of egress* of a building or portion thereof is designed.

**[BG]OCCUPIABLE SPACE.** A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged at labor, and which is equipped with *means of egress* and light and *ventilation* facilities meeting the requirements of this code.

**(OGPE-DDEC) PERMITS MANAGEMENT OFFICE:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**[BG]OPEN PARKING GARAGE.** A structure or portion of a structure with the openings as described in Section 406.5.2 on two or more sides that is used for the parking or storage of private motor vehicles as described in Section 406.5.3.

**[F]OPEN SYSTEM.** The *use* of a *solid* or *liquid hazardous material* involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are

liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for *solids* and *liquids* include dispensing from or into open beakers or containers, dip tank and plating tank operations.

**[F]OPEN-AIR ASSEMBLY SEATING.** Seating served by *means of egress* that is not subject to smoke accumulation within or under a structure and is open to the atmosphere.

**[BE]OPEN-ENDED CORRIDOR.** An interior corridor that is open on each end and connects to an exterior *stairway* or *ramp* at each end with no intervening doors or separation from the corridor.

**[BF]OPENING PROTECTIVE.** A fire door assembly, fire shutter assembly, fire window assembly or glass-block assembly in a fire-resistance-rated wall or partition.

**[F]OPERATING BUILDING.** A building occupied in conjunction with the manufacture, transportation or *use* of explosive materials. Operating buildings are separated from one another with the use of intraplant or intraline distances.

**[BS]ORDINARY PRECAST STRUCTURAL WALL.** See Section 1905.1.1.

**[BS]ORDINARY REINFORCED CONCRETE STRUCTURAL WALL.** See Section 1905.1.1.

**[BS]ORDINARY STRUCTURAL PLAIN CONCRETE WALL.** See Section 1905.1.1.

**[F]ORGANIC PEROXIDE.** An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can pose an *explosion* hazard (*detonation* or *deflagration*) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

**Class I.** Those formulations that are capable of *deflagration* but not *detonation*.

**Class II.** Those formulations that burn very rapidly and that pose a moderate reactivity hazard.

**Class III.** Those formulations that burn rapidly and that pose a moderate reactivity hazard.

**Class IV.** Those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

**Class V.** Those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

**Unclassified detonable.** Organic peroxides that are capable of *detonation*. These peroxides pose an extremely high *explosion* hazard through rapid explosive decomposition.

**[BS]ORTHOGONAL.** To be in two horizontal directions, at 90 degrees (1.57 rad) to each other.

**[BS]OTHER STRUCTURES (for Chapters 16-23).** Structures, other than buildings, for which *loads* are specified in Chapter 16.

**OUTPATIENT CLINIC.** See “Clinic, outpatient.”

**[A]OWNER.** Any person, agent, operator, entity, firm or corporation having any legal or equitable interest in the property; or recorded in the official records of the state, county or municipality as holding an interest or title to the property; or otherwise having possession or control of the property, including the guardian of the estate of any such person, and the executor or administrator of the estate of such person if ordered to take possession of real property by a court.

**[F]OXIDIZER.** A material that readily yields oxygen or other *oxidizing gas*, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.

**Class 4.** An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.

**Class 3.** An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.

**Class 2.** An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.

**Class 1.** An oxidizer that does not moderately increase the burning rate of combustible materials.

**[F]OXIDIZING GAS.** A gas that can support and accelerate combustion of other materials more than air does.

**[BS]PANEL (PART OF A STRUCTURE).** The section of a floor, wall or roof comprised between the supporting frame of two adjacent rows of columns and girders or column bands of floor or roof construction.

**[BE]PANIC HARDWARE.** A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel. See “Fire exit hardware.”

**[BS]PARTICLEBOARD.** A generic term for a panel primarily composed of cellulosic materials (usually wood), generally in the form of discrete pieces or particles, as distinguished from fibers. The cellulosic material is combined with synthetic resin or other suitable bonding system by a process in which the interparticle bond is created by the bonding system under heat and pressure.



**[BF]PENETRATION FIRESTOP.** A through-penetration firestop or a *membrane-penetration firestop*.

**[BG]PENTHOUSE.** An enclosed, unoccupied rooftop structure used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, and vertical *shaft* openings.

**[BS]PERFORMANCE CATEGORY.** A designation of wood structural panels as related to the panel performance used in Chapter 23.

**[A]PERMIT.** An official document or certificate issued by the *building official* that authorizes performance of a specified activity.

**[A]PERSON.** An individual, heirs, executors, administrators or assigns, and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

**[BG]PERSONAL CARE SERVICE.** The care of persons who do not require *medical care*. Personal care involves responsibility for the safety of the persons while inside the building

**[BE]PHOTOLUMINESCENT.** Having the property of emitting light that continues for a length of time after excitation by visible or invisible light has been removed.

**[BS]PHOTOVOLTAIC MODULE.** A complete, environmentally protected unit consisting of solar cells, optics and other components, exclusive of tracker, designed to generate DC power when exposed to sunlight.

**[BS]PHOTOVOLTAIC PANEL.** A collection of modules mechanically fastened together, wired and designed to provide a field-installable unit.

**[BS]PHOTOVOLTAIC PANEL SYSTEM.** A system that incorporates discrete photovoltaic panels, that converts solar radiation into electricity, including rack support systems.

**[BS]PHOTOVOLTAIC SHINGLES.** A *roof covering* resembling shingles that incorporates photovoltaic modules.

**[F]PHYSICAL HAZARD.** A chemical for which there is evidence that it is a *combustible liquid, cryogenic fluid, explosive, flammable (solid, liquid or gas), organic peroxide (solid or liquid), oxidizer (solid or liquid), oxidizing gas, pyrophoric (solid, liquid or gas), unstable (reactive) material (solid, liquid or gas) or water-reactive material (solid or liquid)*.

**[F]PHYSIOLOGICAL WARNING THRESHOLD LEVEL.** A concentration of airborne contaminants, normally expressed in parts per million (ppm) or milligrams per cubic meter (mg/m<sup>3</sup>), that represents the concentration at which persons can sense the presence of the contaminant due to odor, irritation or other quick-acting physiological response. When used in conjunction with the permissible exposure limit (PEL) the physiological warning threshold levels

are those consistent with the classification system used to establish the PEL. See the definition of “Permissible exposure limit (PEL)” in the *Puerto Rico Fire Code*.

**PLACE OF RELIGIOUS WORSHIP.** See “Religious worship, place of.”

**[BF]PLASTIC, APPROVED.** Any thermoplastic, thermosetting or reinforced thermosetting plastic material that conforms to combustibility classifications specified in the section applicable to the application and plastic type.

**[BF]PLASTIC COMPOSITE.** A generic designation that refers to wood/plastic composites, plastic lumber and similar materials.

**[BF]PLASTIC GLAZING.** Plastic materials that are glazed or set in a frame or sash.

**[BF]PLASTIC LUMBER.** A manufactured product made primarily of plastic materials (filled or unfilled) which is generally rectangular in cross section.

**[BG]PLATFORM.** A raised area within a building used for worship, the presentation of music, plays or other entertainment; the head table for special guests; the raised area for lecturers and speakers; boxing and wrestling rings; theater-in-the-round *stages*; and similar purposes wherein, other than horizontal sliding curtains, there are no overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. A temporary platform is one installed for not more than 30 days.

**[BF]POLYPROPYLENE SIDING.** A shaped material, made principally from polypropylene homopolymer, or copolymer, which in some cases contains fillers or reinforcements, that is used to clad *exterior walls* of buildings.

**[BS]PORCELAIN TILE.** Tile that conforms to the requirements of ANSI A137.1.3, Section 3.0 for ceramic tile having an absorption of 0.5 percent or less in accordance with ANSI A137.1, Section 4.1 and Section 6.1 Table 10.

**[BS]POSITIVE ROOF DRAINAGE.** The drainage condition in which consideration has been made for all loading deflections of the *roof deck*, and additional slope has been provided to ensure drainage of the roof within 48 hours of precipitation.

**[BE]POWER-ASSISTED DOOR.** Swinging door which opens by reduced pushing or pulling force on the door-operating hardware. The door closes automatically after the pushing or pulling force is released and functions with decreased forces. See “Low-energy power-operated door” and “Power-operated door.”

**[BE]POWER-OPERATED DOOR.** Swinging, sliding, or folding door which opens automatically when approached by a pedestrian or opens automatically upon an action by a pedestrian. The door closes automatically and includes provisions such as presence sensors to prevent entrapment. See “Low energy power-operated door” and “Power-assisted door.”

**[BS]PREFABRICATED WOOD I-JOIST.** Structural member manufactured using sawn or structural composite lumber flanges and wood structural panel webs bonded together with exterior exposure adhesives, which forms an “I” cross-sectional shape.

**[BS]PRESTRESSED MASONRY.** *Masonry* in which internal stresses have been introduced to counteract potential tensile stresses in *masonry* resulting from applied *loads*.

**[BG]PRIMARY STRUCTURAL FRAME.** The primary structural frame shall include all of the following structural members:

1. The columns.
2. Structural members having direct connections to the columns, including girders, beams, trusses and spandrels.
3. Members of the floor construction and roof construction having direct connections to the columns.
4. Bracing members that are essential to the vertical stability of the primary structural frame under gravity loading shall be considered part of the primary structural frame whether or not the bracing member carries gravity *loads*.

**[BG]PRIVATE GARAGE.** A building or portion of a building in which motor vehicles used by the owner or tenants of the building or buildings on the premises are stored or kept, without provisions for repairing or servicing such vehicles for profit.

**[BG]PROSCENIUM WALL.** The wall that separates the *stage* from the auditorium or assembly seating area.

**PSYCHIATRIC HOSPITALS.** See “Hospitals.”

**[BE]PUBLIC ENTRANCE.** An entrance that is not a *service entrance* or a *restricted entrance*.

**[A]PUBLIC WAY.** A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

**[BE]PUBLIC-USE AREAS.** Interior or exterior rooms or spaces that are made available to the general public.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**[F]PYROPHORIC.** A chemical with an auto-ignition temperature in air, at or below a temperature of 130°F (54.4°C).

**[F]PYROTECHNIC COMPOSITION.** A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

**[BF]RADIANT BARRIER.** A material having a low-emittance surface of 0.1 or less installed in building assemblies.

**[BE]RAMP.** A walking surface that has a running slope steeper than one unit vertical in 20 units horizontal (5-percent slope).

**RAMP, EXIT ACCESS.** See “Exit access ramp.”

**RAMP, EXTERIOR EXIT.** See “Exterior exit ramp.”

**RAMP, INTERIOR EXIT.** See “Interior exit ramp.”

**[BG]RAMP-ACCESS OPEN PARKING GARAGES.** *Open parking garages* employing a series of continuously rising floors or a series of interconnecting ramps between floors permitting the movement of vehicles under their own power from and to the street level.

**[A]RECORD DRAWINGS.** Drawings (“as built”) that document the location of all devices, appliances, wiring sequences, wiring methods and connections of the components of a *fire alarm system* as installed.

**[BF]REFLECTIVE PLASTIC CORE INSULATION.** An insulation material packaged in rolls, that is less than 1/2 inch (12.7 mm) thick, with not less than one exterior low-emittance surface (0.1 or less) and a core material containing voids or cells.

**[A]REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**[A]REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.** A *registered design professional* engaged by the owner or the owner’s authorized agent to review and coordinate certain aspects of the project, as determined by the *building official*, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.

**[BG]RELIGIOUS WORSHIP, PLACE OF.** A building or portion thereof intended for the performance of religious services.

**[A]RELOCATABLE BUILDING.** A partially or completely assembled building constructed and designed to be reused multiple times and transported to different building sites.

**[A]REPAIR.** The reconstruction, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

**[BG]REPAIR GARAGE.** A building, structure or portion thereof used for servicing or repairing motor vehicles.

**[BS]REROOFING.** The process of recovering or replacing an existing *roof covering*. See “Roof recover” and “Roof replacement.”

**[BG]RESIDENTIAL AIRCRAFT HANGAR.** An accessory building less than 2,000 square feet (186 m<sup>2</sup>) and 20 feet (6096 mm) in *building height* constructed on a one- or two-family property where aircraft are stored. Such use will be considered as a residential accessory use incidental to the dwelling.

**[BS]RESISTANCE FACTOR.** A factor that accounts for deviations of the actual strength from the *nominal strength* and the manner and consequences of failure (also called “strength reduction factor”).

**[BE]RESTRICTED ENTRANCE.** An entrance that is made available for *common use* on a controlled basis, but not public use, and that is not a *service entrance*.

**[BG]RETRACTABLE AWNING.** A retractable *awning* is a cover with a frame that retracts against a building or other structure to which it is entirely supported.

**[BS]RISK CATEGORY.** A categorization of buildings and other structures for determination of *flood*, wind, snow, ice and earthquake *loads* based on the risk associated with unacceptable performance.

**[BS]RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCER) GROUND MOTION RESPONSE ACCELERATIONS.** The most severe earthquake effects considered by this code, determined for the orientation that results in the largest maximum response to horizontal ground motions and with adjustment for targeted risk.

**[BS]ROOF ASSEMBLY (For application to Chapter 15 only).** A system designed to provide weather protection and resistance to design *loads*. The system consists of a *roof covering* and *roof deck* or a single component serving as both the roof covering and the *roof deck*. A roof assembly can include an underlayment, a thermal barrier, insulation or a *vapor retarder*.

**[BS]ROOF COATING.** A fluid-applied, adhered coating used for roof maintenance or *roof repair*, or as a component of a *roof covering system* or *roof assembly*.

**[BS]ROOF COVERING.** The covering applied to the *roof deck* for weather resistance, fire classification or appearance.

**ROOF COVERING SYSTEM.** See “Roof assembly.”

**[BS]ROOF DECK.** The flat or sloped surface constructed on top of the *exterior walls* of a building or other supports for the purpose of enclosing the *story* below, or sheltering an area, to protect it from the elements, not including its supporting members or vertical supports.

**ROOF DRAINAGE, POSITIVE.** See “Positive roof drainage.”

**[BS]ROOF RECOVER.** The process of installing an additional *roof covering* over a prepared existing *roof covering* without removing the existing *roof covering*.

**[BS]ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

**[BS]ROOF REPLACEMENT.** The process of removing the existing *roof covering*, repairing any damaged substrate and installing a new *roof covering*.

**[BG]ROOF VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, *attics*, cathedral ceilings or other enclosed spaces over which a *roof assembly* is installed.

**[BG]ROOFTOP STRUCTURE.** A structure erected on top of the *roof deck* or on top of any part of a building.

**[BS]RUNNING BOND.** The placement of *masonry units* such that *head joints* in successive courses are horizontally offset at least one-quarter the unit length.

**[BG]SALLYPORT.** A security vestibule with two or more doors or gates where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door or gate at a time.

**[BE]SCISSOR STAIRWAY.** Two interlocking *stairways* providing two separate paths of egress located within one *exit* enclosure.

**[BS]SCUPPER.** An opening in a wall or parapet that allows water to drain from a roof.

**[BG]SECONDARY MEMBERS.** The following structural members shall be considered secondary members and not part of the *primary structural frame*:

1. Structural members not having direct connections to the columns.
2. Members of the floor construction and roof construction not having direct connections to the columns.
3. Bracing members other than those that are part of the *primary structural frame*.

**[BS]SEISMIC DESIGN CATEGORY.** A classification assigned to a structure based on its *risk category* and the severity of the *design earthquake ground motion* at the site.

**[BS]SEISMIC FORCE-RESISTING SYSTEM.** That part of the structural system that has been considered in the design to provide the required resistance to the prescribed seismic forces.

**[BF]SELF-CLOSING.** As applied to a *fire door* or other opening protective, means equipped with a device that will ensure closing after having been opened.

**[BE]SELF-LUMINOUS.** Illuminated by a self-contained power source, other than batteries, and operated independently of external power sources.

**SELF-PRESERVATION, INCAPABLE OF.** See “Incapable of self-preservation.”

**[BG]SELF-SERVICE STORAGE FACILITY.** Real property designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.

**[F]SERVICE CORRIDOR.** A fully enclosed passage used for transporting *HPM* and purposes other than required *means of egress*.

**[BE]SERVICE ENTRANCE.** An entrance intended primarily for delivery of goods or services.

**[BF]SHAFT.** An enclosed space extending through one or more *stories* of a building, connecting vertical openings in successive floors, or floors and roof.

**[BF]SHAFT ENCLOSURE.** The walls or construction forming the boundaries of a *shaft*.

**[BS]SHALLOW FOUNDATION.** A shallow foundation is an individual or strip footing, a mat foundation, a slab-on-grade foundation or a similar foundation element.

**[BS]SHEAR WALL (for Chapter 23).** A wall designed to resist lateral forces parallel to the plane of a wall.

**Shear wall, perforated.** A wood structural panel sheathed wall with openings, that has not been specifically designed and detailed for force transfer around openings.

**Shear wall segment, perforated.** A section of shear wall with full-height sheathing that meets the height-to-width ratio limits of Section 4.3.4 of AWC SDPWS.

**[BS]SHINGLE FASHION.** A method of installing roof or wall coverings, water-resistive barriers, flashing or other building components such that upper layers of material are placed overlapping lower layers of material to provide for drainage via gravity and moisture control.

**[BS]SINGLE-PLY MEMBRANE.** A roofing membrane that is field applied using one layer of membrane material (either homogeneous or composite) rather than multiple layers.

**[F]SINGLE-STATION SMOKE ALARM.** An assembly incorporating the detector, the control equipment and the alarm-sounding device in one unit, operated from a power supply either in the unit or obtained at the point of installation.

**[BG]SITE.** A parcel of land bounded by a *lot line* or a designated portion of a public right-of-way.

**[BS]SITE CLASS.** A classification assigned to a site based on the types of soils present and their engineering properties as defined in Section 1613.3.2.

**[BS]SITE COEFFICIENTS.** The values of  $F_a$  and  $F_v$  indicated in Tables 1613.3.3(1) and 1613.3.3(2), respectively.

**[BG]SITE-FABRICATED STRETCH SYSTEM.** A system, fabricated on site and intended for acoustical, tackable or aesthetic purposes, that is composed of three elements:

1. A frame (constructed of plastic, wood, metal or other material) used to hold fabric in place.
2. A core material (infill, with the correct properties for the application).
3. An outside layer, composed of a textile, fabric or vinyl, that is stretched taut and held in place by tension or mechanical fasteners via the frame.

**[BS]SKYLIGHT, UNIT.** A factory-assembled, glazed fenestration unit, containing one panel of glazing material that allows for natural lighting through an opening in the *roof assembly* while preserving the weather-resistant barrier of the roof.

**[BS]SKYLIGHTS AND SLOPED GLAZING.** Glass or other transparent or translucent glazing material installed at a slope of 15 degrees (0.26 rad) or more from vertical. Unit skylights, *tubular daylighting devices*, glazing materials, solariums, sunrooms, roofs and sloped walls are included in this definition.

**[A]SLEEPING UNIT.** A single unit that provides rooms or spaces for one or more persons, includes permanent provisions for sleeping and can include provisions for living, eating and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

**[F]SMOKE ALARM.** A single- or multiple-station alarm responsive to smoke. See “Multiple-station smoke alarm” and “Single-station smoke alarm.”

**[BF]SMOKE BARRIER.** A continuous membrane, either vertical or horizontal, such as a wall, floor or ceiling assembly, that is designed and constructed to restrict the movement of smoke.

**[BG]SMOKE COMPARTMENT.** A space within a building enclosed by *smoke barriers* on all sides, including the top and bottom.



**[BF]SMOKE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to resist the passage of smoke. The device is installed to operate *automatically*, controlled by a smoke detection system, and where required, is capable of being positioned from a *fire command center*.

**[F]SMOKE DETECTOR.** A *listed* device that senses visible or invisible particles of combustion.

**[BF]SMOKE PARTITION.** A wall assembly that extends from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

**[BF]SMOKE-DEVELOPED INDEX.** A comparative measure, expressed as a dimensionless number, derived from measurements of smoke obscuration versus time for a material tested in accordance with ASTM E84.

**[BF]SMOKEPROOF ENCLOSURE.** An *exit stairway* or *ramp* designed and constructed so that the movement of the products of combustion produced by a fire occurring in any part of the building into the enclosure is limited.

**[BE]SMOKE-PROTECTED ASSEMBLY SEATING.** Seating served by *means of egress* that is not subject to smoke accumulation within or under a structure for a specified design time by means of passive design or by mechanical ventilation.

**[BG]SOFT CONTAINED PLAY EQUIPMENT STRUCTURE.** A children's play structure containing one or more components where the user enters a play environment that utilizes pliable materials.

**[F]SOLID.** A material that has a melting point, decomposes or sublimates at a temperature greater than 68°F (20°C).

**[BG]SPECIAL AMUSEMENT BUILDING.** A special amusement building is any temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and that contains a device or system that conveys passengers or provides a walkway along, around or over a course in any direction so arranged that the *means of egress* path is not readily apparent due to visual or audio distractions or is intentionally confounded or is not readily available because of the nature of the attraction or mode of conveyance through the building or structure.

**[BS]SPECIAL FLOOD HAZARD AREA.** The land area subject to flood hazards and shown on a *Flood Insurance Rate Map* or other flood hazard map as Zone A, AE, A1-30, A99, AR, AO, AH, V, VO, VE or V1-30.

**[BS]SPECIAL INSPECTION.** Inspection of construction requiring the expertise of an *approved special inspector* in order to ensure compliance with this code and the *approved construction documents*.

**Continuous special inspection.** Special inspection by the *special inspector* who is present continuously when and where the work to be inspected is being performed.

**Periodic special inspection.** Special inspection by the *special inspector* who is intermittently present where the work to be inspected has been or is being performed.

**[BS]SPECIAL INSPECTOR.** A qualified person employed or retained by an *approved* agency and *approved* by the *building official* as having the competence necessary to inspect a particular type of construction requiring *special inspection*.

**[BS]SPECIAL STRUCTURAL WALL.** See Section 1905.1.1.

**[BS]SPECIFIED COMPRESSIVE STRENGTH OF MASONRY,  $f'_m$ .** Minimum compressive strength, expressed as force per unit of net cross-sectional area, required of the *masonry* used in construction by the *approved construction documents*, and upon which the project design is based. Whenever the quantity  $f'_m$  is under the radical sign, the square root of numerical value only is intended and the result has units of pounds per square inch (psi) (MPa).

**[BF]SPLICE.** The result of a factory and/or field method of joining or connecting two or more lengths of a *fire-resistant joint system* into a continuous entity.

**SPORT ACTIVITY, AREA OF.** See “Area of sport activity.”

**[F]SPRAY ROOM.** A room designed to accommodate spraying operations.

**[BF]SPRAYED FIRE-RESISTANT MATERIALS.** Cementitious or fibrous materials that are sprayed to provide fire-resistant protection of the substrates.

**[BG]STAGE.** A space within a building utilized for entertainment or presentations, which includes overhead hanging curtains, drops, scenery or stage effects other than lighting and sound.

**[BE]STAIR.** A change in elevation, consisting of one or more risers.

**[BE]STAIRWAY.** One or more *flights of stairs*, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another.

**STAIRWAY, EXIT ACCESS.** See “Exit access stairway.”

**STAIRWAY, EXTERIOR EXIT.** See “Exterior exit stairway.”

**STAIRWAY, INTERIOR EXIT.** See “Interior exit stairway.”

**STAIRWAY, SCISSOR.** See “Scissor stairway.”

**[BE]STAIRWAY, SPIRAL.** A *stairway* having a closed circular form in its plan view with uniform section-shaped treads attached to and radiating from a minimum-diameter supporting column.

**[F]STANDBY POWER SYSTEM.** A source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of a failure of the primary power. Standby power systems are required for electrical loads where interruption of the primary power could create hazards or hamper rescue or fire-fighting operations.

**[F]STANDPIPE, TYPES OF.** Standpipe types are as follows:

**Automatic dry.** A dry standpipe system, normally filled with pressurized air, that is arranged through the use of a device, such as dry pipe valve, to admit water into the system piping *automatically* upon the opening of a hose valve. The water supply for an *automatic* dry standpipe system shall be capable of supplying the system demand.

**Automatic wet.** A wet standpipe system that has a water supply that is capable of supplying the system demand *automatically*.

**Manual dry.** A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a fire department pumper to be pumped into the system through the fire department connection in order to meet the system demand.

**Manual wet.** A wet standpipe system connected to a water supply for the purpose of maintaining water within the system but does not have a water supply capable of delivering the system demand attached to the system. Manual wet standpipe systems require water from a fire department pumper (or the like) to be pumped into the system in order to meet the system demand.

**Semiautomatic dry.** A dry standpipe system that is arranged through the use of a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection. The water supply for a semiautomatic dry standpipe system shall be capable of supplying the system demand.

**[F]STANDPIPE SYSTEM, CLASSES OF.** Standpipe classes are as follows:

**Class I system.** A system providing 2 1/2-inch (64 mm) hose connections to supply water for use by fire departments and those trained in handling heavy fire streams.

**Class II system.** A system providing 1 1/2-inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the fire department during initial response.

**Class III system.** A system providing 1 1/2-inch (38 mm) hose stations to supply water for use by building occupants and 2 1/2-inch (64 mm) hose connections to supply a larger volume of water for use by fire departments and those trained in handling heavy fire streams.

**[BS]START OF CONSTRUCTION.** The date of permit issuance for new construction and *substantial improvements to existing structures*, provided the actual start of construction, *repair*, reconstruction, rehabilitation, *addition*, placement or other improvement is within 180 days after the date of issuance. The actual start of construction means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns. Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a *basement*, footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as *dwelling units* or not part of the main building. For a *substantial improvement*, the actual “start of construction” means the first *alteration* of any wall, ceiling, floor or other structural part of a building, whether or not that *alteration* affects the external dimensions of the building.

**[BS]STEEL CONSTRUCTION, COLD-FORMED.** That type of construction made up entirely or in part of *steel structural members* cold formed to shape from sheet or strip steel such as *roof deck*, floor and wall panels, studs, floor joists, roof joists and other structural elements.

**[BS]STEEL ELEMENT, STRUCTURAL.** Any *steel structural member* of a building or structure consisting of rolled shapes, pipe, hollow structural sections, plates, bars, sheets, rods or steel castings other than cold-formed steel or steel joist members.

**[BS]STEEL JOIST.** Any *steel structural member* of a building or structure made of hot-rolled or cold-formed solid or open-web sections, or riveted or welded bars, strip or sheet steel members, or slotted and expanded, or otherwise deformed rolled sections.

**[BF]STEEP SLOPE.** A roof slope greater than two units vertical in 12 units horizontal (17-percent slope).

**[BS]STONE MASONRY.** *Masonry* composed of field, quarried or *cast stone* units bonded by *mortar*.

**[F]STORAGE, HAZARDOUS MATERIALS.** The keeping, retention or leaving of hazardous materials in closed containers, tanks, cylinders, or similar vessels; or vessels supplying operations through closed connections to the vessel.

**[BS]STORAGE RACKS.** Cold-formed or hot-rolled steel structural members which are formed into steel storage racks, including pallet storage racks, movable-shelf racks, rack-supported systems, automated storage and retrieval systems (stacker racks), push-back racks, pallet-flow racks, case-flow racks, pick modules and rack-supported platforms. Other types of racks, such as drive-in or drive-through racks, cantilever racks, portable racks or racks made of materials other than steel, are not considered storage racks for the purpose of this code.

**[BG]STORM SHELTER.** A building, structure or portions thereof, constructed in accordance with ICC 500 and designated for use during a severe wind storm event, such as a hurricane or tornado.

**Community storm shelter.** A storm shelter not defined as a “Residential storm shelter.”

**Residential storm shelter.** A storm shelter serving occupants of *dwelling units* and having an *occupant load* not exceeding 16 persons.

**[BG]STORY.** That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above (see “*Basement*,” “*Building height*,” “*Grade plane*” and “*Mezzanine*”). A story is measured as the vertical distance from top to top of two successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

**[BG]STORY ABOVE GRADE PLANE.** Any *story* having its finished floor surface entirely above *grade plane*, or in which the finished surface of the floor next above is:

1. More than 6 feet (1829 mm) above *grade plane*; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

**[BS]STRENGTH (For Chapter 21).**

**Design strength.** Nominal strength multiplied by a strength reduction factor.

**Nominal strength.** Strength of a member or cross section calculated in accordance with these provisions before application of any strength-reduction factors.

**Required strength.** Strength of a member or cross section required to resist *factored loads*.

**[BS]STRENGTH (for Chapter 16).**

**Nominal strength.** The capacity of a structure or member to resist the effects of *loads*, as determined by computations using *specified* material strengths and dimensions and equations derived from accepted principles of structural mechanics or by field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.

**Required strength.** Strength of a member, cross section or connection required to resist *factored loads* or related internal moments and forces in such combinations as stipulated by these provisions.

**Strength design.** A method of proportioning structural members such that the computed forces produced in the members by *factored loads* do not exceed the member design strength

[also called “*load and resistance factor design*” (LRFD)]. The term “strength design” is used in the design of concrete and *masonry* structural elements.

**[BS]STRUCTURAL COMPOSITE LUMBER.** Structural member manufactured using wood elements bonded together with exterior adhesives. Examples of structural composite lumber are:

**Laminated strand lumber (LSL).** A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inch (2.54 mm) or less and their average lengths not less than 150 times the least dimension of the wood strand elements.

**Laminated veneer lumber (LVL).** A composite of wood *veneer* sheet elements with wood fibers primarily oriented along the length of the member, where the *veneer* element thicknesses are 0.25 inches (6.4 mm) or less.

**Oriented strand lumber (OSL).** A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inches (2.54 mm) or less and their average lengths not less than 75 times and less than 150 times the least dimension of the strand elements.

**Parallel strand lumber (PSL).** A composite of wood strand elements with wood fibers primarily oriented along the length of the member where the least dimension of the wood strand elements is 0.25 inches (6.4 mm) or less and their average lengths not less than 300 times the least dimension of the wood strand elements.

**[BS]STRUCTURAL GLUED-LAMINATED TIMBER.** An engineered, stress-rated product of a timber laminating plant, comprised of assemblies of specially selected and prepared wood laminations in which the grain of all laminations is approximately parallel longitudinally and the laminations are bonded with adhesives.

**[BS]STRUCTURAL OBSERVATION.** The visual observation of the structural system by a *registered design professional* for general conformance to the *approved construction documents*.

**[A]STRUCTURE.** That which is built or constructed.

**[BS]SUBSTANTIAL DAMAGE.** Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

**[BS]SUBSTANTIAL IMPROVEMENT.** Any *repair*, reconstruction, rehabilitation, *alteration*, *addition* or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained *substantial damage*, any *repairs* are considered substantial improvement regardless of the actual *repair* work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the *building official* and that are the minimum necessary to assure safe living conditions.
2. Any *alteration* of a historic structure provided that the *alteration* will not preclude the structure's continued designation as a historic structure.

**[BG]SUNROOM.** A one-story structure attached to a building with a glazing area in excess of 40 percent of the gross area of the structure's *exterior walls* and roof.

**[F]SUPERVISING STATION.** A facility that receives signals and at which personnel are in attendance at all times to respond to these signals.

**[F]SUPERVISORY SERVICE.** The service required to monitor performance of guard tours and the operative condition of fixed suppression systems or other systems for the protection of life and property.

**[F]SUPERVISORY SIGNAL.** A signal indicating the need of action in connection with the supervision of guard tours, the fire suppression systems or equipment or the maintenance features of related systems.

**[F]SUPERVISORY SIGNAL-INITIATING DEVICE.** An initiation device, such as a valve supervisory switch, water-level indicator or low-air pressure switch on a dry-pipe sprinkler system, whose change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system, or a need for action in connection with guard tours, fire suppression systems or equipment or maintenance features of related systems.

**[BS]SUSCEPTIBLE BAY.** A roof or portion thereof with either of the following:

1. A slope less than 1/4-inch per foot (0.0208 rad).
2. On which water is impounded, in whole or in part, and the secondary drainage system is functional but the primary drainage system is blocked. A roof surface with a slope of 1/4-inch per foot (0.0208 rad) or greater towards points of free drainage is not a susceptible bay.

**[BG]SWIMMING POOL.** Any structure intended for swimming, recreational bathing or wading that contains water over 24 inches (610 mm) deep. This includes in-ground, above-ground and on-ground pools; hot tubs; spas and fixed-in-place wading pools.

**[BF]T RATING.** The time period that the *penetration firestop system*, including the penetrating item, limits the maximum temperature rise to 325°F (163°C) above its initial temperature through the penetration on the nonfire side when tested in accordance with ASTM E814 or UL 1479.

**[BG]TECHNICAL PRODUCTION AREA.** Open elevated areas or spaces intended for entertainment technicians to walk on and occupy for servicing and operating entertainment technology systems and equipment. Galleries, including fly and lighting galleries, gridirons, catwalks, and similar areas are designed for these purposes.

**[BG]TENSILE MEMBRANE STRUCTURE.** A membrane structure having a shape that is determined by tension in the membrane and the geometry of the support structure. Typically, the structure consists of both flexible elements (e.g., membrane and cables), nonflexible elements (e.g., struts, masts, beams and arches) and the anchorage (e.g., supports and foundations). This includes frame-supported tensile membrane structures.

**[F]TENT.** A structure, enclosure, umbrella structure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported in any manner except by air or the contents it protects (see “Umbrella structure”).

**[BG]THERMAL ISOLATION.** A separation of conditioned spaces, between a *sunroom* and a *dwelling unit*, consisting of existing or new walls, doors or windows.

**[BF]THERMOPLASTIC MATERIAL.** A plastic material that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.

**[BF]THERMOSETTING MATERIAL.** A plastic material that is capable of being changed into a substantially nonreformable product when cured.

**[BF]THROUGH PENETRATION.** A breach in both sides of a floor, floor-ceiling and wall assembly to accommodate an item passing through the breaches.

**[BF]THROUGH-PENETRATION FIRESTOP SYSTEM.** An assemblage consisting of a fire-resistance-rated floor, floor-ceiling, or wall assembly, one or more penetrating items passing through the breaches in both sides of the assembly and the materials or devices, or both, installed to resist the spread of fire through the assembly for a prescribed period of time.

**[BS]TIE, WALL.** Metal connector that connects *wythes* of *masonry* walls together.

**[BS]TIE-DOWN (HOLD-DOWN).** A device used to resist uplift of the chords of *shear walls*.

**[BS]TILE, STRUCTURAL CLAY.** A hollow *masonry unit* composed of burned clay, shale, fire clay or mixture thereof, and having parallel *cells*.

**[F]TIRES, BULK STORAGE OF.** Storage of tires where the area available for storage exceeds 20,000 cubic feet (566 m<sup>3</sup>).

**[A]TOWNHOUSE.** A single-family *dwelling unit* constructed in a group of three or more attached units in which each unit extends from the foundation to roof and with open space on at least two sides.

**[F]TOXIC.** A chemical falling within any of the following categories:



1. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram, but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million, but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

**[BG]TRANSIENT.** Occupancy of a *dwelling unit* or *sleeping unit* for not more than 30 days.

**[BG]TRANSIENT AIRCRAFT.** Aircraft based at another location and that is at the transient location for not more than 90 days.

**[BS]TREATED WOOD.** Wood products that are conditioned to enhance fire-retardant or preservative properties.

**Fire-retardant-treated wood.** Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire.

**Preservative-treated wood.** Wood products that, conditioned with chemicals by a pressure process or other means, exhibit reduced susceptibility to damage by fungi, insects or marine borers.

**[BF]TRIM.** Picture molds, chair rails, baseboards, *handrails*, door and window frames and similar decorative or protective materials used in fixed applications.

**[F]TROUBLE SIGNAL.** A signal initiated by the *fire alarm system* or device indicative of a fault in a monitored circuit or component.

**[BS]TSUNAMI DESIGN GEODATABASE.** The ASCE database (version 2016-1.0) of Tsunami Design Zone maps and associated design data for the states of Alaska, California, Hawaii, Oregon and Washington.

**[BS]TSUNAMI DESIGN ZONE.** An area identified on the Tsunami Design Zone map between the shoreline and the inundation limit, within which certain structures designated in Chapter 16 are designed for or protected from inundation.

**[BS]TUBULAR DAYLIGHTING DEVICE (TDD).** A non-operable *fenestration* unit primarily designed to transmit daylight from a roof surface to an interior ceiling via a tubular conduit. The basic unit consists of an exterior glazed weathering surface, a light-transmitting tube with a

reflective interior surface, and an interior-sealing device such as a translucent ceiling panel. The unit can be factory assembled, or field-assembled from a manufactured kit.

**24-HOUR BASIS.** See “24-hour basis” located preceding “AAC masonry.”

**[BE]TYPE A UNIT.** A *dwelling unit* or *sleeping unit* designed and constructed for accessibility in accordance with this code and the provisions for *Type A units* in ICC A117.1.

**[BE]TYPE B UNIT.** A *dwelling unit* or *sleeping unit* designed and constructed for accessibility in accordance with this code and the provisions for *Type B units* in ICC A117.1, consistent with the design and construction requirements of the federal Fair Housing Act.

**[F]UMBRELLA STRUCTURE.** A structure, enclosure or shelter with or without sidewalls or drops, constructed of fabric or pliable material supported by a central pole or poles (see “Tent”).

**[BS]UNDERLAYMENT.** One or more layers of a material that is applied to a steep-slope *roof covering* deck under the roof covering and resists liquid water that penetrates the roof covering.

**UNIT SKYLIGHT.** See “Skylight, unit.”

**[F]UNSTABLE (REACTIVE) MATERIAL.** A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including *explosion*, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with *incompatible materials*. Unstable (reactive) materials are subdivided as follows:

**Class 4.** Materials that in themselves are readily capable of *detonation* or explosive decomposition or explosive reaction at *normal temperatures and pressures*. This class includes materials that are sensitive to mechanical or localized thermal shock at *normal temperatures and pressures*.

**Class 3.** Materials that in themselves are capable of *detonation* or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

**Class 2.** Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at *normal temperatures and pressures*, and that can undergo violent chemical change at elevated temperatures and pressures.

**Class 1.** Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

**[F]USE (MATERIAL).** Placing a material into action, including *solids*, *liquids* and *gases*.

**[BF]VAPOR PERMEABLE.** The property of having a moisture vapor permeance rating of 5 perms ( $2.9 \times 10^{-10}$  kg/ Pa  $\times$  s  $\times$  m<sup>2</sup>) or greater, when tested in accordance with the desiccant method using Procedure A of ASTM E96. A vapor permeable material permits the passage of moisture vapor.

**[BF]VAPOR RETARDER CLASS.** A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E96 as follows:

**Class I:** 0.1 perm or less.

**Class II:**  $0.1 < \text{perm} \leq 1.0$  perm.

**Class III:**  $1.0 < \text{perm} \leq 10$  perm.

**[BS]VEGETATIVE ROOF.** An assembly of interacting components designed to waterproof a building's top surface that includes, by design, vegetation and related landscape elements.

**[BS]VEHICLE BARRIER.** A component or a system of components, near open sides or walls of garage floors or ramps that act as a restraint for vehicles.

**[BG]VEHICULAR GATE.** A gate that is intended for use at a vehicular entrance or exit to a facility, building or portion thereof, and that is not intended for use by pedestrian traffic.

**[BF]VENEER.** A facing attached to a wall for the purpose of providing ornamentation, protection or insulation, but not counted as adding strength to the wall.

**[M]VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

**[BF]VINYL SIDING.** A shaped material, made principally from rigid polyvinyl chloride (PVC), that is used as an *exterior wall covering*.

**[F]VISIBLE ALARM NOTIFICATION APPLIANCE.** A notification appliance that alerts by the sense of sight.

**[BG]WALKWAY, PEDESTRIAN.** A walkway used exclusively as a pedestrian trafficway.

**[BS]WALL (for Chapter 21).** A vertical element with a horizontal length-to-thickness ratio greater than three, used to enclose space.

**Cavity wall.** A wall built of *masonry units* or of concrete, or a combination of these materials, arranged to provide an airspace within the wall, and in which the inner and outer parts of the wall are tied together with metal ties.

**Dry-stacked, surface-bonded wall.** A wall built of concrete *masonry units* where the units are stacked dry, without *mortar* on the bed or *head joints*, and where both sides of the wall are coated with a surface-bonding *mortar*.

**Parapet wall.** The part of any wall entirely above the roof line.

**[BS]WALL, LOAD-BEARING.** Any wall meeting either of the following classifications:

1. Any metal or wood stud wall that supports more than 100 pounds per linear foot (1459 N/m) of vertical load in addition to its own weight.
2. Any *masonry* or concrete wall that supports more than 200 pounds per linear foot (2919 N/m) of vertical load in addition to its own weight.

**[BS]WALL, NONLOAD-BEARING.** Any wall that is not a *load-bearing wall*.

**[F]WATER-REACTIVE MATERIAL.** A material that explodes; violently reacts; produces *flammable*, *toxic* or other hazardous gases; or evolves enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

**Class 3.** Materials that react explosively with water without requiring heat or confinement.

**Class 2.** Materials that react violently with water or have the ability to boil water. Materials that produce *flammable*, *toxic* or other hazardous gases or evolve enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture.

**Class 1.** Materials that react with water with some release of energy, but not violently.

**[BF]WATER-RESISTIVE BARRIER.** A material behind an *exterior wall covering* that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the *exterior wall* assembly.

**[BF]WEATHER-EXPOSED SURFACES.** Surfaces of walls, ceilings, floors, roofs, soffits and similar surfaces exposed to the weather except the following:

1. Ceilings and roof soffits enclosed by walls, fascia, bulkheads or beams that extend not less than 12 inches (305 mm) below such ceiling or roof soffits.
2. Walls or portions of walls beneath an unenclosed roof area, where located a horizontal distance from an open exterior opening equal to not less than twice the height of the opening.
3. Ceiling and roof soffits located a minimum horizontal distance of 10 feet (3048 mm) from the outer edges of the ceiling or roof soffits.

**[F]WET-CHEMICAL EXTINGUISHING SYSTEM.** A solution of water and potassium-carbonate-based chemical, potassium-acetate-based chemical or a combination thereof, forming an extinguishing agent.

**[BE]WHEELCHAIR SPACE.** A space for a single wheelchair and its occupant.

**[BS]WINDBORNE DEBRIS REGION.** Areas within hurricane-prone regions located:

1. Within 1 mile (1.61 km) of the coastal mean high-water line where the basic design wind speed,  $V$ , is 130 mph (58 m/s) or greater; or
2. In areas where the basic design wind speed is 140 mph (63.6 m/s) or greater. For *Risk Category II* buildings and structures and *Risk Category III* buildings and structures, except health care facilities, the windborne debris region shall be based on Figure 1609.3.(1). For *Risk Category IV* buildings and structures and *Risk Category III* health care facilities, the windborne debris region shall be based on Figure 1609.3(2).

**WINDFORCE-RESISTING SYSTEM, MAIN.** See “Main windforce-resisting system.”

**[BS]WIND SPEED,  $V$ .** Basic design wind speeds.

**[BS]WIND SPEED,  $V_{asd}$ .** Allowable stress design wind speeds.

**[BE]WINDER.** A tread with nonparallel edges.

**[BS]WIRE BACKING.** Horizontal strands of tautened wire attached to surfaces of vertical supports which, when covered with the building paper, provide a *backing* for cement plaster.

**[F]WIRELESS PROTECTION SYSTEM.** A system or a part of a system that can transmit and receive signals without the aid of wire.

**[BS]WOOD/PLASTIC COMPOSITE.** A composite material made primarily from wood or cellulose-based materials and plastic.

**[BS]WOOD SHEAR PANEL.** A wood floor, roof or wall component sheathed to act as a *shear wall* or *diaphragm*.

**[BS]WOOD STRUCTURAL PANEL.** A panel manufactured from *veneers*, wood strands or wafers or a combination of *veneer* and wood strands or wafers bonded together with waterproof synthetic resins or other suitable bonding systems. Examples of wood structural panels are:

**Composite panels.** A wood structural panel that is comprised of wood *veneer* and reconstituted wood-based material and bonded together with waterproof adhesive.

**Oriented strand board (OSB).** A mat-formed wood structural panel comprised of thin rectangular wood strands arranged in cross-aligned layers with surface layers normally arranged in the long panel direction and bonded with waterproof adhesive.

**Plywood.** A wood structural panel comprised of plies of wood *veneer* arranged in cross-aligned layers. The plies are bonded with waterproof adhesive that cures on application of heat and pressure.

**[F]WORKSTATION.** A defined space or an independent principal piece of equipment using *HPM* within a *fabrication area* where a specific function, laboratory procedure or research activity occurs. *Approved* or *listed hazardous materials storage cabinets*, *flammable liquid storage cabinets* or *gas cabinets* serving a workstation are included as part of the workstation. A workstation is allowed to contain *ventilation* equipment, fire protection devices, detection devices, electrical devices and other processing and scientific equipment.

**[BS]WYTHER.** Each continuous, vertical section of a wall, one *masonry unit* in thickness.

**[BG]YARD.** An open space, other than a *court*, unobstructed from the ground to the sky, except where specifically provided by this code, on the lot on which a building is situated.

**[F]ZONE.** A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.

**[F]ZONE, NOTIFICATION.** An area within a building or facility covered by notification appliances which are activated simultaneously.

## CHAPTER 3 – OCCUPANCY - CLASSIFICATION AND USE

No amendments

## CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASE ON USE AND OCCUPANCY

### SECTION 403 - HIGH-RISE BUILDINGS

[F] **403.3.2 Water supply to required fire pumps.** In buildings that are more than 420 feet (128 m) in *building height*, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets as approved by Puerto Rico Aqueducts and Sewer Authority (PRASA) or (AAA) or delegated entity. Connections to mains must be made in compliance with the REGLAMENTO DE NORMAS DE DISEÑO of PRASA. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate as approved by PRASA or the delegated utility entity.

**Exception:** Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through not fewer than one of the connections.

### SECTION 406 – MOTOR-VEHICLE -RELATED OCCUPANCIES

**406.2.9 Equipment and appliances.** Equipment and appliances shall be installed in accordance with Sections 406.2.9.1 through 406.2.9.3 and the *Puerto Rico Mechanical Code*, *Puerto Rico Fuel Gas Code*, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

### SECTION 423 - STORM SHELTERS

**423.3 Critical Emergency Operations.** In areas where the storm shelter design wind speed for hurricanes is 190 mph or greater on island states or territories where vehicle access to the continental US by roadway is not available, 911 call stations, emergency operations center and fire, rescue, ambulance and police stations shall comply with Table 1604.5 as a Risk Category IV structure and shall be provided with a storm shelter constructed in accordance with ICC 500.

**423.4 Group E Occupancies.** In accordance with Figure 304.2(2) of ICC 500, all Group E occupancies with occupant load of 50 or more shall have a storm shelter constructed in accordance with ICC 500.

## **CHAPTER 5 – GENERAL BUILDING HEIGHTS AND AREAS**

No amendments

## **CHAPTER 6 – TYPES OF CONSTRUCTION**

No amendments.

## **CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES**

No amendments.

## **CHAPTER 8 – INTERIOR FINISHES**

No amendments.

## **CHAPTER 9 – FIRE PROTECTION SYSTEMS AND LIFE SAFETY SYSTEMS**

### **SECTION 903 - AUTOMATIC SPRINKLER SYSTEMS**

**[F] 903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

#### **Exceptions:**

1. Residential occupancy Group R-2, construction type I, when the floor level having an occupant load of 30 or less that is located 45 feet (16.76 m) or less above the lowest level of fire department vehicle access.
2. Residential occupancy Group R-3.

**[F] 903.2.8.1 Group R-3.** An *automatic sprinkler system* if installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

**[F] 903.2.8.2 Group R-4, Condition 1.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4, Condition 1 occupancies.

**[F] 903.2.8.3 Group R-4, Condition 2.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4, Condition 2 occupancies.

**[F] 903.2.8.4 Care facilities.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling



**[F] 903.3.5 Water supplies.** Water supplies for *automatic sprinkler systems* shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with the requirements of this section and the *Puerto Rico Plumbing Code*. For connections to public waterworks systems, connections to water mains must be made in compliance with the Reglamento de Normas de Diseño of the Puerto Rico Aqueducts and Sewer Authority or the delegated utility entity.

**[F] 903.3.5.1 Domestic services.** Where the domestic service provides the water supply for the *automatic sprinkler system*, the supply shall be in accordance with this section.

**[F] 903.3.5.2 Residential combination services.** A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand, where required, shall be as required by NFPA.

## **CHAPTER 10 – MEANS OF EGRESS**

### **SECTION 1004 - OCCUPANT LOAD**

**1004.7 Outdoor areas.** *Yards*, patios, occupied roofs, *courts* and similar outdoor areas accessible to and usable by the building occupants shall be provided with *means of egress* as required by this chapter. The *occupant load* of such outdoor areas shall be assigned by the registered design professional and the fire code official in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, *means of egress* requirements for the building shall be based on the sum of the *occupant loads* of the building plus the outdoor areas.

#### **Exceptions:**

1. Outdoor areas used exclusively for service of the building need only have one *means of egress*.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

# SECTION 1006 - NUMBER OF EXITS AND EXIT ACCESS DOORWAYS

TABLE 1006.2.1  
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE(feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A <sup>c</sup> , E, M	49	75	75	75 <sup>a</sup>
B	49	100	75	100 <sup>a</sup>
F	49	75	75	100 <sup>a</sup>
H-1, H-2, H-3	3	NP	NP	25 <sup>b</sup>
H-4, H-5	10	NP	NP	75 <sup>b</sup>
I-1, I-2 <sup>d</sup> , I-4	10	NP	NP	75 <sup>a</sup>
I-3	10	NP	NP	100 <sup>a</sup>
R-1	10	NP	NP	75 <sup>a</sup>
R-2	30	75	NP	125 <sup>a</sup>
R-3 <sup>e</sup>	20	75	NP	125 <sup>a, g</sup>
R-4 <sup>e</sup>	20	NP	NP	125 <sup>a, g</sup>
S <sup>f</sup>	29	100	75	100 <sup>a</sup>
U	49	100	75	75 <sup>a</sup>

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

- a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.
- b. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.
- c. For a room or space used for assembly purposes having fixed seating, see Section 1029.8.
- d. For the travel distance limitations in Group I-2, see Section 407.4.
- e. The common path of egress travel distance shall only apply in a Group R-3 occupancy located in a mixed occupancy building.
- f. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.
- g. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6

TABLE 1006.3.3(1)  
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS PER STORY	MAXIMUM COMMON PATH OF TRAVEL DISTANCE
<b>Basement, first, second, third, or fourth story above grade plane</b>	R-2 <sup>a, b</sup>	4 dwelling units	125 feet
<b>Fifth story above grade plane and higher</b>	NP	NA	NA

For SI: 1 foot = 3048 mm.

NP = Not Permitted.

NA = Not Applicable.

- a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
- b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).

## SECTION 1020 - CORRIDORS

TABLE 1020.1  
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R-1, R-4	Greater than 10	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Less than 30	1	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Greater than 30	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R3	Less than 16	1	0.5 <sup>c</sup> /1 <sup>d</sup>
I-2 <sup>a</sup>	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>
I-4	All	1	0

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.

b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

d. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.

## CHAPTER 11 – ACCESSIBILITY

No amendments.

## CHAPTER 12 – INTERIOR ENVIRONMENT

### SECTION 1207 - INTERIOR SPACE DIMENSIONS

**1207.2 Minimum ceiling heights.** Occupiable spaces, *habitable spaces* and *corridors* shall have a ceiling height of no less than 8 feet (2625 mm) above the finished floor. Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall be permitted to have a ceiling of no less than 7 feet (2134 mm) above the finished floor.

#### Exceptions:

1. In one- and two-family dwellings, beams or girders spaced not more than 6 inches (152 mm) below the required ceiling height.
2. If any room in a building has a slope ceiling, the prescribed ceiling height for the room is required at the lower level of the ceiling. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof.
3. The height of *mezzanines* and spaces below *mezzanines* shall be in accordance with Section 505.2.
4. Corridors contained within a *dwelling unit* or *sleeping unit* in a Group R occupancy shall have a ceiling height of not less than 7 feet (2134 mm) above the finished floor.

**1207.2.1 Furred ceiling.** Any room with a furred ceiling shall be required to have the minimum ceiling height in two-thirds of the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet (2134 mm).

## CHAPTER 13 – ENERGY EFFICIENCY

### SECTION 1302 – ENVIRONMENTAL LUMINARIES

**[E]1302.1 Environmental Luminaries.** Any luminary or sign on building with illumination shall be replaced with full-cutoff lamps and shall comply with the *Reglamento para el Control y la Prevención de la Contaminación Lumínica* issued by the *Puerto Rico Environmental Quality Board*.

## CHAPTER 14 – EXTERIOR WALLS

No amendments.

# CHAPTER 15 – ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

## SECTION 1504 - PERFORMANCE REQUIREMENTS

TABLE 1504.1.1  
CLASSIFICATION OF STEEP SLOPE ROOF SHINGLES TESTED IN ACCORDANCE  
WITH ASTM D316 OR D71581

MAXIMUM BASIC WIND SPEED, $V$ , FROM FIGURES 1609.3(1)-(12) OR ASCE 7 (mph)	MAXIMUM ALLOWABLE STRESS DESIGN WIND SPEED, $V_{asd}$ , FROM TABLE 1609.3.1 (mph)	ASTM D7158 <sup>a</sup> CLASSIFICATION	ASTM D3161 CLASSIFICATION
110	85	D, G or H	A, D or F
116	90	D, G or H	A, D or F
129	100	G or H	A, D or F
142	110	G or H	F
155	120	G or H	F
168	130	H	F
181	140	H	F
194	150	H	F

For SI: 1 foot = 304.8 mm; 1 mph = 0.447 m/s.

a. The standard calculations contained in ASTM D7158 assume Exposure Category B or C and building height of 60 feet or less. Additional calculations are required for conditions outside of these assumptions.

1504.5 Edge securement for low-slope roofs. Low-slope built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except basic design wind speed,  $V$ , shall be determined from Figures 1609.3(1) through 1609.3(12) as applicable.

# SECTION 1507 - REQUIREMENTS FOR ROOF COVERINGS

TABLE 1507.3.7  
CLAY AND CONCRETE TILE ATTACHMENT<sup>a,b,c</sup>

GENERAL - CLAY OR CONCRETE ROOF TILE				
Maximum Allowable Stress Design Wind Speed, $V_{asd}$ (mph)	Mean roof height (feet)	Roof slope < 3:12	Roof slope 3:12 and over	
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.3.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS <sup>d</sup> (Installations on spaced/solid sheathing with battens or spaced sheathing)				
Maximum Allowable Stress Design Wind Speed, $V_{asd}$ (mph)	Mean roof height (feet)	Roof slope < 5:12	Roof slope 5:12 < 12:12	Roof slope 12:12 and over
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.3.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS (Installations on solid sheathing without battens)				
Maximum Allowable Stress Design Wind Speed, $V_{asd}$ (mph)	Mean roof height (feet)	All roof slopes		
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.3.		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m<sup>2</sup>.

a. Minimum fastener size. Corrosion-resistant nails not less than No. 11 gage with 5/16-inch head. Fasteners shall be long enough to penetrate into the sheathing 3/4 inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch.

b. Snow areas. Not fewer than two fasteners per tile are required or battens and one fastener.

c. Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.

d. Horizontal battens. Battens shall be not less than 1 inch by 2 inch nominal. Provisions shall be made for drainage by a riser of not less than 1/8 inch at each nail or by 4-foot-long battens with not less than a 1/2-inch separation between battens. Horizontal battens are required for slopes over 7:12.

e. Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes.

f.  $V_{asd}$  shall be determined in accordance with Section 1609.3.1.

**1507.12.2 Material standards.** Thermoset single-ply roof coverings shall comply with ASTM D4637 or ASTM D5019. Minimum thickness shall be 60 mils reinforced membrane over a 1/4" minimum thickness dense coverboard.

**1507.13.2 Material standards.** Thermoplastic single-ply roof coverings shall comply with ASTM D4434, ASTM D6754 or ASTM D6878. Minimum thickness shall be 60 mils reinforced membrane over a 1/4" minimum thickness dense coverboard.

**1507.15.1 Slope.** Liquid-applied roofing shall have a design slope of not less than one-fourth unit vertical in 12 units horizontal (2-percent slope). Liquid acrylic coatings shall have a one-half unit vertical in 12 units horizontal (4-percent slope).

## CHAPTER 16 – STRUCTURAL DESIGN

### SECTION 1602 - NOTATIONS

**1602.1 Notations.** The following notations are used in this chapter:

$D$  = Dead load.

$D_i$  = Weight of ice in accordance with Chapter 10 of ASCE 7.

$E$  = Combined effect of horizontal and vertical earthquake induced forces as defined in Section 2.3.6 of ASCE 7.

$F$  = Load due to fluids with well-defined pressures and maximum heights.

$F_a$  = Flood load in accordance with Chapter 5 of ASCE 7.

$H$  = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.

$L$  = Roof live load greater than 20 psf (0.96 kN/m<sup>2</sup>) and floor live load.

$L_r$  = Roof live load of 20 psf (0.96 kN/m<sup>2</sup>) or less.

$R$  = Rain load.

$S$  = Snow load.

$T$  = Cumulative effects of self-straining load forces and effects.

$V_{asd}$  = Allowable stress design wind speed, miles per hour (mph) (km/hr) where applicable.

$V$  = Basic design wind speeds, miles per hour (mph) (km/hr) determined from Figures 1609.3(1) through 1609.3(12) or ASCE 7.

$W$  = Load due to wind pressure.

$W_i$  = Wind-on-ice in accordance with Chapter 10 of ASCE 7.

### SECTION 1603 - CONSTRUCTION DOCUMENTS

**1603.1.4 Wind design data.** The following information related to wind loads shall be shown, regardless of whether wind loads govern the design of the lateral force-resisting system of the structure:

1. Basic design wind speed,  $V$ , miles per hour and allowable stress design wind speed,  $V_{asd}$ , as determined in accordance with Section 1609.3.1.
2. Risk category.
3. Wind exposure. Applicable wind direction if more than one wind exposure is utilized.
4. Applicable internal pressure coefficient.

5. Design wind pressures to be used for exterior component and cladding materials not specifically designed by the registered design professional responsible for the design of the structure, psf (kN/m<sup>2</sup>), shall be coordinated and approved by the designer of record of the project, and comply with all engineering design regulations.

## **SECTION 1604 - GENERAL DESIGN REQUIREMENTS**

**1604.3 Serviceability.** Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections as indicated in Table 1604.3. Drift limits applicable to earthquake loading shall be in accordance with ASCE 7 Chapter 12, 13, 15 or 16, as applicable. See Section 12.12.1 of ASCE 7 for drift limits applicable to earthquake loading.



TABLE 1604.3  
DEFLECTION LIMITS a,b,c,h,l

CONSTRUCTION	L or $L_c$	S or $W^t$	$D + L_{d,g}$
<b>Roof members:<sup>c</sup></b> <b>Supporting plaster or stucco ceiling</b> <b>Supporting nonplaster ceiling</b> <b>Not supporting ceiling</b>	$l/360$ $l/240$ $l/180$	$l/360$ $l/240$ $l/180$	$l/240$ $l/180$ $l/120$
<b>Floor members</b>	$l/360$	—	$l/240$
<b>Exterior walls:</b> <b>With plaster or stucco finishes</b> <b>With other brittle finishes</b> <b>With flexible finishes</b>	— — —	$l/360$ $l/240$ $l/120$	— — —
<b>Interior partitions:<sup>b</sup></b> <b>With plaster or stucco finishes</b> <b>With other brittle finishes</b> <b>With flexible finishes</b>	$l/360$ $l/240$ $l/120$	— — —	— — —
<b>Farm buildings</b>	—	—	$l/180$
<b>Greenhouses</b>	—	—	$l/120$

For SI: 1 foot = 304.8 mm.

- a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed  $l/60$ . For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed  $l/150$ . For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed  $l/90$ . For roofs, this exception only applies when the metal sheets have no roof covering.
- b. Flexible, folding and portable partitions and interior partitions not exceeding 6 feet in height are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.15.
- c. See Section 2403 for glass supports.
- d. The deflection limit for the  $D+(L+L_p)$  load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For lumber, structural glued laminated timber, prefabricated wood I-joists and structural composite lumber members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from  $0.5D$ . For lumber and glued laminated timber members installed or used at all other moisture conditions or cross laminated timber and wood structural panels that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from  $D$ . The value of  $0.5D$  shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.
- e. The preceding deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Chapter 8 of ASCE 7.
- f. The wind load shall be permitted to be taken as 0.42 times the "component and cladding" loads or directly calculated using the 10-year mean return interval wind speed for the purpose of determining deflection limits in Table 1604.3. Where framing members support glass, the deflection limit therein shall not exceed that specified in Section 1604.3.7.
- g. For steel structural members, the deflection due to creep component of long-term dead load shall be permitted to be taken as zero.
- h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed  $l/60$ . For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed  $l/175$  for each glass lite or  $l/60$  for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed  $l/120$ .
- i.  $l$  = Length of the member between supports. For cantilever members,  $l$  shall be taken as twice the length of the cantilever.

**1604.4 Analysis.** *Load effects* on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short-and long-term material properties.

Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis the added eccentricities expected to occur during their service life.

Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete load path capable of transferring loads from their point of origin to the load-resisting elements.

The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into buildings provided that their effect on the action of the system is considered and provided for in the design. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift. Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system

Every structure shall be designed to resist the overturning effects caused by the lateral forces specified in this chapter. See Section 1609 for wind loads, Section 1610 for lateral soil loads and Section 1613 for earthquake loads. The use of reinforced concrete walls with slabs acting as frames, in their weak (out-of-plane) direction, to withstand lateral forces as part of lateral force resisting system, is not permitted.

**TABLE 1607.1**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L<sub>0</sub>,**  
**AND MINIMUM CONCENTRATED LIVE LOADS<sup>g</sup>**

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
1. Apartments (see residential)	—	—
2. Access floor systems		
Office use	50	2,000
Computer use	100	2,000
3. Armories and drill rooms	150 <sup>h</sup>	—
4. Assembly areas		
Fixed seats (fastened to floor) Follow spot, projections and control rooms Lobbies	60 <sup>m</sup>	—
Movable seats	50	—
Stage floors	100 <sup>m</sup>	—
Platforms	100 <sup>m</sup>	—
1.5 times the live load for the area served, not required to exceed 100	150 <sup>n</sup>	—
5. Balconies and decks <sup>h</sup>	1.5 times the live load for the area served, not required to exceed 100	—
6. Catwalks	40	300
7. Cornices	60	—
8. Corridors		
First floor	100	—
Other floors	Same as occupancy served except as indicated	—
9. Dining rooms and restaurants	100 <sup>m</sup>	—
10. Dwellings (see residential)	—	—
11. Elevator machine room and controlroom grating (on area of 2 inches by 2 inches)	—	300
12. Finish light floor plate construction (on area of 1 inch by 1 inch)	—	200
13. Fire escapes	100	—
On single-family dwellings only	40	—
14. Garages (passenger vehicles only) Trucks and buses	40 <sup>o</sup>	Note a
15. Handrails, guards and grab bars	See Section 1607.7	See Section 1607.8
16. Helipads	See Section 1607.6	See Section 1607.6
17. Hospitals		
Corridors above first floor	80	1,000
Operating rooms, laboratories Patient rooms	60	1,000
laboratories Patient rooms	40	1,000
18. Hotels (see residential)	—	—
19. Libraries		
Corridors above first floor	80	1,000
Reading rooms	60	1,000
Stack rooms	150 <sup>b</sup>	1,000
20. Manufacturing		
Heavy	250 <sup>n</sup>	3,000
Light	125 <sup>n</sup>	2,000
21. Marquees, except one- and two-family dwellings	75	—
22. Office buildings		
Corridors above first floor	80	2,000
File and computer rooms shall be designed for heavier loads based on anticipated occupancy Lobbies and first-floor	—	—
Lobbies and first-floor	100	2,000
Stairways	50	2,000

(continued)

**TABLE 1607.1—continued**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L<sub>0</sub>,**  
**AND MINIMUM CONCENTRATED LIVE LOADS<sup>g</sup>**

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
23. Penal institutions		
Cell blocks	40	—
Corridors	100	—
24. Recreational uses:		
Bowling alleys, poolrooms and similar uses	75 <sup>m</sup>	—
Dance halls and ballrooms	100 <sup>m</sup>	—
Gymnasiums	100 <sup>m</sup>	—
Ice skating rink	250 <sup>n</sup>	—
Reviewing stands, grandstands and bleachers	100 <sup>c, m</sup>	—
Roller skating rink	100 <sup>m</sup>	—
Stadiums and arenas with fixed seating	60 <sup>c, m</sup>	—
25. Residential		
One- and two-family dwellings	10	—
Uninhabitable attics without storage <sup>i</sup>	20	—
Uninhabitable attics with storage <sup>i, j, k</sup>	30	—
Habitable attics and sleeping areas	20	—
Canopies, including marquees	40	—
All other areas	40	—
Hotels and multifamily dwellings		
Private rooms and corridors serving them	100	—
Public rooms and corridors	100	—
26. Roofs		
<b>Flat roofs with rise less 1 unit vertical in 24 units horizontal (slope less than 4.2%)</b>	<b>30</b>	
All roof surfaces subject to maintenance workers	5 <sup>m</sup>	300
Awnings and canopies:		
Fabric construction supported by a skeleton structure	20	2,000
All other construction, except one- and two-family dwellings	20	300
Ordinary flat, pitched, and curved roofs (that are not occupiable) Primary roof members exposed to a work floor	100	Note 1
Single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs over manufacturing, storage warehouses, and repair garages	100 <sup>m</sup>	Note 1
All other primary roof members	100 <sup>m</sup>	Note 1
Occupiable roofs:		
Roof gardens	100 <sup>m</sup>	Note 1
27. Schools		
Classrooms	40	1,000
Corridors above first floor	80	1,000
First-floor corridors	100	1,000
28. Scuttles, skylight ribs and accessible ceilings	—	200
29. Sidewalks, vehicular driveways and yards, subject to trucking	250 <sup>a, n</sup>	8,000 <sup>e</sup>
30. Stairs and exits		
One- and two-family dwellings	40	300 <sup>f</sup>
All other	100	300 <sup>f</sup>

(continued)

**TABLE 1607.1—continued**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L<sub>0</sub>,**  
**AND MINIMUM CONCENTRATED LIVE LOADS<sup>a</sup>**

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
31. Storage warehouses (shall be designed for heavier loads if required for anticipated storage) Heavy Light	250 <sup>n</sup> 125 <sup>n</sup>	—
32. Stores Retail First floor Upper floors Wholesale, all floors	100 75 125 <sup>n</sup>	1,000 1,000 1,000
33. Vehicle barriers	See Section 1607.9	
34. Walkways and elevated platforms (other than exitways)	60	—
35. Yards and terraces, pedestrians	100 <sup>m</sup>	—

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm<sup>2</sup>,  
1 square foot = 0.0929 m<sup>2</sup>, 1 pound per square foot = 0.0479 kN/m<sup>2</sup>,  
1 pound = 0.004448 kN, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of this table or the following concentrated loads: (1) for garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 4 1/2 inches by 4 1/2 inches; (2) for mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds per wheel.

b. The loading applies to stack room floors that support nonmobile, double-faced library book stacks, subject to the following limitations:  
1. The nominal book stack unit height shall not exceed 90 inches.  
2. The nominal shelf depth shall not exceed 12 inches for each face.  
3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches wide.

c. Design in accordance with ICC 300.

d. Other uniform loads in accordance with an approved method containing provisions for truck loadings shall be considered where appropriate.

e. The concentrated wheel load shall be applied on an area of 4.5 inches by 4.5 inches.

f. The minimum concentrated load on stair treads shall be applied on an area of 2 inches by 2 inches. This load need not be assumed to act concurrently with the uniform load.

g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official (see Section 1608).

h. See Section 1604.8.3 for decks attached to exterior walls.

i. Uninhabitable attics without storage are those where the maximum clear height between the joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.

j. Uninhabitable attics with storage are those where the maximum clear height between the joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.  
The live load need only be applied to those portions of the joists or truss bottom chords where both of the following conditions are met:  
i. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is not less than 30 inches.  
ii. The slopes of the joists or truss bottom chords are not greater than two units vertical in 12 units horizontal.  
The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 pounds per square foot.

k. Attic spaces served by stairways other than the pull-down type shall be designed to support the minimum live load specified for habitable attics and sleeping rooms.

l. Areas of occupiable roofs, other than roof gardens and assembly areas, shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section 1607.13.3.

m. Live load reduction is not permitted.

n. Live load reduction is only permitted in accordance with Section 1607.11.1.2 or Item 1 of Section 1607.11.2.

o. Live load reduction is only permitted in accordance with Section 1607.11.1.3 or Item 2 of Section 1607.11.2.

## SECTION 1609 - WIND LOADS

**1609.1 Applications.** Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads pre-scribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

**1609.1.1 Determination of Wind Loads.** Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 31 of ASCE 7. The type of opening protection required, the basic design wind speed,  $V$ , and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

### Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AWC WFCM.
3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided that the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.
6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.

The wind speeds in Figures 1609.3(1) through 1609.3(12) are basic design wind speeds,  $V$ , and shall be converted in accordance with Section 1609.3.1 to allowable stress design wind speeds,  $V_{asd}$ , when the provisions of the standards referenced in Exceptions 4 and 5 are used.

**1609.3 Basic design wind speed.** The basic design wind speed,  $V$ , in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1) through (12). The basic design wind speed,  $V$ , for use in the design of Risk Category II buildings and structures shall be obtained from Figures 1609.3(1), 1609.3(5), and for Puerto Rico 1609.3(9). The basic design wind speed,  $V$ , for use in the design of Risk Category III buildings and structures shall be obtained from Figures 1609.3(2), 1609.3(6), and for Puerto Rico 1609.3(10). The basic design wind speed,  $V$ , for use in the design of Risk Category IV buildings and structures shall be obtained from Figures 1609.3(3), 1609.3(7), and for Puerto Rico 1609.3(11). The basic design wind speed,  $V$ , for use in the design of Risk Category I buildings and structures shall be obtained from Figures 1609.3(4), 1609.3(8), and for Puerto Rico 1609.3(12). The basic design wind speed,  $V$ , for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The basic design wind speeds,  $V$ , determined by the local jurisdiction shall be in accordance with Chapter 26 of ASCE 7.

In nonhurricane-prone regions, when the basic design wind speed,  $V$ , is estimated from regional climatic data, the basic design wind speed,  $V$ , shall be determined in accordance with Chapter 26 of ASCE 7.

**1609.3.1 Wind speed conversion.** Where required, the basic design wind speeds of Figures 1609.3(1) through 1609.3(12) shall be converted to allowable stress design wind speeds,  $V_{asd}$ , using Table 1609.3.1 or Equation 16-33.

$$V_{asd} = V\sqrt{0.6} \quad \text{(Equation 16-33)}$$

where:

$V_{asd}$  = Allowable stress design wind speed applicable to methods specified in Exceptions 4 and 5 of Section 1609.1.1.

$V$  = Basic design wind speeds determined from Figures 1609.3(1) through 1609.3(12).

TABLE 1609.2  
WINDBORNE DEBRIS PROTECTION FASTENING SCHEDULE FOR WOOD  
STRUCTURAL PANELS<sup>a, b, c, d</sup>

FASTENER TYPE	FASTENER SPACING (inches)		
	Panel Span ≤ 4 feet	4 feet < Panel Span ≤ 6 feet	6 feet < Panel Span ≤ 8 feet
No. 8 wood-screw-based anchor with 2-inch embedment length	16	10	8
No. 10 wood-screw-based anchor with 2-inch embedment length	16	12	9
1/4-inch diameter lag-screw-based anchor with 2-inch embedment length	16	16	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 4.448 N, 1 mile per hour = 0.447 m/s.

- a. This table is based on a 140 mph basic design wind speeds and a 45-foot mean roof height.
- b. Fasteners shall be installed at opposing ends of the wood structural panel. Fasteners shall be located not less than 1 inch from the edge of the panel.
- c. Anchors shall penetrate through the exterior wall covering with an embedment length of 2 inches minimum into the building frame. Fasteners shall be located not less than 2 1/2 inches from the edge of concrete block or concrete.
- d. Where panels are attached to masonry or masonry/stucco, they shall be attached using vibration-resistant anchors having a minimum ultimate withdrawal capacity of 1,500 pounds.

**TABLE 1609.3.1**  
**WIND SPEED CONVERSIONS** <sup>a, b, c</sup>

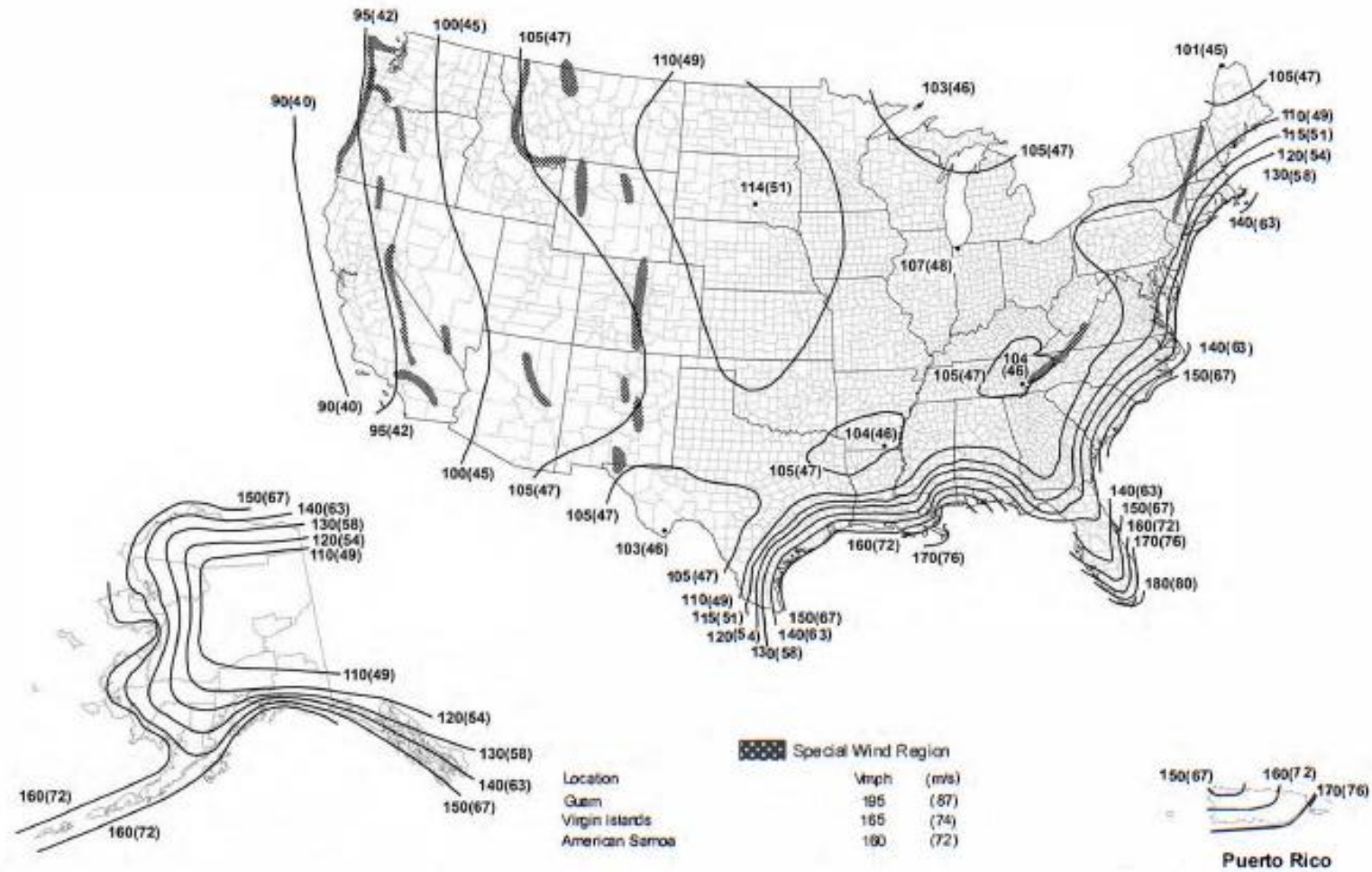
V	100	110	120	130	140	150	160	170	180	190	200
V <sub>asd</sub>	78	85	93	101	108	116	124	132	139	147	155

For SI: 1 mile per hour = 0.44 m/s.

a. Linear interpolation is permitted.

b. V = allowable stress design wind speed applicable to methods specified in Exceptions 1 through 5 of Section 1609.1.1.

c. V = basic design wind speeds determined from Figures 1609.3(1) through 1609.3(12).



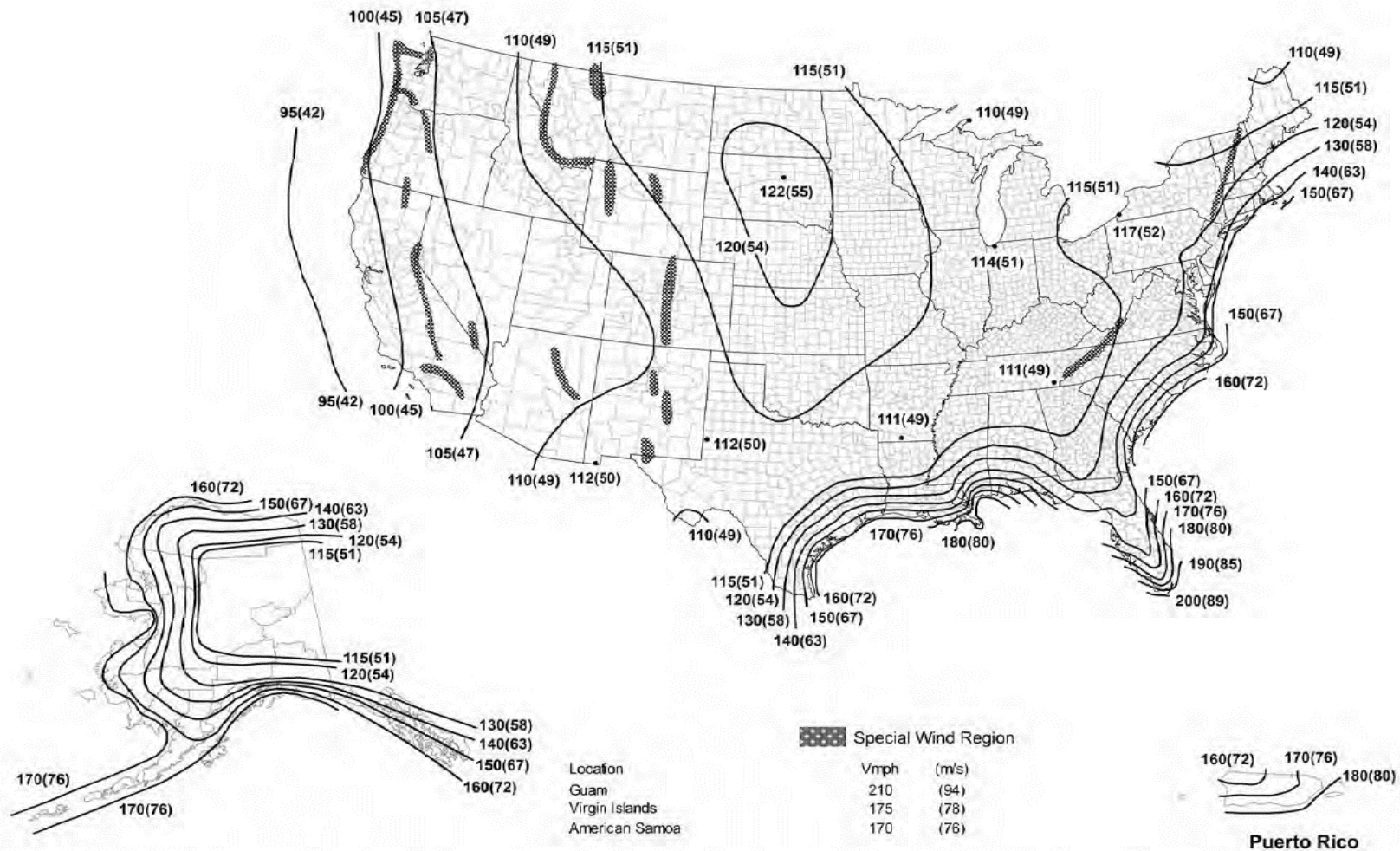
Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
2. Linear interpolation is permitted between the contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using [www.atcouncil.org/windspeed](http://www.atcouncil.org/windspeed) when applicable to ASCE 7.

FIGURE 1609.3(1)

BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES



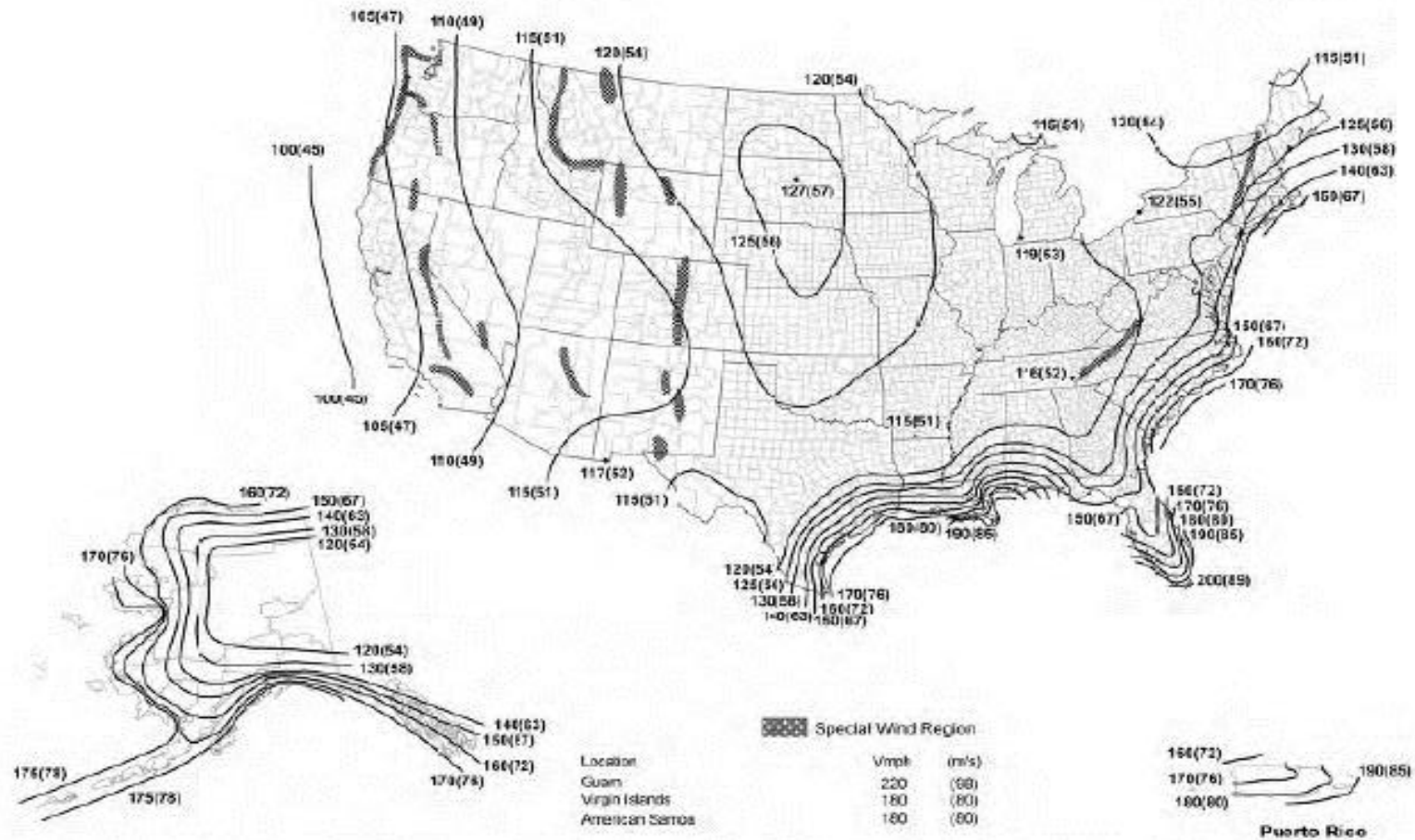


Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
2. Linear interpolation is permitted between the contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using [www.atcouncil.org/windspeed](http://www.atcouncil.org/windspeed) when applicable to ASCE 7.

FIGURE 1609.3(2)

BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES



Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
2. Linear interpolation is permitted between the contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using [www.atcouncil.org/windspeed](http://www.atcouncil.org/windspeed) when applicable to ASCE 7.

FIGURE 1609.3(3)  
BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES

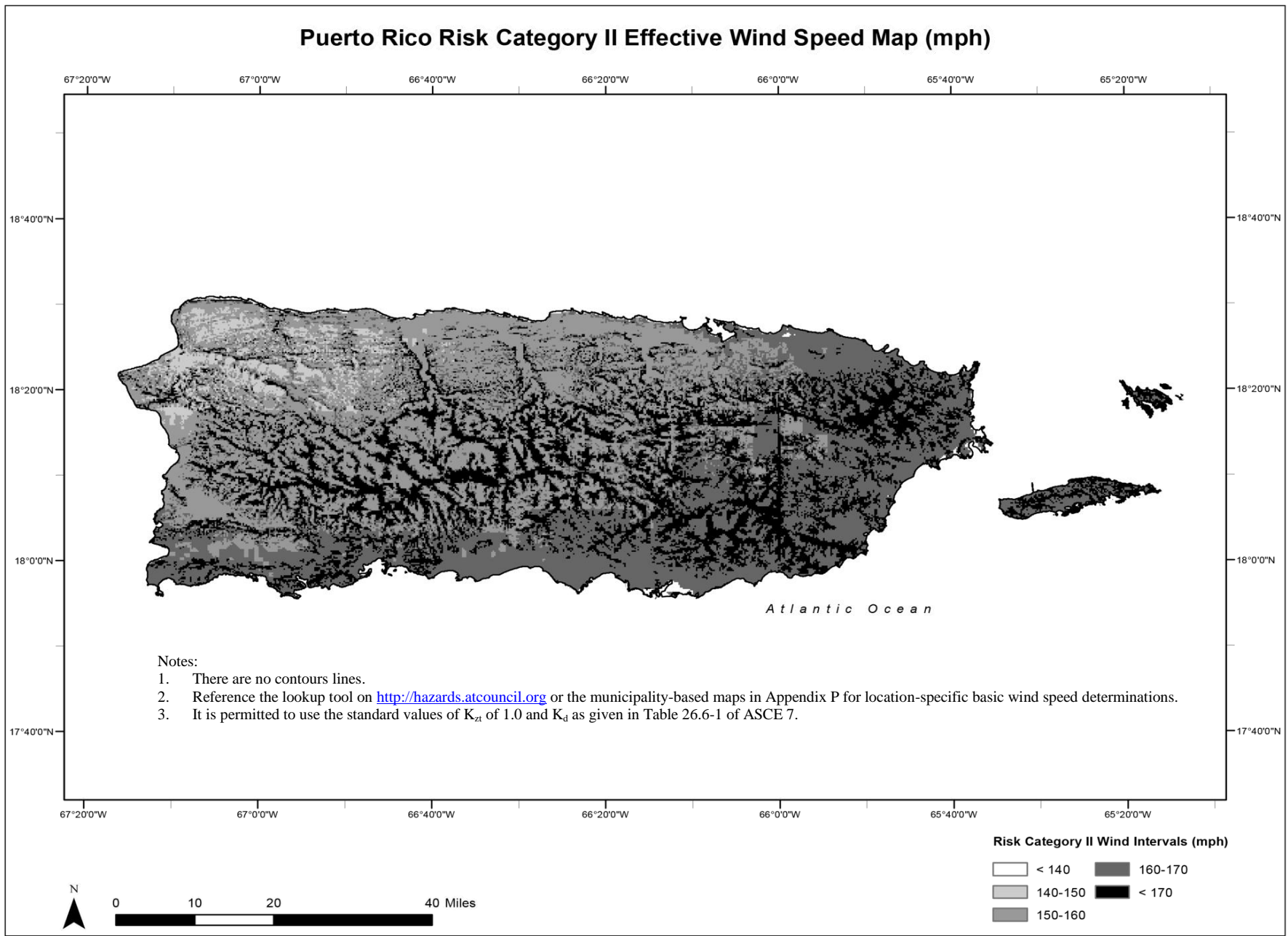


FIGURE 1609.3(9)  
 BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES (PUERTO RICO)

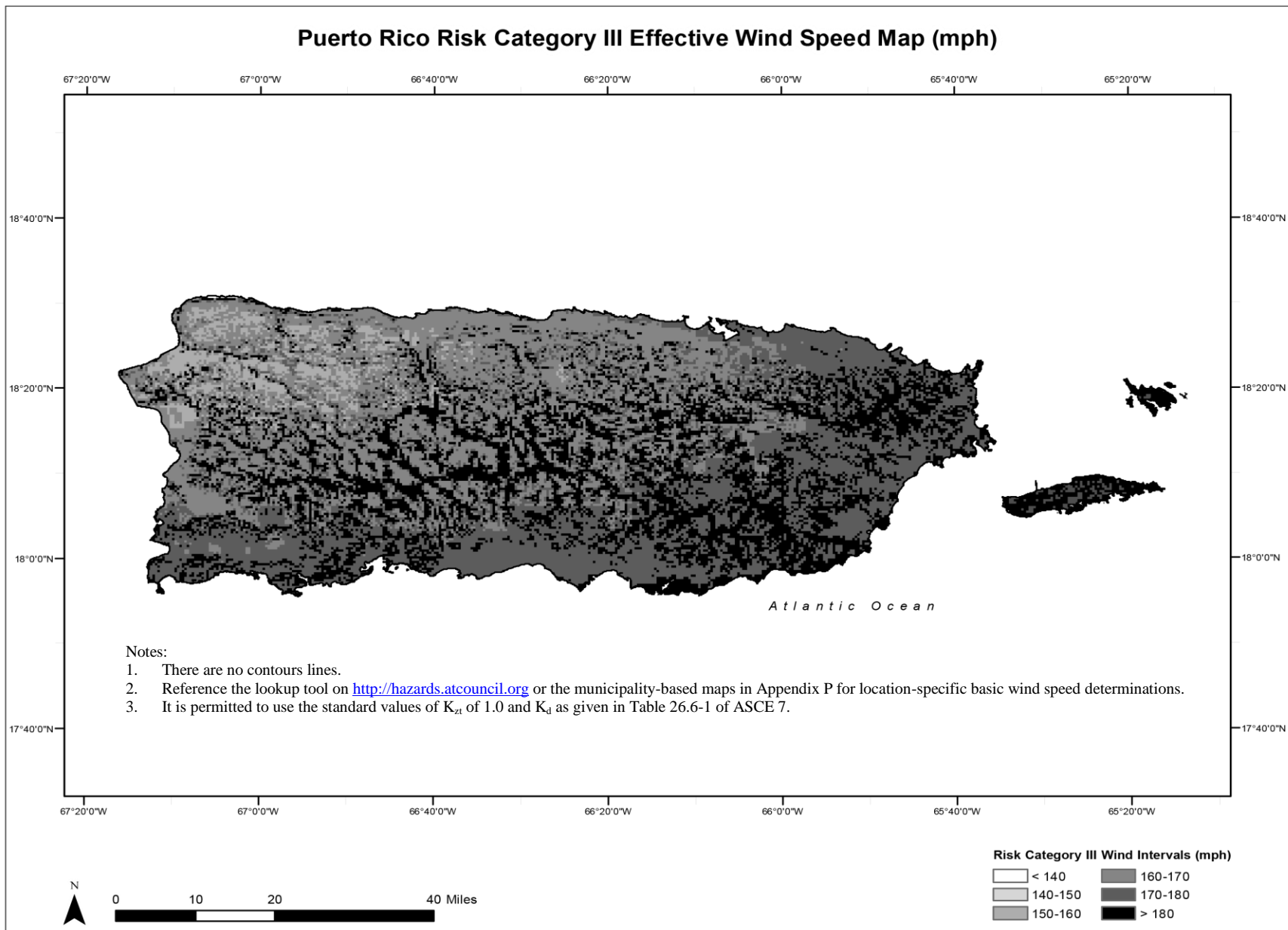


FIGURE 1609.3(10)

BASIC DESIGN WIND SPEEDS,  $V$ , FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES (PUERTO RICO)

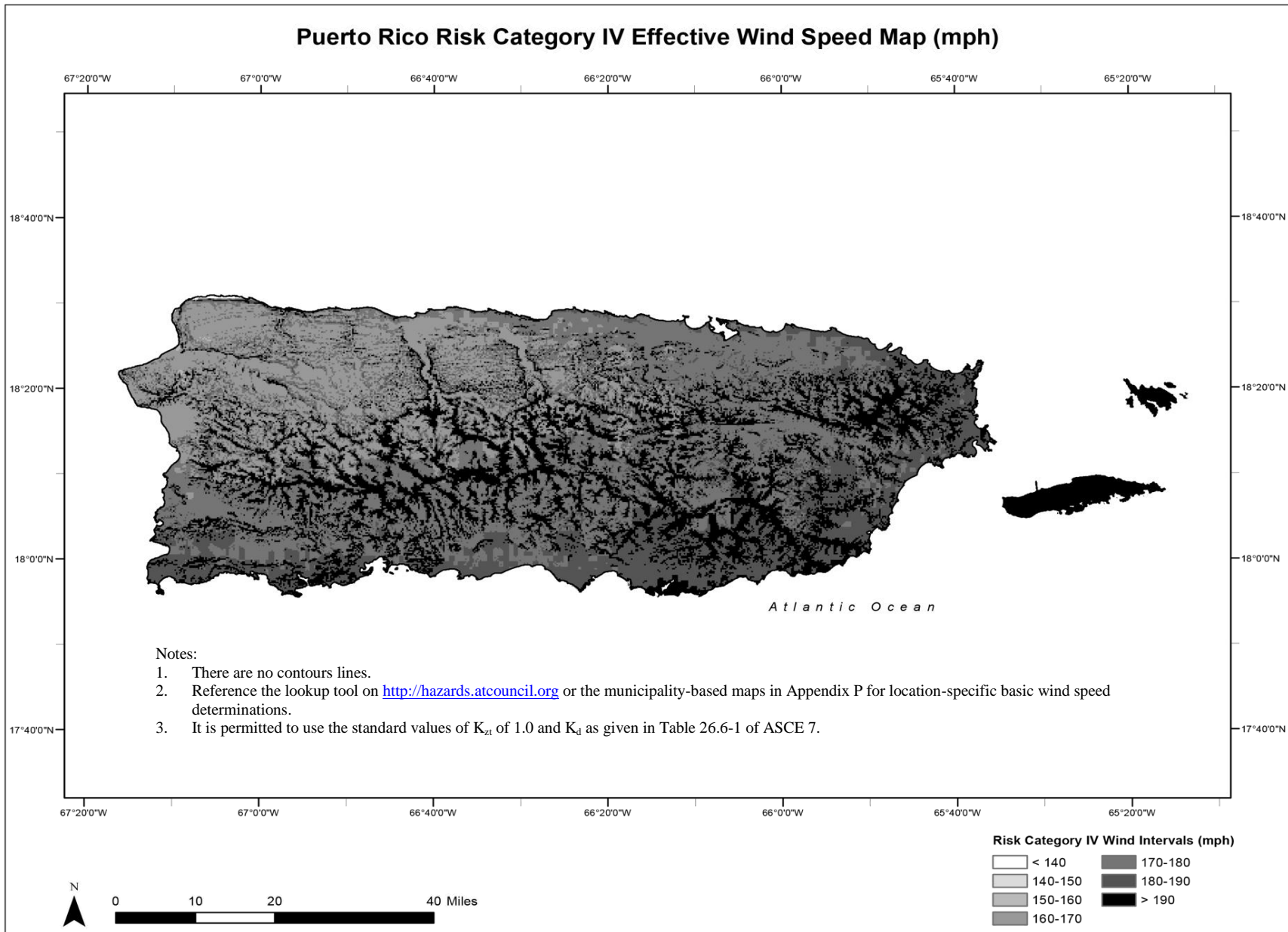
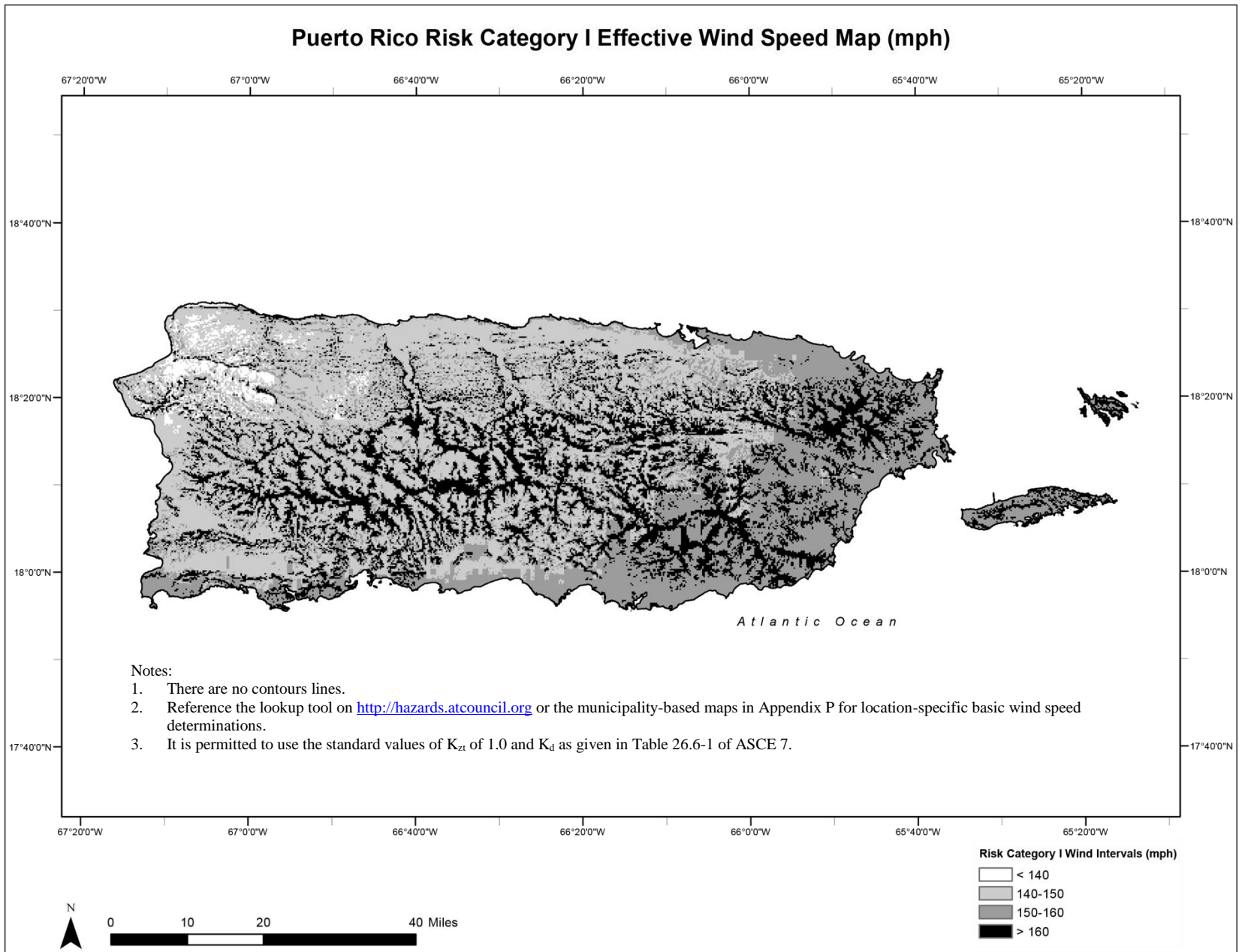


FIGURE 1609.3(11)

BASIC DESIGN WIND SPEEDS,  $V$ , FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES (PUERTO RICO)



## SECTION 1613 - EARTHQUAKE LOADS

**1613.2 Seismic ground motion values.** Seismic ground motion values shall be determined in accordance with this section.

**1613.2.1 Mapped acceleration parameters.** The parameters  $SS$  and  $S1$  shall be determined from the 0.2 and 1-second spectral response accelerations shown on Figures 1613.2.1(1) through 1613.2.1(8) and Table 1613.2.1. Where  $S1$  is less than or equal to 0.04 and  $SS$  is less than or equal to 0.15, the structure is permitted to be assigned *Seismic Design Category A*.



FIGURE 1613.2.1(6)A  
 SPECTRAL RESPONSE ACCELERATION AT PERIOD OF 0.2 SECONDS, 5% OF CRITICAL DAMPING, RECURRENCE OF  
 2,475 YEARS (PROBABILITY OF EXCEEDANCE OF 2% IN 50 YEARS)





FIGURE 1613.2.1(6)B  
 SPECTRAL RESPONSE ACCELERATION AT PERIOD OF 1.0 SECONDS, 5% OF CRITICAL DAMPING, RECURRENCE OF  
 2,475 YEARS (PROBABILITY OF EXCEEDANCE OF 2% IN 50 YEARS)

Table 1613.2 .1  
Spectral Response Accelerations for Municipalities of Puerto Rico, % of g.

MUNICIPALITIES	0.2 Sec	1.0 Sec	MUNICIPALITIES	0.2 Sec	1.0 Sec	MUNICIPALITIES	0.2 Sec	1.0 Sec
ADJUNTAS	110	43	FAJARDO	98	39	NAGUABO	97	37
AGUADA	133	50	FLORIDA	110	42	NARANJITO	97	38
AGUADILLA	133	50	GUÁNICA	125	50	OROCOVIS	101	39
AGUAS BUENAS	95	37	GUAYAMA	92	34	PATILLAS	93	34
AIBONITO	96	36	GUAYANILLA	125	46	PEÑUELAS	115	43
AÑASCO	125	48	GUAYNABO	98	39	PONCE	107	42
ARECIBO	116	45	GURABO	95	37	QUEBRADILLAS	122	48
ARROYO	92	34	HATILLO	119	46	RINCÓN	135	53
BARCELONETA	113	43	HORMIGUEROS	124	49	RIO GRANDE	97	39
BARRANQUITAS	97	38	HUMACAO	96	36	SABANA GRANDE	125	47
BAYAMÓN	98	39	ISABELA	125	49	SALINAS	93	35
CABO ROJO	135	53	JAYUYA	105	41	SAN GERMÁN	125	48
CAGUAS	94	36	JUANA DÍAZ	100	38	SAN JUAN	98	39
CAMUY	119	47	JUNCOS	95	37	SAN LORENZO	94	36
CANÓVANAS	96	38	LAJAS	130	51	SAN SEBASTIÁN	119	47
CAROLINA	97	39	LARES	116	44	SANTA ISABEL	96	36
CATAÑO	99	39	LAS MARÍAS	118	46	TOA ALTA	99	39
CAYEY	93	35	LAS PIEDRAS	96	37	TOA BAJA	101	40
CEIBA	98	38	LOIZA	98	39	TRUJILLO ALTO	96	38
CIALES	106	40	LUQUILLO	98	39	UTUADO	112	43
CIDRA	94	36	MANATÍ	110	43	VEGA ALTA	106	41
COAMO	97	37	MARICAO	117	46	VEGA BAJA	107	42
COMERIO	96	37	MAUNABO	96	34	VIEQUES	102	37
COROZAL	99	39	MAYAGÜEZ	124	48	VILLALBA	101	39
CULEBRA	112	40	MOCA	125	49	YABUCOA	96	35
DORADO	104	40	MOROVIS	103	39	YAUCO	125	46

## CHAPTER 17 – SPECIAL INSPECTIONS AND TEST

### SECTION 1703 - APPROVALS

**1703.6 Evaluation and follow-up inspection services.** Where structural components or other items regulated by this code are not visible for inspection after completion of a pre-fabricated assembly, the owner or the owner's authorized agent shall submit a report of each prefabricated assembly. The report shall indicate the complete details of the assembly, including a description of the assembly and its components, the basis upon which the assembly is being evaluated, test results and similar information and other data as necessary for the Registered Design Professional in Responsible Charge and/or *designated inspector* to determine conformance to this code. Such a report shall be approved by the building official.

### SECTION 1704 - CONTRACTOR RESPONSIBILITY

**1704.4 Contractor responsibility.** Each contractor responsible for the construction of a main wind- or seismic force-resisting system, designated seismic system or a wind- or seismic force-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the *designated inspector* and to the building official and the owner or the owner's authorized agent prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of special inspections.

### SECTION 1705 - REQUIRED SPECIAL INSPECTIONS AND TEST

**1705.4 Masonry construction.** *Special Inspection* and *tests* of masonry construction shall be performed in accordance with the quality assurance program requirements of TMS 402 and TMS 602.

**Exception:** *Special inspections* and *tests* shall not be required for:

1. Masonry fireplaces, masonry heaters or masonry chimneys installed or constructed in accordance with Section 2111, 2112 or 2113, respectively.

**1705.4.1 Empirically designed masonry, glass unit masonry or masonry veneer in Risk Category III or IV.** *Special inspections* and *tests* for empirically designed masonry, glass unit masonry or masonry veneer designed in accordance with Section 2109, 2110 or Chapter 14, respectively, where they are part of a structure classified as Risk Category III or IV shall be performed in accordance with TMS 402 Level B Quality Assurance.

**1705.4.2 Vertical masonry foundation elements.** *Special inspections* and *tests* of vertical masonry foundation elements shall be performed in accordance with Section 1705.4.

**1705.12.5 Architectural components.** *Periodic special inspection* is required for the erection and fastening of exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer in structures assigned to *Seismic Design Category D, E or F*.

**Exception:** Periodic inspection is not required for the following:

1. Interior nonbearing walls and interior veneer 30 feet (9144 mm) or less in height above grade or walking surface.
2. Interior veneer weighing 5 psf (24.5 N/m<sup>2</sup>) or less.
3. Interior nonbearing walls weighing 15 psf (73.5 N/m<sup>2</sup>) or less.

## **CHAPTER 18 – SOILS AND FOUNDATIONS**

### **SECTION 1810 - DEEP FOUNDATIONS**

**1810.3.8.2.1 Minimum reinforcement.** Longitudinal Reinforcement shall consist of at least four bars with a minimum longitudinal reinforcement ratio of 0.008.

**1810.3.8.2.2 Seismic reinforcement in Seismic Design Categories C through F.** For structures assigned to Seismic Design Category C, D, E or F, precast non-prestressed piles shall be reinforced as specified in this section. The minimum longitudinal reinforcement ratio shall be 0.01 throughout the length. Transverse reinforcement shall consist of closed ties or spirals with a minimum 3/8 inch (9.5 mm) diameter. The spiral ratio made with wire 6.0 mm or bigger in diameter is accepted for spiral reinforcement in prefabricated concrete piles of 12 inches or less in diameter. Spacing of transverse reinforcement shall not exceed the smaller of eight times the diameter of the smallest longitudinal bar or 6 inches (152 mm) within a distance of three times the least pile dimension from the bottom of the pile cap. Spacing of transverse reinforcement shall not exceed 6 inches (152 mm) throughout the remainder of the pile.

## **CHAPTER 19 – CONCRETE**

No amendments.

## **CHAPTER 20 – ALUMINUM**

No amendments.

## **CHAPTER 21 – MASONRY**

No amendments.

## **CHAPTER 22 – STEEL**

No amendments.

## CHAPTER 23 – WOOD

### SECTION 2303 – MINIMUM STANDARDS AND QUALITY

**2303.4 Trusses.** Wood trusses shall comply with Sections 2303.4.1 through 2303.4.7.

**2303.4.1 Design.** Wood trusses shall be designed in accordance with the provisions of this code and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other *approved* framing devices.

**2303.4.1.1 Truss design drawings.** The written, graphic and pictorial depiction of each individual truss shall be provided by the registered design professional in charge to the *building official* for approval prior to installation. Truss design drawings shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the following information:

## CHAPTER 24 – GLASS AND GLAZING

No amendments.

## CHAPTER 25 – GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER

No amendments.

## CHAPTER 26 – PLASTIC

No amendments.

## CHAPTER 27 – ELECTRICAL AND TELECOMMUNICATIONS

### SECTION 2701 – GENERAL

**2701.1 Scope.** The provisions of this chapter, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code) shall govern the design, construction, erection and installation of the electrical components, appliances, equipment and systems used in buildings and structures covered by this code. The *Puerto Rico Fire Code* and NFPA 70 shall govern the use and maintenance of electrical components, appliances, equipment and systems. The *Puerto Rico Existing Building Code*, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code) shall govern the alteration, repair, relocation, replacement and addition of electrical components, appliances, or equipment and systems. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **SECTION 2703 – TELECOMMUNICATIONS**

**2703.1 Scope.** The provisions of this chapter and the Telecommunications Industry Association (TIA) Common Standards and Premise Standards shall govern the design and construction of the telecommunication infrastructure, and the installation of components, appliances, equipment and systems used in buildings and structures covered by this code.

The Puerto Rico Telecommunication Regulatory Board may, by way of Technical Bulletins and or Regulations amend or clarify the Telecommunications Industry Association (TIA) adopted standards.

## **CHAPTER 28 – MECHANICAL SYSTEMS**

No amendments.

## **CHAPTER 29 – PLUMBING SYSTEMS**

No amendments.

## **CHAPTER 30 – ELEVATORS AND CONVEYING SYSTEMS**

No amendments.

## **CHAPTER 31 – SPECIAL CONSTRUCTION**

### **SECTION 3108 - TELECOMMUNICATIONS AND BROADCAST TOWERS**

**[BS] 3108.1 General.** Towers shall be designed and constructed in accordance with the provisions of TIA-222.

**Exception:** Single free-standing poles used to support antennas not greater than 75 feet (22 860 mm), measured from the top of the pole to grade, shall not be required to be noncombustible.

**[BS] 3108.2 Location and access.** Towers shall be located such that guy wires and other accessories shall not cross or encroach on any street or other public space, or over above-ground electric utility lines, or encroach on any privately-owned property without the written consent of the owner of the encroached-upon property, space or above-ground electric utility lines. Towers shall be equipped with climbing and working facilities in compliance with TIA-222. Access to the tower sites shall be limited as required by applicable OSHA, FCC and EPA regulations.

## SECTION 3111 - SOLAR ENERGY SYSTEMS

**3111.3 Photovoltaic solar energy systems.** Photovoltaic solar energy systems shall be designed and installed in accordance with this section, the *Puerto Rico Fire Code*, NFPA 70, the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code), either the *Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta* (Regulation 8915) or the *Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta* (Regulation 8916), as applicable, and the manufacturer's installation instructions.

**3111.3.1 Equipment.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703. Inverters shall comply with IEEE 1547 and be *listed* and *labeled* in accordance with UL 1741. Systems connected to the utility grid shall use inverters *listed* for utility interaction. Photovoltaic panels, modules and inverters shall be approved and certified by the Authority having Jurisdiction.

## CHAPTER 32 – ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY

No amendments.

## CHAPTER 33 – SAFEGUARDS DURING CONSTRUCTION

No amendments.

## CHAPTER 34 – RESERVED

## CHAPTER 35 – REFERENCED STANDARDS

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**PRASA**

Puerto Rico Aqueduct and Sewer Authority  
PO BOX 7066  
SAN JUAN, PR 00916 - 7066

3149-1984: Reglamento de Normas de Diseño (Complementary Code)

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**PREPA**

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
[A]108.3, 406.2.9, 2701.1, 3111.3

8915-2017: Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
3111.3

8916-2017: Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
3111.3

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**JCA**

Puerto Rico Environmental Quality Board  
Apartado 11488  
Santurce, PR 00910

8786-2016: Reglamento para el Control y la Prevención de la Contaminación Lumínica  
[E]1302.1

## **APPENDIX A - EMPLOYEE QUALIFICATIONS**

No amendments.

## **APPENDIX B - BOARD OF APPEALS**

No amendments.

## **APPENDIX C - GROUP U - AGRICULTURAL BUILDINGS**

No amendments.

## **APPENDIX D - FIRE DISTRICTS**

No amendments.

## **APPENDIX E – SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS**

No amendments.

## **APPENDIX F - RODENTPROOFING**

No amendments.

## **APPENDIX G - FLOOD-RESISTANT CONSTRUCTION**

### **SECTION G105 - VARIANCES**

**G105.3 Historic structures.** A variance is authorized to be issued for the repair or rehabilitation of a historic structure upon a determination that the proposed repair or rehabilitation will not



preclude the structure's continued designation as a historic structure, and the variance is the minimum necessary to preserve the historic character and design of the structure.

**Exception:** Within *flood hazard areas*, *historic structures* or properties that do not meet one or more of the following designations:

1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.
2. Determined by the Secretary of the U.S. Department of Interior, *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly, as contributing to the historical significance of a registered historic district or zone or a district preliminarily determined to qualify as an historic district or zone.
3. Designated as *historic* or having historic significance under applicable state or law, ordinance or resolution.

## **APPENDIX H - SIGNS**

No amendments.

## **APPENDIX I - PATIO COVERS**

No amendments.

## **APPENDIX J - GRADING**

No amendments.

## **APPENDIX K - ADMINISTRATIVE PROVISIONS**

No amendments.

## **APPENDIX L - EARTHQUAKE RECORDING INSTRUMENTATION**

No amendments.

## **APPENDIX M – TSUNAMI-GENERATED FLOOD HAZARD**

No amendments.

## **APPENDIX N - REPLICABLE BUILDINGS**

### **SECTION N103 - REPLICABLE DESIGN REQUIREMENTS**

**N103.1 Prototypical construction documents.** A replicable design shall establish prototypical construction documents for application at multiple locations. The construction documents shall include details appropriate to each wind region, seismic design category, Special Flood Hazard Area (SFHA), and climate zone for locations in which the replicable design is intended for

application. Application of replicable design shall not vary with regard to the following, except for allowable variations in accordance with Section N106.

1. Use and occupancy classification.
2. Building heights and area limitations.
3. Type of construction classification.
4. Fire-resistance ratings.
5. Interior finishes.
6. Fire protection system.
7. Means of egress.
8. Accessibility.
9. Structural design criteria.
10. Energy efficiency.
11. Type of mechanical and electrical systems.
12. Type of plumbing system and number of fixtures.
13. Special Flood Hazard Area (SFHA).

**N104.1.2 Structural plans, specifications and engineering details.** Where approval of the structural requirements of the replicable design is sought, the submittal documents shall include details for each wind region, seismic design category, Special Flood Hazard Area (SFHA), and climate zone for which approval is sought; and shall include the following:

1. Signed and sealed structural design calculations that support the member sizes on the drawings.
2. Design load criteria, including: frost depth, live loads, snow loads, flood loads, wind loads, earthquake design date, and other special loads.
3. Details of foundations and superstructure.
4. Provisions for special inspections.

## **APPENDIX O - ALTERNATE STRUCTURAL PROVISIONS FOR ONE AND TWO STORY BUILDINGS ONE AND TWO STORIES BUILDING CONSTRUCTION**

### **SECTION O101 - APPLICABILITY AND SCOPE**

**O101.1 General.** The structural design and construction of new qualified one and two story reinforced concrete buildings can be performed in accordance with these alternate provisions, as an alternate to those included in the 2018 Puerto Rico Building Code (IBC 2018) and the Puerto Rico Residential Code 2018. For additions or modifications of existing structures, follow the Puerto Rico Existing Building Code 2018. A qualified building shall meet the requirements set forth in this section as follows:

1. The building consists of a reinforced concrete structure with or without concrete block infill walls. The floor area of each story shall not exceed five thousand (5,000) square feet and any story level shall not exceed 12 feet in height.
2. The building shall have a nearly symmetrical plan configuration in both principal directions. The distance between the center of mass and the center of rigidity of the building shall not exceed five (5) percent of the plan dimension measured normal to the direction of the load.
3. All reinforced concrete structural elements supporting vertical and lateral loads shall be cast-in-place.
4. A lateral force resisting system (LFRS), consisting of moment frames or shear walls or a combination of both, shall be provided in both principal directions of the building. The out-of-plane stiffness of the walls shall not be considered as part of the LFRS.
5. All vertical structural elements shall be continuous down to the foundation, with no horizontal offset and no reduction in sectional area. Rigid structural systems on the second level, like reinforced concrete or concrete block shear walls that are supported by frame systems on the first level, shall be identified as a soft story at the first level and shall not be allowed.
6. The maximum difference in base elevation between adjacent footings shall not exceed twelve (12) inches. Additionally, the final grading elevation around the building shall not exceed three (3) feet above the ground slab elevation.
7. The second-floor slab area shall not exceed that of the ground floor, except that for balconies or overhangs the second-floor slabs are permitted up to six (6) feet from the faces of the four façades of the building, but not larger than 1/3 of the adjacent interior span.
8. The resulting design seismic base shear, calculated as per these alternate provisions, shall not be reduced due to ductility considerations.
9. These provisions shall apply only to buildings with Occupancy Category I and II as defined in Table O102.2 or Table 1604.5 (IBC 2018) (Minimum Design Loads for Buildings and Other Structures). The qualified buildings shall not have an Importance Factor greater than 1.0.

## **SECTION O102 - DESIGN LOADS**

**O102.1. Permanent Loads.** Dead, fixed and permanent loads used for the design shall be as per the IBC 2018 provisions.

**O102.2. Live Loads:** Design live loads shall be as per the IBC 2018 provisions or PRBC-2018 amendments.

**O102.3. Lateral Forces.** The general provisions for the calculation of the design lateral loads shall be as per this section.

### **O102.3.1. Hurricane Wind Loads:**

**O102.3.1.1. General.** All buildings and their components, and accessories and their attachments subject to wind loads, shall be designed to withstand the pressures and meet the requirements of this section. Building components, such as windows, panels, doors,

roof equipment, antennas and the architectural features exposed to the wind shall be designed for the wind loads specified. The wind shall be assumed as approaching the structure from any horizontal direction. Reductions on the design wind pressures shall not be permitted. Reductions in load associated with protection or shielding provided by adjacent structures shall not be permitted. However, the calculated capacity of the components may be increased by a factor of 1.3 to account for the short duration of the wind loads.

**O102.3.1.2. Basic wind speed.** Wind pressures listed in this section are based on a wind speed of three (3) seconds gust criteria, as defined by the ASCE 7 design standard. Design wind pressures as per this section are unfactored service loads.

**O102.3.1.3. Design wind pressure.** The net wind pressure, at strength load condition, acting on the main wind force resisting system shall not be less than 54 psf, acting normal to both the windward (positive pressure) and leeward (negative pressure) façades of the building, concurrently with a roof vertical pressure of 54 psf acting on the roof upward or 42 psf acting on the roof downward. The two load cases specified above shall be considered separately and the structural element shall be designed for the larger load combination. The total shear force induced by wind shall be calculated based on these criteria.

**O102.3.1.4. Components and Cladding** – The wind pressures acting on any structural or non-structural component or cladding element shall not be less than those listed on Table I. Designer shall refer to ASCE 7 standard, to obtain the design wind pressures for those components not listed in this section. Wall edge zones shall be defined as the portion of the wall located within a distance of ten (10) feet measured horizontally from the corners of the building.

Table O102.1: Design Wind Pressures for Components and Cladding

<b>TYPE OF Component and Cladding</b>	<b>DESIGN pressure NORMAL to surface (IN psf)</b>
Wall components and their connections to LFRS, including, but not limited to, structural members, concrete block walls, exterior wall panels, doors, windows, permanent terrace covers and non-retractable shade curtains and all exterior architectural components, All Roof structure components.	90 (inward or outward) at edge zone and 65(inward or outward) elsewhere
All equipment and components supported by the roof including, but not limited to, solar water heaters, solar panels, water cisterns, A/C units, equipment, and associated conduit and ductwork and all attachments. Also, skylights, ventilation and extraction fans and all their attachments.	90 (acting in any direction) 54 (acting upward and downward)
All parapets or extension of wall elements above roof elevation.	90 (acting inward, outward or upward)
Roof membranes installed for impermeabilization and climate control purposes.	90 (acting inward or outward) 110 (acting upward) at edge zones and flashings and 65 (acting upward) elsewhere

**O102.3.2 Earthquake Loads:**

**O102.3.2.1 General.** All qualified buildings and all their components shall be designed to meet the seismic requirements of this section.

**O102.3.2.2 Seismic loads.** The design horizontal seismic force shall be applied at the level of each story and located at a distance of plus or minus five (5) percent of the maximum plan dimension normal to the direction of the load from the center of rigidity of each story. This distance shall be considered the accidental eccentricity. The seismic load need not be applied concurrently along both principal directions of the building. For all non-structural components, the design seismic force shall be applied at their center of mass. The seismic forces calculated as per these alternate provisions are factored loads based on the elastic structural behavior and shall not be reduced to account for any ductility considerations.

**O102.3.2.3 Minimum design seismic force.** The design seismic load shall not be less than that calculated by the following formula:

$$V_u = 0.50W$$

where;

$W$  = Total weight of the structure including all structural and non-structural components, equipment and any other permanent attachment to the structure that modifies the inertial properties of the structure.

$V_u$  = Total horizontal base shear force at factored level.

For one story structures, the total base shear,  $V_u$ , shall be applied to the roof level. For two story structures,  $V_u$  shall be applied in equal proportions to the first and roof levels.

**O102.3.2.4 Horizontal Distribution of Seismic Force.** The total shear force applied at each level shall be distributed among all components of the LFRS in proportion to their relative stiffness. The floor and roof slabs shall be used as horizontal rigid diaphragms. Slabs thickness shall not be less than four (4) inches and shall be cast-in-place without horizontal construction joints.

**O102.3.2.5 Minimum horizontal design seismic forces on nonstructural components:** All non-structural components and their attachments to the principal structure shall be designed to withstand as a minimum, the lateral loads calculated in accordance with the following formula:

$$F_p = 0.60W_p$$

where,

$W_p$  = Total weight of the non-structural components or equipment.

$F_p$  = Total design horizontal seismic force at factored level.

**O102.4. Load Combinations:** The required strength of the structure and all its components shall be determined from the Load and Resistance Factor Design load combinations and load factors provided in Section 1605 of the IBC 2018.

## **SECTION O103 - FOUNDATIONS**

**O103.1 General.** The foundation design of qualified buildings shall meet the requirements of this section. Structures designed as per these alternate provisions may be supported by isolated or combined footings or by a mat foundation. Minimum concrete compressive strength is 3,000 psi at 28 days and 60,000 ksi for steel reinforcement conforming to ASTM A615-09. Welding of reinforcement bars shall not be permitted.

**O103.2 Minimum foundation thickness.** The foundation thickness shall not be less than the following:

1. For spread footings under load bearing walls twelve (12) inches.
2. For spread footings under columns twelve (12) inches.
3. For mat foundations, twelve (12) inches under concrete walls, twelve (12) inches under columns and six (6) inches elsewhere. Changes in thickness shall be done gradually in a 1:1 slope down towards the thickened portion.

**O103.3 Minimum foundation width.** The foundation width shall not be less than the following:

1. For combined footings and mat foundations under interior load bearing walls, twelve (12) inches measured from each face of the wall. For the case of combined footings and mat foundations under exterior load bearing walls, fifteen (15) inches measured from each face of the wall.
2. For spread footings and combined footings under interior and exterior columns, eighteen (18) inches measured from each face of the column. For the case of mat foundations under interior columns, eighteen (18) inches measured from each face of the column. For the case of mat foundations under exterior columns, fifteen (15) inches measured from each face of the column.

**O103.4 Minimum steel reinforcement** – Foundation reinforcement shall not be less than 0.002 of the gross sectional area.

**O103.5 Minimum concrete cover.** The concrete clear cover of steel reinforcement cast against earth or permanently exposed to earth, shall not be less than three (3) inches or two (2) inches if the complete foundation is cast against an unperforated bituminous or plastic vapor barrier membrane conforming to ASTM E-1993 and ASTM 1745 of at least six thousandths of an inch (6 mils) thick. Membrane installation shall be as per ASTM 1643.

**O103.6 Type L Footings.** Type “L” footings shall not be used except at those instances required to avoid conflicts with property lines. In such cases, their design shall consider soil bearing pressure variations caused by the eccentricity of the applied load. The full footprint of the foundation shall remain in bearing contact with the soil when subjected to service level loads combinations as per IBC 2018.

## **SECTION O104 REINFORCED CONCRETE FRAMES**

**O104.1 General.** The design of reinforced concrete frames designated to be part of the LFRS shall meet the provisions of this section.

**O104.2 Materials.** The specified materials shall satisfy or exceed the following minimum requirements:

1. Concrete. The specified 28 days concrete compressive strength for all components of the frame components shall not be less than three thousand pounds per square inches (3,000 psi).
2. Steel. All steel reinforcement shall consist of deformed bars with a minimum yield stress,  $F_y$ , of sixty thousand pounds per square inches (60,000 psi) conforming to ASTM A615-09. Welding of steel reinforcement bars shall not be permitted.

**O104.3 Minimum element dimensions.** The depth of frame elements in the plane of the lateral load under consideration, shall not be less than twelve (12) inches in columns and eighteen (18) inches in beams, including the slab thickness when cast monolithically. In no case any frame element shall have a dimension of less than eight (8) inches. In addition, the minimum column cross sectional area shall not be less than one hundred forty-four (144) square inches.

**O104.4 Minimum reinforcement.** The beams of the frame shall be provided with at least two (2) #5 longitudinal reinforcing bars at bottom and top. In no case shall the minimum reinforcement provided in beams be less than the provisions of Section 10.5 of ACI 318-14. Transverse reinforcement shall consist of at least #3 closed stirrups spaced no farther apart than six (6) inches on center. The center of the splice for the positive (bottom) reinforcement shall be located at a distance of one-fourth (1/4) the clear span from the face of the support and shall have a splice length of thirty-six (36) times the bar diameter or eighteen (18) inches, whichever is greater. The negative (top) reinforcement shall be continuous throughout the supports, and the center of the splice shall be located at mid-span with an overlapping length of thirty (30) times the bar diameter or twelve (12) inches, whichever is greater. The longitudinal top and bottom reinforcement of beams shall terminate on exterior columns anchored with 90 degree standard hooks. The longitudinal reinforcement in columns shall not be less than eight (8) #5 bars. The longitudinal reinforcement of columns shall terminate anchored with 90 degree standard hooks. The footing dowels shall be spliced with the column longitudinal reinforcement at column mid-height with an overlapping of thirty-six (36) times the diameter of the longitudinal bars. Column transverse reinforcement shall consist of at least #3 closed ties spaced no farther than six (6) inches on center. Beam stirrups and column ties shall consist of closed hoops in accordance with ACI standards. In all columns, ties shall be extended through the column-beam joints.

**O104.5 Minimum Area of Concrete Columns.** The sum of the gross area of all concrete columns, in square inches and on the base floor must be at least 0.00325 times the total horizontal base shear  $V_u$ , in pounds.

**O104.6 Required analysis of moment frames.** The structural analysis of moment frames shall be performed by means of a rational analytical method accepted by the engineering community. The stiffness contribution and effects of moment frames with Concrete Masonry Units (CMU) infill shall be considered as per these provisions.

## **SECTION O105 - REINFORCED CONCRETE WALLS**

**O105.1 General** – The design of reinforced concrete walls designated to be part of the LFRS shall meet the provisions of this section.



**O105.2 Materials.** The specified materials shall satisfy or exceed the following minimum requirements:

1. Concrete – The specified 28 days concrete compressive strength for all walls shall not be less than three thousand pounds per square inches (3,000 psi).
2. Steel – All steel reinforcement shall consist of deformed bars with a minimum yield stress,  $F_y$ , of sixty thousand pounds per square inches (60,000 psi) conforming to ASTM A615-09. Welding of steel reinforcement bars shall not be permitted.

**O105.3 Minimum element dimensions.** The length of the wall in the direction of the lateral load under consideration, shall not be less than forty-eight (48) inches. The perpendicular dimension of the wall shall not be less than eight (8) inches.

**O105.4 Minimum reinforcement.** The walls shall be provided with at least two (2) #5 longitudinal reinforcing bars at each end of the wall cross section, confined with #3 ties or hairpins spaced at six (6) inches along the wall height. In no case shall the minimum horizontal and vertical reinforcement provided in walls be less than 0.0025 times the gross area of the wall. The vertical and horizontal reinforcements shall not be spaced further apart than eighteen (18) inches. The longitudinal reinforcement of walls shall be anchored with 90 degree standard hooks. The footing dowels shall be spliced with the wall longitudinal reinforcement with an overlapping length of thirty-six (36) times the diameter of the longitudinal bars.

**O105.5 Minimum Area of Concrete Walls.** The sum of the gross area of all concrete walls at the base floor must be at least 0.005 times the total gross area of the ground level.

## **SECTION O106 - CONCRETE MASONRY WALLS**

**O106.1 General.** The design of concrete masonry (CMU) walls shall meet the provisions of this section. The out-of-plane stiffness and strength of all CMU walls shall not be considered in the LFRS.

The design lateral forces shall be resisted by the designated structural walls comprising the LFRS. The seismic loads shall be distributed among all wall components in proportion to their relative in-plane stiffness. Only walls properly connected to a horizontal rigid diaphragm shall be considered to be part of the LFRS.

CMU walls designated to be part of the LFRS, shall not have their horizontal sectional area reduced by more than fifty (50) percent at any location. Larger reductions may be permitted, when caused by the presence of embedded components such as vertical conduits, drainage pipes or any other required accessories to be installed within the wall, if the discontinuity in the horizontal sectional area is considered in the structural analysis and design. The affected wall shall not be considered to act as a whole unit. Instead they shall be modeled and designed as independent wall segments delimited by each vertical disruption. The structural designer shall coordinate with other disciplines in order to determine and consider all the instances in which such condition would occur.

**O106.2 Materials.** The materials to be used in the construction of the load bearing and transverse CMU walls shall satisfy the minimum quality requirements specified below:

1. Concrete Masonry Units (CMU) – All CMU must meet all minimum requirements specified in Chapter 21, Section 2103 of IBC 2018
2. Mortar – must meet all minimum requirements specified in Chapter 21, Section 2103 of IBC 2018.
3. Cement Grout must meet all the minimum requirements specified in Chapter 21, Section 2103 of IBC 2018.
4. Concrete – The concrete used in the structural confining elements shall have a minimum compressive strength of three thousand psi (3,000 psi) at twenty-eight (28) days.
5. Steel Reinforcement – The reinforcement shall have a minimum yield strength of sixty thousand psi (60,000 psi) and shall comply with ASTM A615-09.

**O106.3 Dimensions.** All load bearing and transverse CMU walls shall meet the following requirements related to their dimensions. The free distance, horizontal or vertical between supports or confining elements, shall not exceed twenty-five (25) times the thickness of the wall. For this limitation, the vertical distance from top of foundation to bottom of confining beam, or the distance from top of slab to bottom of confining beam shall be considered. The horizontal distance to be considered shall be the distance between confining columns or transverse walls. No structural CMU walls shall be constructed using a thickness less than six inches (6”). No finishes or plaster shall be considered to determine wall thicknesses.

**O106.4 Wall Confinements.** The CMU wall and its confining frame, acting as a structural unit, shall be designed to withstand the vertical and lateral loads. The minimum dimensions for the beams and columns shall be as established in sections O106.5 and O106.6 of this regulation.

To guarantee that individual and group behavior will be adequate, the confined CMU walls shall be located symmetrically and must provide the highest possible torsional stiffness of the building. This could be achieved by locating confined walls as close as possible to the perimeter of the structure.

The openings located on load bearing and transverse CMU walls that form part of the LFRS shall meet the following:

1. The total area of the openings shall not exceed thirty-five percent (35%) of the total CMU wall area enclosed by the horizontal and vertical confinement elements.
2. The aggregate of the horizontal length of the openings, within the CMU wall, shall not exceed half (1/2) the distance between confinement column elements.
3. The horizontal distance between an opening edge and the CMU wall edge shall not be less than one fourth (1/4) the opening height.
4. The clear horizontal distance between openings shall not be less than one half (1/2) the smaller height of the openings, nor less than twenty inches (20”).
5. The clear vertical distance between openings shall not be less than one half (1/2) the width of the widest opening, nor less than twenty inches (20”).

When any CMU wall does not comply with one or more of the requirements above in this subsection, the wall shall not be considered part of the LFRS. Nevertheless, this wall shall be designed to withstand all applicable local horizontal and vertical forces.

When all openings are surrounded by interior confinement columns and beams as defined below on these provisions, the edge distance requirements above in this subsection are no longer required. The confinement columns that surround the openings shall extend from the foundations or inferior diaphragm to the next superior diaphragm, and shall be properly anchored on both sides.

**O106.5 Interior Confinement Beams.** The minimum width for the interior confinement beams shall be eight (8) inches. Interior confinement beams shall not have a total depth smaller than twelve (12) inches and shall comply with the requirements of Section O104.3.

The confinement beams shall have a minimum reinforcement as required on this section. Minimum reinforcement shall consist of four (4) longitudinal #4 bars (2 bars top and two bars bottom) with #3 stirrups spaced at eight inches (8") on the beams located at intermediate floor levels and roof. The interior confinement beams for load bearing and transverse CMU walls must fit inside the intermediate floor system to guarantee the diaphragm effect. The superior level of the interior confinement beam will correspond to the superior level of the intermediate floor level.

The beams shall be cast on top of the CMU wall to anchor the vertical reinforcement of the walls. As an alternate, the CMU wall shall be constructed so that the wall reinforcement is effectively anchored to the beam and columns through splices and the wall is provided with a mechanism to transfer the shear forces acting in all directions.

**O106.6 Interior Confinement Columns.** The interior confinement columns are interior vertical reinforced elements that confine the walls. These Confinement columns will be used wherever the required CMU walls are part of the LFRS or at the intersection between two load bearing or transverse walls, or at intermediate locations of the load bearing and transverse walls with a separation not to exceed the limits established in these provisions.

The minimum width of the confinement columns shall be the eight (8) inches, and the cross-sectional area shall not be less than ninety-six square inches (96 in<sup>2</sup>). The confinement columns shall extend from the inferior beam up to the superior beam properly anchored to these elements. The reinforcement of the columns shall be anchored with standard 90 degree hooks to the foundation.

The confinement columns minimum reinforcement shall be six (6) #4 longitudinal bars with #3 ties spaced at six (6) inches.

The columns shall be cast against the CMU walls, and the forms shall be placed only to the sides with no walls. As an alternate, the CMU wall shall be constructed so that the wall reinforcement is effectively anchored to the beam and columns through splices and the wall is provided with a mechanism to transfer the shear forces acting in all directions.

**O106.7 CMU walls subjected to Lateral Loads Design.** The wall elements shall be designed according to the following criteria:

1. Lateral Loads – The lateral loads specified in this regulation shall be used.
2. Analysis – Each CMU wall will be modeled as a frame of articulated joints comprised of confinement beams and columns and diagonal elements formed by masonry equivalent elements. Those diagonal elements shall have an equivalent width no greater than twenty-five percent (25%) of the clear diagonal length within joints and a depth equal to the thickness of the wall. The elasticity modulus of the equivalent element shall be equal to the masonry modulus of elasticity to be taken as  $E_m = 900f'_m$ .
3. Design – For the loads specified in section O102 and the mathematical model described above, the internal forces in tension or compression of the different columns will be determined, and each will be designed for the predominant forces.

The diagonal equivalent elements forces shall not exceed the diagonal strength of the wall, estimated as,

$$R_c = (2/3) a t f'_m \sec \theta$$

Where,

$R_c$  = Ultimate strength of the equivalent diagonal element.

$t$  = Equivalent element depth, in other words, the thickness of the wall, in inches.

# APPENDIX P

## MICROZONE WIND MAPS FOR PUERTO RICO

*The maps provided in this appendix should be considered as the reference for wind design criteria.*

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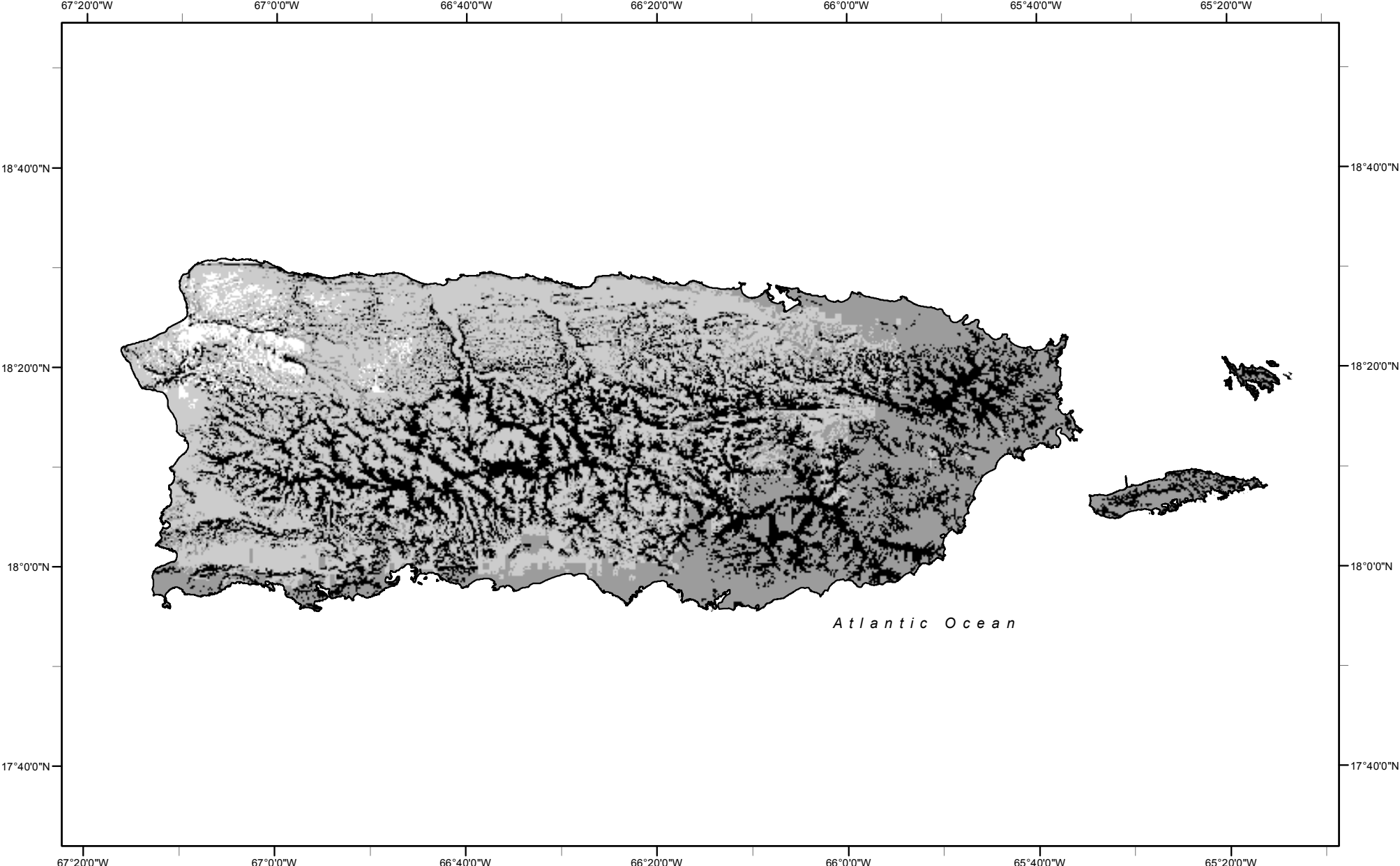
### USER NOTE:

***About this appendix:** This wind speed maps for Puerto Rico were specifically developed to consider areas with significant topographic features. Puerto Rico can evaluate the wind speed from these revised basic wind speed maps that consider topographic effects as a simplified and acceptable, alternative method to determine wind loads and pressures (using  $K_z=1.0$  during calculation) on a building or structure. The revised basic wind maps do not change the design wind criteria of ASCE 7. For location-specific basic wind speed determinations reference the lookup tool on <http://hazards.atcouncil.org> or the municipality-based maps in this Appendix.*

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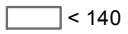





# Puerto Rico Risk Category I Effective Wind Speed Map (mph)



*Atlantic Ocean*

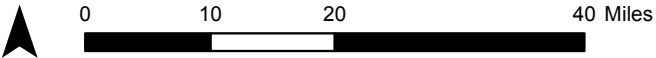
**Risk Category I Wind Intervals (mph)**

	< 140
	140-150
	150-160
	> 160

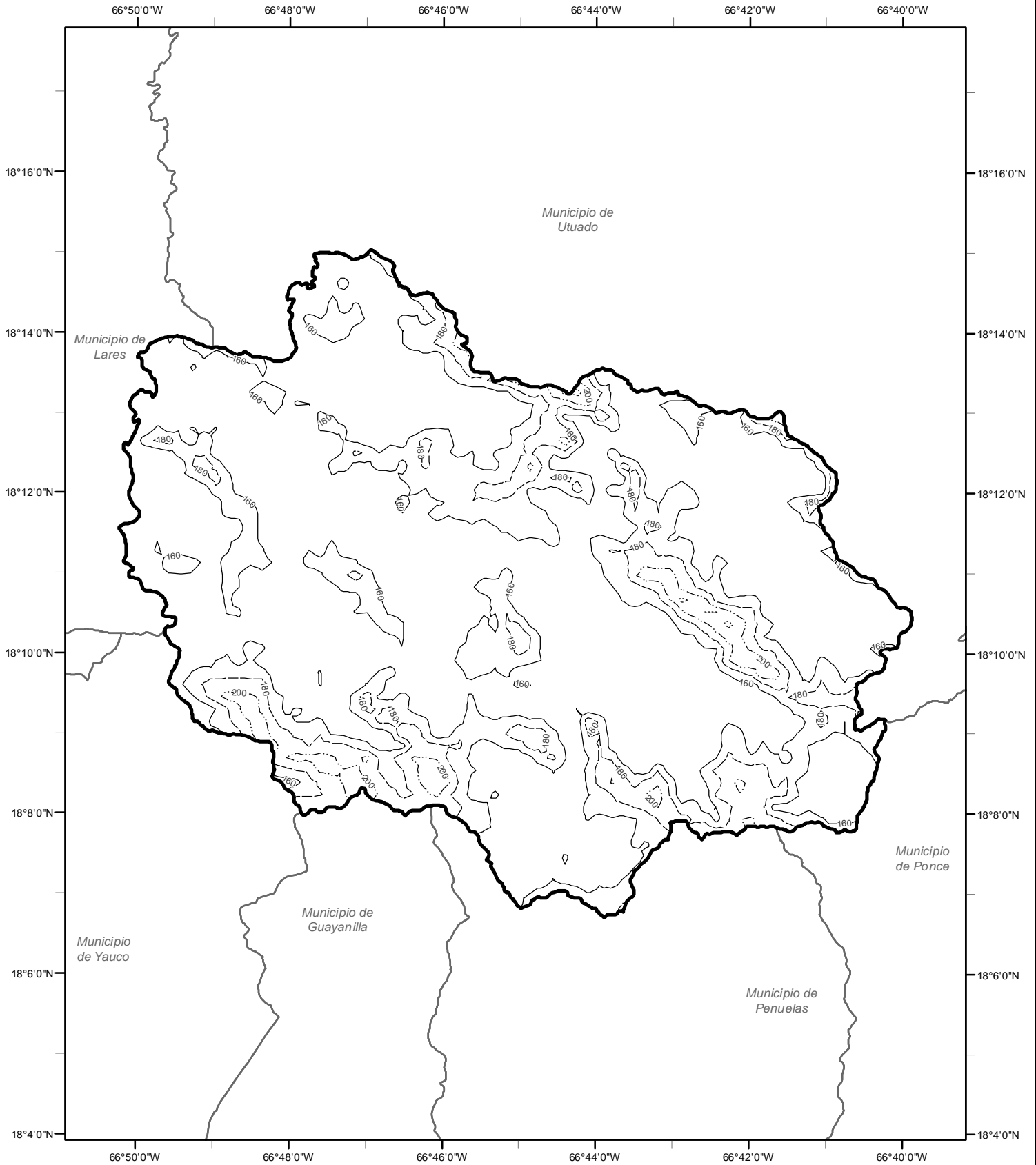
N

165

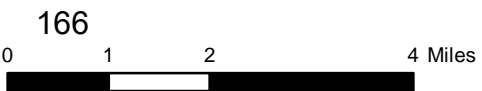
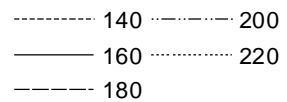
0 10 20 40 Miles



# Municipio de Adjuntas Risk Category I Effective Wind Speed Map (mph)

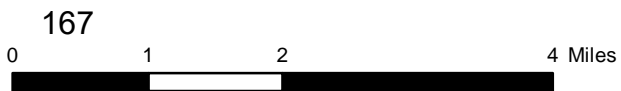
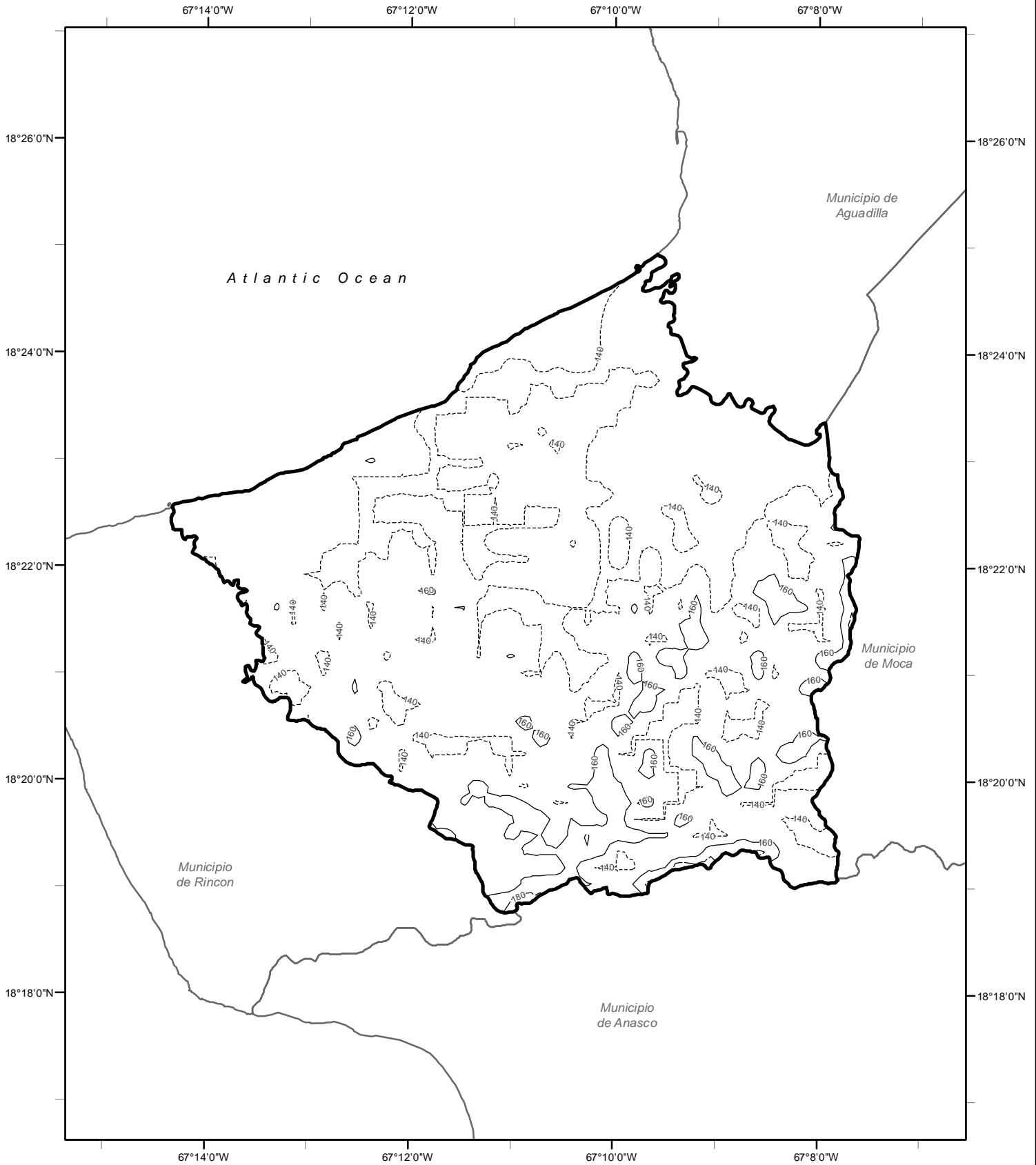


## Risk Category I Wind Contour (mph)

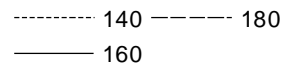




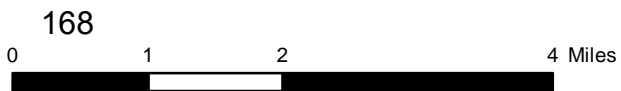
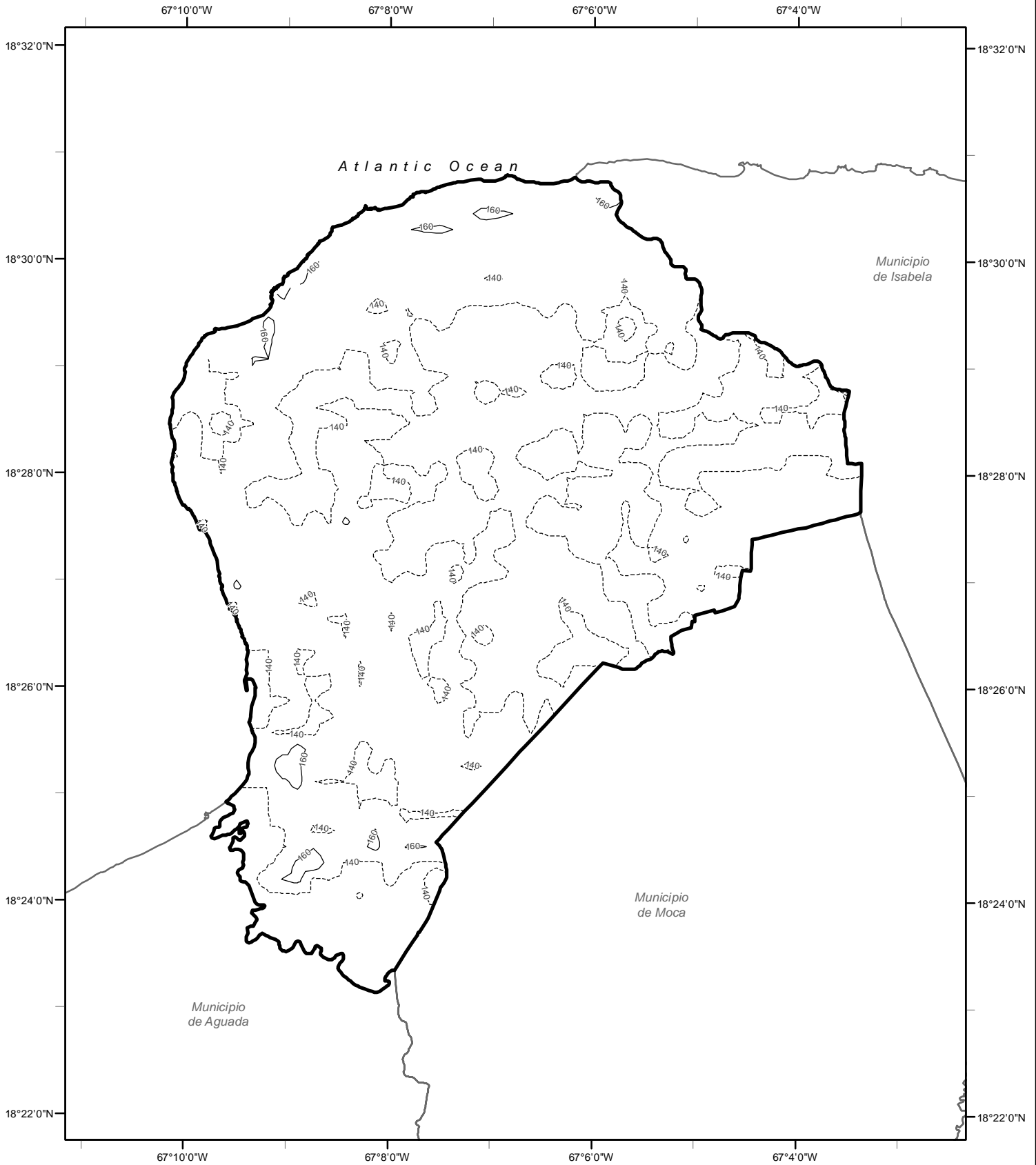
# Municipio de Aguada Risk Category I Effective Wind Speed Map (mph)



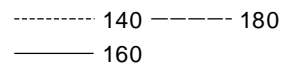
### Risk Category I Wind Contour (mph)



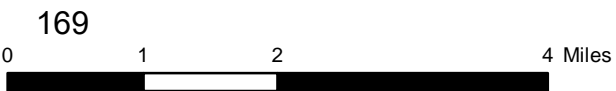
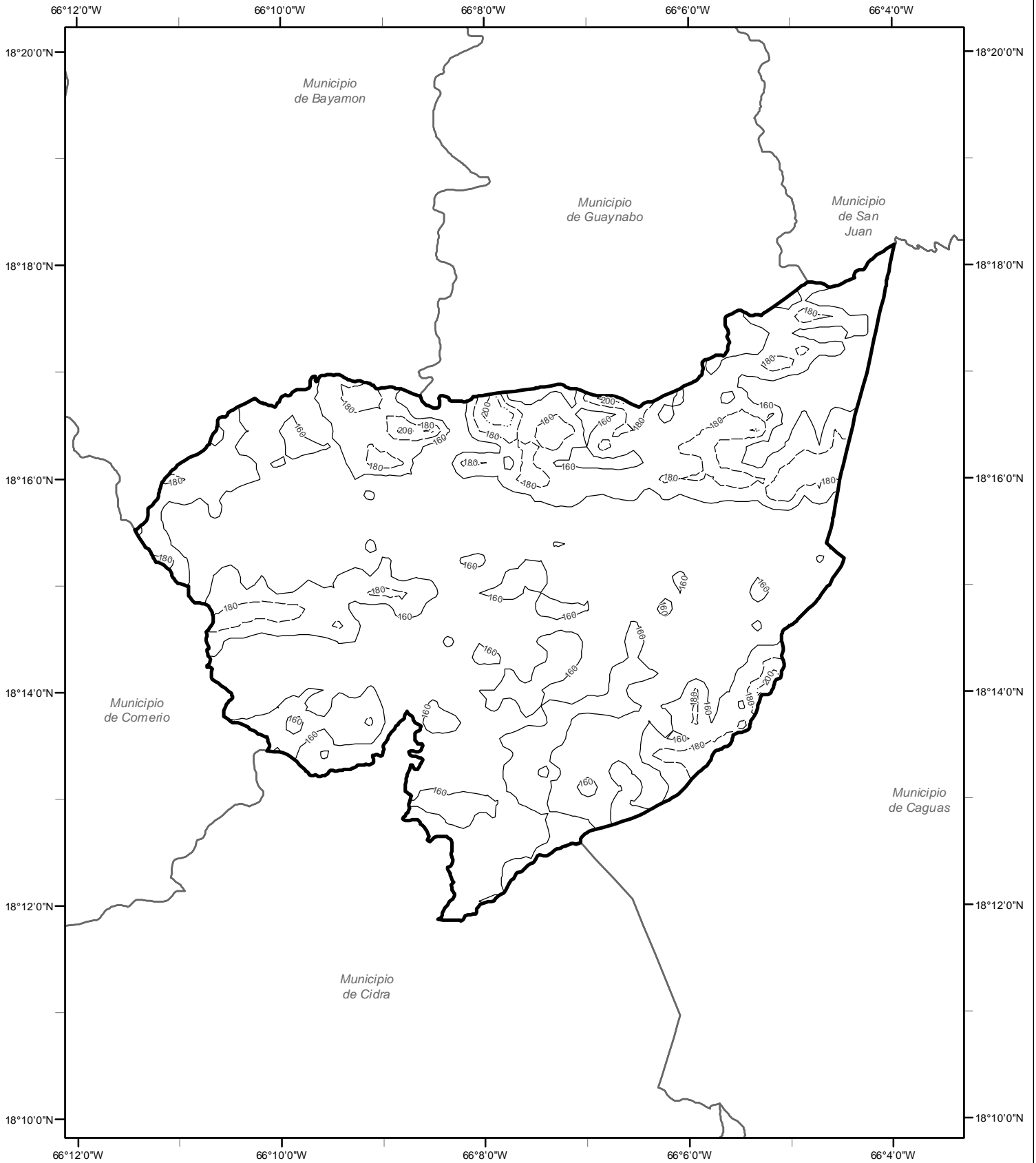
# Municipio de Aguadilla Risk Category I Effective Wind Speed Map (mph)



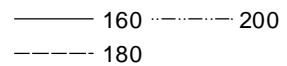
### Risk Category I Wind Contour (mph)



# Municipio de Aguas Buenas Risk Category I Effective Wind Speed Map (mph)

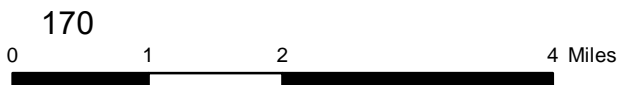
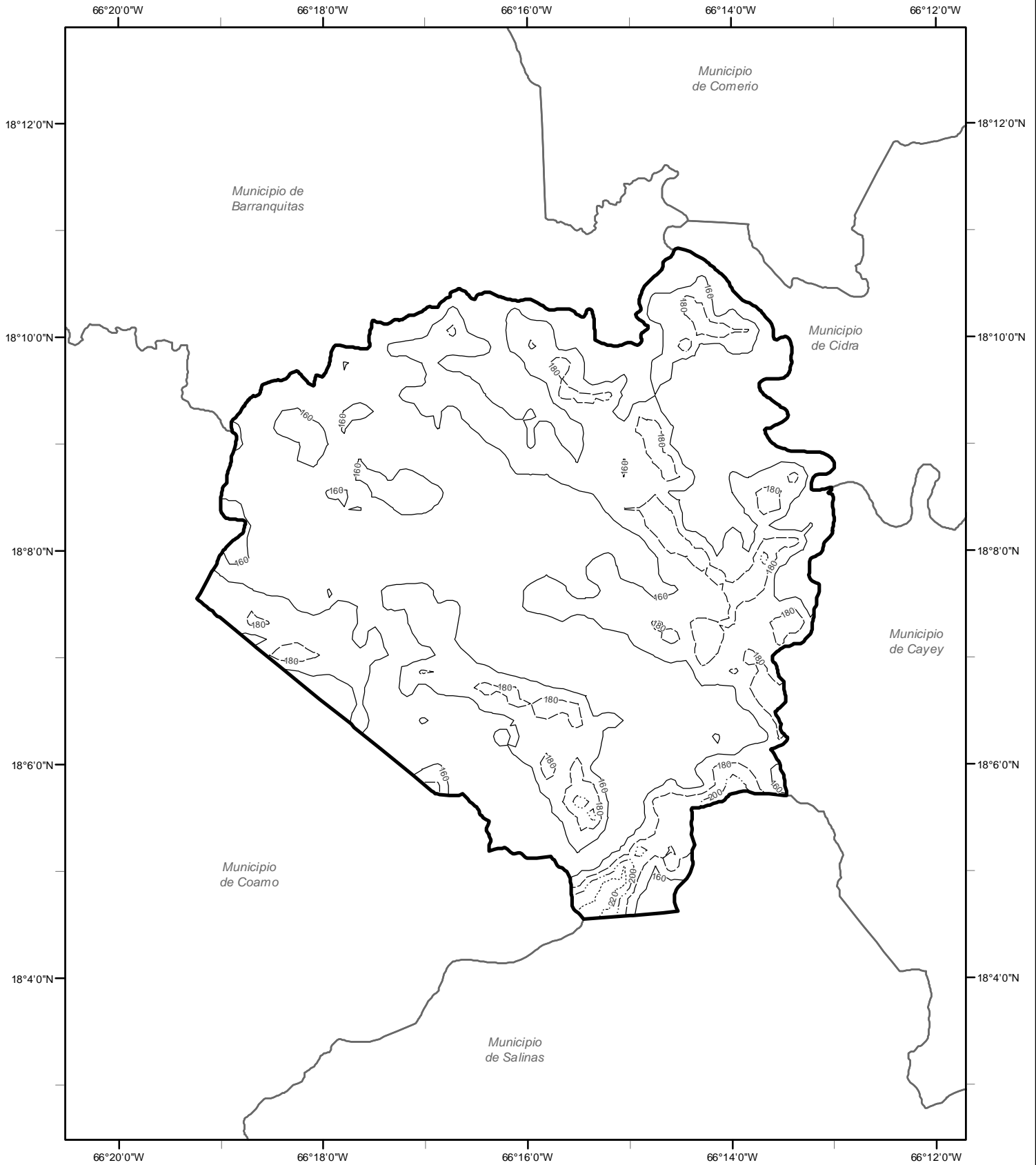


### Risk Category I Wind Contour (mph)

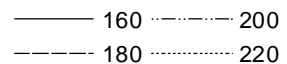


# Municipio de Aibonito

## Risk Category I Effective Wind Speed Map (mph)

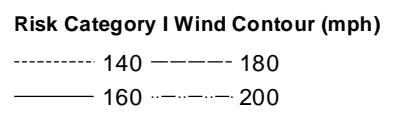
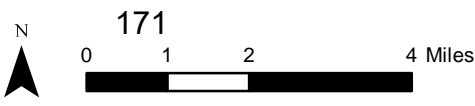
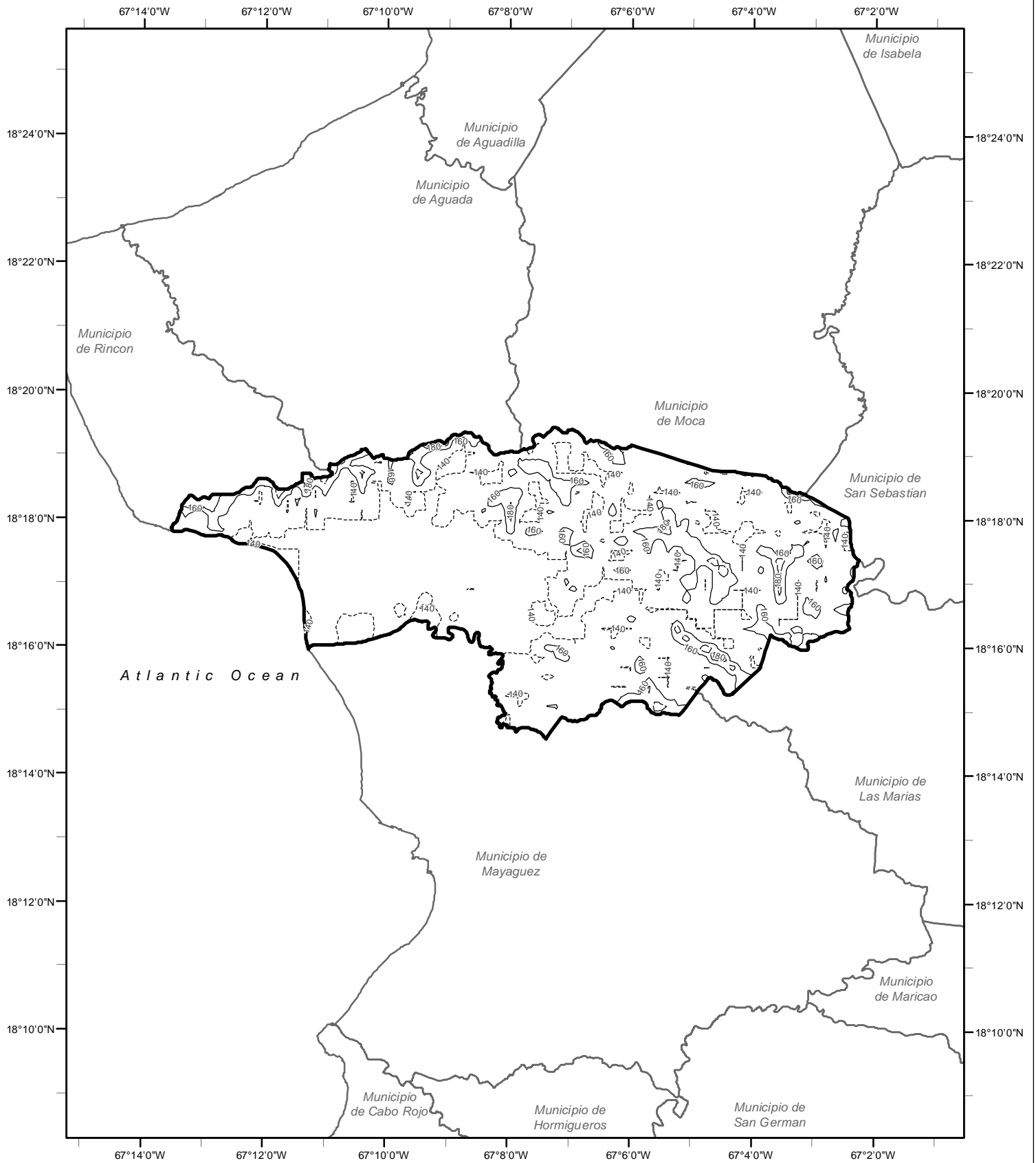


### Risk Category I Wind Contour (mph)



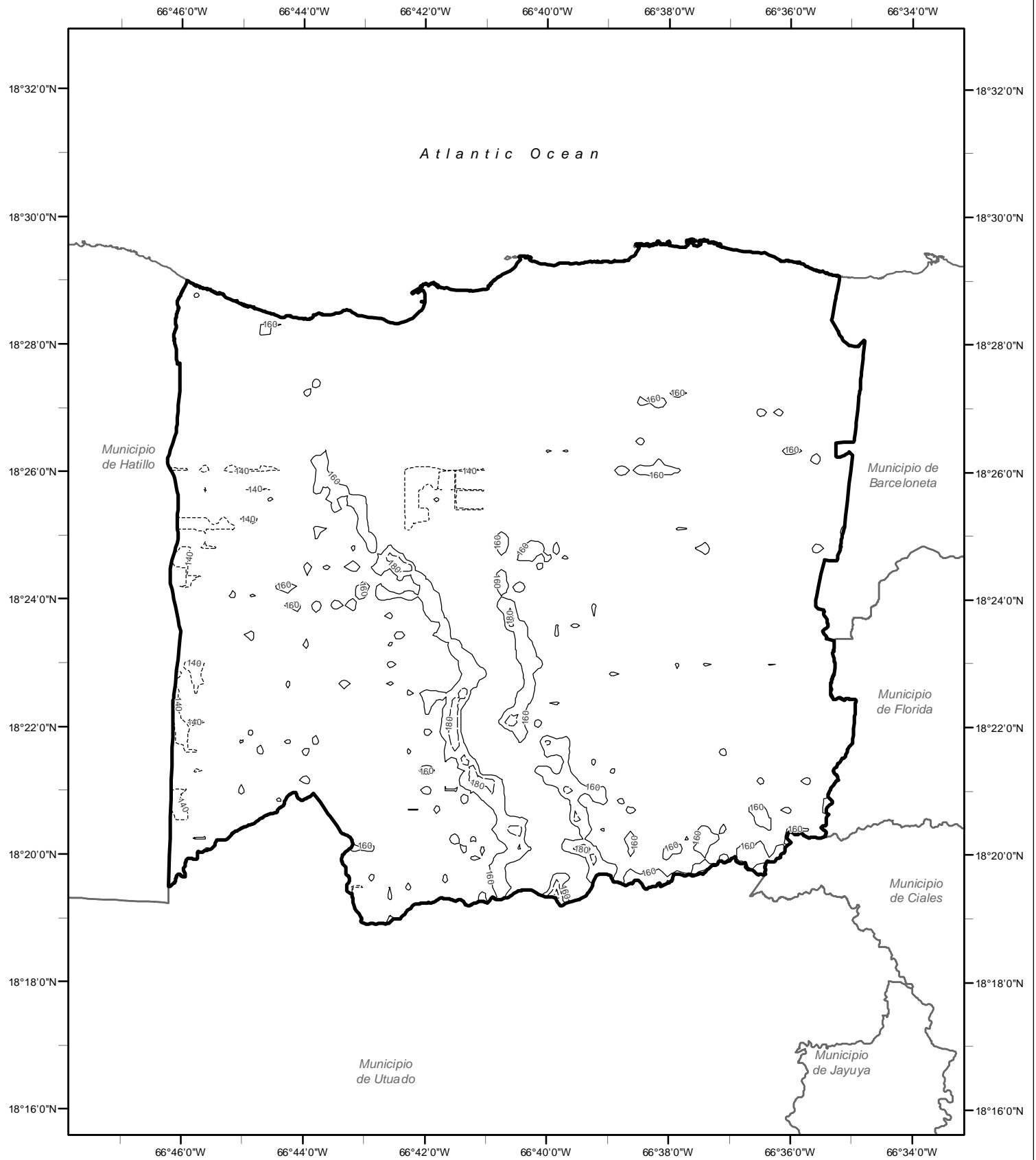
# Municipio de Anasco

## Risk Category I Effective Wind Speed Map (mph)

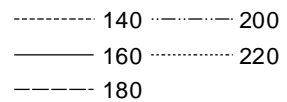


# Municipio de Arecibo

## Risk Category I Effective Wind Speed Map (mph)



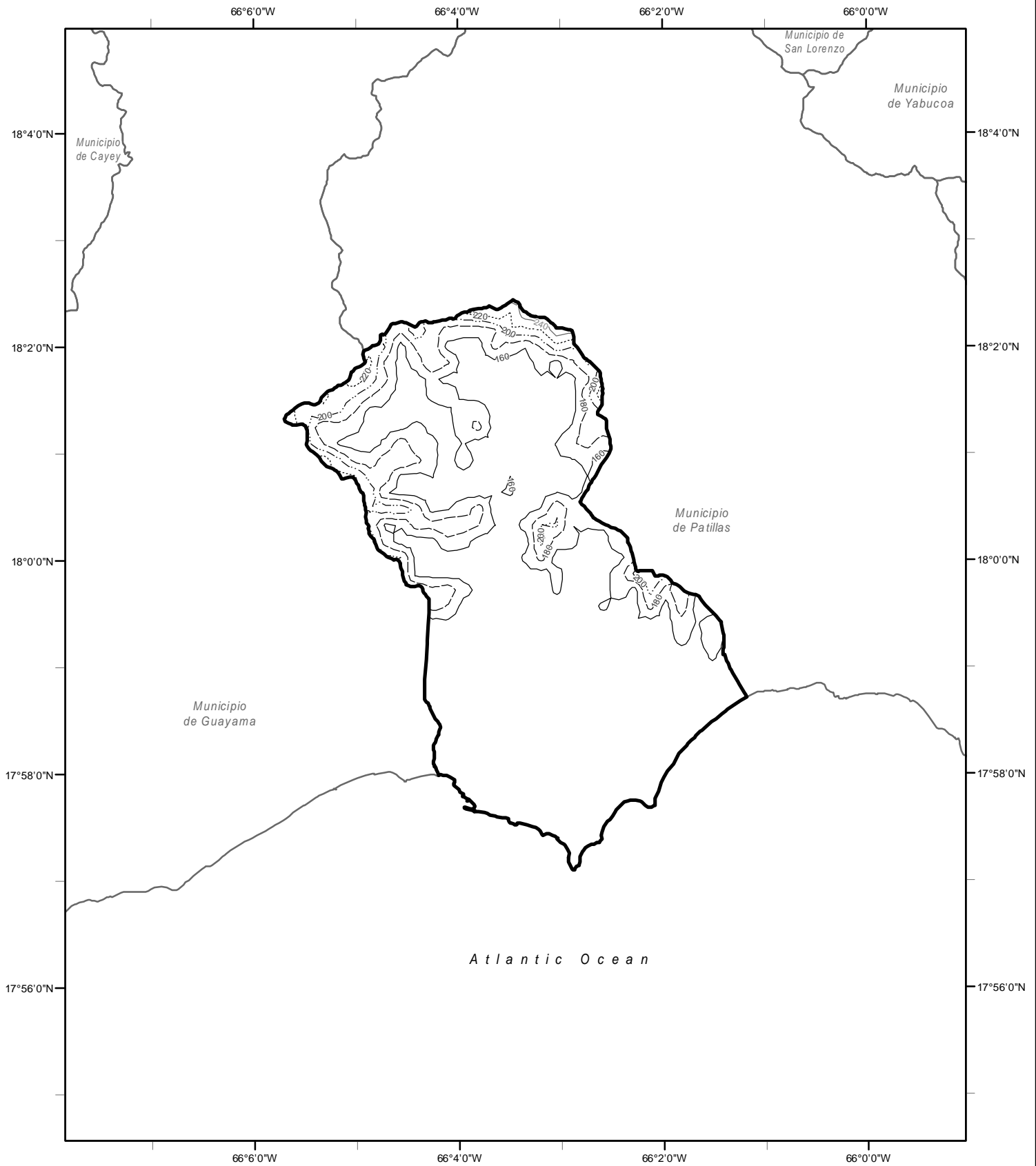
### Risk Category I Wind Contour (mph)



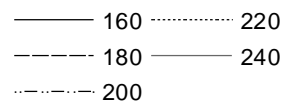
172



# Municipio de Arroyo Risk Category I Effective Wind Speed Map (mph)



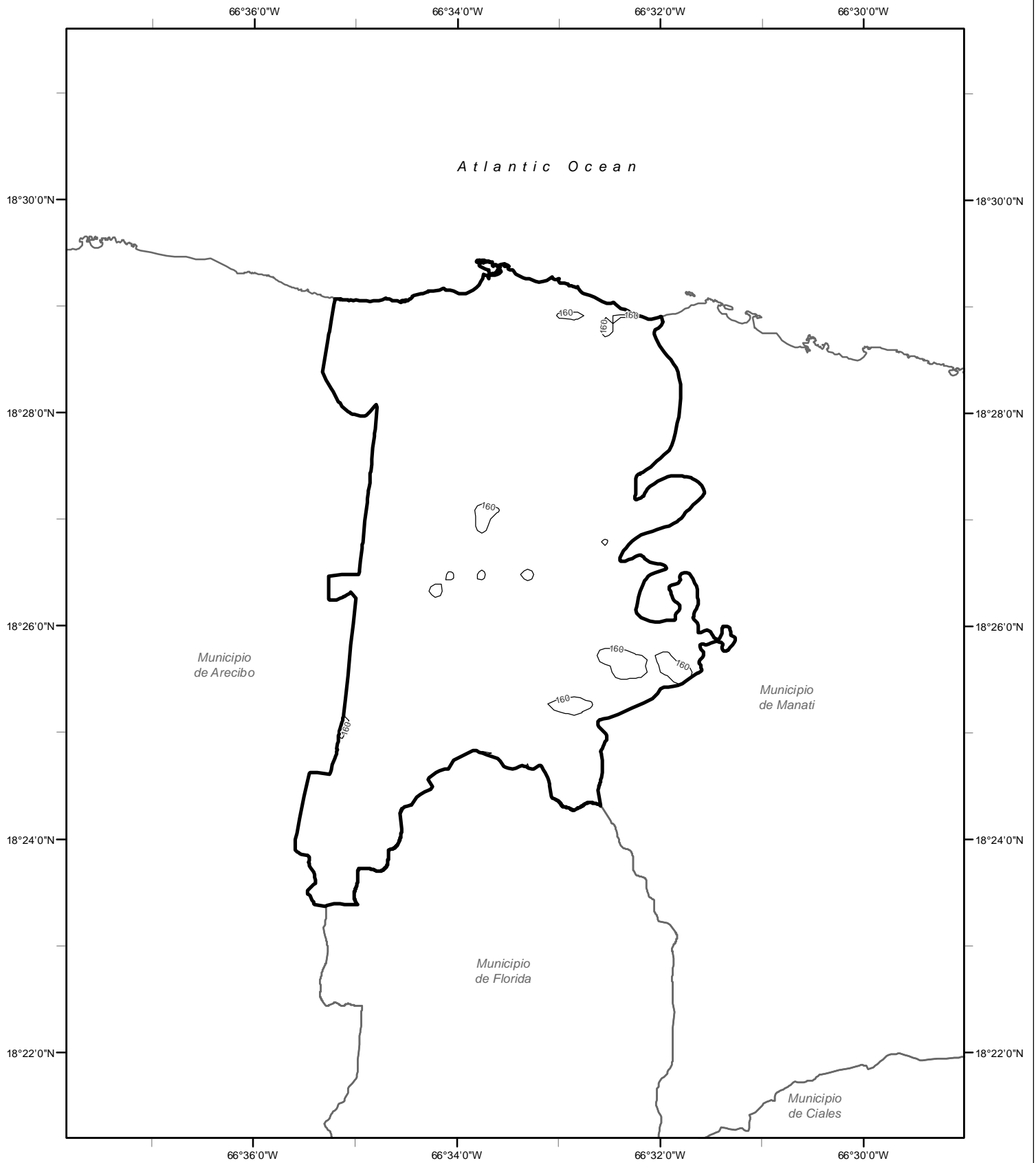
### Risk Category I Wind Contour (mph)



173



# Municipio de Barceloneta Risk Category I Effective Wind Speed Map (mph)



174

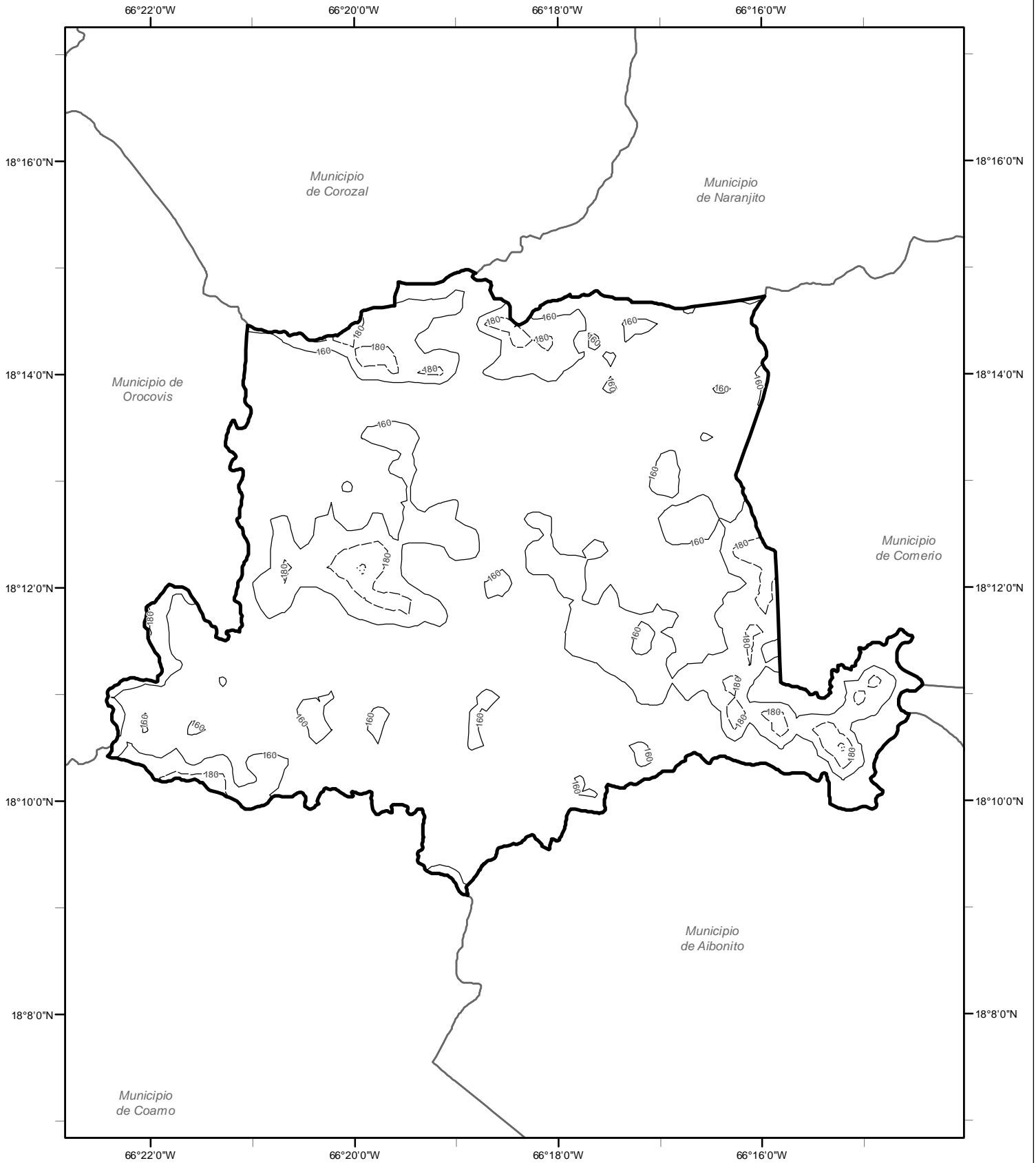


Risk Category I Wind Contour (mph)

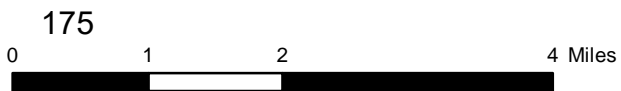
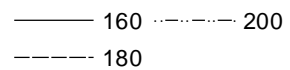
—— 160    - - - - 180



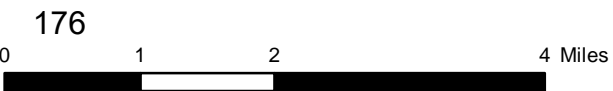
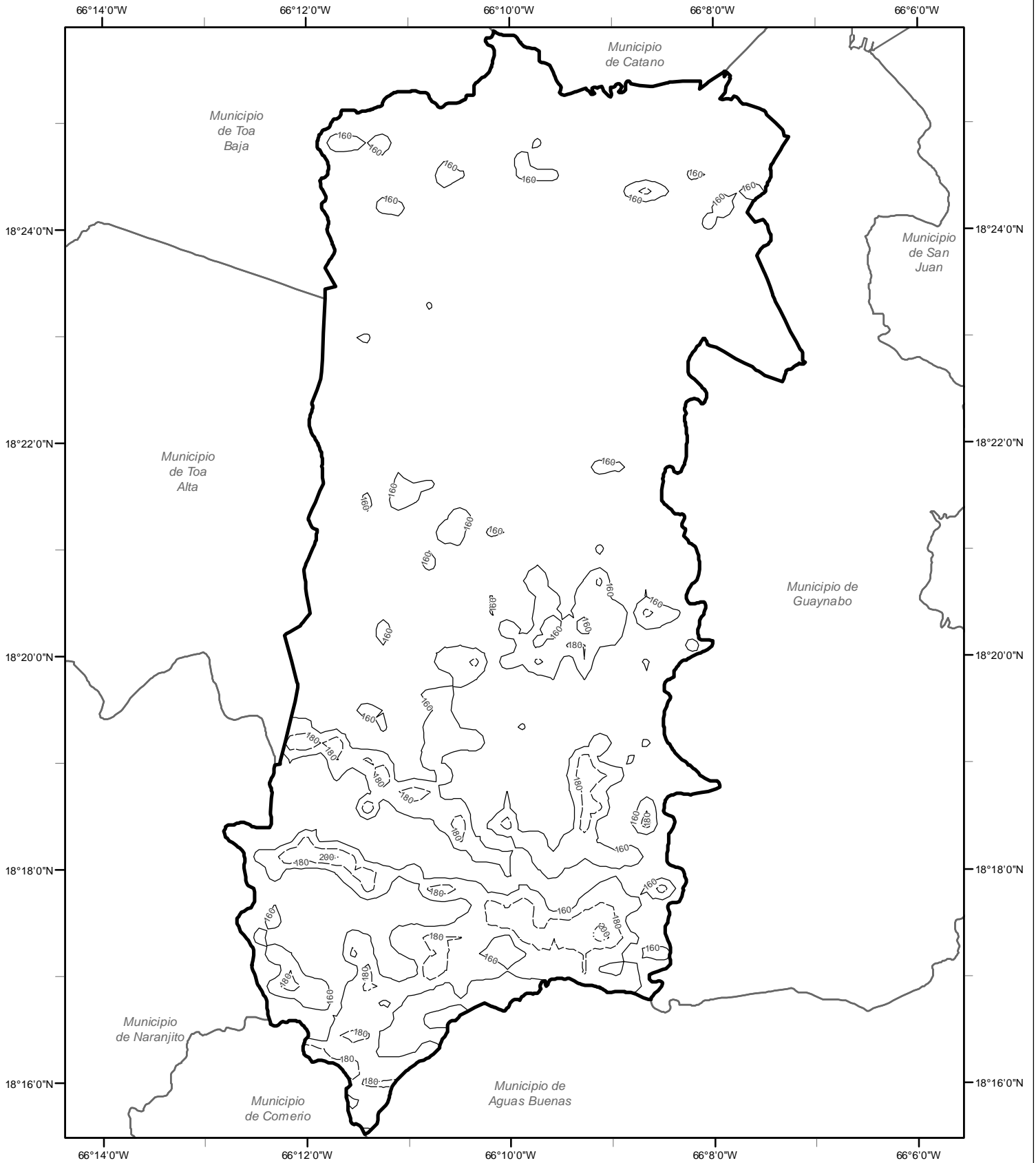
# Municipio de Barranquitas Risk Category I Effective Wind Speed Map (mph)



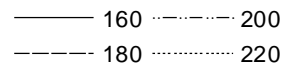
## Risk Category I Wind Contour (mph)



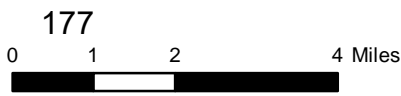
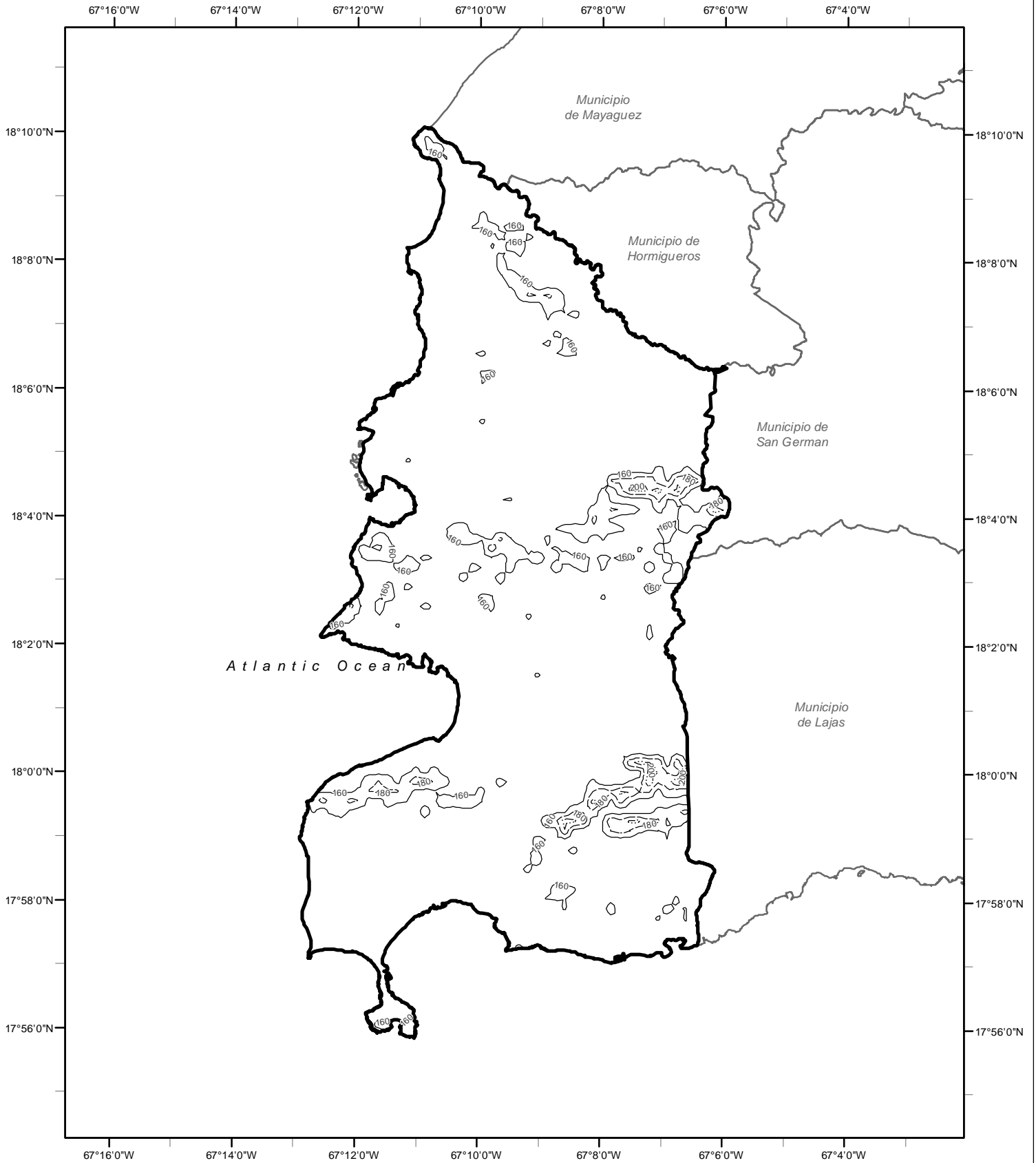
# Municipio de Bayamon Risk Category I Effective Wind Speed Map (mph)



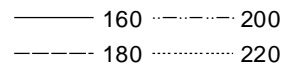
### Risk Category I Wind Contour (mph)



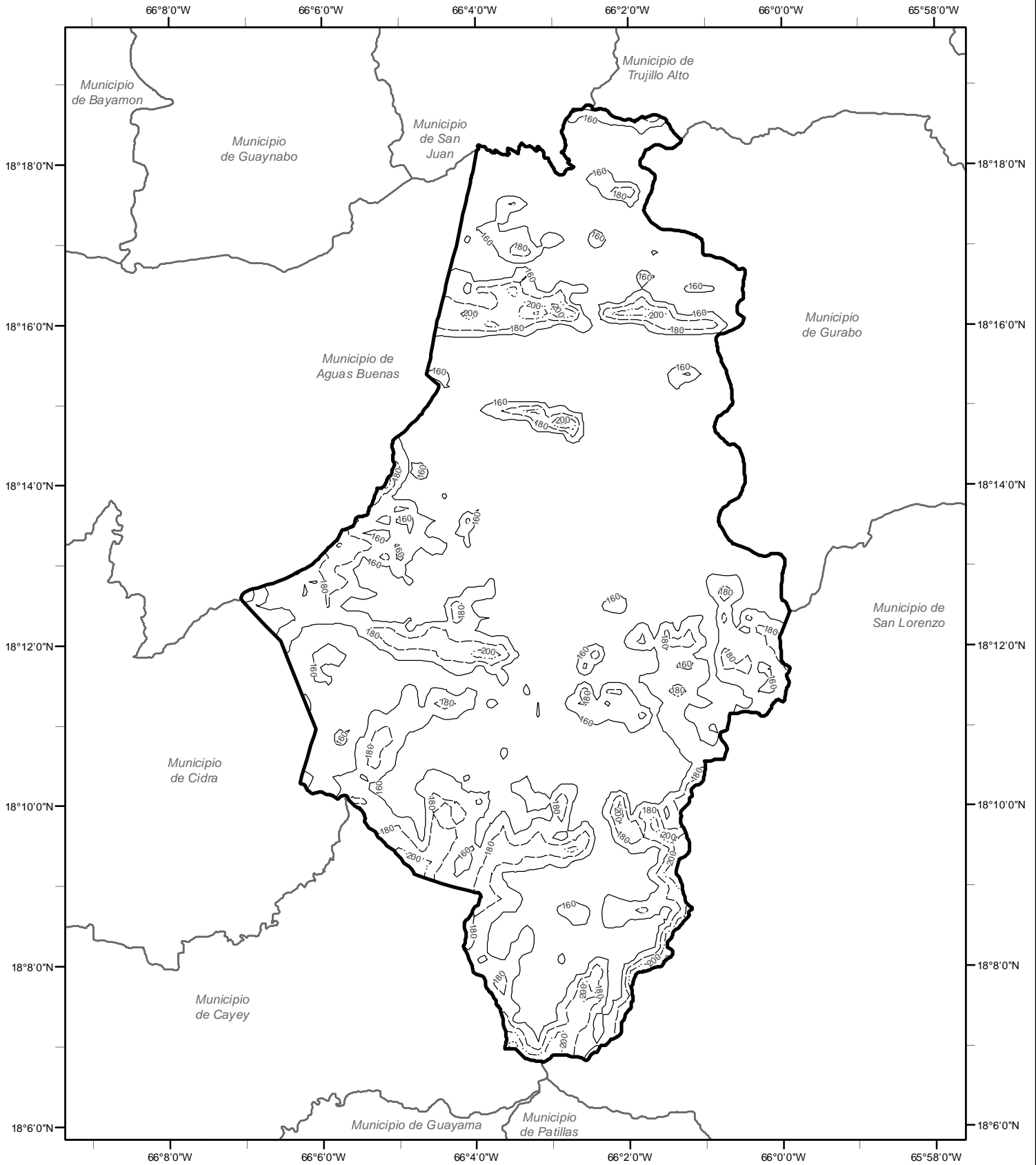
# Municipio de Cabo Rojo Risk Category I Effective Wind Speed Map (mph)



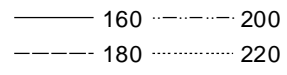
### Risk Category I Wind Contour (mph)



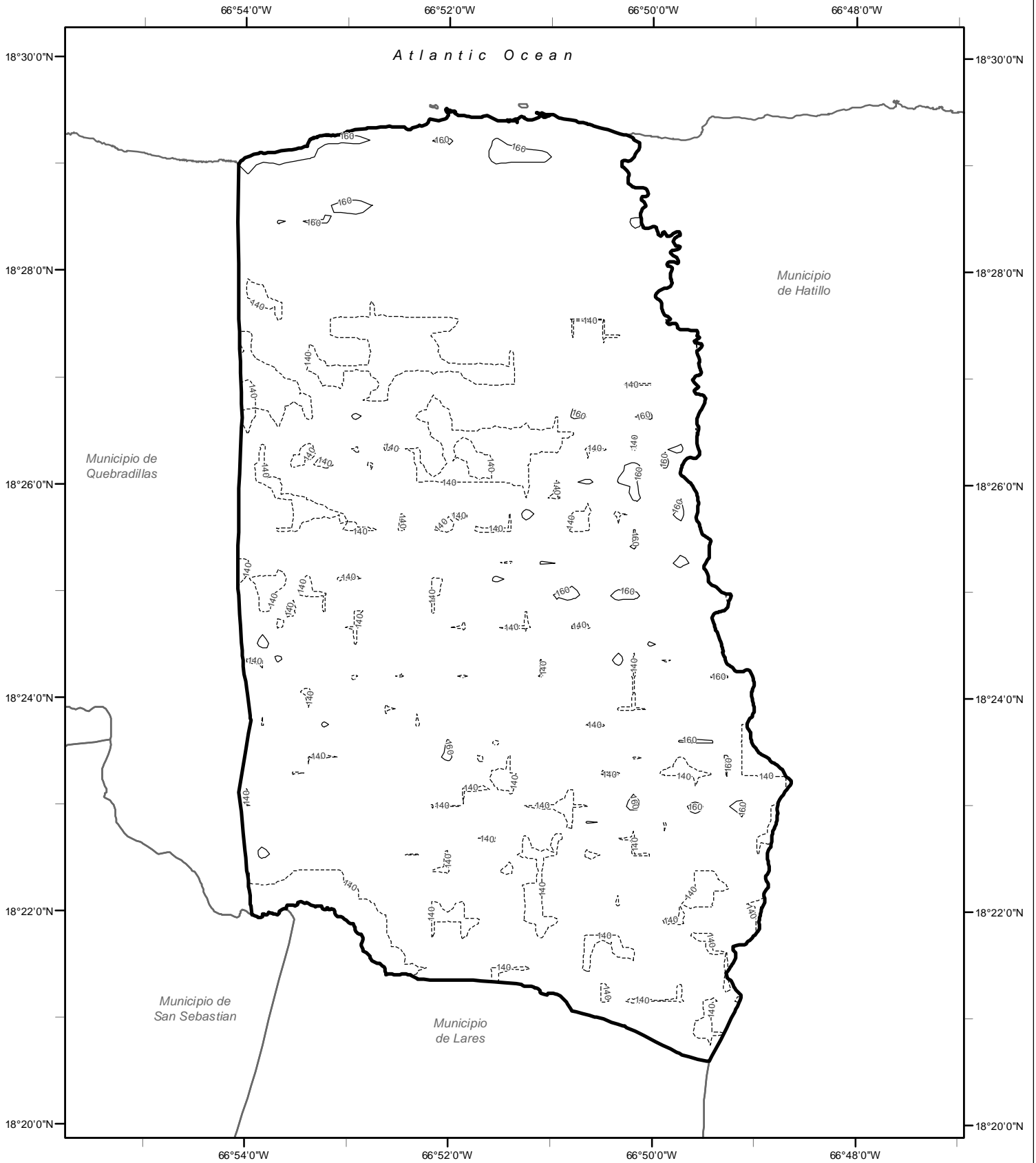
# Municipio de Caguas Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)



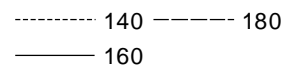
# Municipio de Camuy Risk Category I Effective Wind Speed Map (mph)



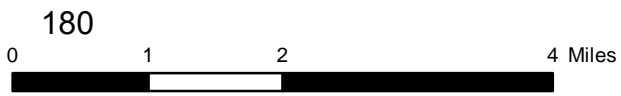
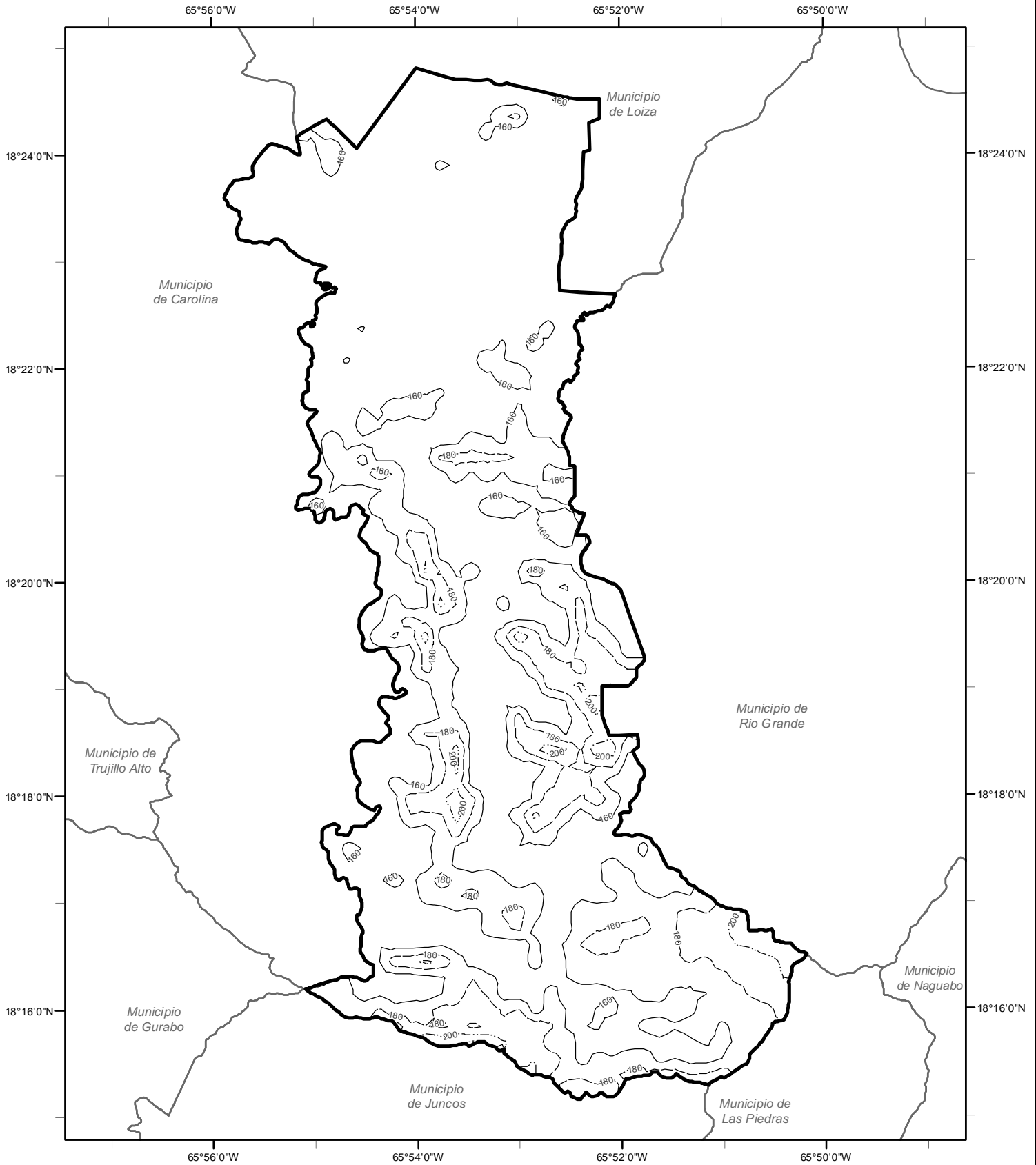
179



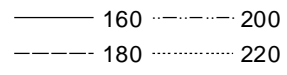
Risk Category I Wind Contour (mph)



# Municipio de Canovanas Risk Category I Effective Wind Speed Map (mph)

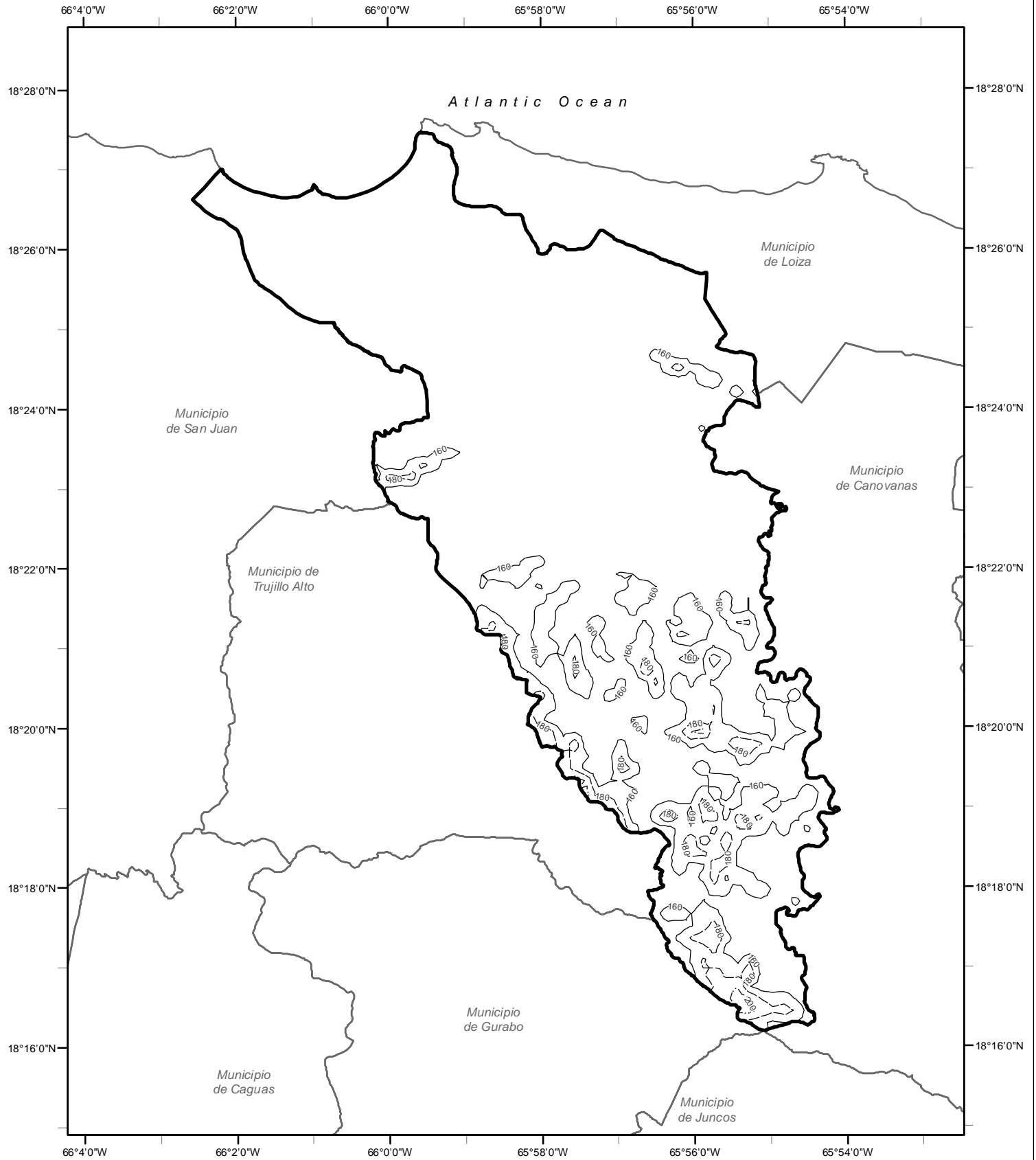


### Risk Category I Wind Contour (mph)



# Municipio de Carolina

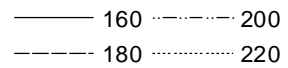
## Risk Category I Effective Wind Speed Map (mph)



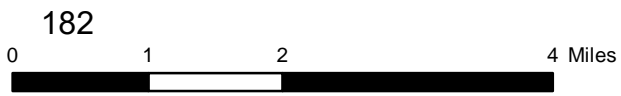
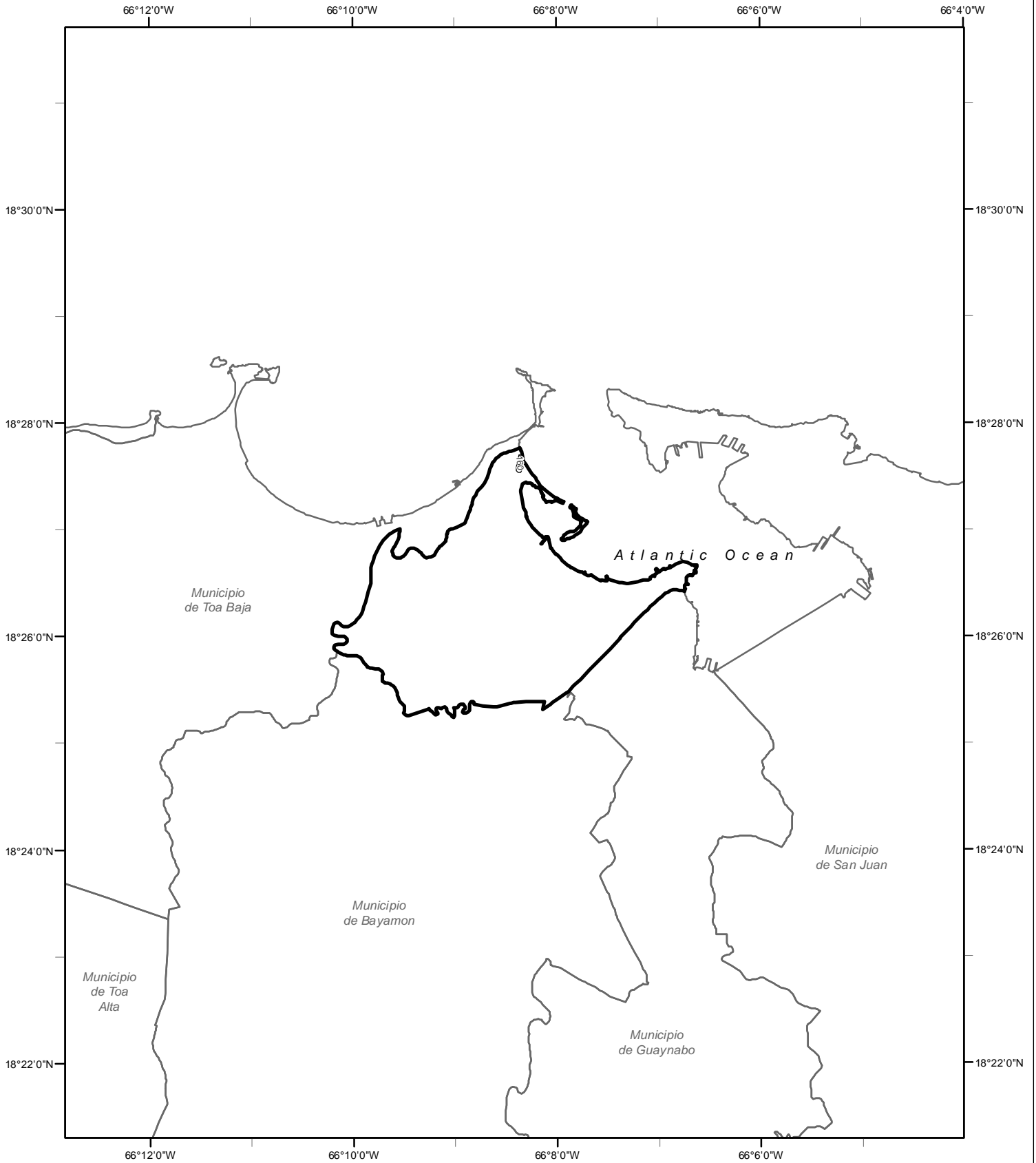
181



**Risk Category I Wind Contour (mph)**



# Municipio de Catano Risk Category I Effective Wind Speed Map (mph)

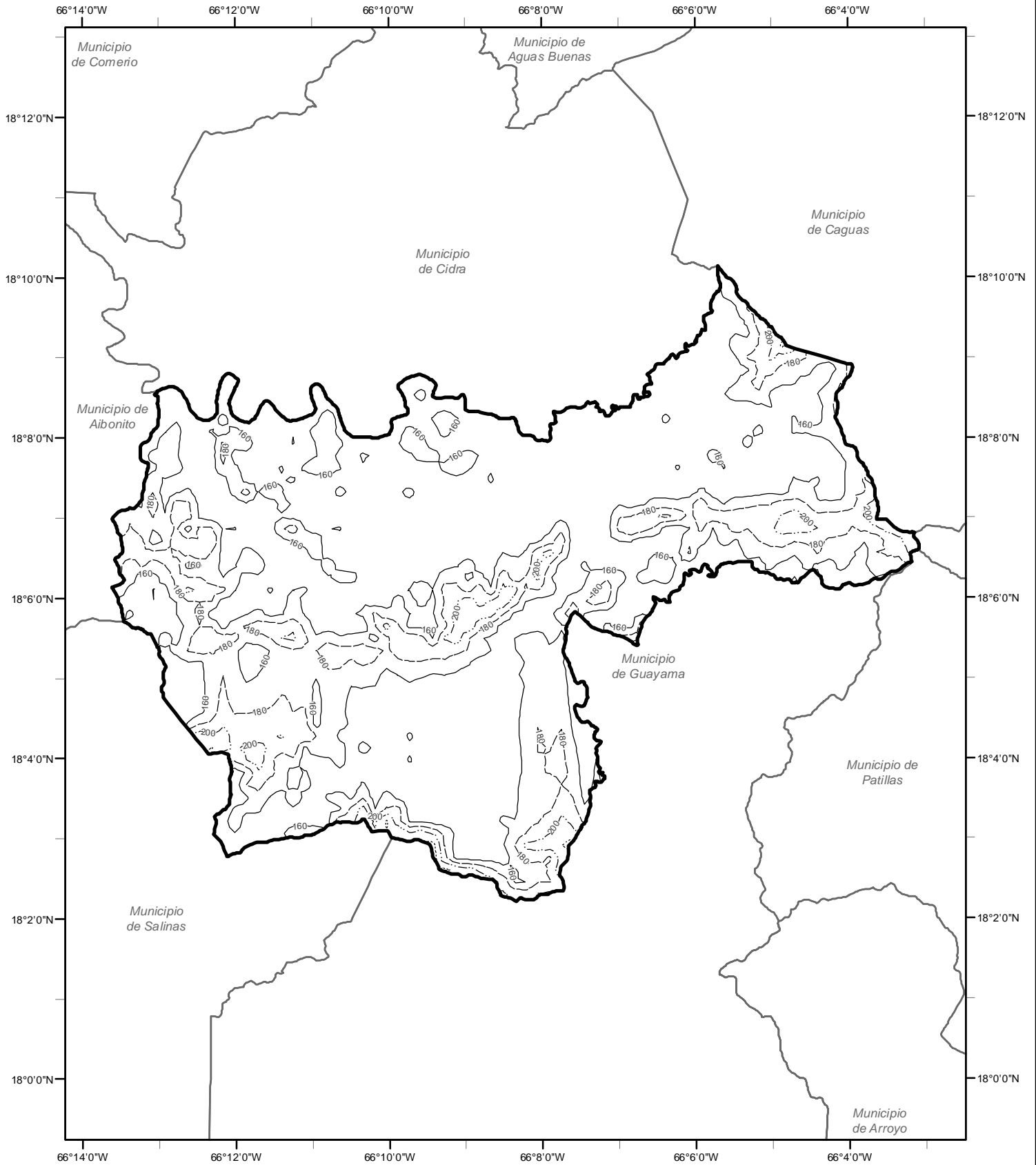


**Risk Category I Wind Contour (mph)**

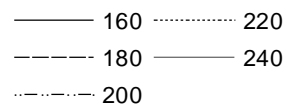
—— 160 - - - - 180



# Municipio de Cayey Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)



183



# Municipio de Ceiba Risk Category I Effective Wind Speed Map (mph)

65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W      65°38'0"W      65°36'0"W

18°20'0"N

18°18'0"N

18°16'0"N

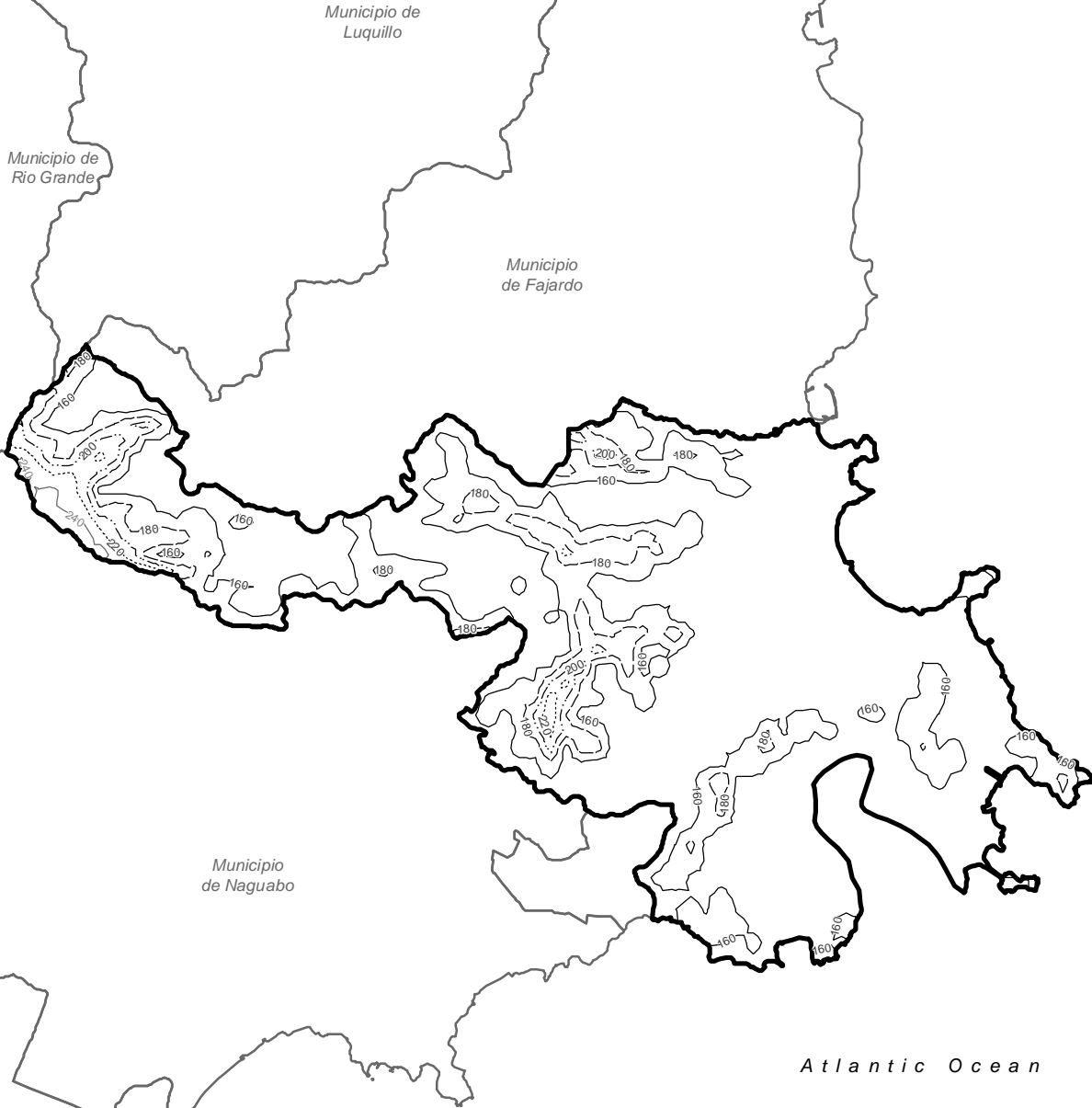
18°14'0"N

18°12'0"N

18°10'0"N

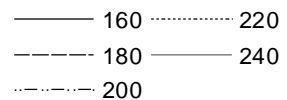
18°8'0"N

65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W      65°38'0"W      65°36'0"W



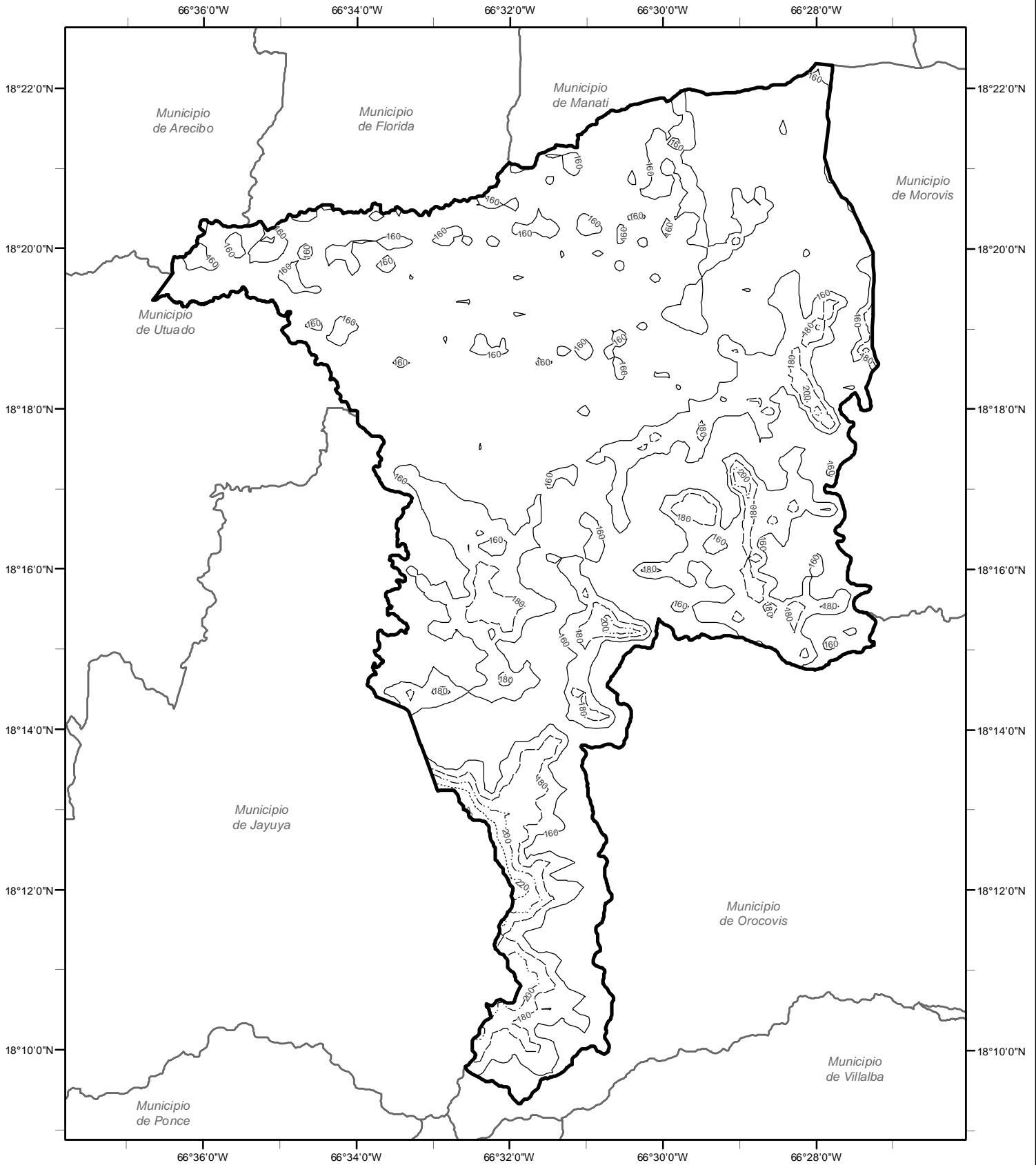
Atlantic Ocean

### Risk Category I Wind Contour (mph)

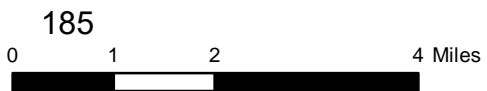
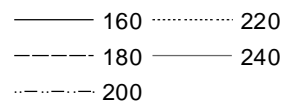


# Municipio de Ciales

## Risk Category I Effective Wind Speed Map (mph)

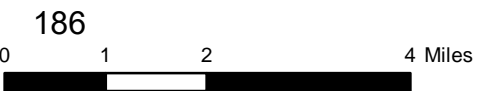
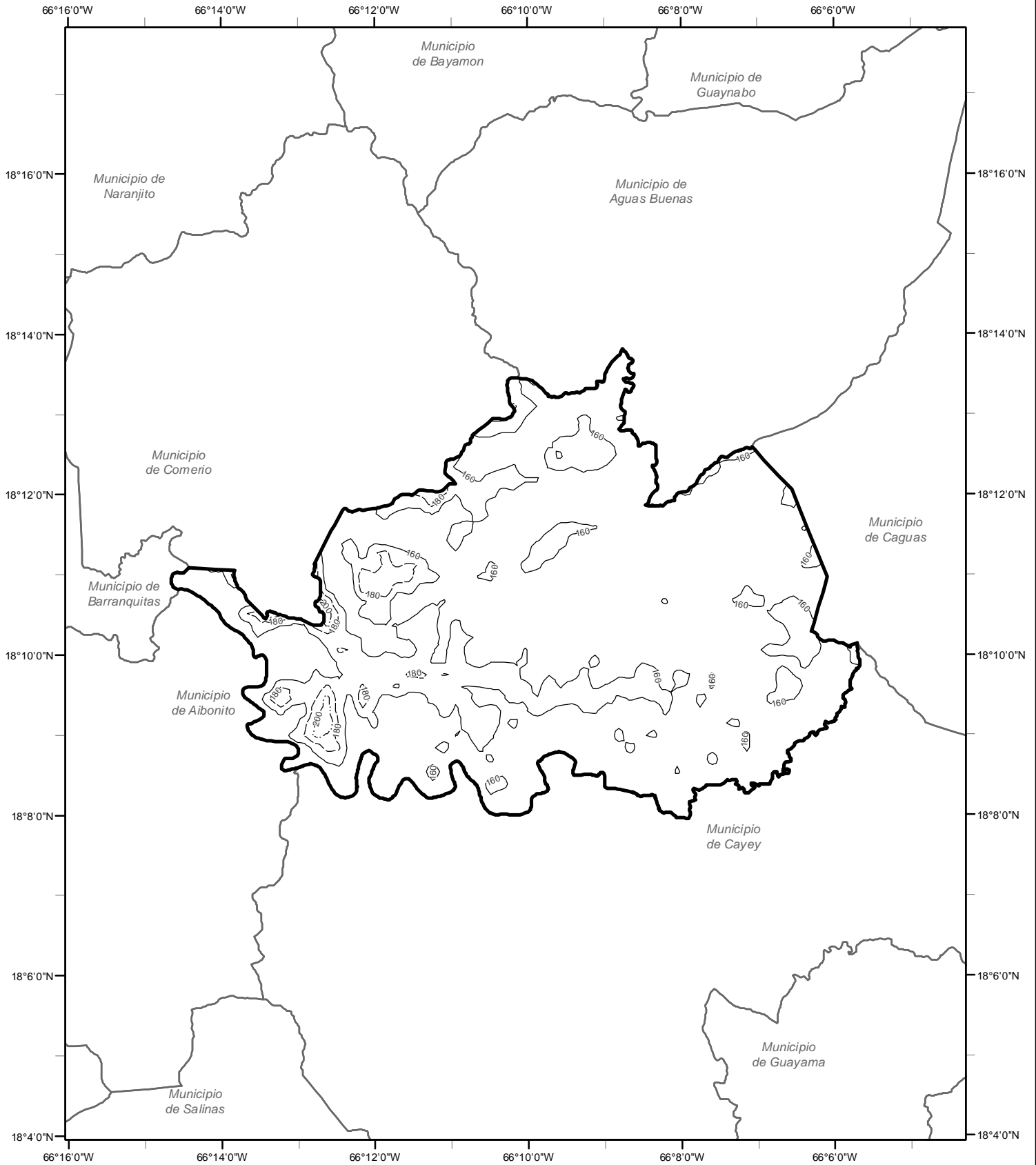


### Risk Category I Wind Contour (mph)

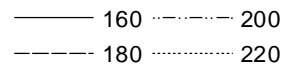


# Municipio de Cidra

## Risk Category I Effective Wind Speed Map (mph)

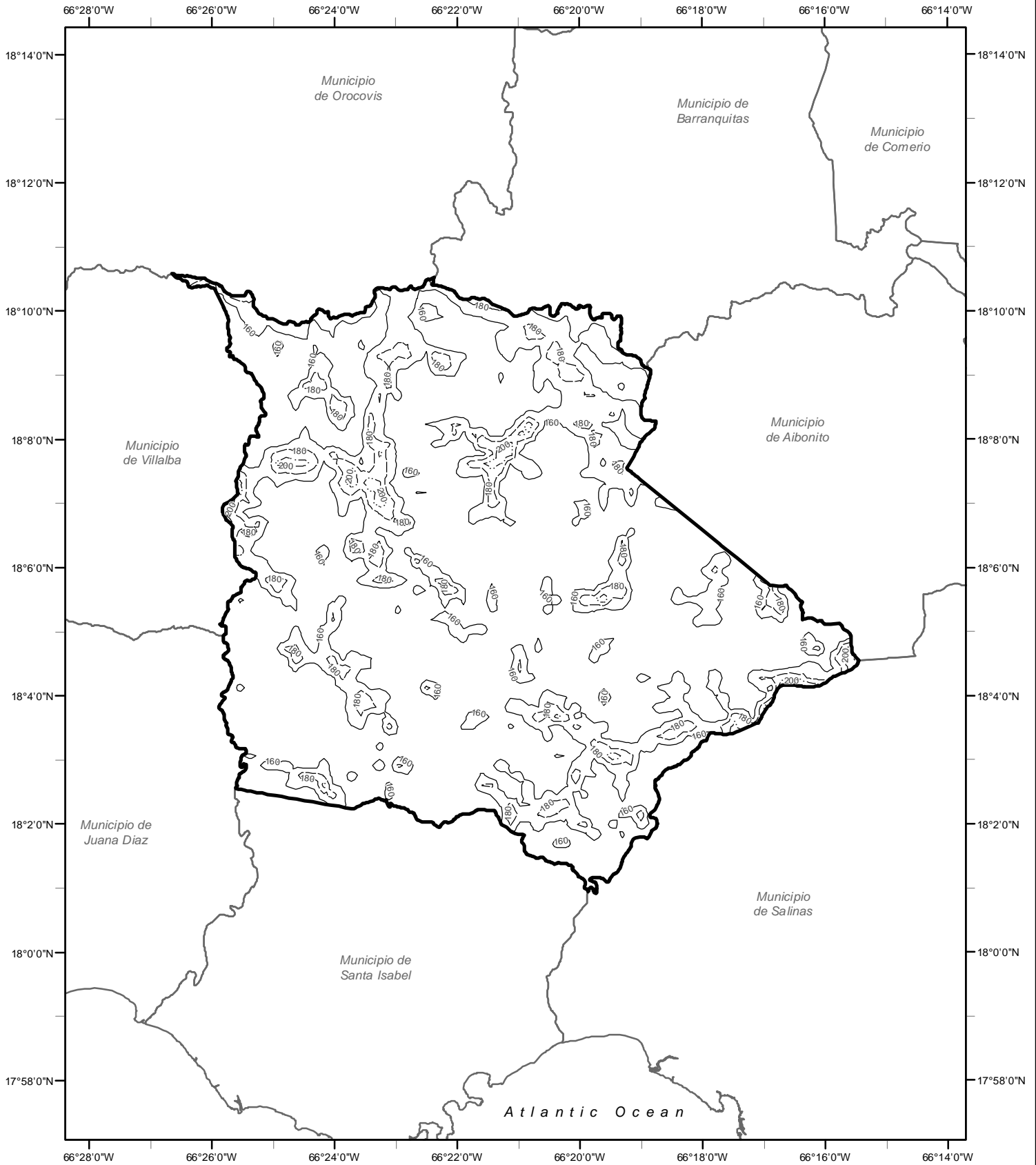


### Risk Category I Wind Contour (mph)

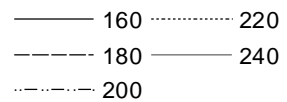


# Municipio de Coamo

## Risk Category I Effective Wind Speed Map (mph)



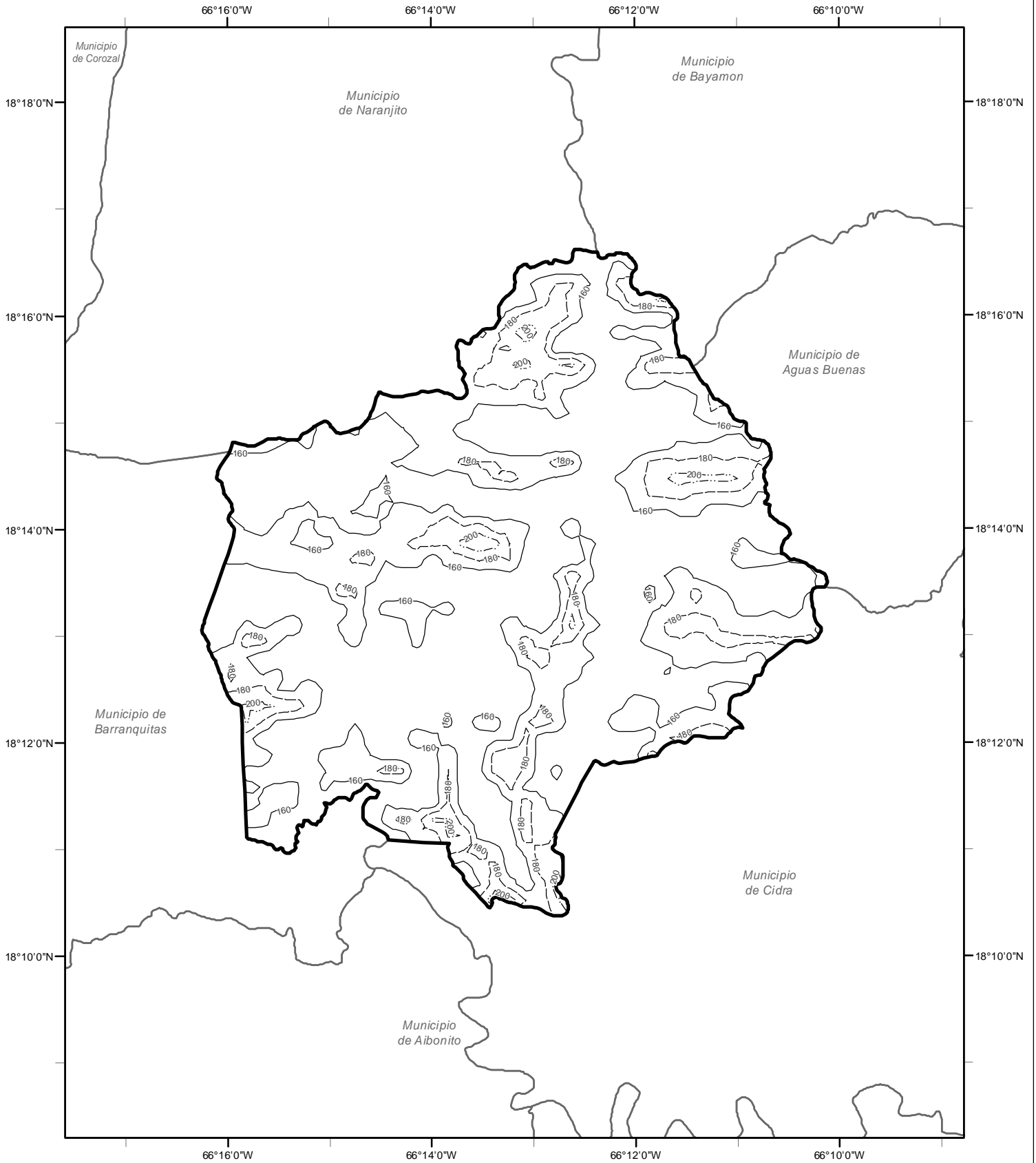
### Risk Category I Wind Contour (mph)



187



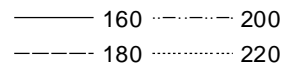
# Municipio de Comerio Risk Category I Effective Wind Speed Map (mph)



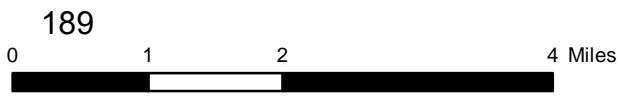
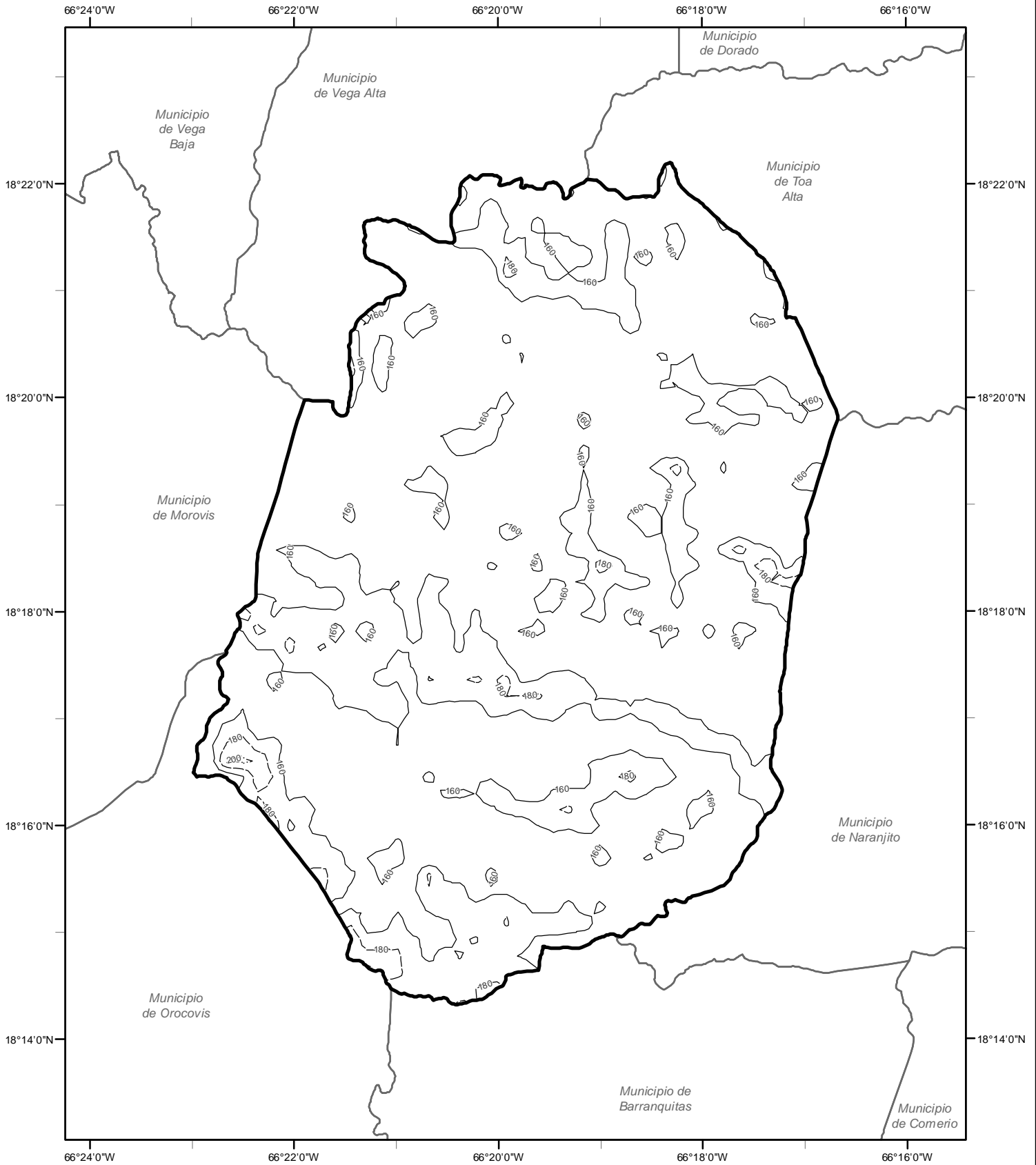
188



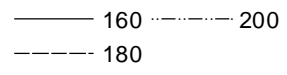
**Risk Category I Wind Contour (mph)**



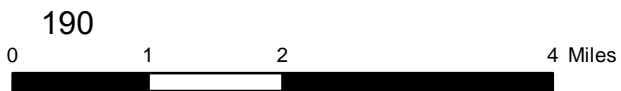
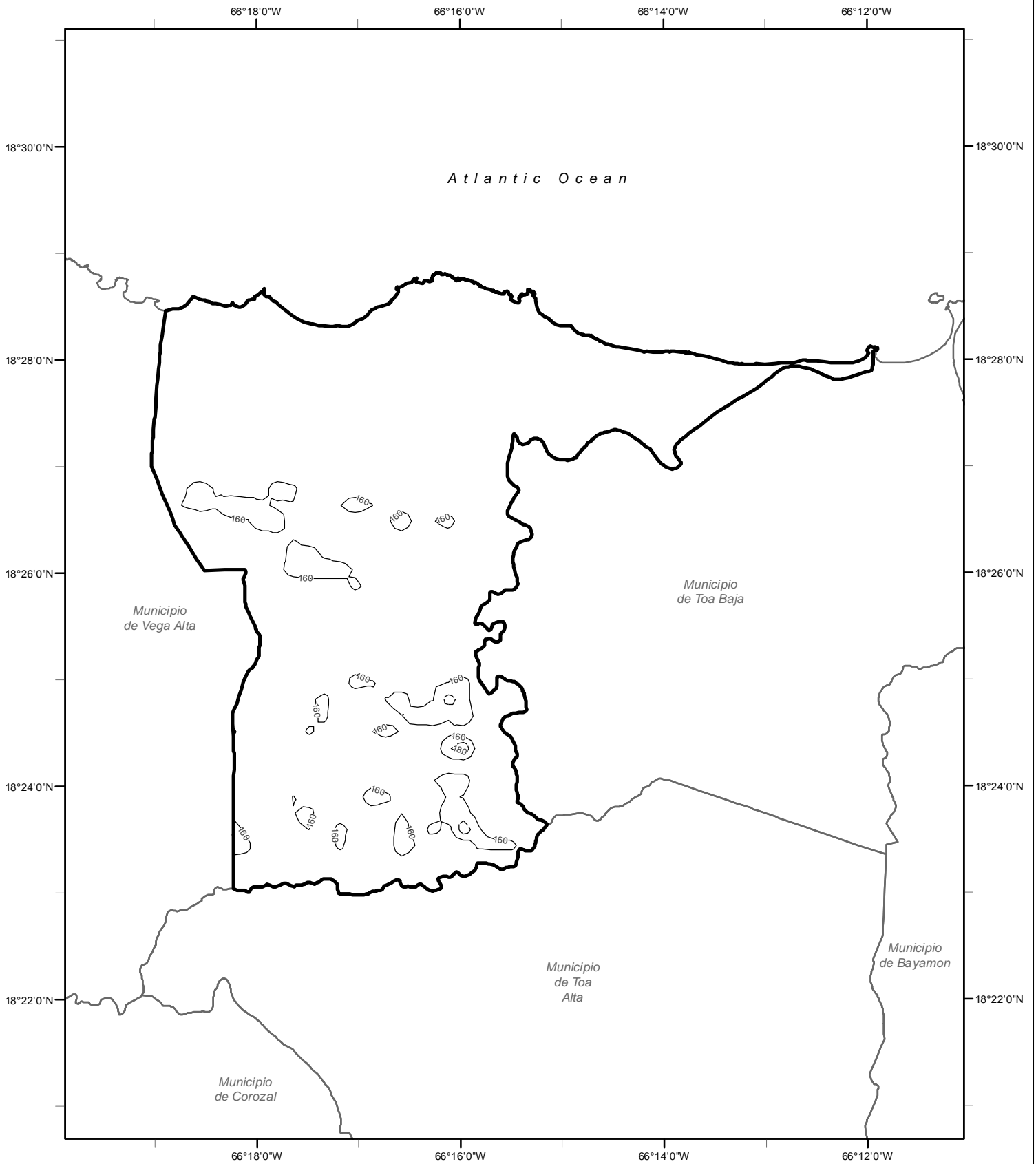
# Municipio de Corozal Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)



# Municipio de Dorado Risk Category I Effective Wind Speed Map (mph)

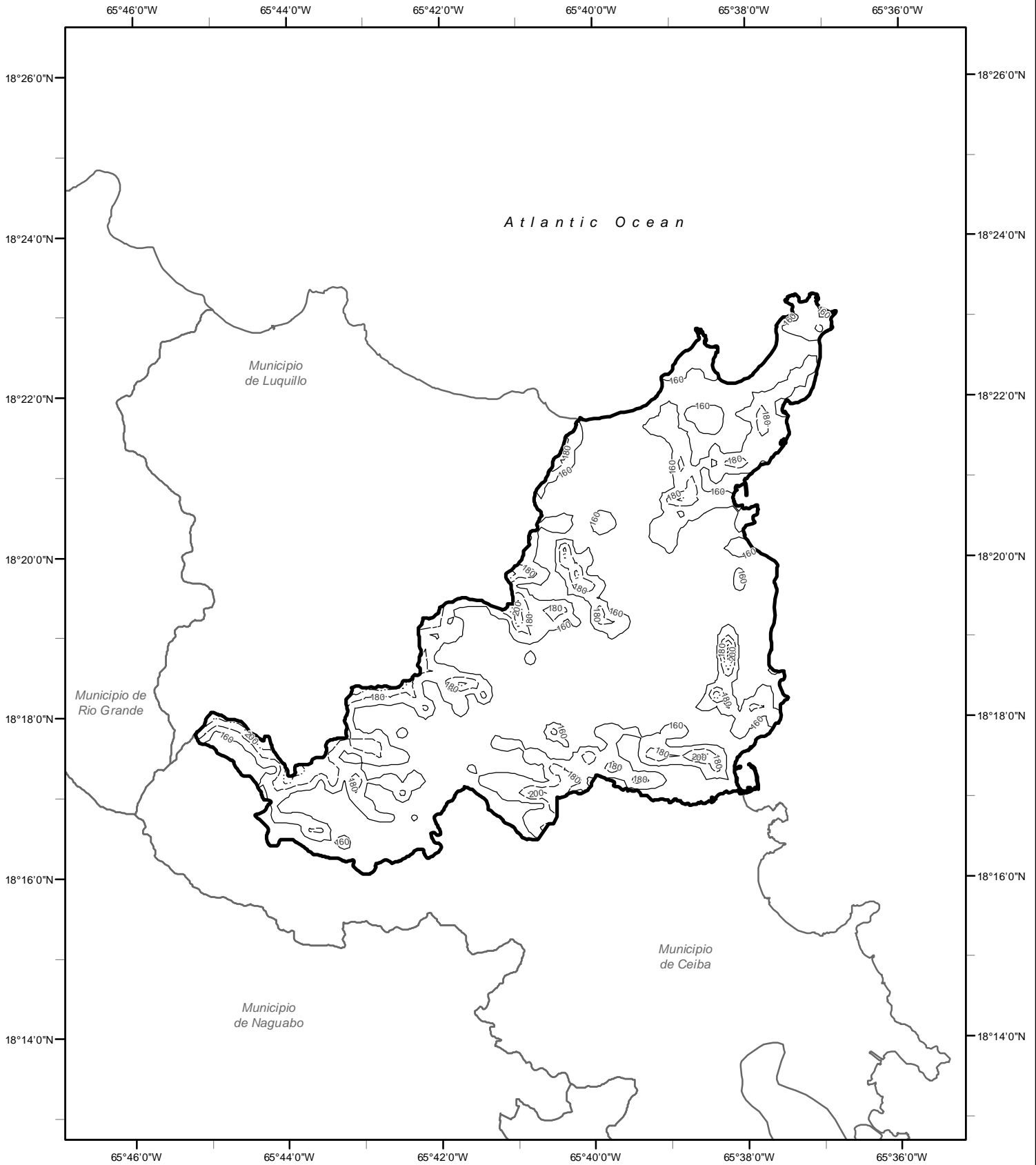


Risk Category I Wind Contour (mph)

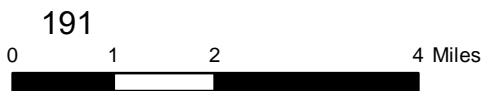
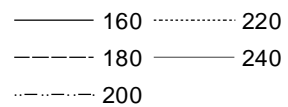
—— 160 - - - - 180



# Municipio de Fajardo Risk Category I Effective Wind Speed Map (mph)

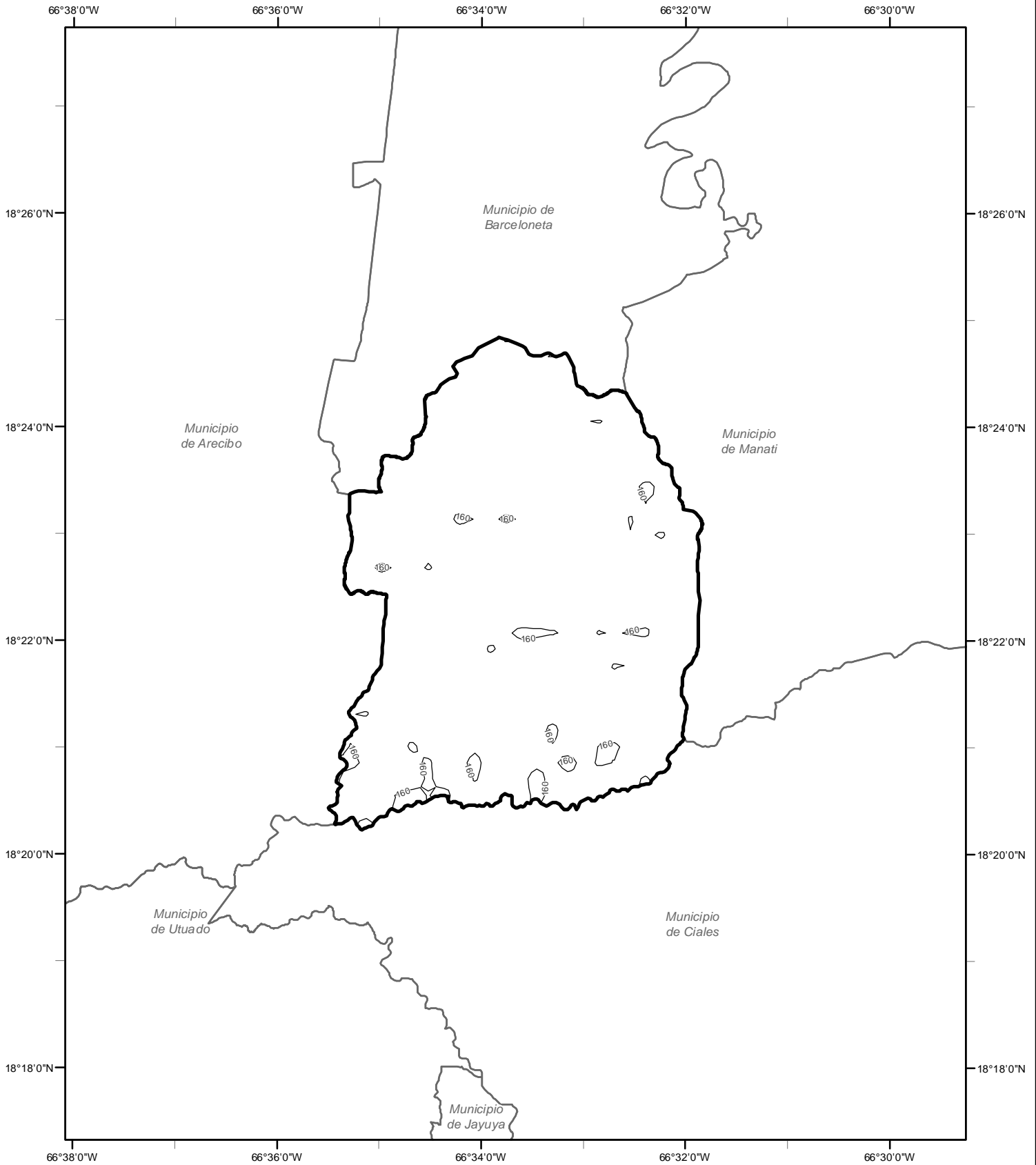


### Risk Category I Wind Contour (mph)

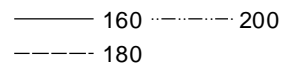


# Municipio de Florida

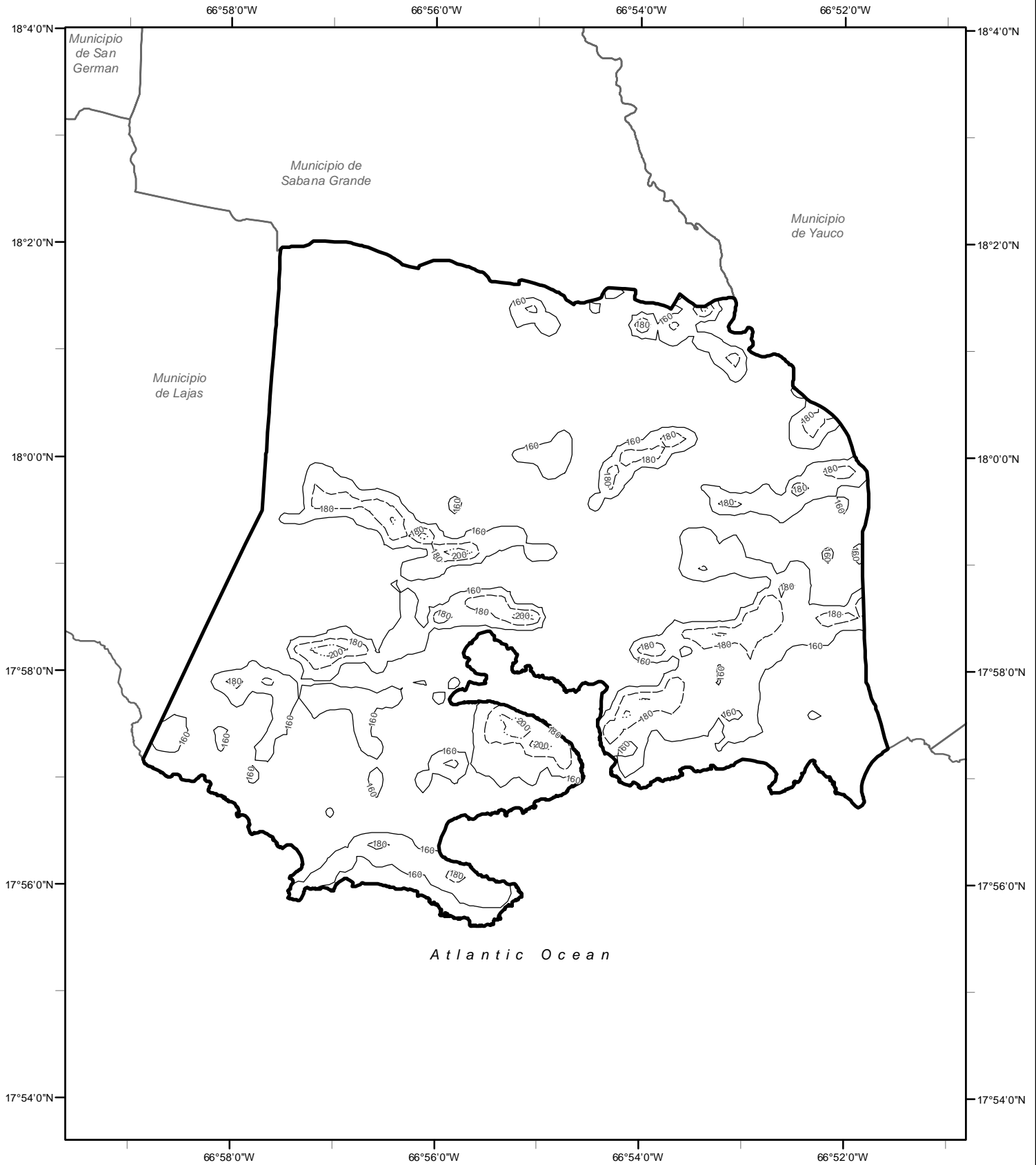
## Risk Category I Effective Wind Speed Map (mph)



**Risk Category I Wind Contour (mph)**



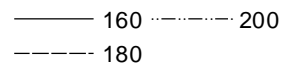
# Municipio de Guanica Risk Category I Effective Wind Speed Map (mph)



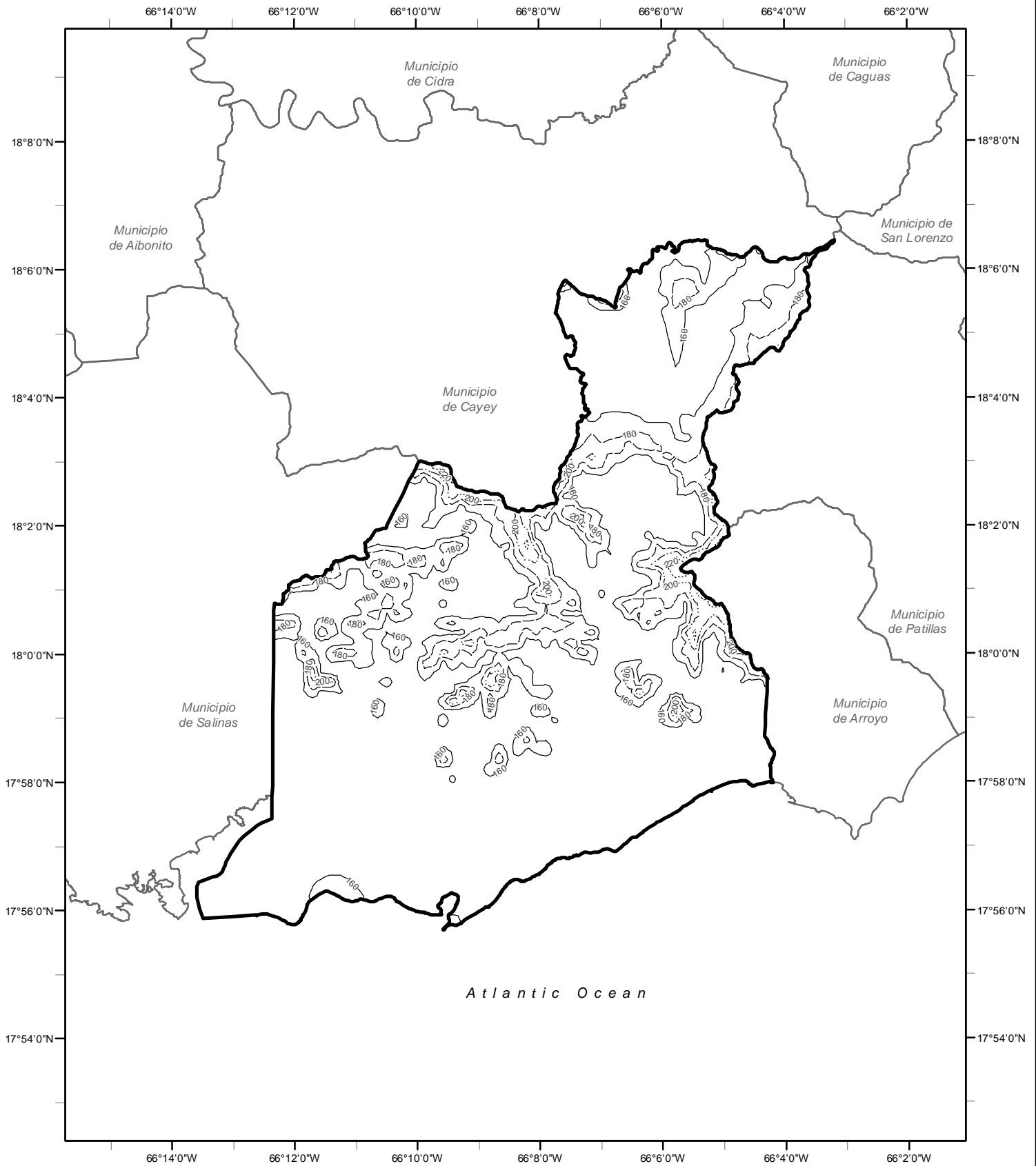
193



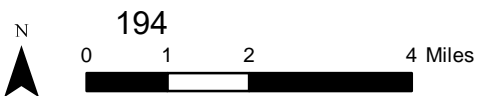
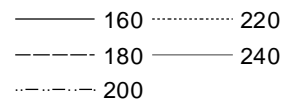
**Risk Category I Wind Contour (mph)**



# Municipio de Guayama Risk Category I Effective Wind Speed Map (mph)

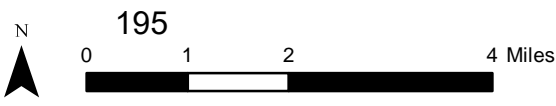
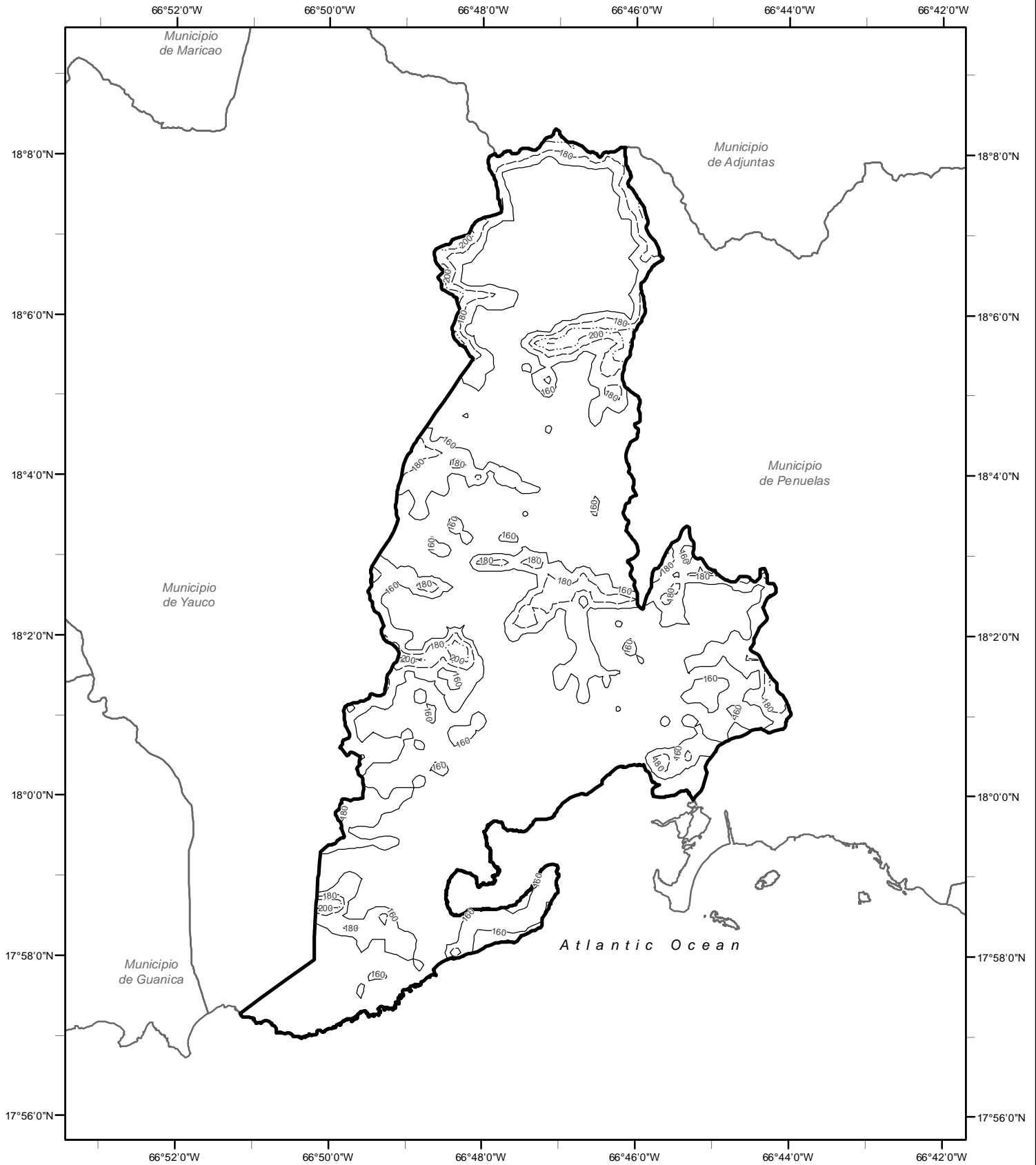


### Risk Category I Wind Contour (mph)

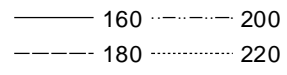


# Municipio de Guayanilla

## Risk Category I Effective Wind Speed Map (mph)

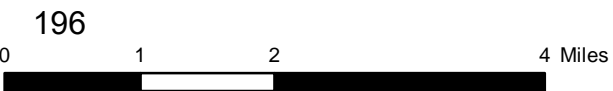
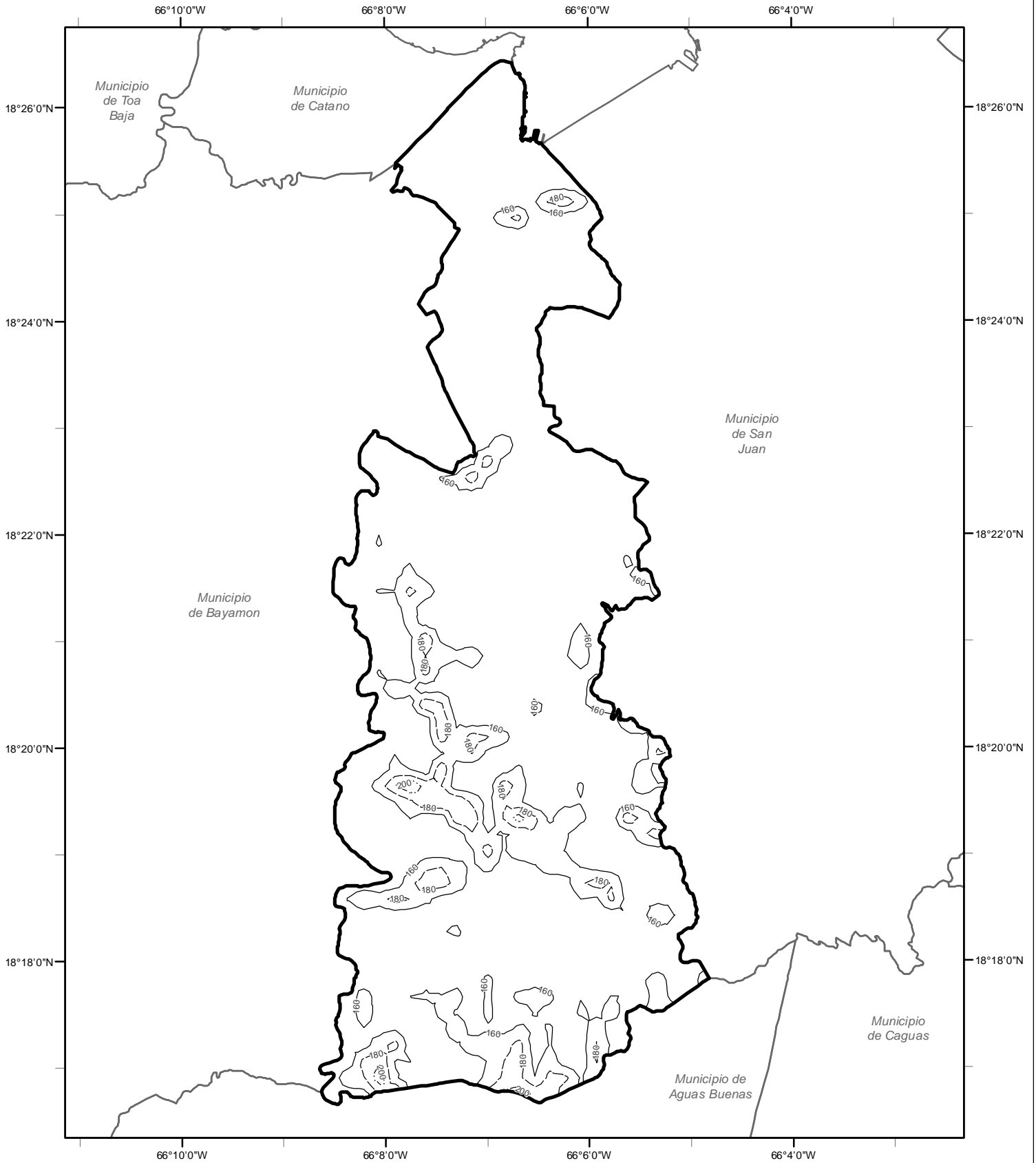


### Risk Category I Wind Contour (mph)

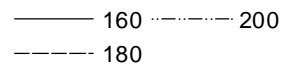


# Municipio de Guaynabo

## Risk Category I Effective Wind Speed Map (mph)

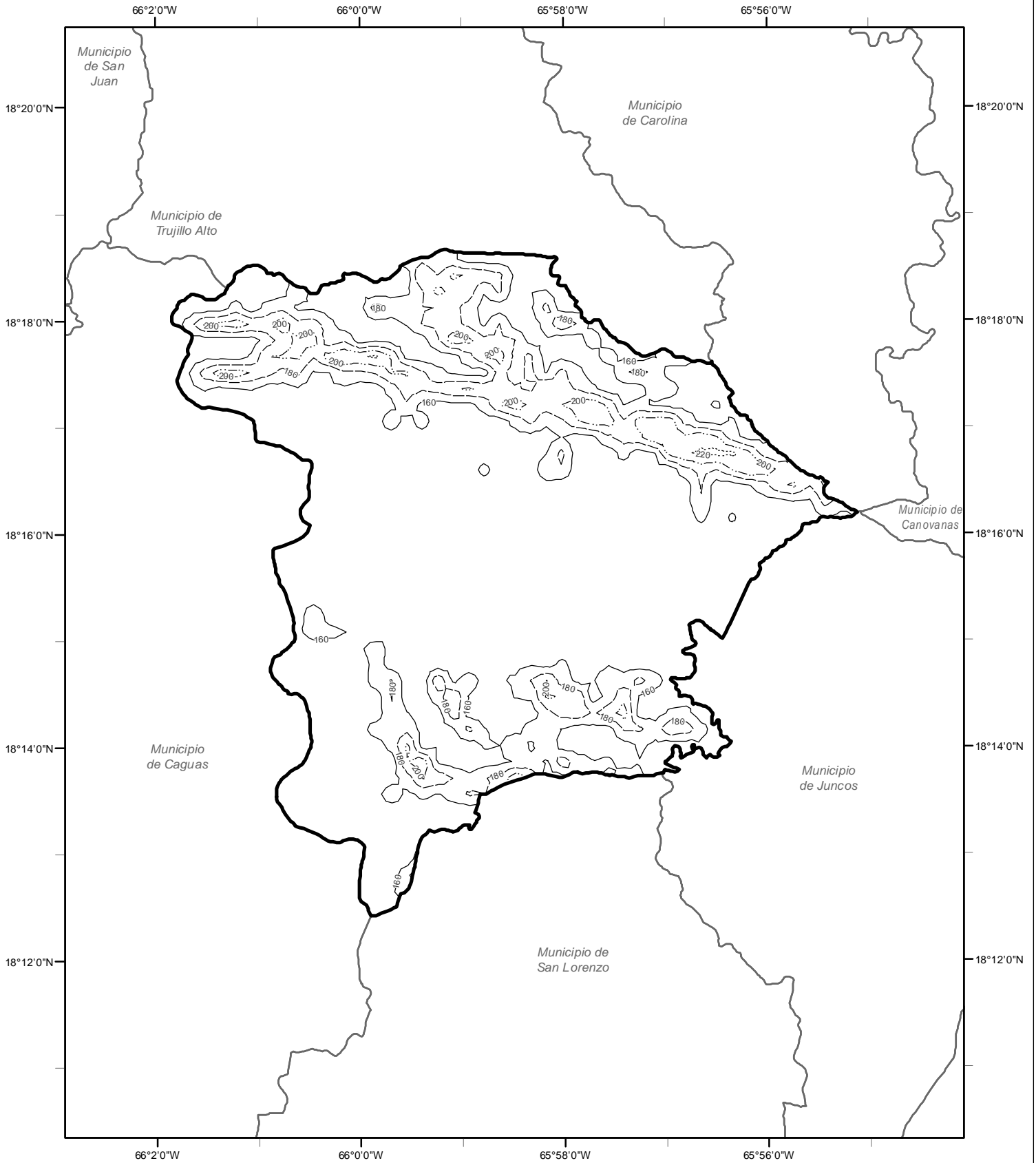


**Risk Category I Wind Contour (mph)**



# Municipio de Gurabo

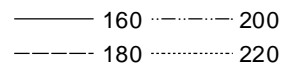
## Risk Category I Effective Wind Speed Map (mph)



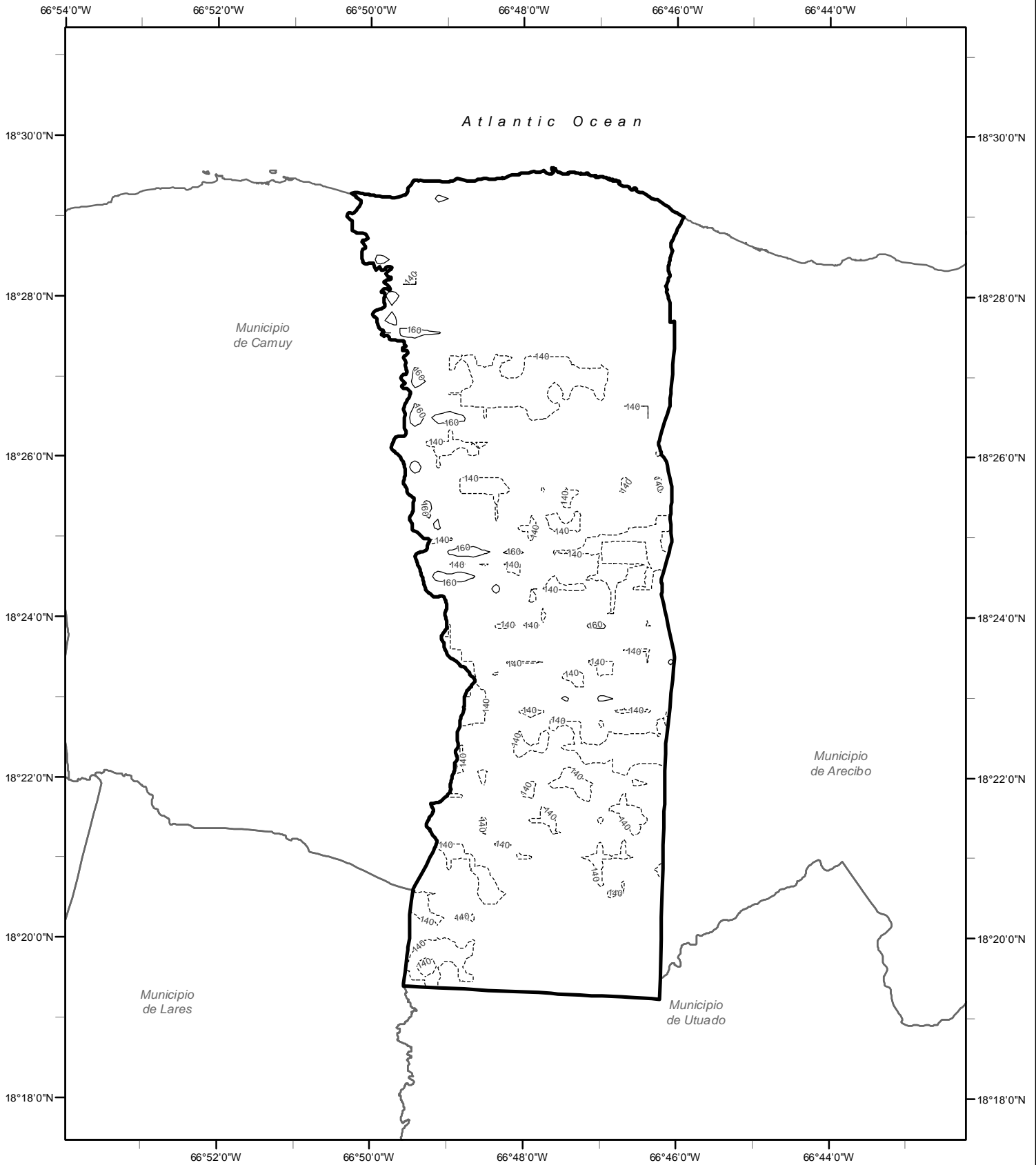
197



**Risk Category I Wind Contour (mph)**



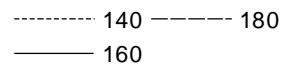
# Municipio de Hatillo Risk Category I Effective Wind Speed Map (mph)



198

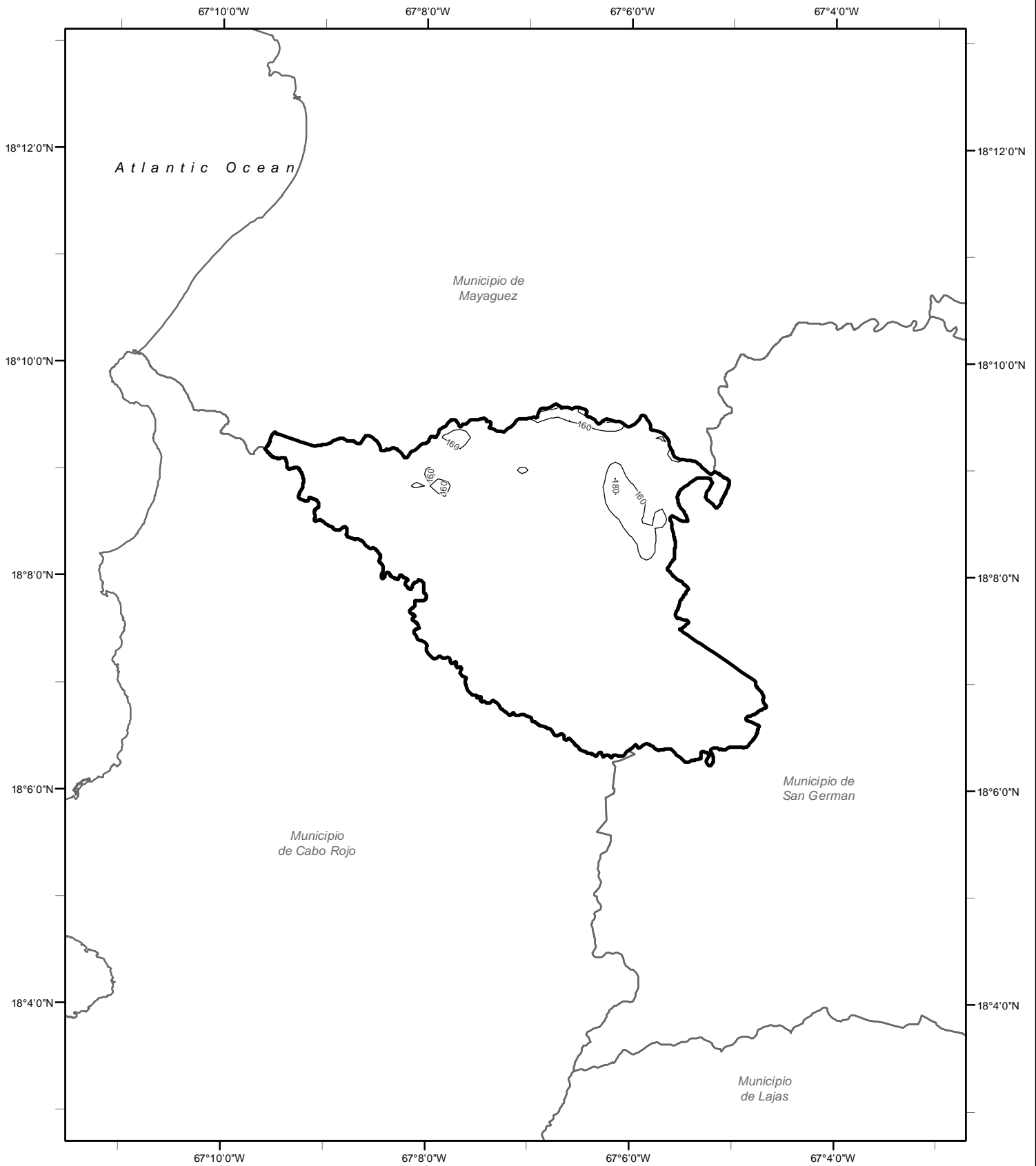


**Risk Category I Wind Contour (mph)**





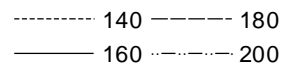
# Municipio de Hormigueros Risk Category I Effective Wind Speed Map (mph)



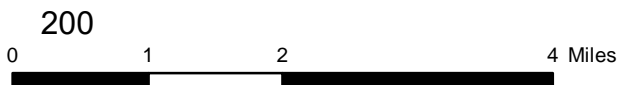
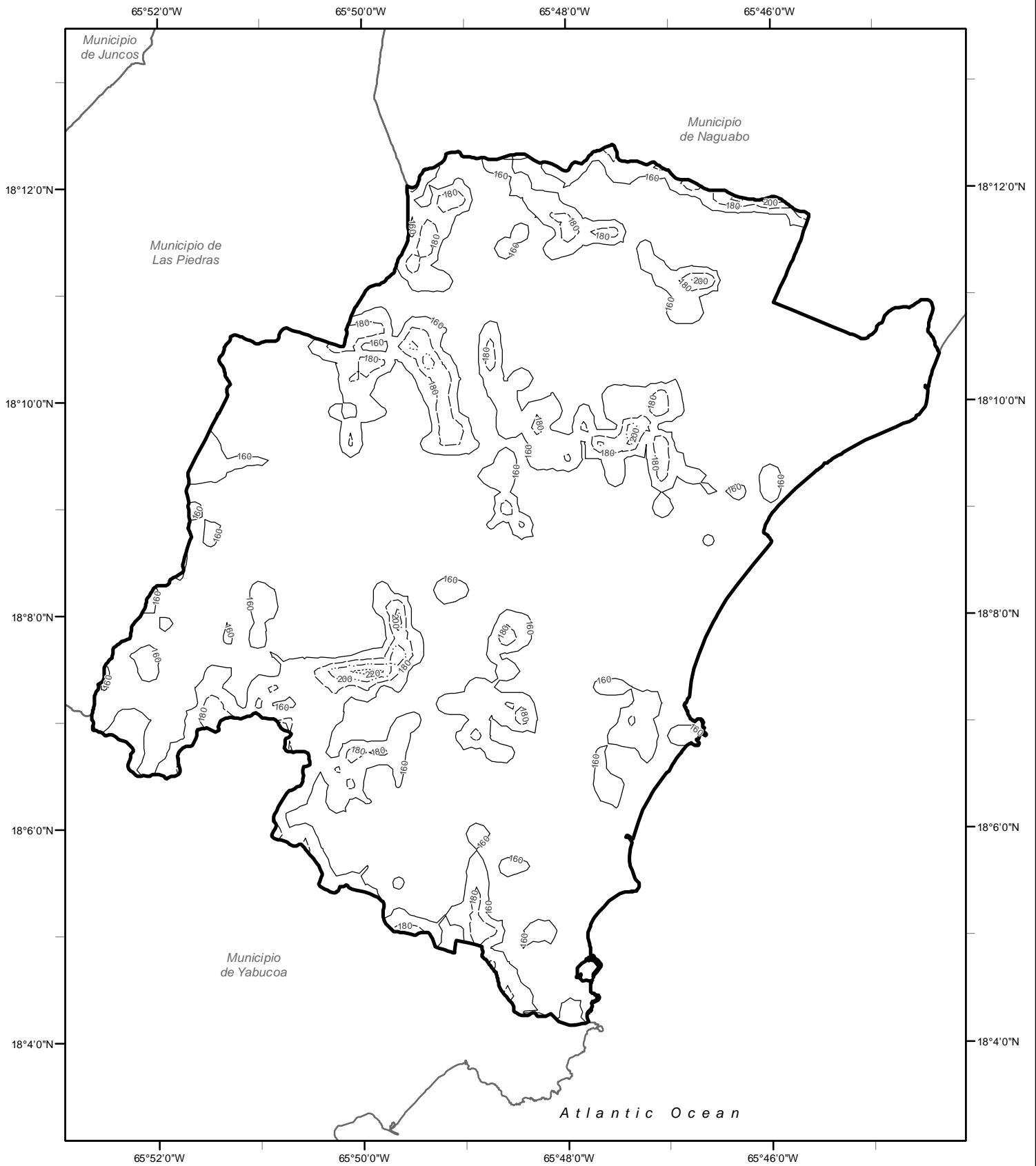
199



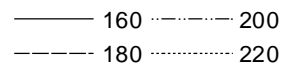
### Risk Category I Wind Contour (mph)



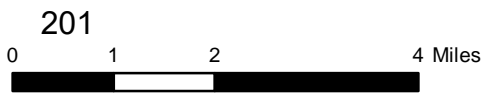
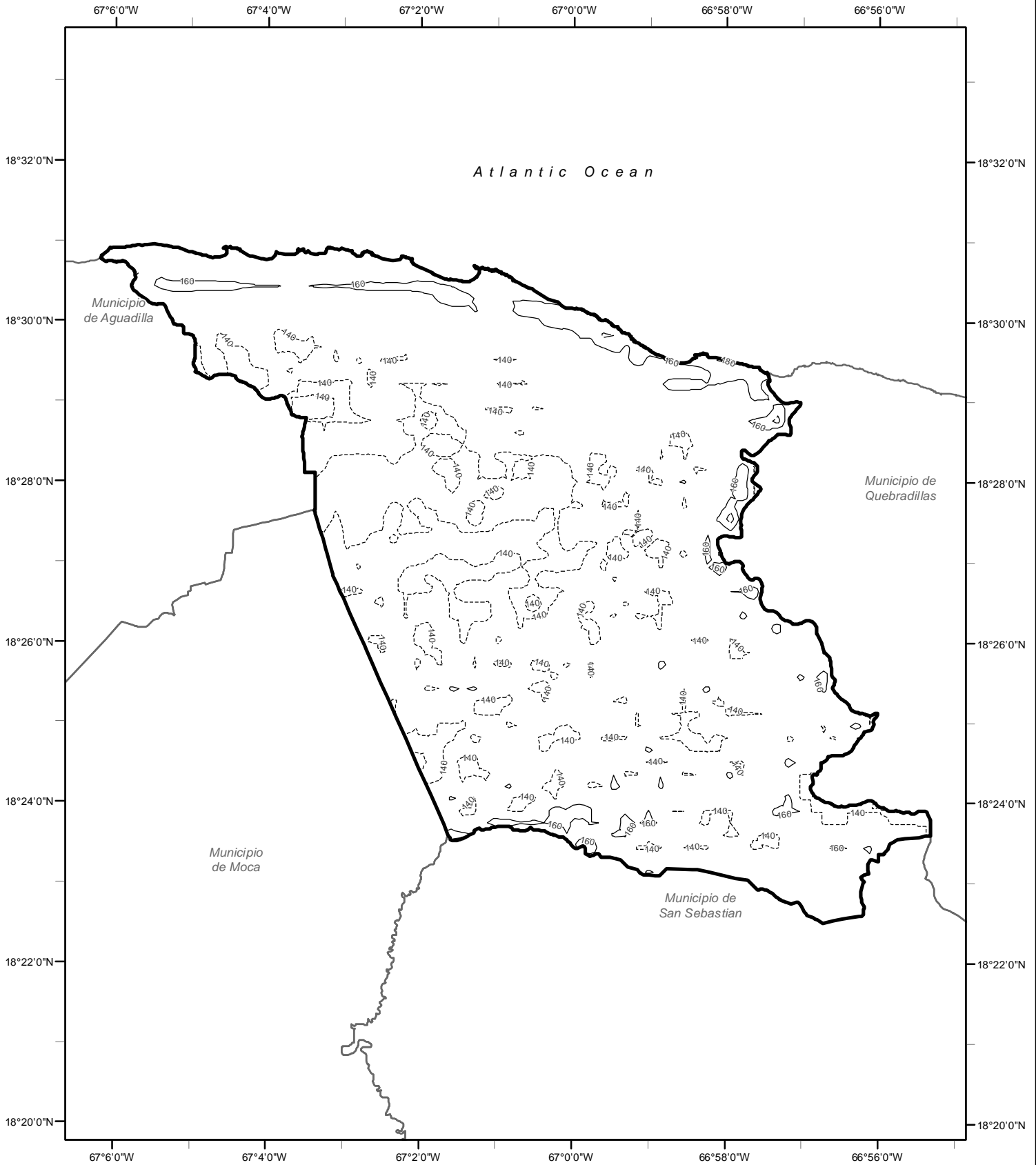
# Municipio de Humacao Risk Category I Effective Wind Speed Map (mph)



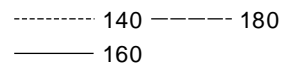
### Risk Category I Wind Contour (mph)



# Municipio de Isabela Risk Category I Effective Wind Speed Map (mph)

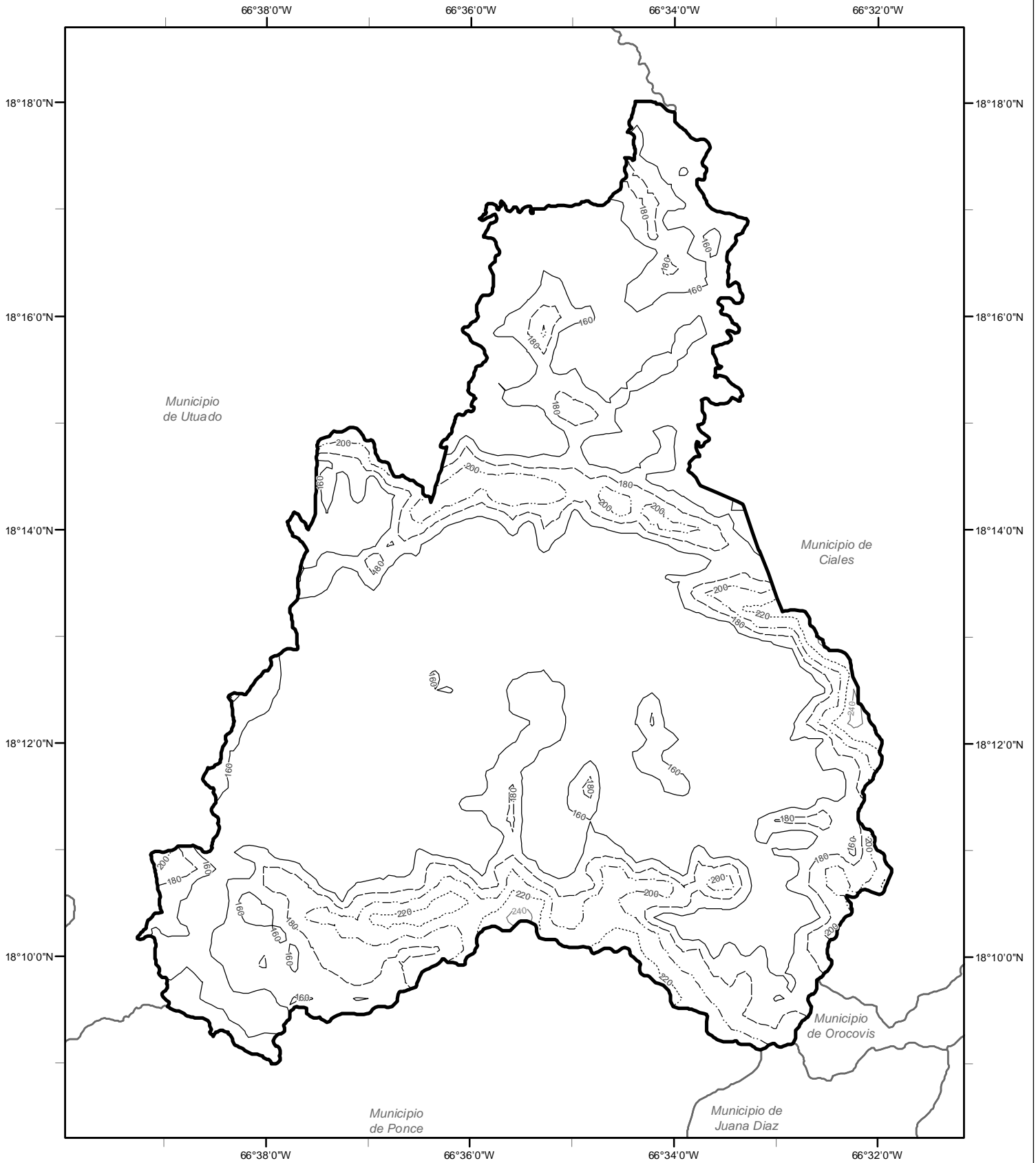


### Risk Category I Wind Contour (mph)

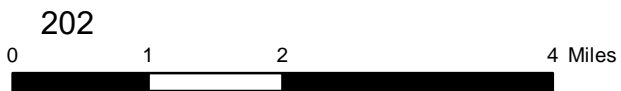
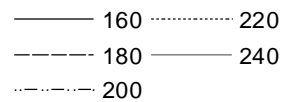


# Municipio de Jayuya

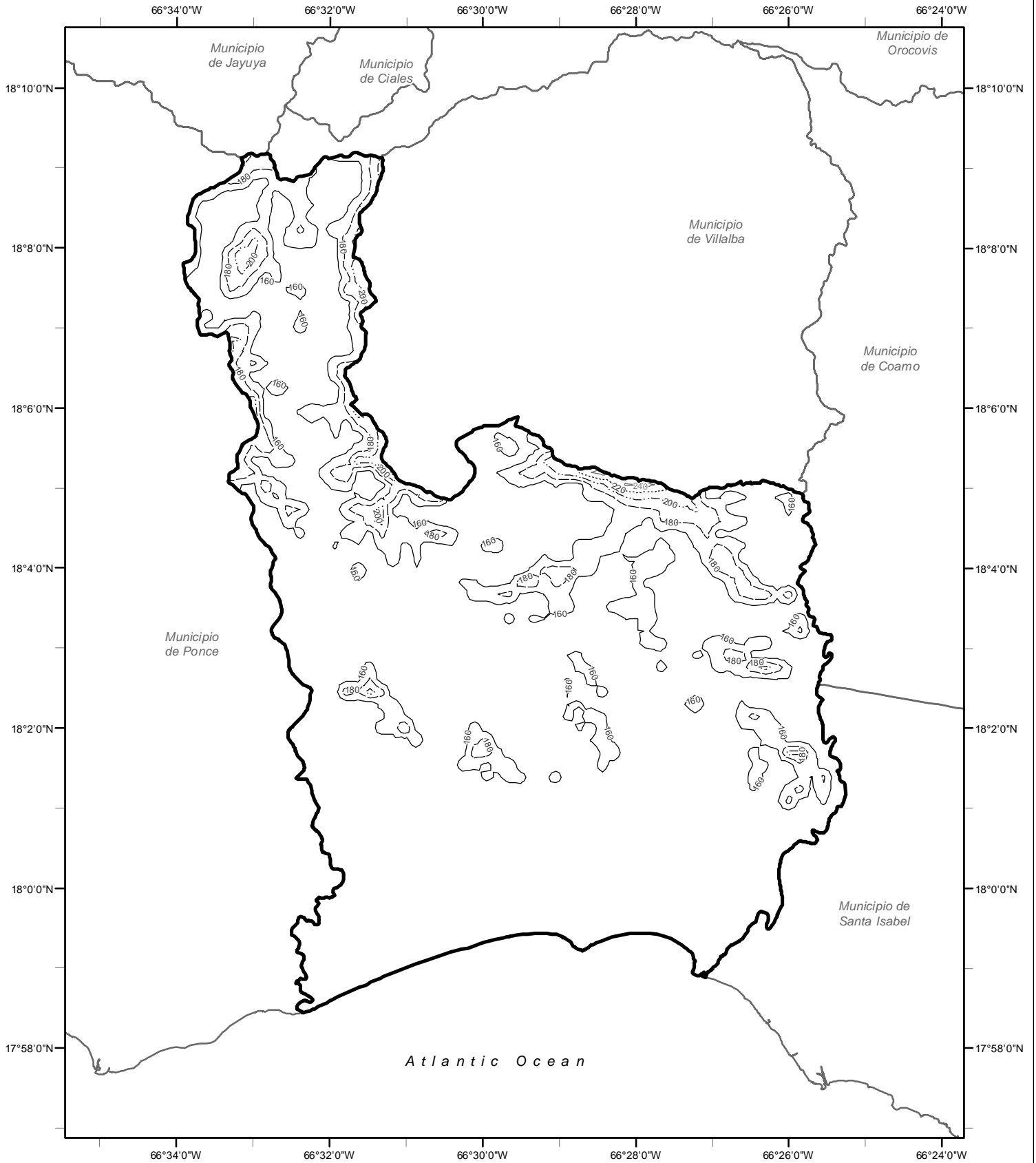
## Risk Category I Effective Wind Speed Map (mph)



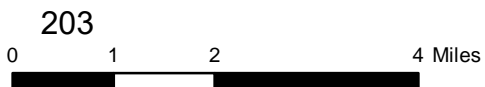
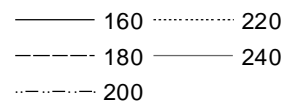
### Risk Category I Wind Contour (mph)



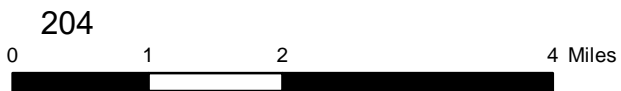
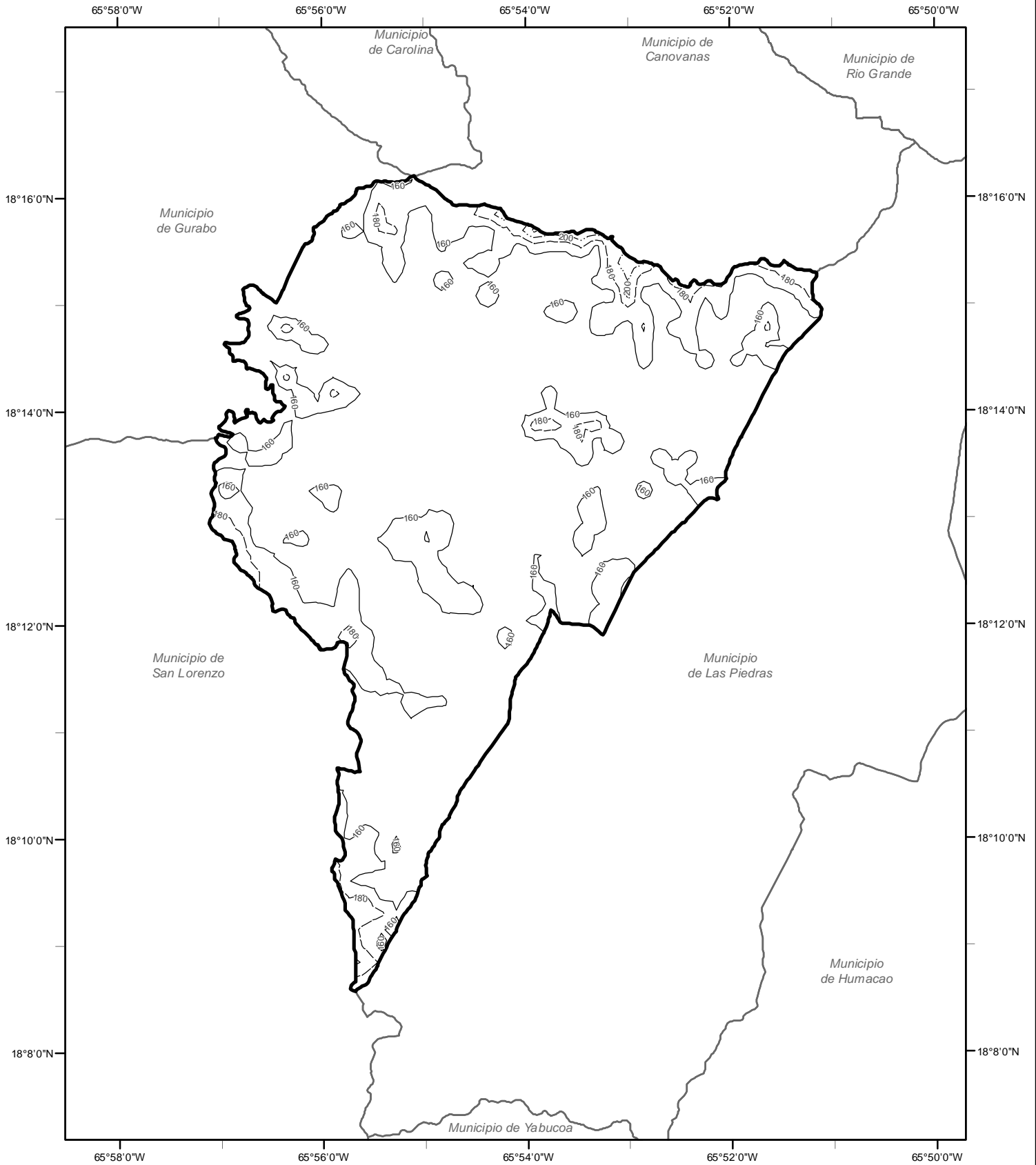
# Municipio de Juana Diaz Risk Category I Effective Wind Speed Map (mph)



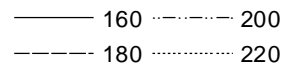
### Risk Category I Wind Contour (mph)



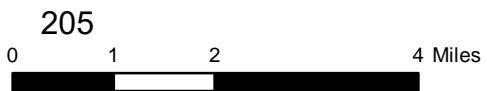
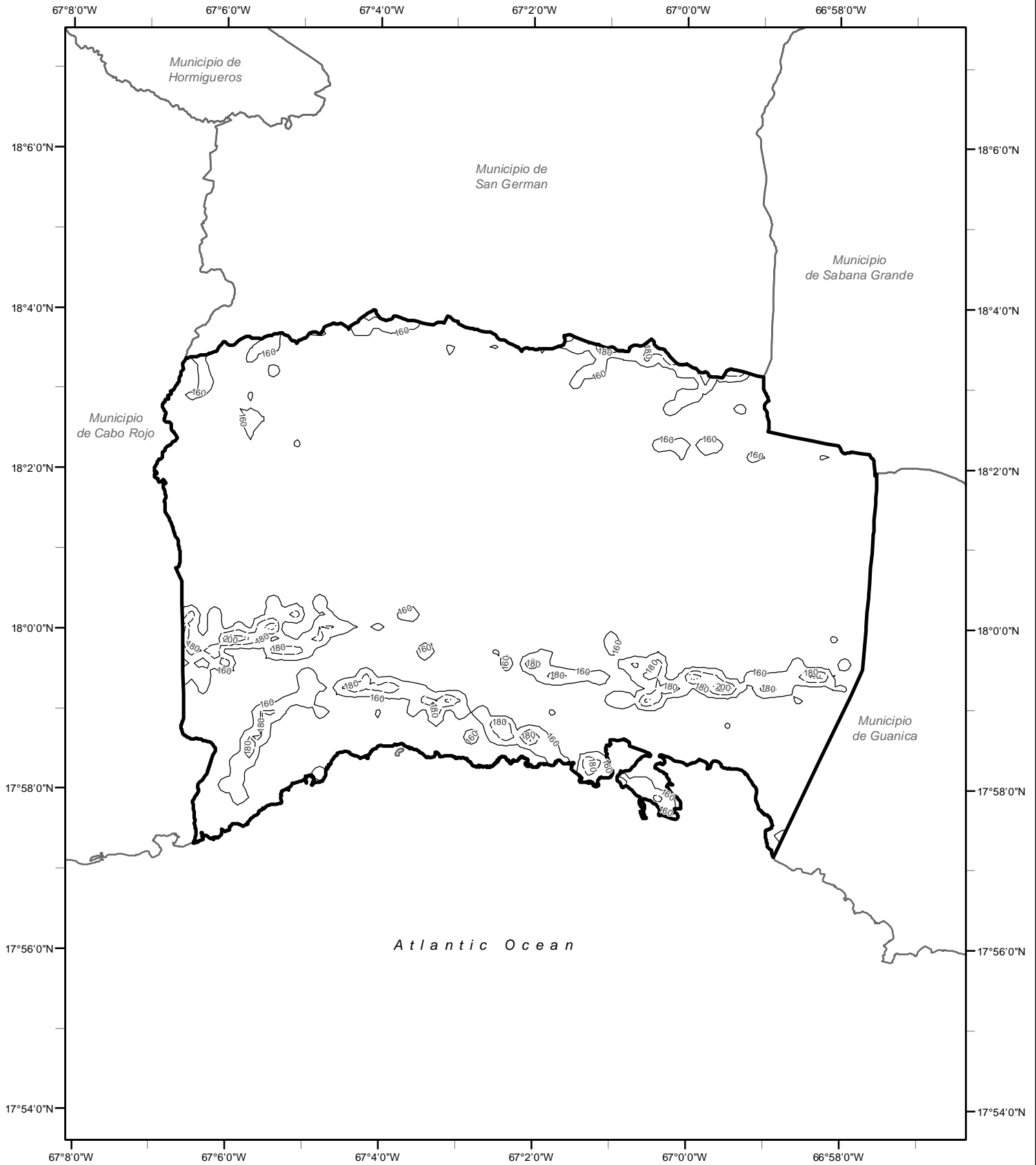
# Municipio de Juncos Risk Category I Effective Wind Speed Map (mph)



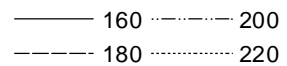
### Risk Category I Wind Contour (mph)



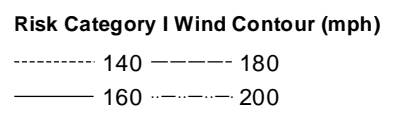
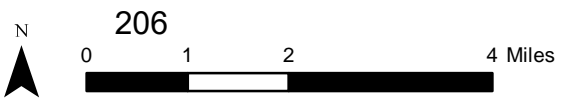
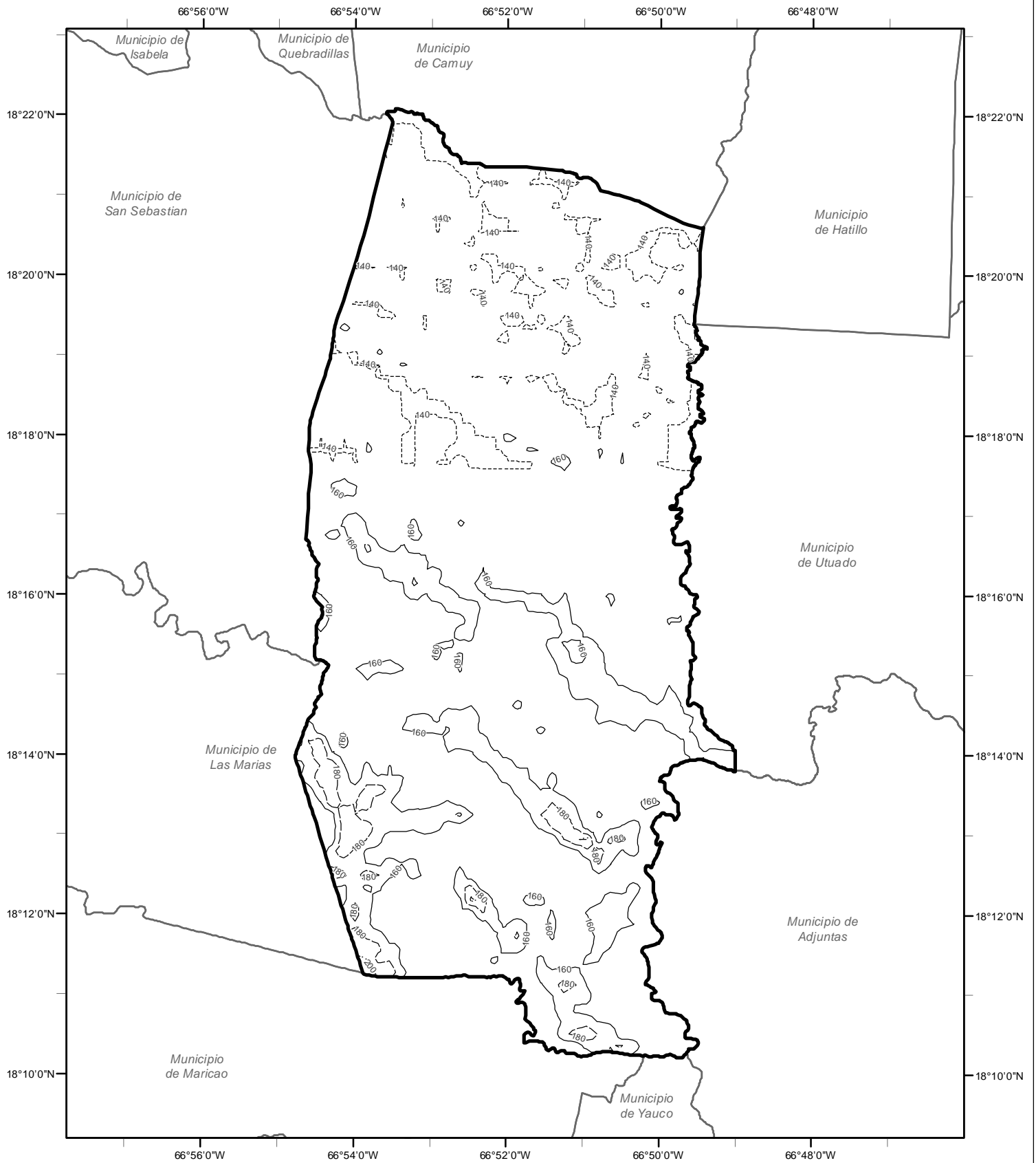
# Municipio de Lajas Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)

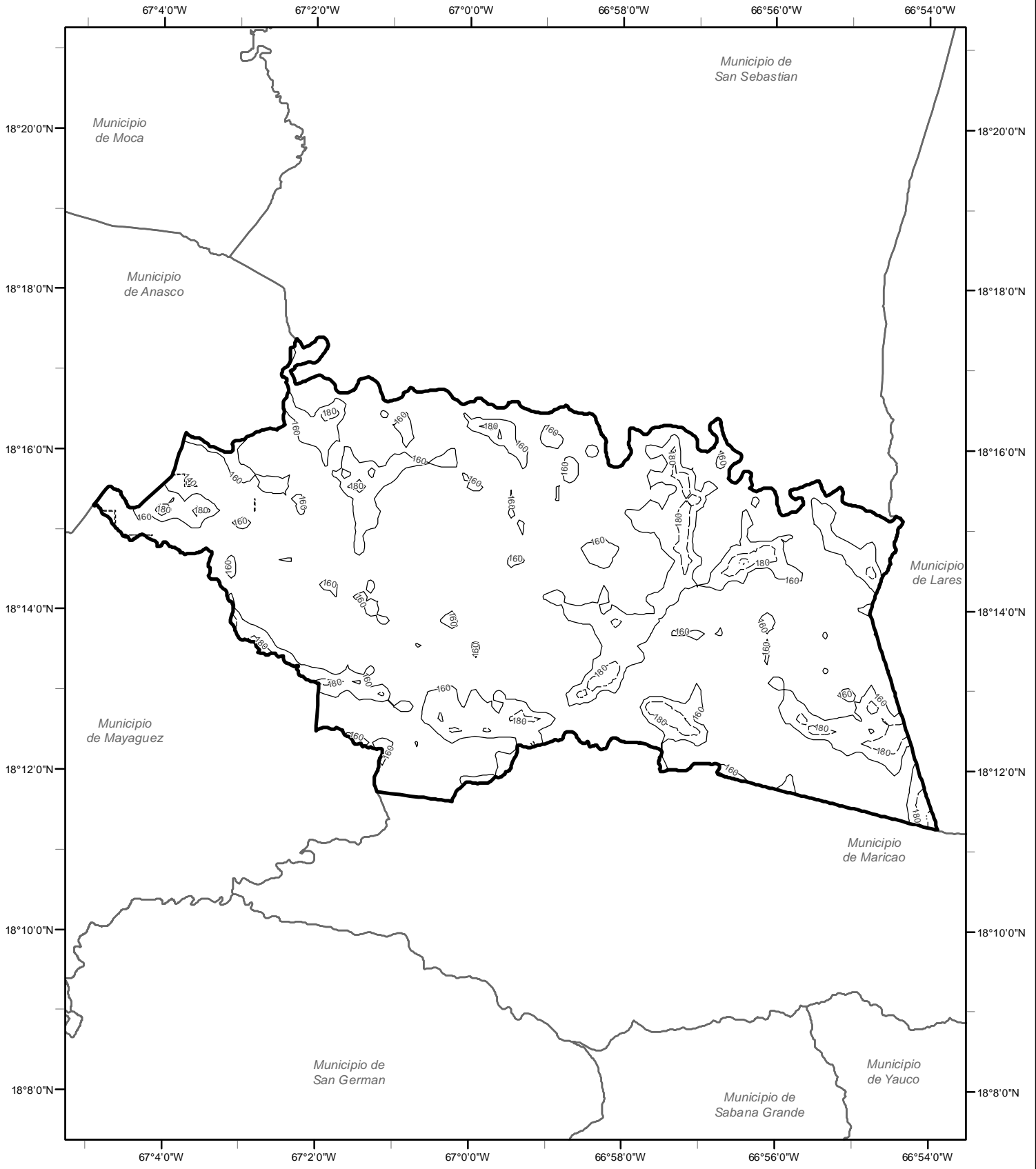


# Municipio de Lares Risk Category I Effective Wind Speed Map (mph)



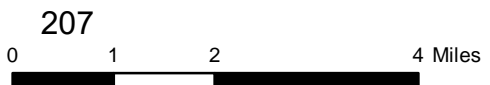


# Municipio de Las Marias Risk Category I Effective Wind Speed Map (mph)

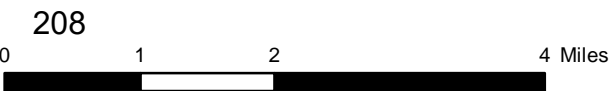
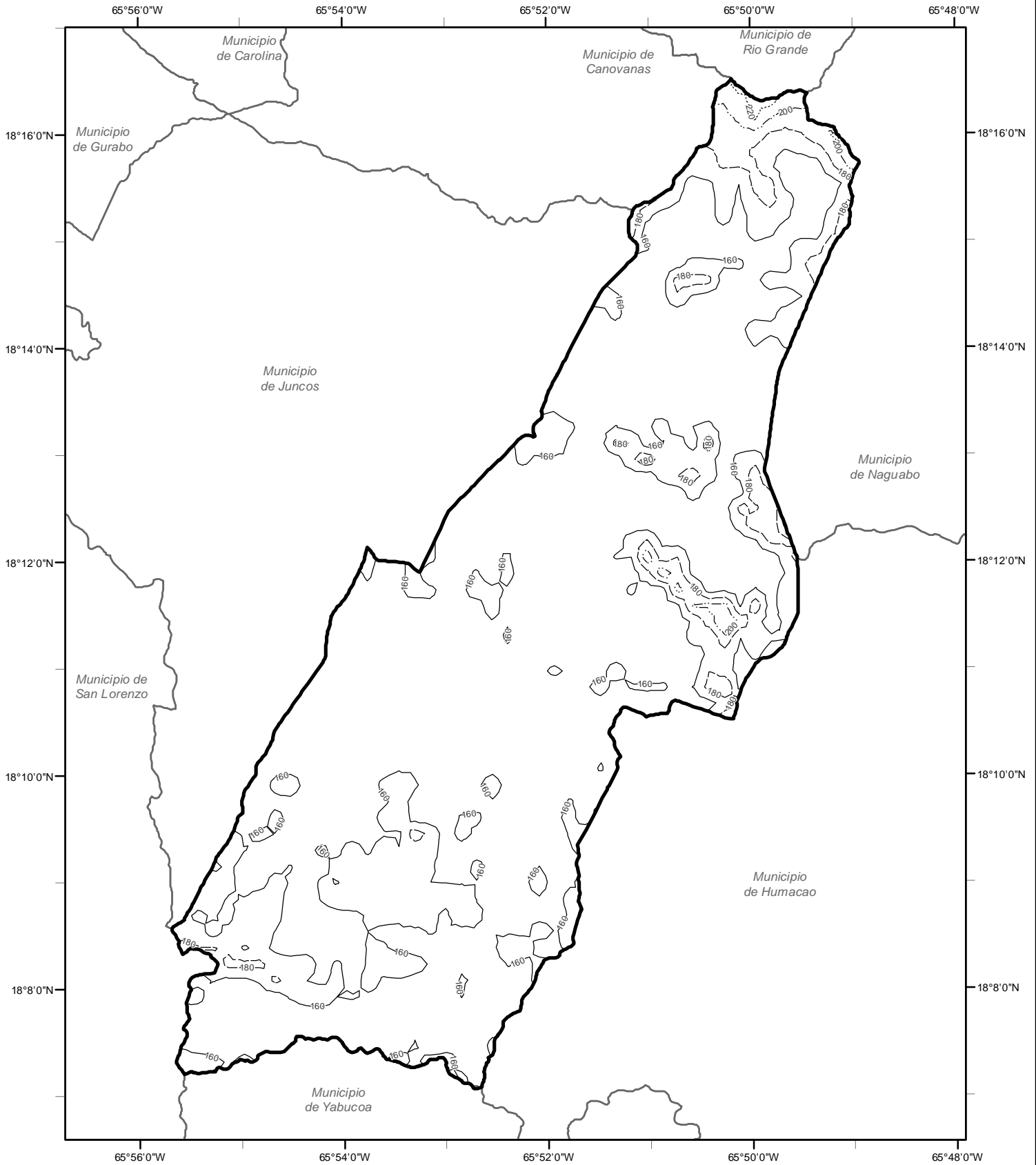


### Risk Category I Wind Contour (mph)

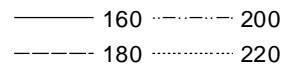
- 140
- 160
- 180
- 200
- 220



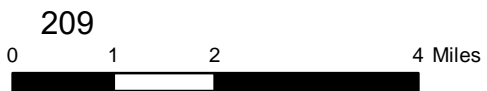
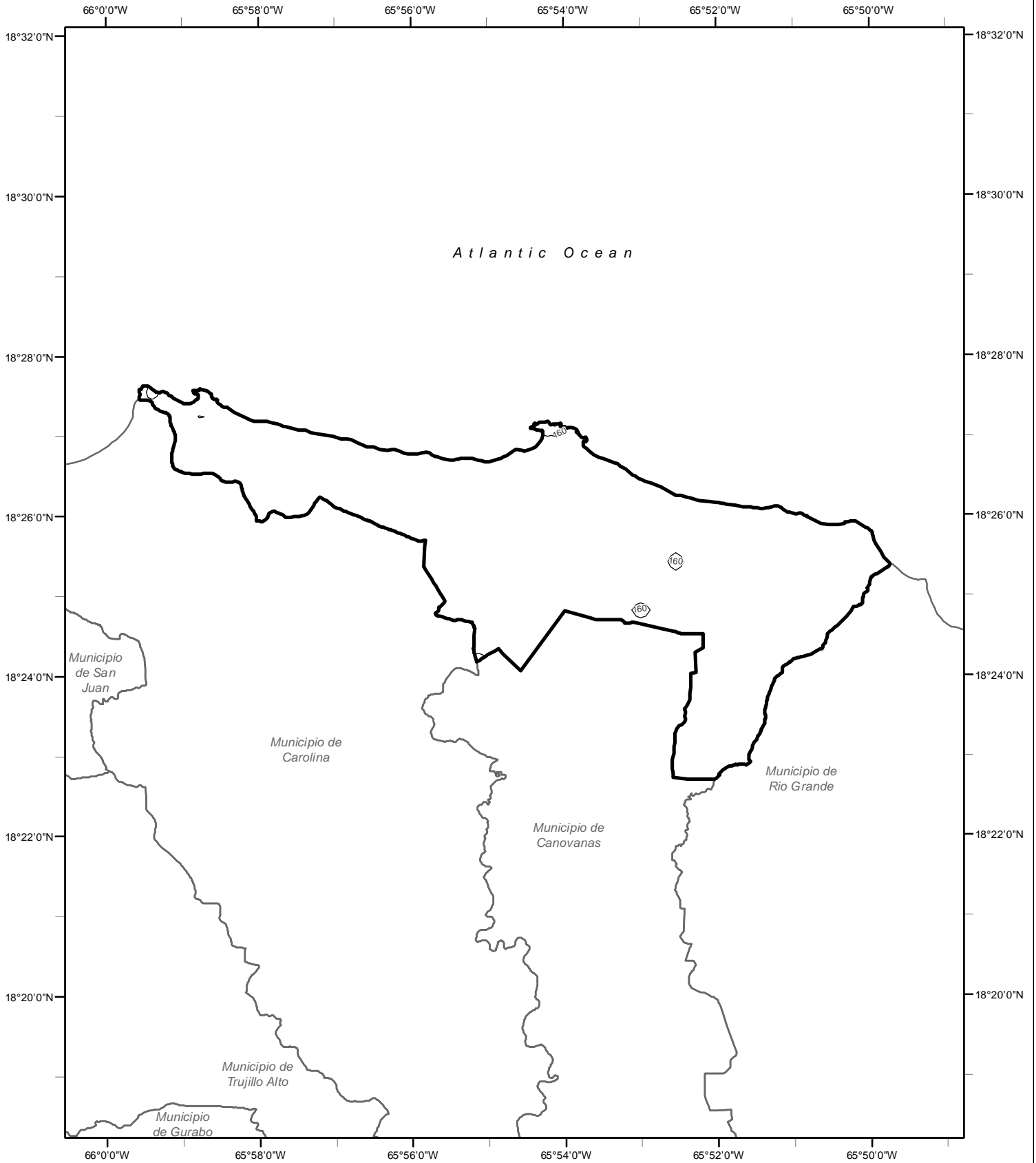
# Municipio de Las Piedras Risk Category I Effective Wind Speed Map (mph)



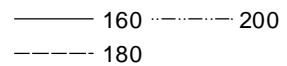
### Risk Category I Wind Contour (mph)



# Municipio de Loiza Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)



# Municipio de Luquillo Risk Category I Effective Wind Speed Map (mph)

65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W

18°24'0"N      *Atlantic Ocean*      18°24'0"N

18°22'0"N      18°22'0"N

18°20'0"N      18°20'0"N

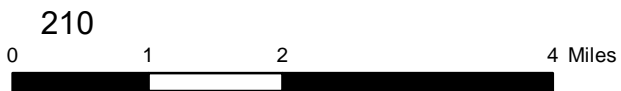
18°18'0"N      *Municipio de Rio Grande*      *Municipio de Fajardo*      18°18'0"N

18°16'0"N      *Municipio de Naguabo*      *Municipio de Ceiba*      18°16'0"N

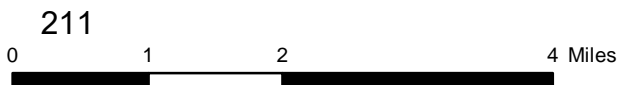
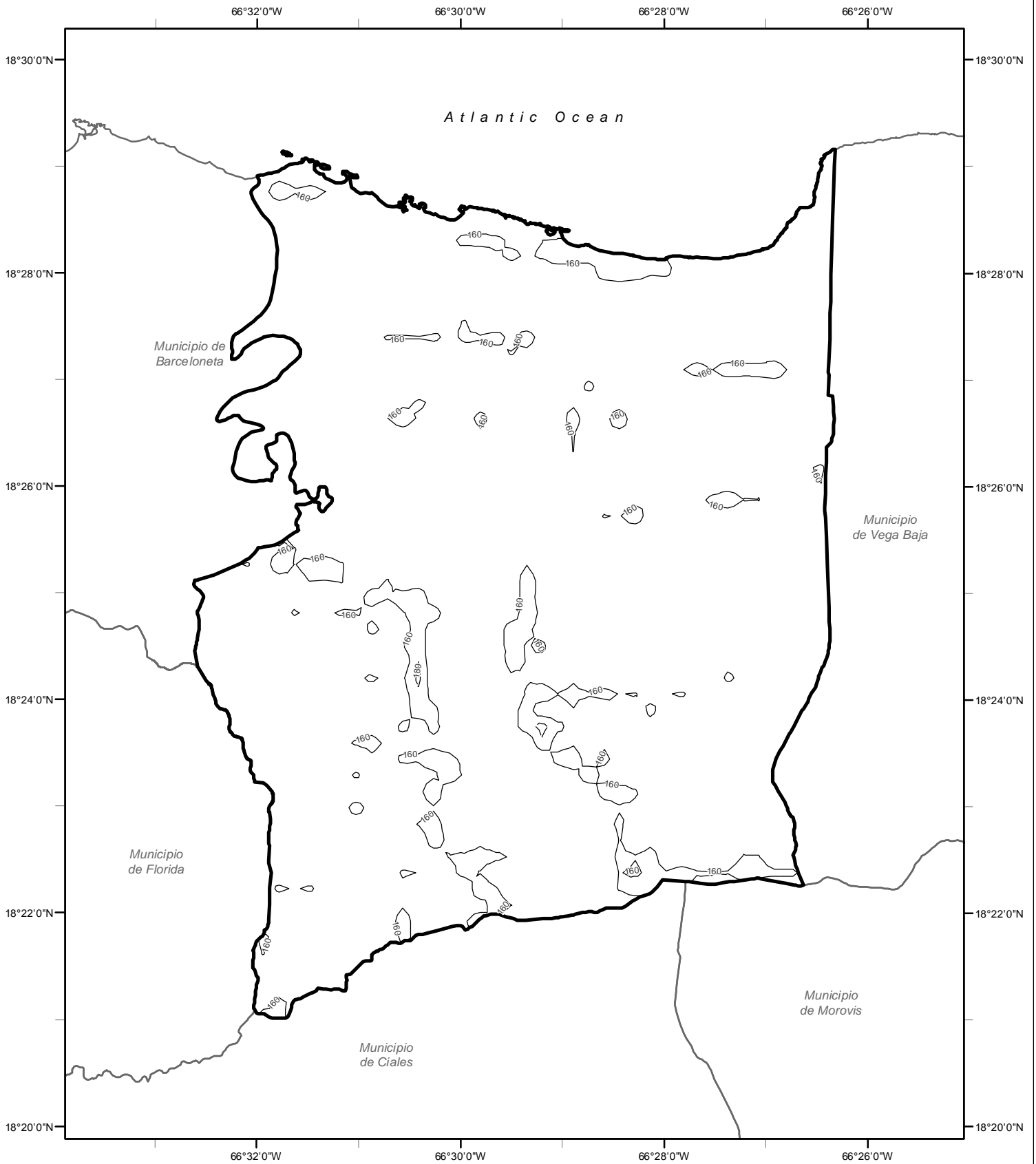
65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W

### Risk Category I Wind Contour (mph)

- 160      ····· 220
- - - 180      — 240
- · · · · 200



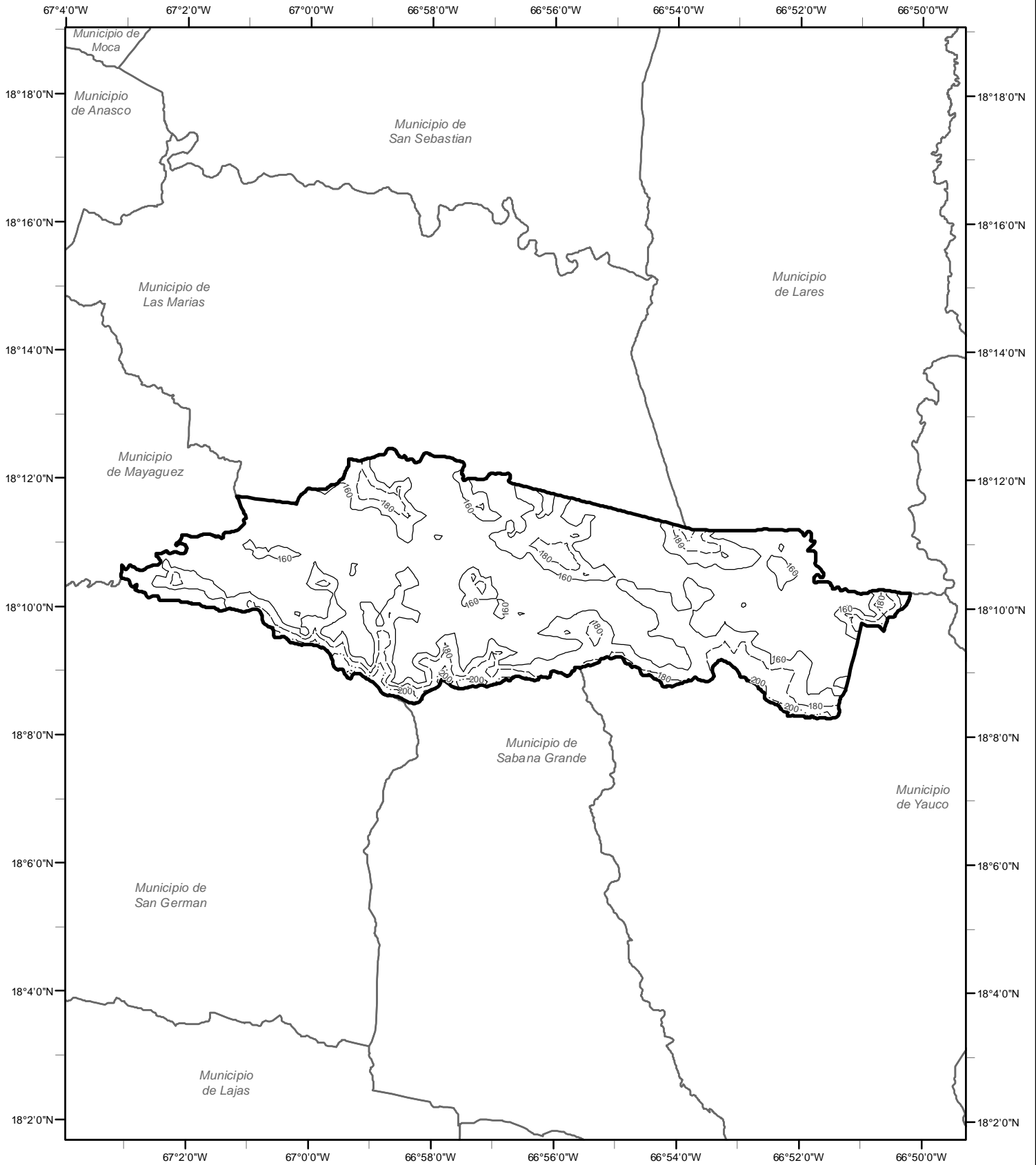
# Municipio de Manati Risk Category I Effective Wind Speed Map (mph)



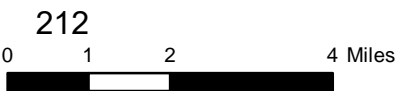
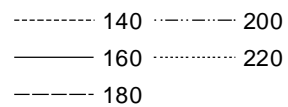
Risk Category I Wind Contour (mph)

—— 160    - - - - 180

# Municipio de Maricao Risk Category I Effective Wind Speed Map (mph)

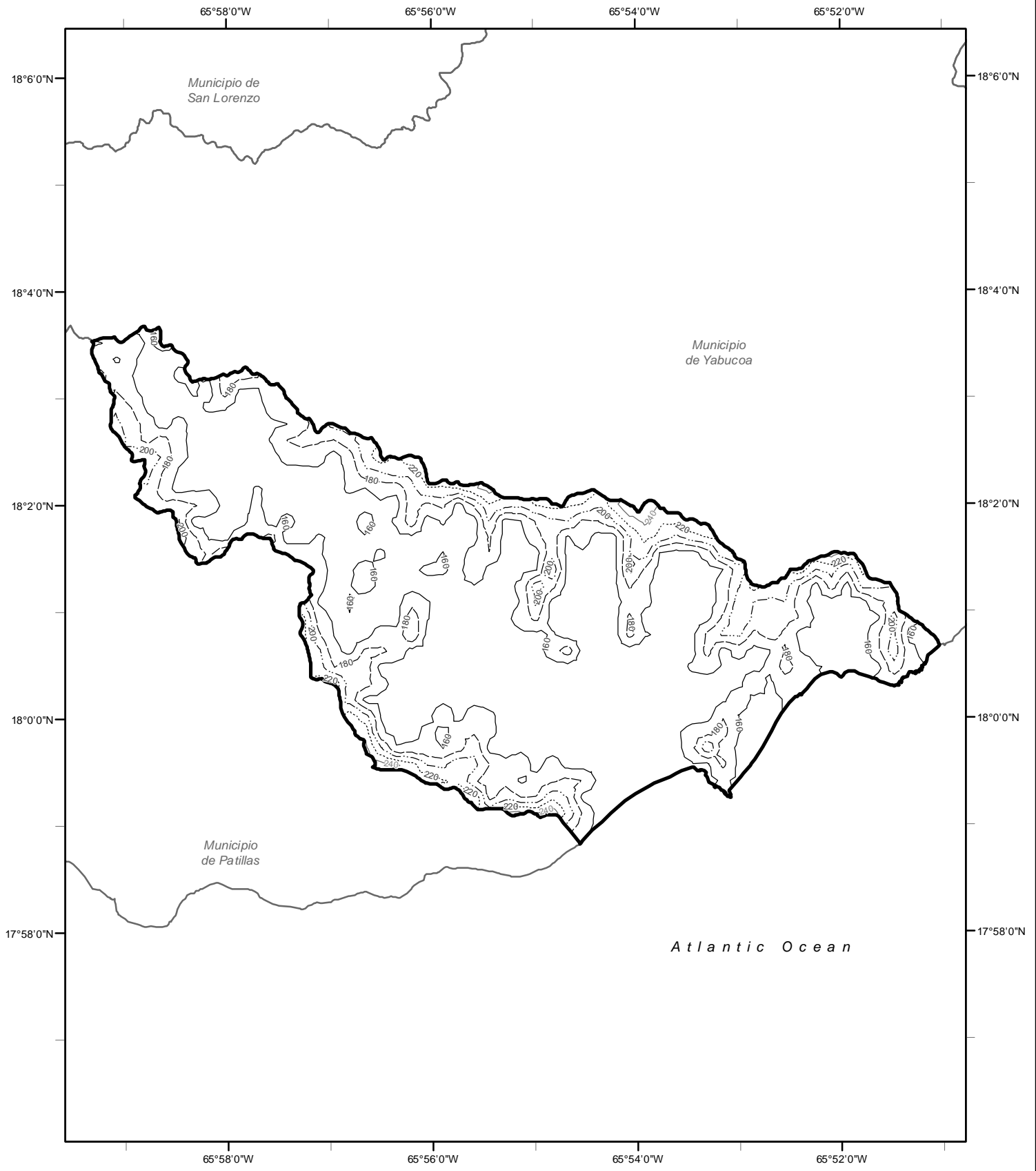


### Risk Category I Wind Contour (mph)

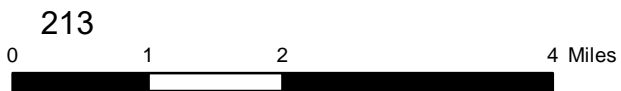
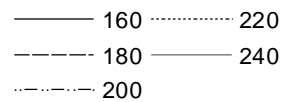


# Municipio de Maunabo

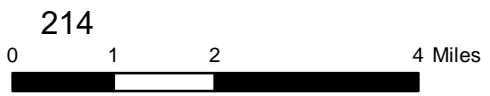
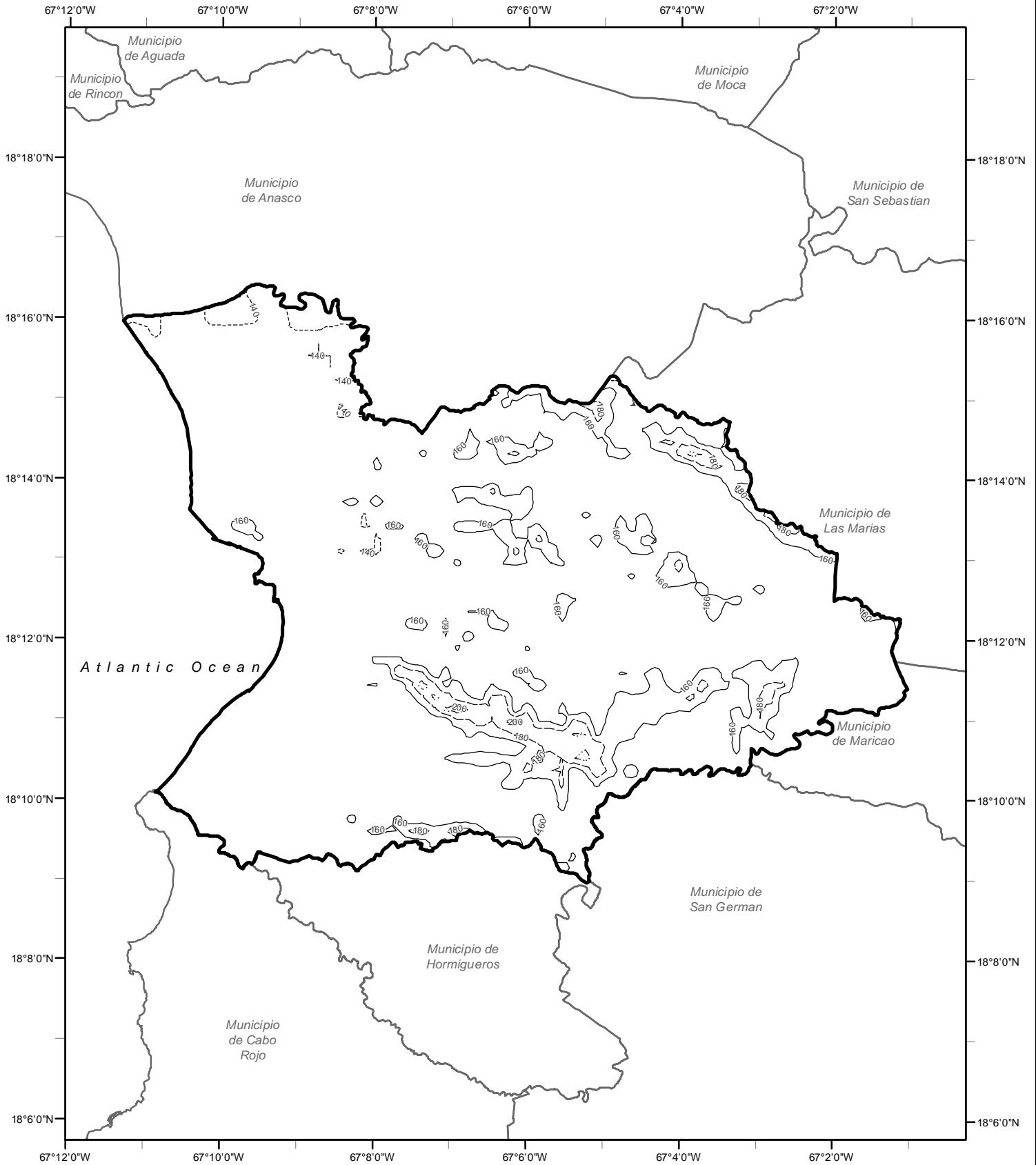
## Risk Category I Effective Wind Speed Map (mph)



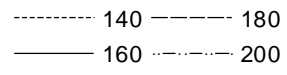
### Risk Category I Wind Contour (mph)



# Municipio de Mayaguez Risk Category I Effective Wind Speed Map (mph)



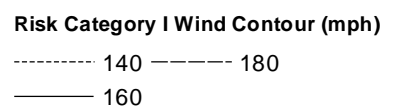
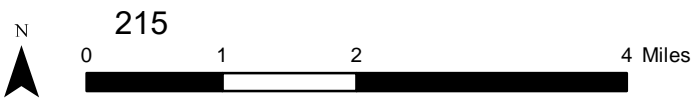
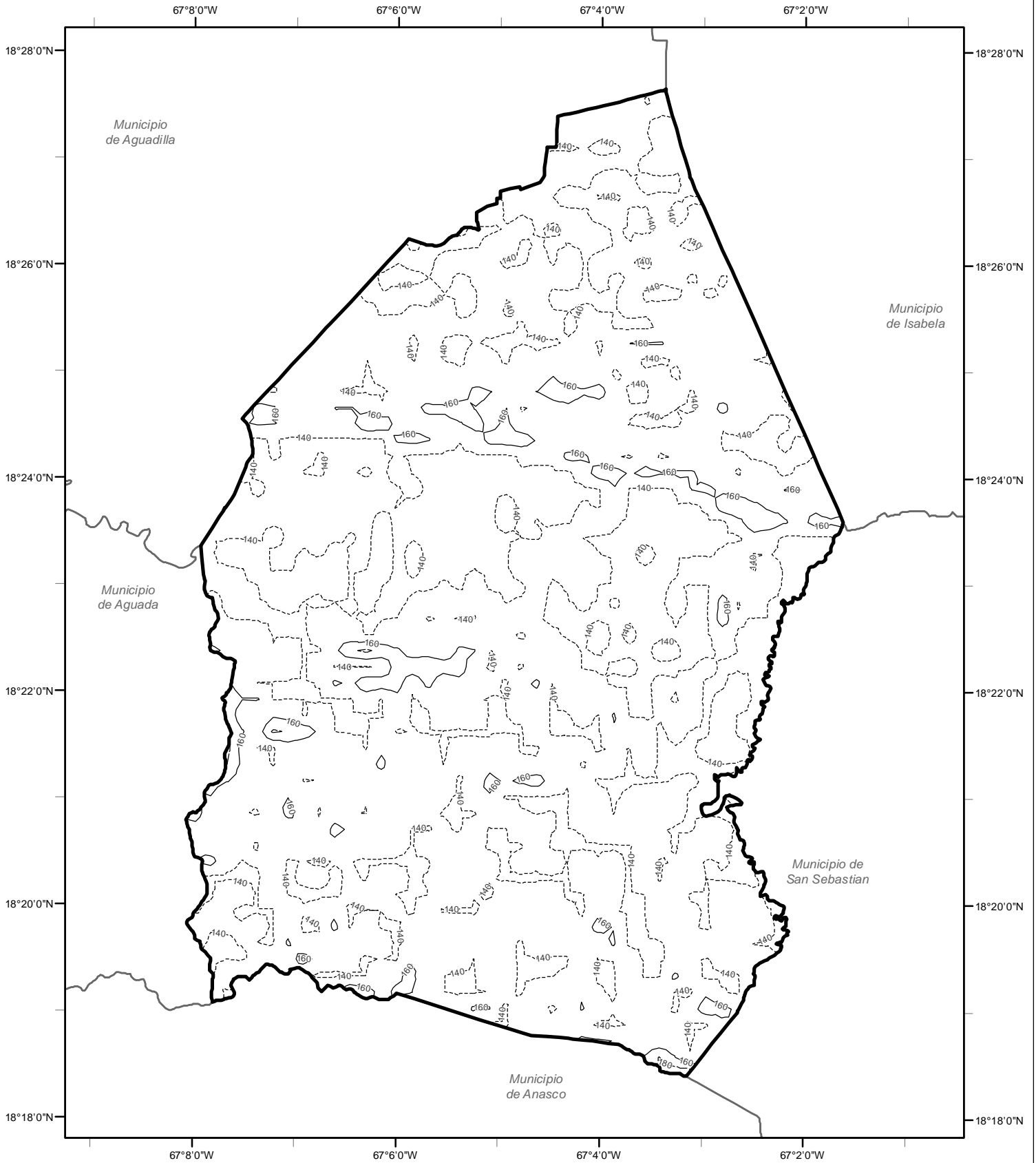
### Risk Category I Wind Contour (mph)





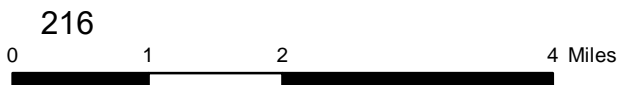
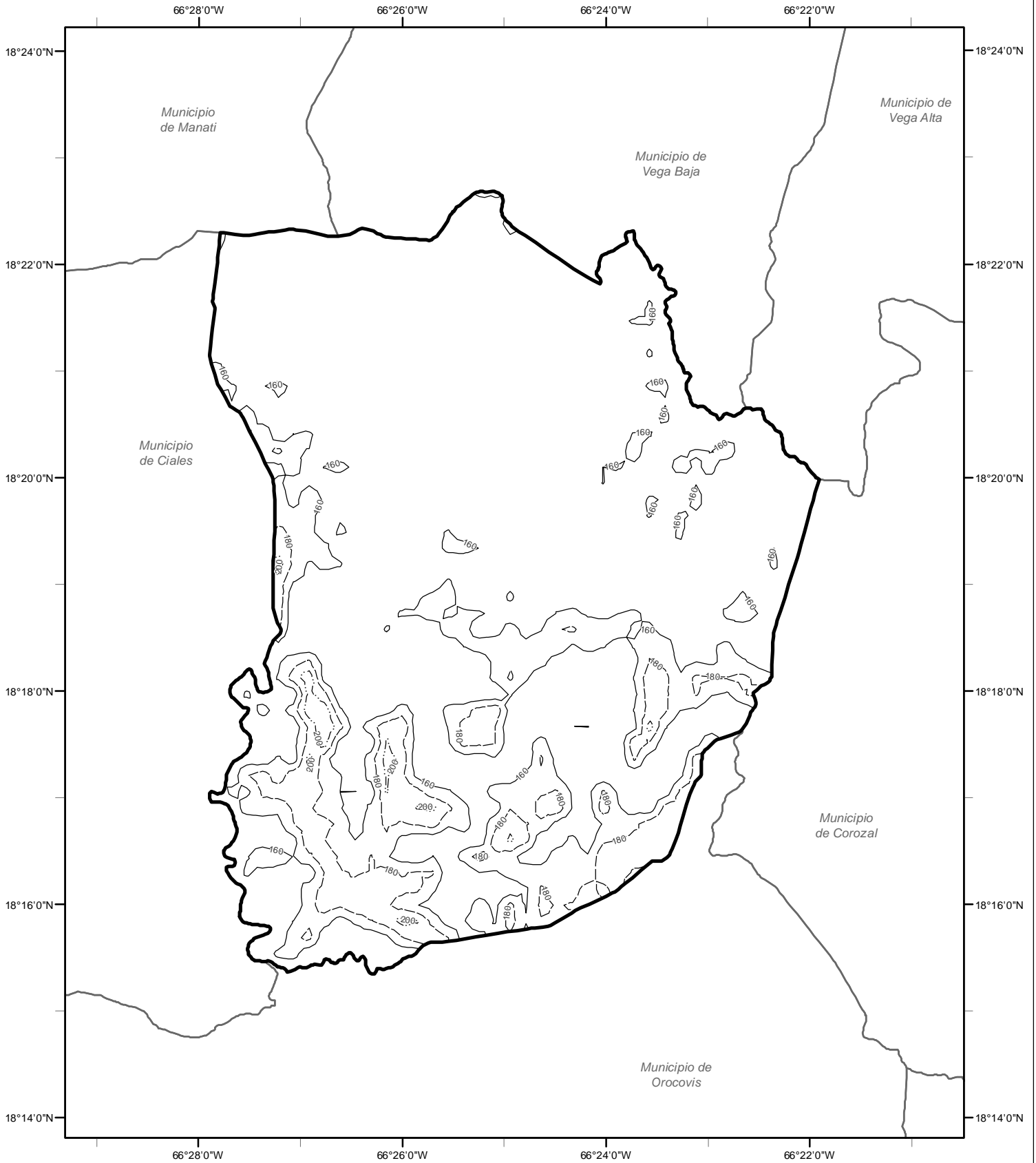
# Municipio de Moca

## Risk Category I Effective Wind Speed Map (mph)

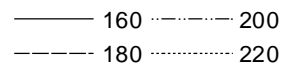


# Municipio de Morovis

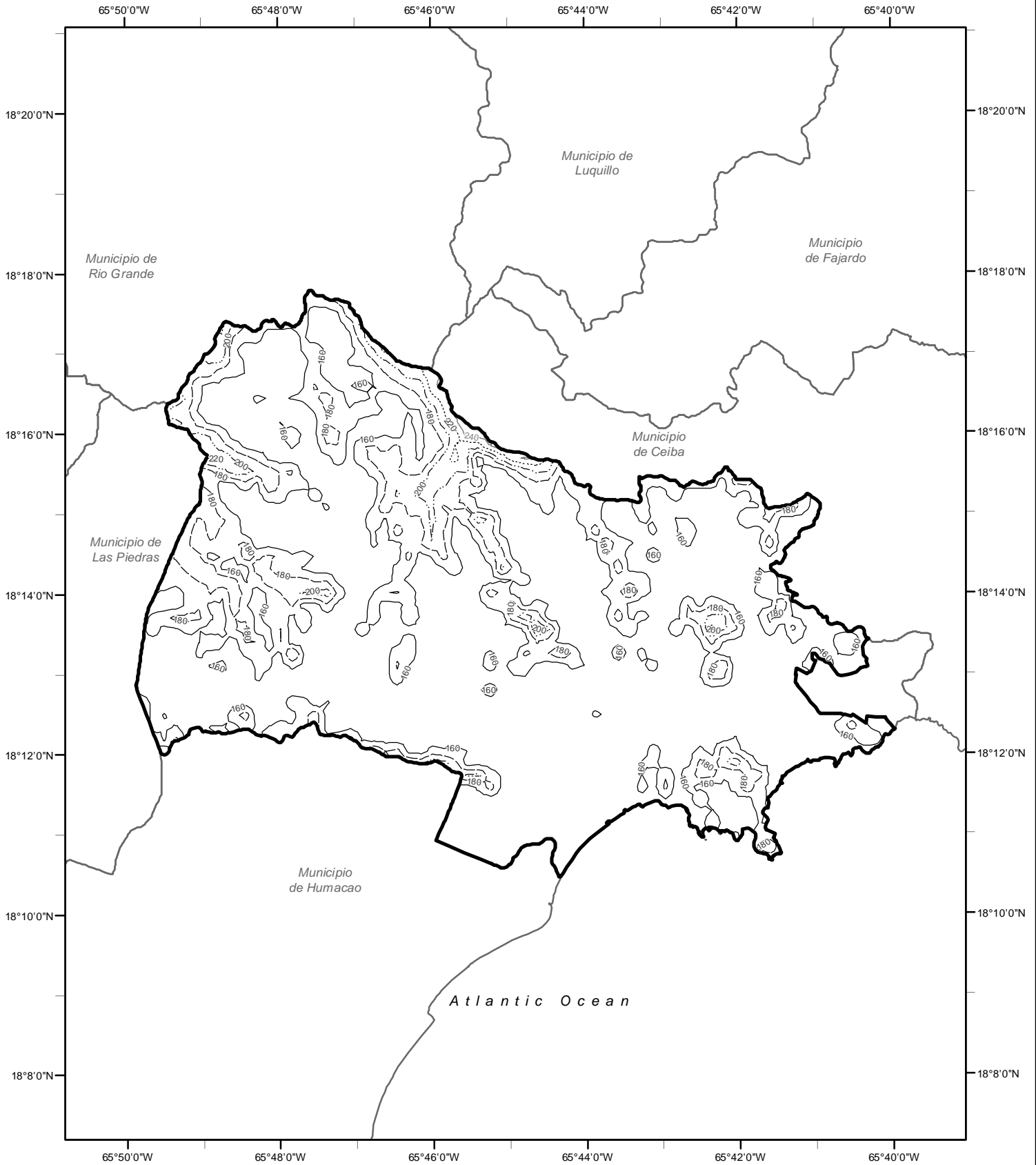
## Risk Category I Effective Wind Speed Map (mph)



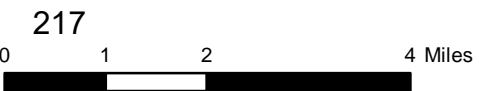
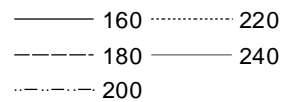
### Risk Category I Wind Contour (mph)



# Municipio de Naguabo Risk Category I Effective Wind Speed Map (mph)



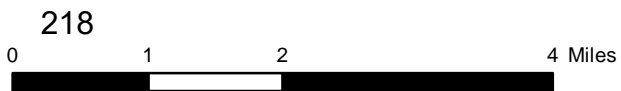
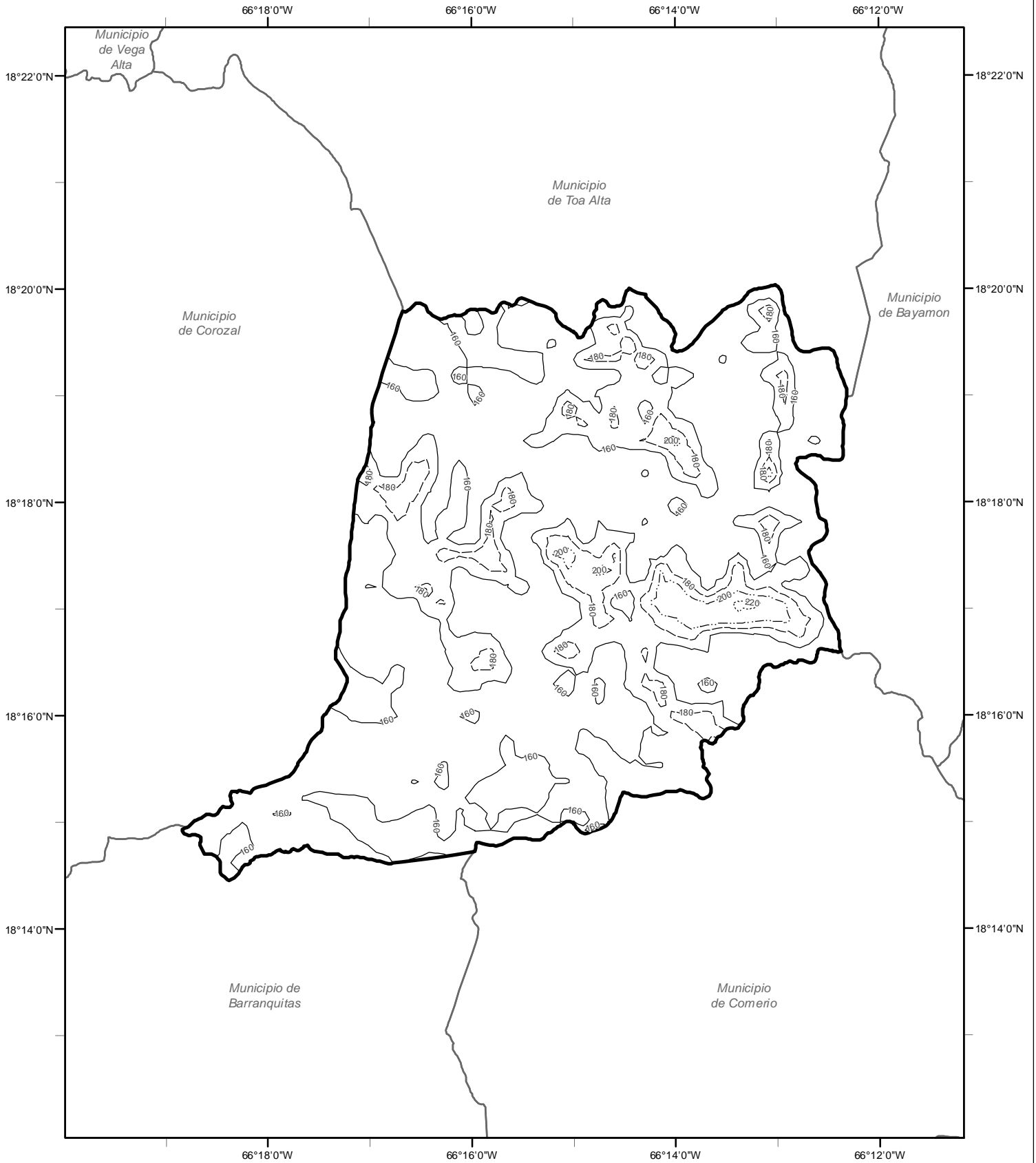
### Risk Category I Wind Contour (mph)



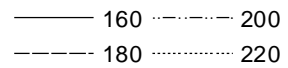
217

# Municipio de Naranjito

## Risk Category I Effective Wind Speed Map (mph)

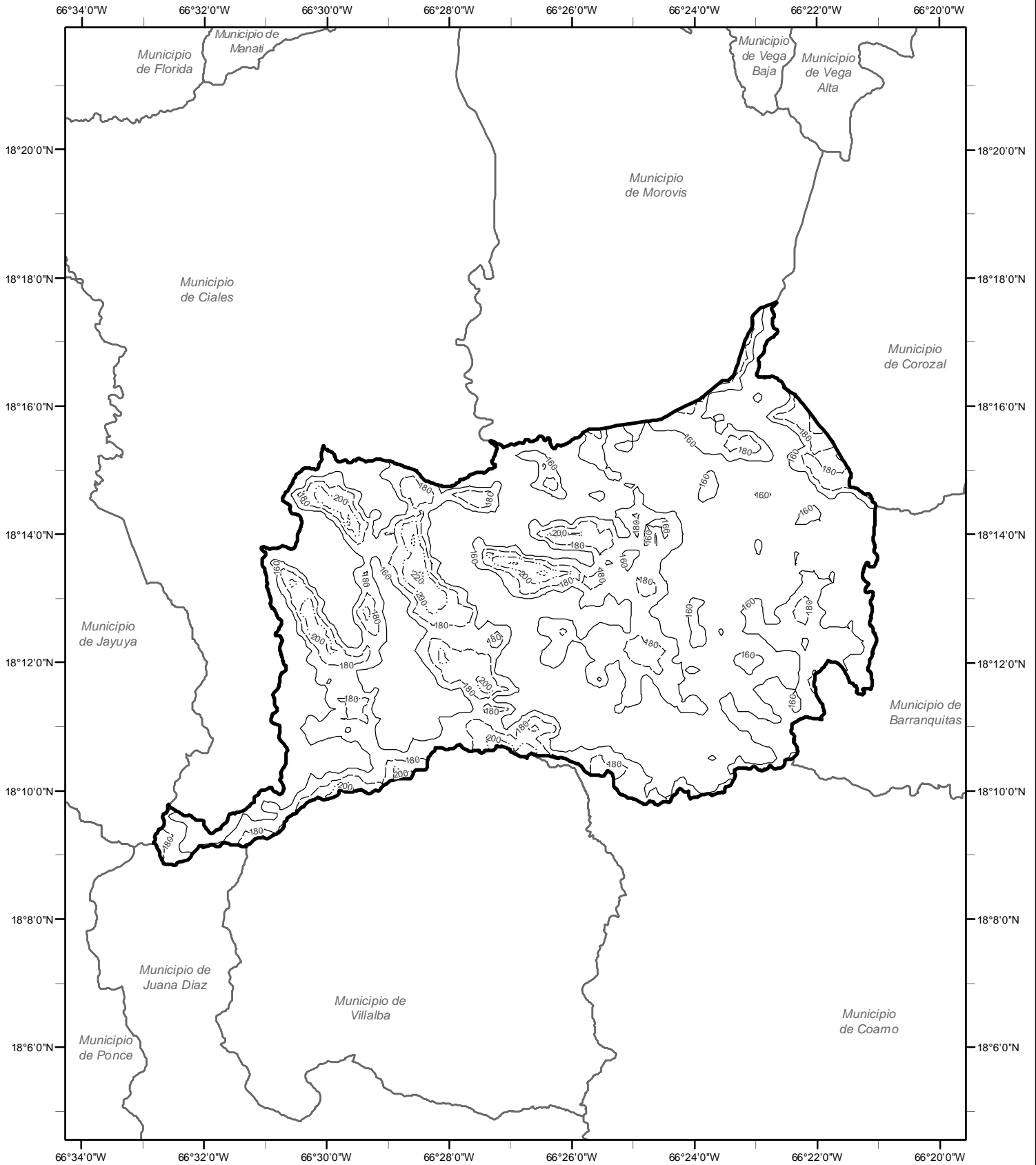


### Risk Category I Wind Contour (mph)

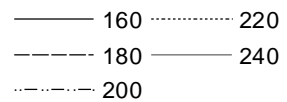


# Municipio de Orocovis

## Risk Category I Effective Wind Speed Map (mph)



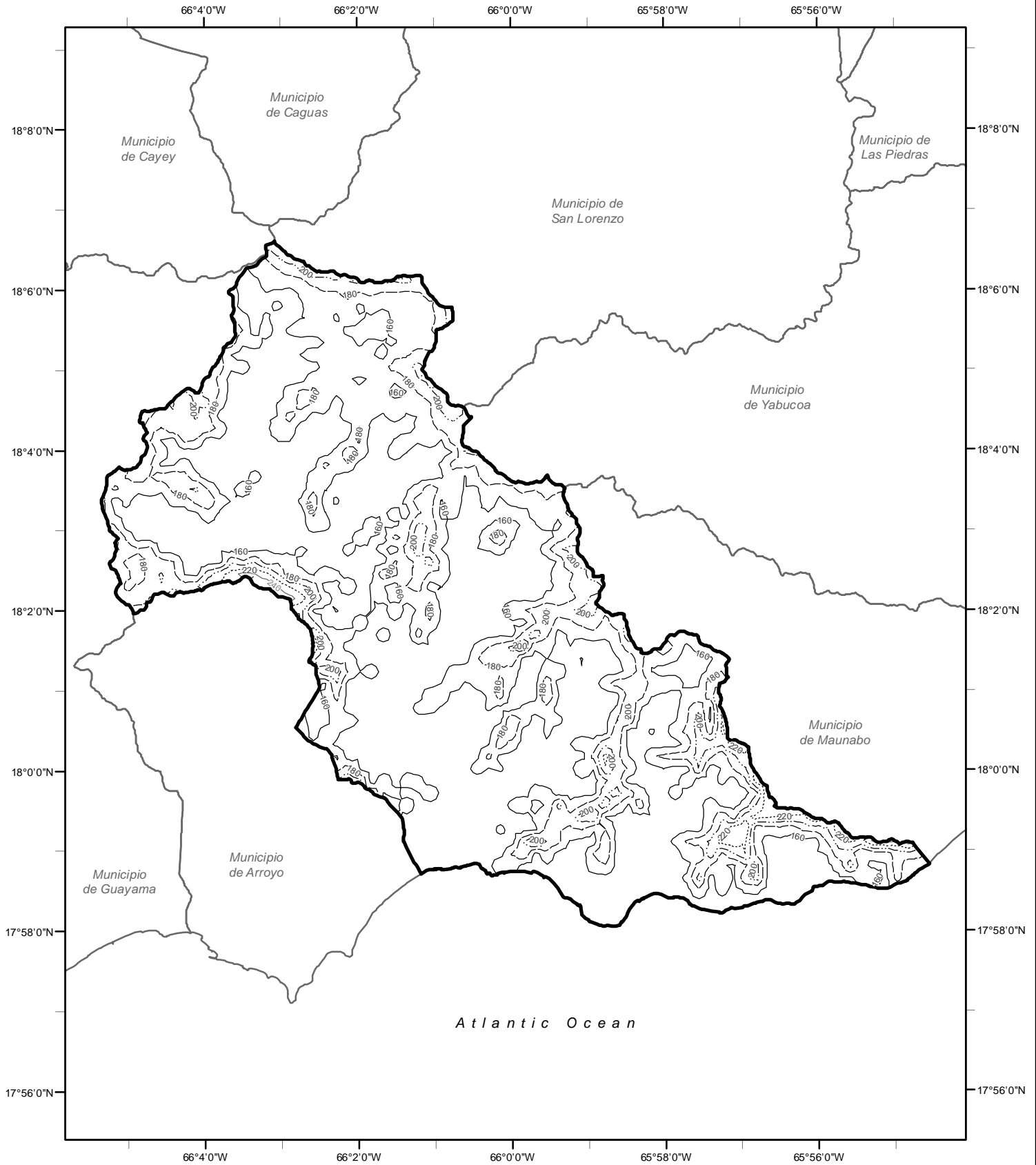
### Risk Category I Wind Contour (mph)



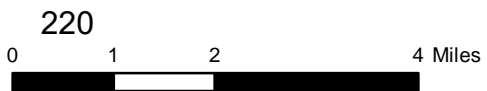
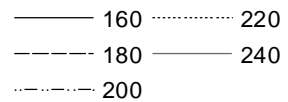
219



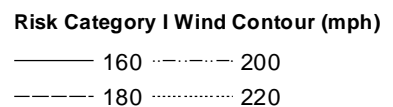
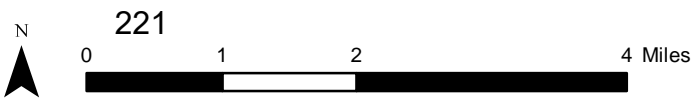
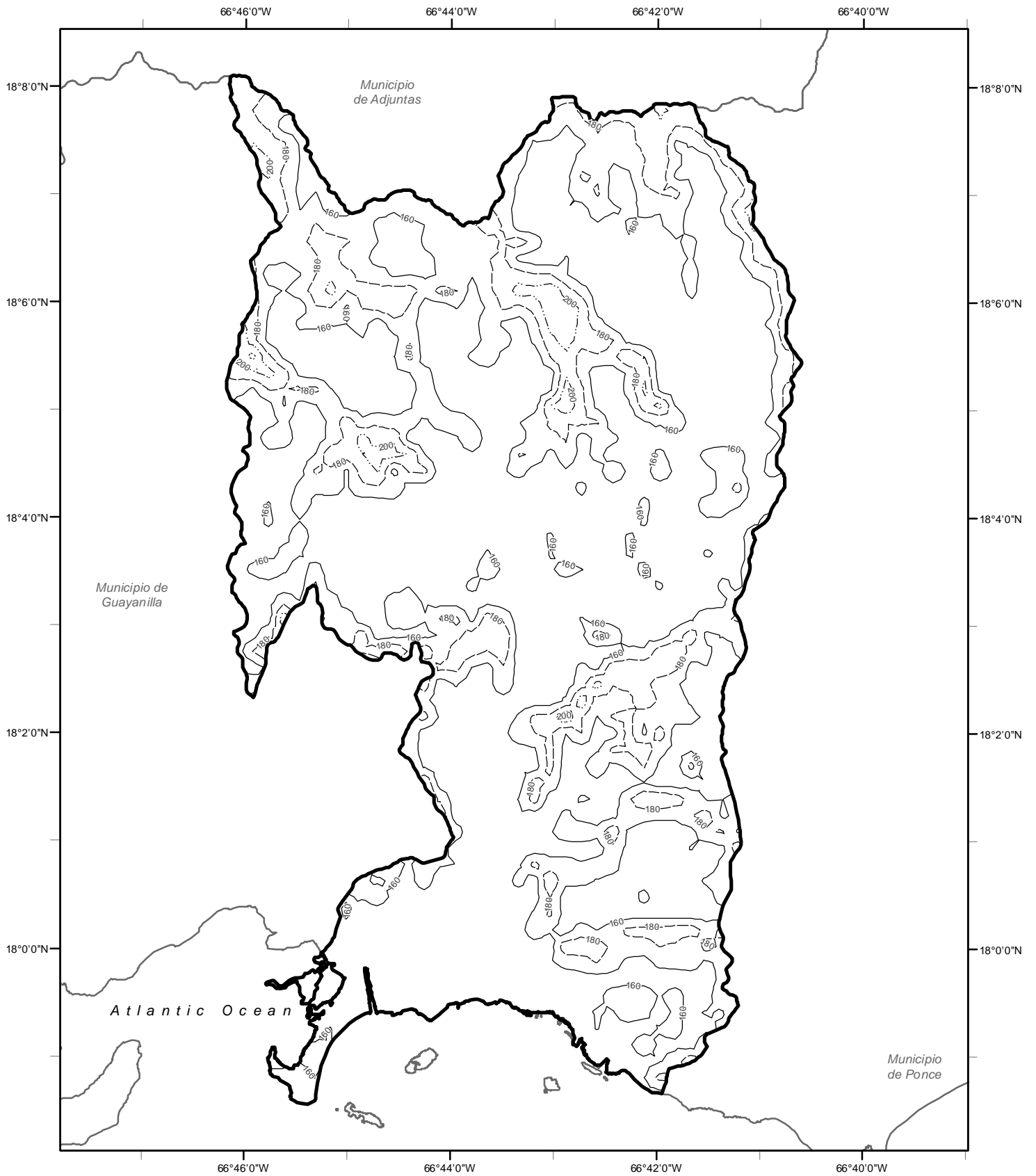
# Municipio de Patillas Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)

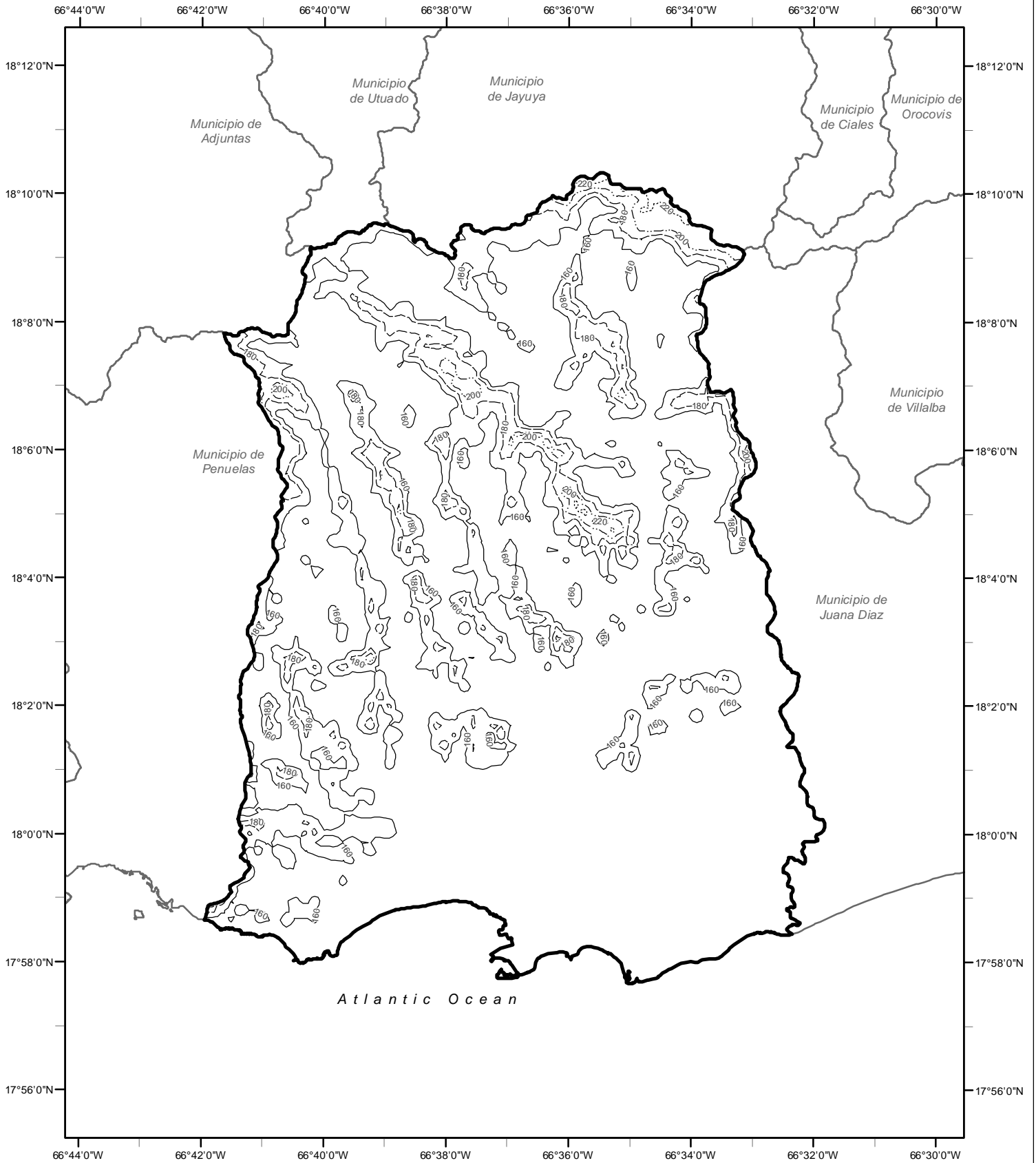


# Municipio de Penuelas Risk Category I Effective Wind Speed Map (mph)

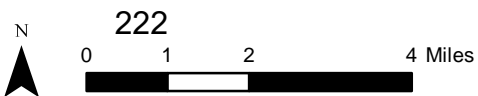
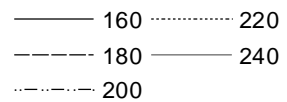


# Municipio de Ponce

## Risk Category I Effective Wind Speed Map (mph)

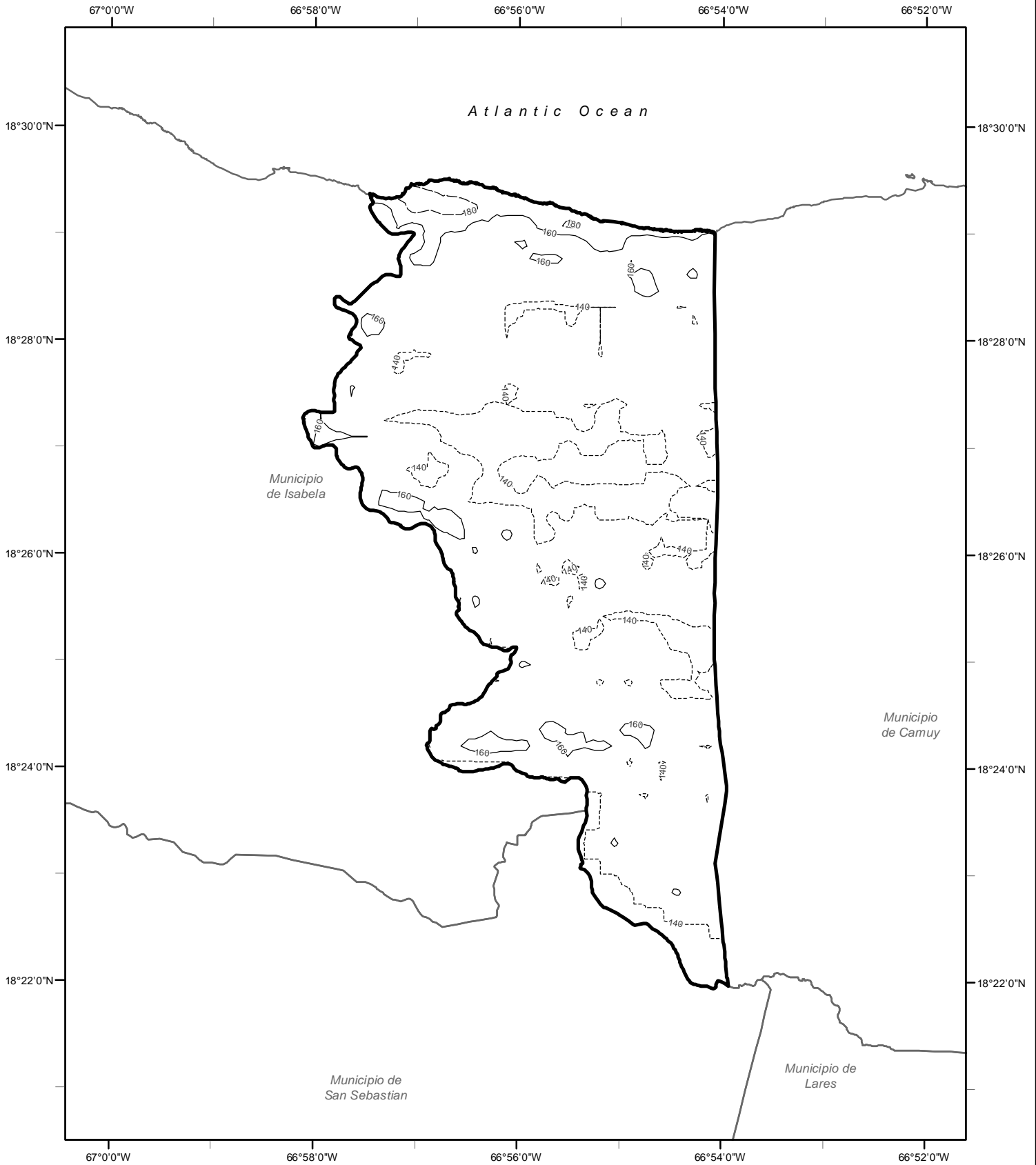


### Risk Category I Wind Contour (mph)



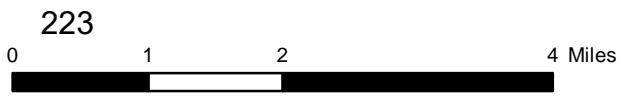


# Municipio de Quebradillas Risk Category I Effective Wind Speed Map (mph)

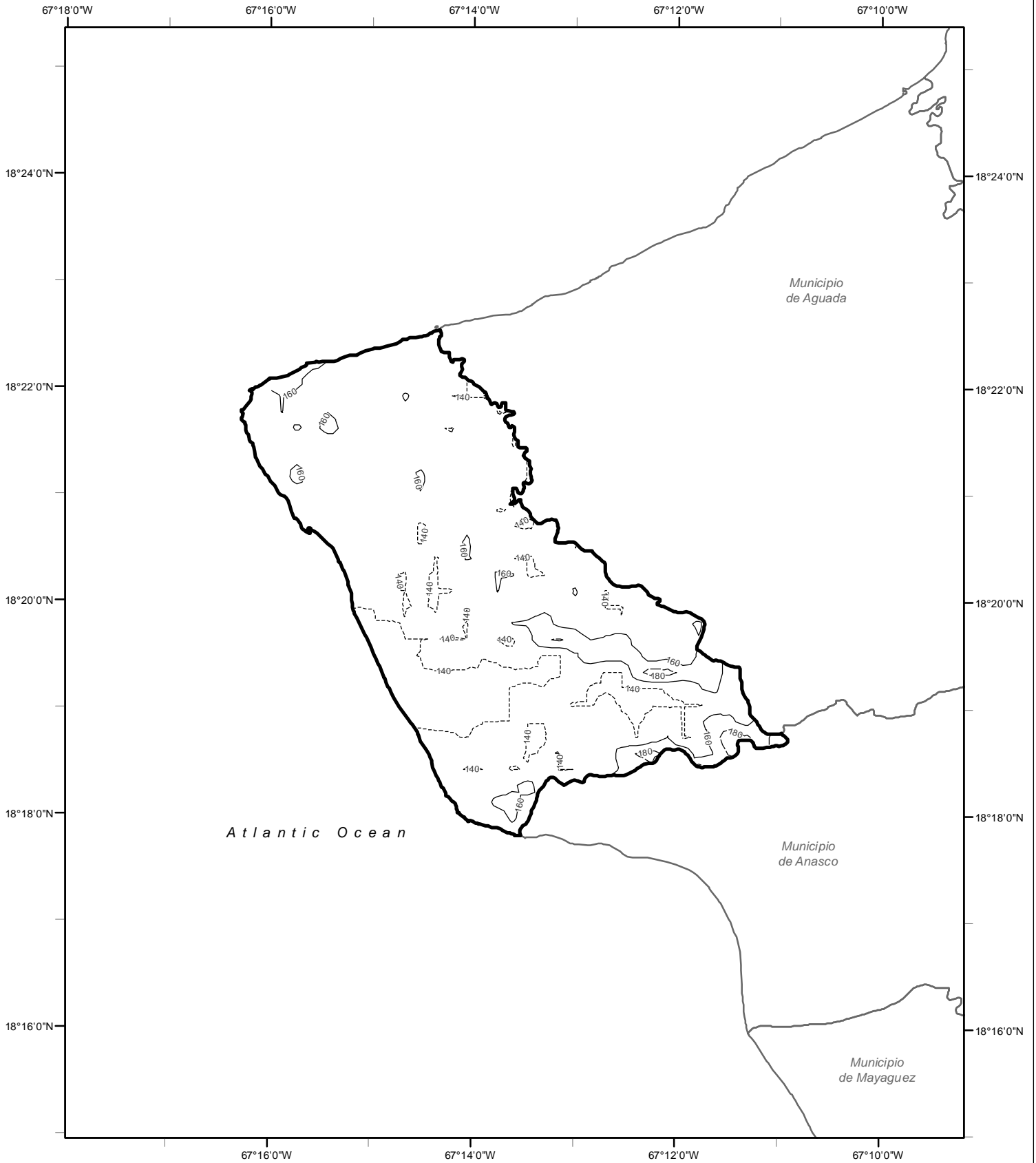


**Risk Category I Wind Contour (mph)**

- 140
- 180
- 160

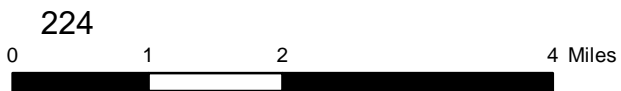


# Municipio de Rincon Risk Category I Effective Wind Speed Map (mph)

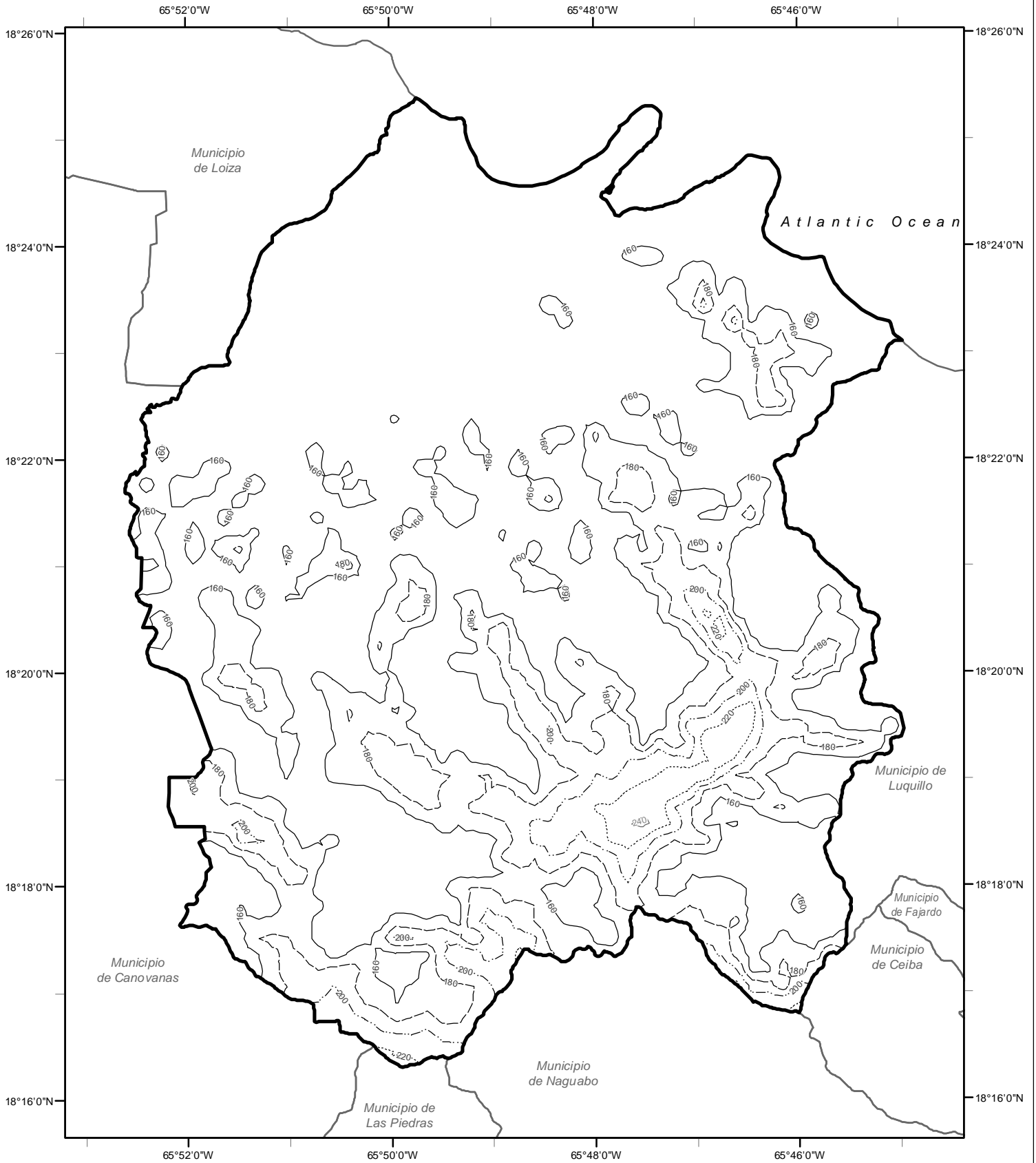


**Risk Category I Wind Contour (mph)**

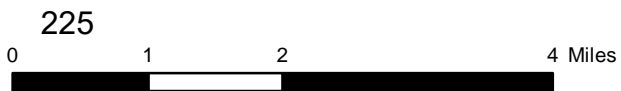
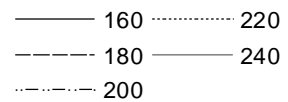
- 140
- 180
- \_\_\_\_\_ 160



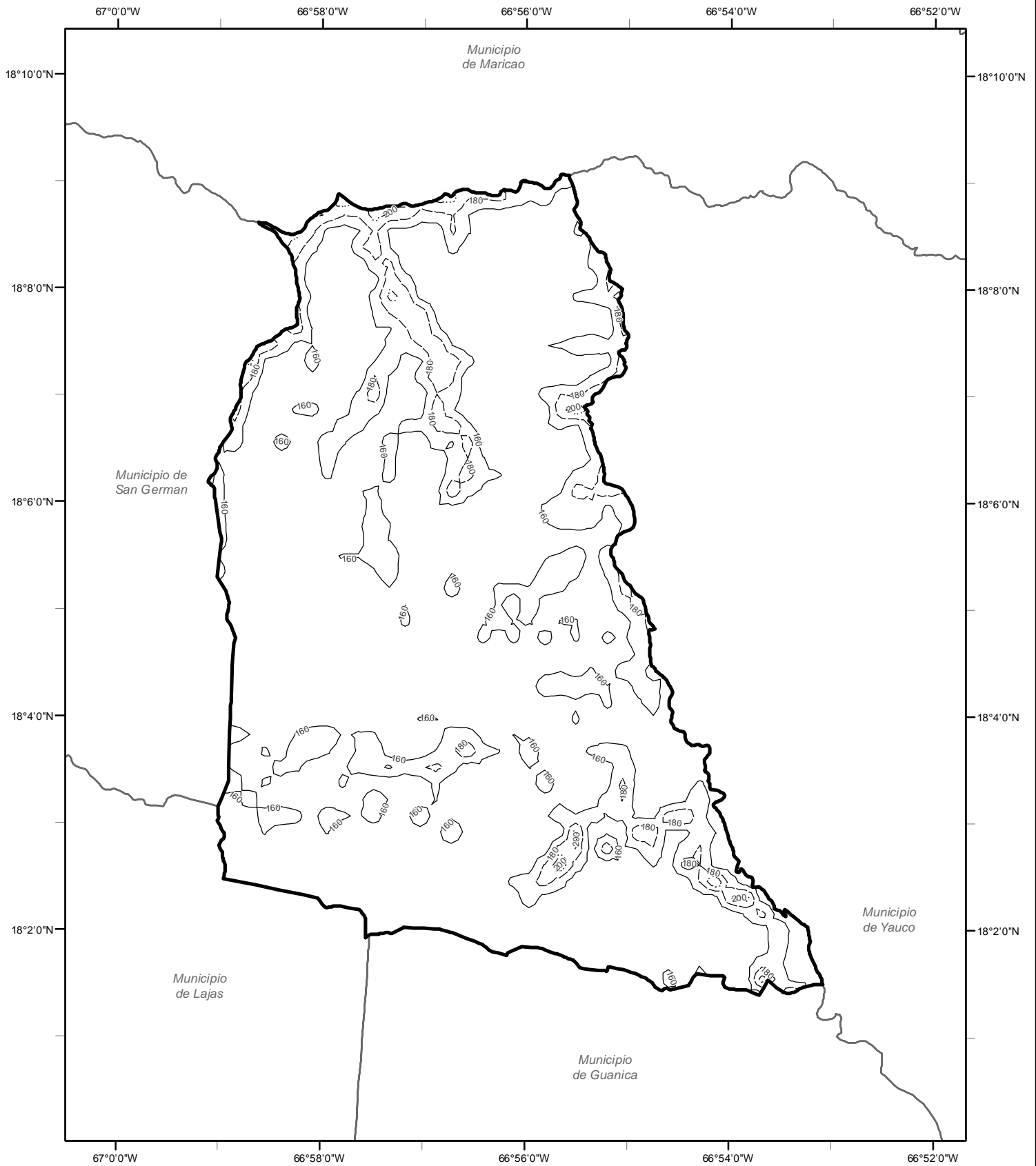
# Municipio de Rio Grande Risk Category I Effective Wind Speed Map (mph)



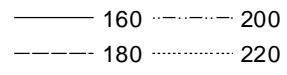
## Risk Category I Wind Contour (mph)



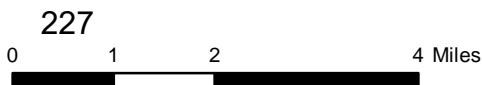
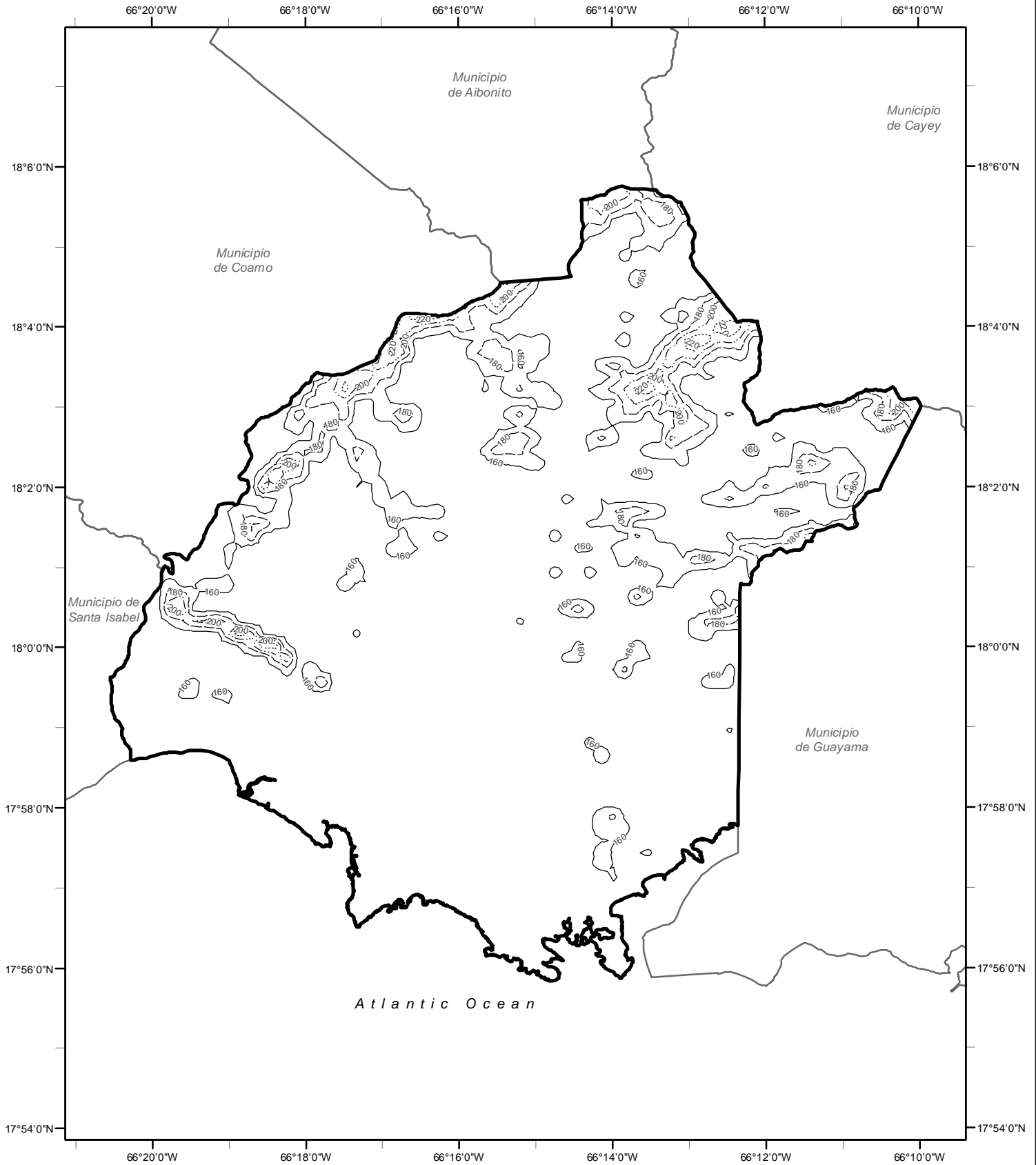
# Municipio de Sabana Grande Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)

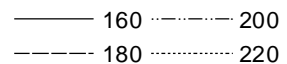


# Municipio de Salinas Risk Category I Effective Wind Speed Map (mph)

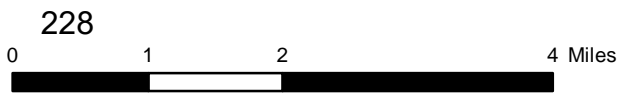
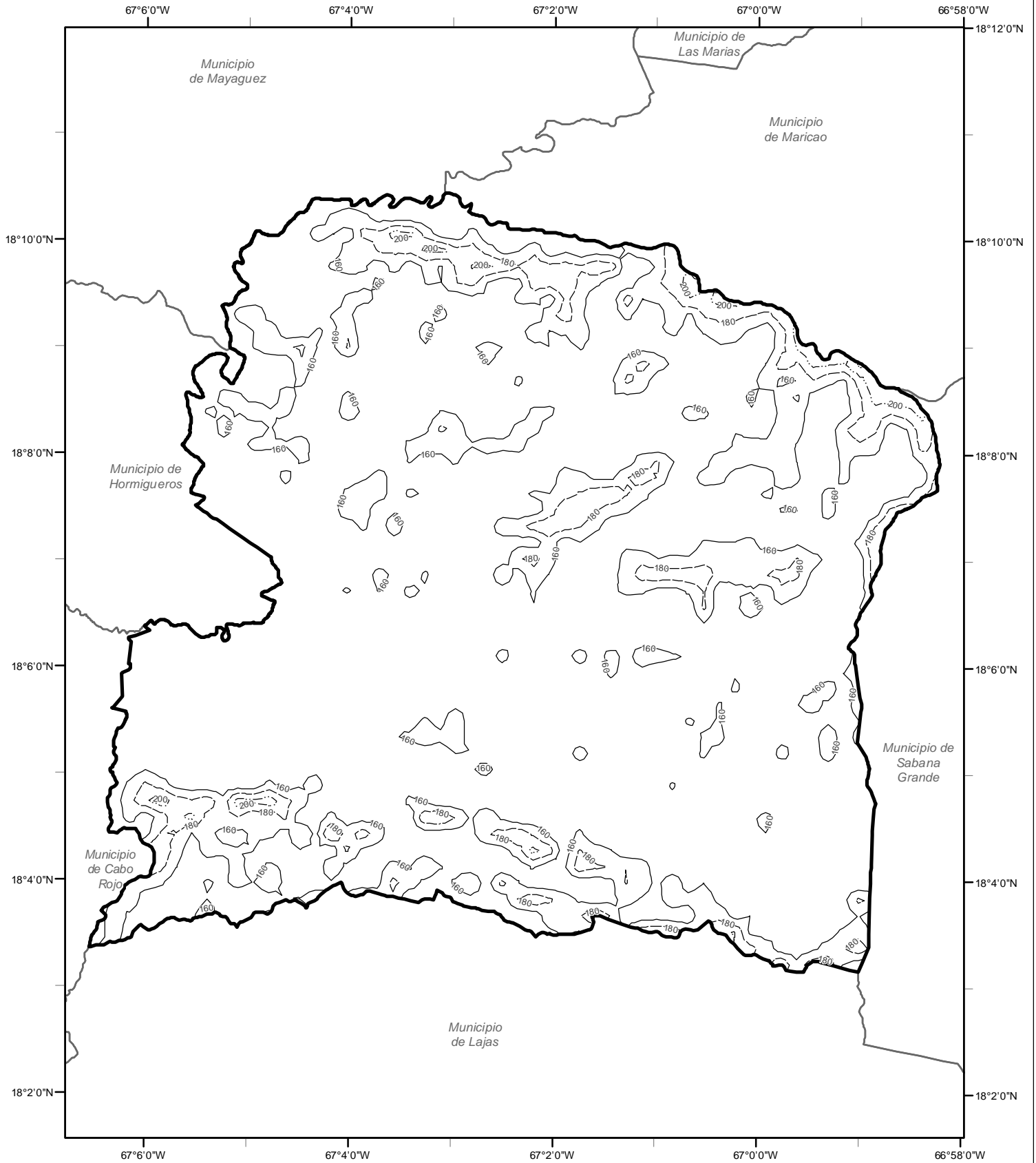


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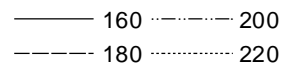
### Risk Category I Wind Contour (mph)



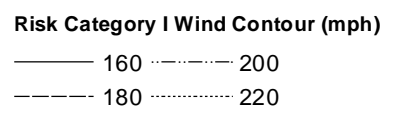
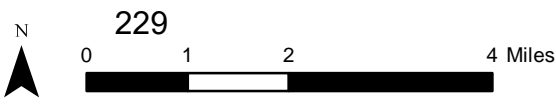
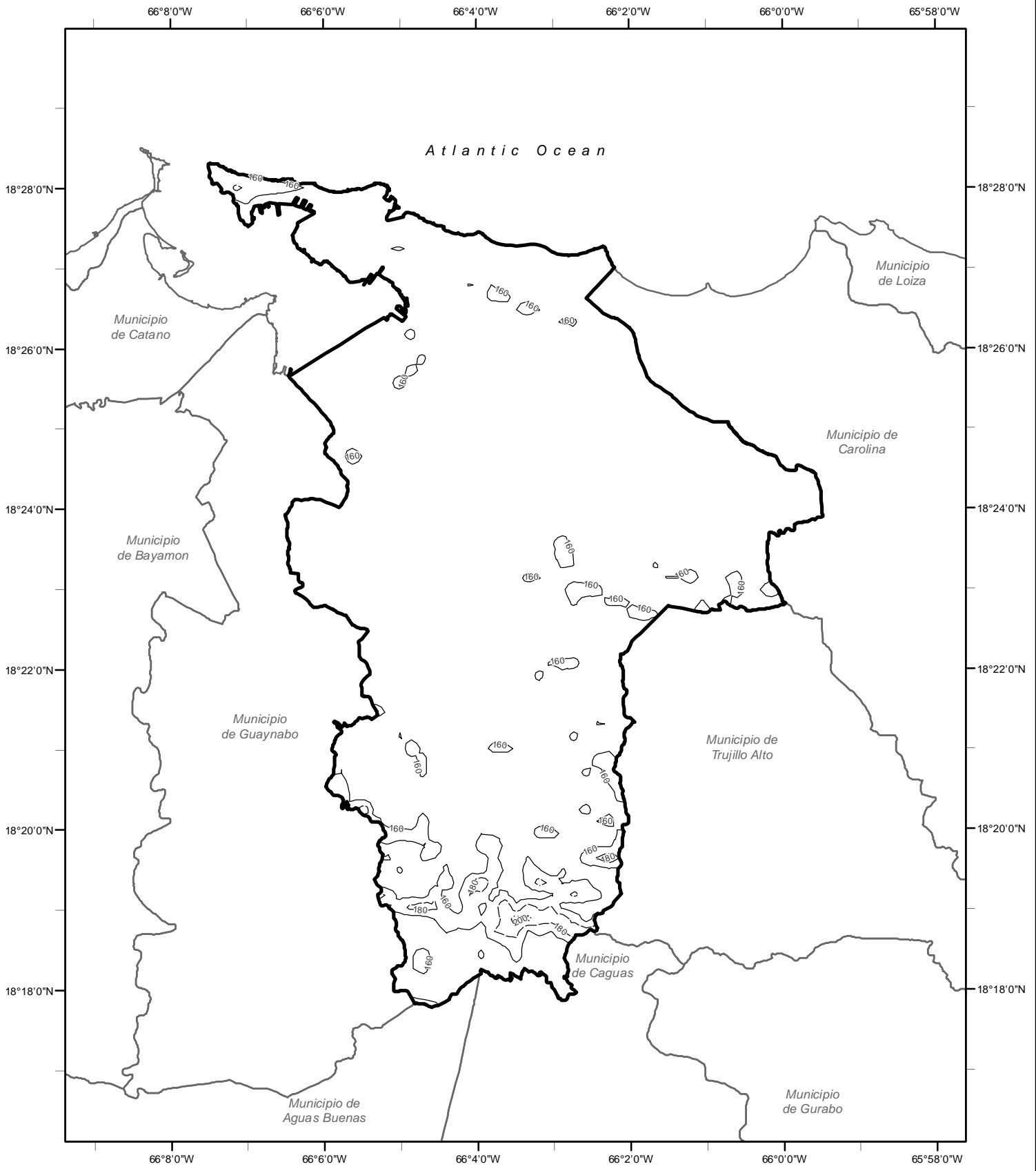
# Municipio de San German Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)

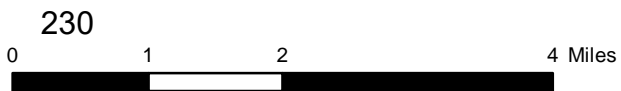
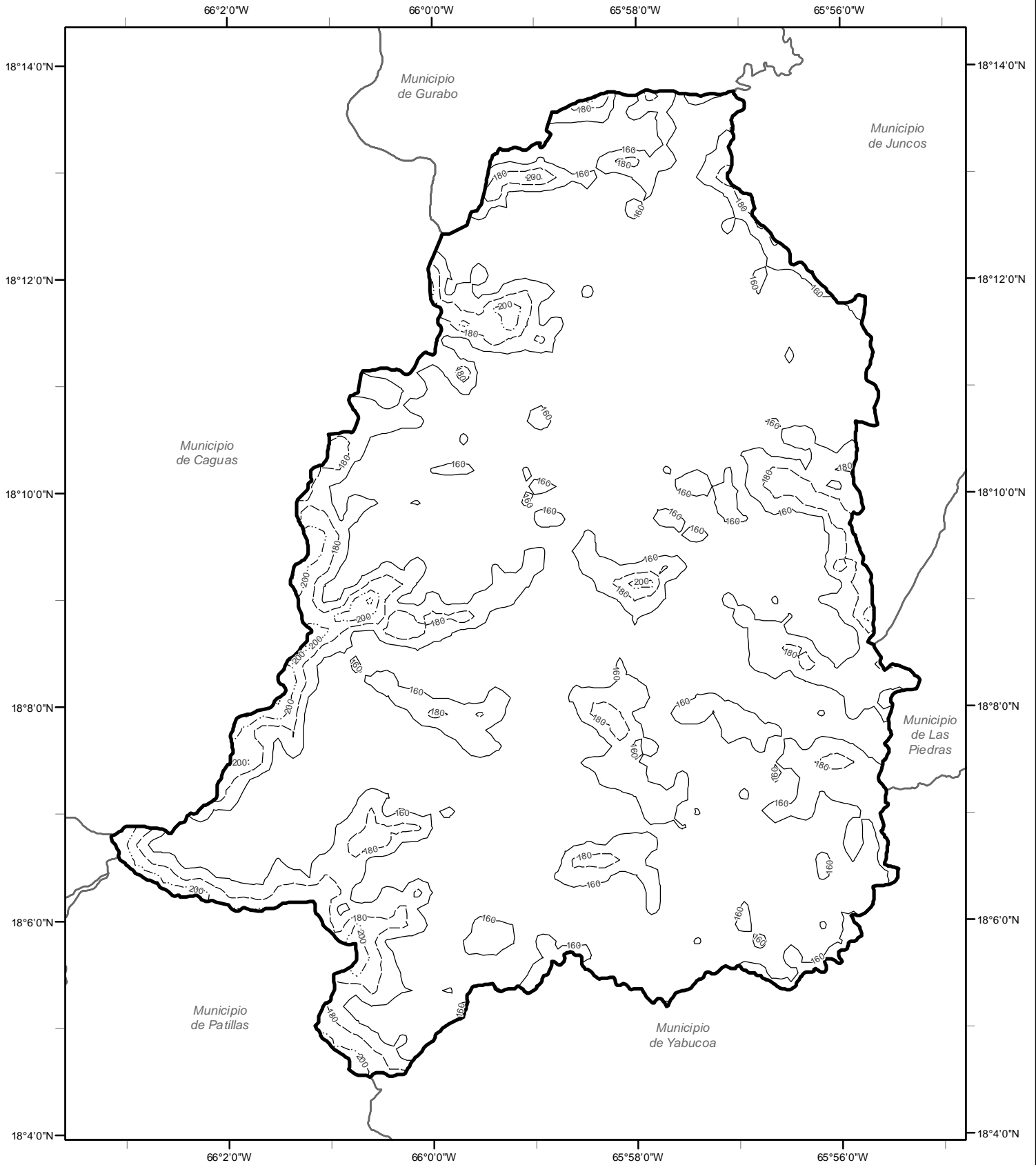


# Municipio de San Juan Risk Category I Effective Wind Speed Map (mph)

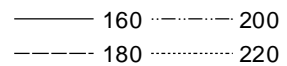


# Municipio de San Lorenzo

## Risk Category I Effective Wind Speed Map (mph)

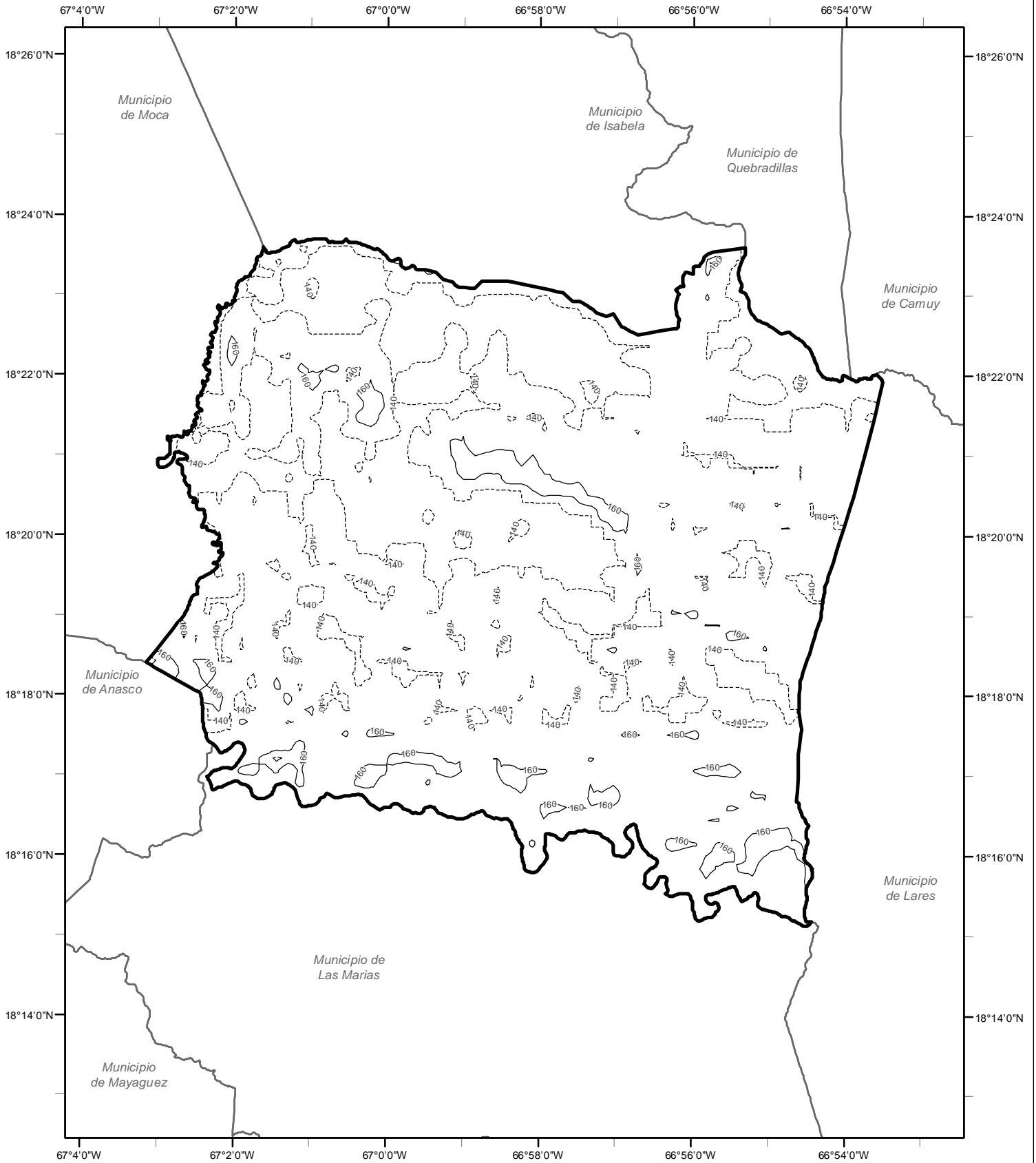


### Risk Category I Wind Contour (mph)





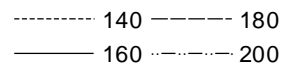
# Municipio de San Sebastian Risk Category I Effective Wind Speed Map (mph)



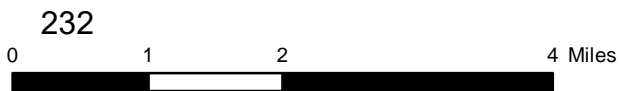
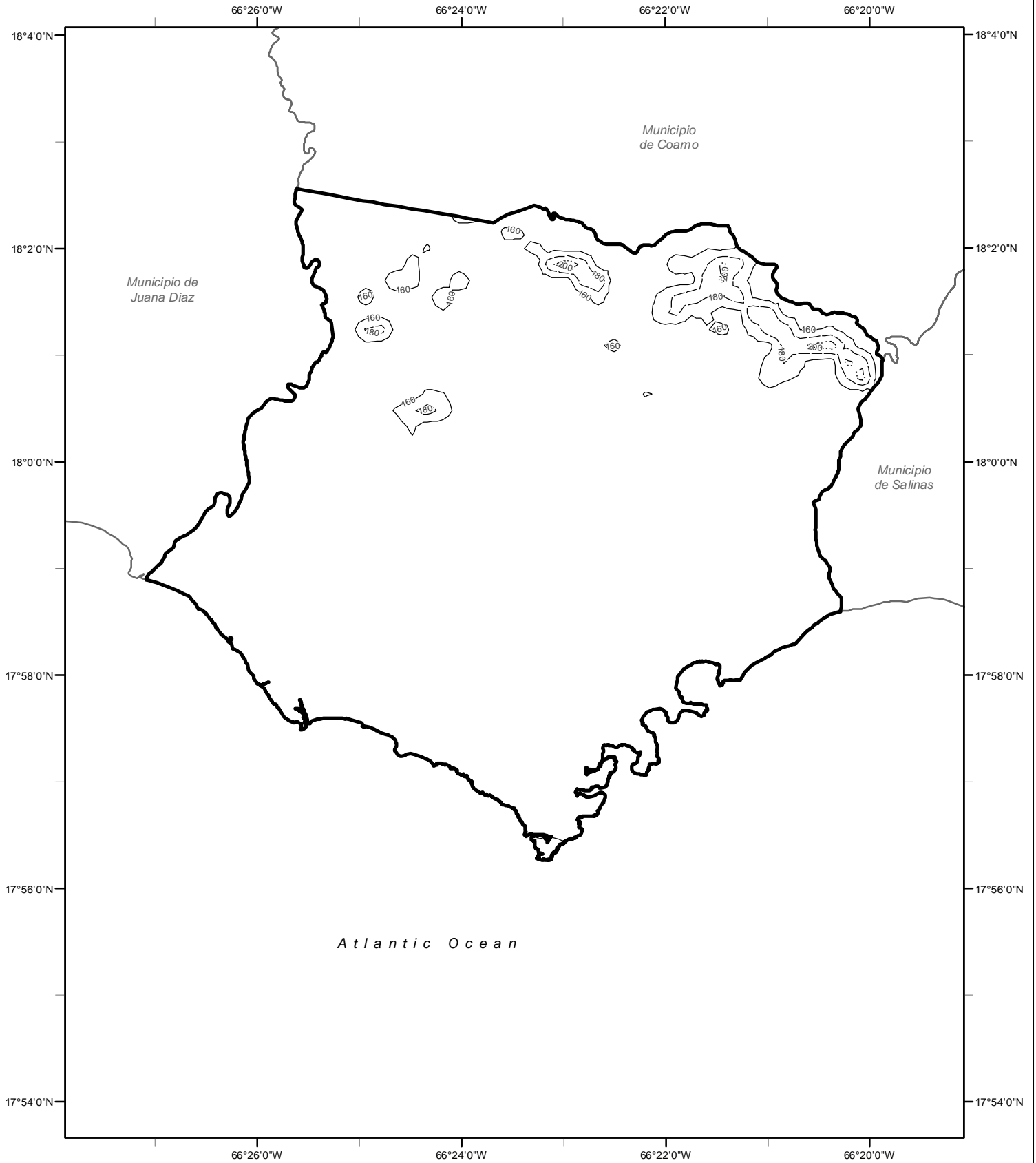
231



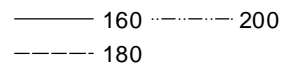
**Risk Category I Wind Contour (mph)**



# Municipio de Santa Isabel Risk Category I Effective Wind Speed Map (mph)

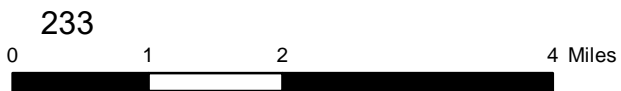
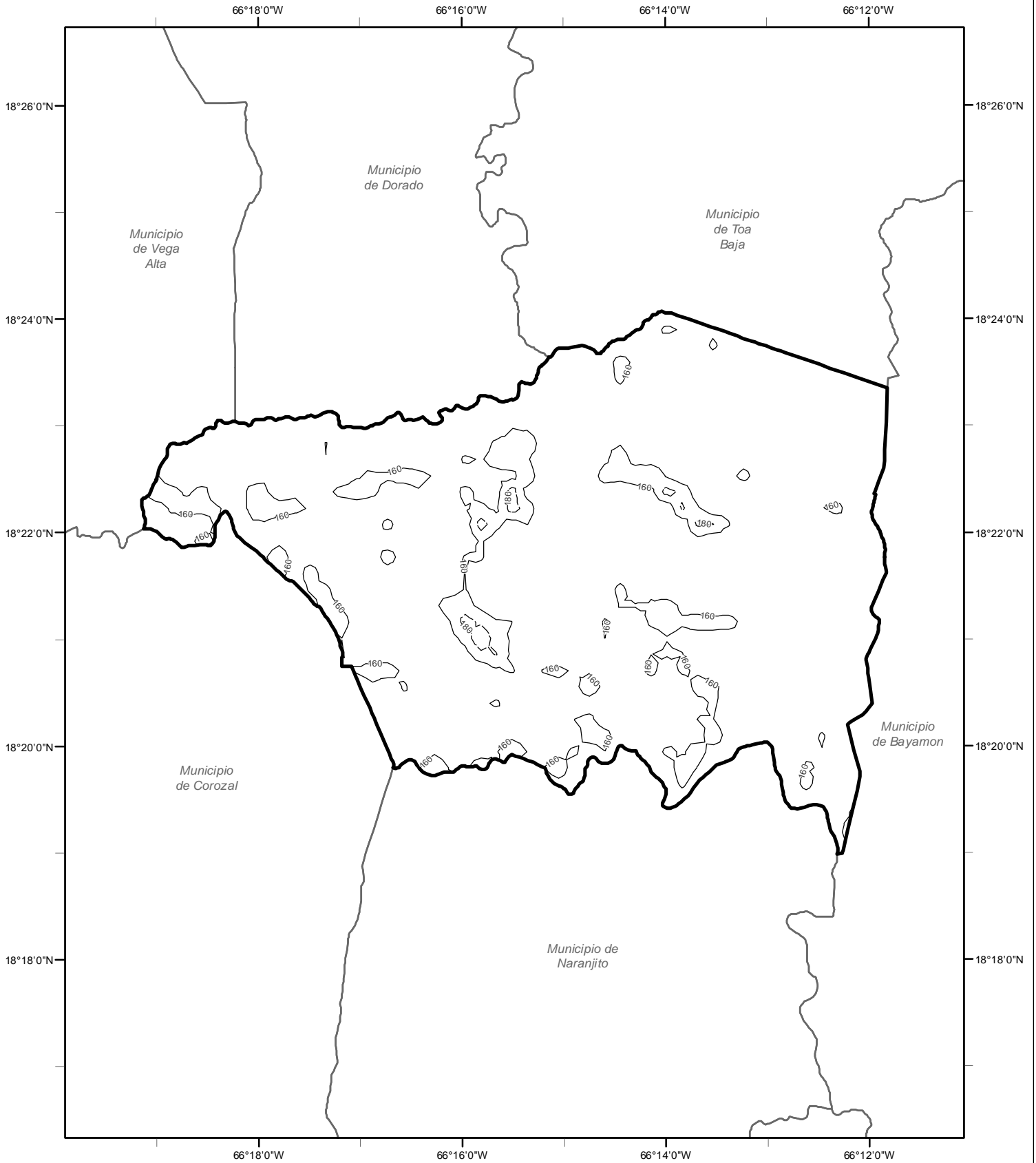


### Risk Category I Wind Contour (mph)

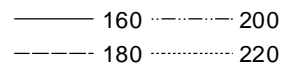


# Municipio de Toa Alta

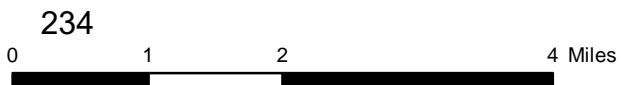
## Risk Category I Effective Wind Speed Map (mph)



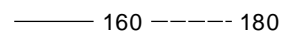
### Risk Category I Wind Contour (mph)



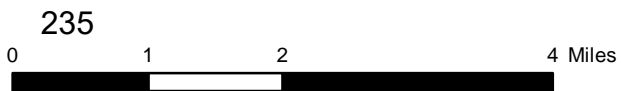
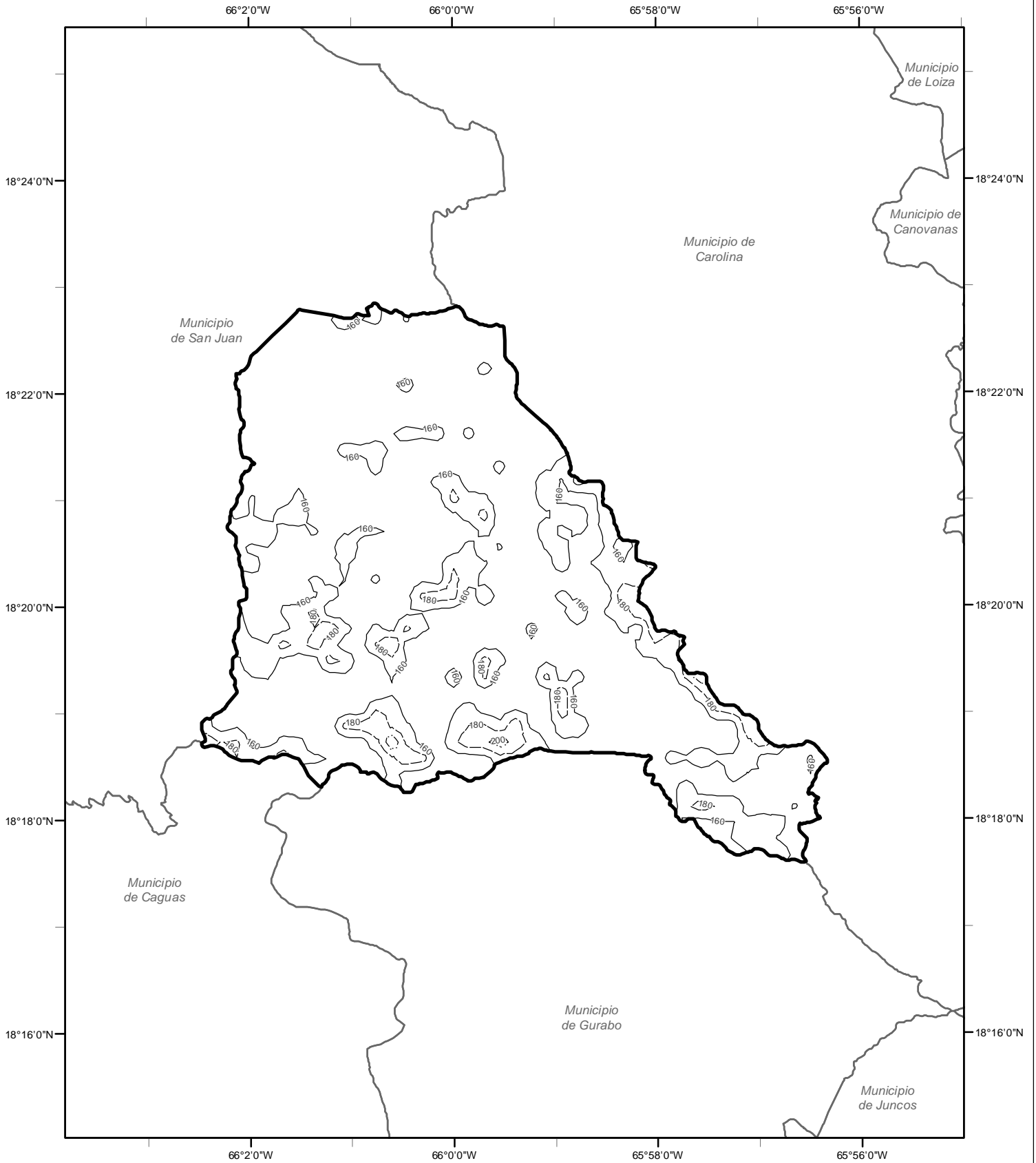
# Municipio de Toa Baja Risk Category I Effective Wind Speed Map (mph)



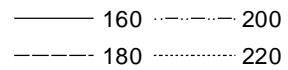
Risk Category I Wind Contour (mph)



# Municipio de Trujillo Alto Risk Category I Effective Wind Speed Map (mph)

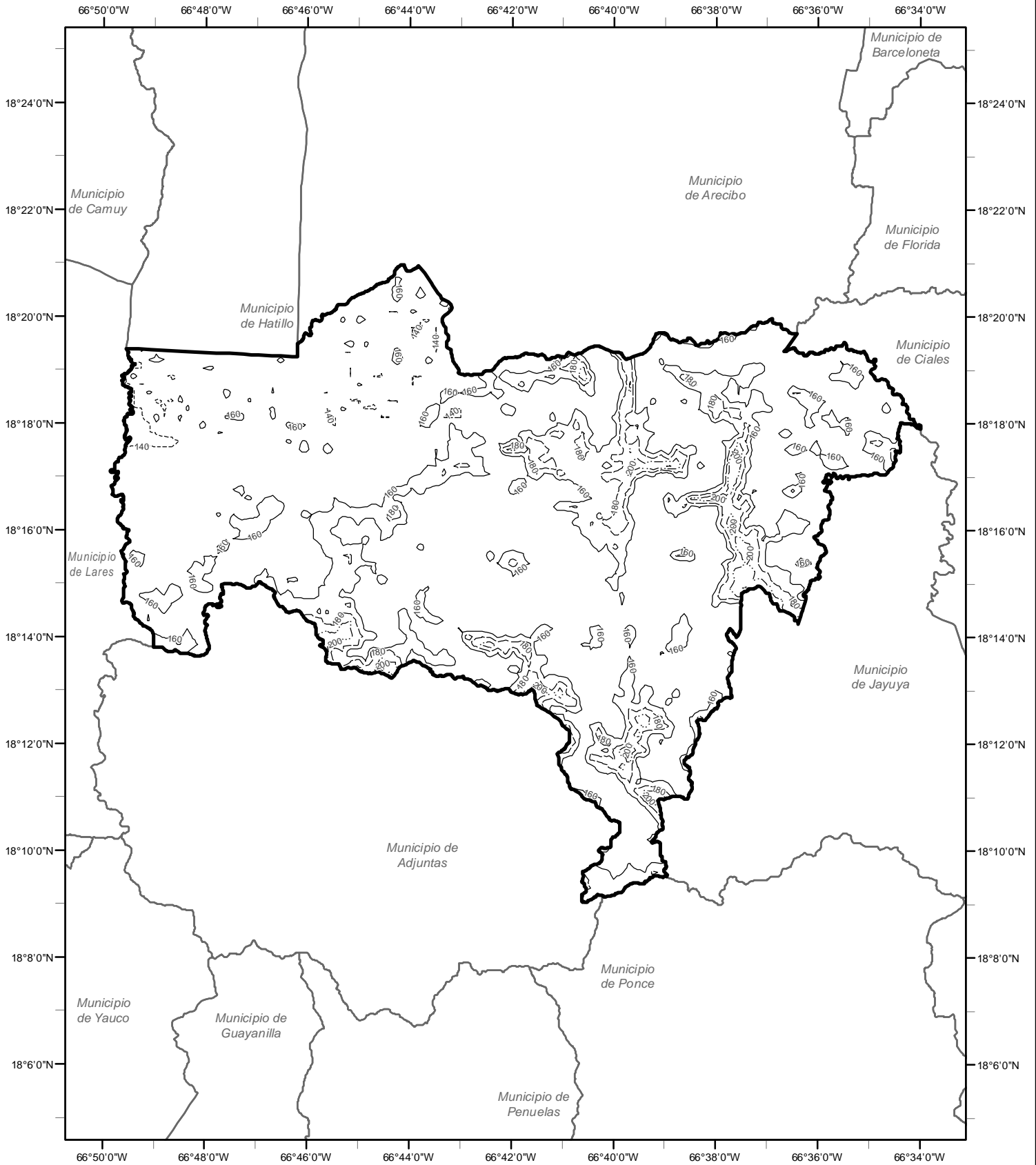


### Risk Category I Wind Contour (mph)

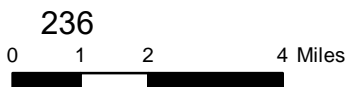
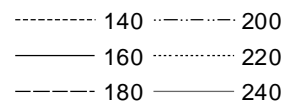


# Municipio de Utuado

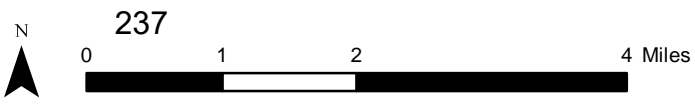
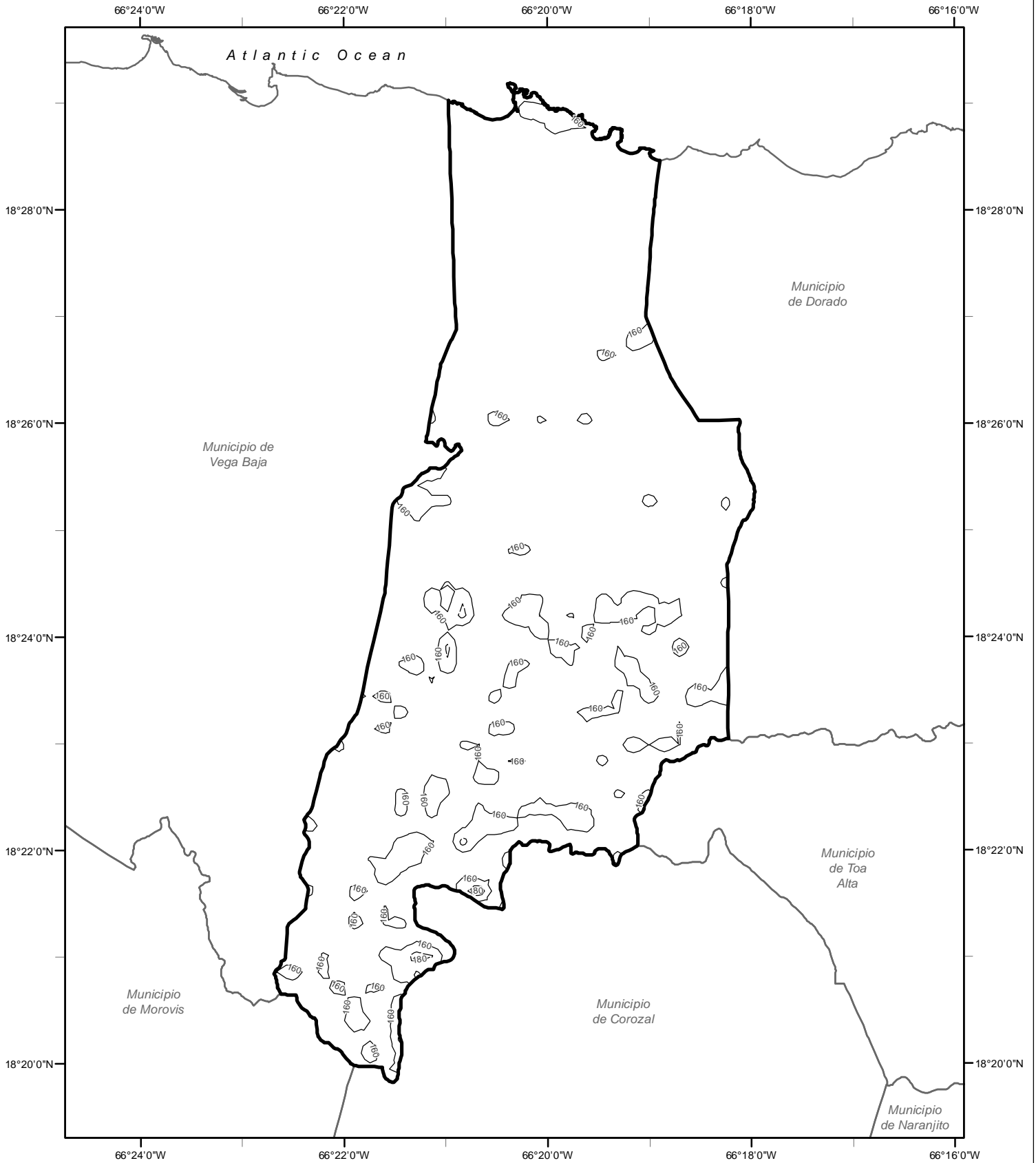
## Risk Category I Effective Wind Speed Map (mph)



### Risk Category I Wind Contour (mph)

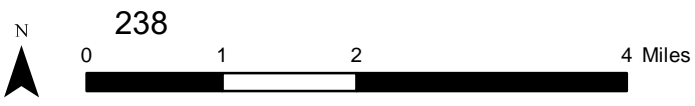
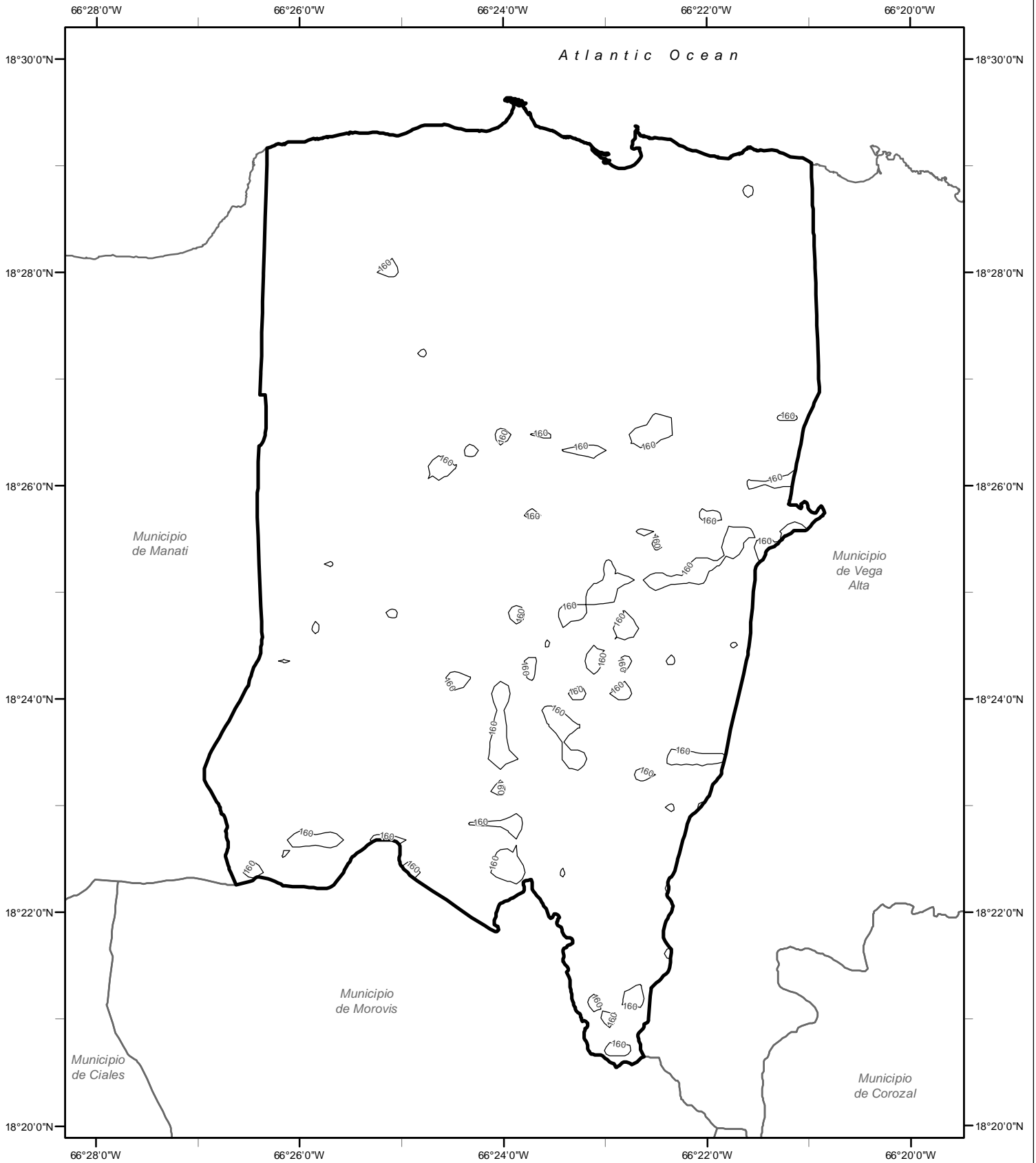


# Municipio de Vega Alta Risk Category I Effective Wind Speed Map (mph)



**Risk Category I Wind Contour (mph)**  
—— 160    - - - - 180

# Municipio de Vega Baja Risk Category I Effective Wind Speed Map (mph)

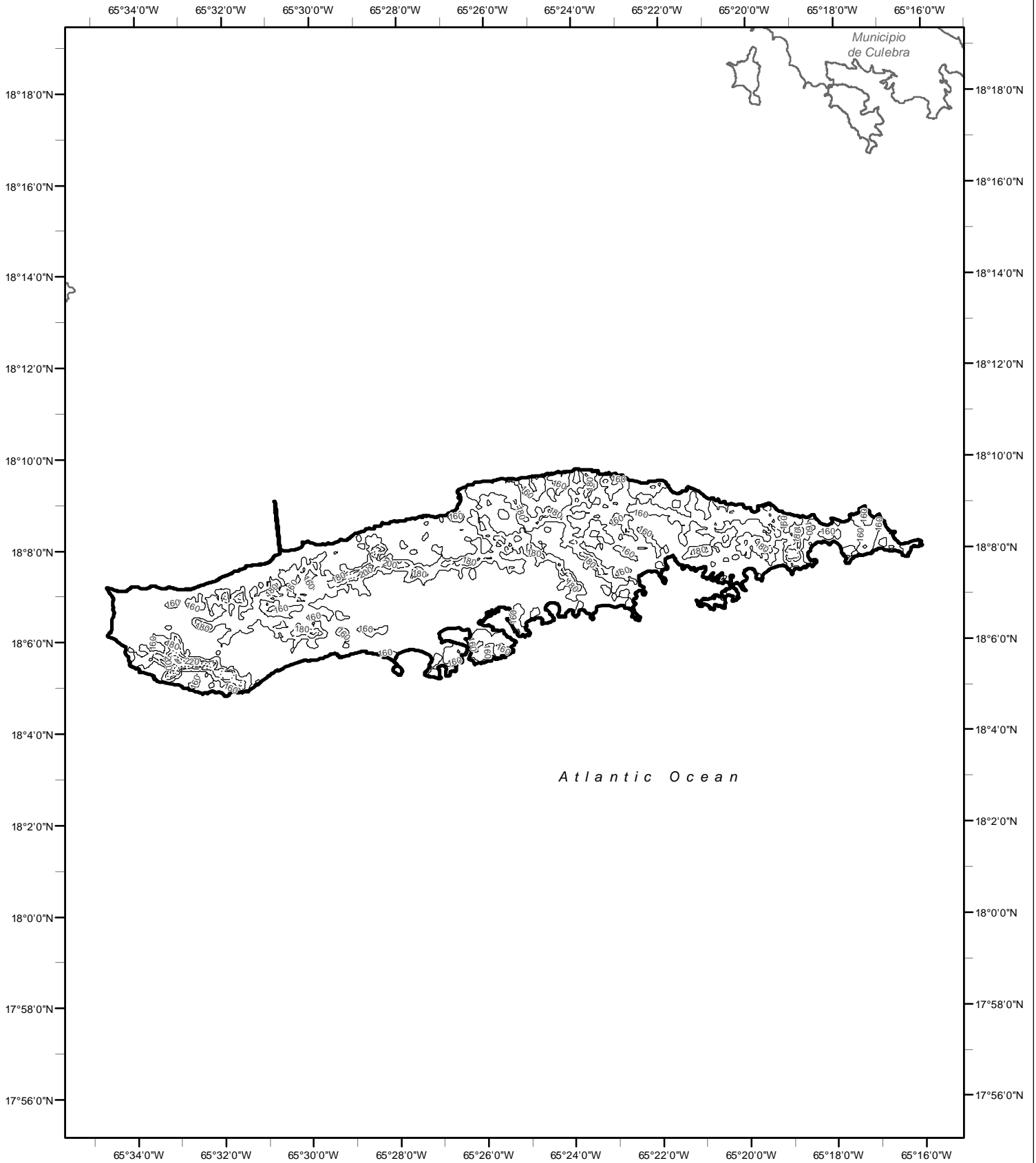


**Risk Category I Wind Contour (mph)**  
—— 160    - - - - 180

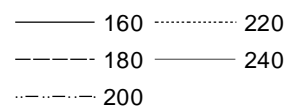


# Municipio de Vieques

## Risk Category I Effective Wind Speed Map (mph)

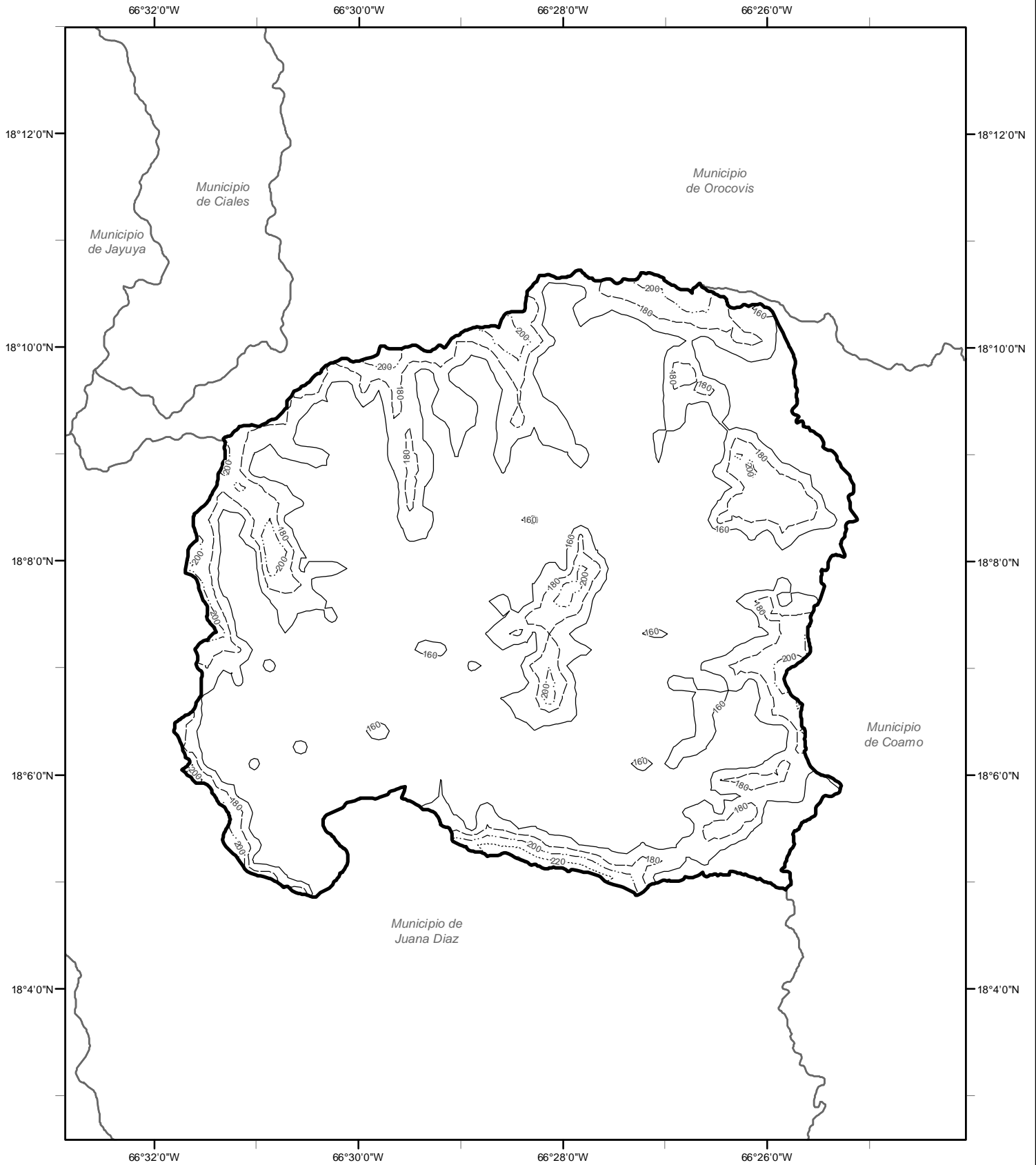


### Risk Category I Wind Contour (mph)

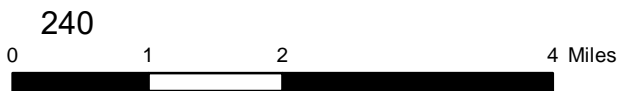
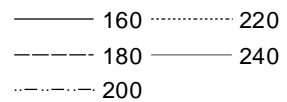


239

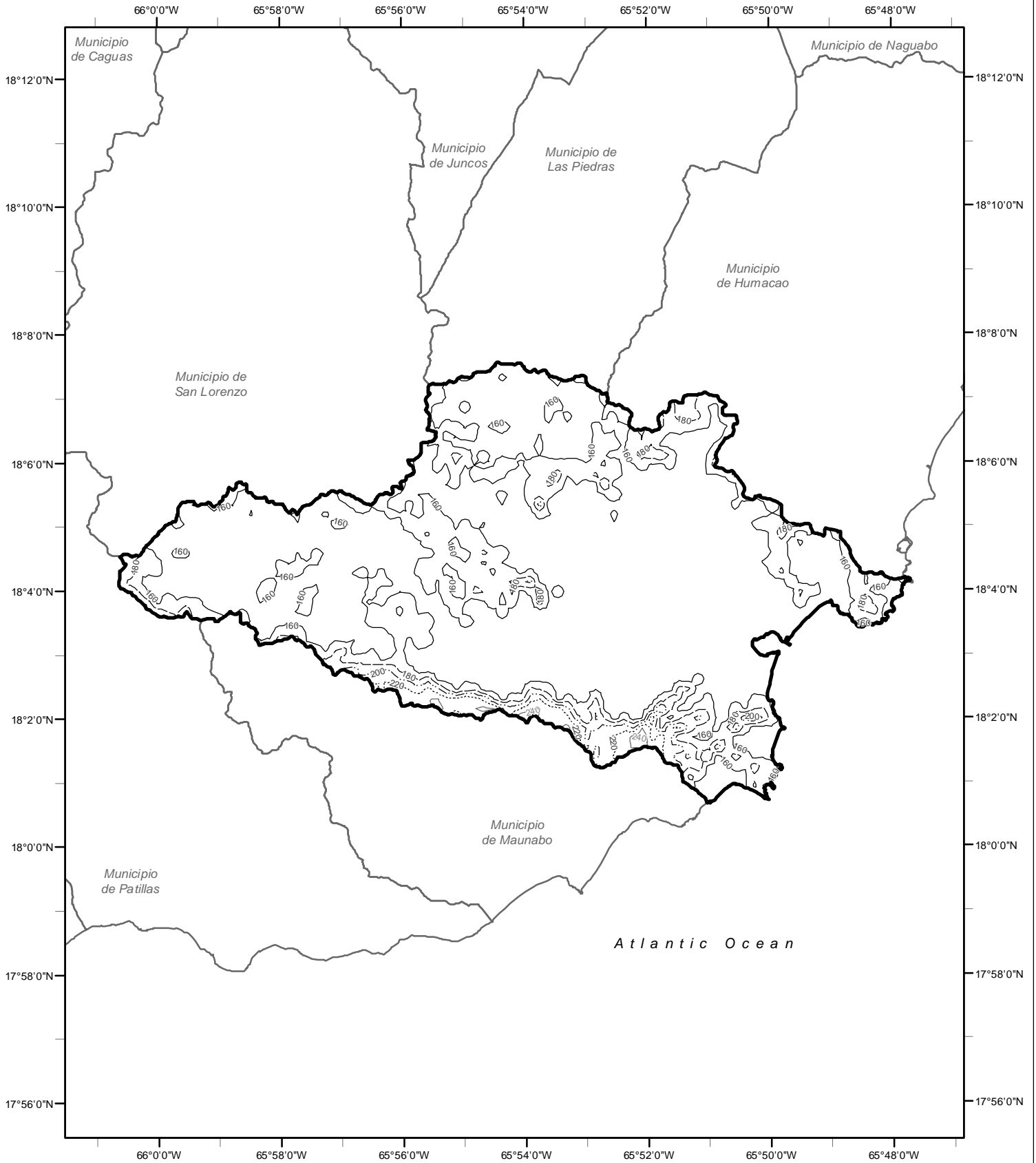
# Municipio de Villalba Risk Category I Effective Wind Speed Map (mph)



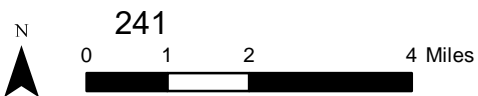
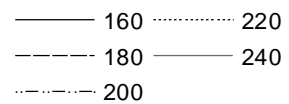
### Risk Category I Wind Contour (mph)



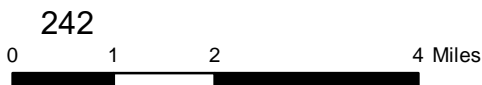
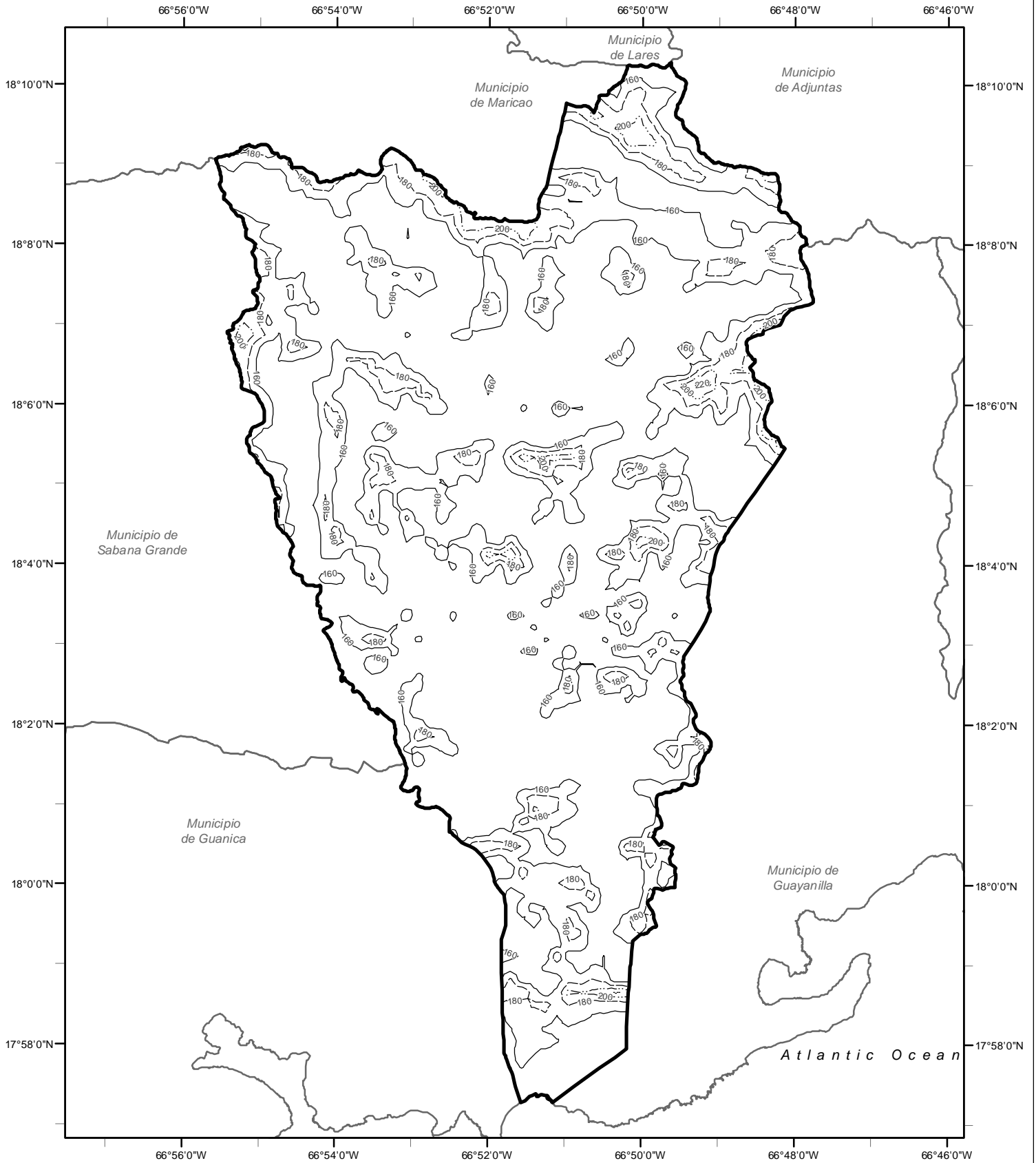
# Municipio de Yabucoa Risk Category I Effective Wind Speed Map (mph)



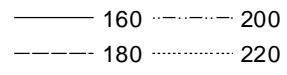
## Risk Category I Wind Contour (mph)



# Municipio de Yauco Risk Category I Effective Wind Speed Map (mph)

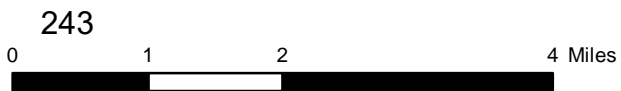
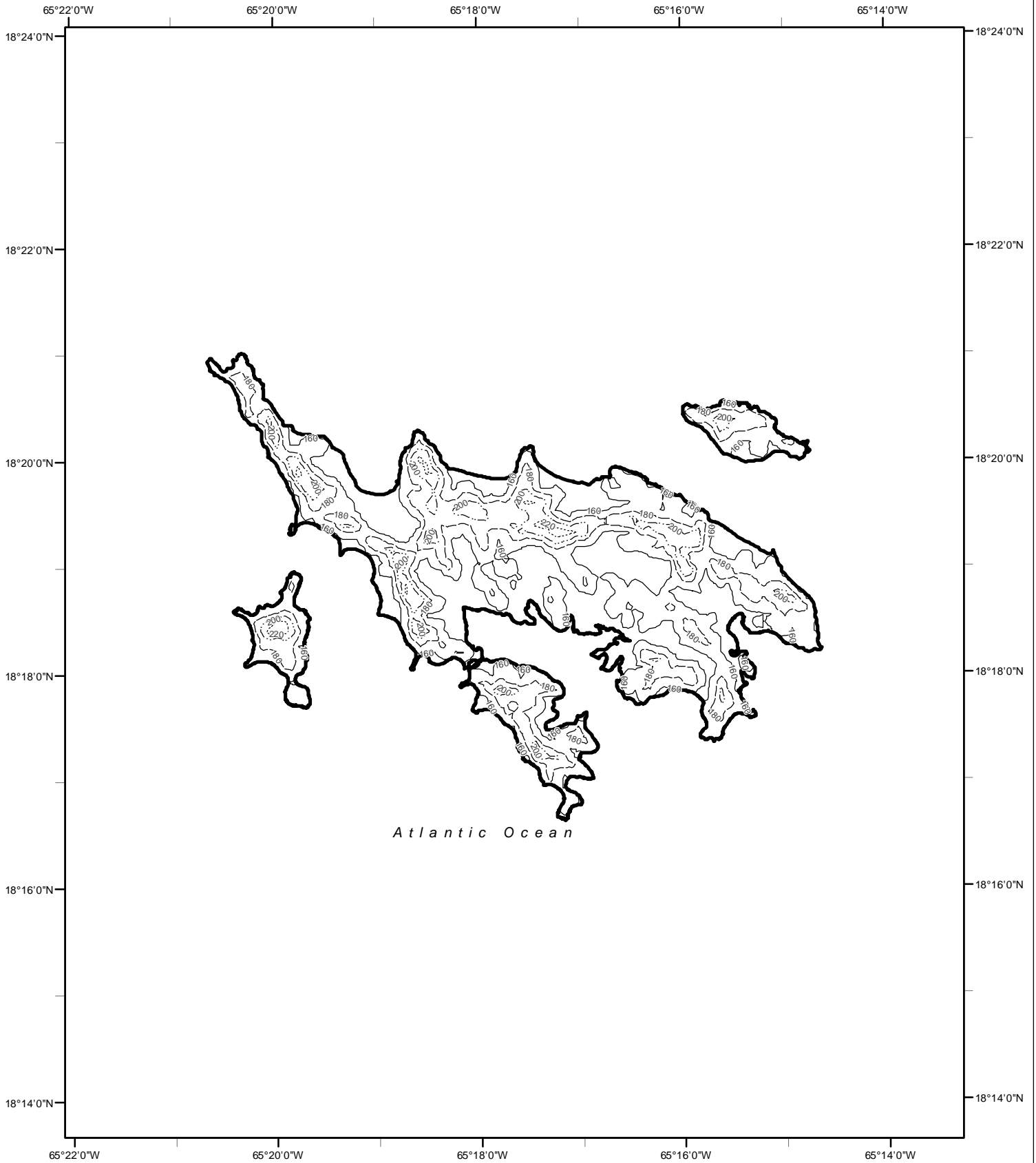


### Risk Category I Wind Contour (mph)

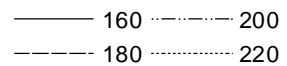


# Municipio de Culebra

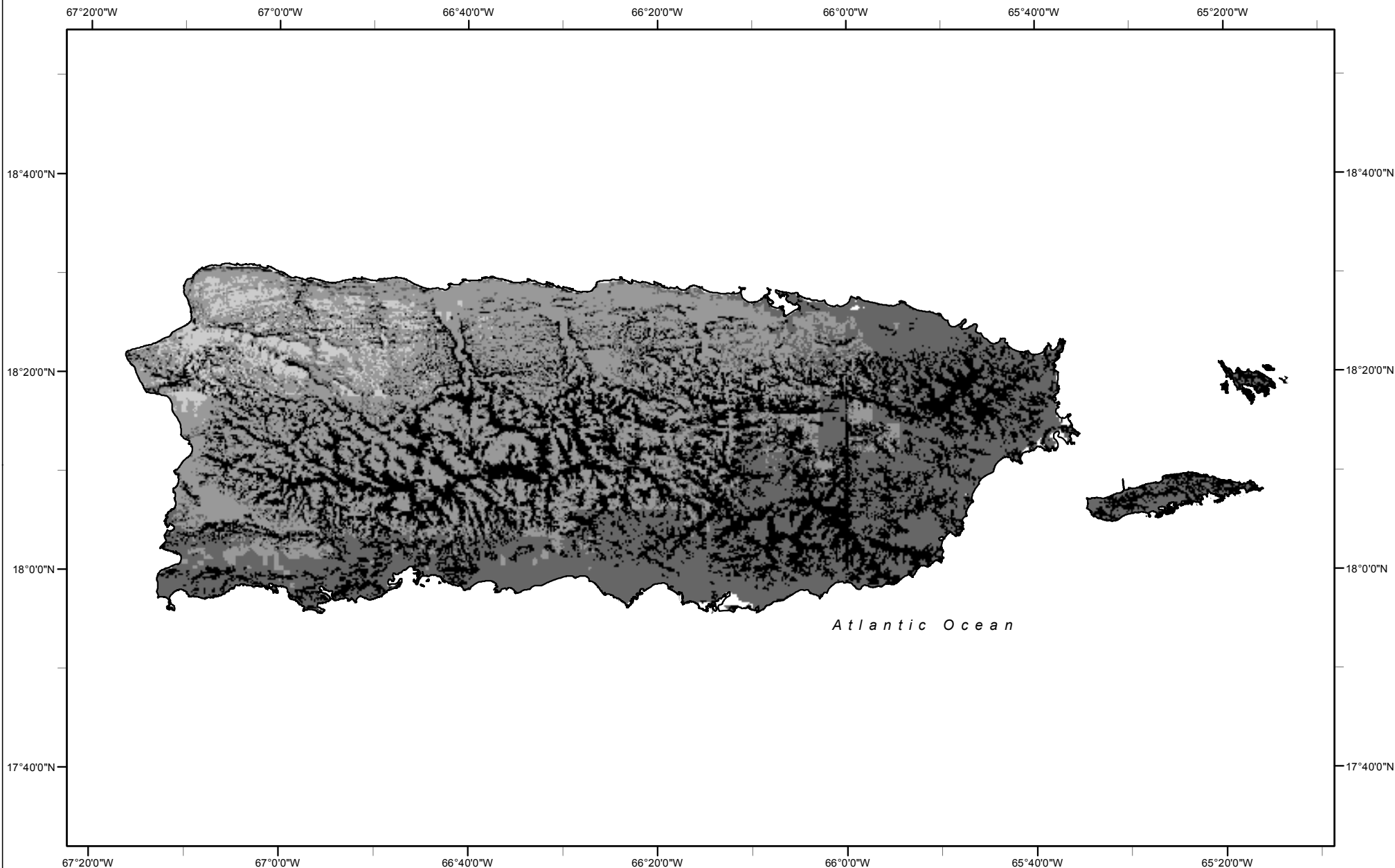
## Risk Category I Effective Wind Speed Map (mph)



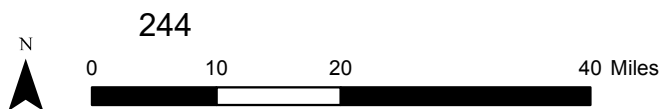
### Risk Category I Wind Contour (mph)



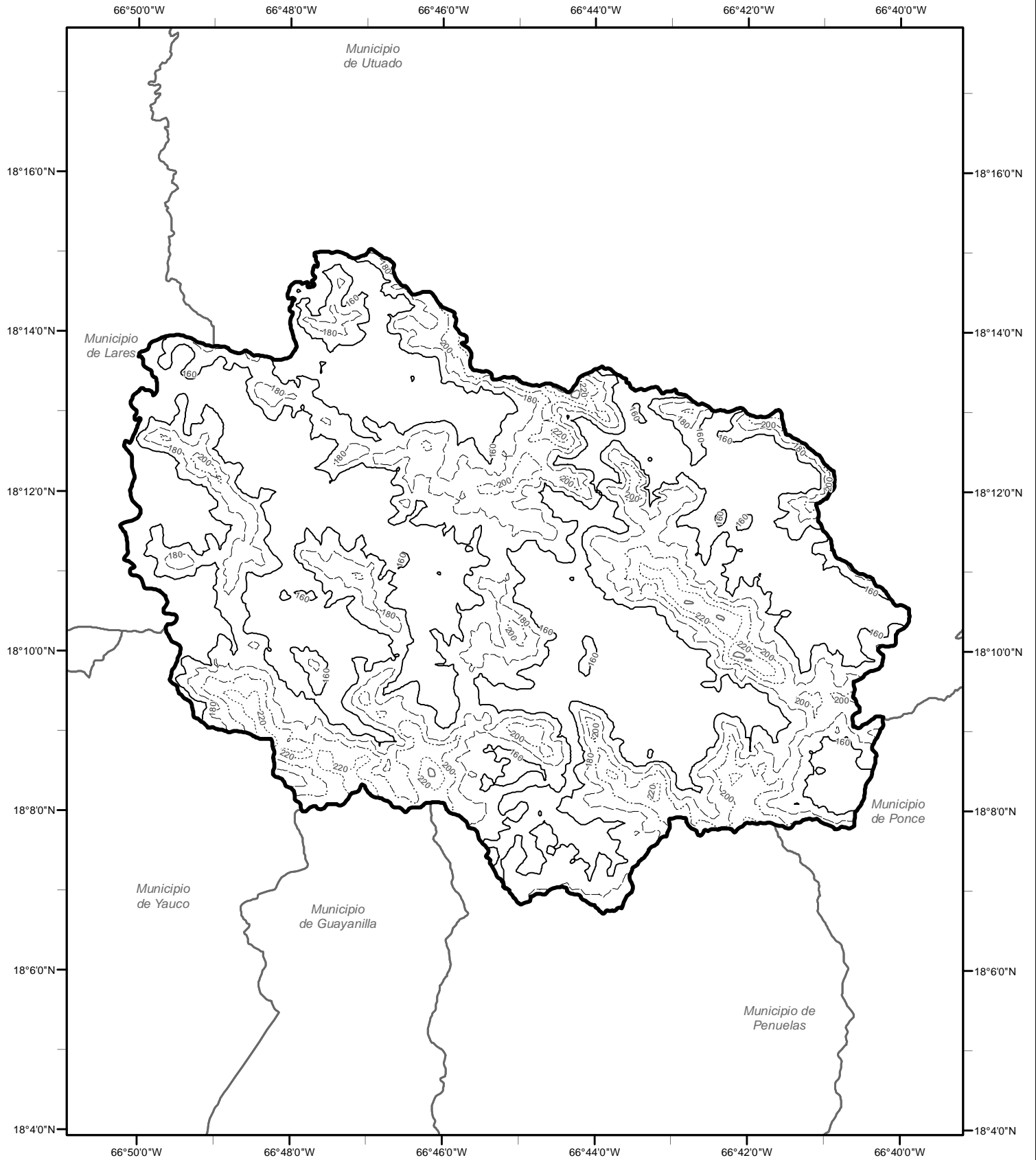
# Puerto Rico Risk Category II Effective Wind Speed Map (mph)



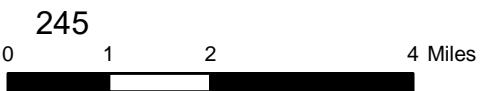
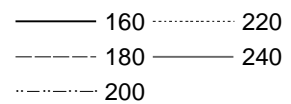
## Risk Category II Wind Intervals (mph)



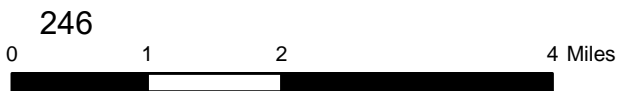
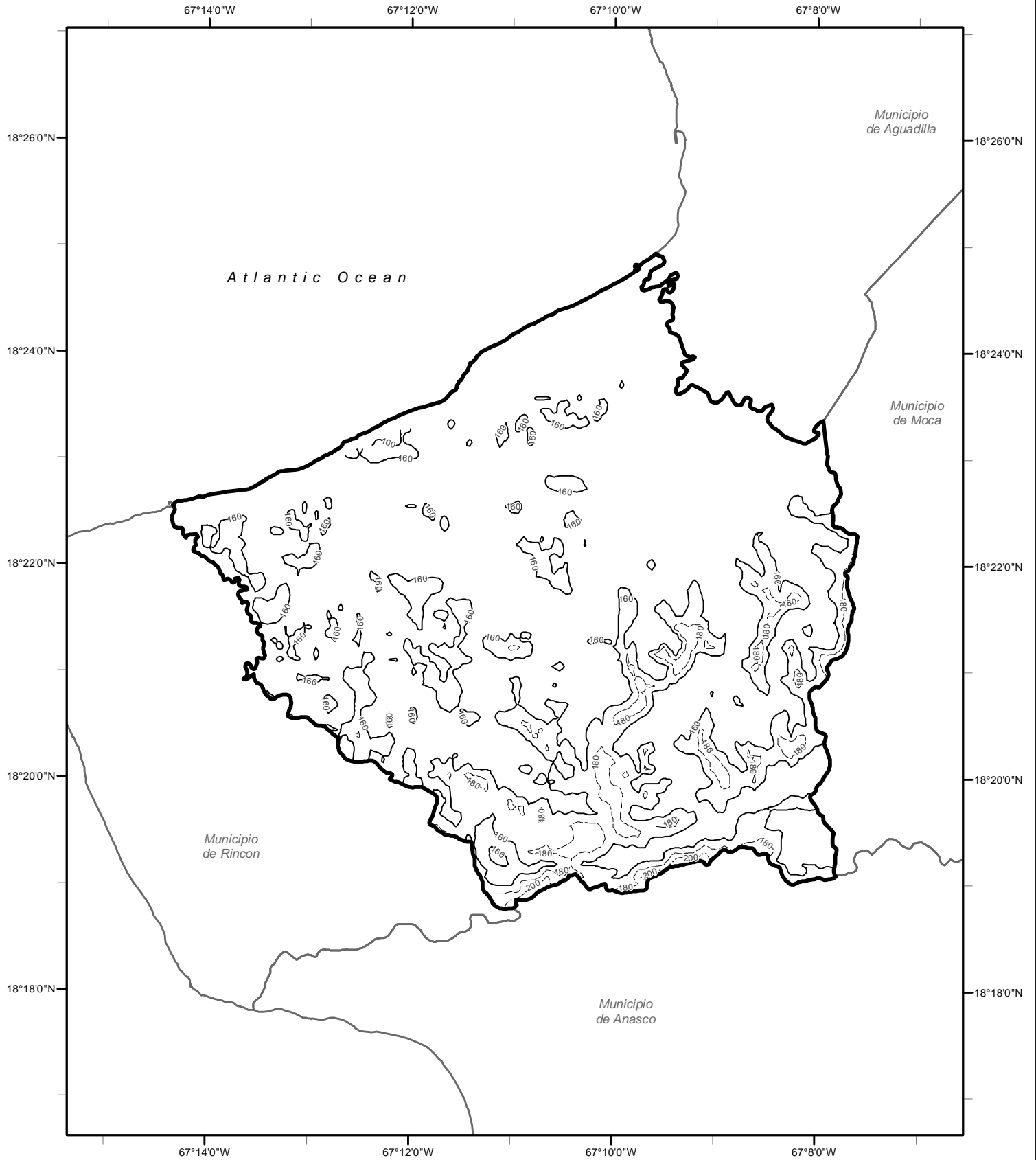
# Municipio de Adjuntas Risk Category II Effective Wind Speed Map (mph)



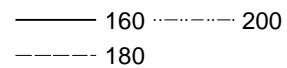
### Risk Category II Wind Contour (mph)



# Municipio de Aguada Risk Category II Effective Wind Speed Map (mph)

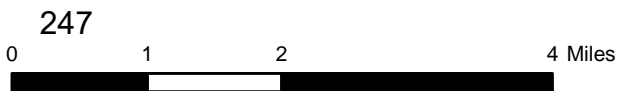
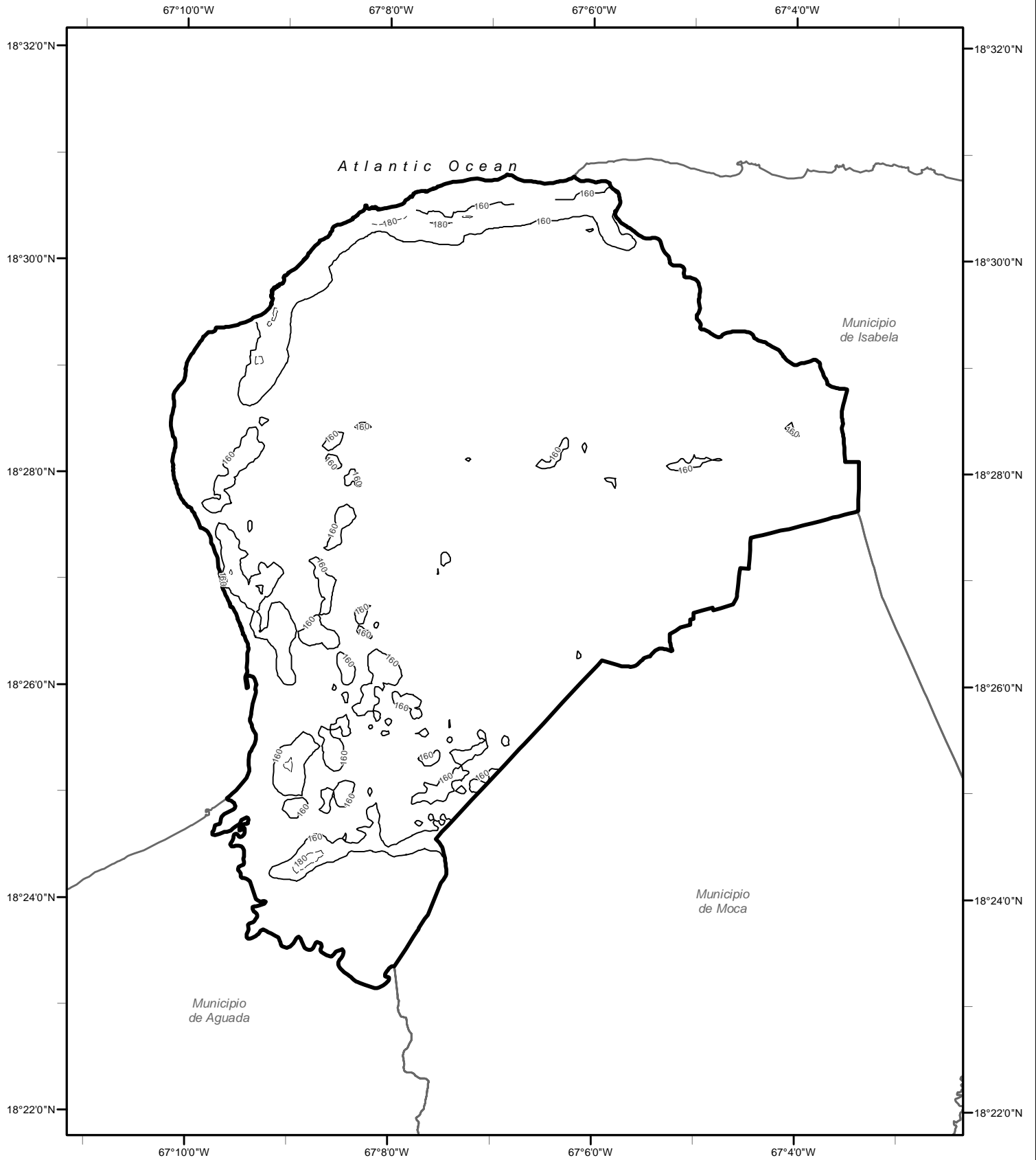


### Risk Category II Wind Contour (mph)

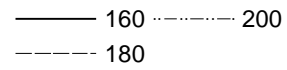




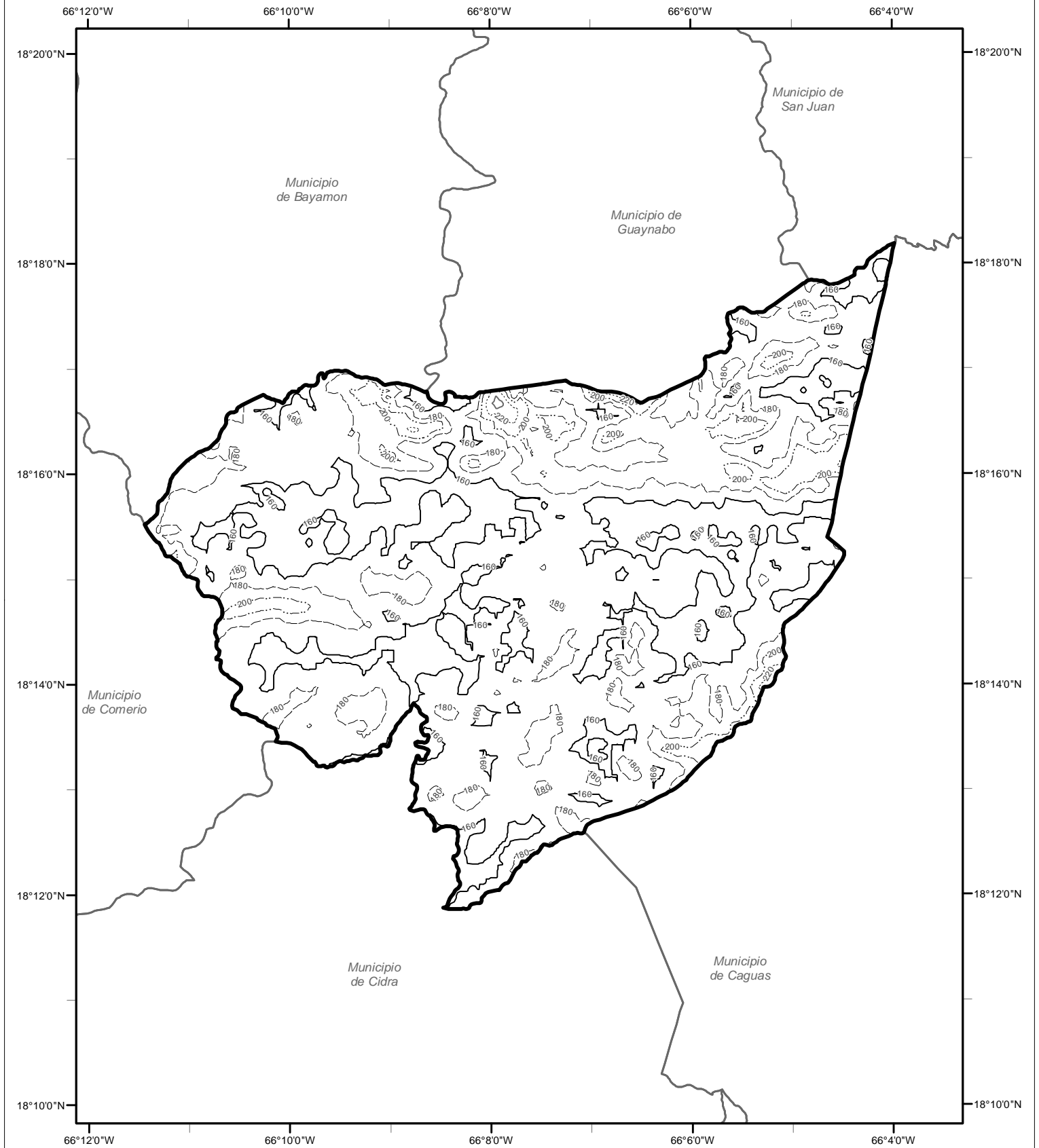
# Municipio de Aguadilla Risk Category II Effective Wind Speed Map (mph)



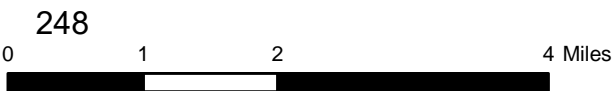
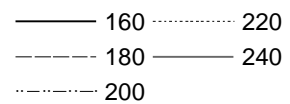
### Risk Category II Wind Contour (mph)



# Municipio de Aguas Buenas Risk Category II Effective Wind Speed Map (mph)

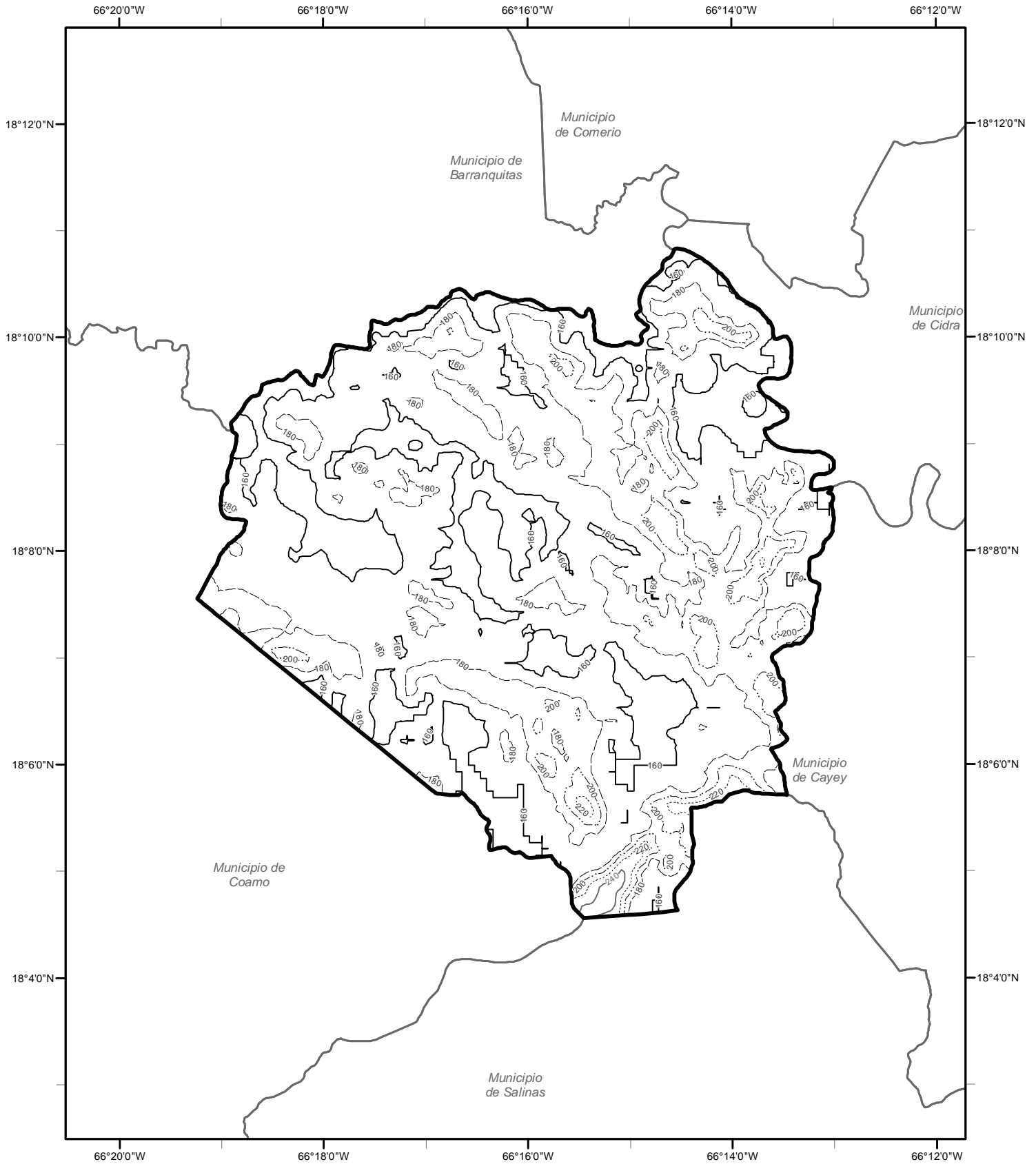


### Risk Category II Wind Contour (mph)

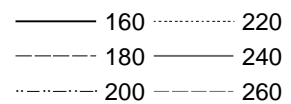


# Municipio de Aibonito

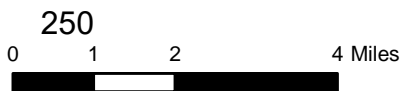
## Risk Category II Effective Wind Speed Map (mph)



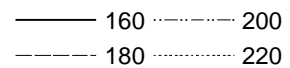
### Risk Category II Wind Contour (mph)



# Municipio de Anasco Risk Category II Effective Wind Speed Map (mph)

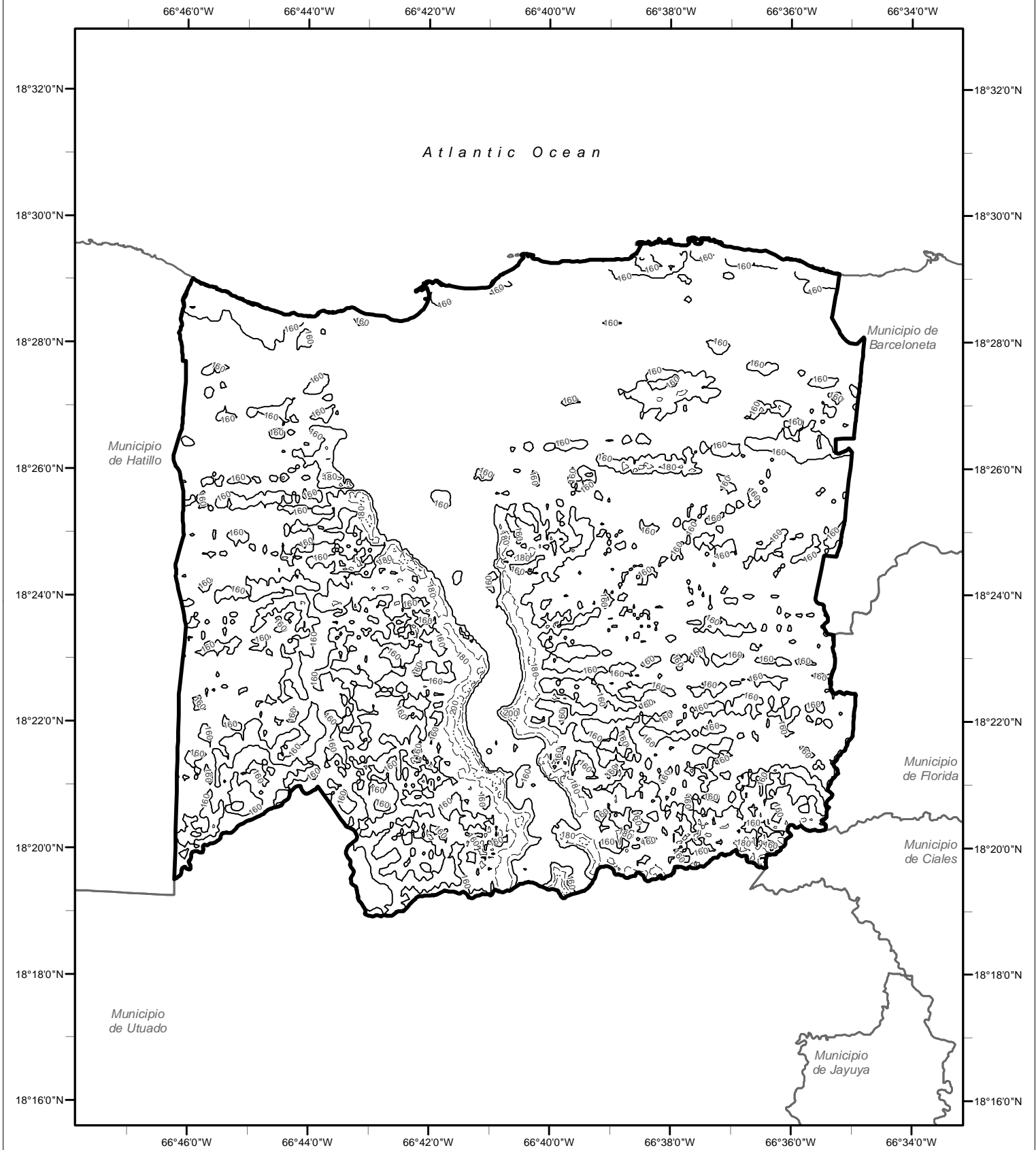


### Risk Category II Wind Contour (mph)

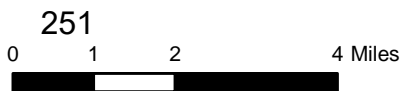
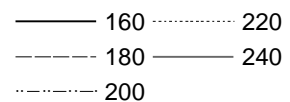


# Municipio de Arecibo

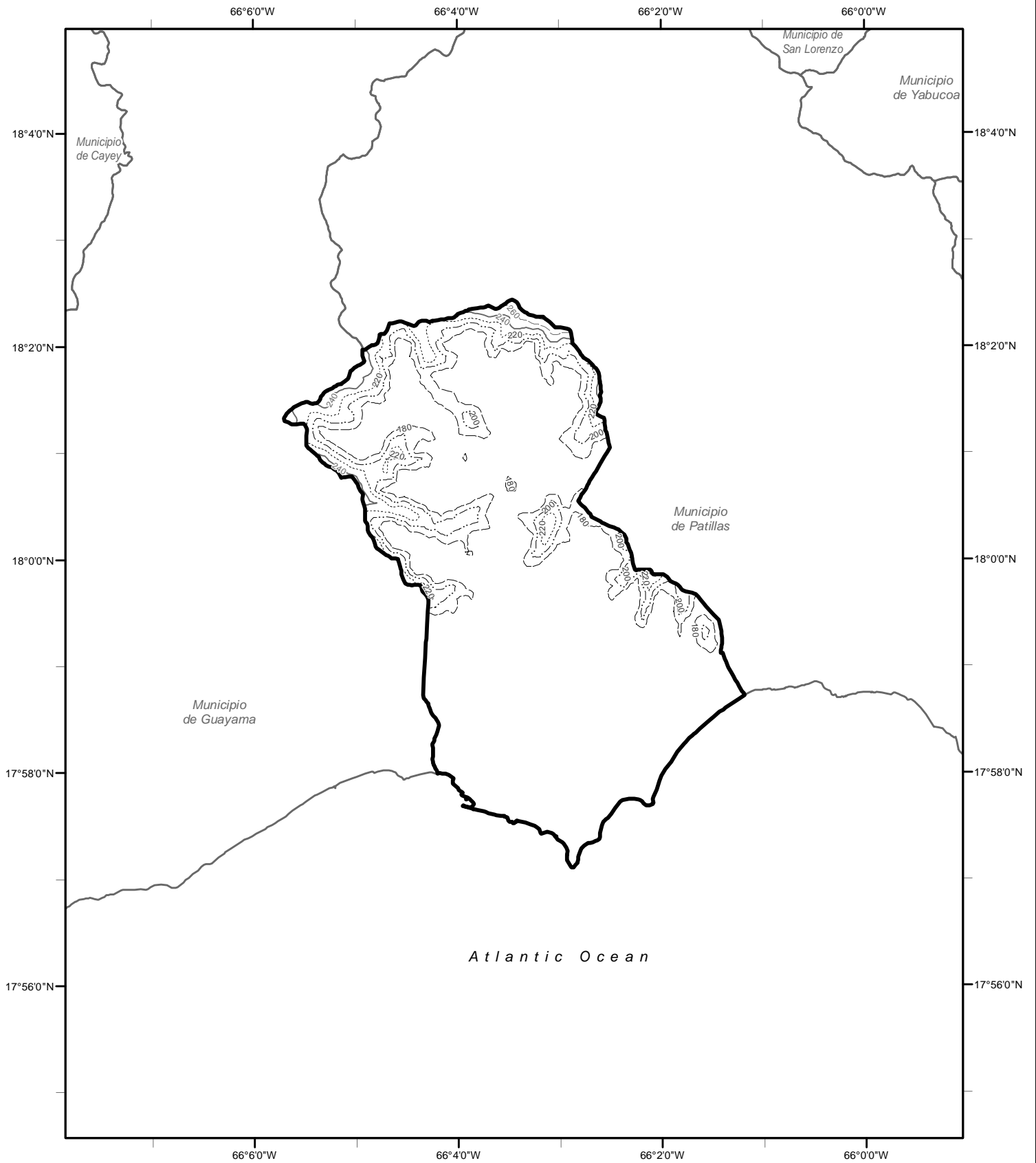
## Risk Category II Effective Wind Speed Map (mph)



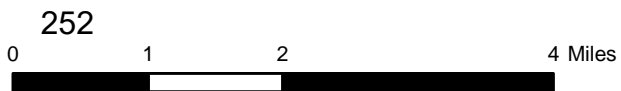
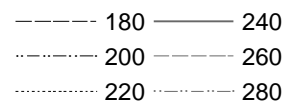
### Risk Category II Wind Contour (mph)



# Municipio de Arroyo Risk Category II Effective Wind Speed Map (mph)

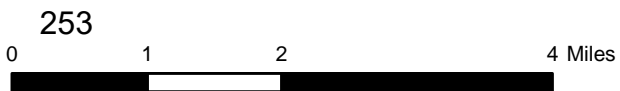
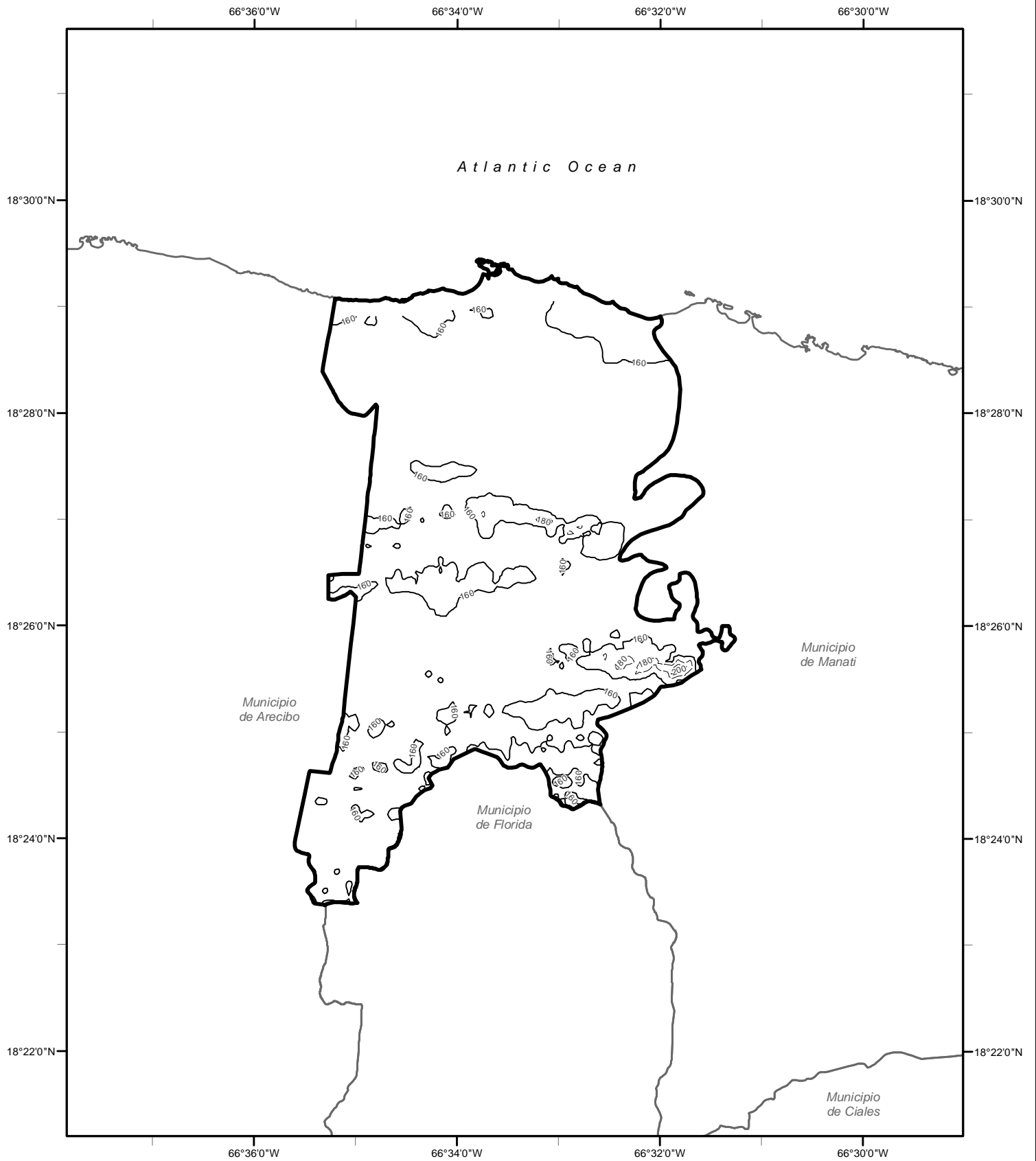


### Risk Category II Wind Contour (mph)

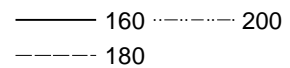


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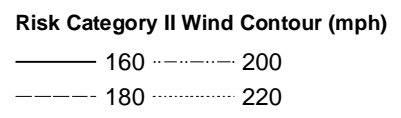
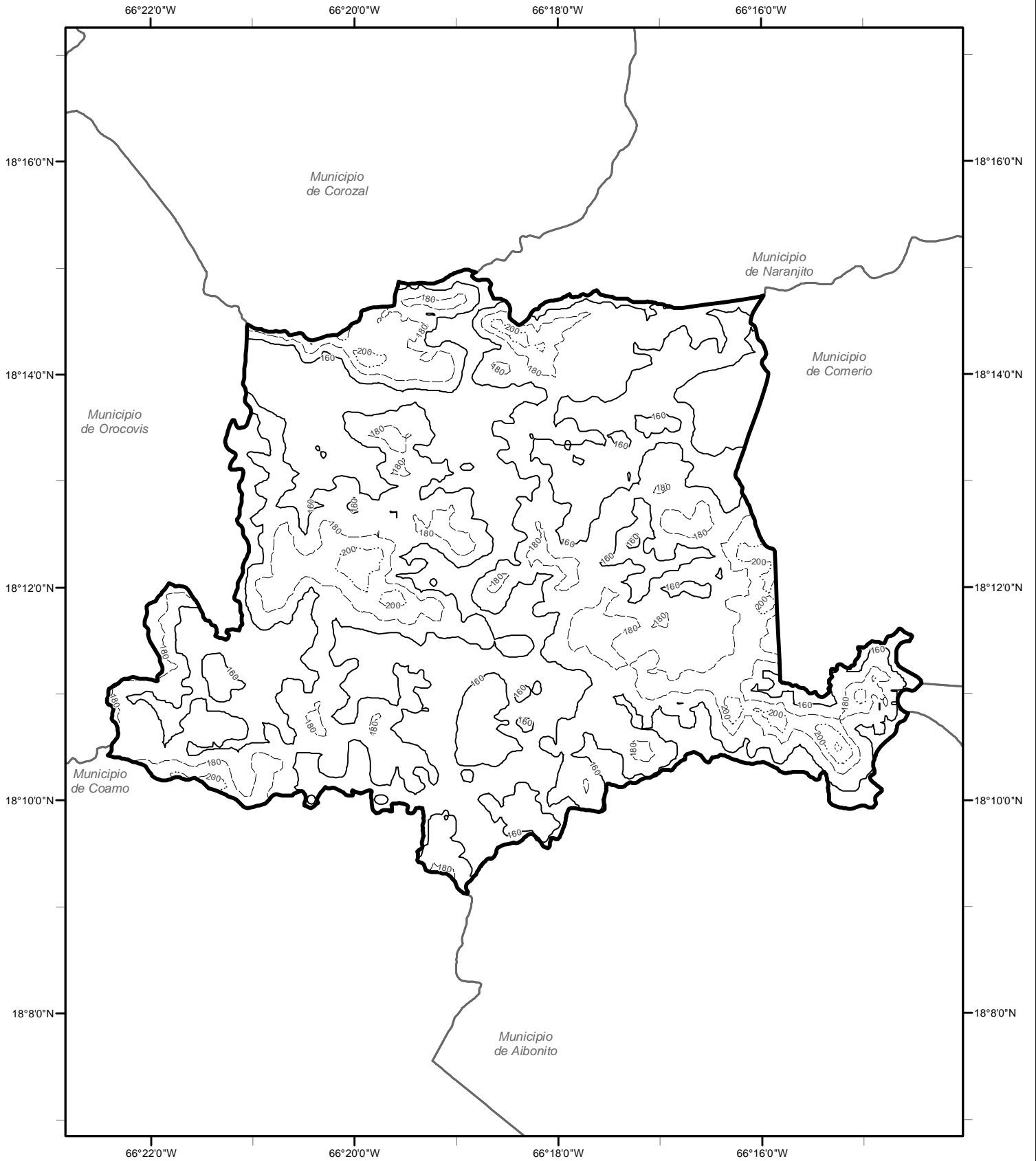
# Municipio de Barceloneta Risk Category II Effective Wind Speed Map (mph)



### Risk Category II Wind Contour (mph)

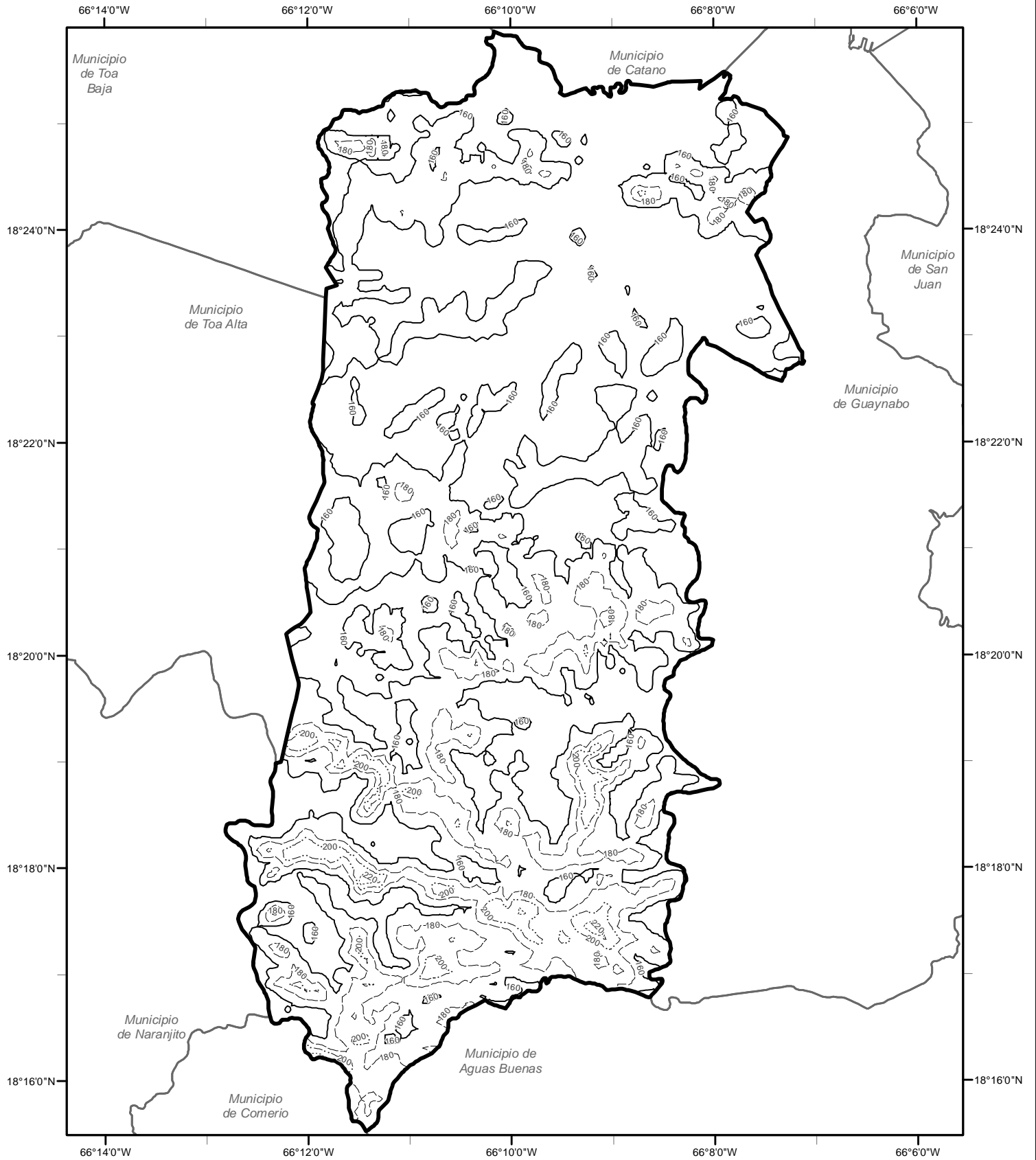


# Municipio de Barranquitas Risk Category II Effective Wind Speed Map (mph)

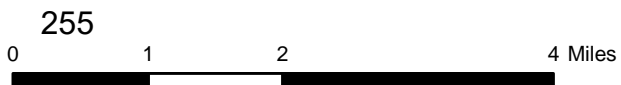
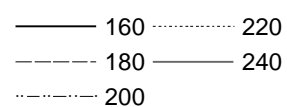




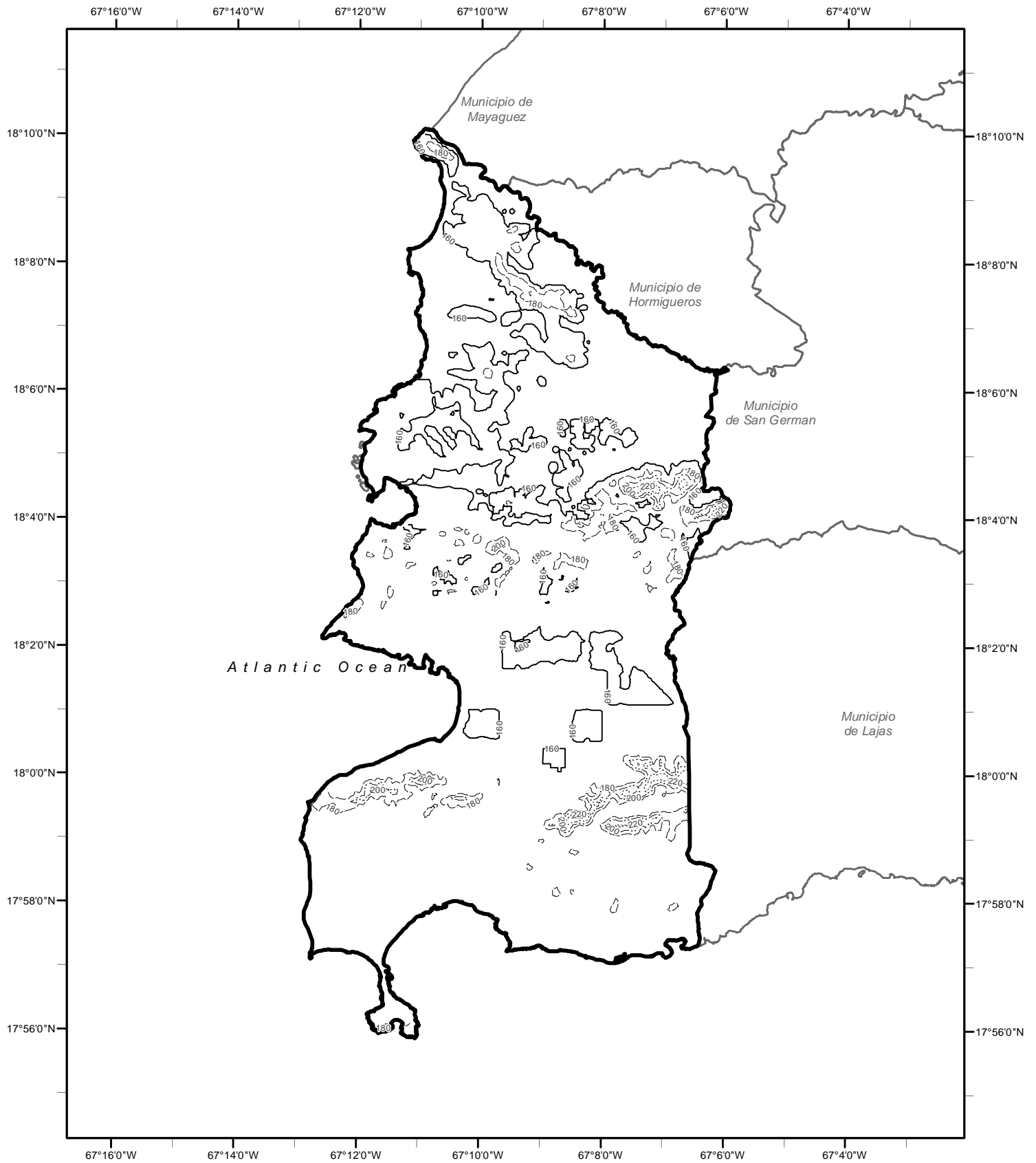
# Municipio de Bayamon Risk Category II Effective Wind Speed Map (mph)



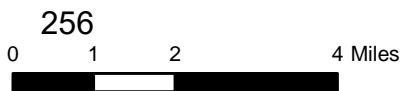
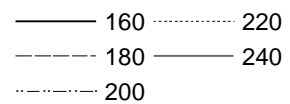
### Risk Category II Wind Contour (mph)



# Municipio de Cabo Rojo Risk Category II Effective Wind Speed Map (mph)

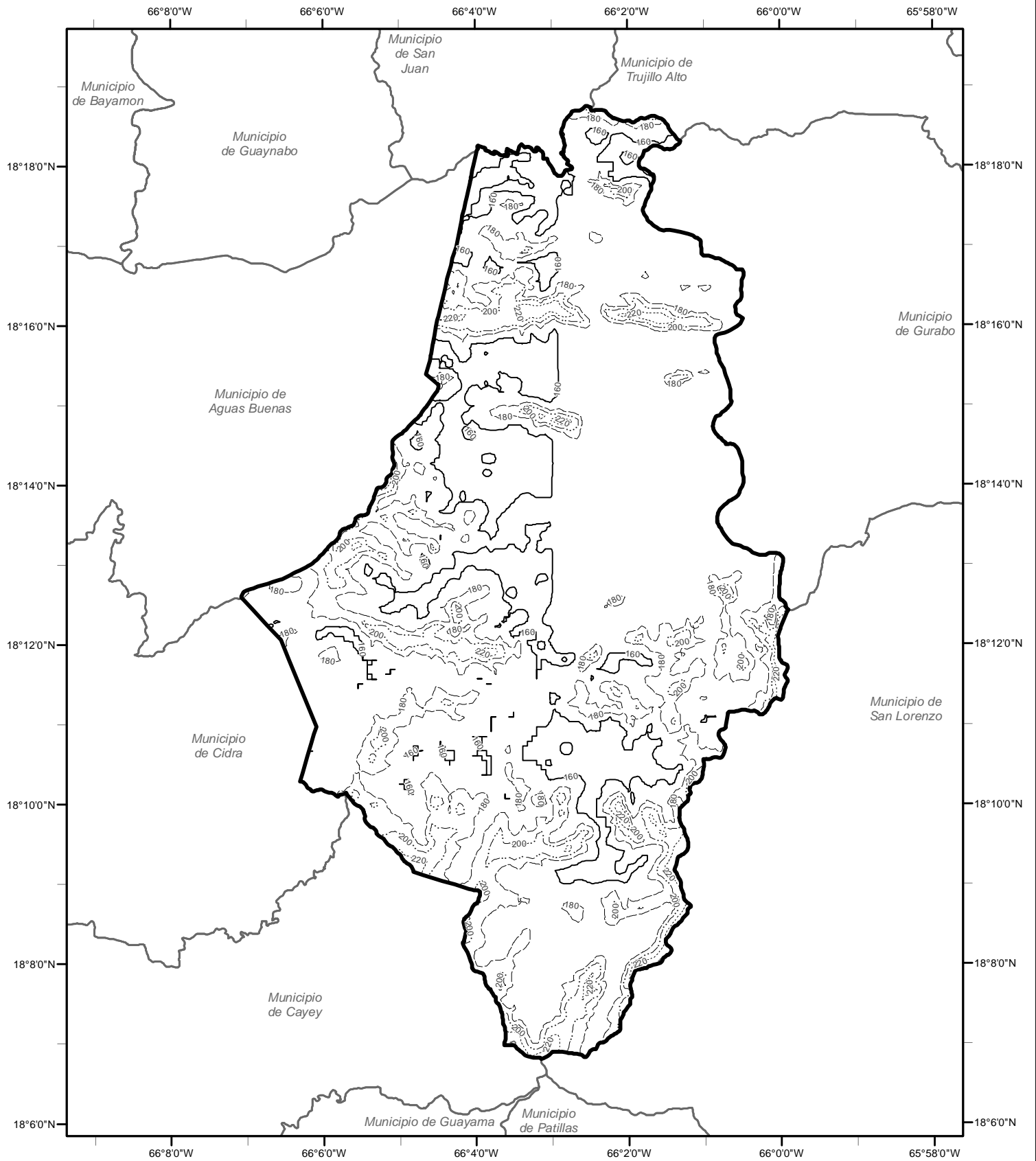


### Risk Category II Wind Contour (mph)

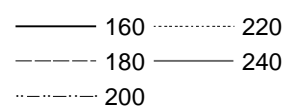


# Municipio de Caguas

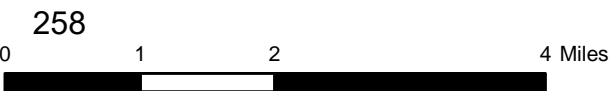
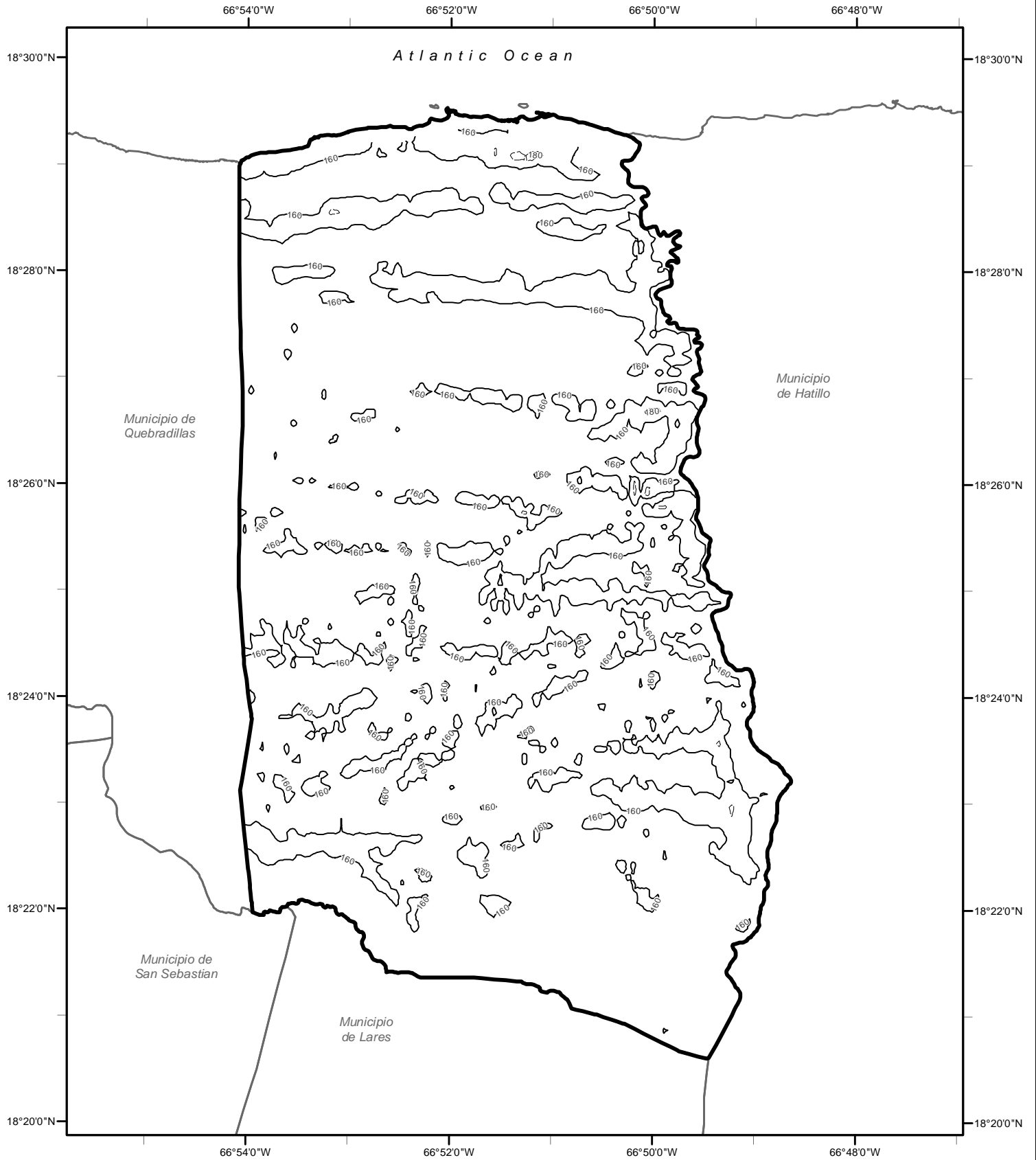
## Risk Category II Effective Wind Speed Map (mph)



### Risk Category II Wind Contour (mph)

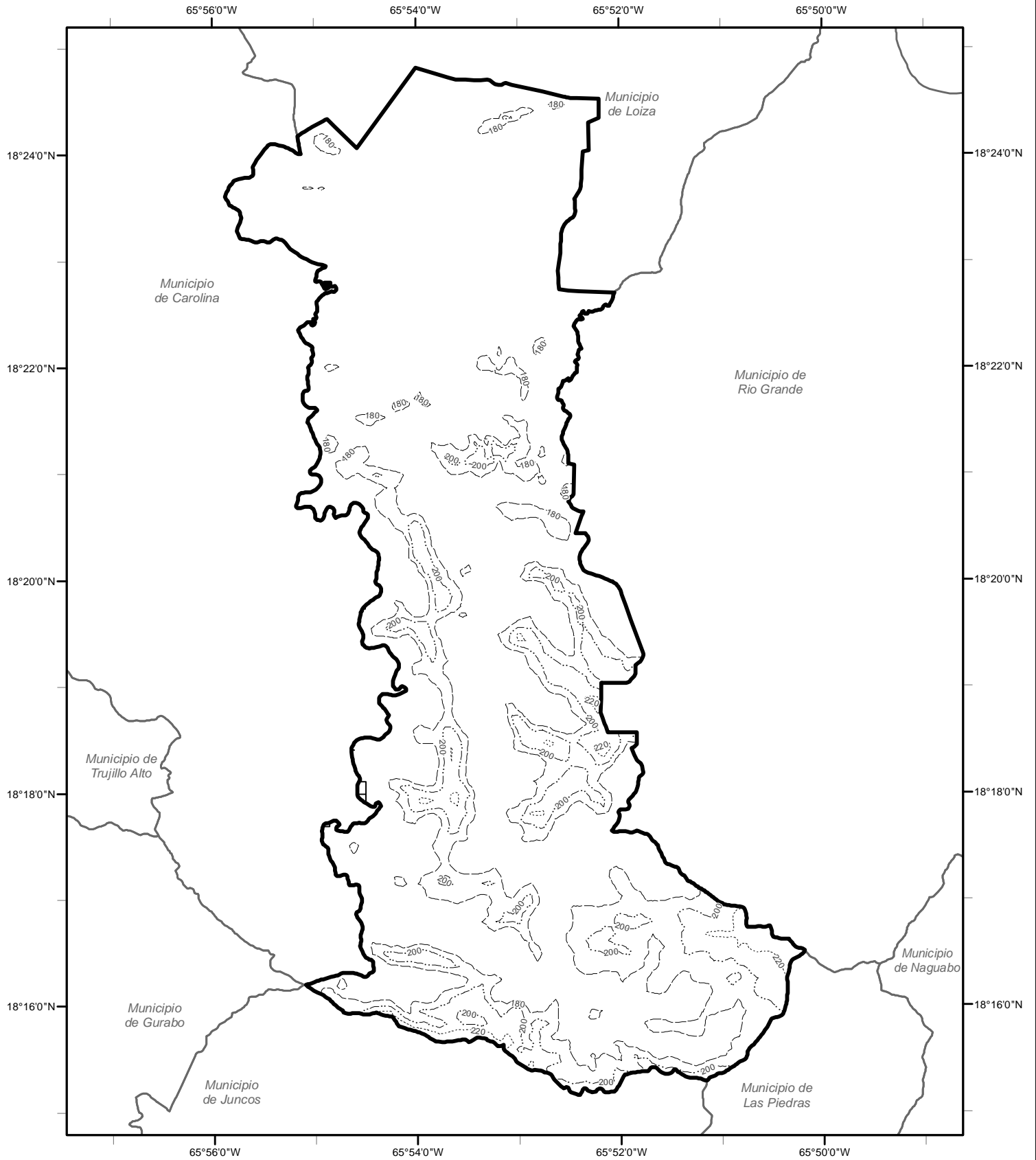


# Municipio de Camuy Risk Category II Effective Wind Speed Map (mph)



**Risk Category II Wind Contour (mph)**  
—— 160    - - - - 180

# Municipio de Canovanas Risk Category II Effective Wind Speed Map (mph)



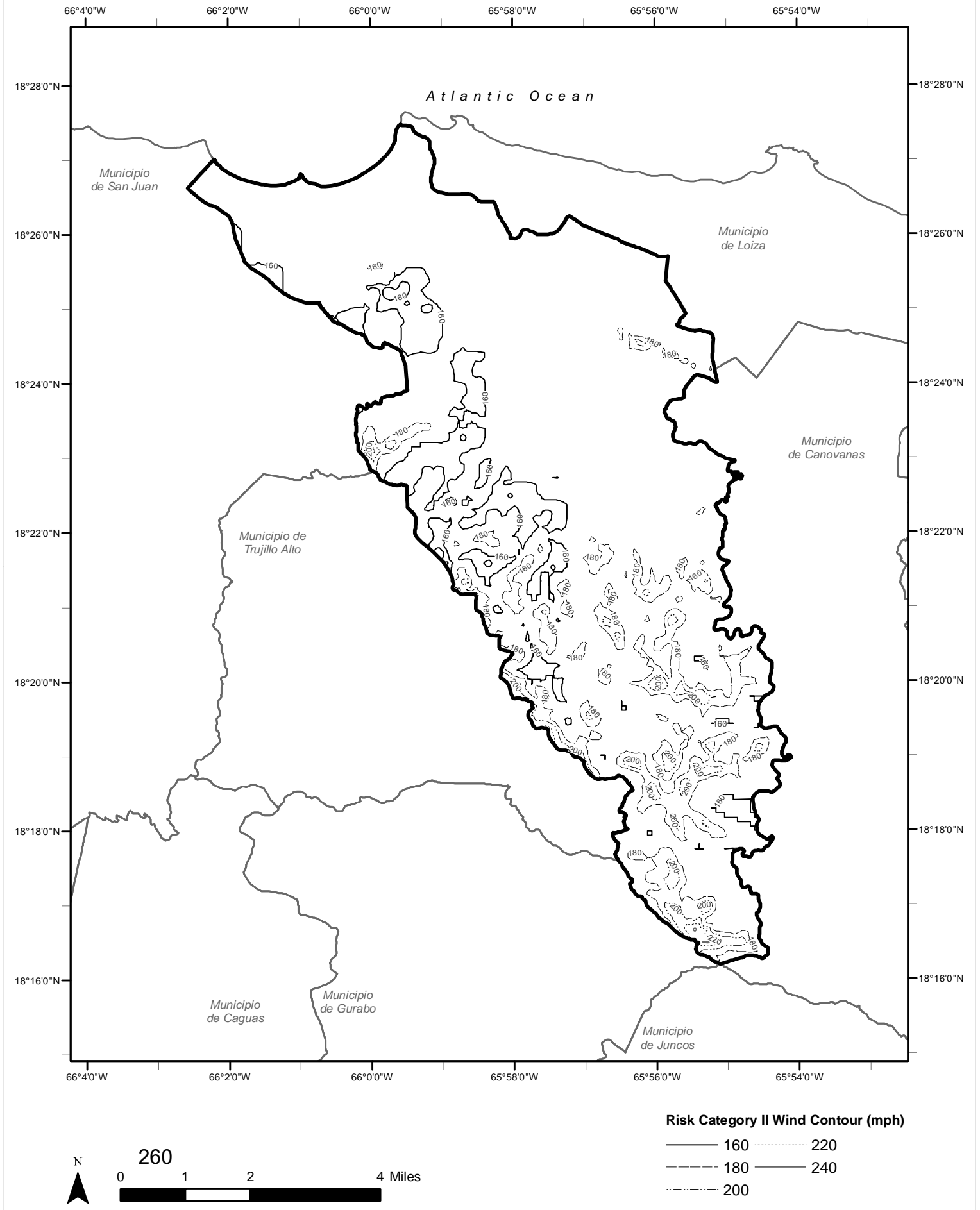
### Risk Category II Wind Contour (mph)

- 160
- 180
- 200
- 220
- 240

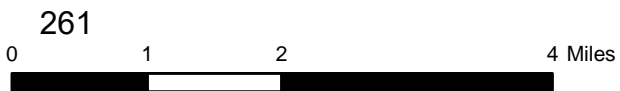
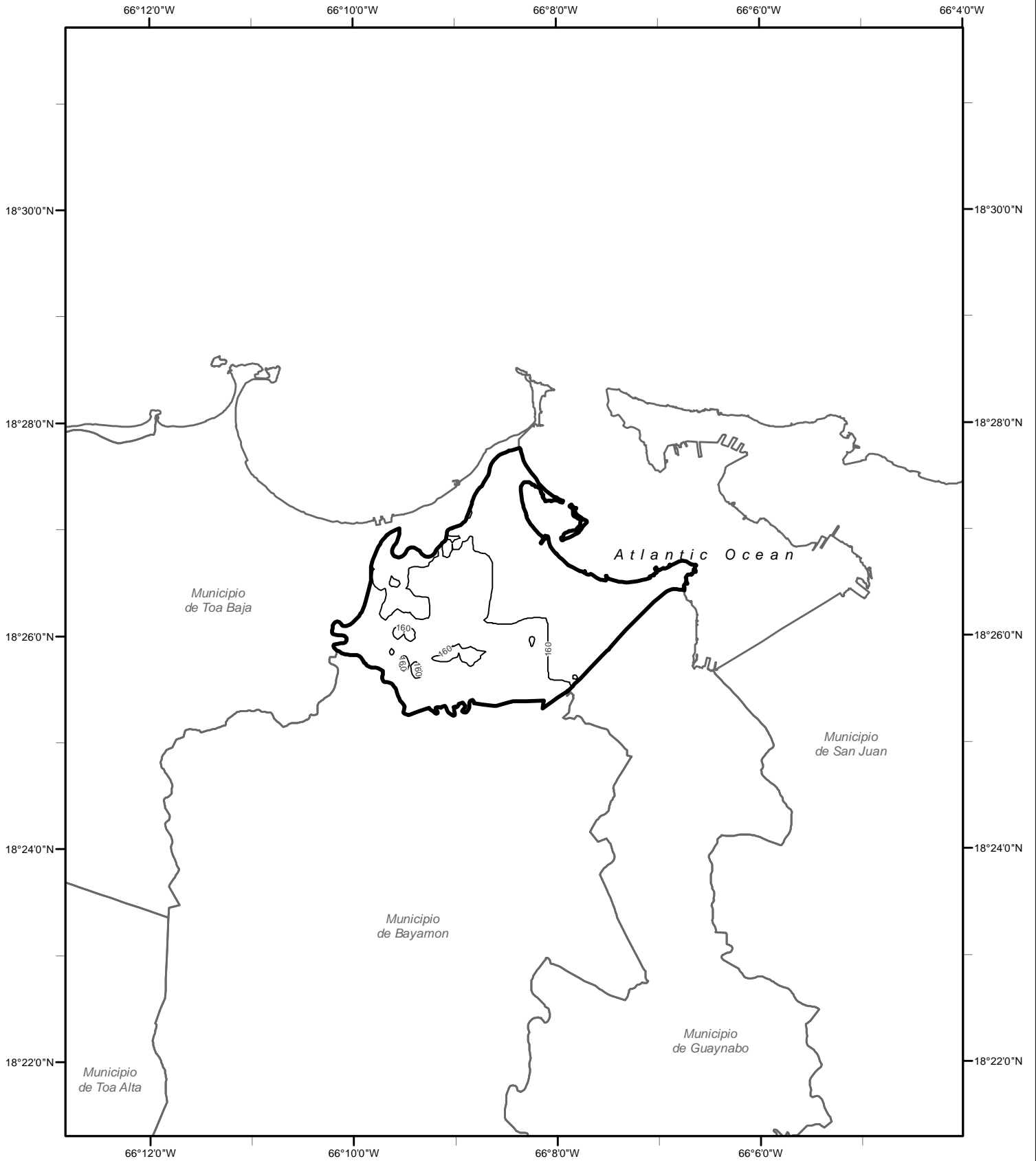


# Municipio de Carolina

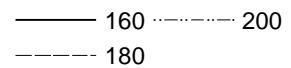
## Risk Category II Effective Wind Speed Map (mph)



# Municipio de Catano Risk Category II Effective Wind Speed Map (mph)

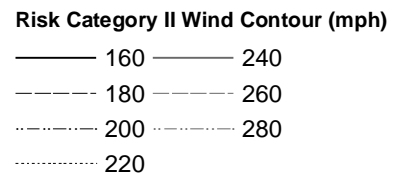
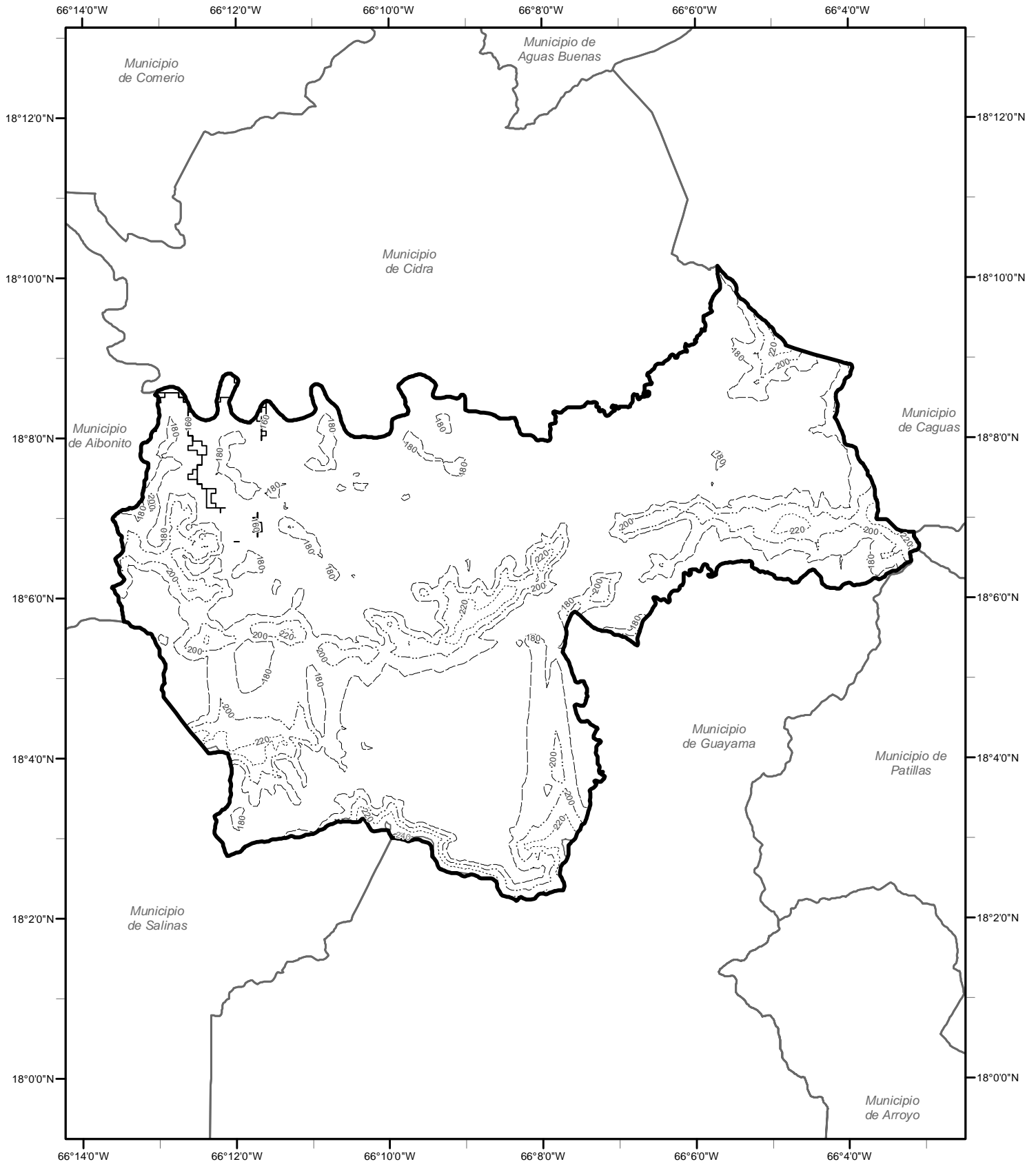


### Risk Category II Wind Contour (mph)



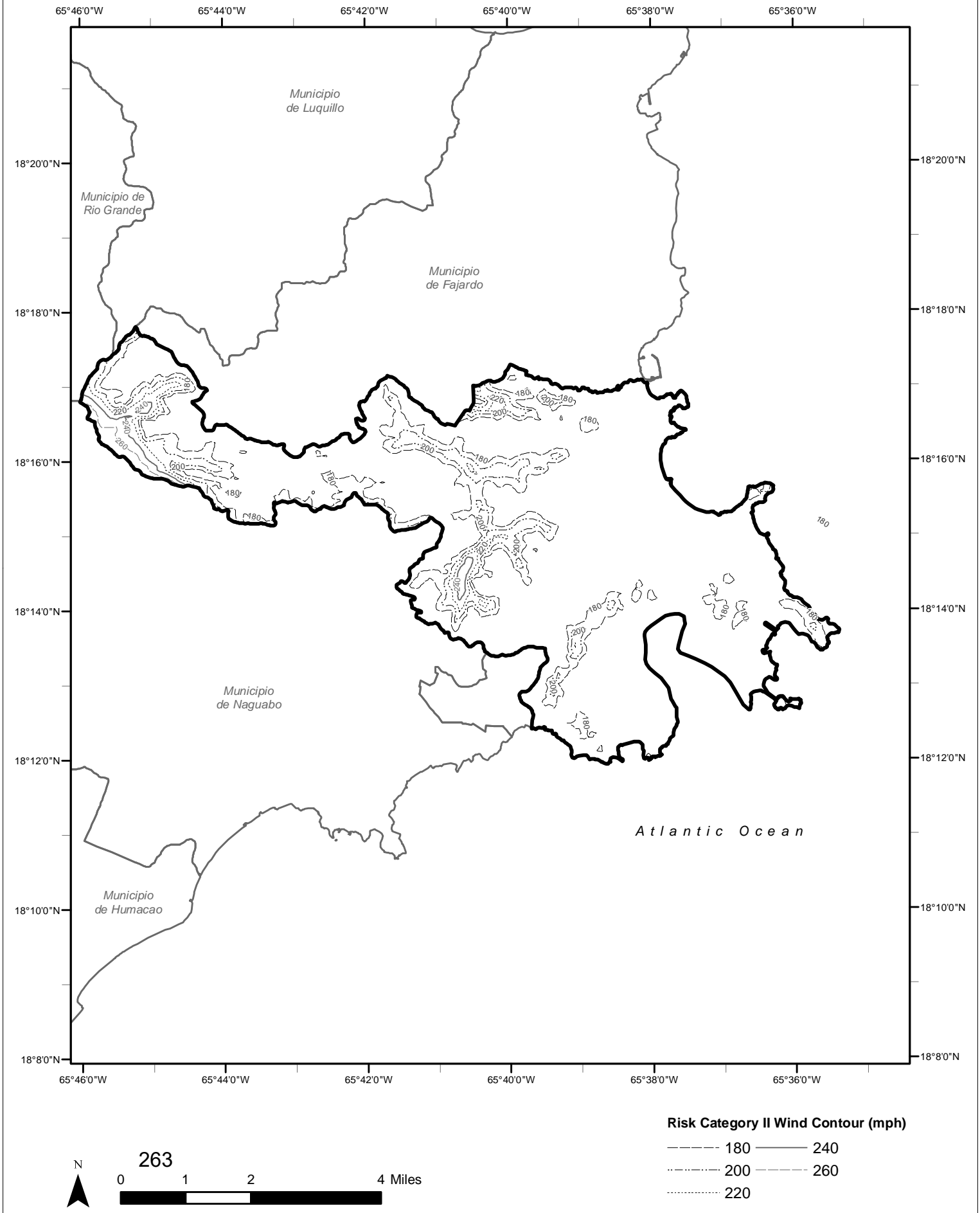
# Municipio de Cayey

## Risk Category II Effective Wind Speed Map (mph)



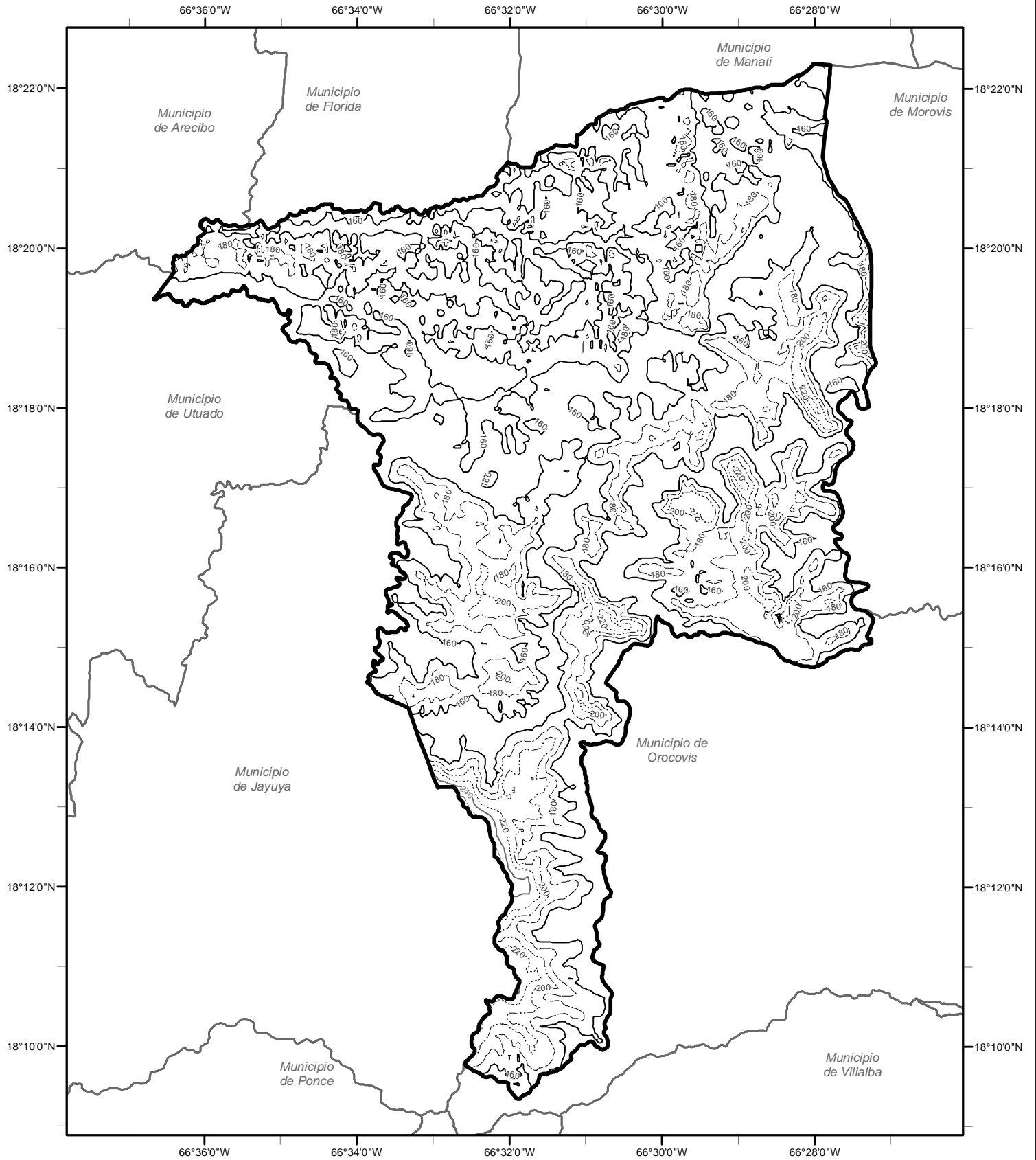


# Municipio de Ceiba Risk Category II Effective Wind Speed Map (mph)



# Municipio de Ciales

## Risk Category II Effective Wind Speed Map (mph)



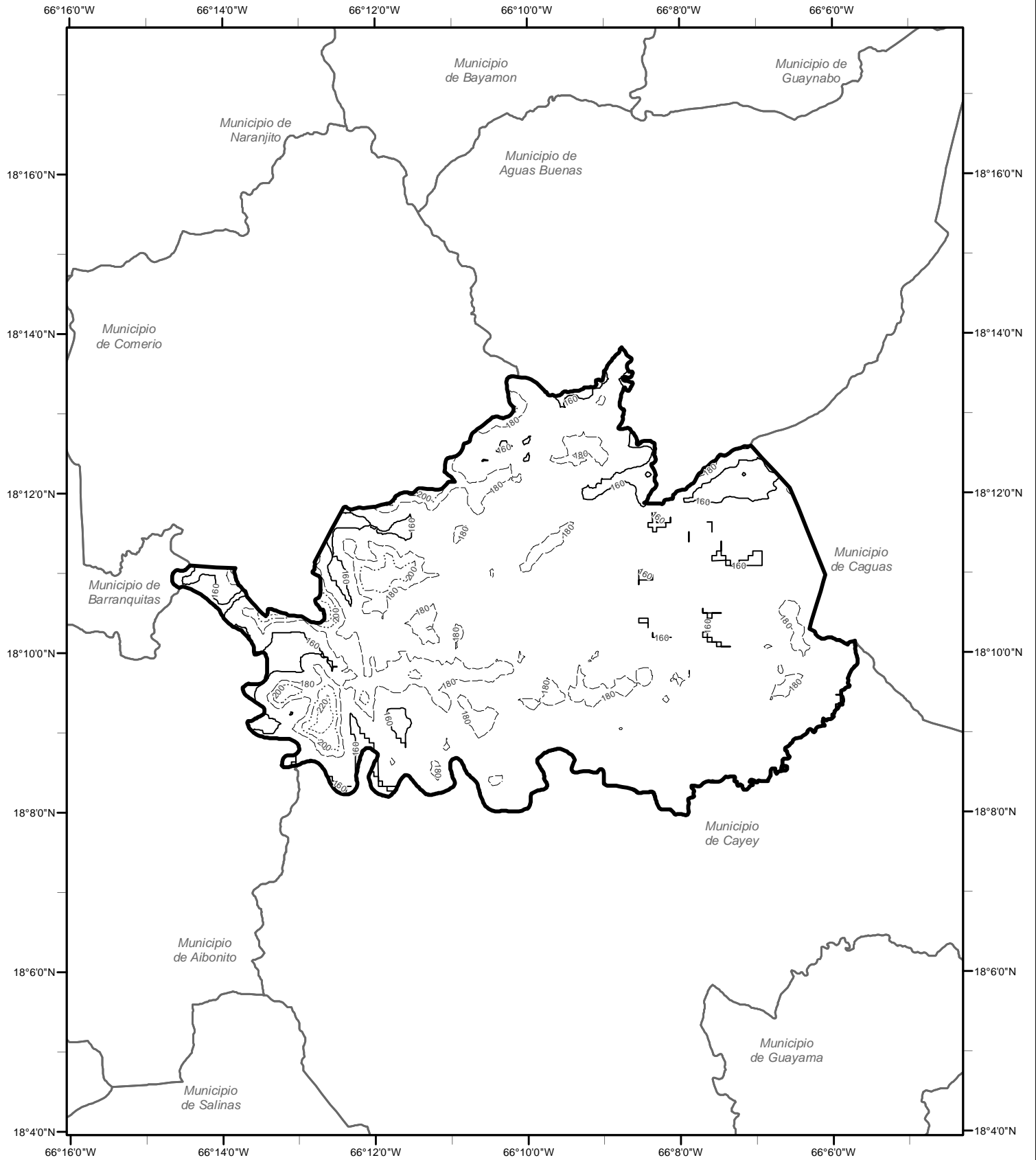
### Risk Category II Wind Contour (mph)

- 160      ····· 220
- - - - 180      ——— 240
- · · · · 200      - - - - 260

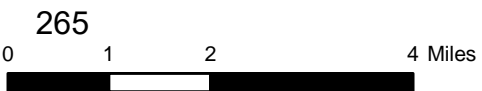
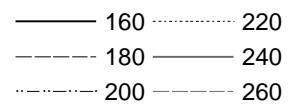


# Municipio de Cidra

## Risk Category II Effective Wind Speed Map (mph)

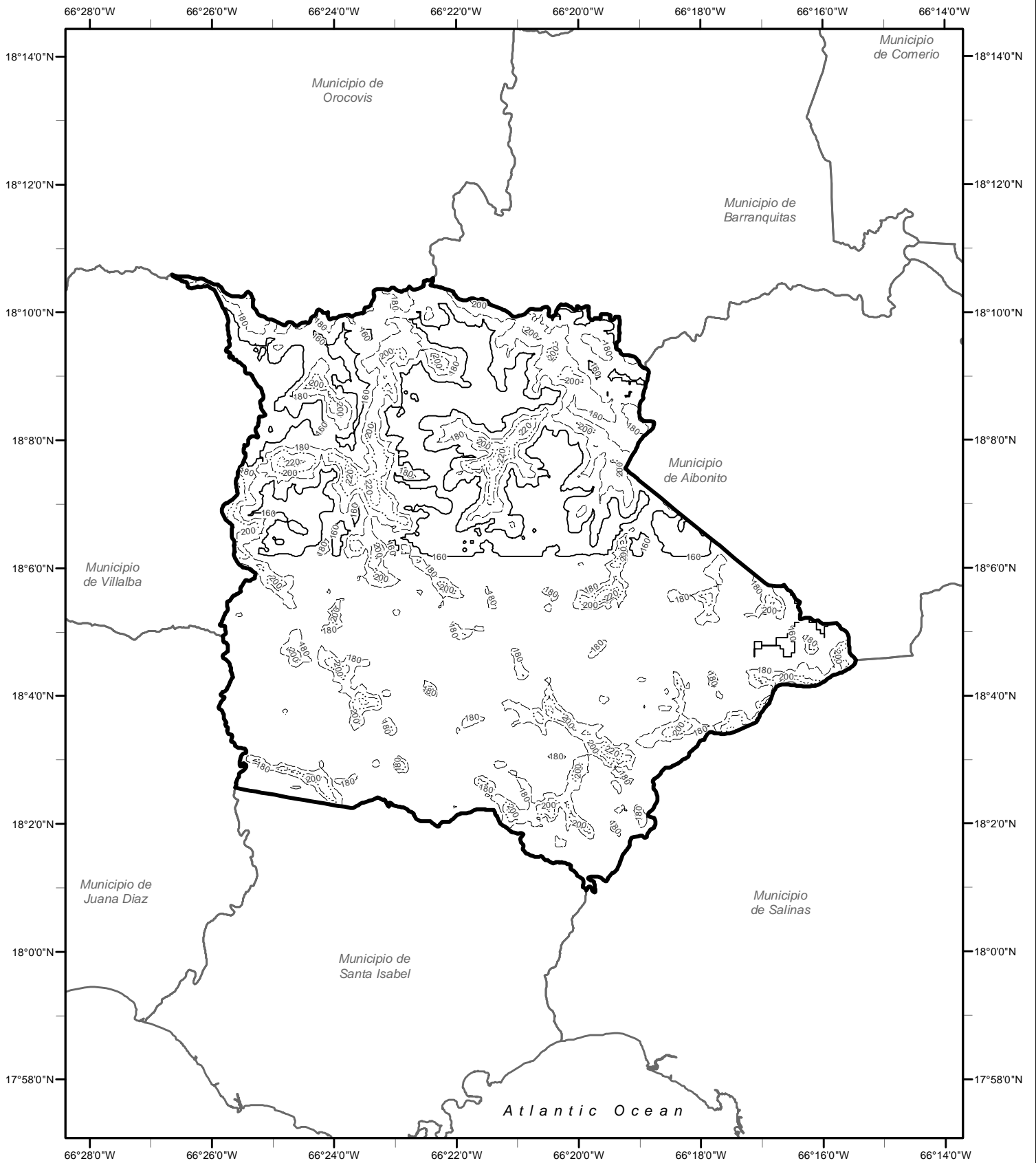


### Risk Category II Wind Contour (mph)

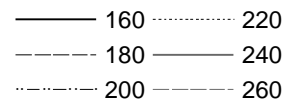


# Municipio de Coamo

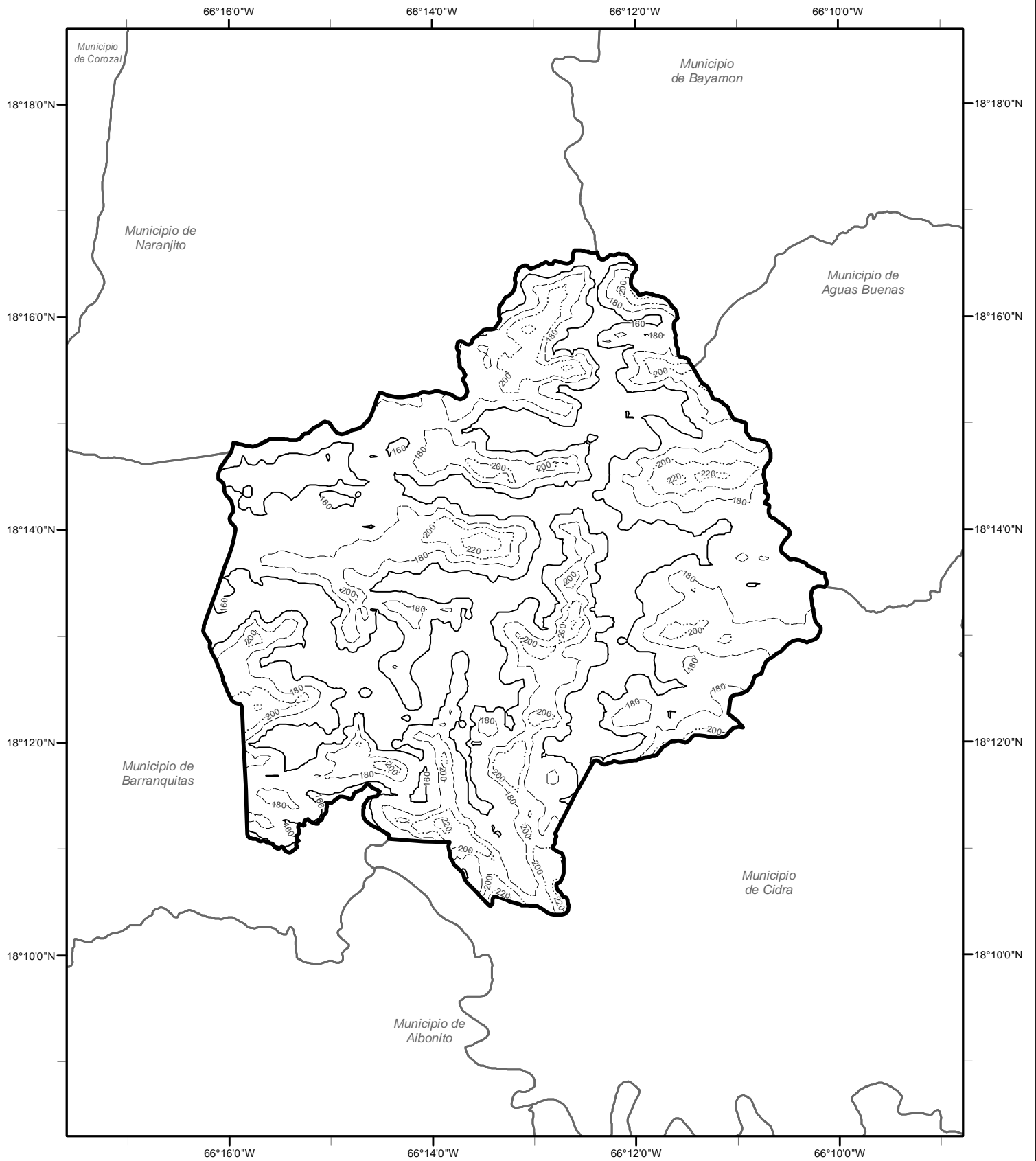
## Risk Category II Effective Wind Speed Map (mph)



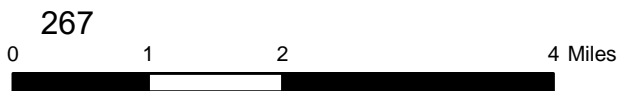
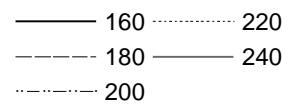
### Risk Category II Wind Contour (mph)



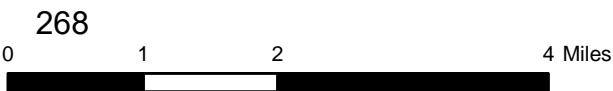
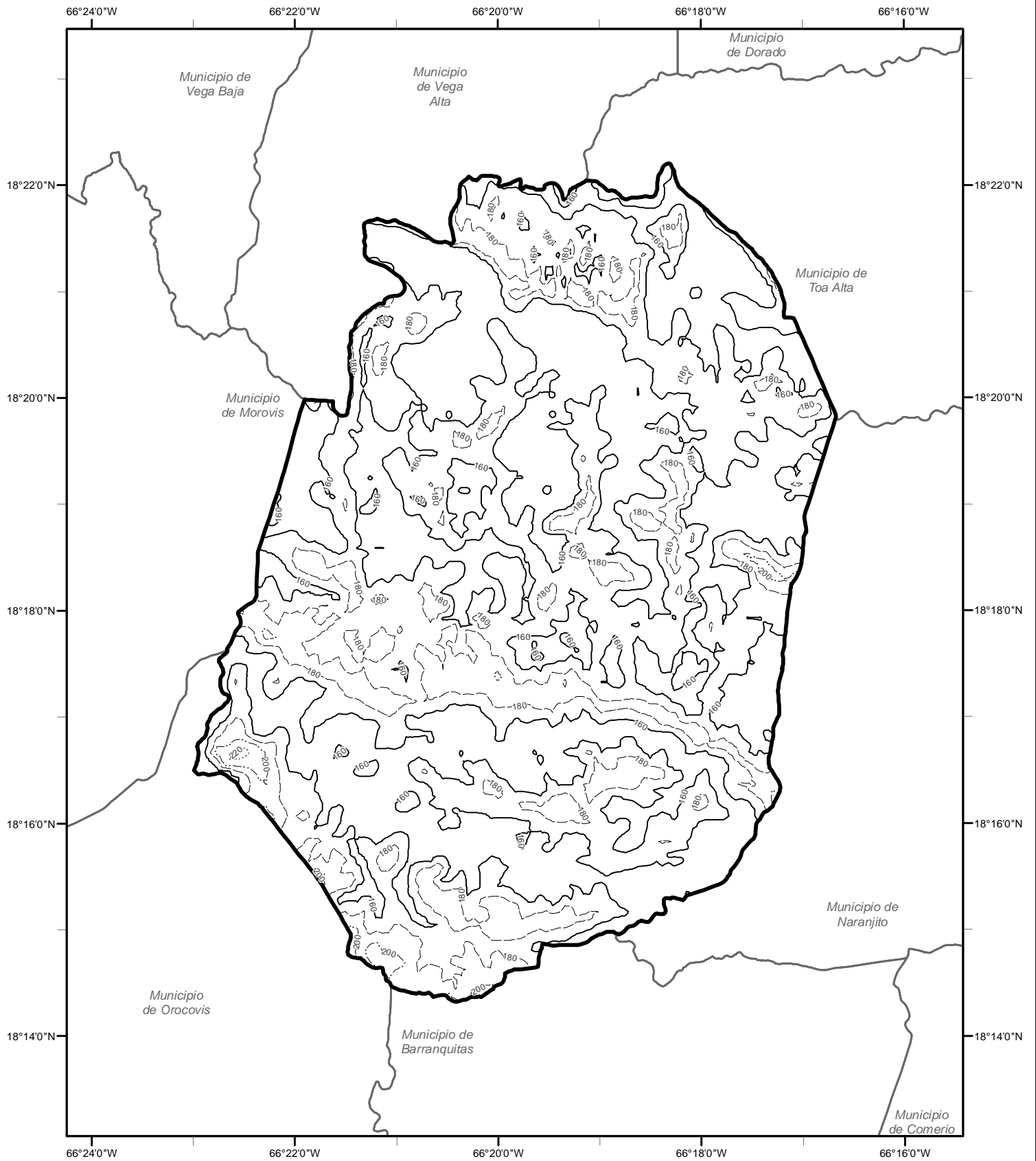
# Municipio de Comerio Risk Category II Effective Wind Speed Map (mph)



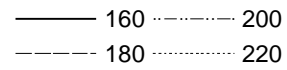
### Risk Category II Wind Contour (mph)



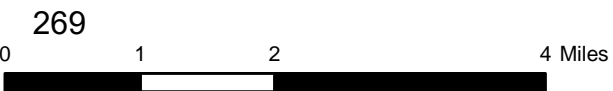
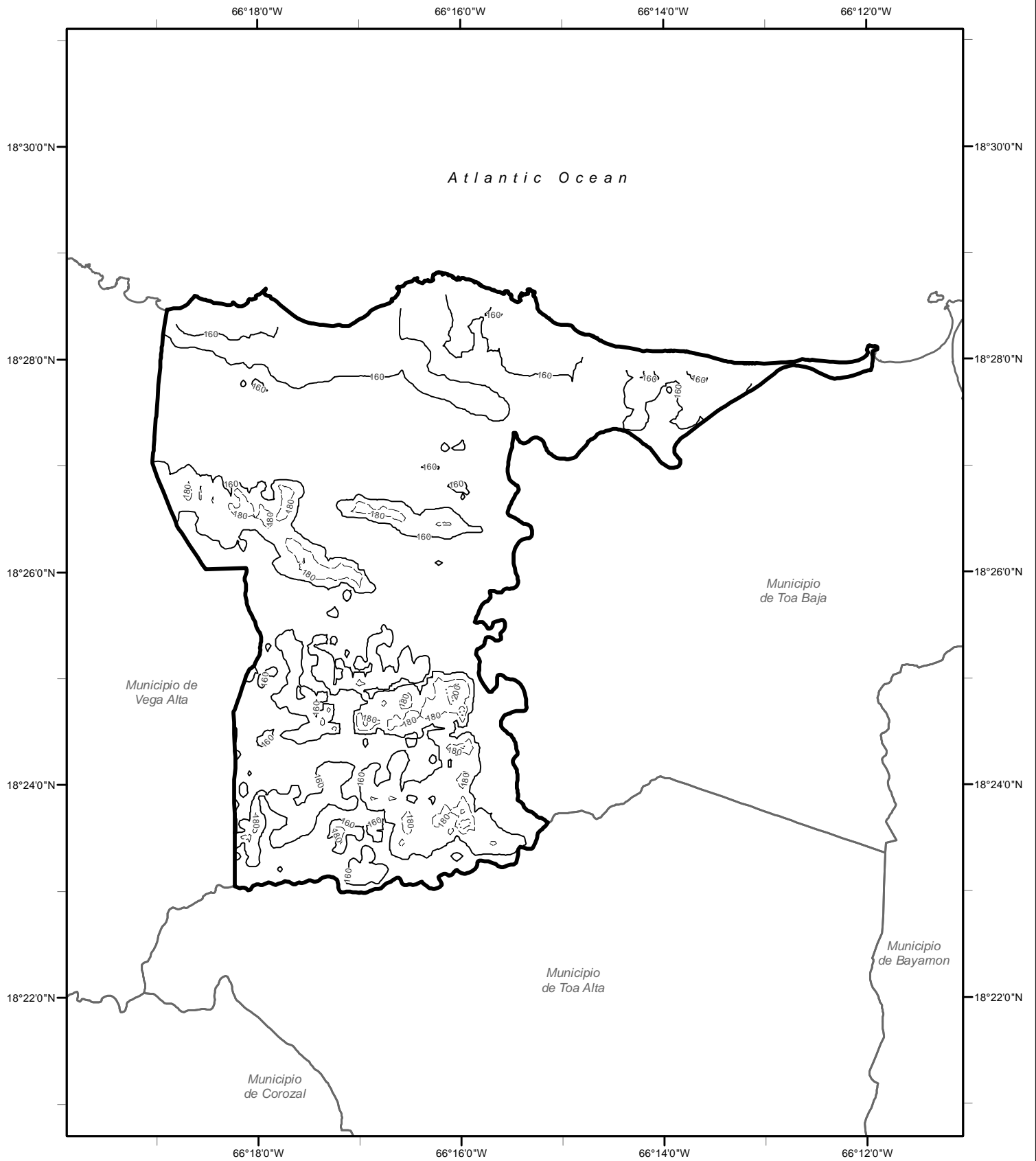
# Municipio de Corozal Risk Category II Effective Wind Speed Map (mph)



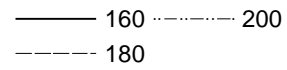
### Risk Category II Wind Contour (mph)



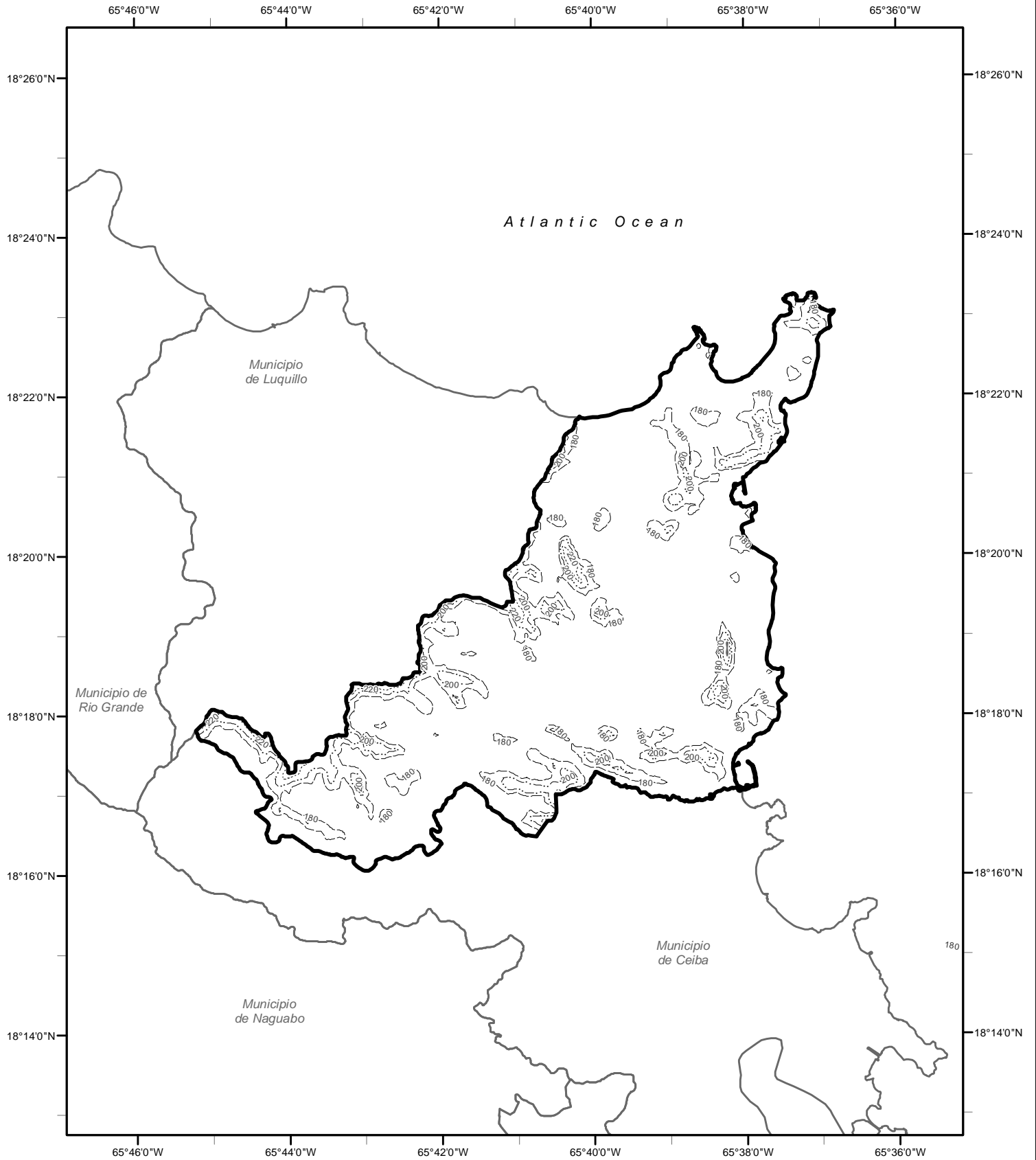
# Municipio de Dorado Risk Category II Effective Wind Speed Map (mph)



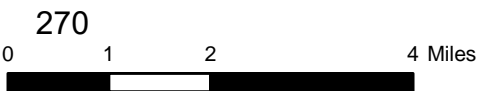
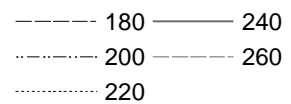
### Risk Category II Wind Contour (mph)



# Municipio de Fajardo Risk Category II Effective Wind Speed Map (mph)



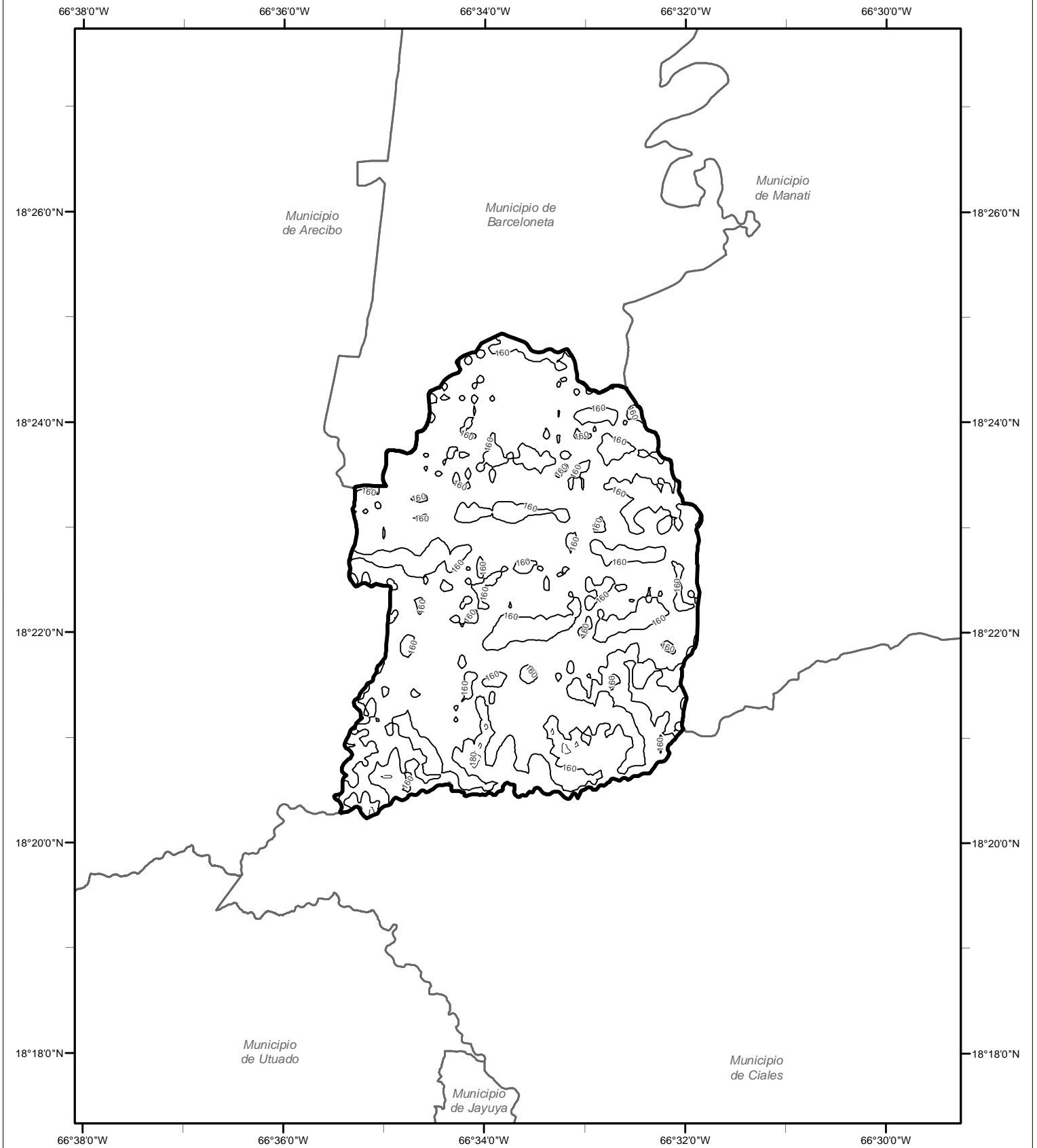
### Risk Category II Wind Contour (mph)



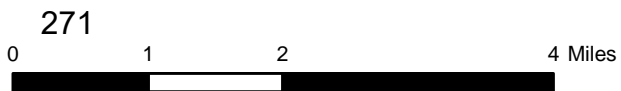
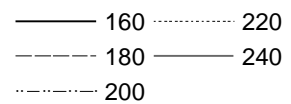


# Municipio de Florida

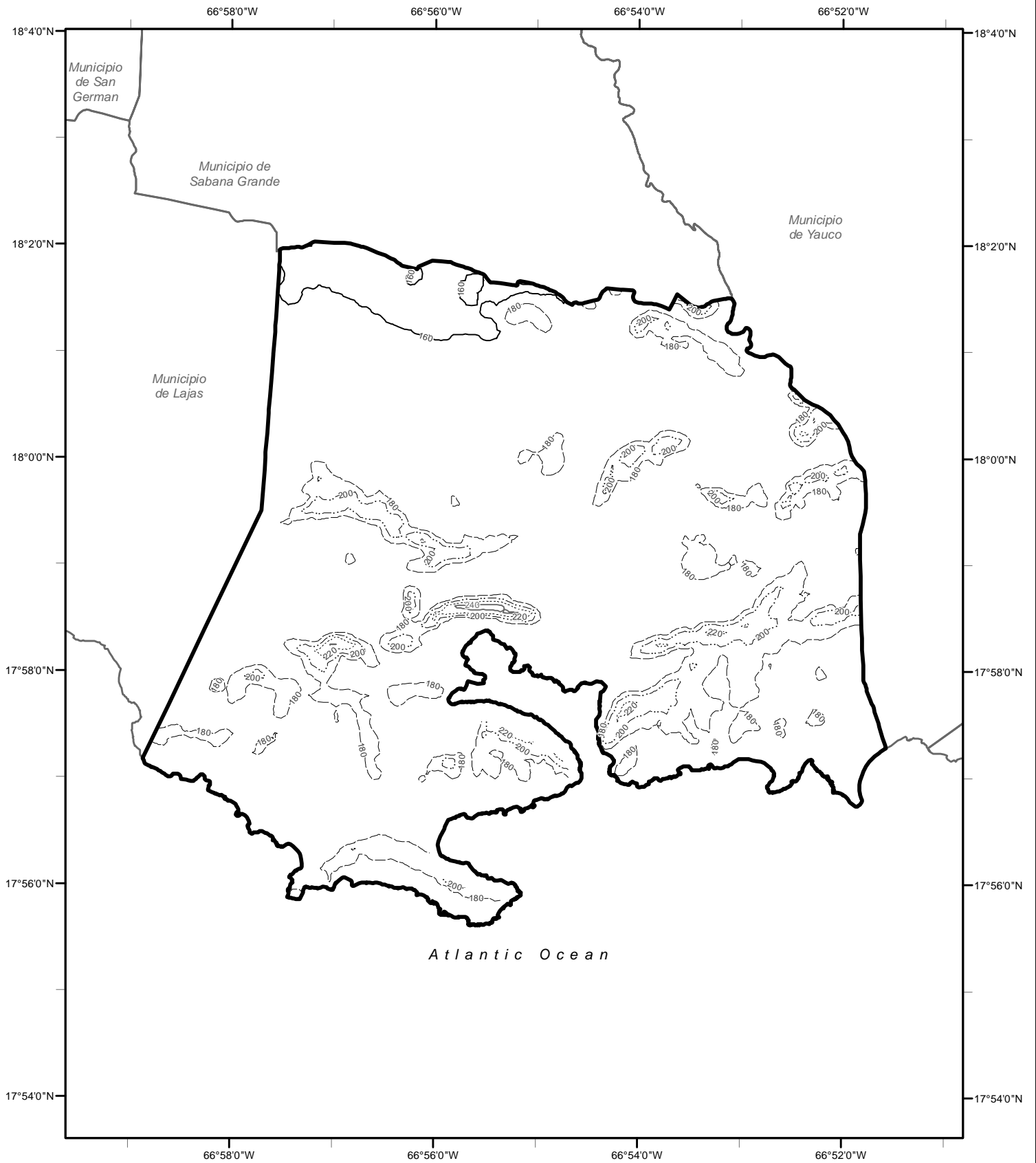
## Risk Category II Effective Wind Speed Map (mph)



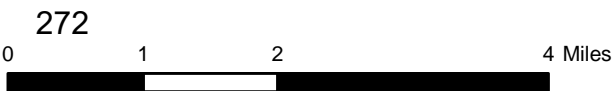
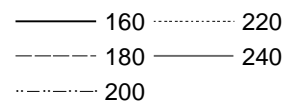
### Risk Category II Wind Contour (mph)



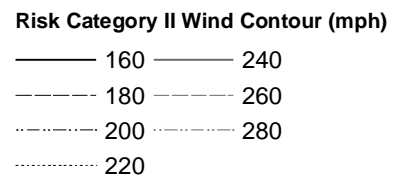
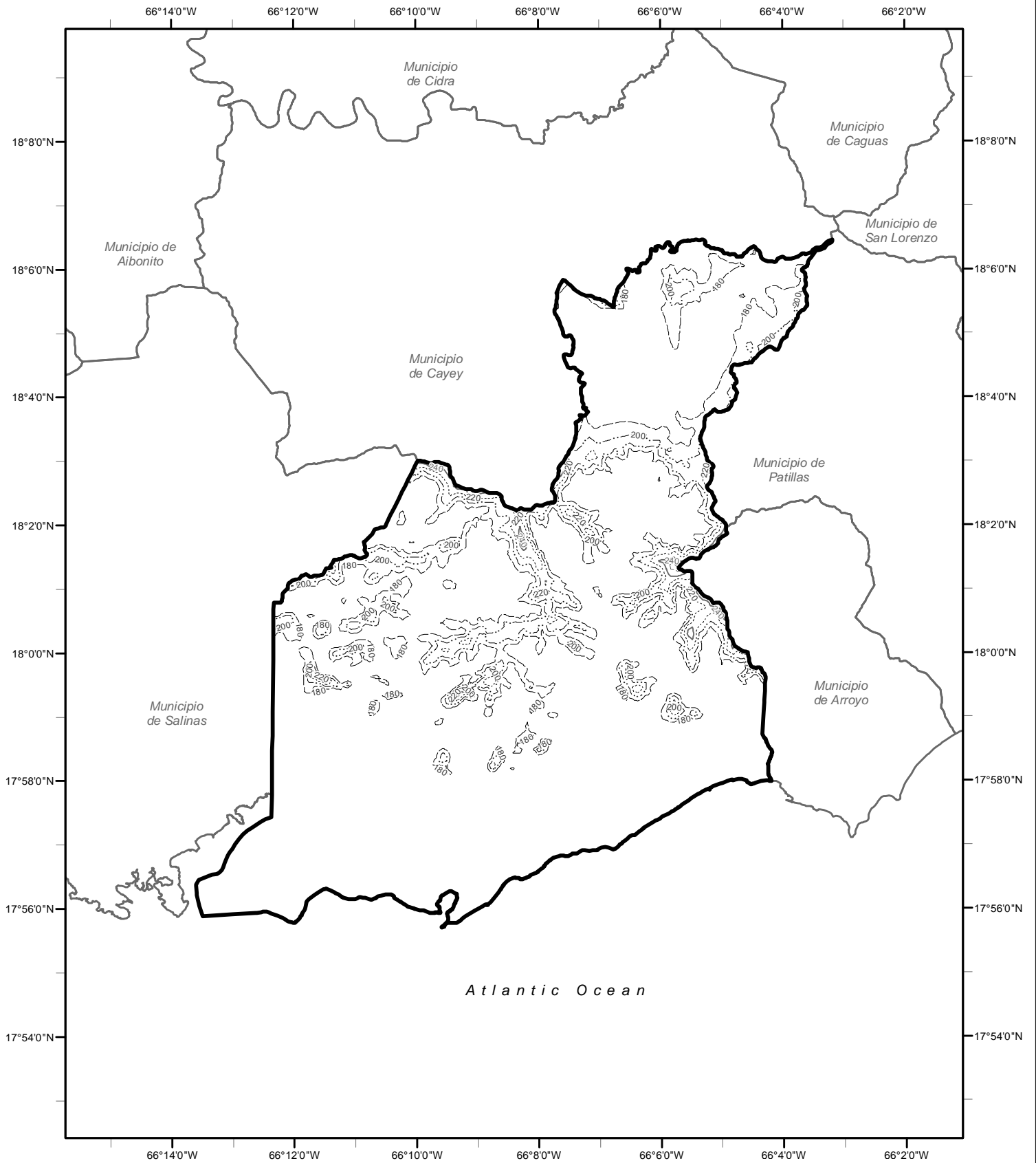
# Municipio de Guanica Risk Category II Effective Wind Speed Map (mph)



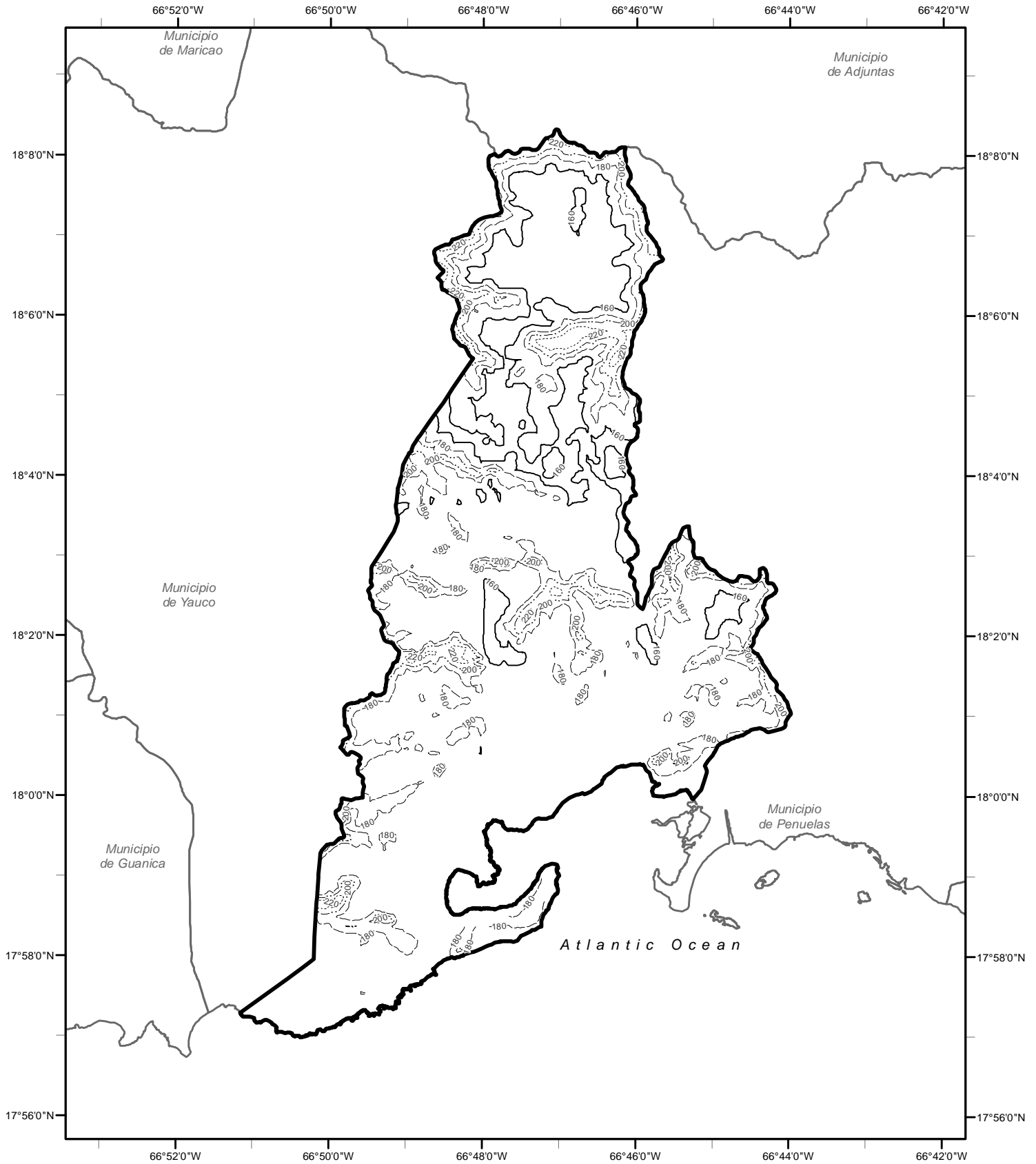
### Risk Category II Wind Contour (mph)



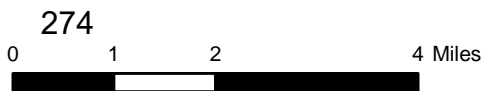
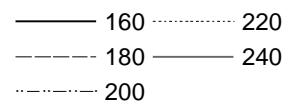
# Municipio de Guayama Risk Category II Effective Wind Speed Map (mph)



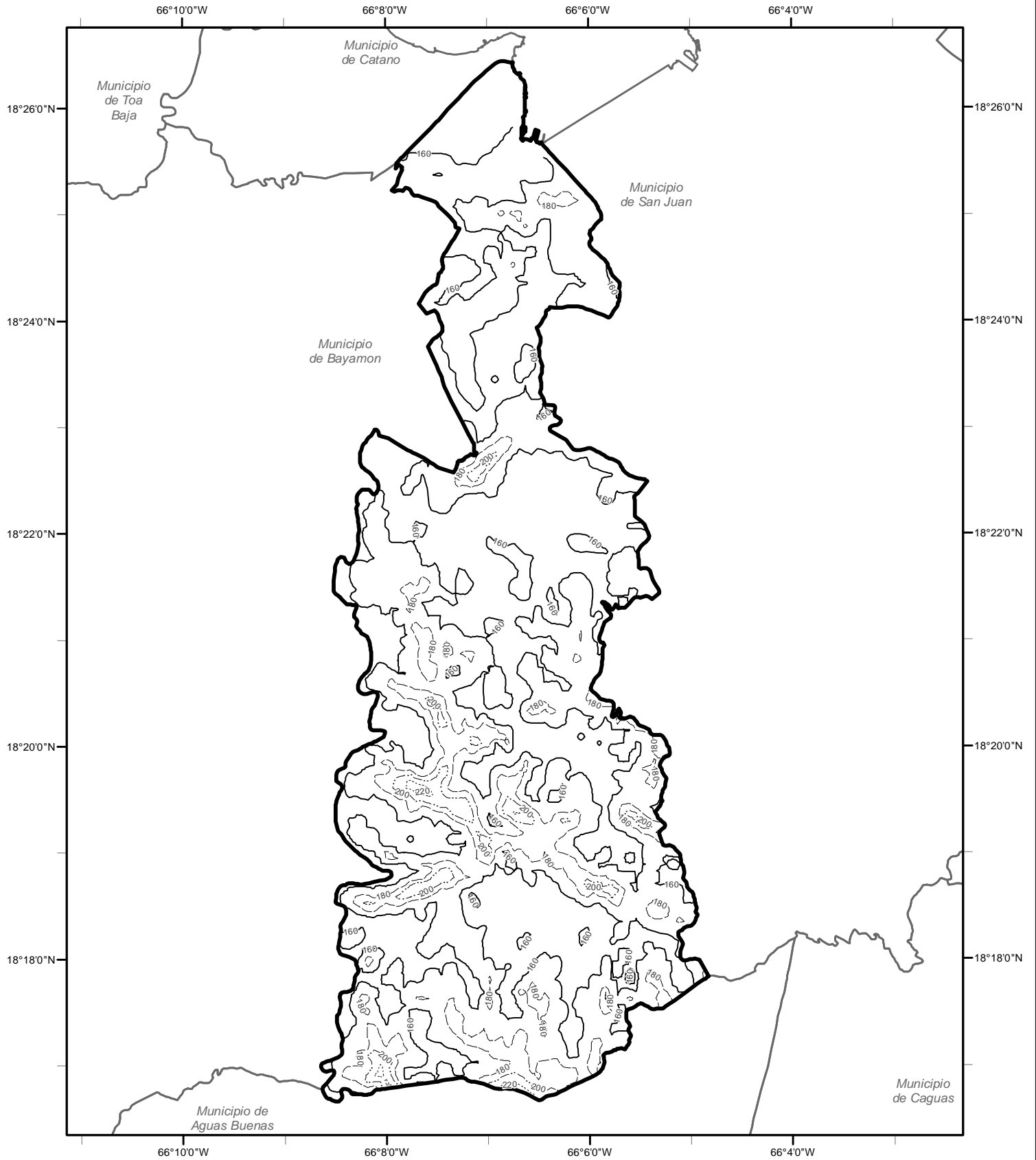
# Municipio de Guayanilla Risk Category II Effective Wind Speed Map (mph)



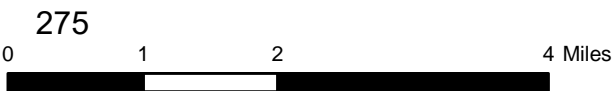
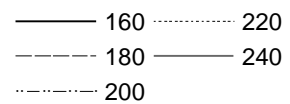
### Risk Category II Wind Contour (mph)



# Municipio de Guaynabo Risk Category II Effective Wind Speed Map (mph)

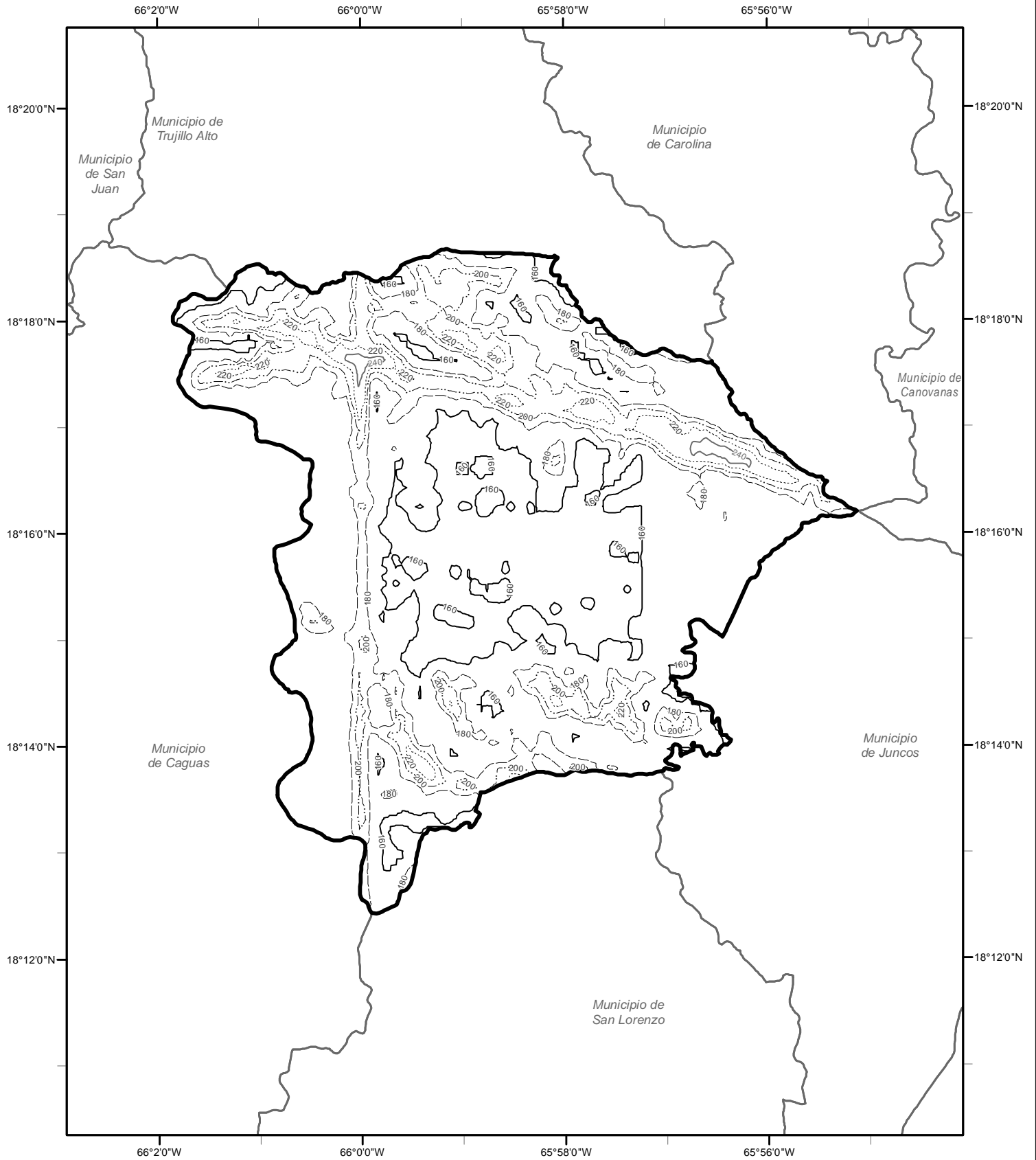


### Risk Category II Wind Contour (mph)

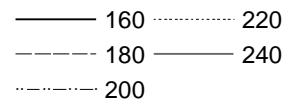


# Municipio de Gurabo

## Risk Category II Effective Wind Speed Map (mph)

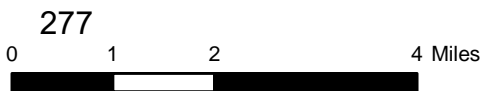
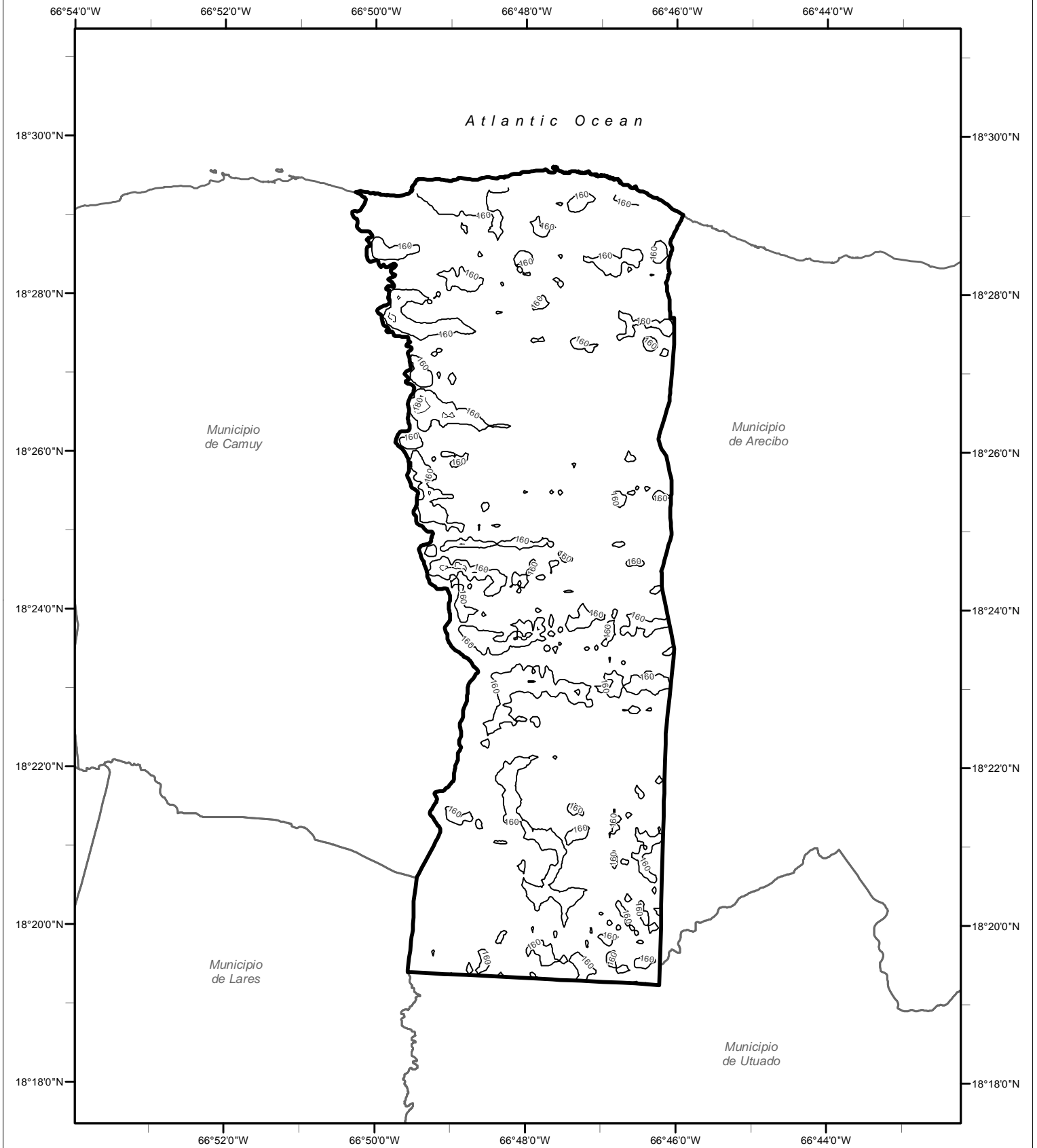


### Risk Category II Wind Contour (mph)

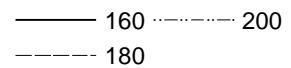


276

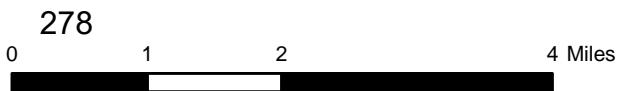
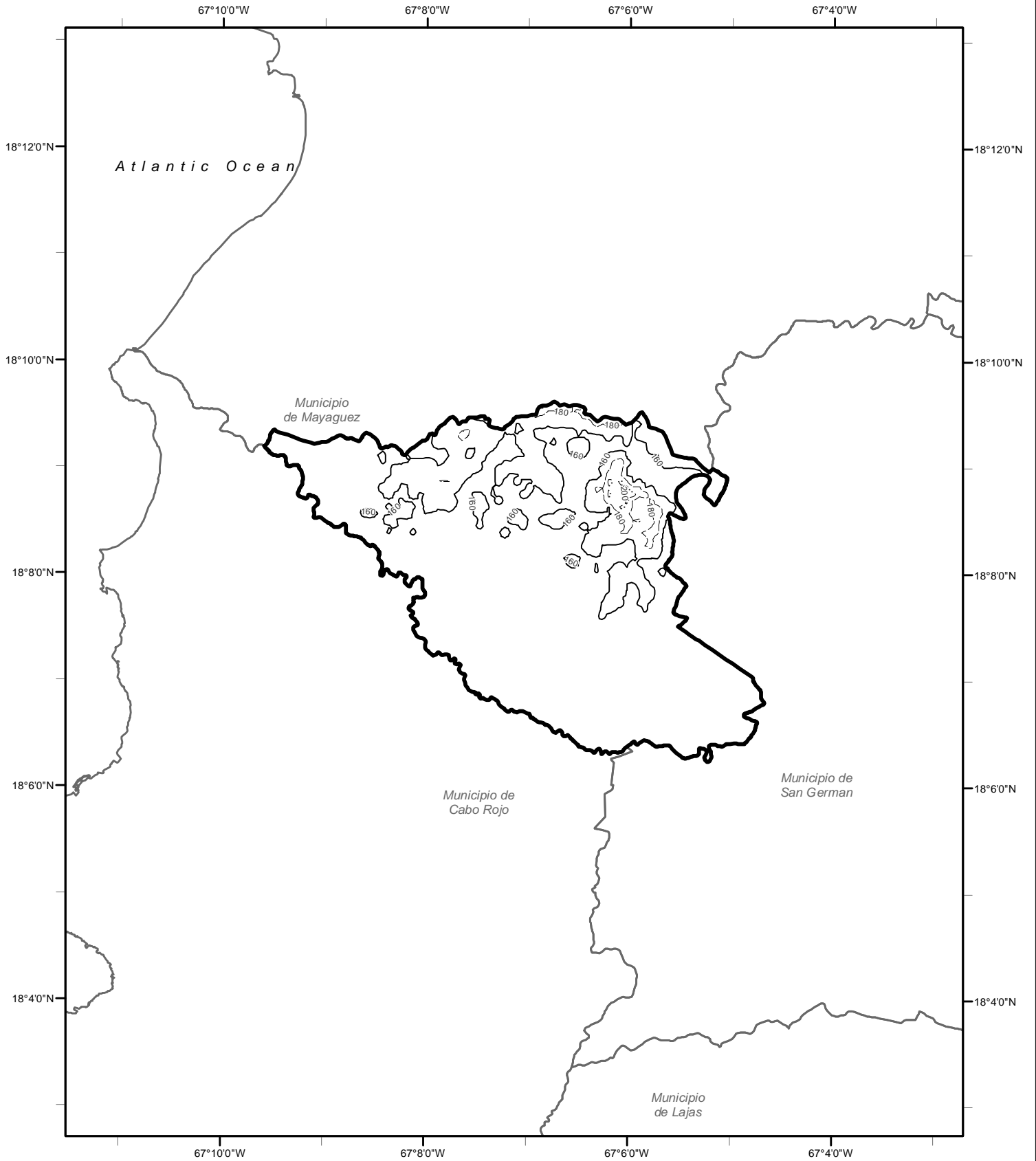
# Municipio de Hatillo Risk Category II Effective Wind Speed Map (mph)



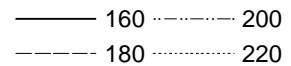
### Risk Category II Wind Contour (mph)



# Municipio de Hormigueros Risk Category II Effective Wind Speed Map (mph)

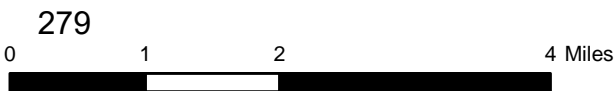
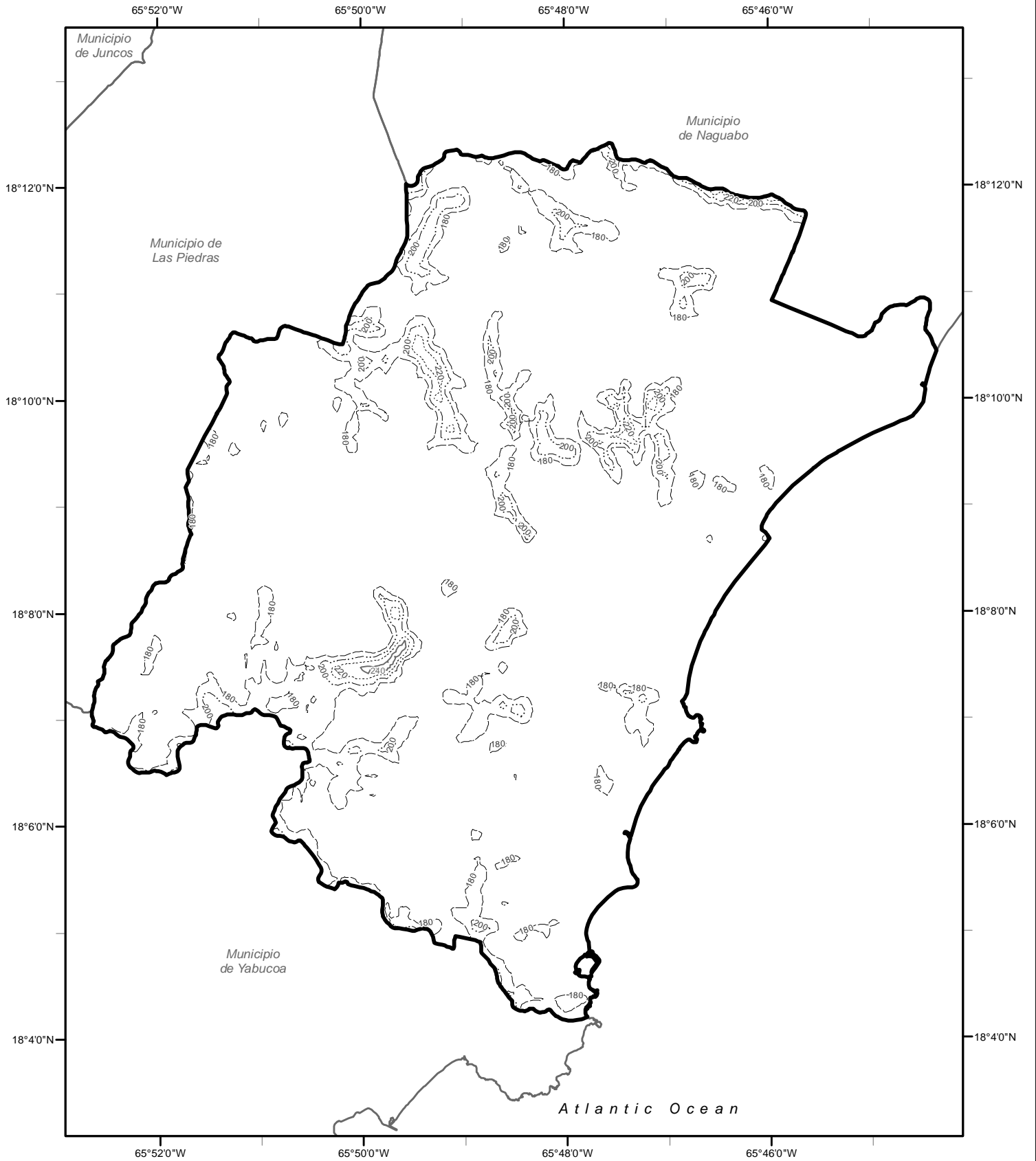


### Risk Category II Wind Contour (mph)

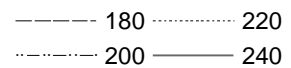




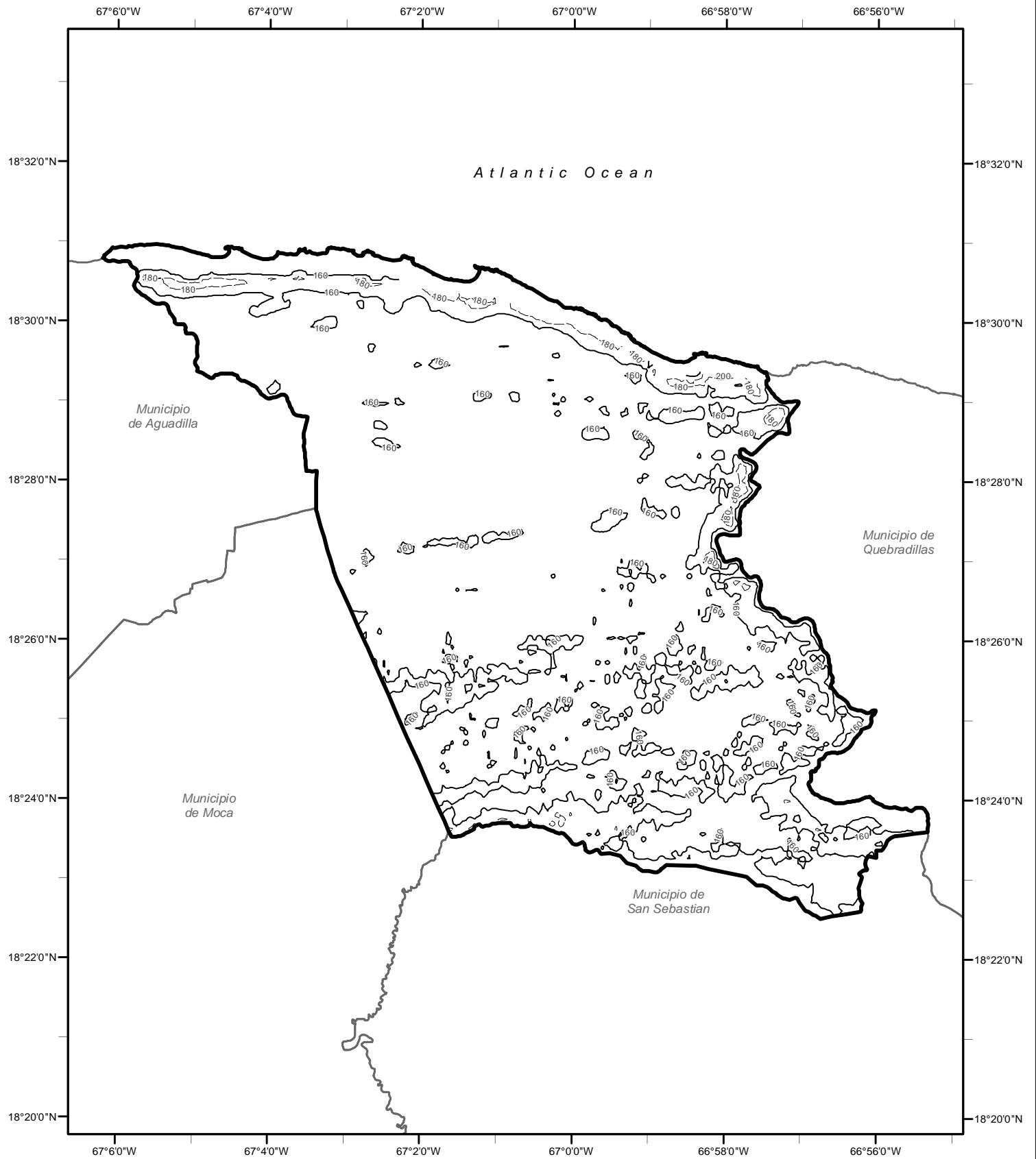
# Municipio de Humacao Risk Category II Effective Wind Speed Map (mph)



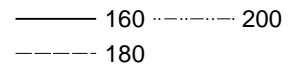
### Risk Category II Wind Contour (mph)



# Municipio de Isabela Risk Category II Effective Wind Speed Map (mph)

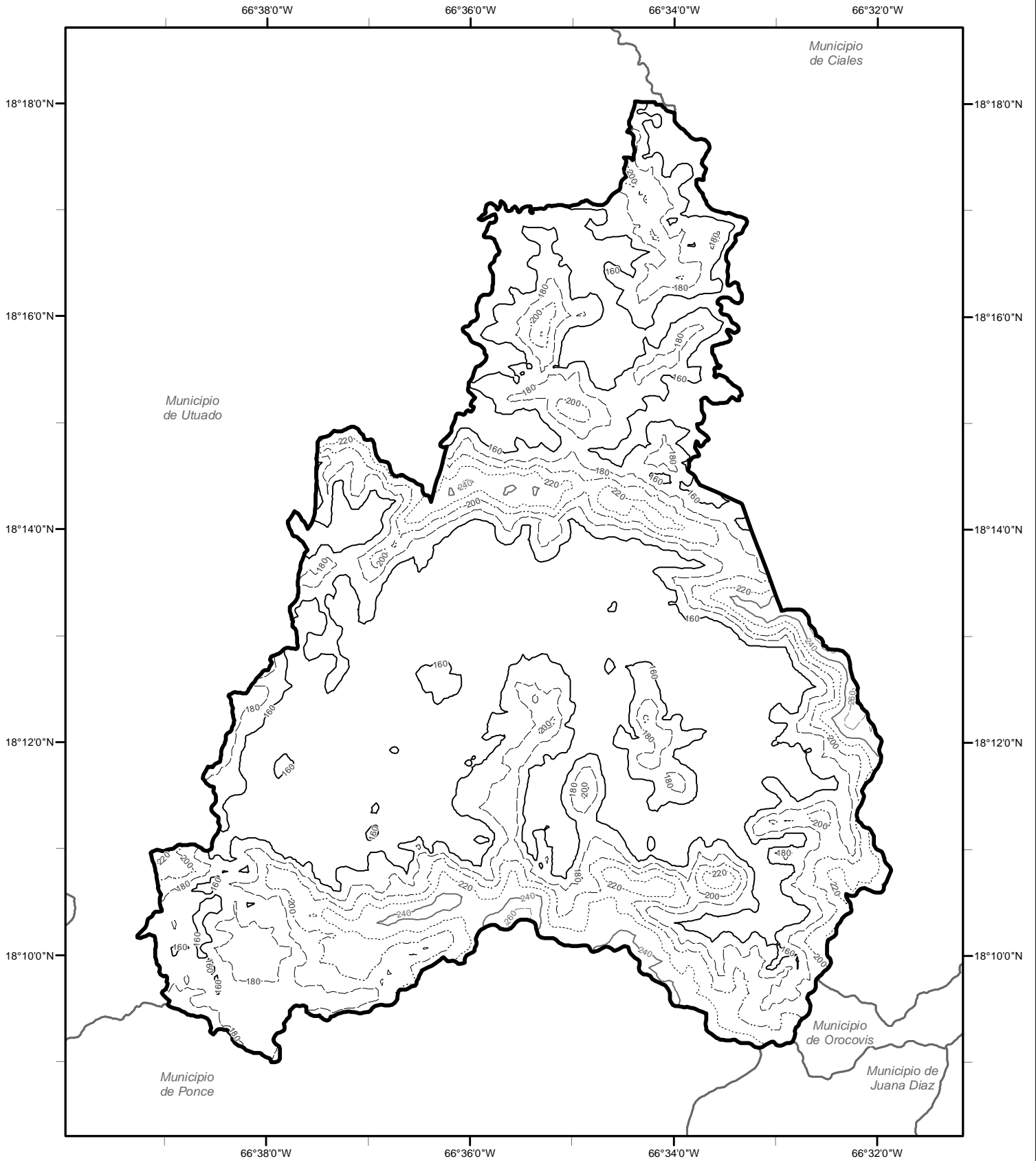


### Risk Category II Wind Contour (mph)

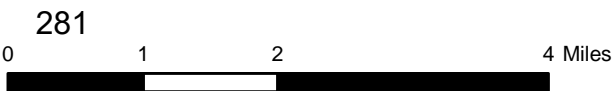
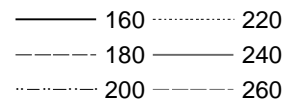


# Municipio de Jayuya

## Risk Category II Effective Wind Speed Map (mph)

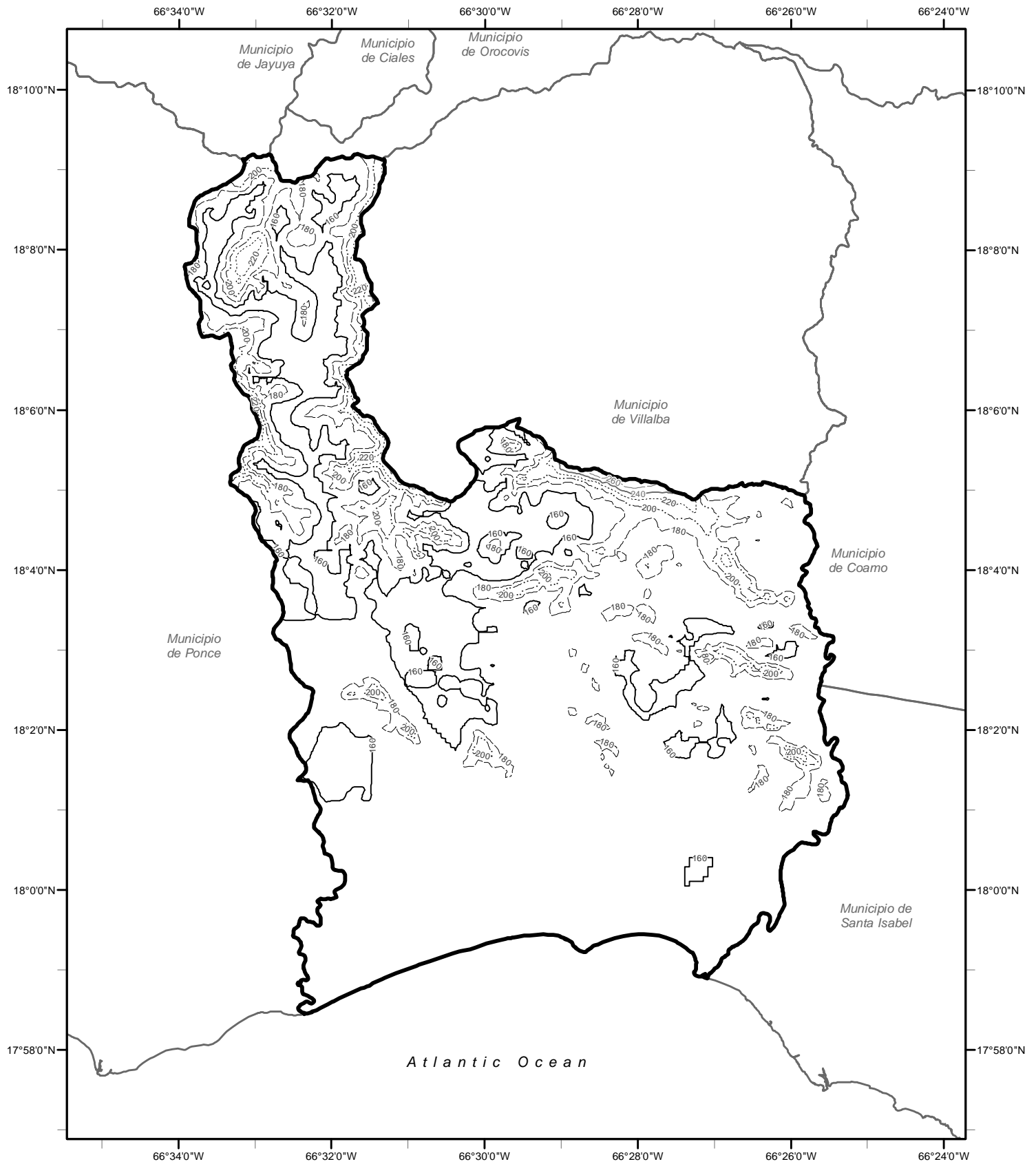


### Risk Category II Wind Contour (mph)

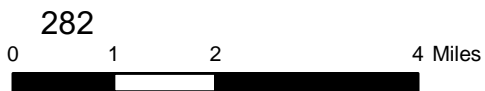
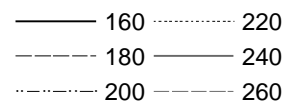


281

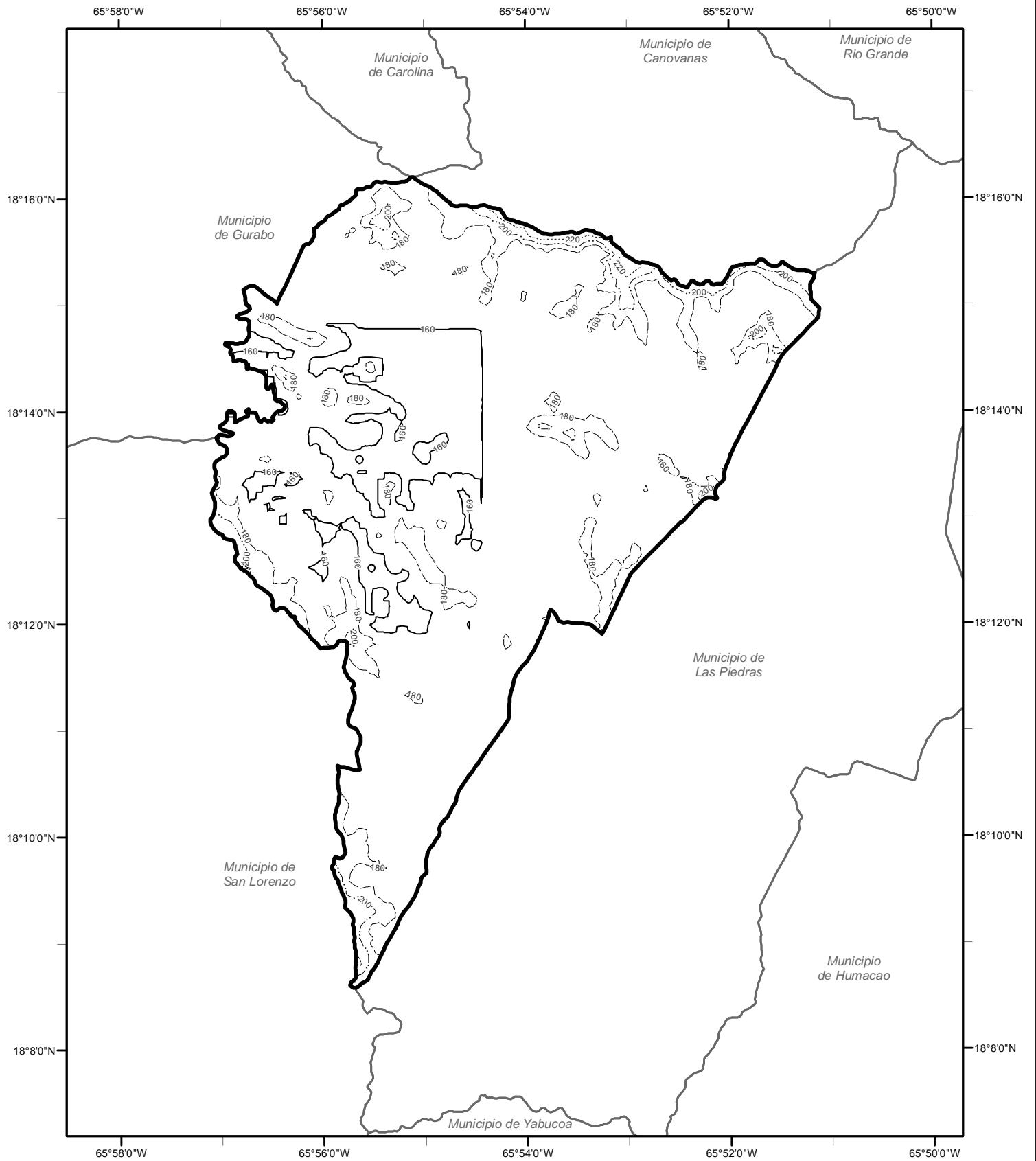
# Municipio de Juana Diaz Risk Category II Effective Wind Speed Map (mph)



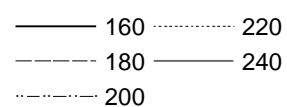
### Risk Category II Wind Contour (mph)



# Municipio de Juncos Risk Category II Effective Wind Speed Map (mph)

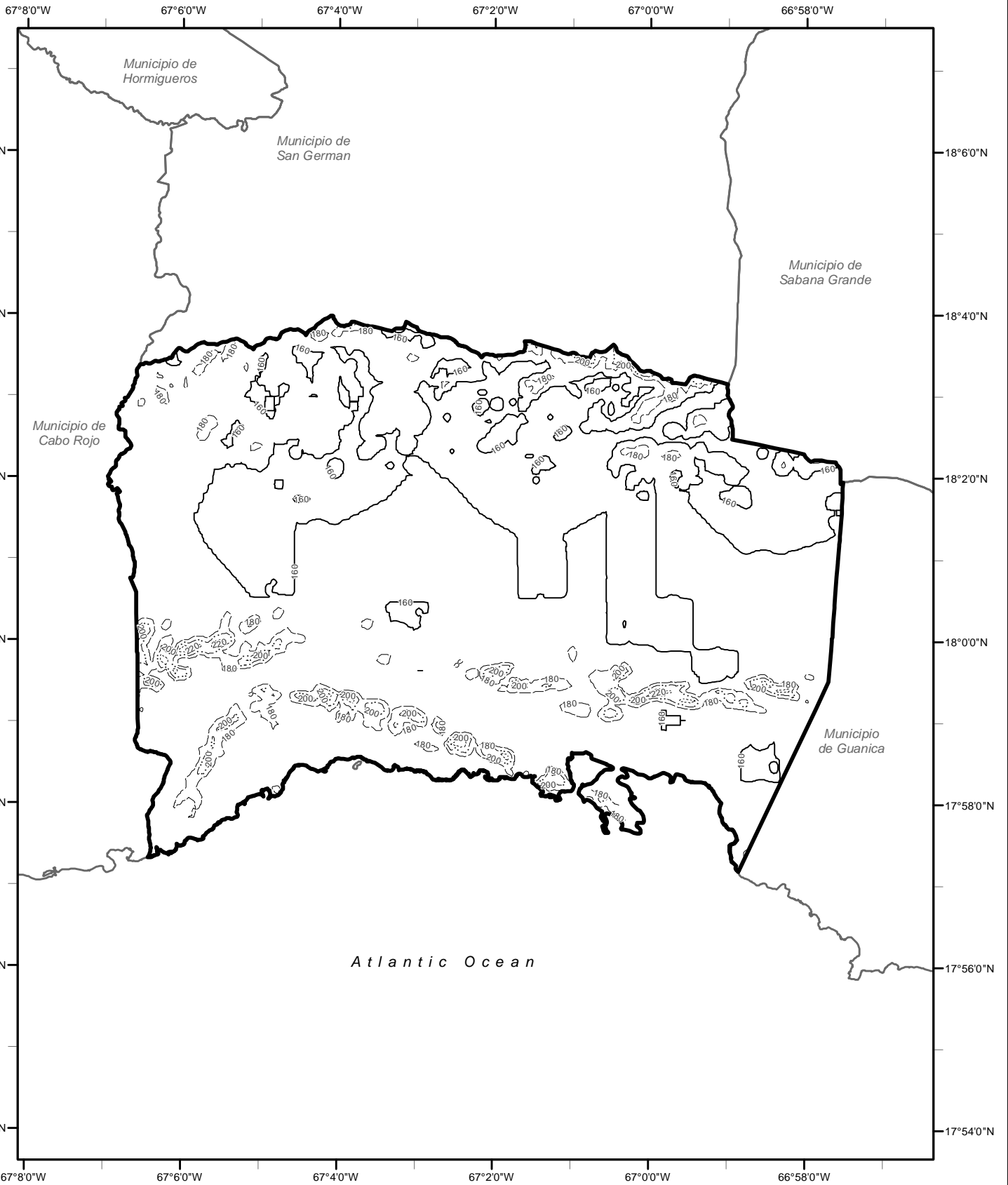


### Risk Category II Wind Contour (mph)

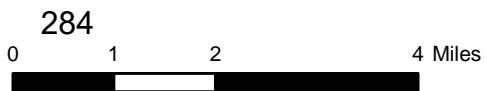
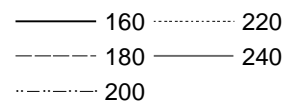


# Municipio de Lajas

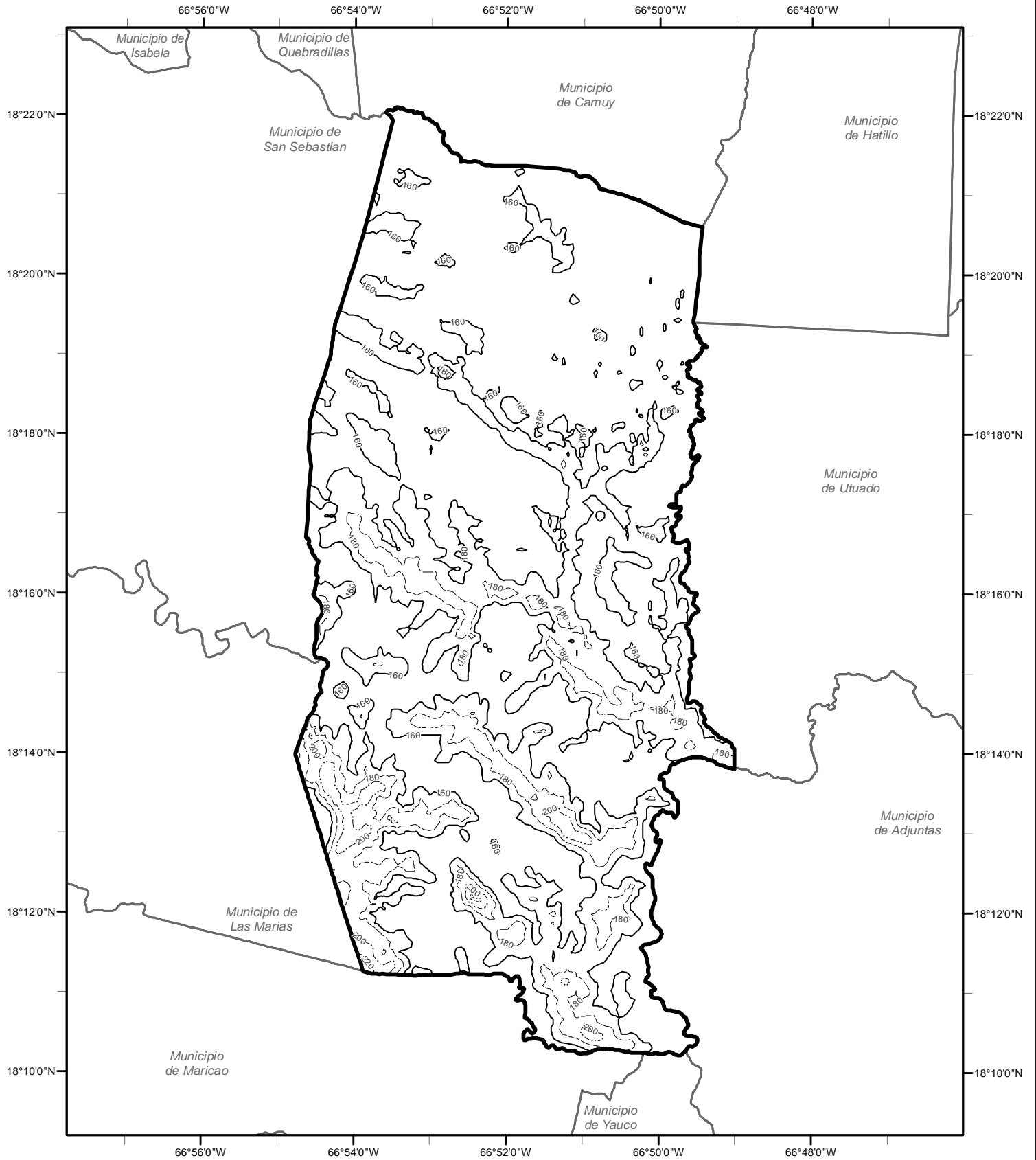
## Risk Category II Effective Wind Speed Map (mph)



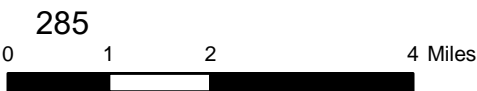
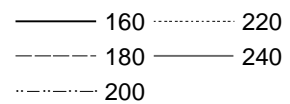
### Risk Category II Wind Contour (mph)



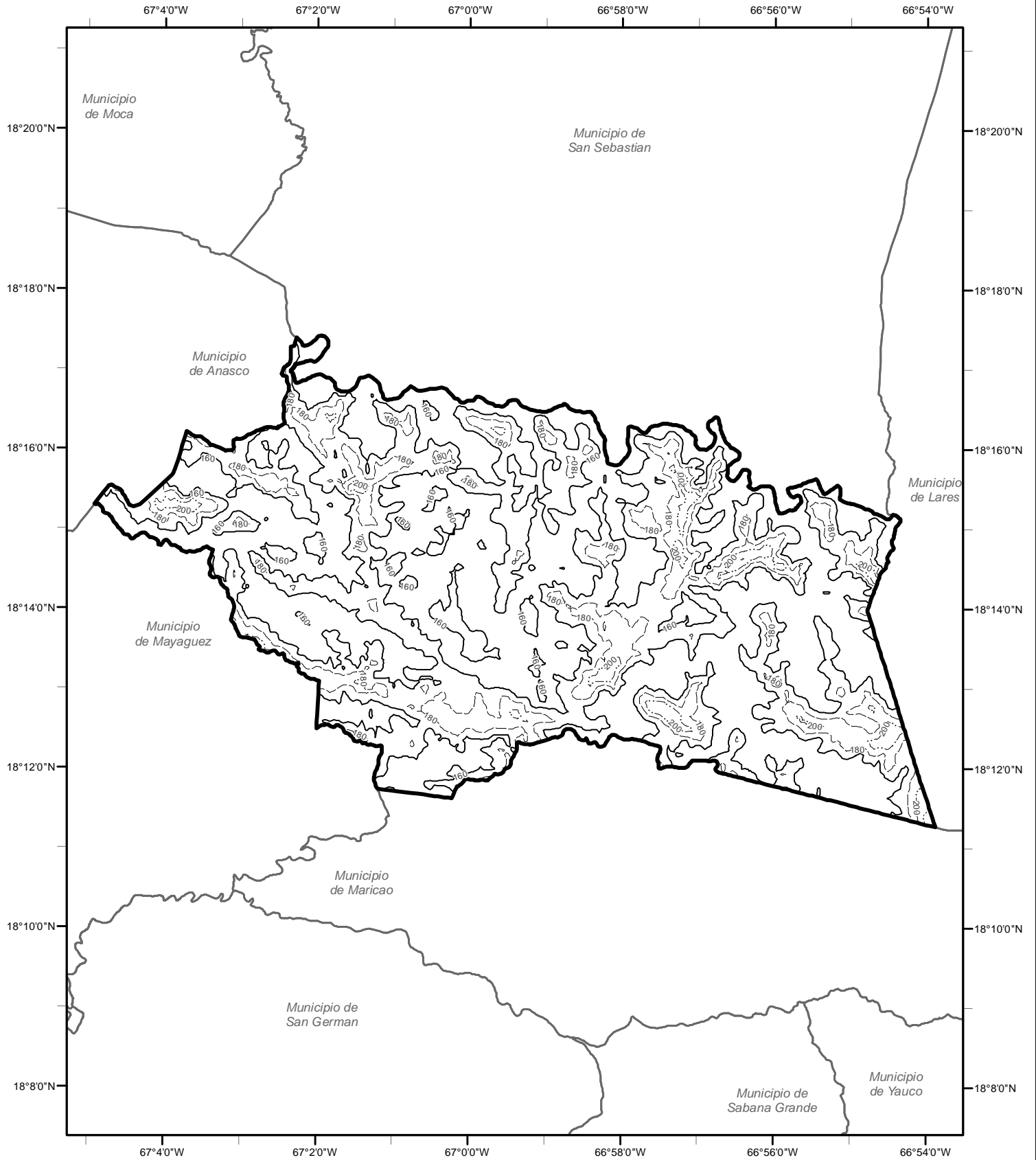
# Municipio de Lares Risk Category II Effective Wind Speed Map (mph)



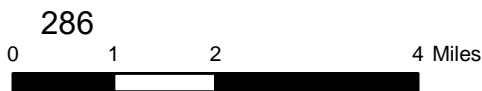
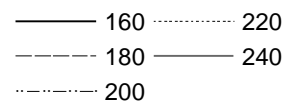
### Risk Category II Wind Contour (mph)



# Municipio de Las Marias Risk Category II Effective Wind Speed Map (mph)

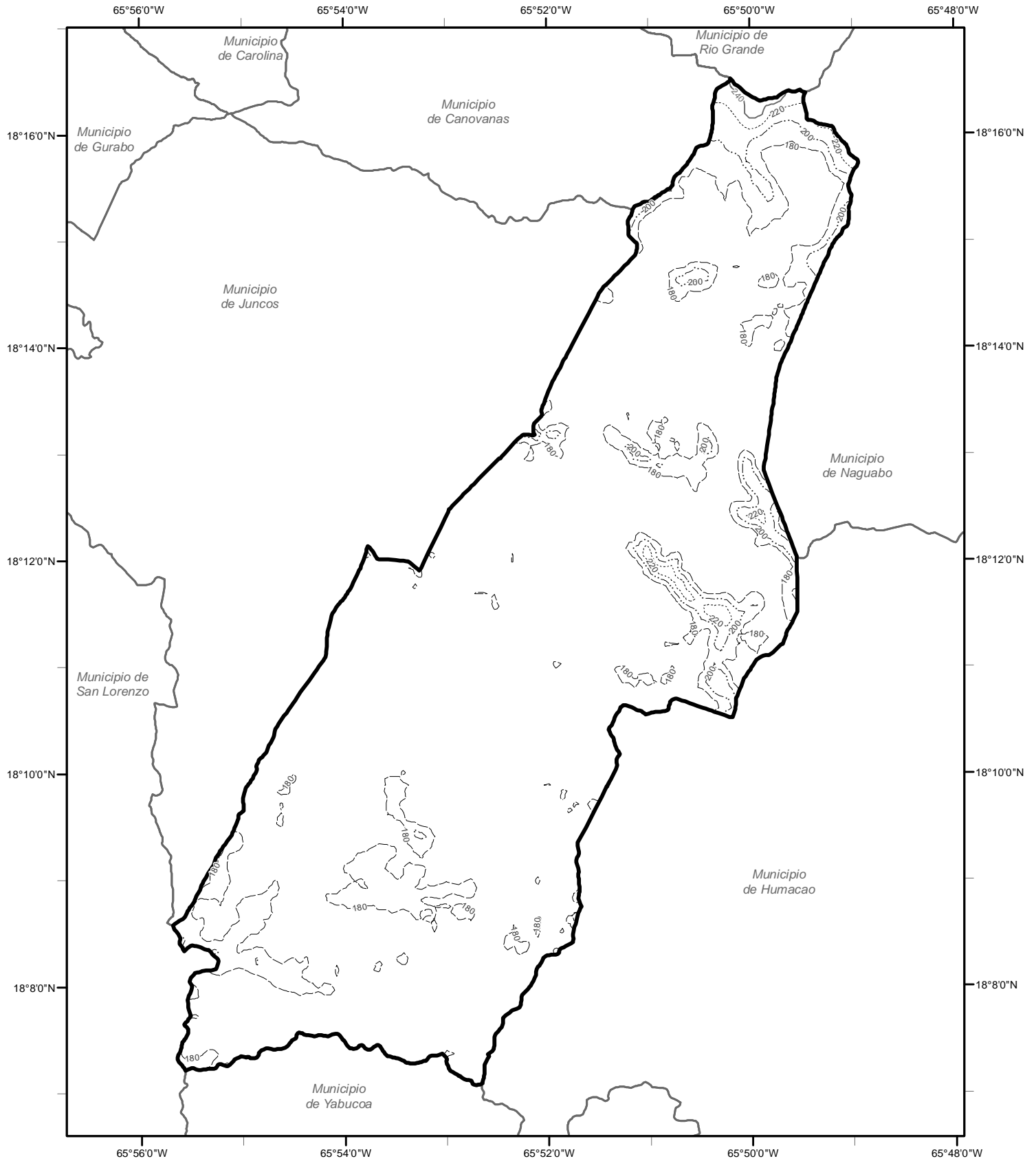


### Risk Category II Wind Contour (mph)

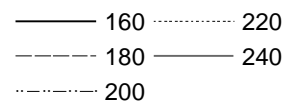




# Municipio de Las Piedras Risk Category II Effective Wind Speed Map (mph)

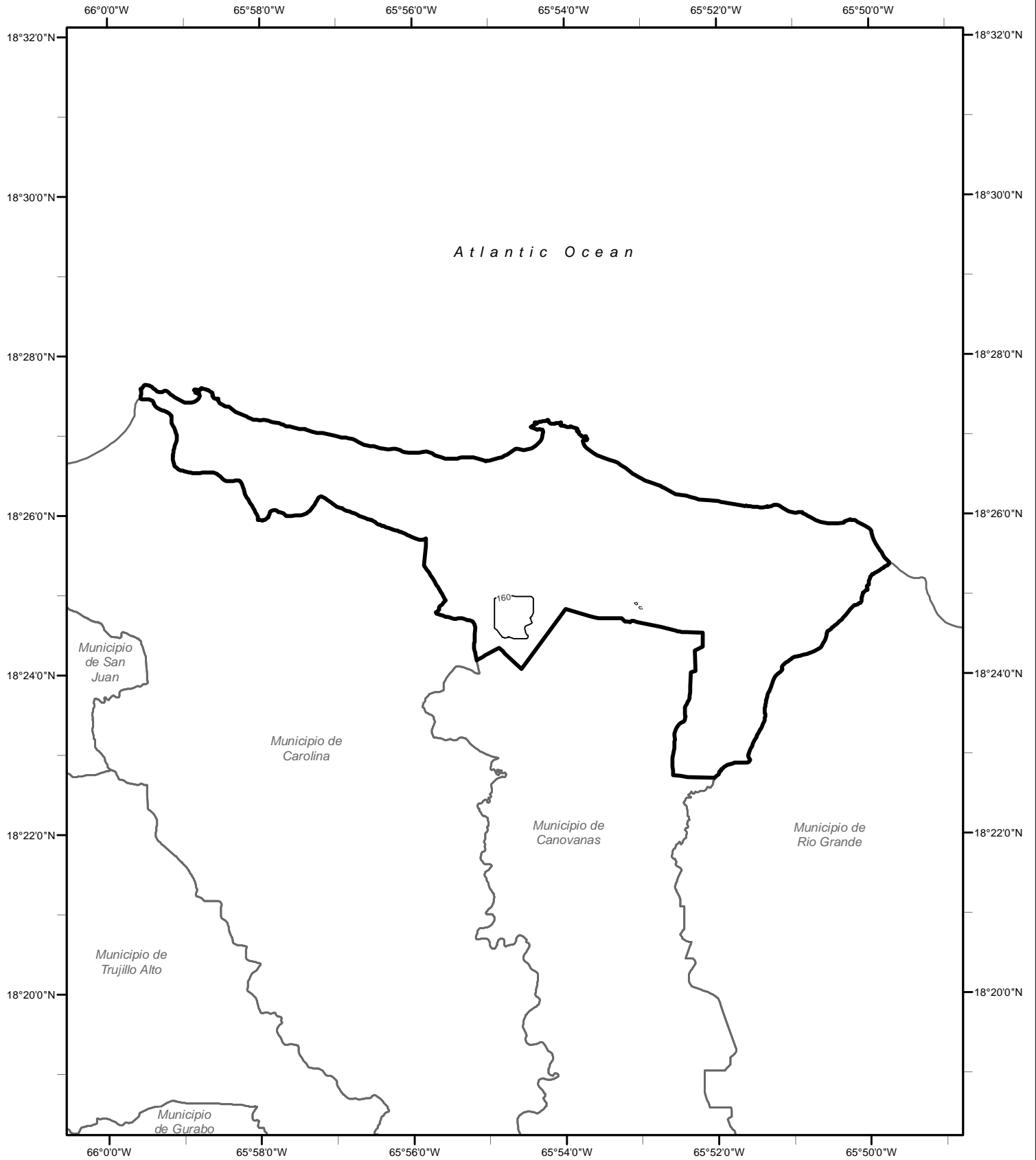


### Risk Category II Wind Contour (mph)

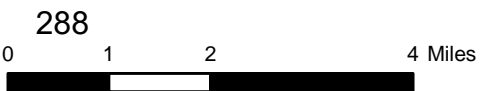
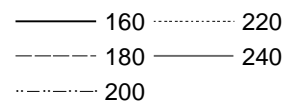


# Municipio de Loiza

## Risk Category II Effective Wind Speed Map (mph)



### Risk Category II Wind Contour (mph)



288

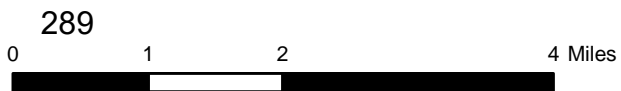
# Municipio de Luquillo Risk Category II Effective Wind Speed Map (mph)

65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W

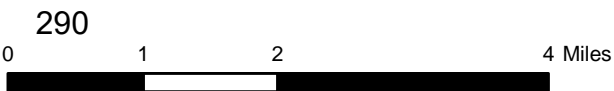
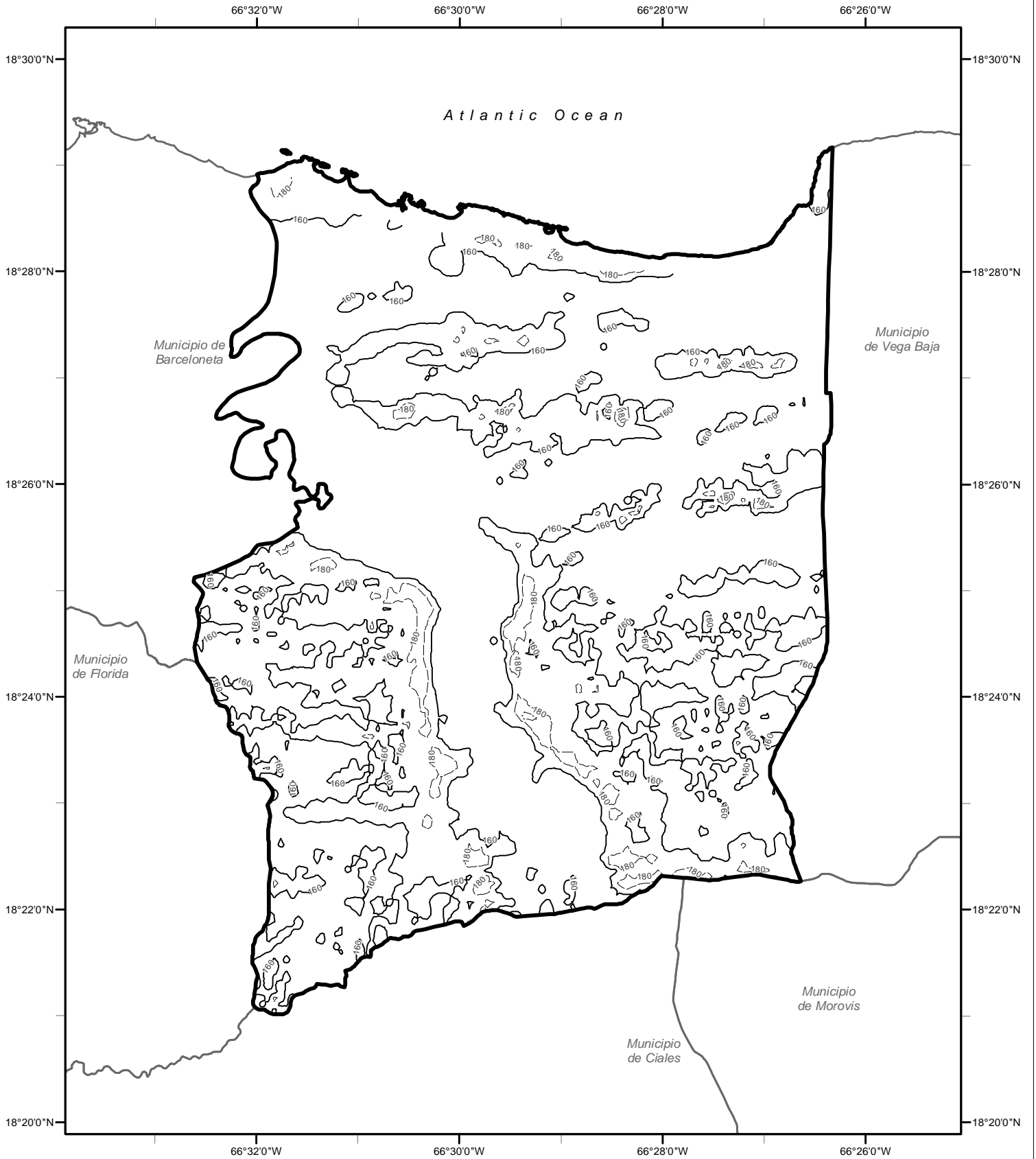


### Risk Category II Wind Contour (mph)

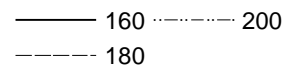
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



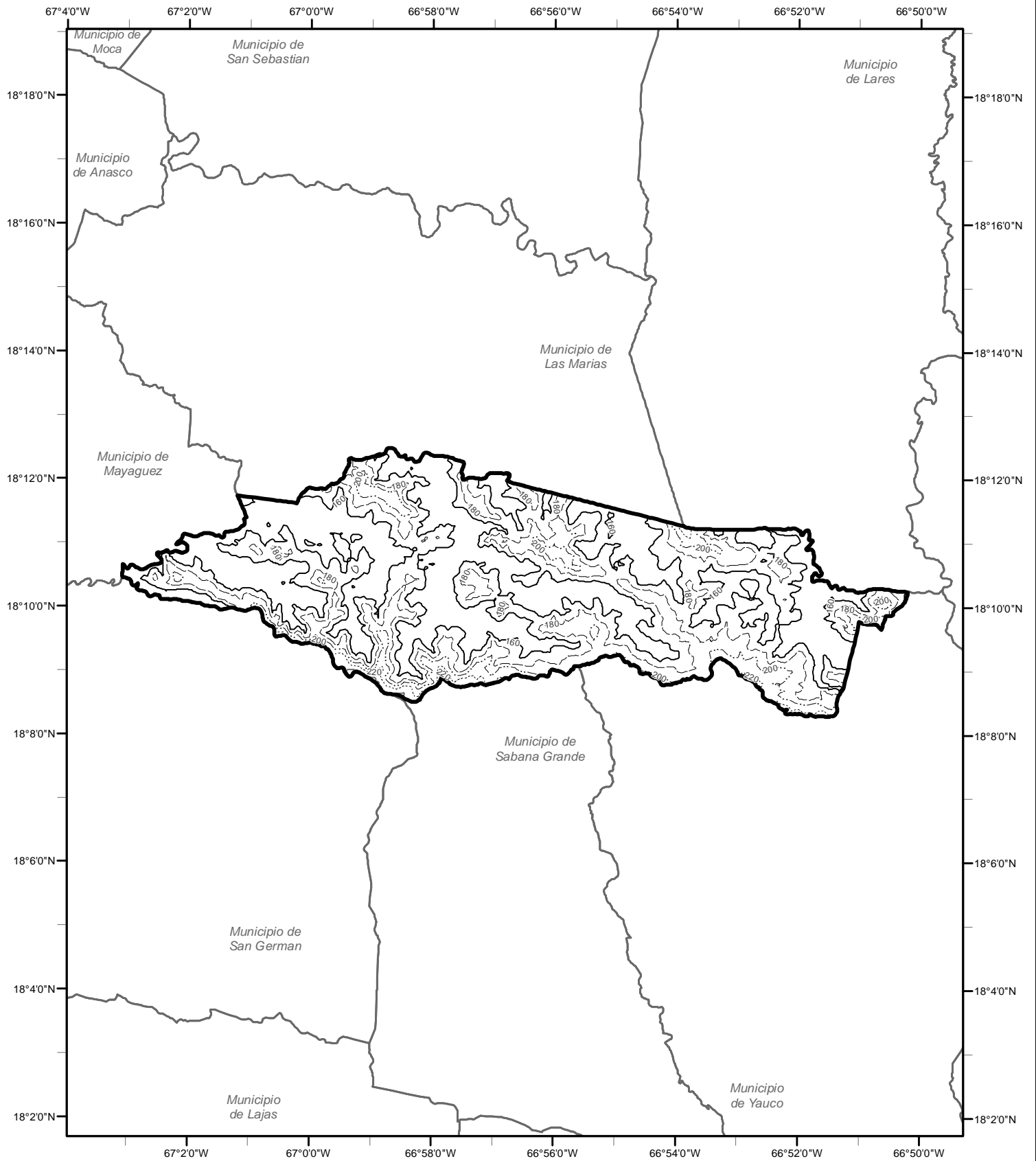
# Municipio de Manati Risk Category II Effective Wind Speed Map (mph)



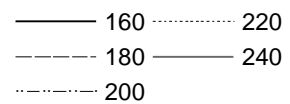
### Risk Category II Wind Contour (mph)



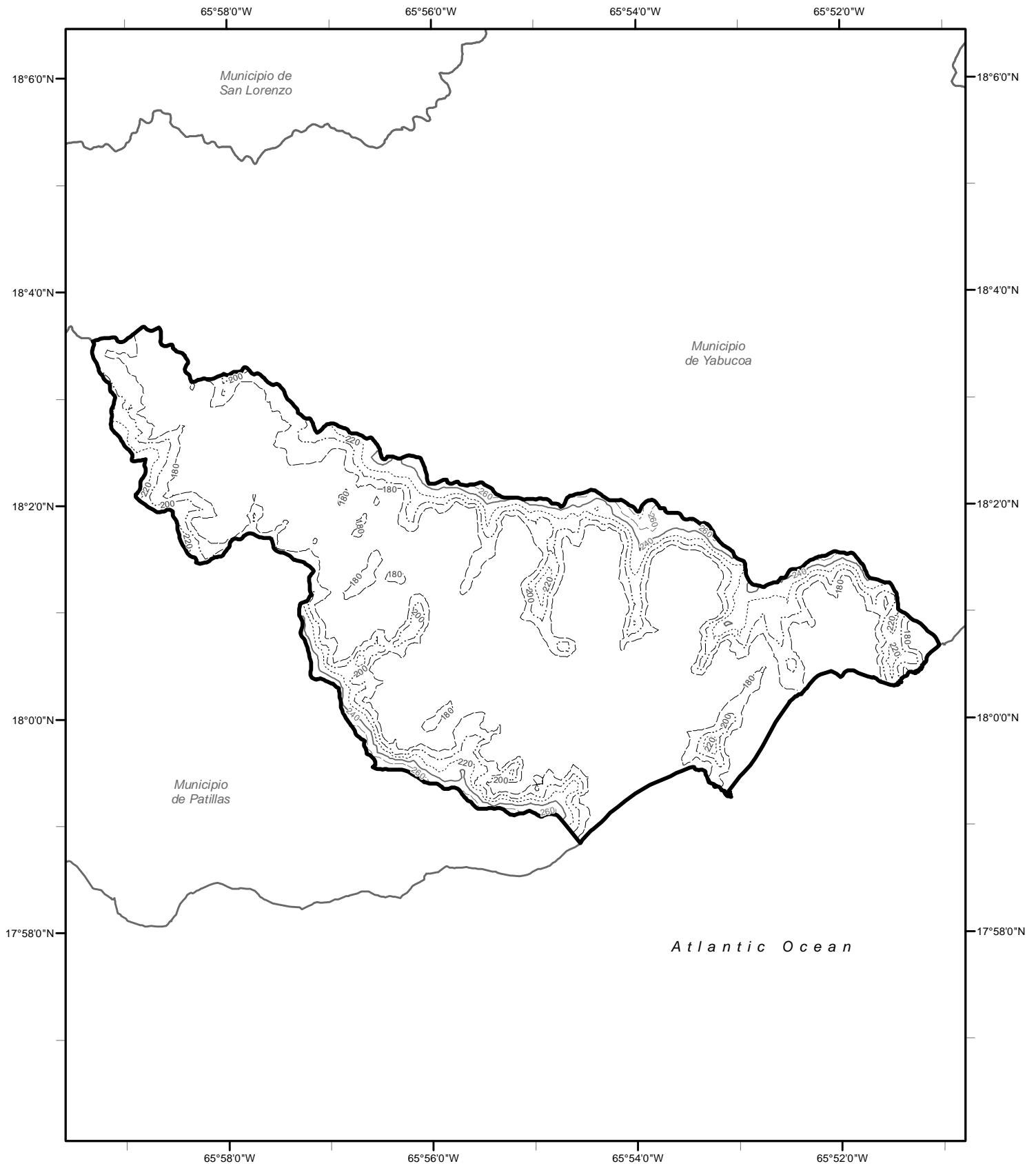
# Municipio de Maricao Risk Category II Effective Wind Speed Map (mph)



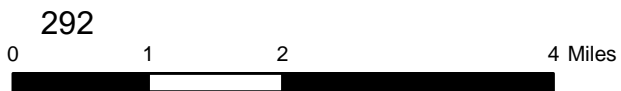
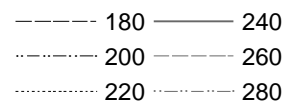
### Risk Category II Wind Contour (mph)



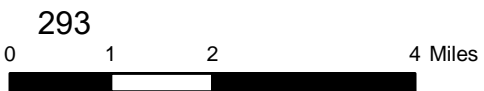
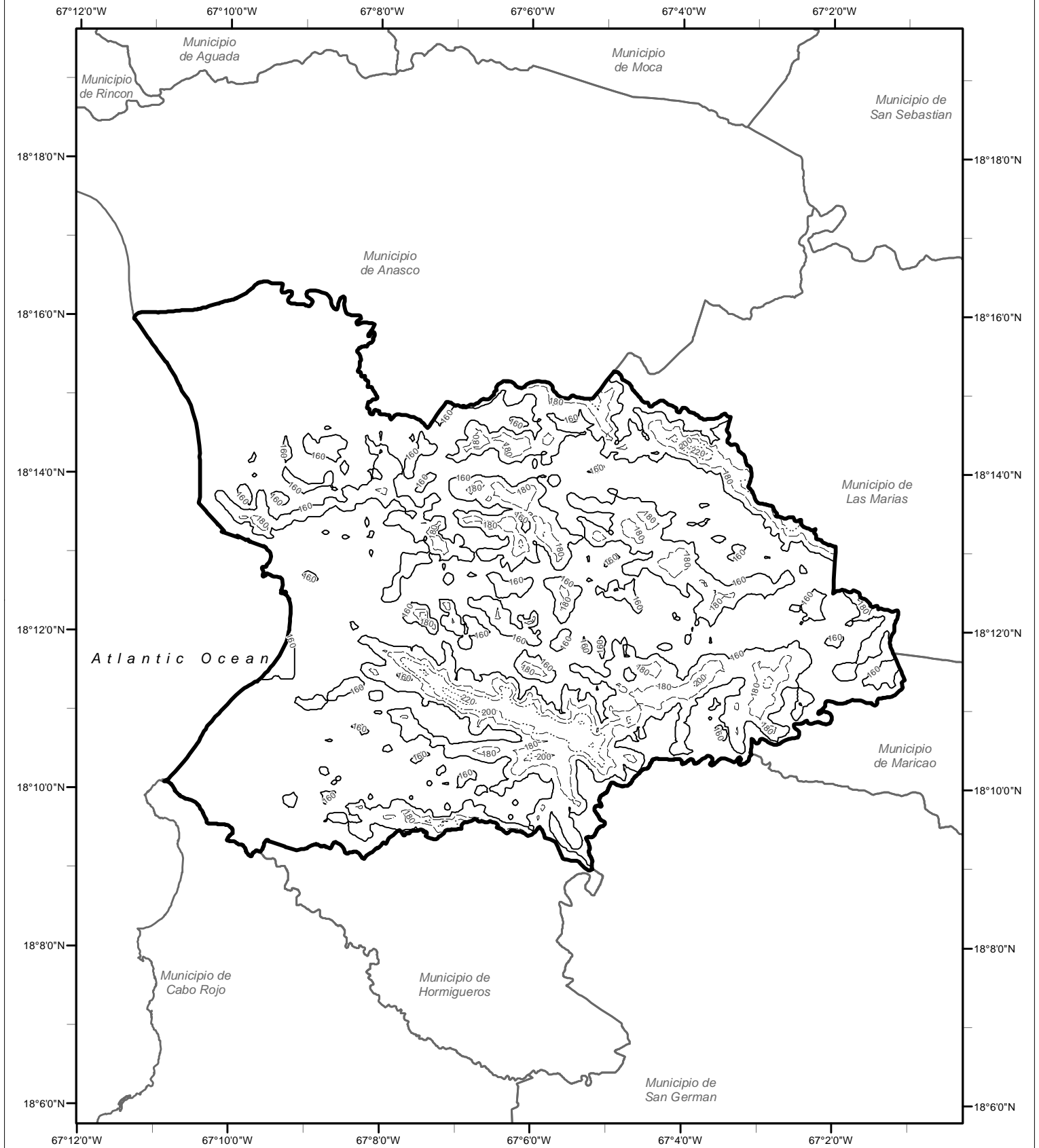
# Municipio de Maunabo Risk Category II Effective Wind Speed Map (mph)



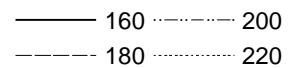
### Risk Category II Wind Contour (mph)



# Municipio de Mayaguez Risk Category II Effective Wind Speed Map (mph)

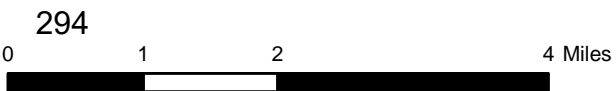
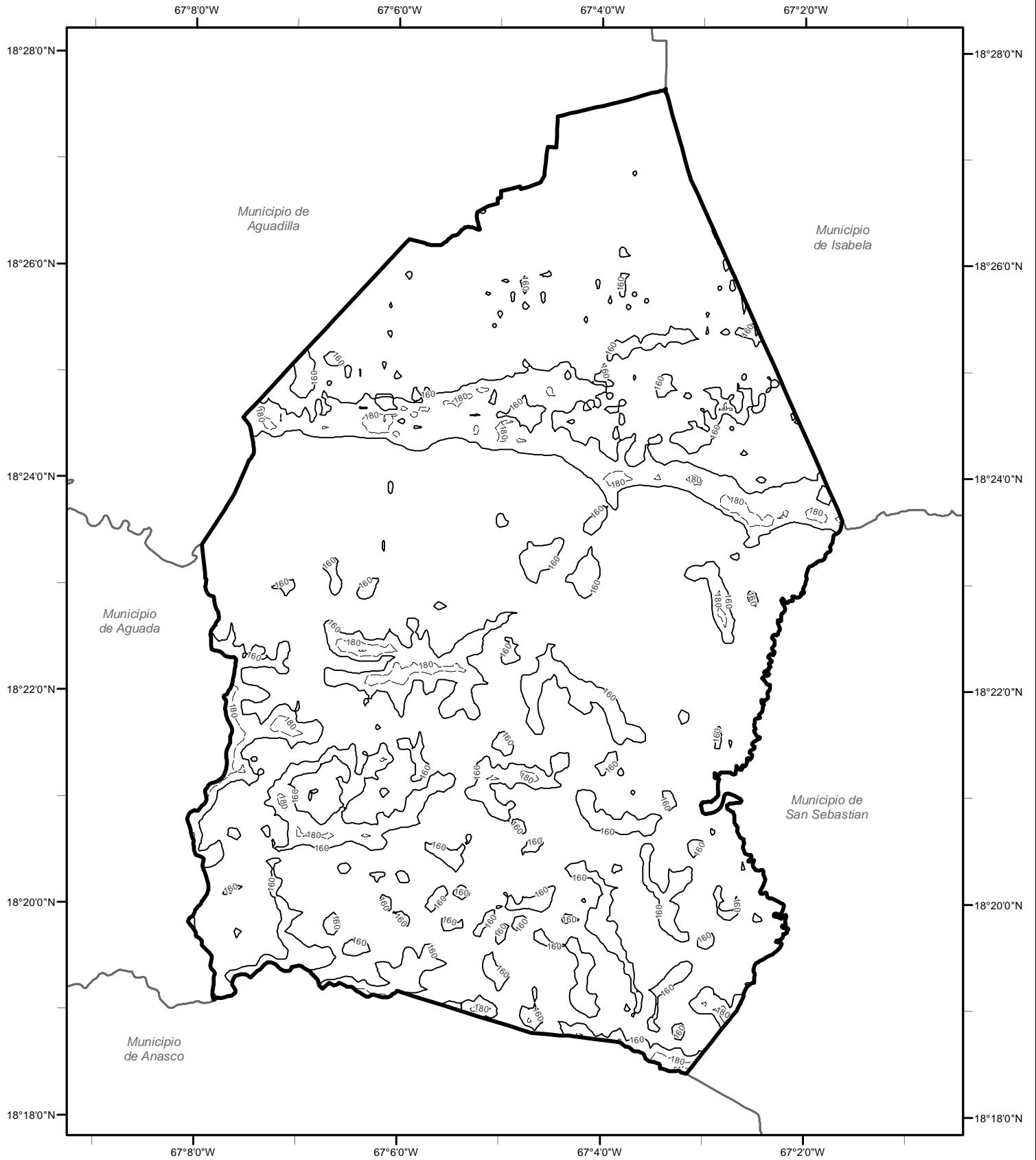


### Risk Category II Wind Contour (mph)

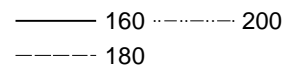


# Municipio de Moca

## Risk Category II Effective Wind Speed Map (mph)



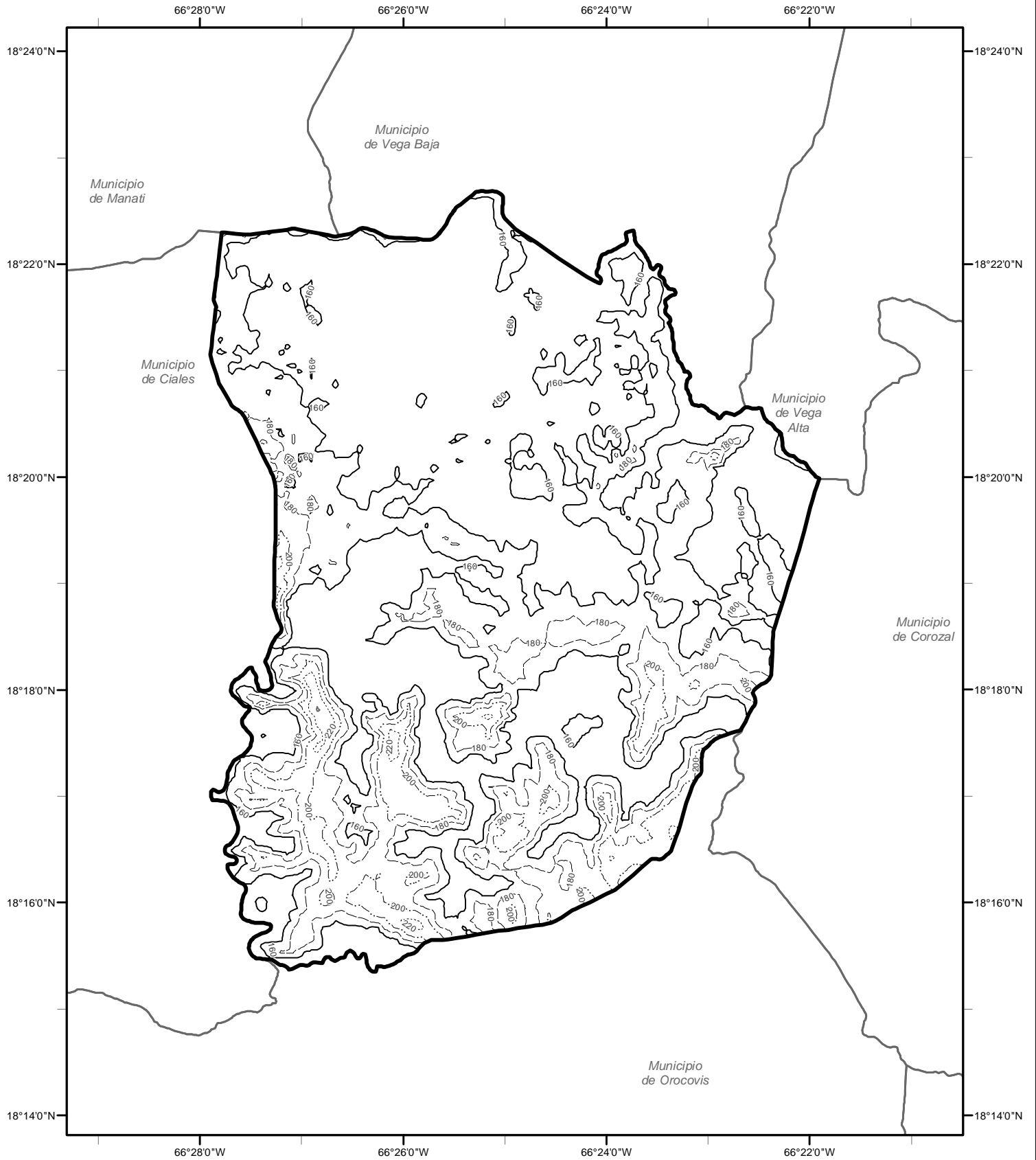
### Risk Category II Wind Contour (mph)



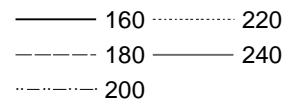


# Municipio de Morovis

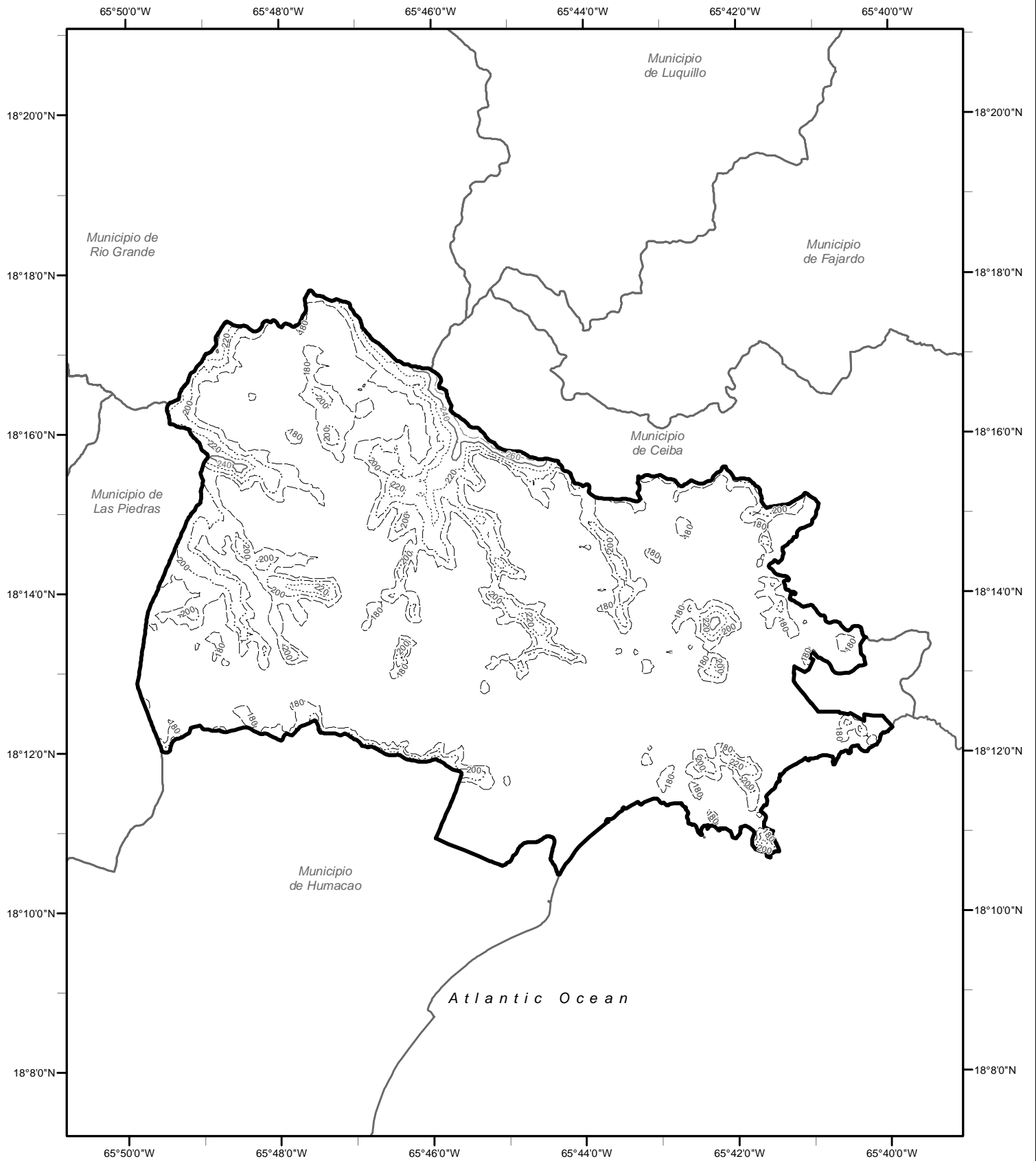
## Risk Category II Effective Wind Speed Map (mph)



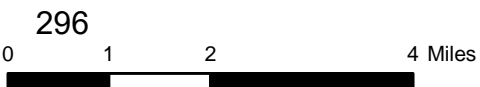
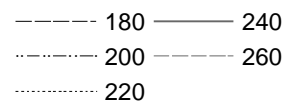
### Risk Category II Wind Contour (mph)



# Municipio de Naguabo Risk Category II Effective Wind Speed Map (mph)

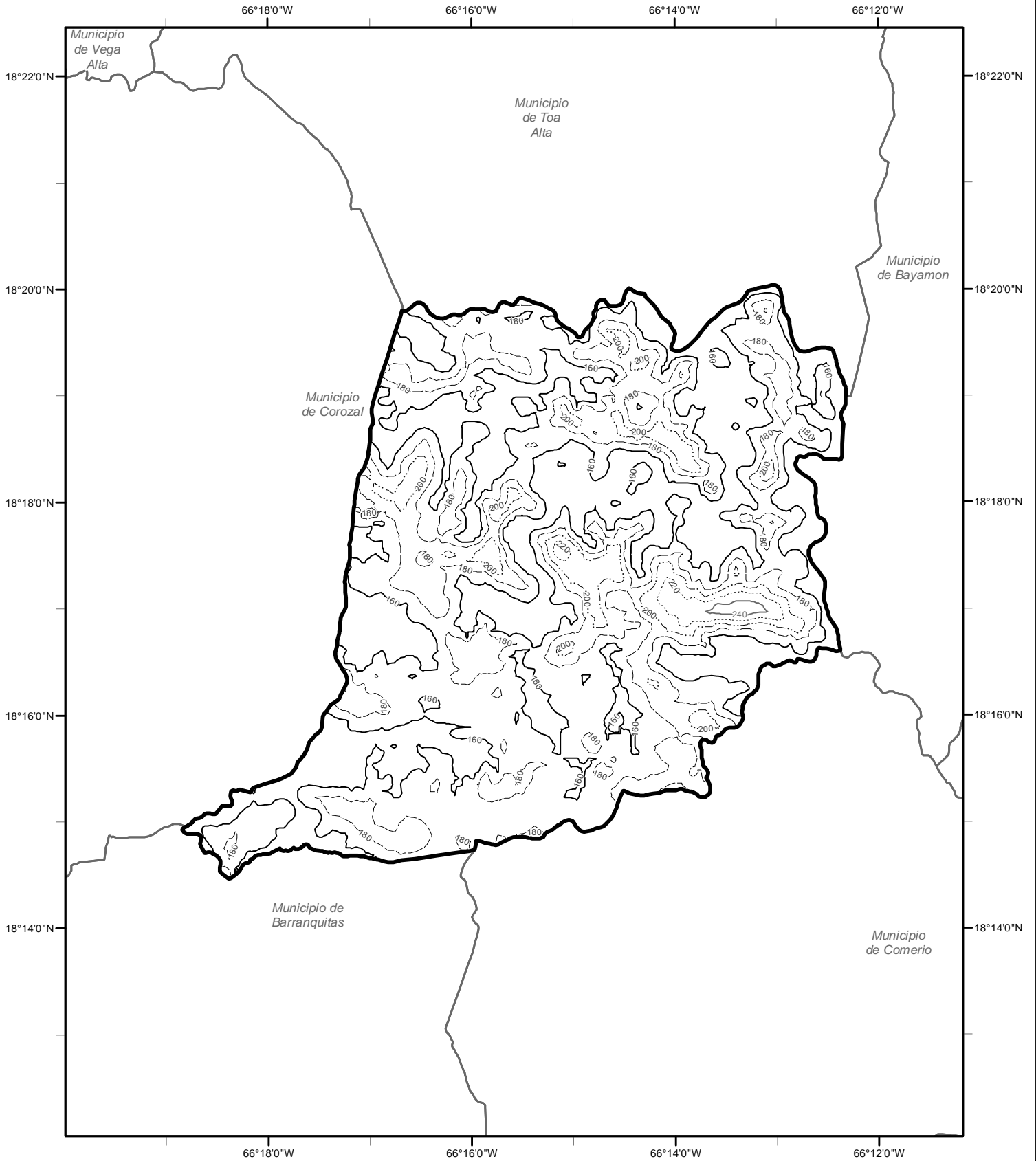


### Risk Category II Wind Contour (mph)

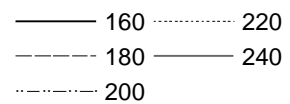


# Municipio de Naranjito

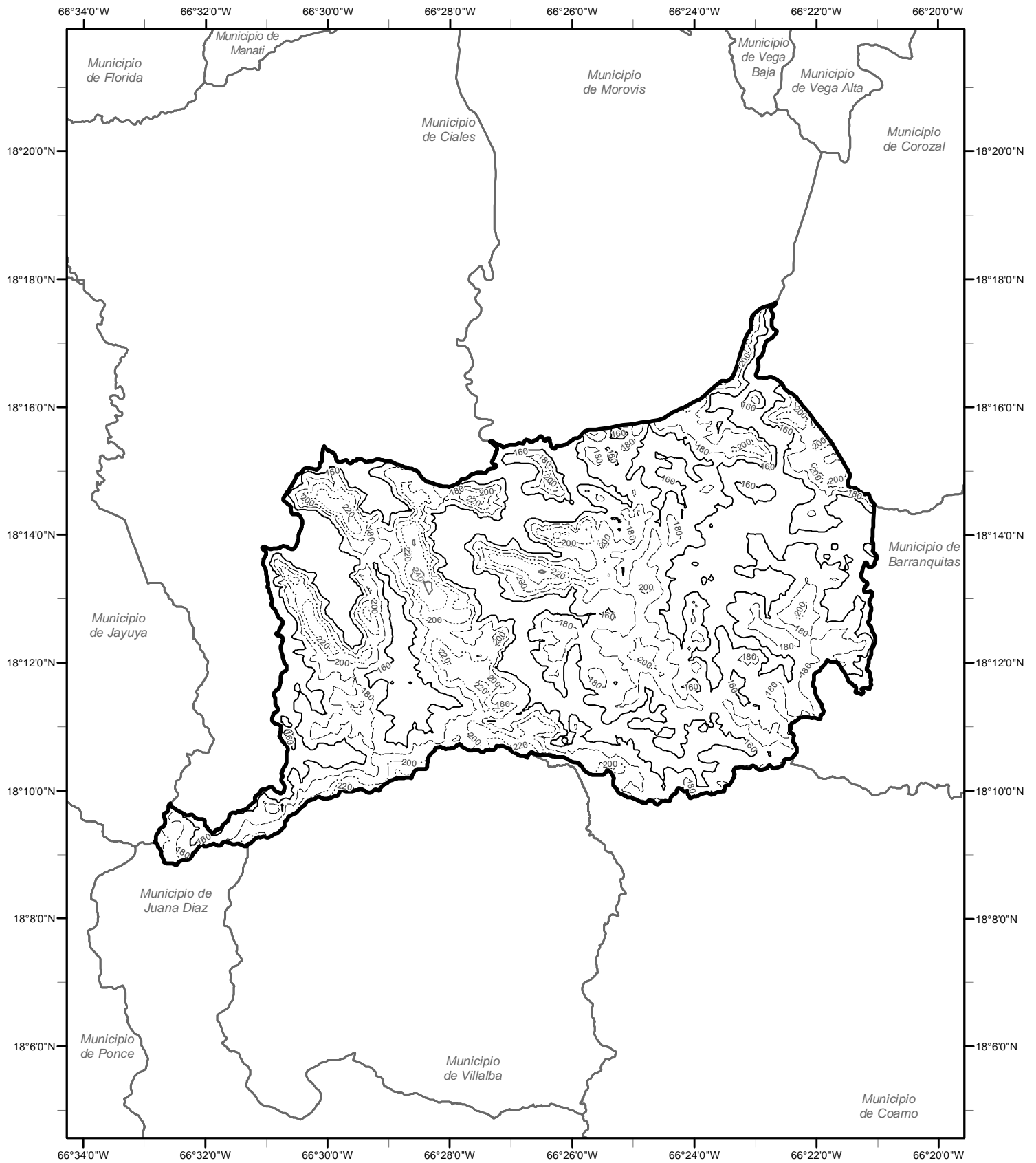
## Risk Category II Effective Wind Speed Map (mph)



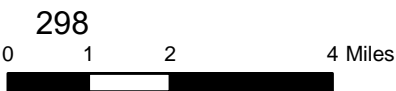
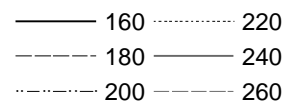
### Risk Category II Wind Contour (mph)



# Municipio de Orocovis Risk Category II Effective Wind Speed Map (mph)

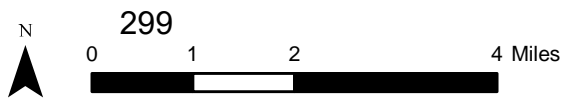
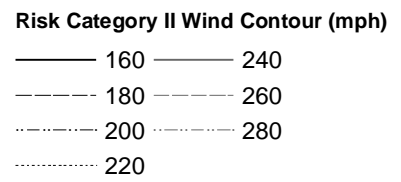
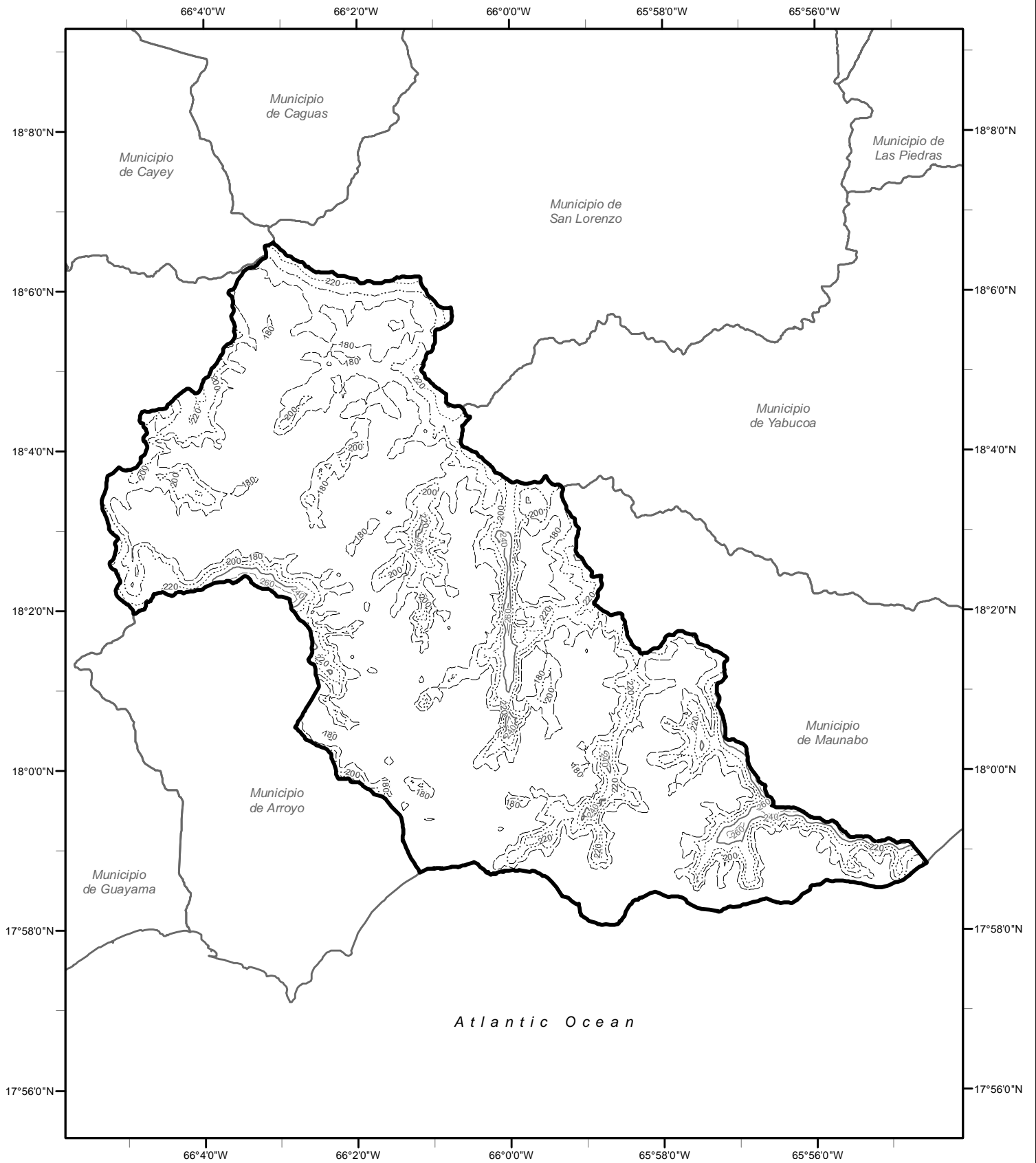


### Risk Category II Wind Contour (mph)

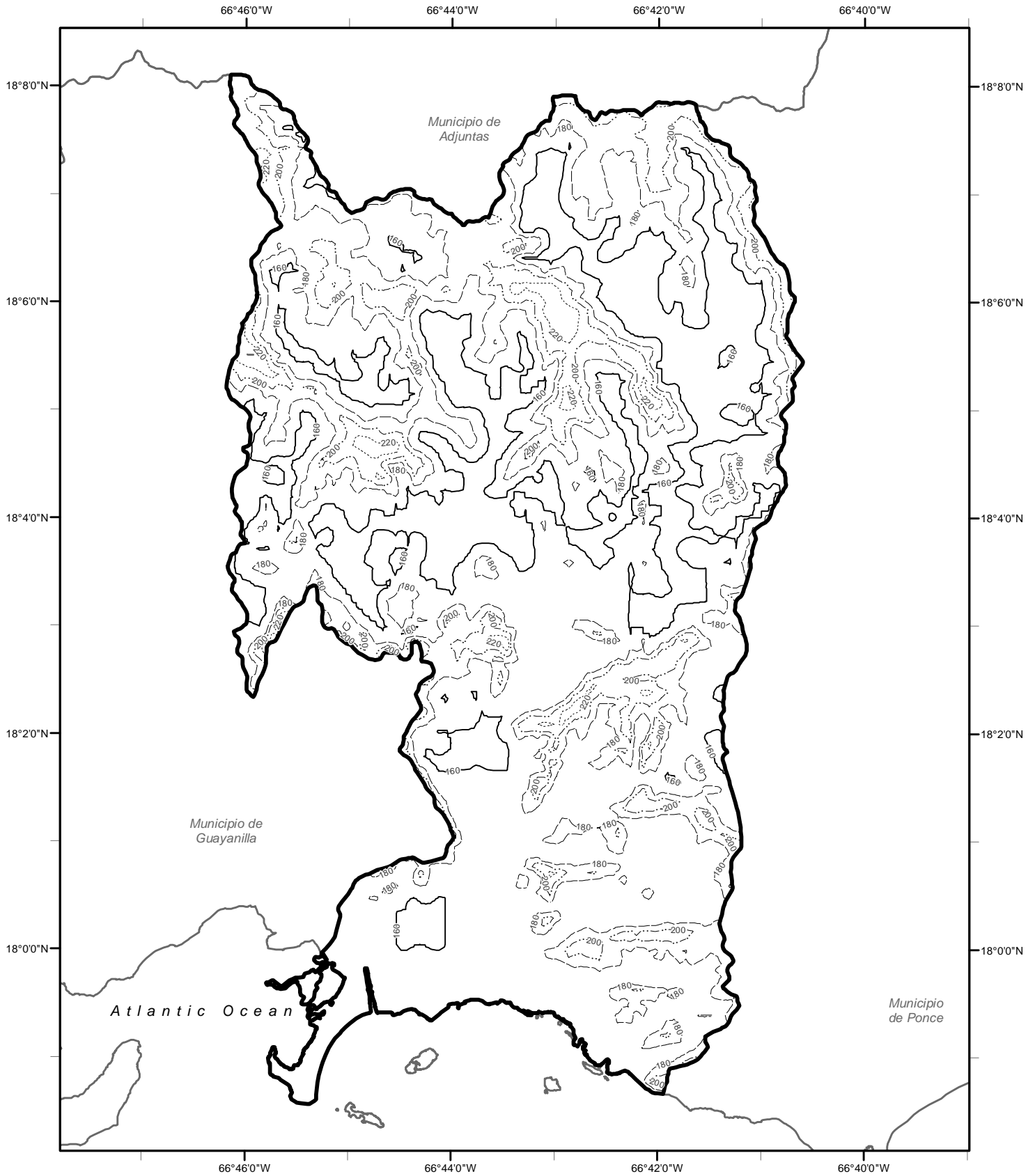


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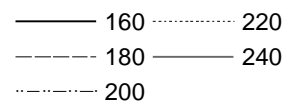
# Municipio de Patillas Risk Category II Effective Wind Speed Map (mph)



# Municipio de Penuelas Risk Category II Effective Wind Speed Map (mph)

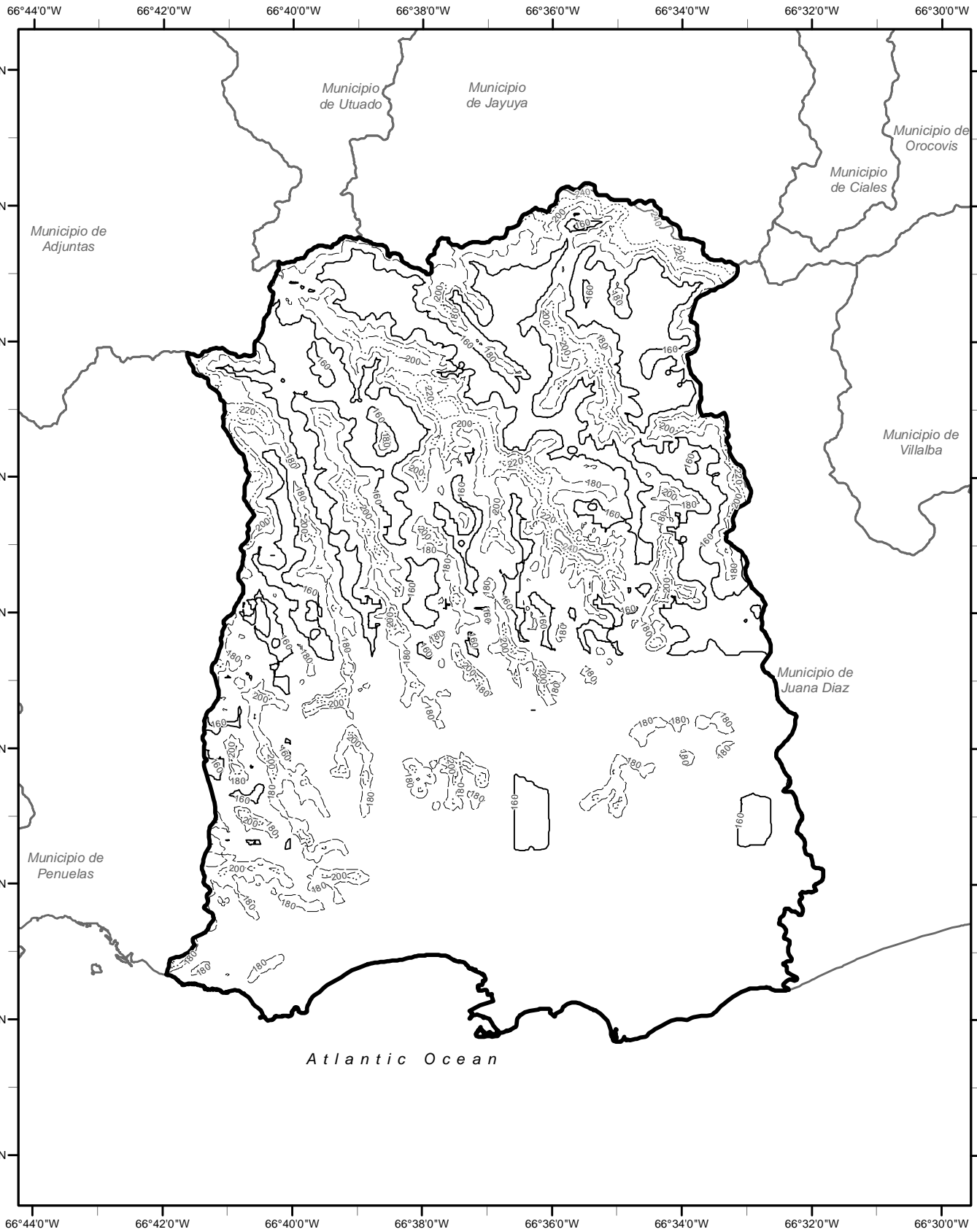


### Risk Category II Wind Contour (mph)

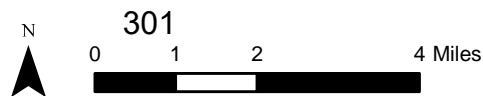
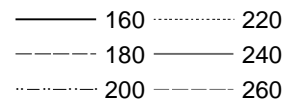


# Municipio de Ponce

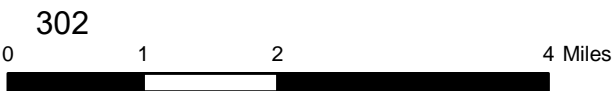
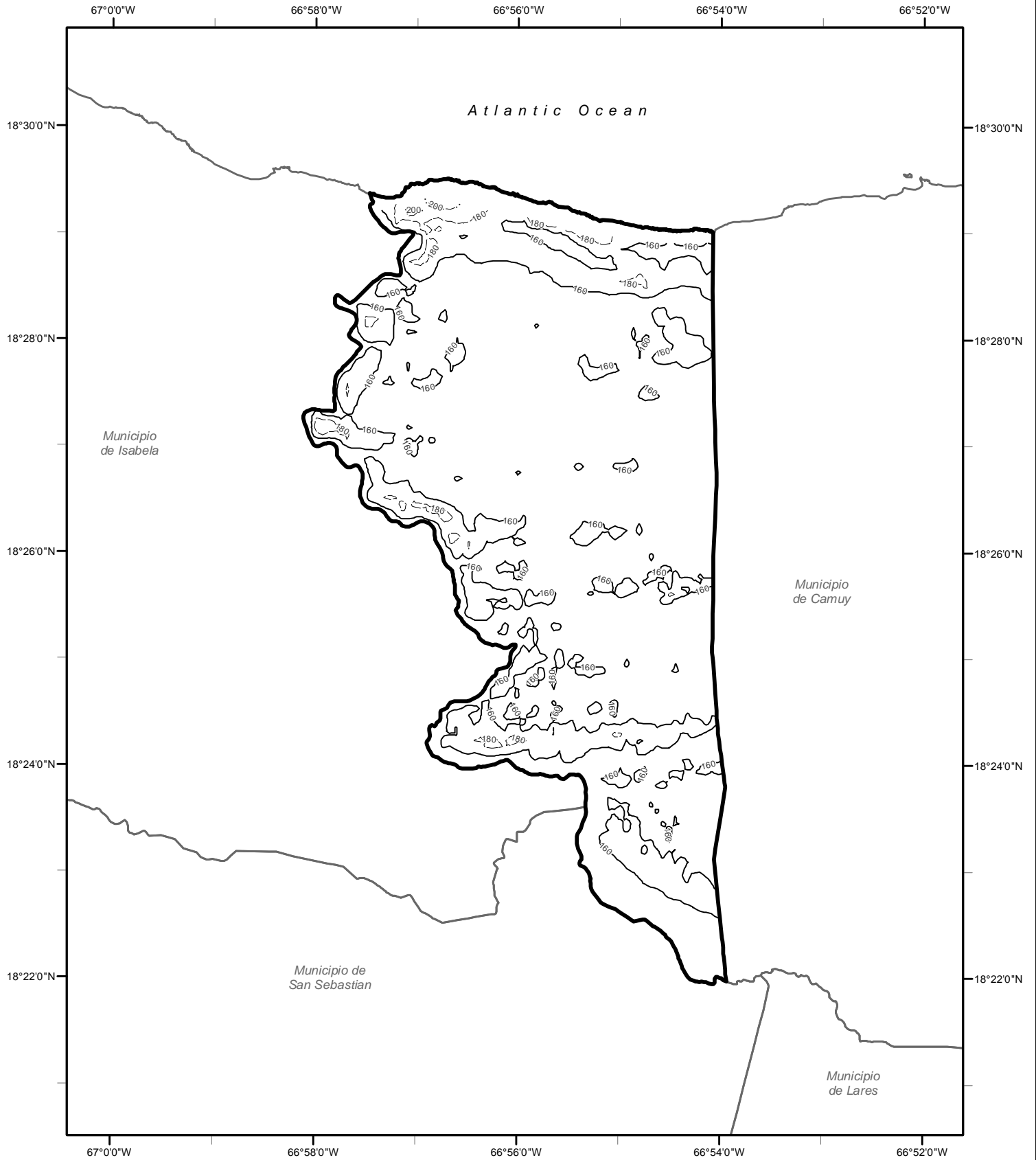
## Risk Category II Effective Wind Speed Map (mph)



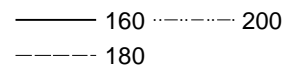
### Risk Category II Wind Contour (mph)



# Municipio de Quebradillas Risk Category II Effective Wind Speed Map (mph)

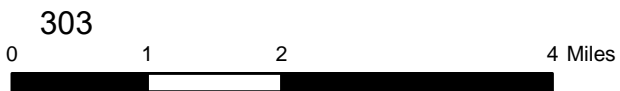
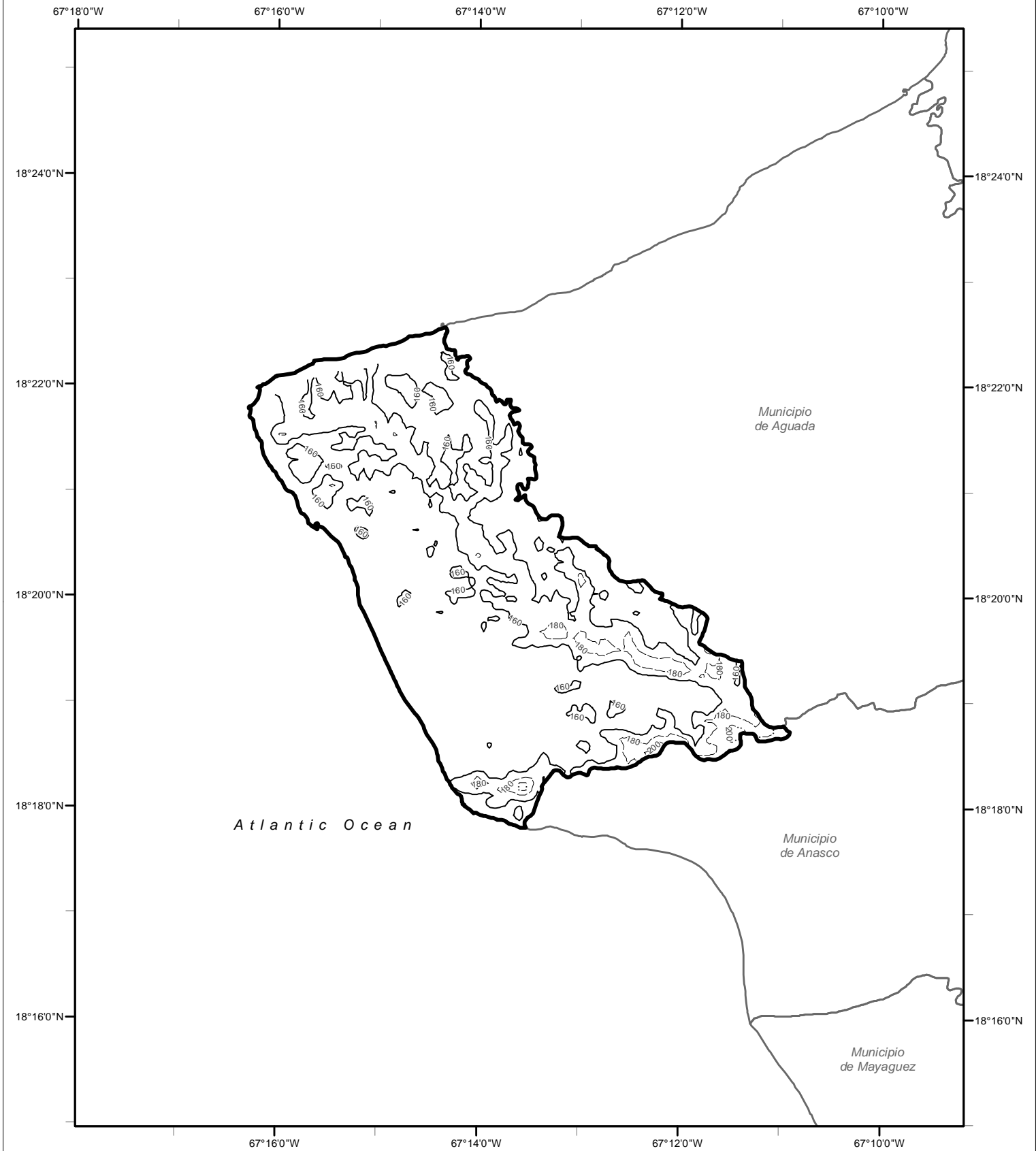


### Risk Category II Wind Contour (mph)

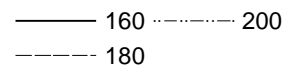




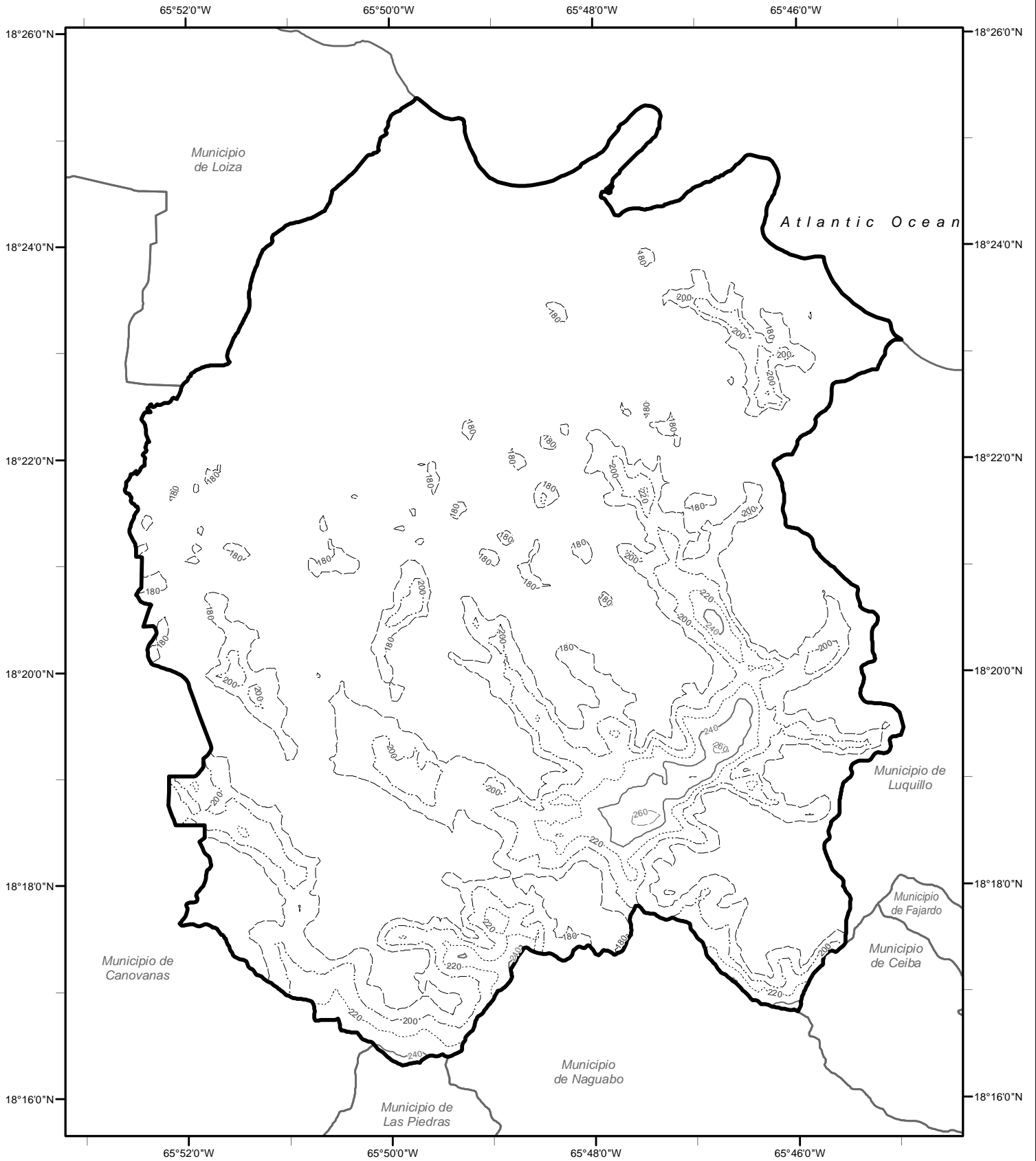
# Municipio de Rincon Risk Category II Effective Wind Speed Map (mph)



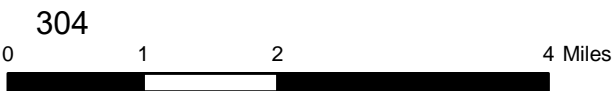
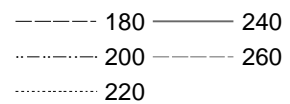
### Risk Category II Wind Contour (mph)



# Municipio de Rio Grande Risk Category II Effective Wind Speed Map (mph)

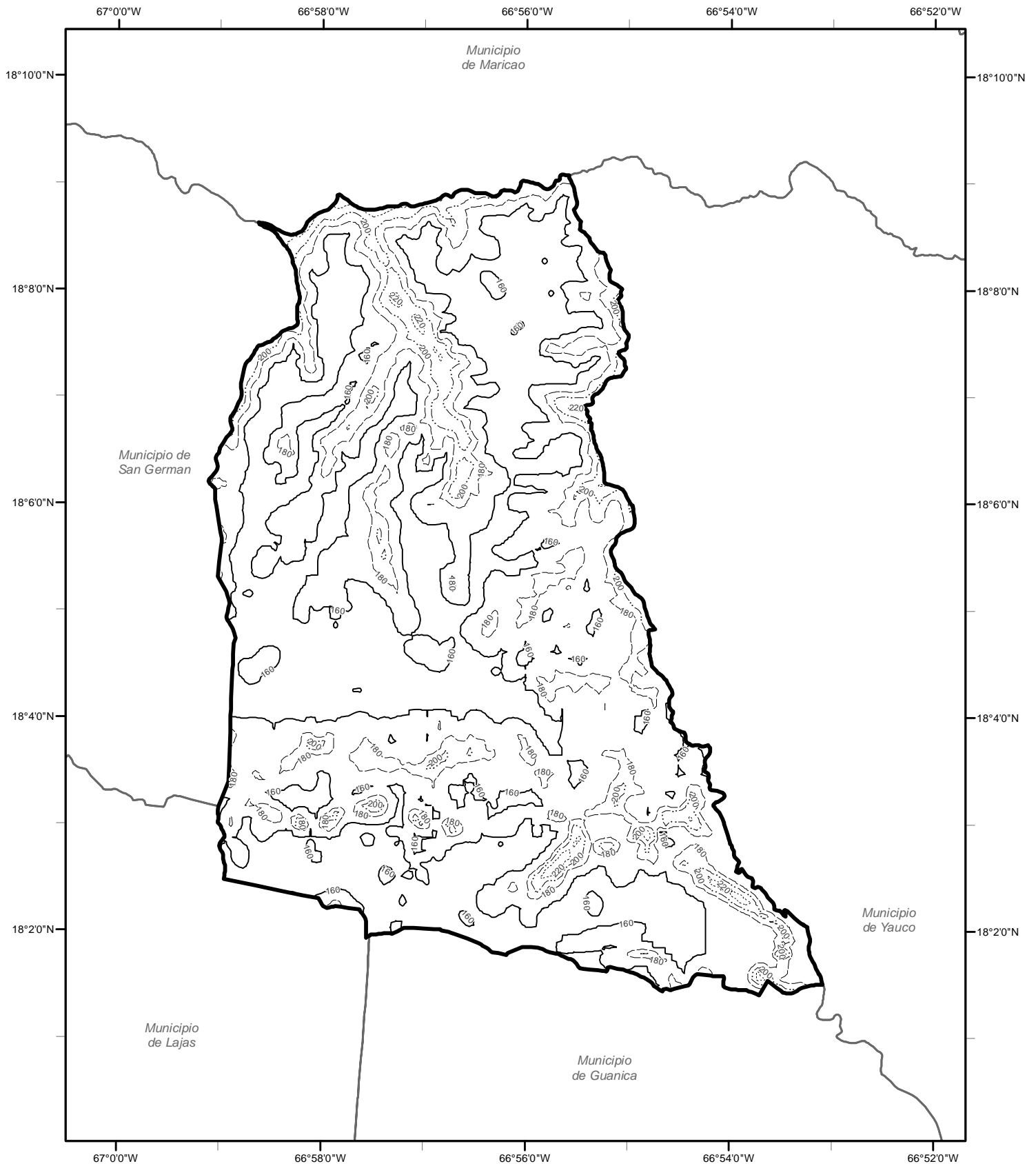


### Risk Category II Wind Contour (mph)

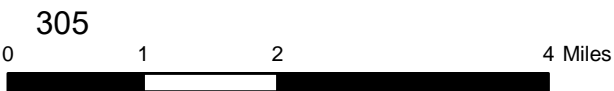
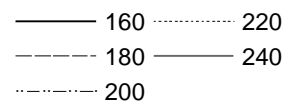


304

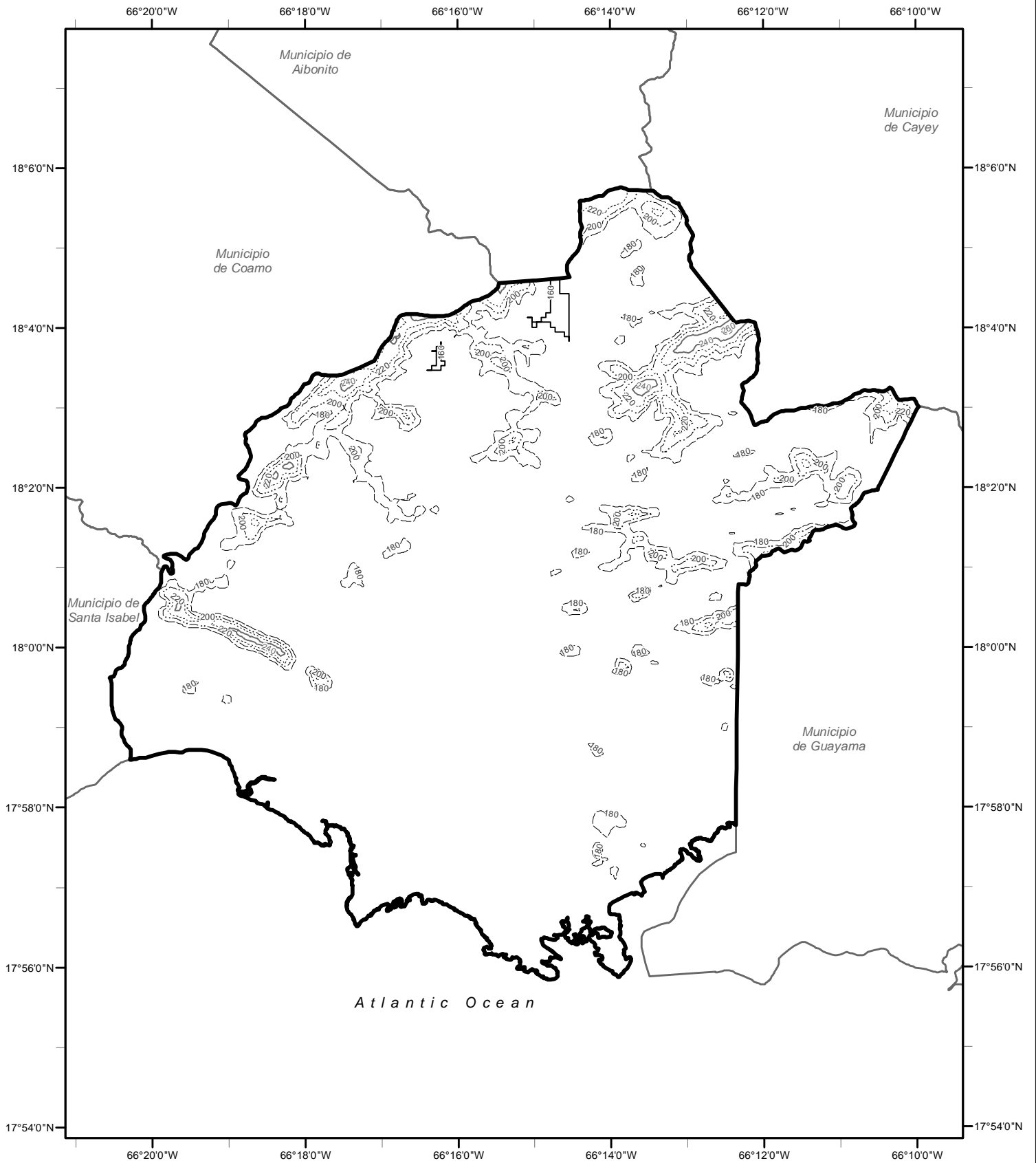
# Municipio de Sabana Grande Risk Category II Effective Wind Speed Map (mph)



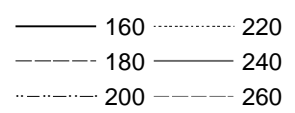
### Risk Category II Wind Contour (mph)



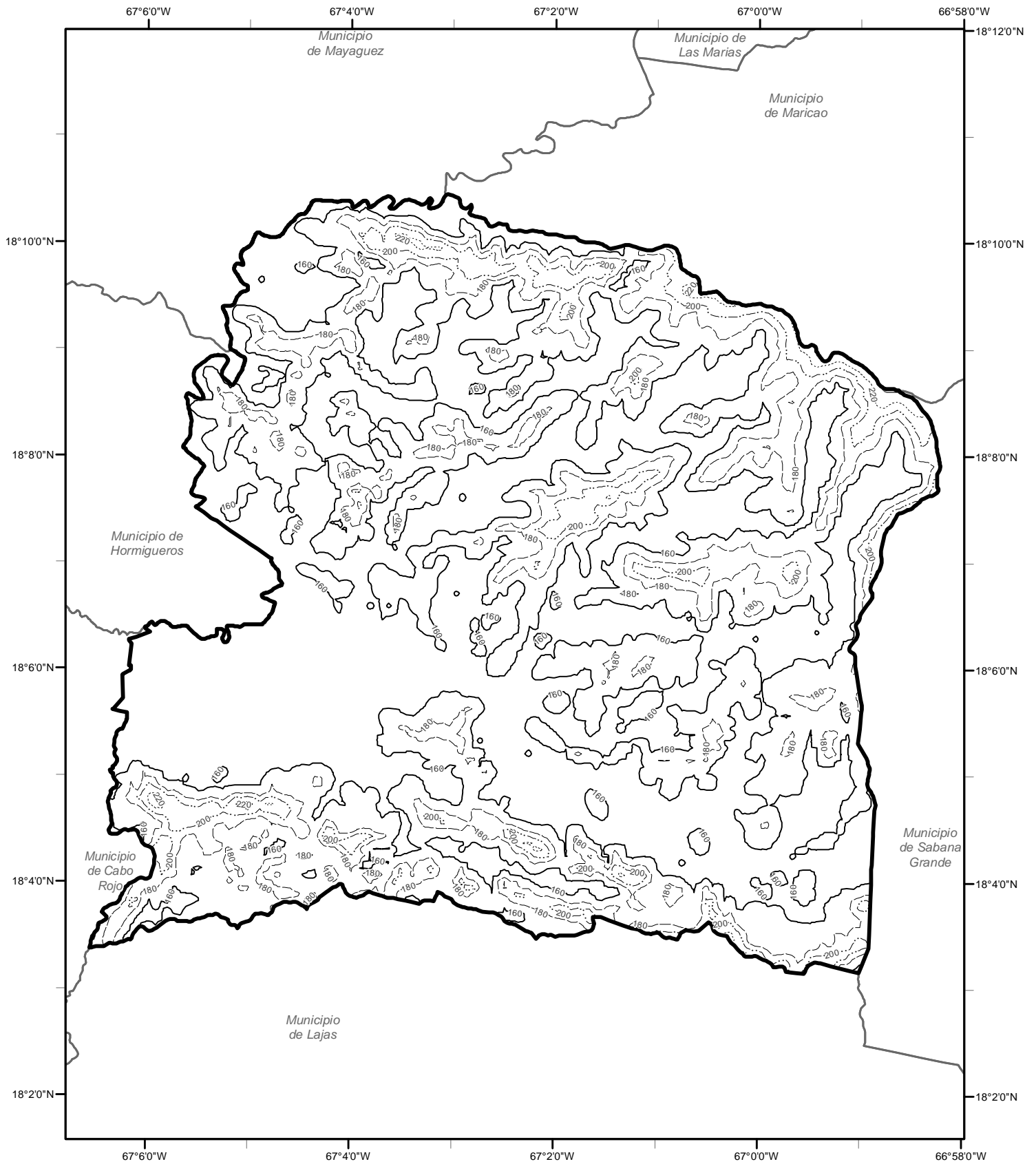
# Municipio de Salinas Risk Category II Effective Wind Speed Map (mph)



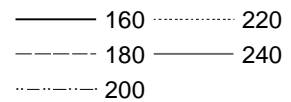
### Risk Category II Wind Contour (mph)



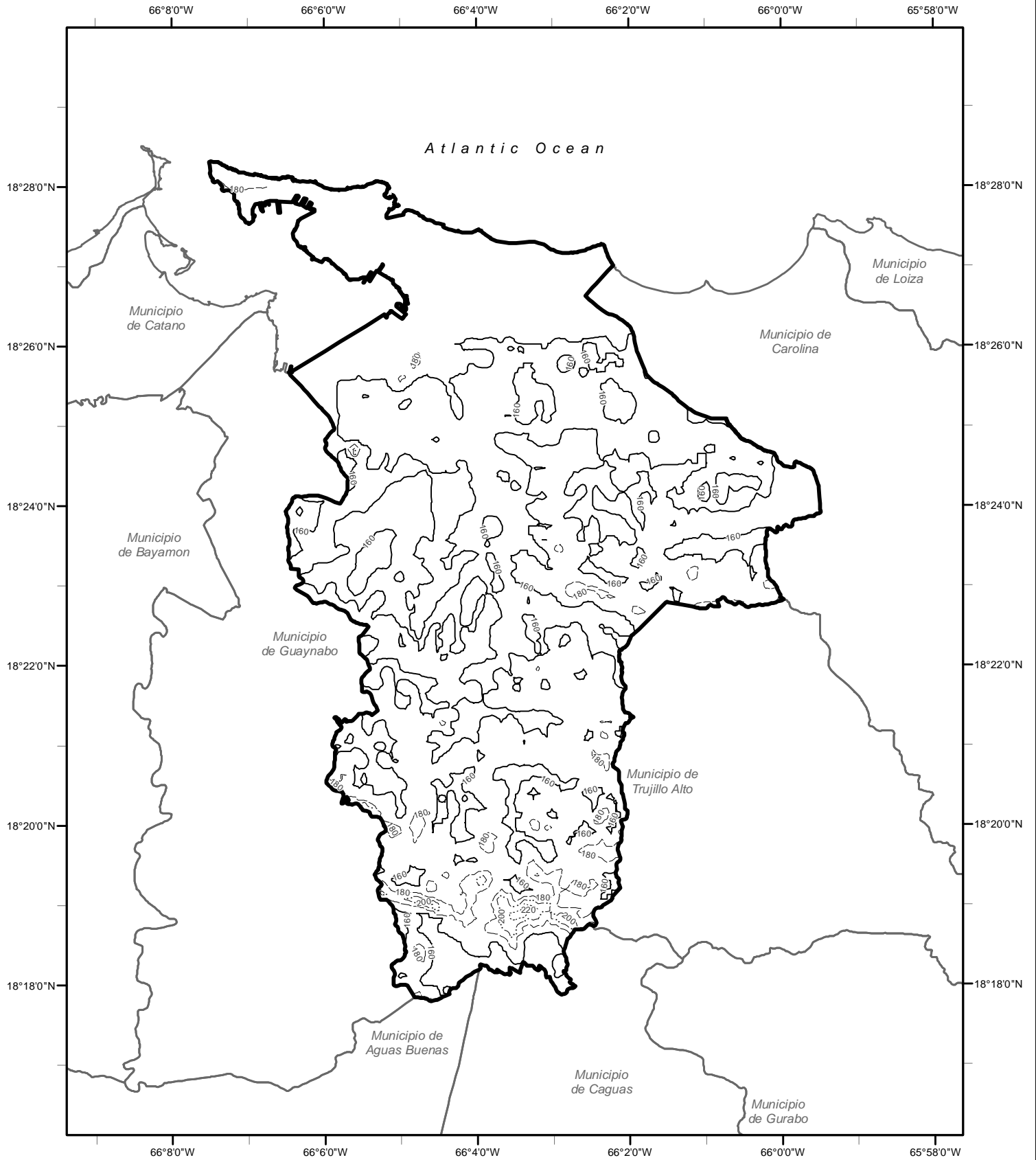
# Municipio de San Germain Risk Category II Effective Wind Speed Map (mph)



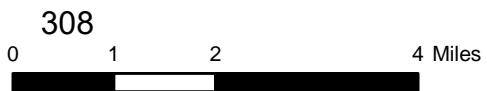
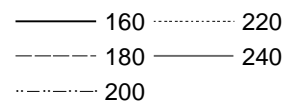
### Risk Category II Wind Contour (mph)



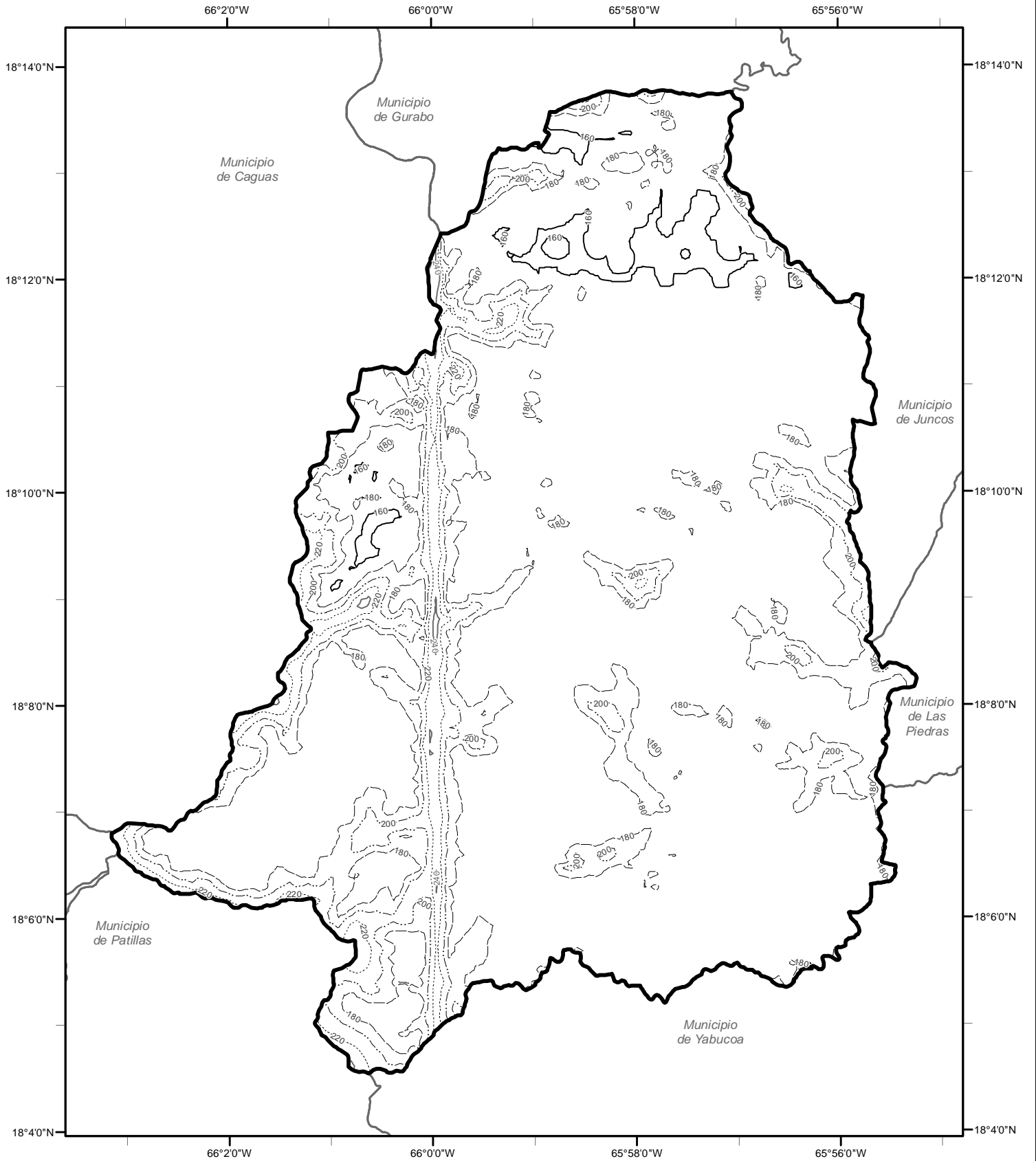
# Municipio de San Juan Risk Category II Effective Wind Speed Map (mph)



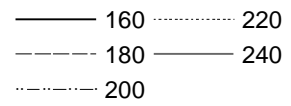
## Risk Category II Wind Contour (mph)



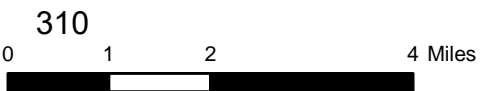
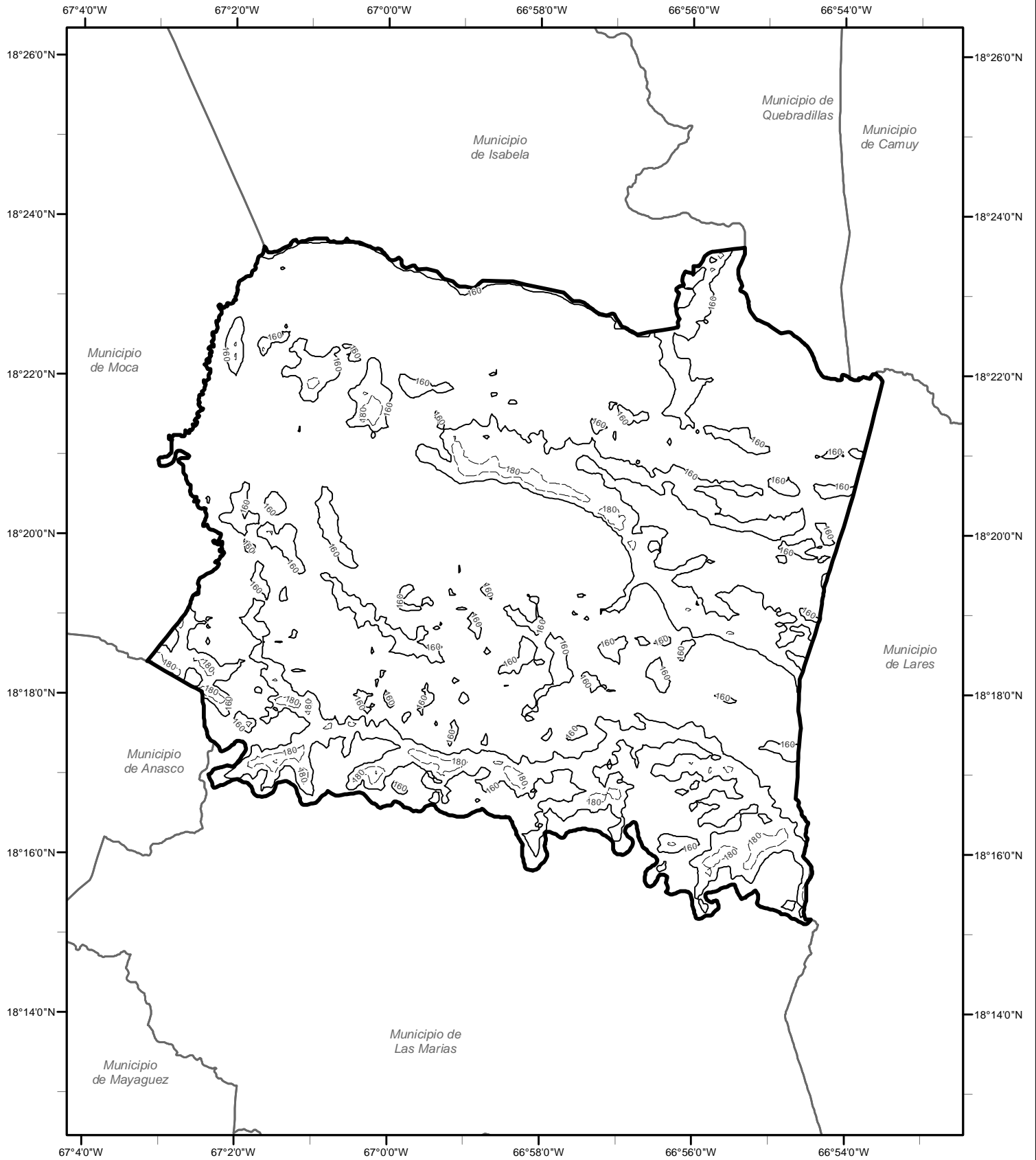
# Municipio de San Lorenzo Risk Category II Effective Wind Speed Map (mph)



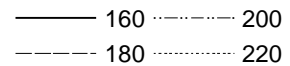
### Risk Category II Wind Contour (mph)



# Municipio de San Sebastian Risk Category II Effective Wind Speed Map (mph)

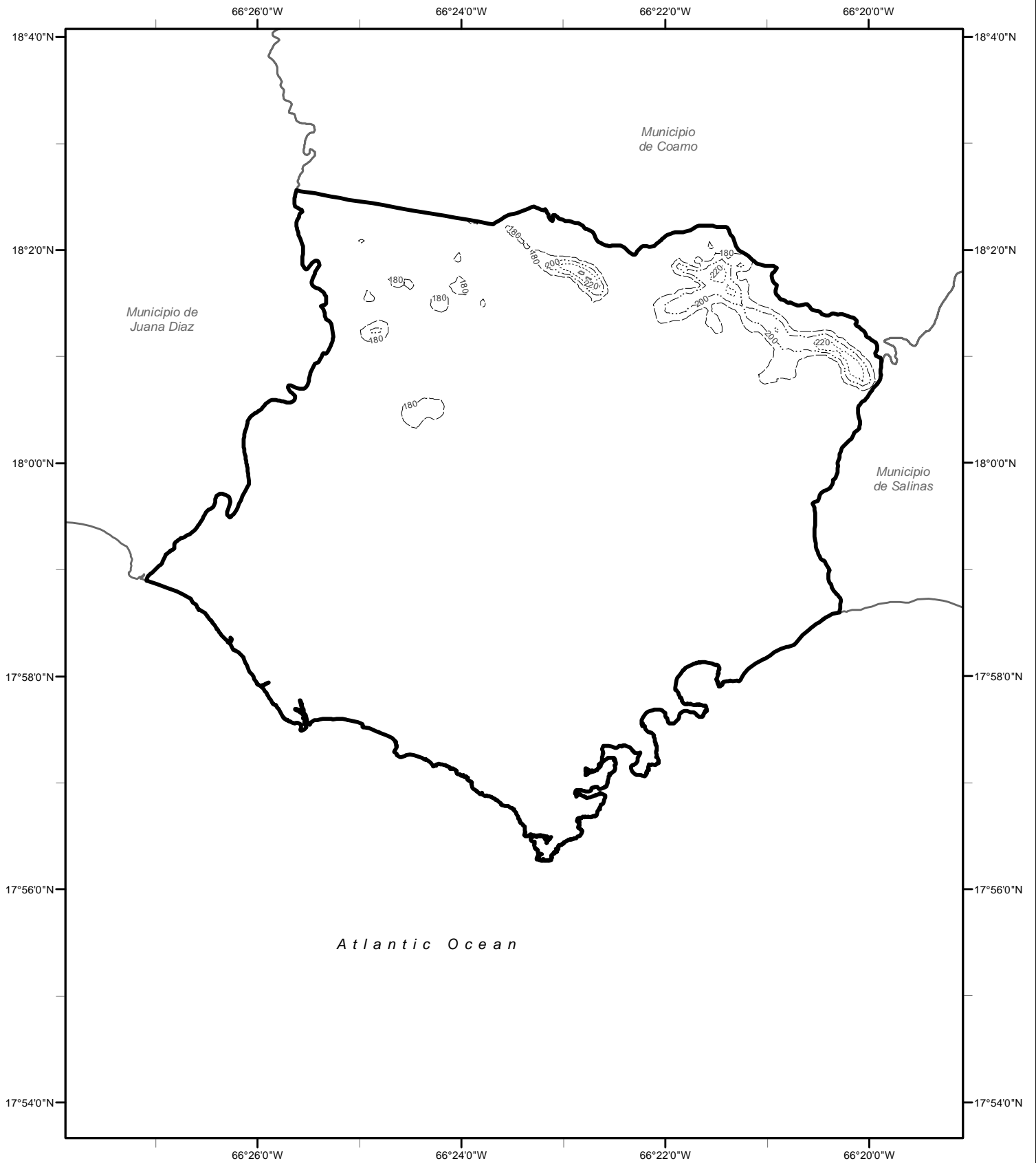


### Risk Category II Wind Contour (mph)

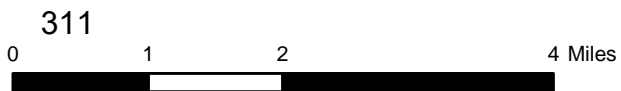
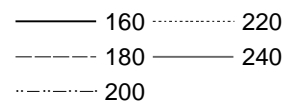




# Municipio de Santa Isabel Risk Category II Effective Wind Speed Map (mph)



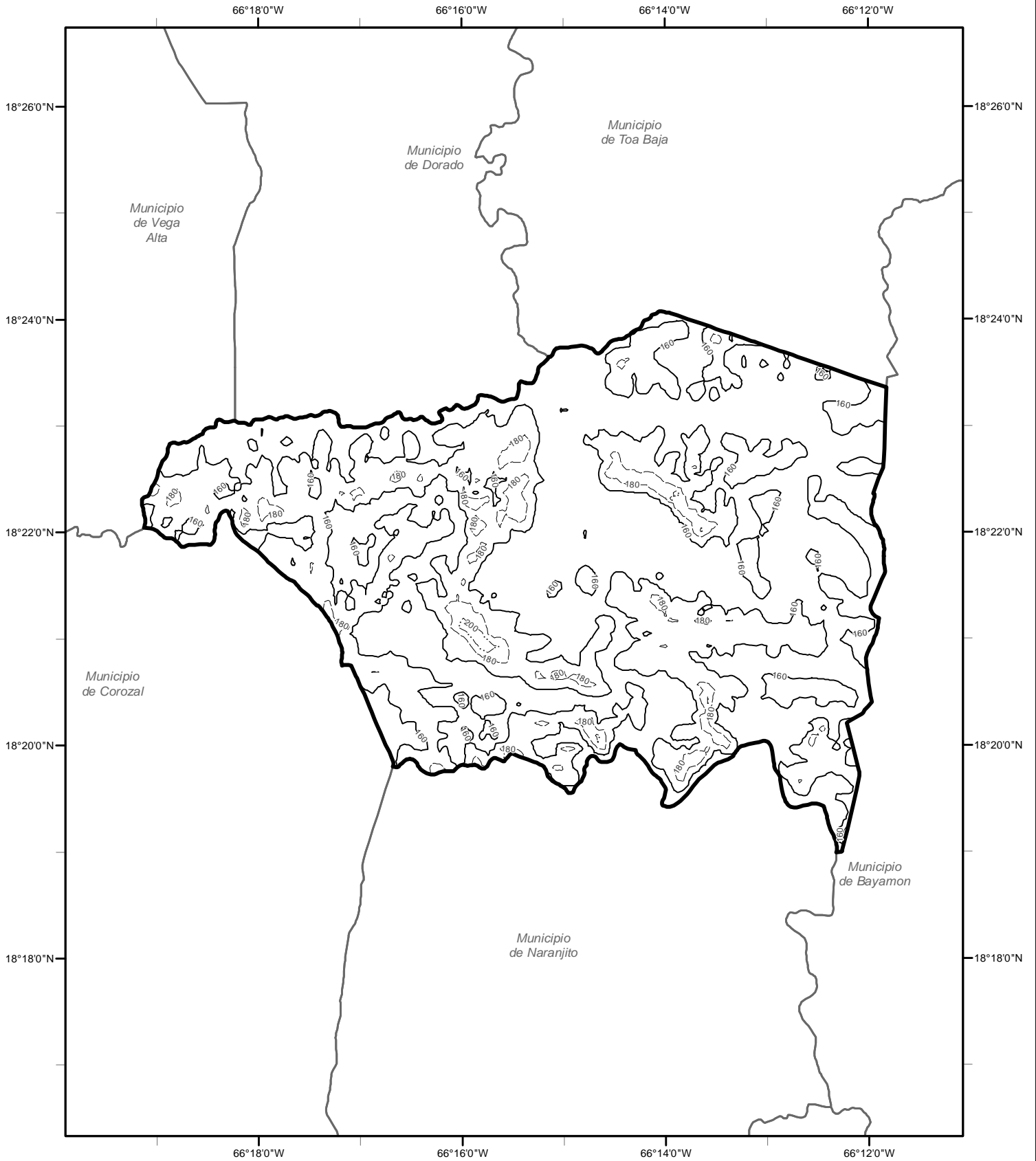
### Risk Category II Wind Contour (mph)



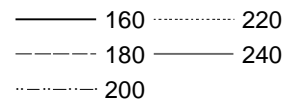
311

# Municipio de Toa Alta

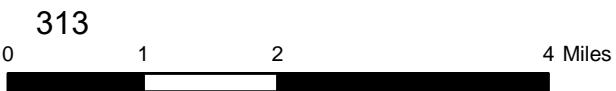
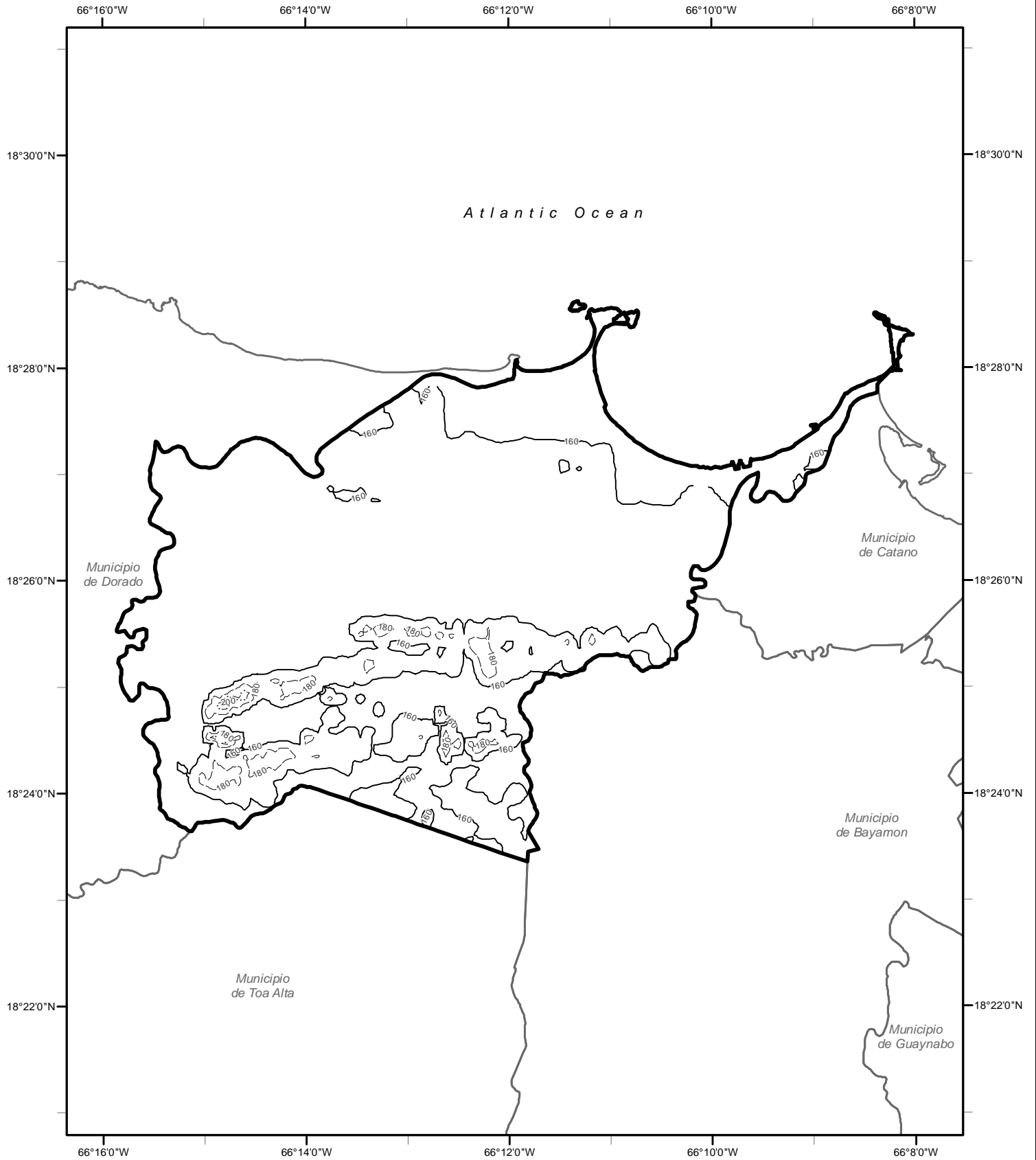
## Risk Category II Effective Wind Speed Map (mph)



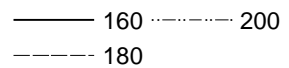
### Risk Category II Wind Contour (mph)



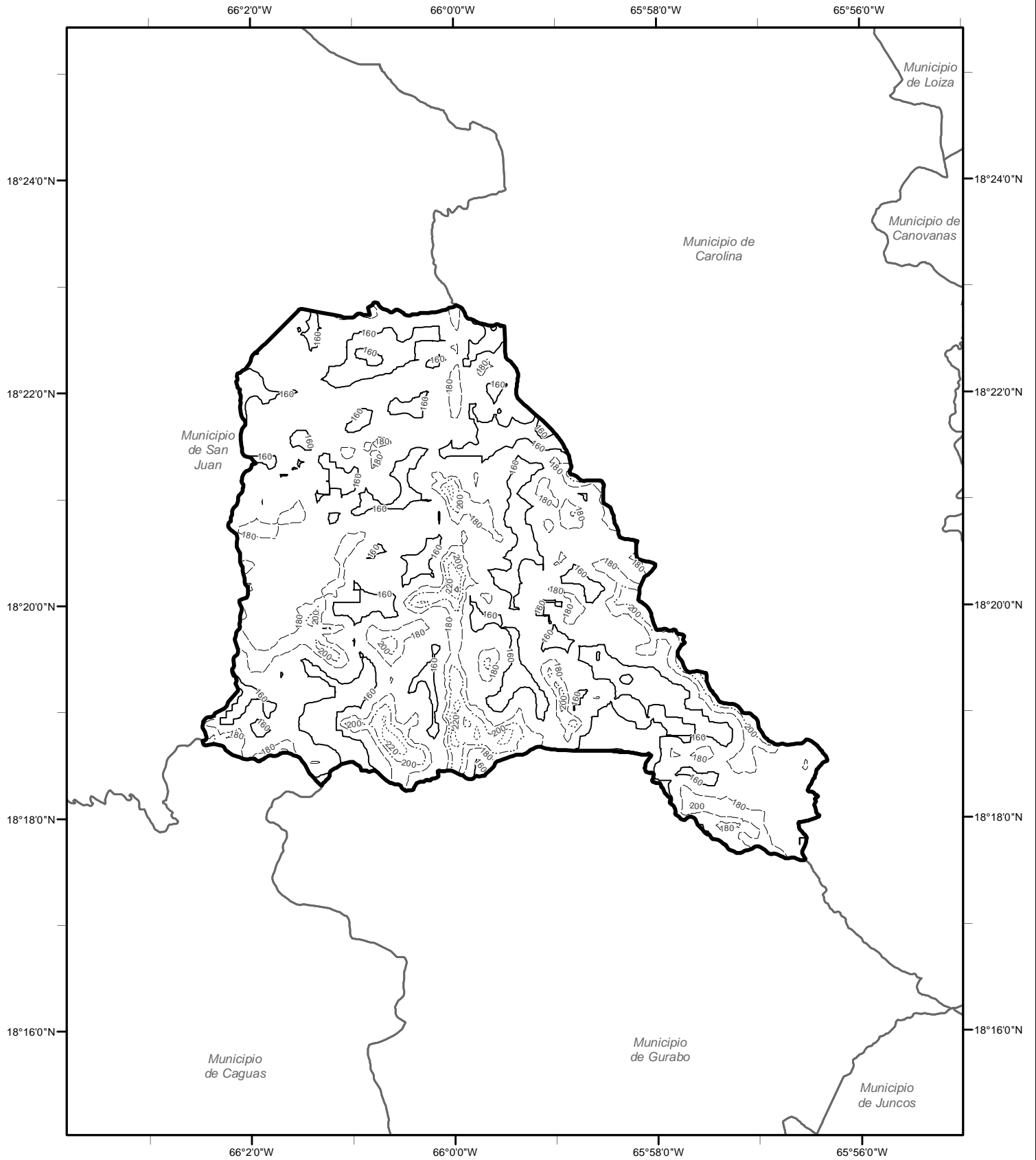
# Municipio de Toa Baja Risk Category II Effective Wind Speed Map (mph)



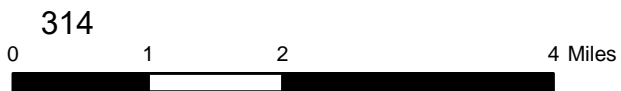
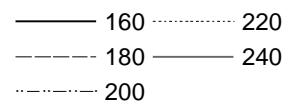
### Risk Category II Wind Contour (mph)



# Municipio de Trujillo Alto Risk Category II Effective Wind Speed Map (mph)

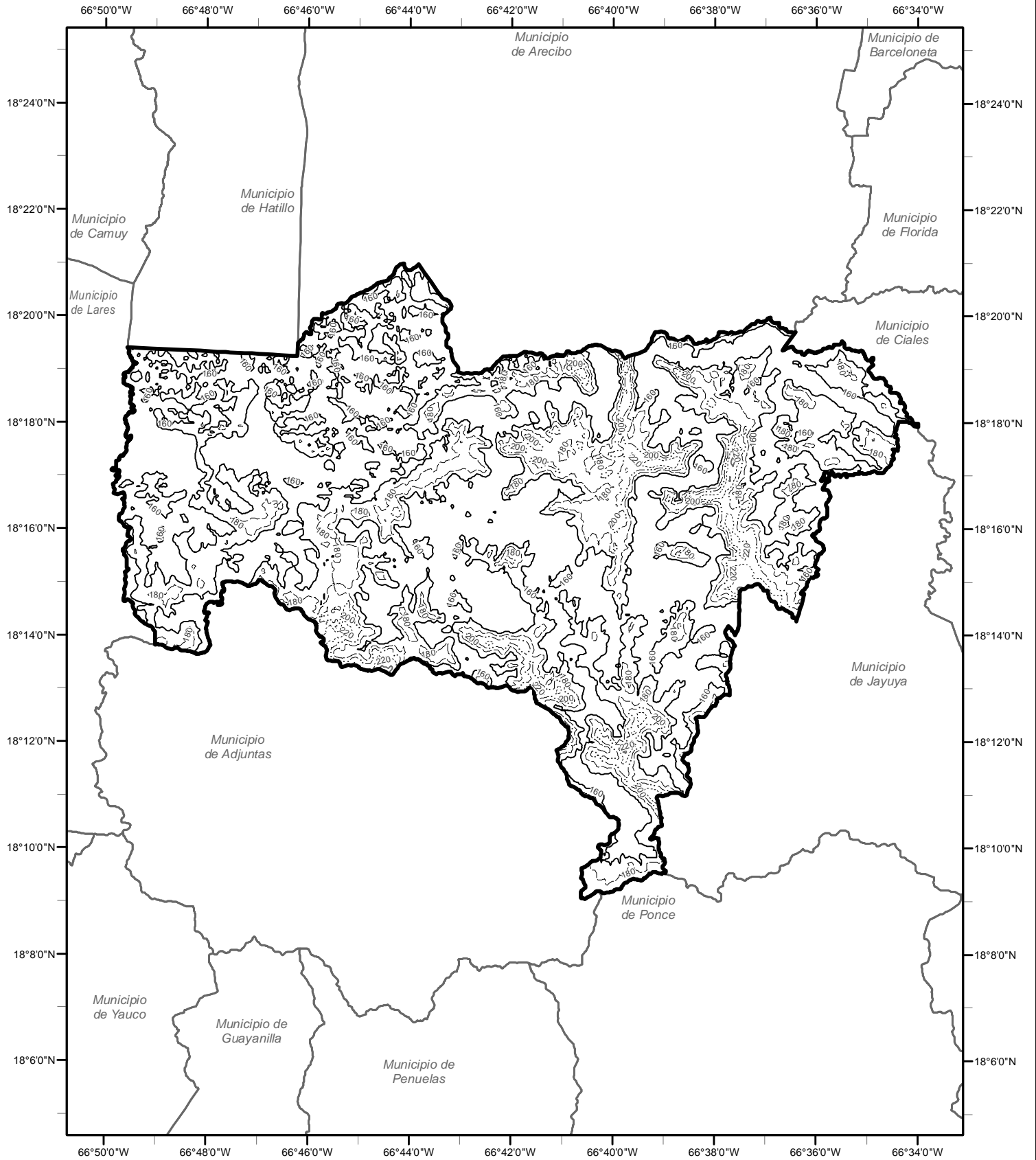


### Risk Category II Wind Contour (mph)

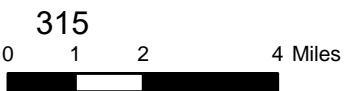
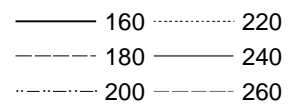


# Municipio de Utuado

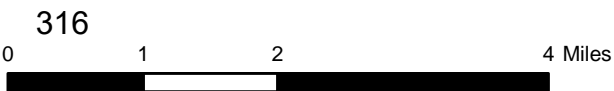
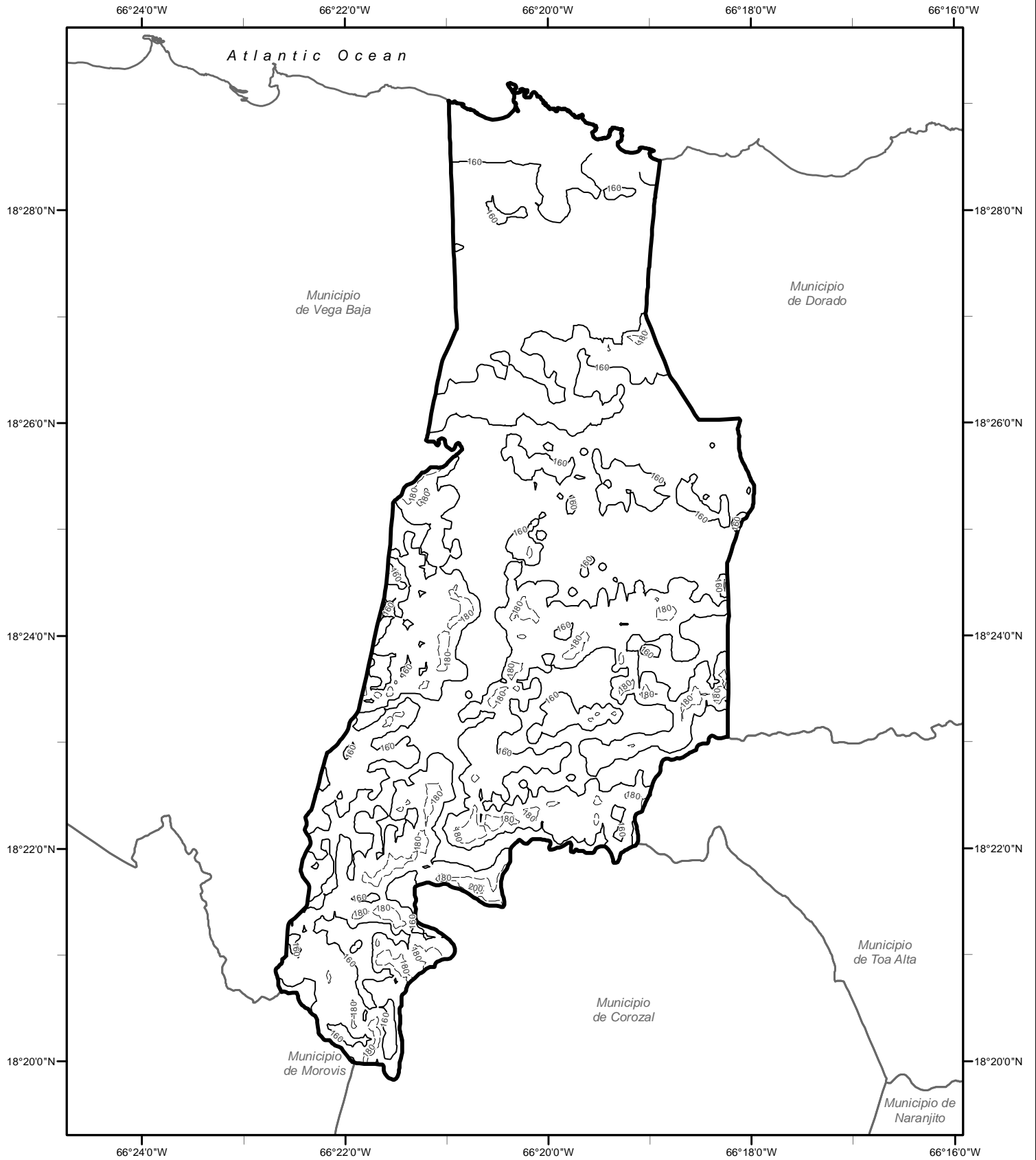
## Risk Category II Effective Wind Speed Map (mph)



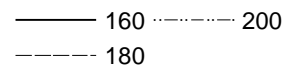
**Risk Category II Wind Contour (mph)**



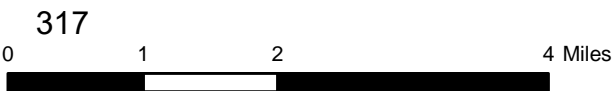
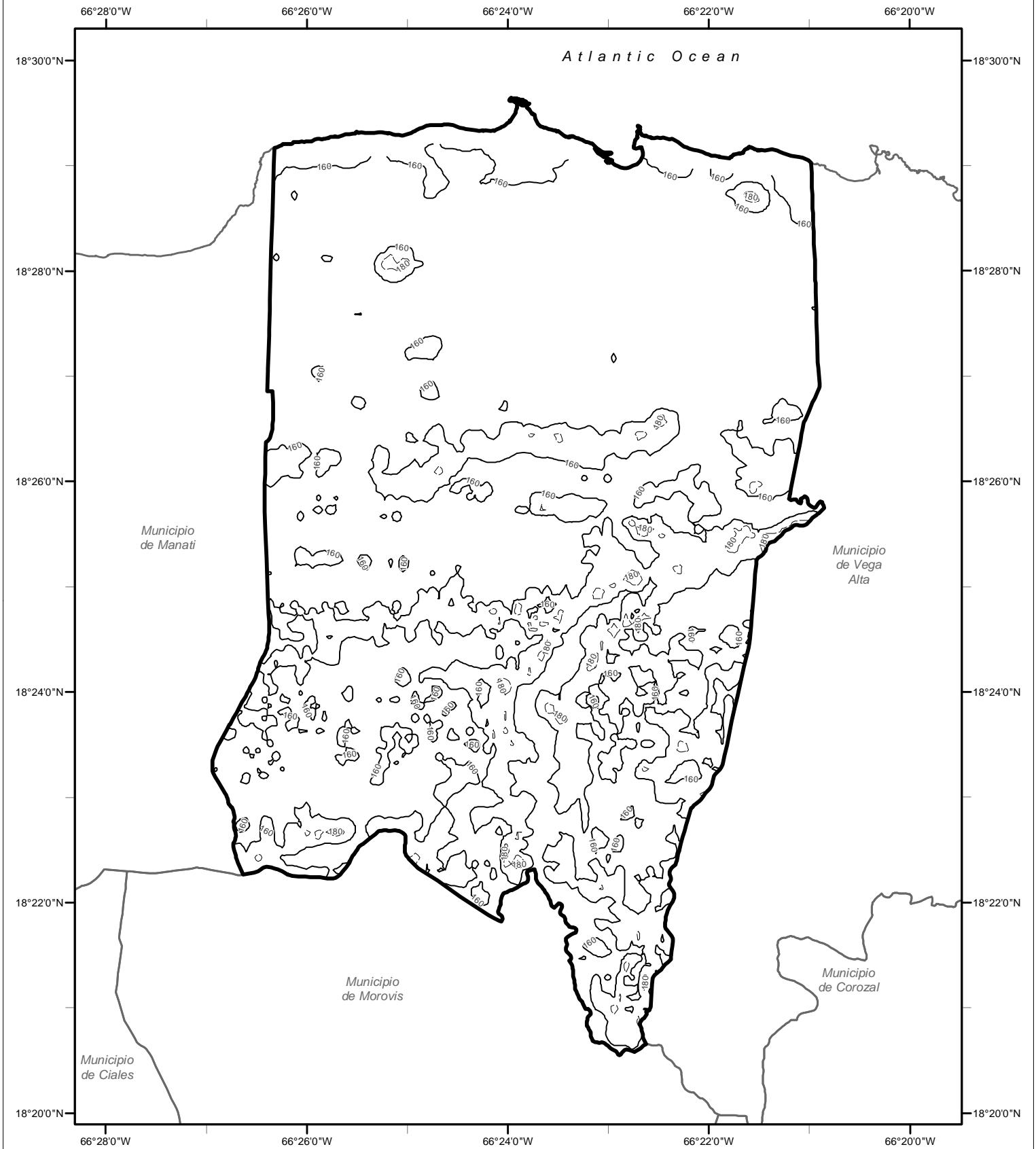
# Municipio de Vega Alta Risk Category II Effective Wind Speed Map (mph)



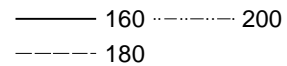
### Risk Category II Wind Contour (mph)



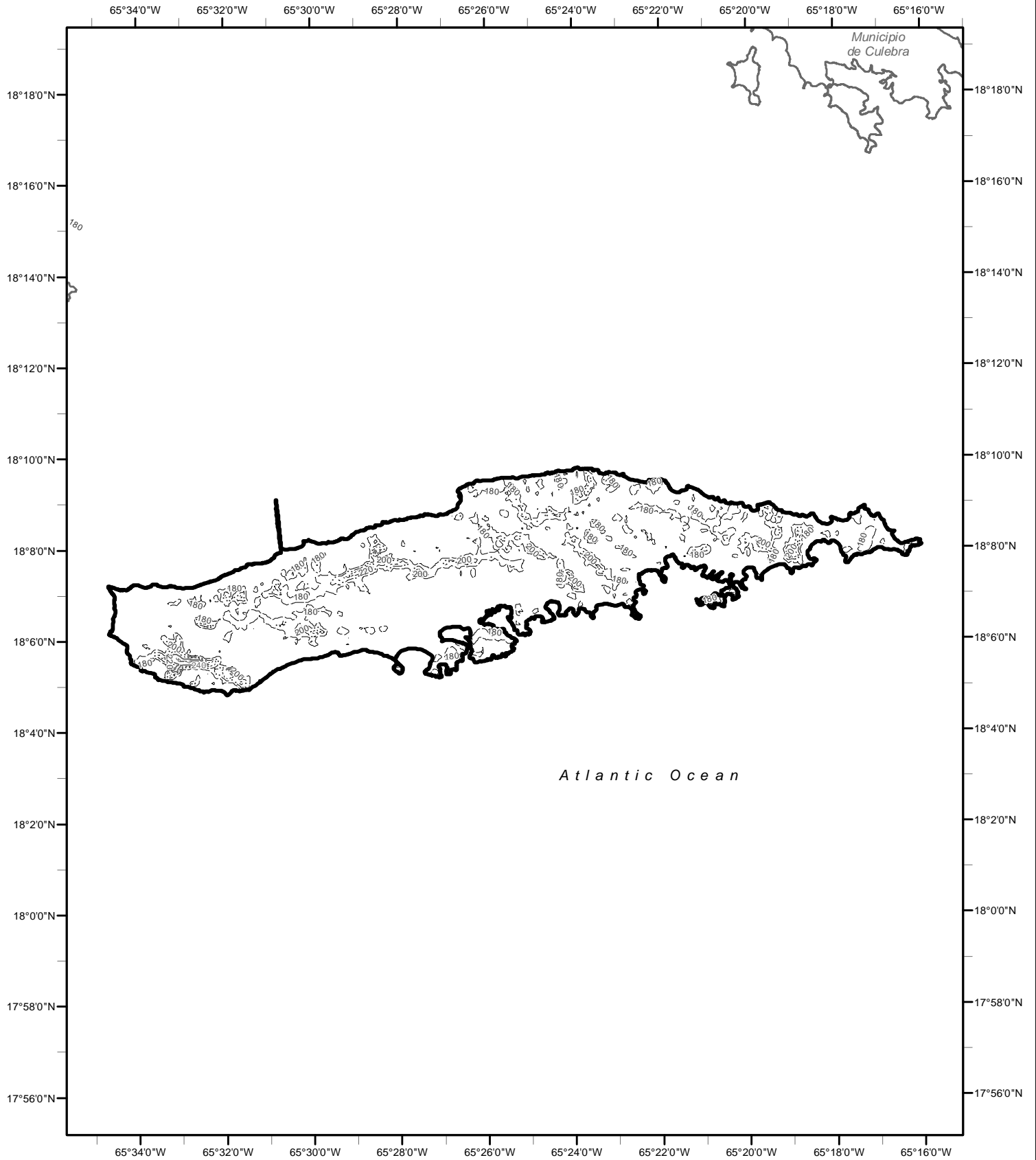
# Municipio de Vega Baja Risk Category II Effective Wind Speed Map (mph)



### Risk Category II Wind Contour (mph)

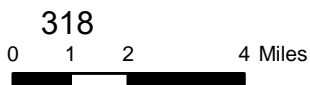


# Municipio de Vieques Risk Category II Effective Wind Speed Map (mph)



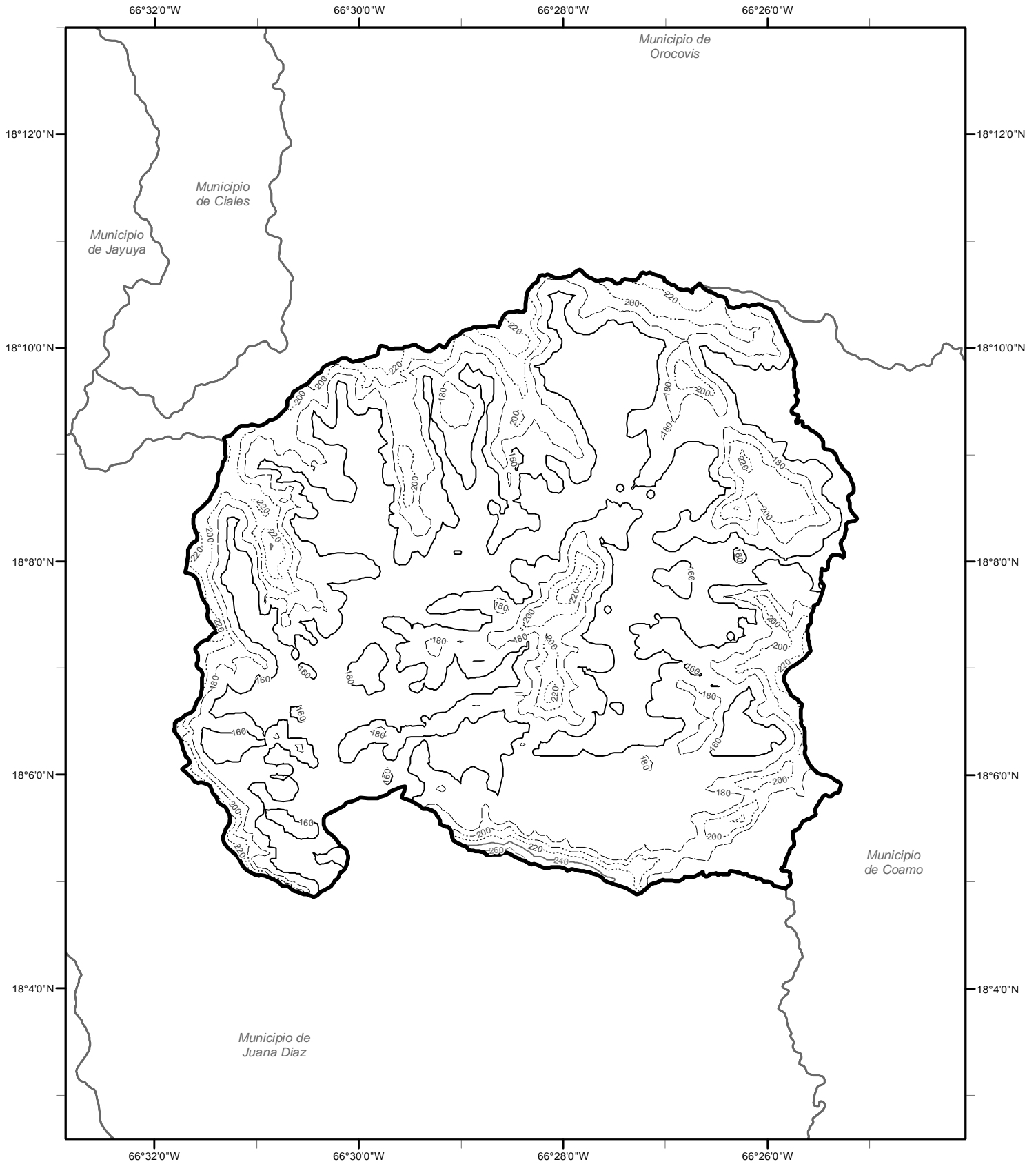
### Risk Category II Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260

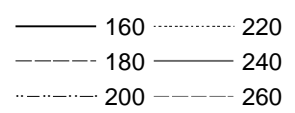




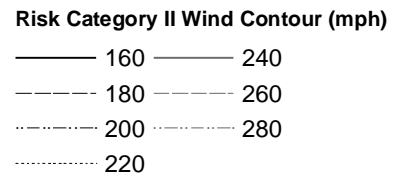
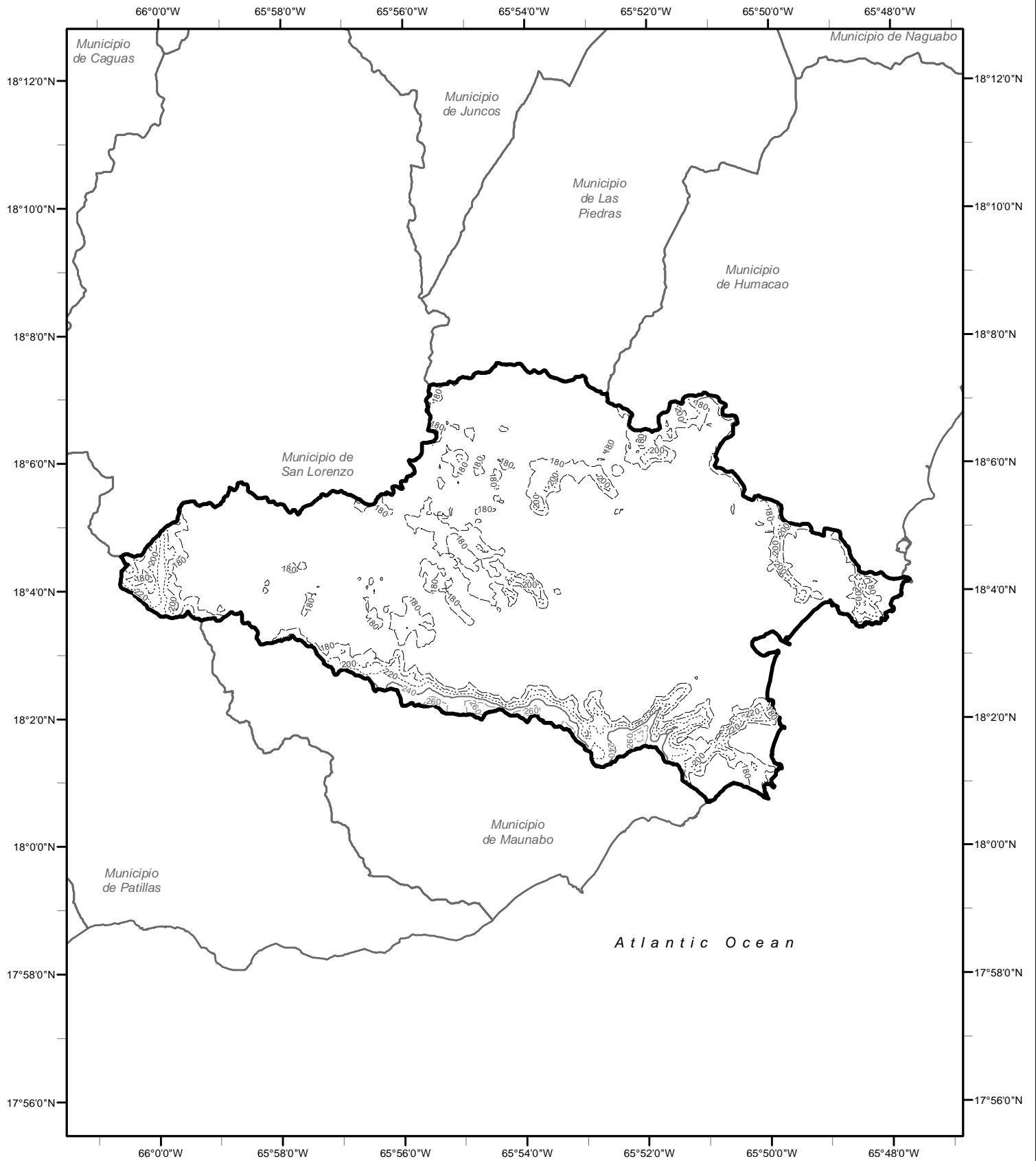
# Municipio de Villalba Risk Category II Effective Wind Speed Map (mph)



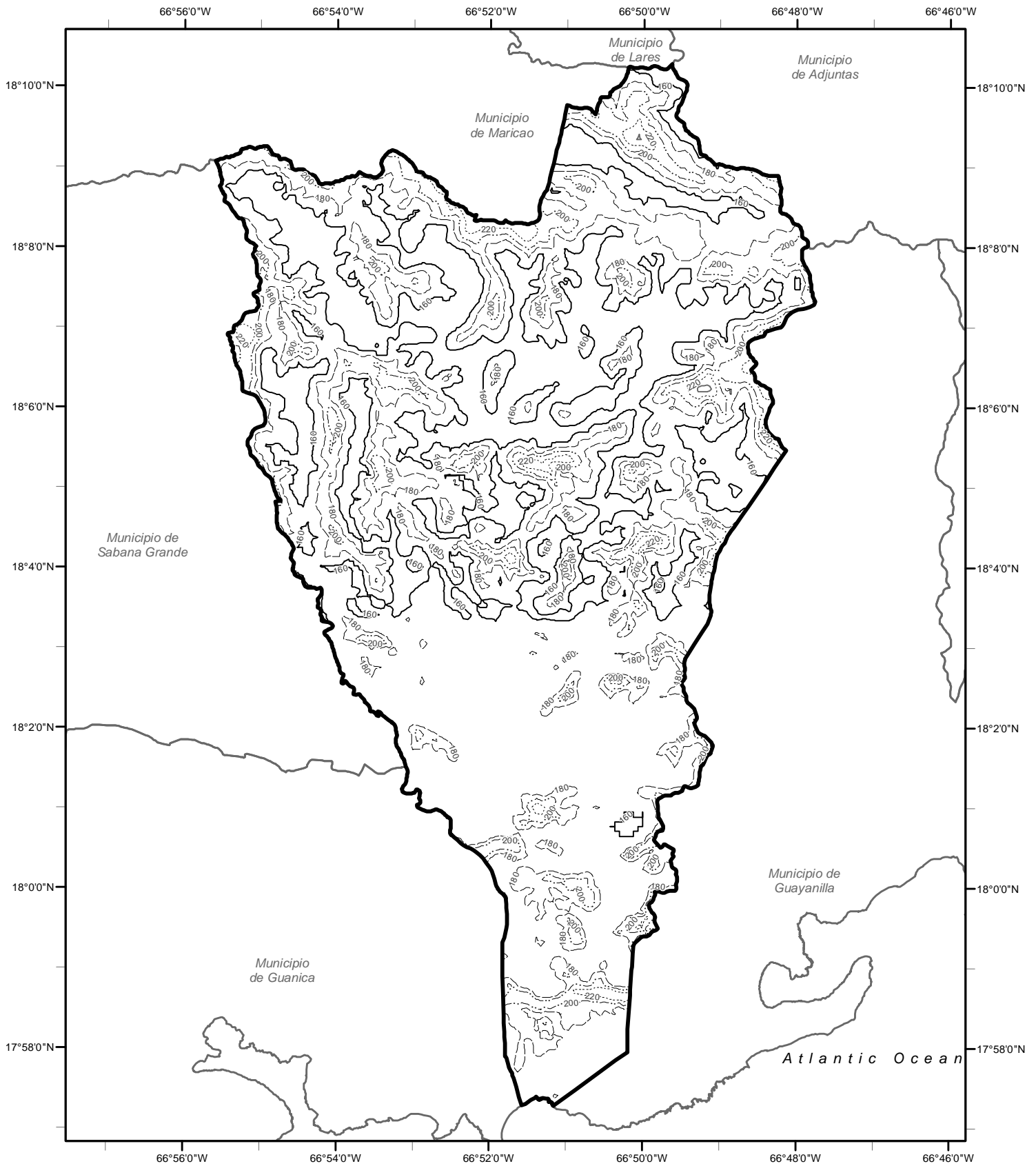
### Risk Category II Wind Contour (mph)



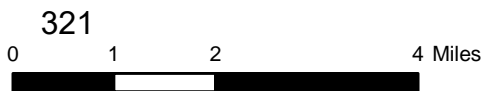
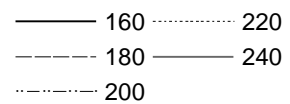
# Municipio de Yabucoa Risk Category II Effective Wind Speed Map (mph)



# Municipio de Yauco Risk Category II Effective Wind Speed Map (mph)



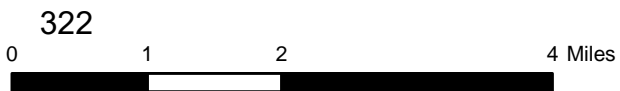
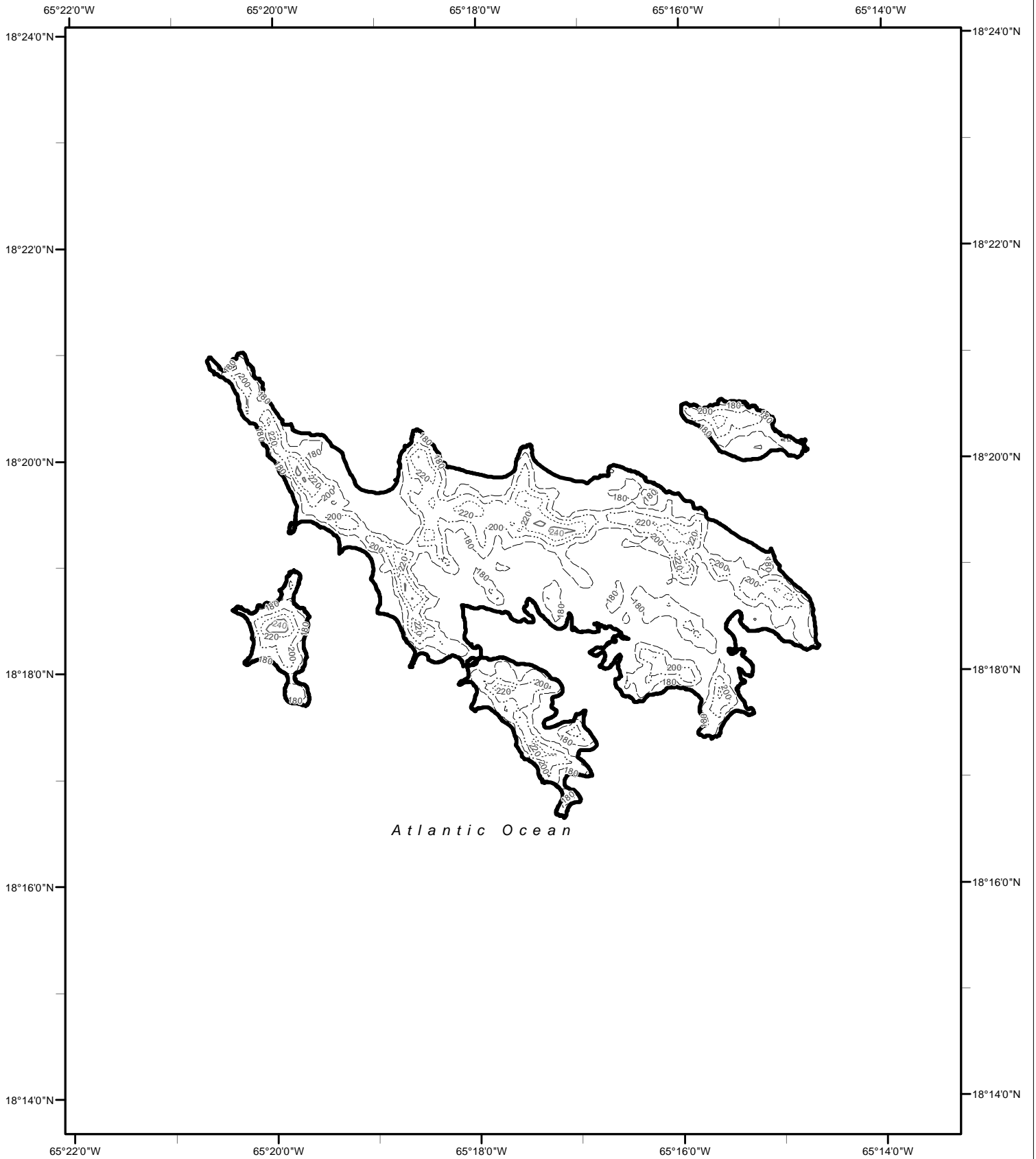
### Risk Category II Wind Contour (mph)



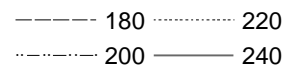
321

# Municipio de Culebra

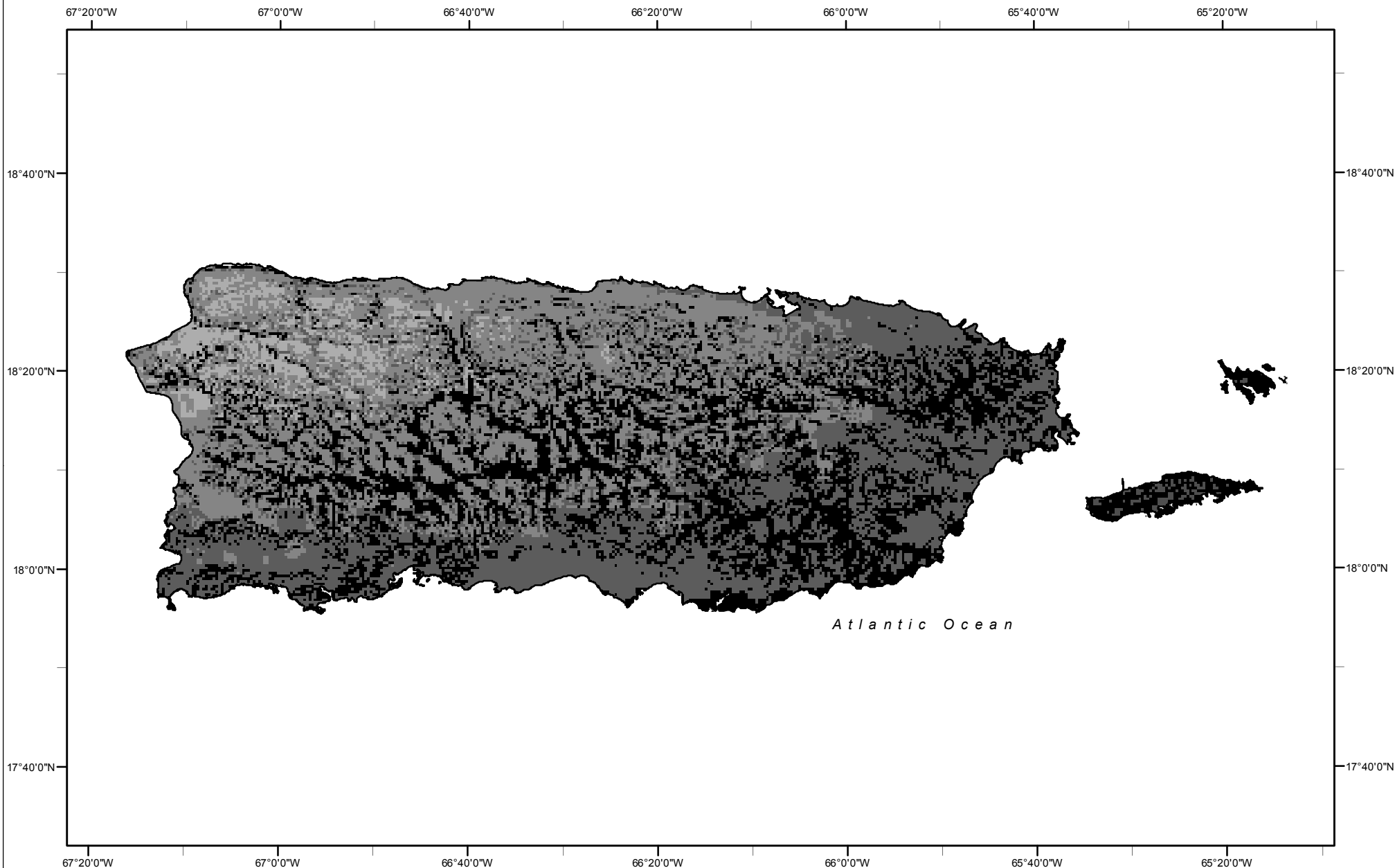
## Risk Category II Effective Wind Speed Map (mph)



### Risk Category II Wind Contour (mph)



# Puerto Rico Risk Category III Effective Wind Speed Map (mph)



67°20'0"W

67°0'0"W

66°40'0"W

66°20'0"W

66°0'0"W

65°40'0"W

65°20'0"W

18°40'0"N

18°20'0"N

18°0'0"N

17°40'0"N

18°40'0"N

18°20'0"N

18°0'0"N

17°40'0"N

*Atlantic Ocean*

67°20'0"W

67°0'0"W

66°40'0"W

66°20'0"W

66°0'0"W

65°40'0"W

65°20'0"W

N

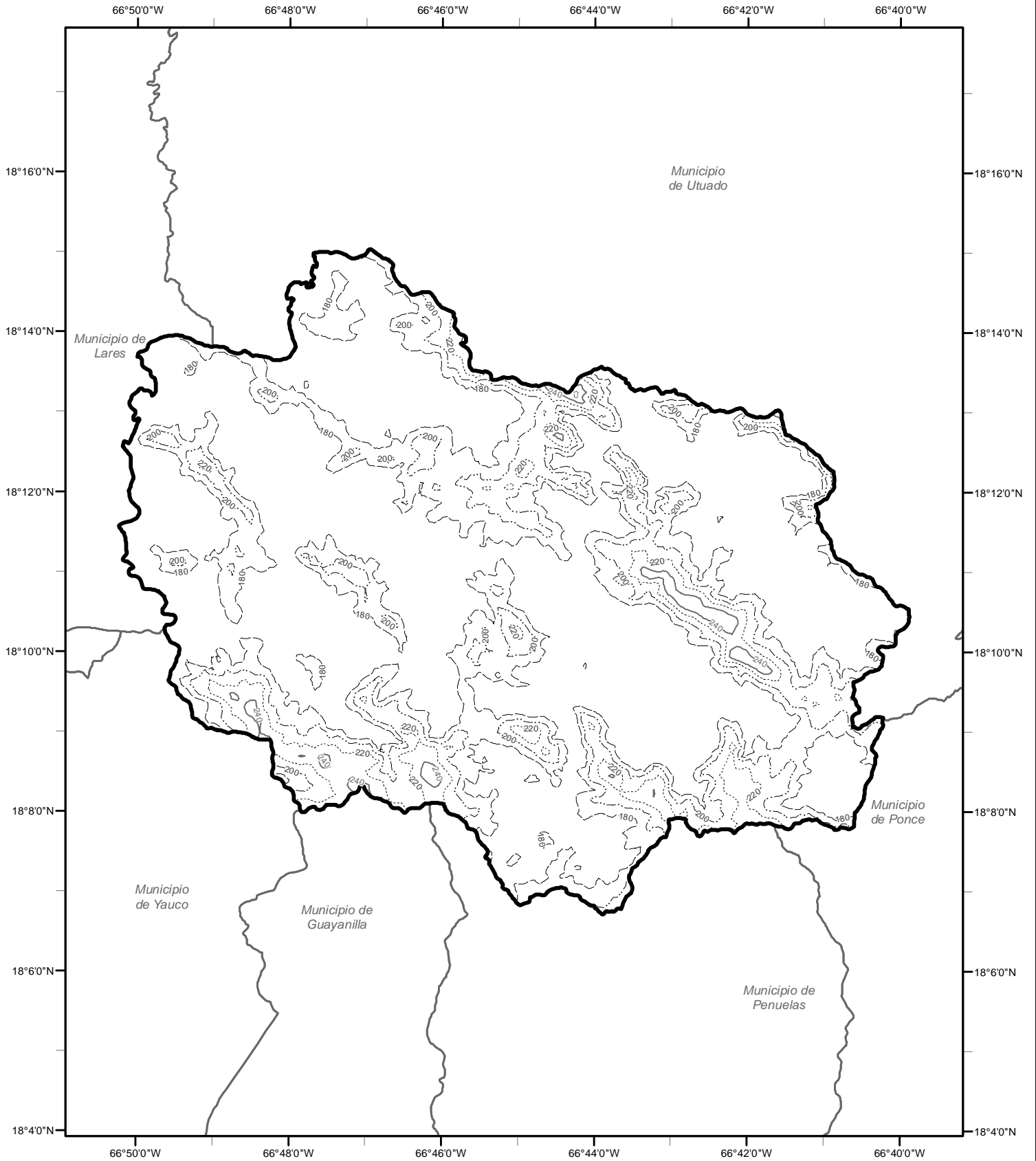
323

0 10 20 40 Miles

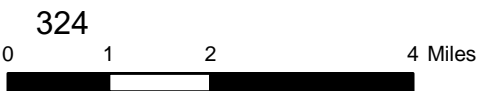
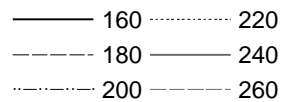
## Risk Category III Wind Intervals (mph)



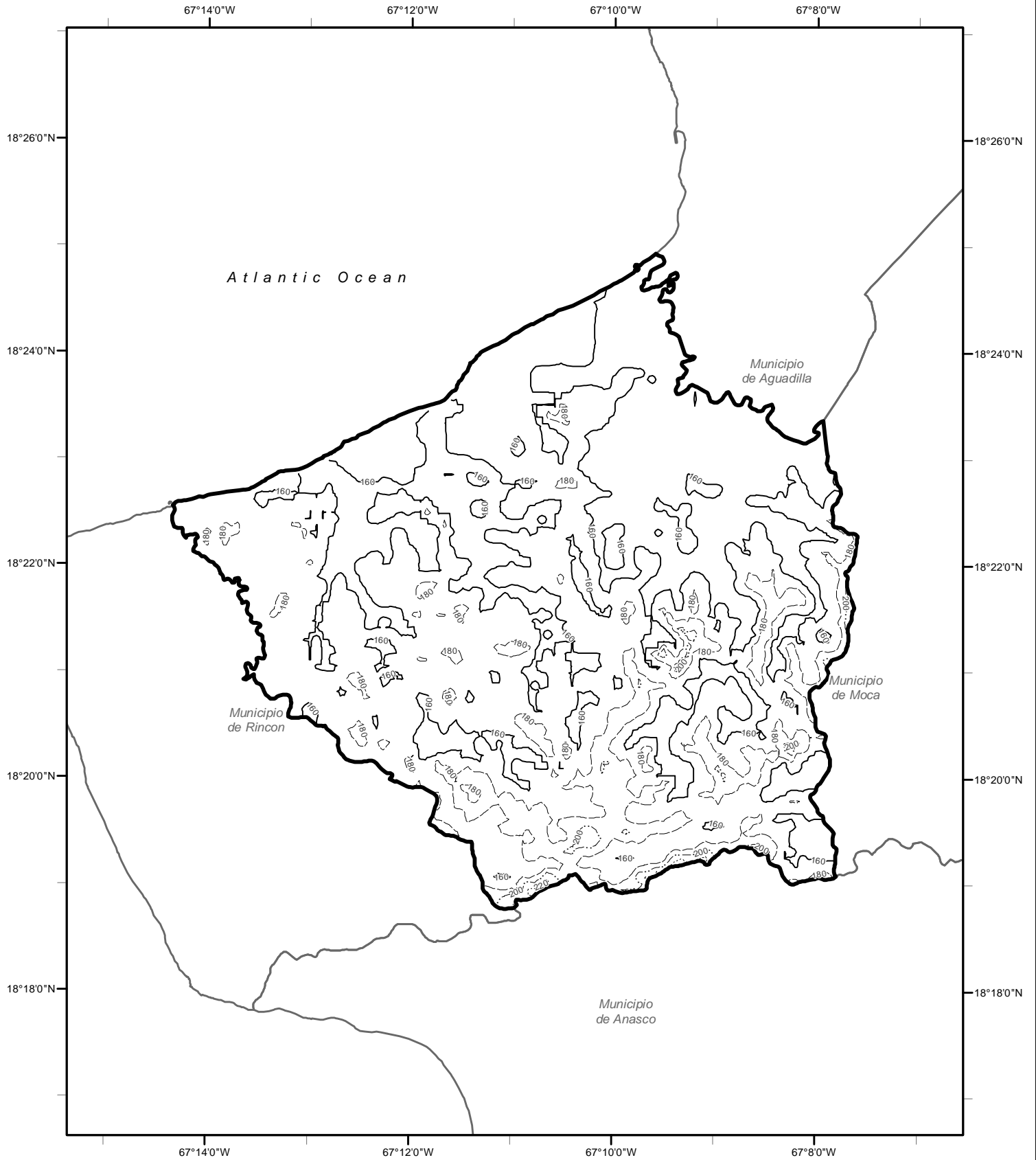
# Municipio de Adjuntas Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)



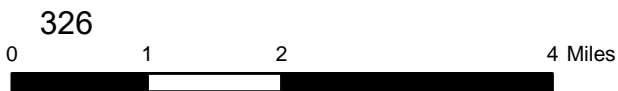
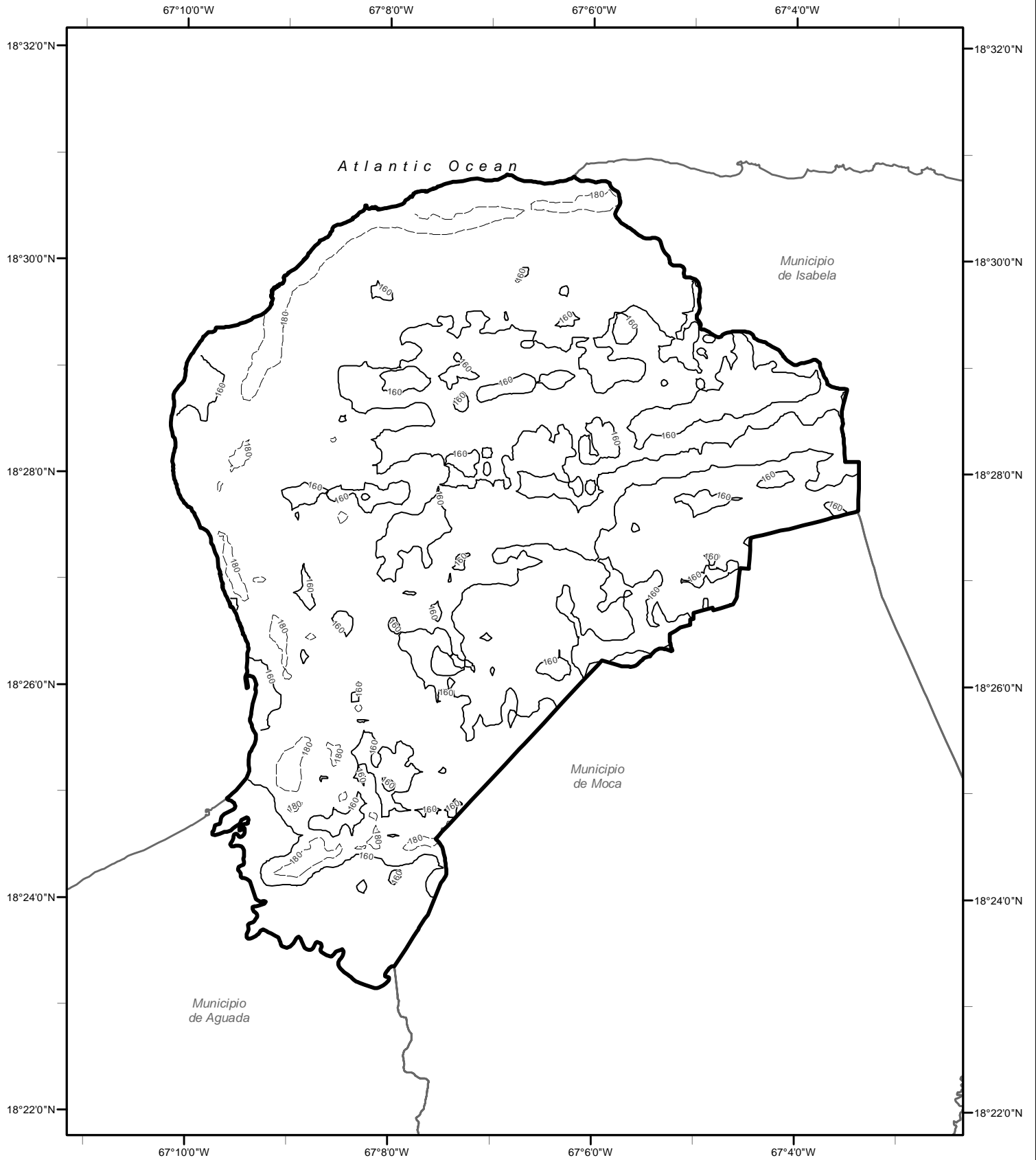
# Municipio de Aguada Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

- 160
- 180
- 200
- 220

# Municipio de Aguadilla Risk Category III Effective Wind Speed Map (mph)

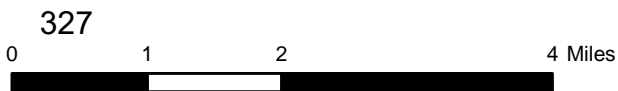
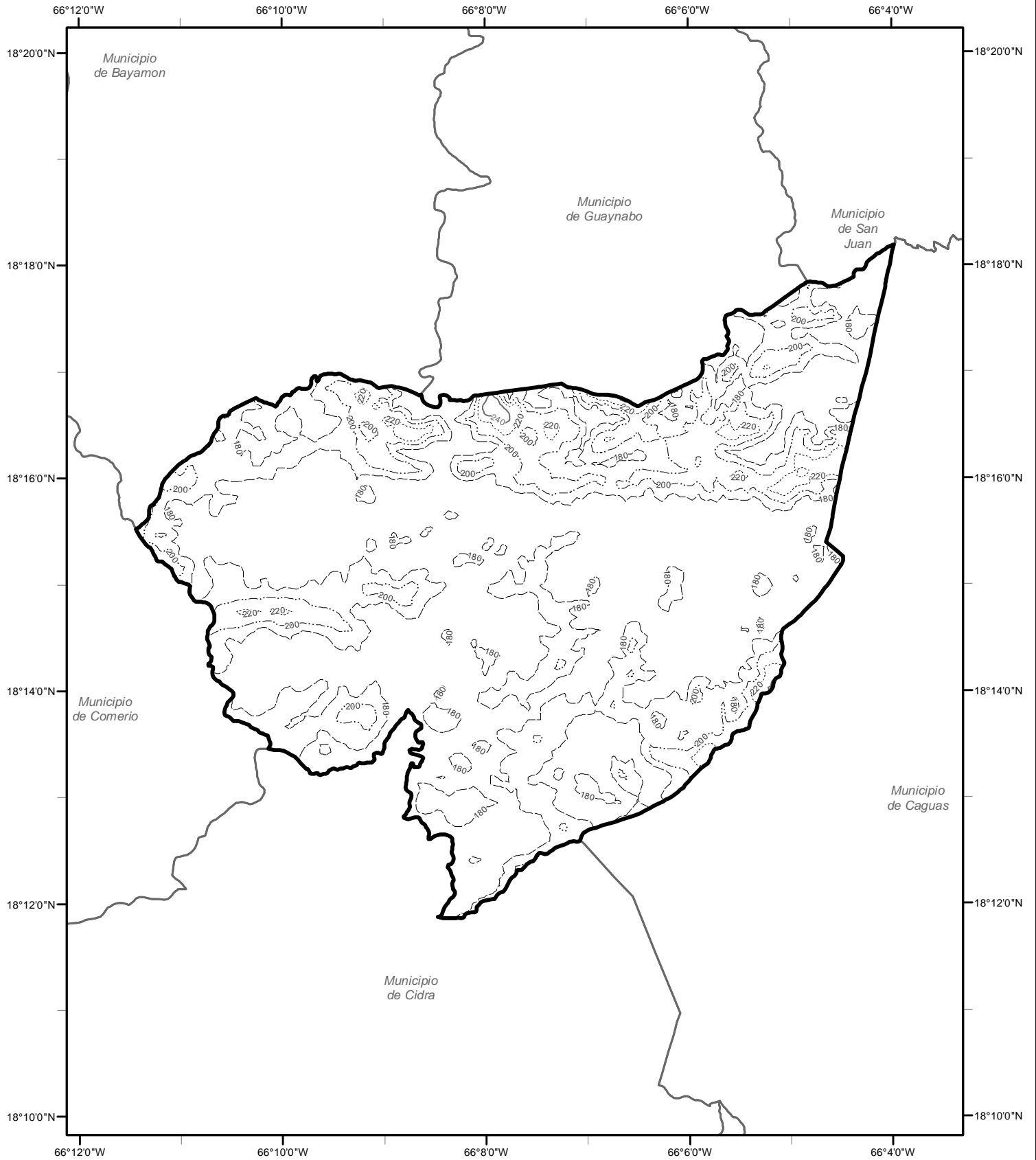


### Risk Category III Wind Contour (mph)

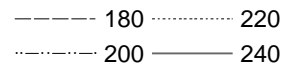
- 160
- - - 180
- · · 200



# Municipio de Aguas Buenas Risk Category III Effective Wind Speed Map (mph)

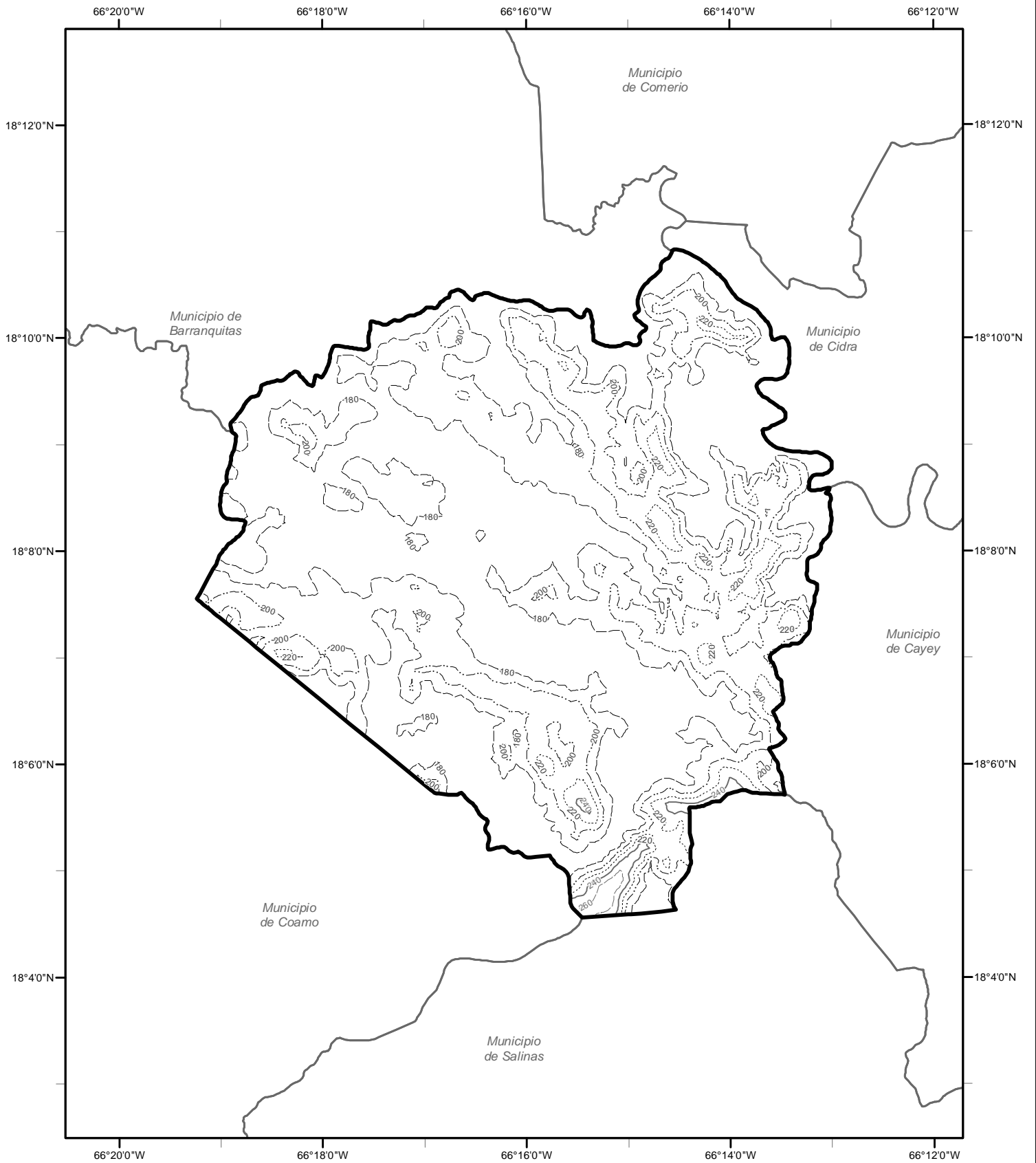


### Risk Category III Wind Contour (mph)

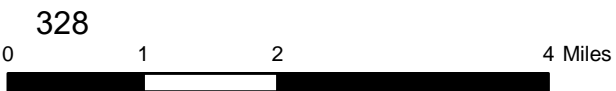
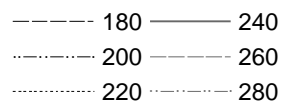


# Municipio de Aibonito

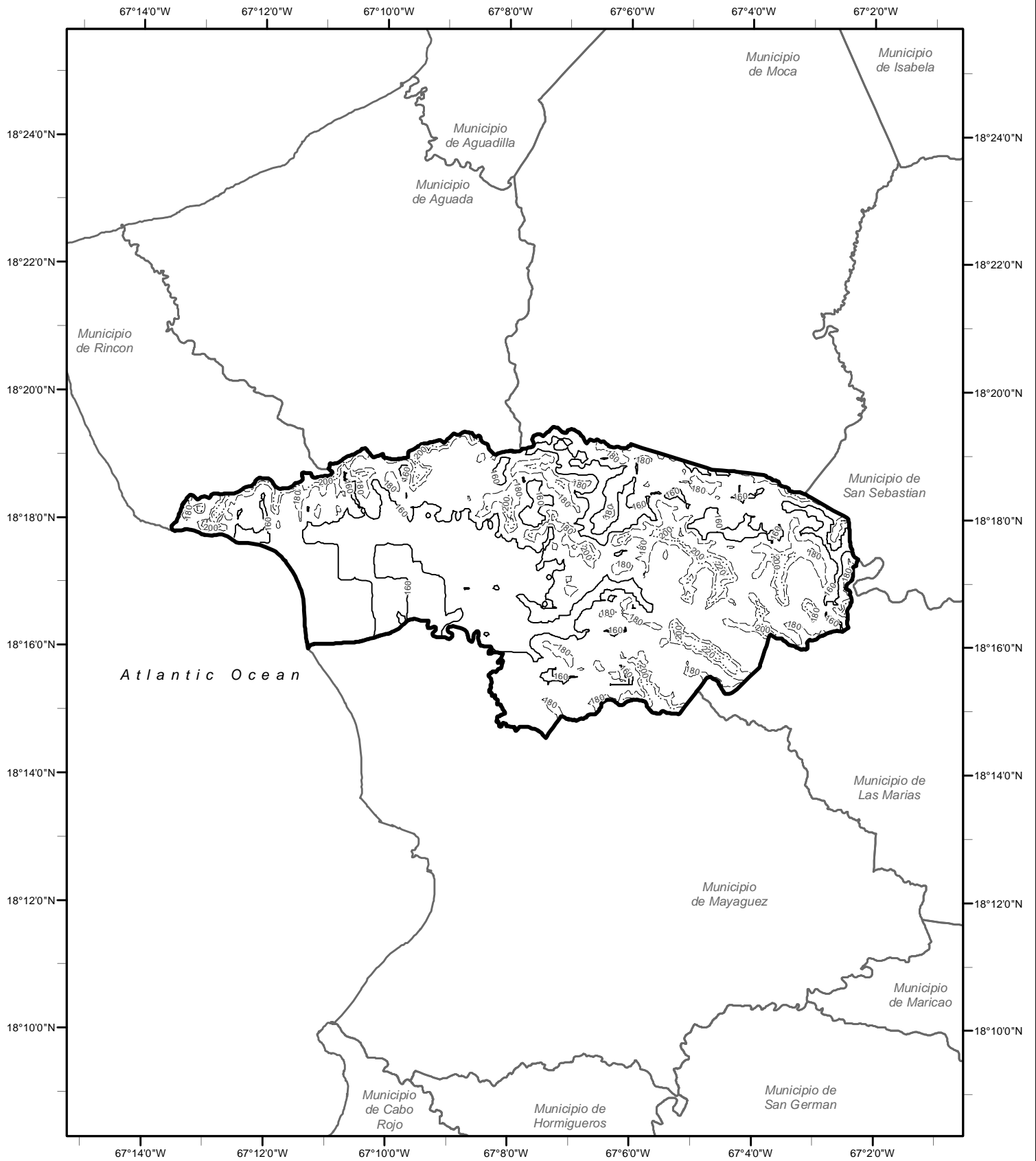
## Risk Category III Effective Wind Speed Map (mph)



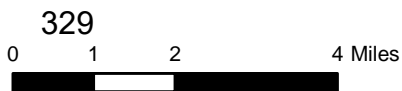
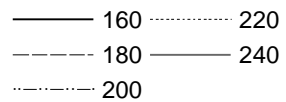
### Risk Category III Wind Contour (mph)



# Municipio de Anasco Risk Category III Effective Wind Speed Map (mph)

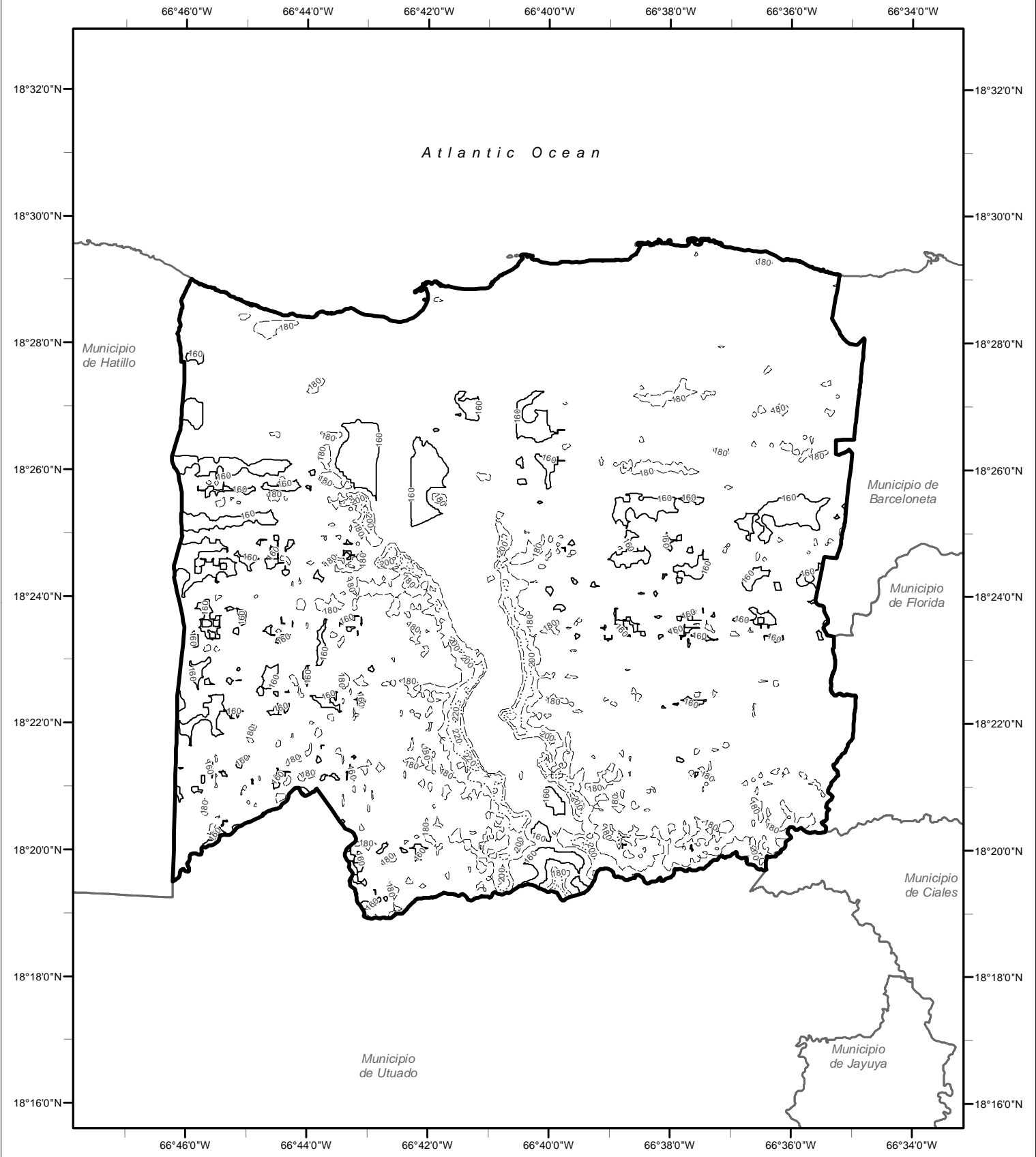


### Risk Category III Wind Contour (mph)



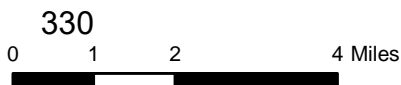
329

# Municipio de Arcibo Risk Category III Effective Wind Speed Map (mph)

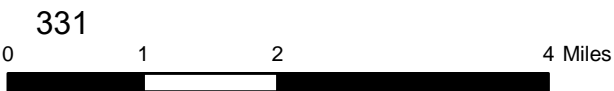
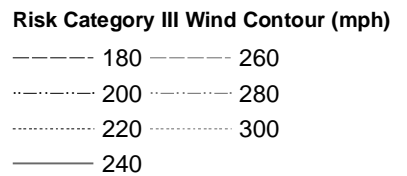
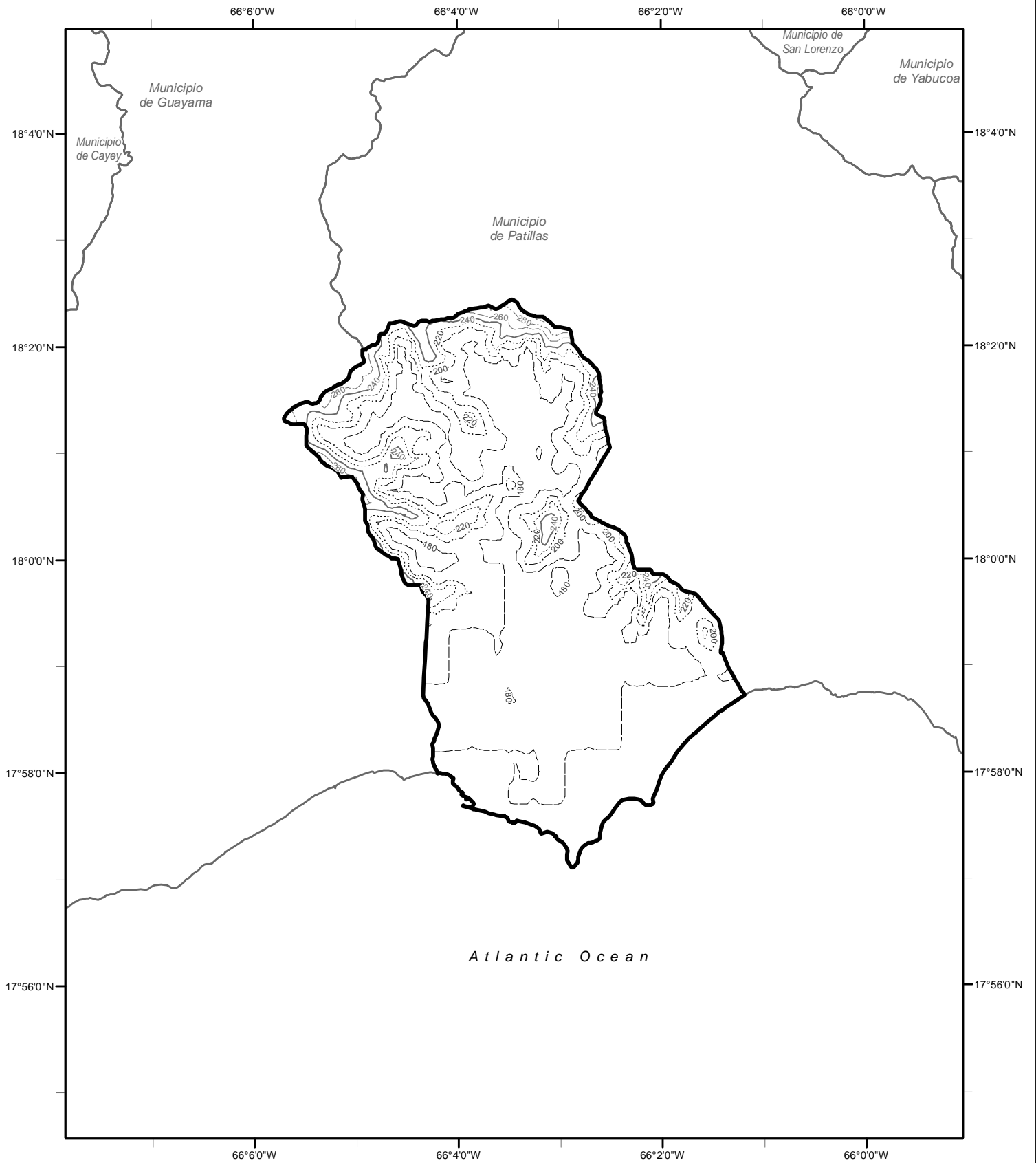


### Risk Category III Wind Contour (mph)

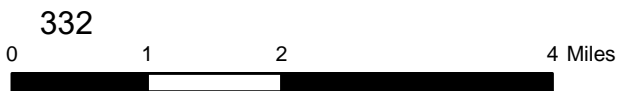
- 160      ····· 220
- - - - 180      ——— 240
- · · · · 200



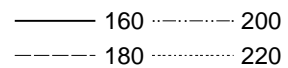
# Municipio de Arroyo Risk Category III Effective Wind Speed Map (mph)



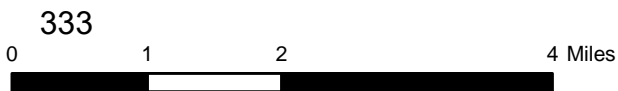
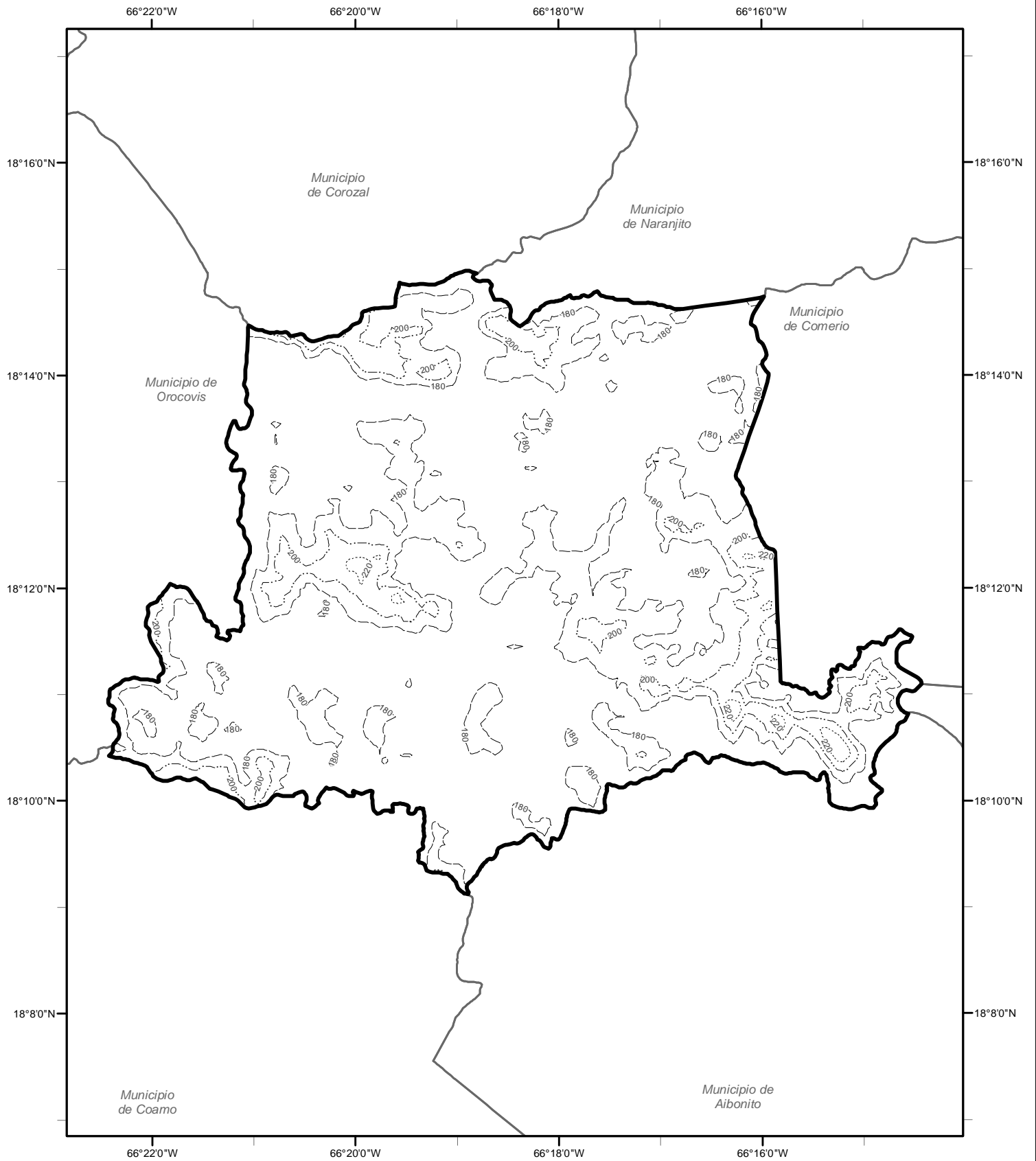
# Municipio de Barceloneta Risk Category III Effective Wind Speed Map (mph)



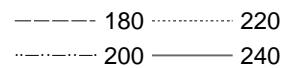
### Risk Category III Wind Contour (mph)



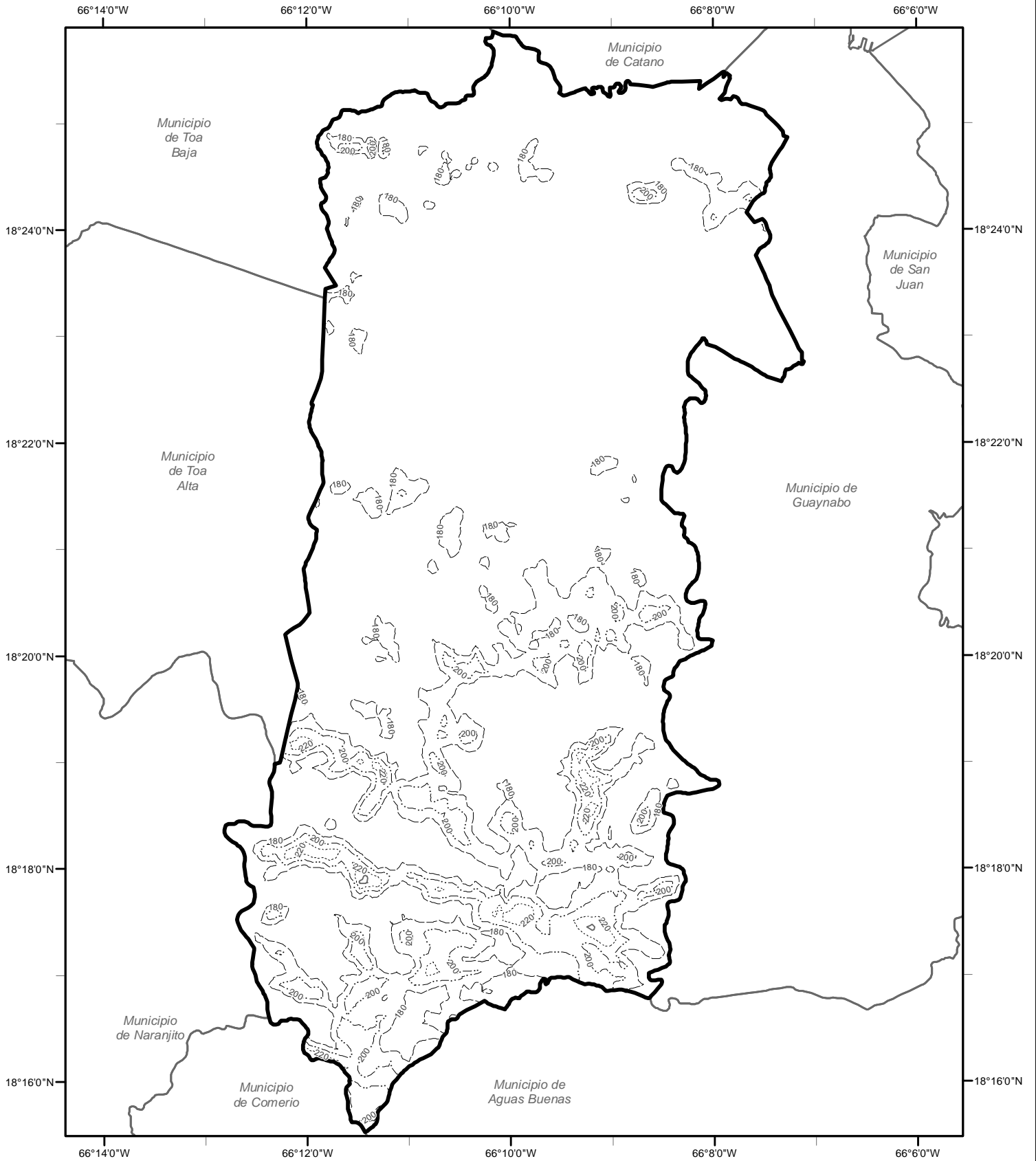
# Municipio de Barranquitas Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)



# Municipio de Bayamon Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



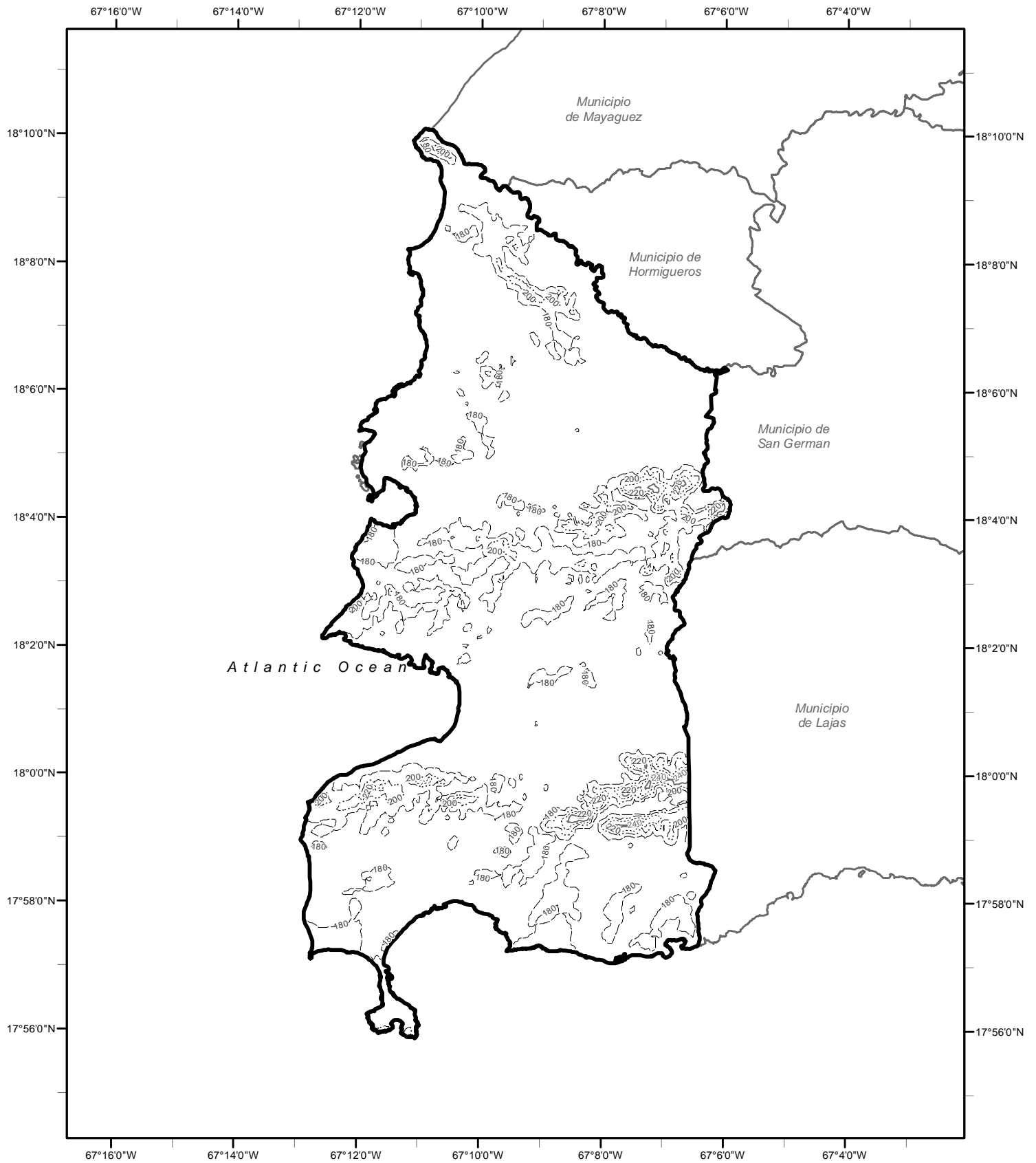
334



4 Miles

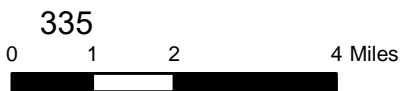


# Municipio de Cabo Rojo Risk Category III Effective Wind Speed Map (mph)

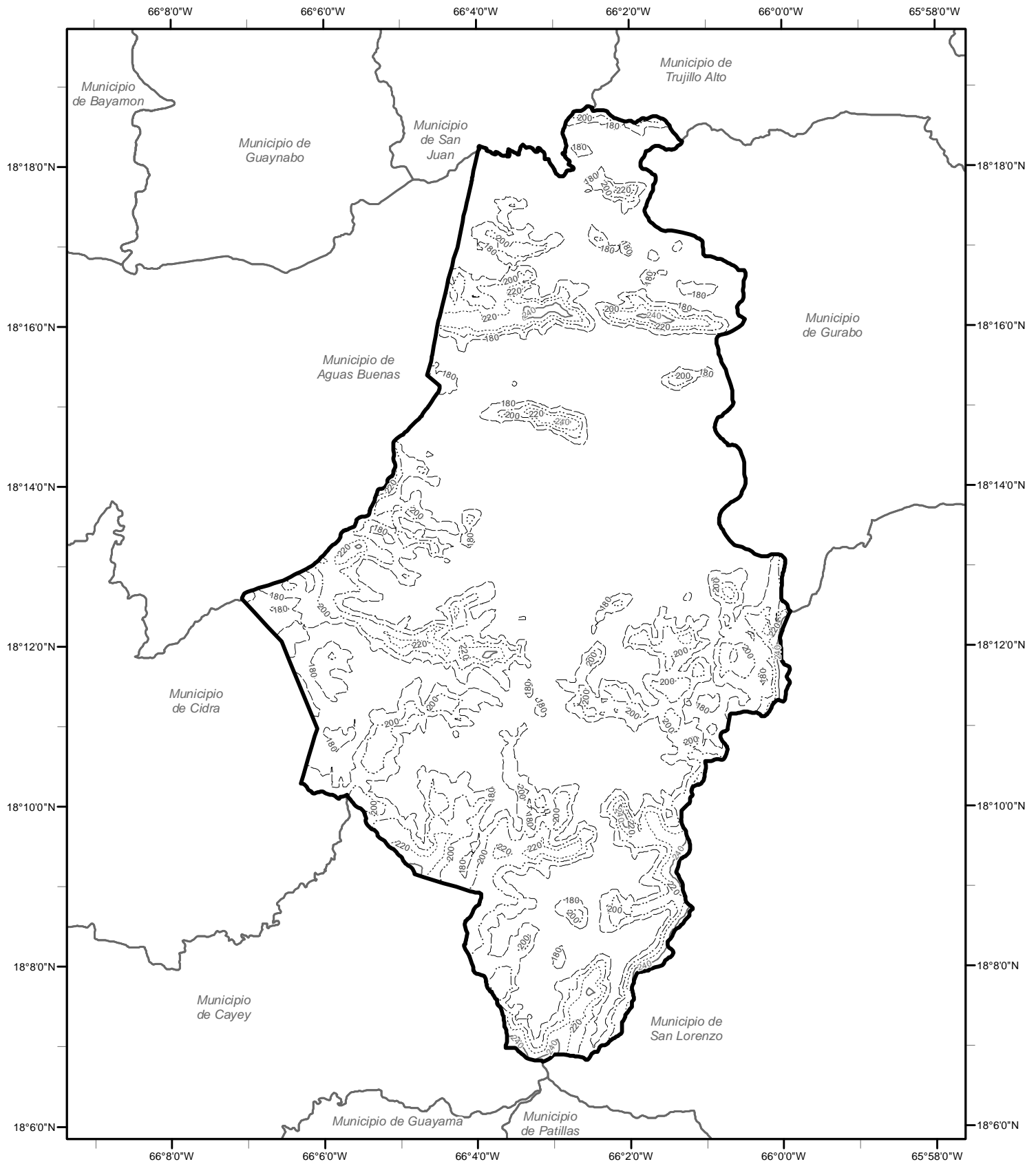


### Risk Category III Wind Contour (mph)

- 180
- ..... 190
- ..... 200
- ..... 210
- 220
- 230
- 240



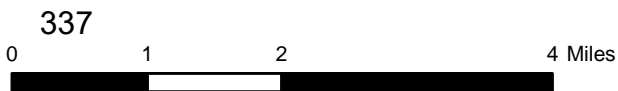
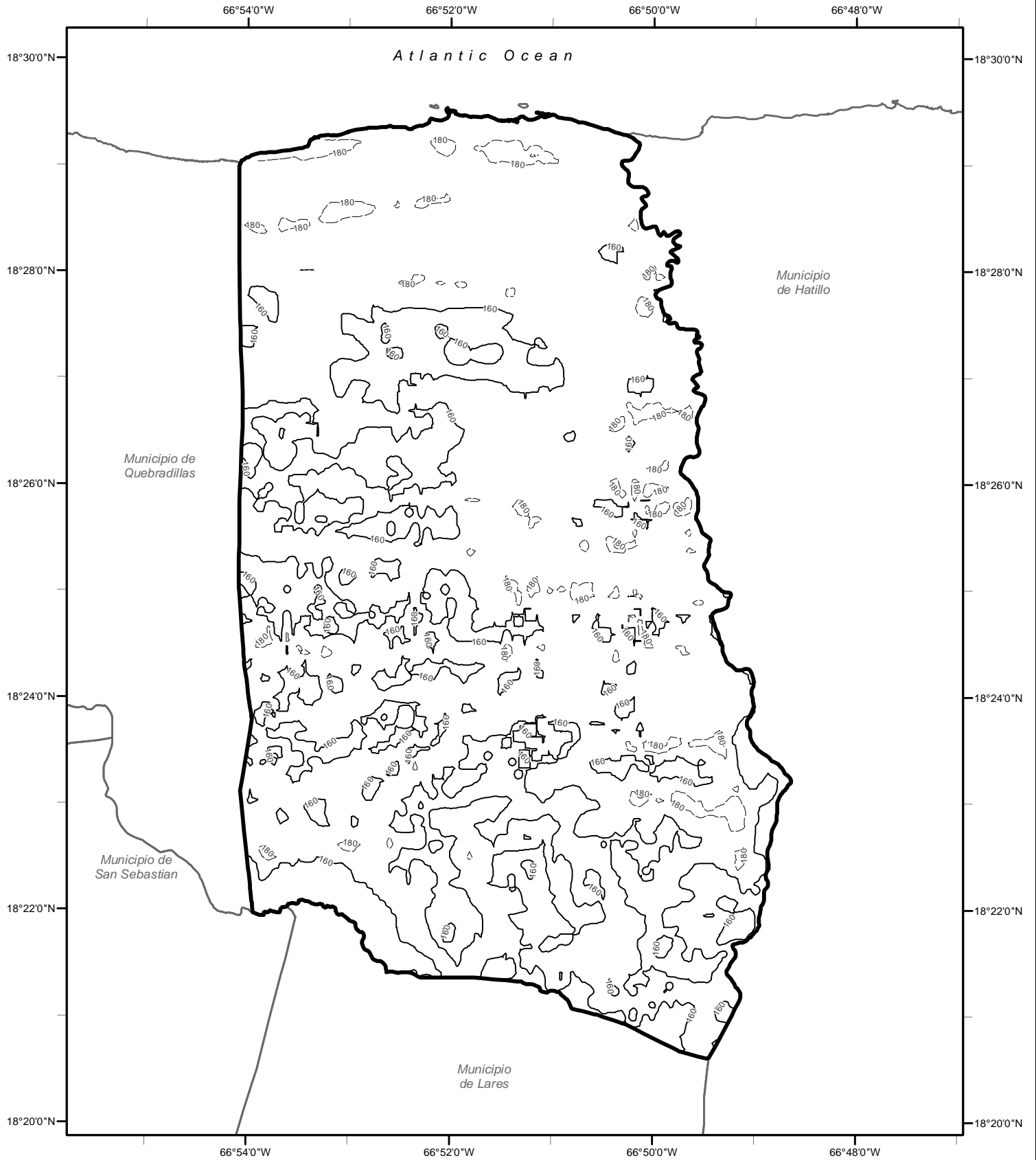
# Municipio de Caguas Risk Category III Effective Wind Speed Map (mph)



## Risk Category III Wind Contour (mph)

- 180
- 200
- ..... 220
- 240
- 260

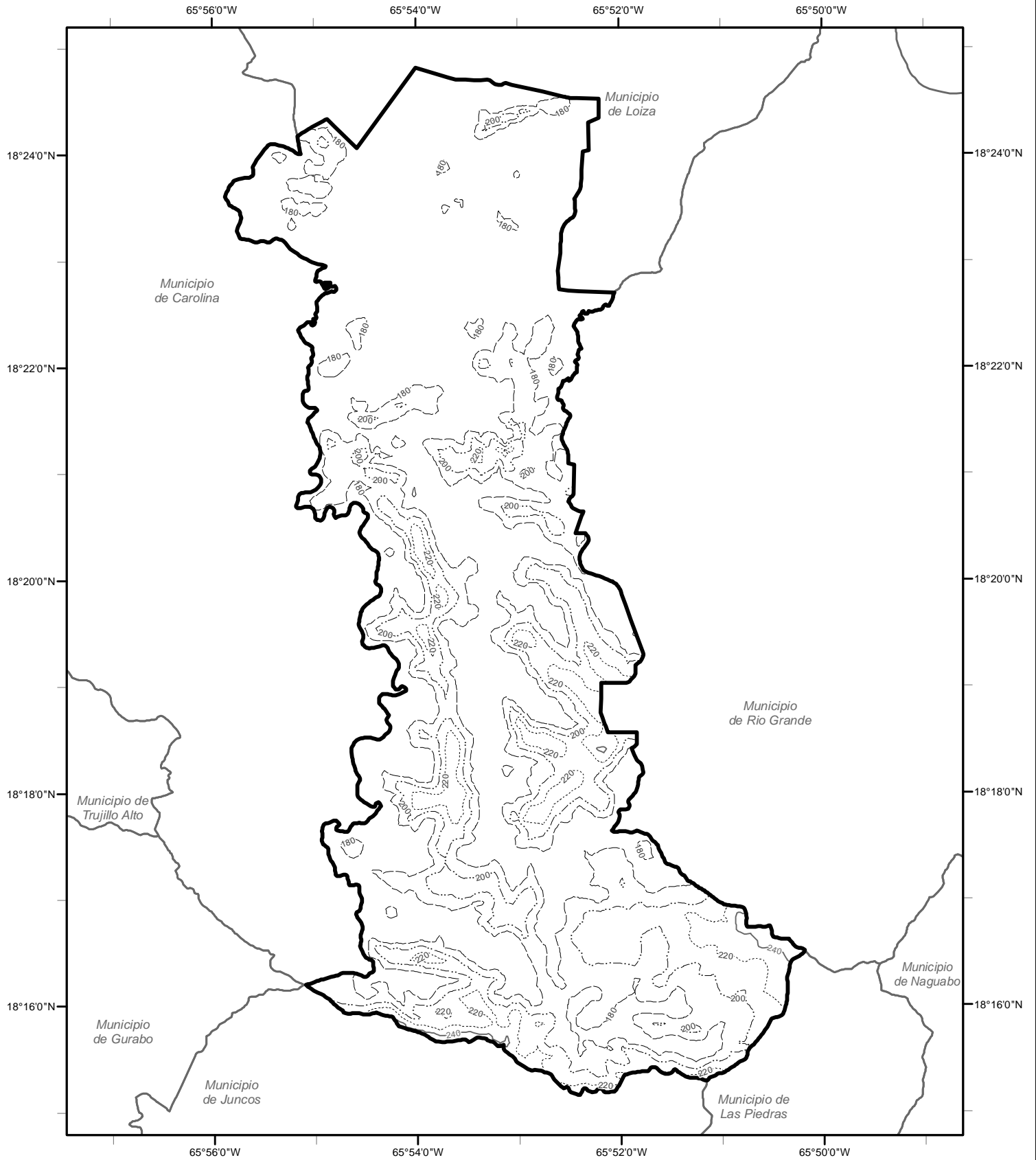
# Municipio de Camuy Risk Category III Effective Wind Speed Map (mph)



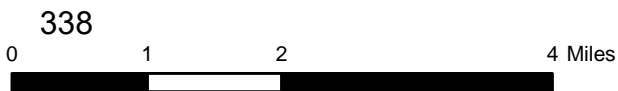
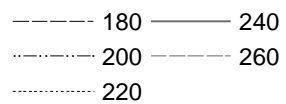
### Risk Category III Wind Contour (mph)

- 160
- ..... 200
- - - 180

# Municipio de Canovanas Risk Category III Effective Wind Speed Map (mph)

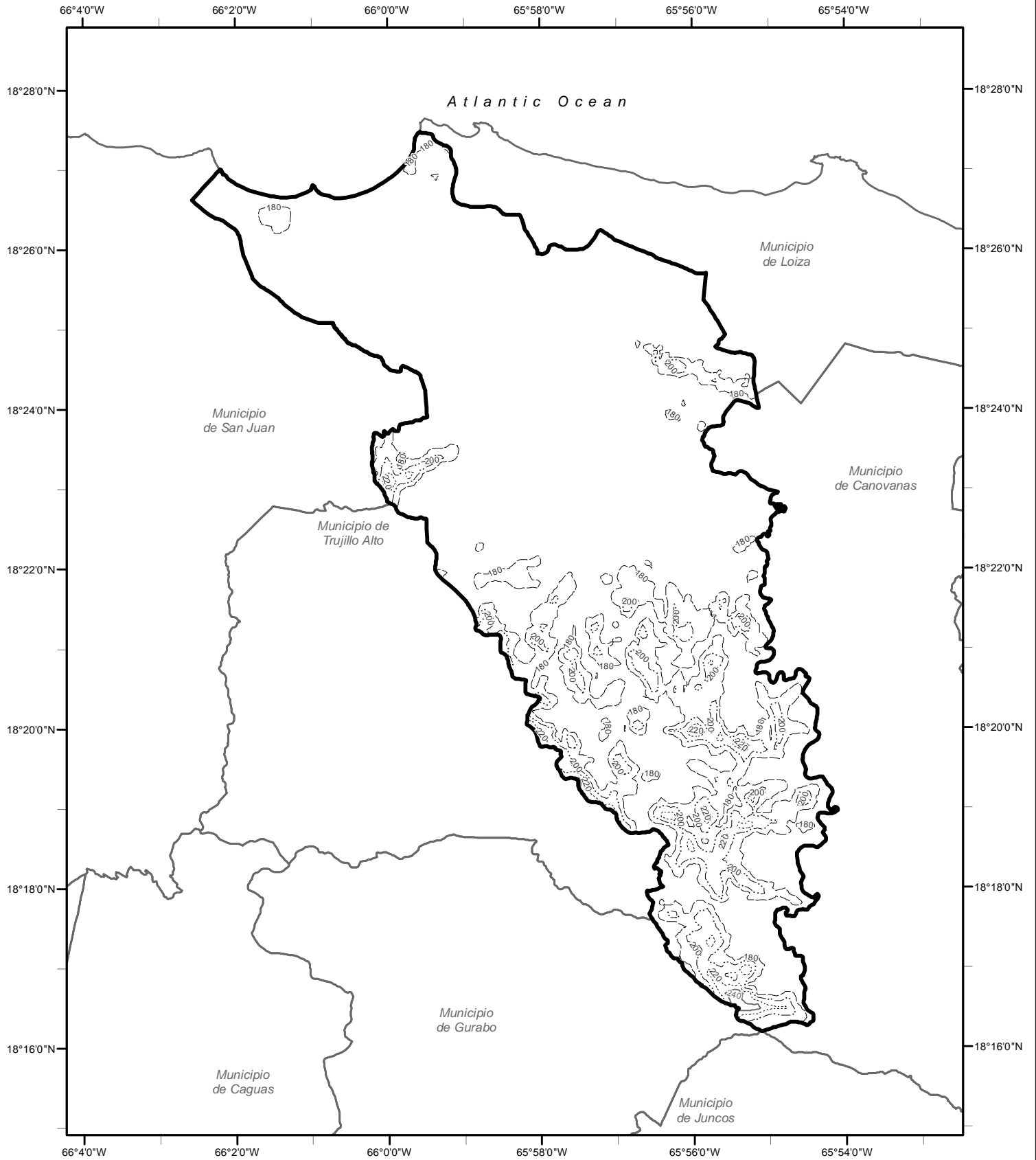


### Risk Category III Wind Contour (mph)



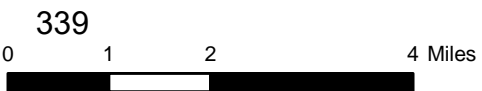
# Municipio de Carolina

## Risk Category III Effective Wind Speed Map (mph)



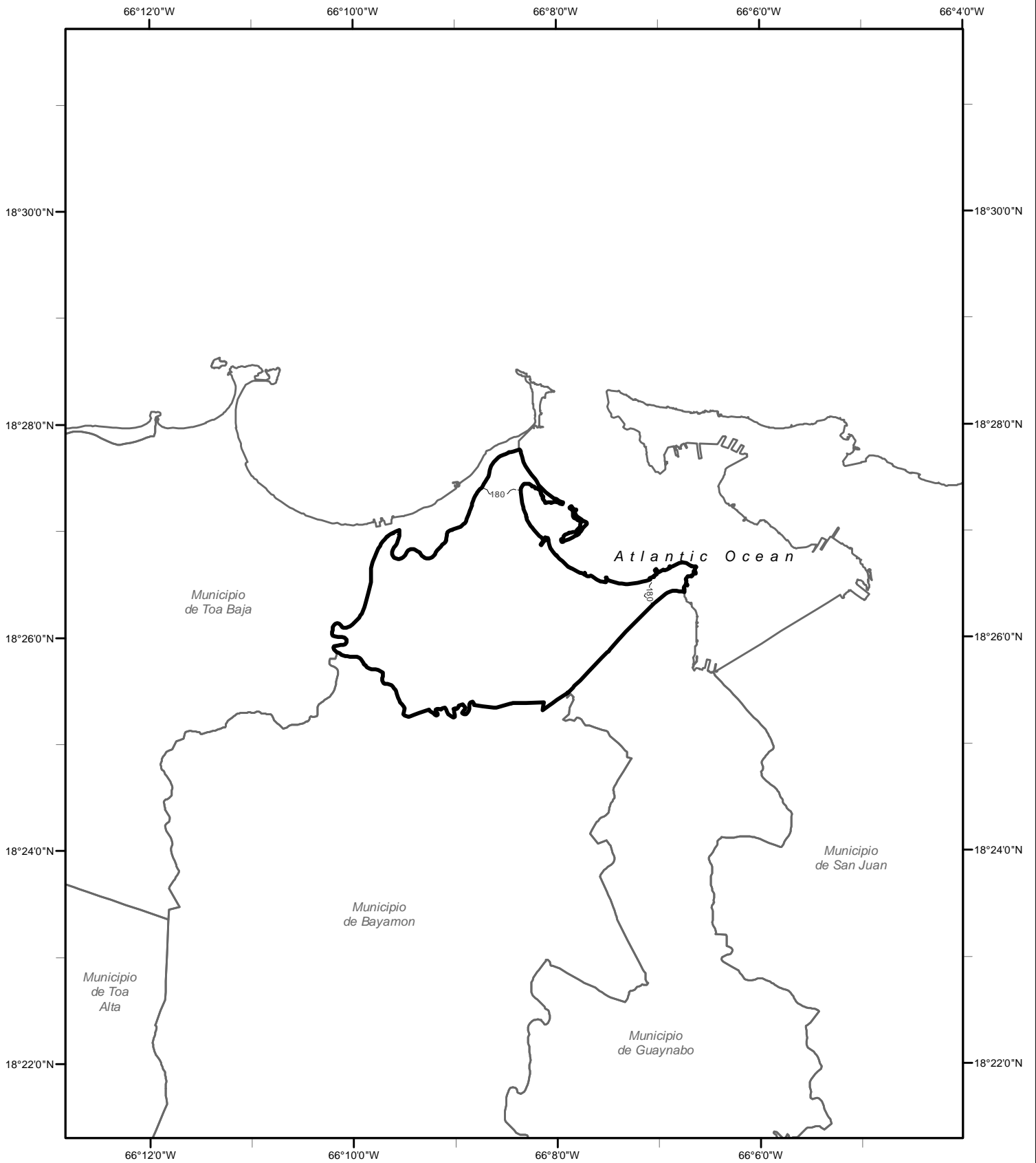
### Risk Category III Wind Contour (mph)

- 180
- ..... 200
- · - · - 220
- 240
- 260

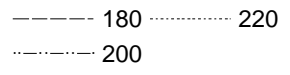


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# Municipio de Catano Risk Category III Effective Wind Speed Map (mph)

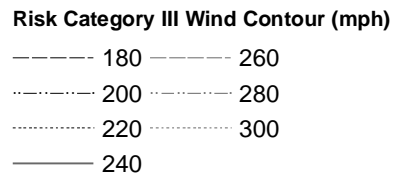
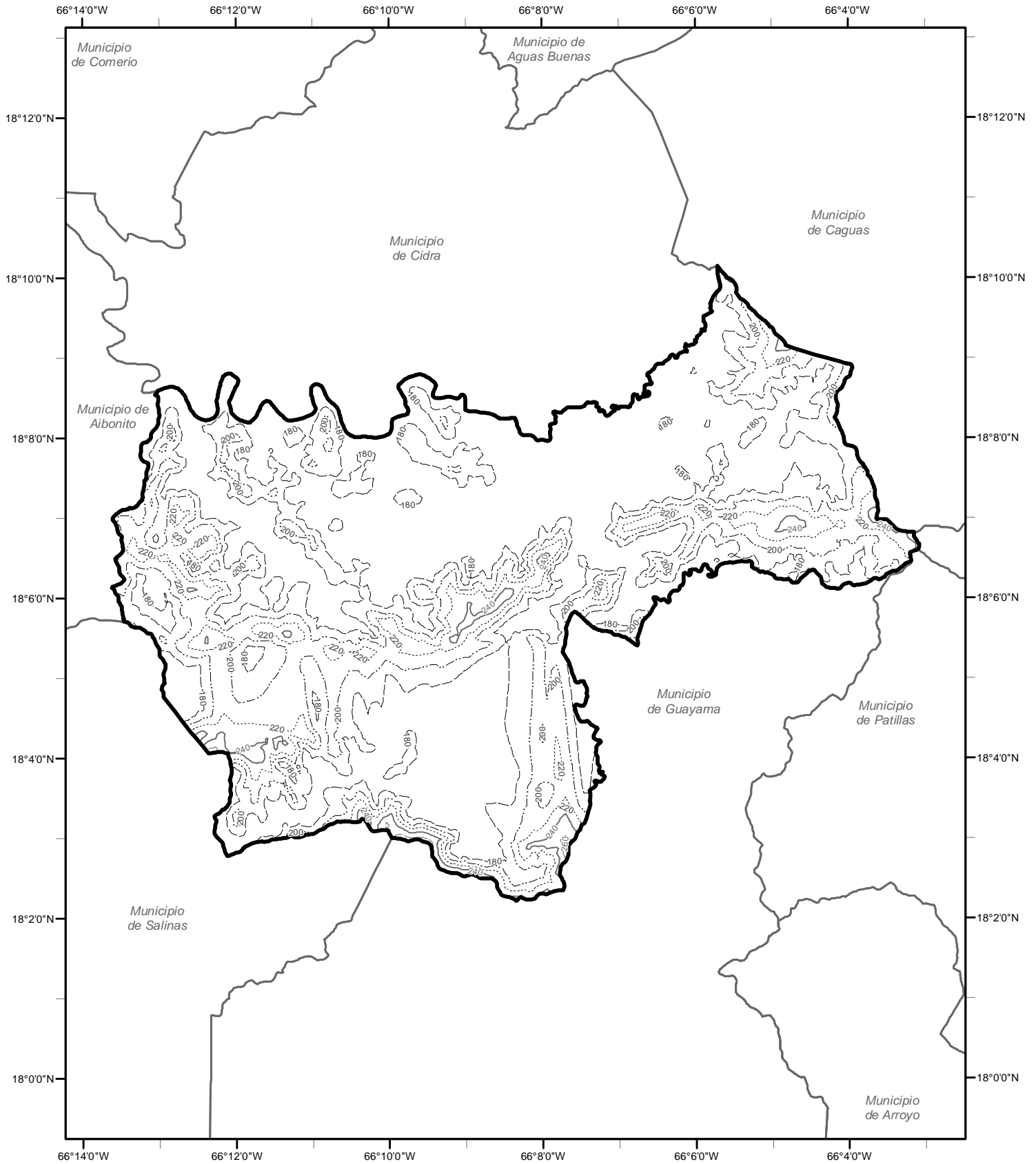


### Risk Category III Wind Contour (mph)

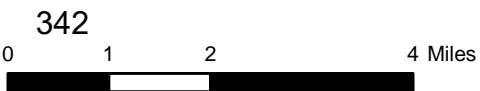
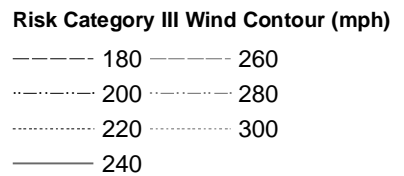
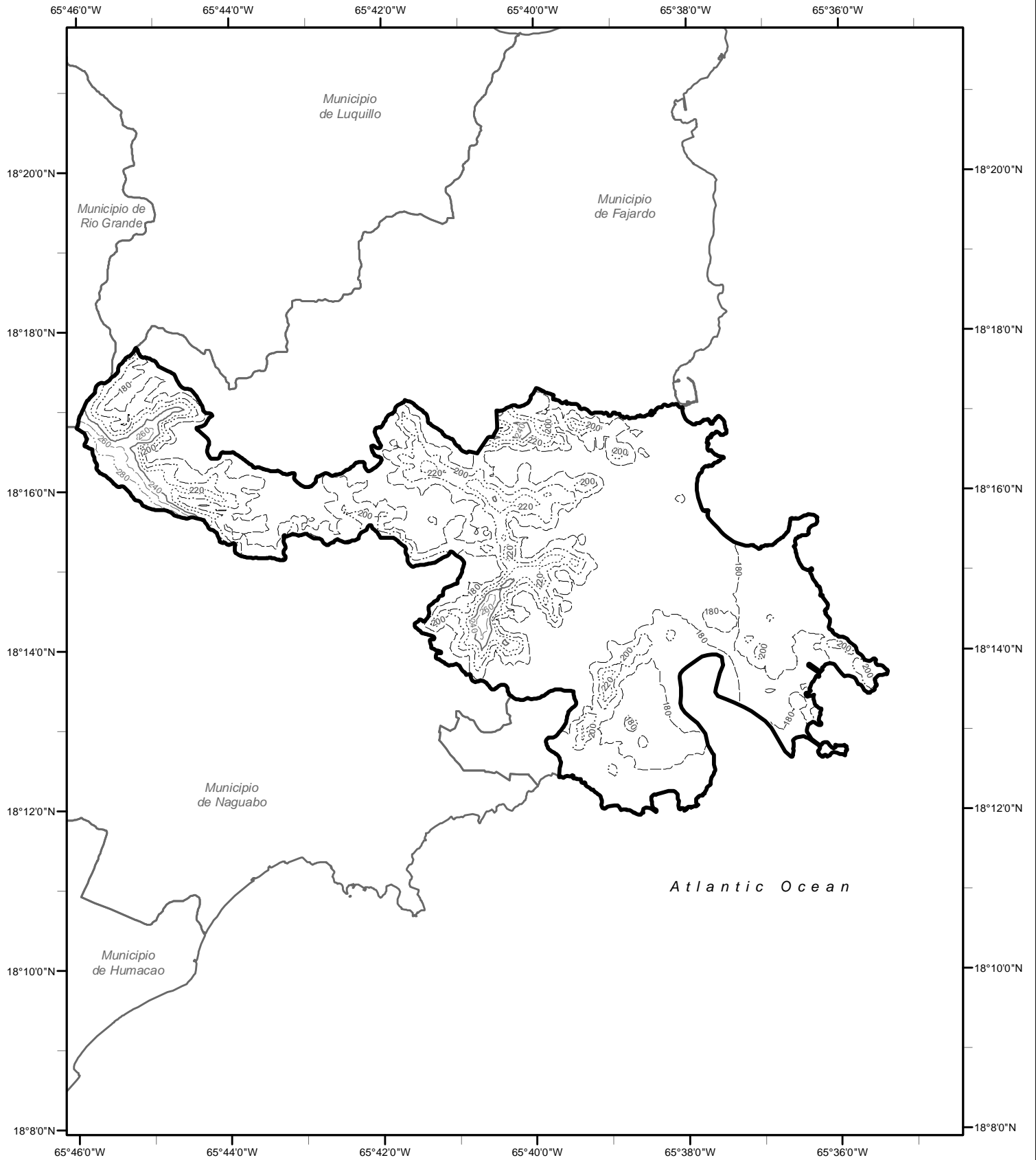


# Municipio de Cayey

## Risk Category III Effective Wind Speed Map (mph)



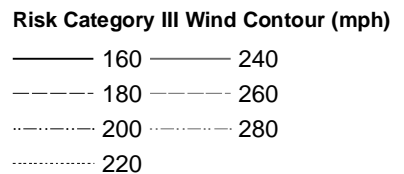
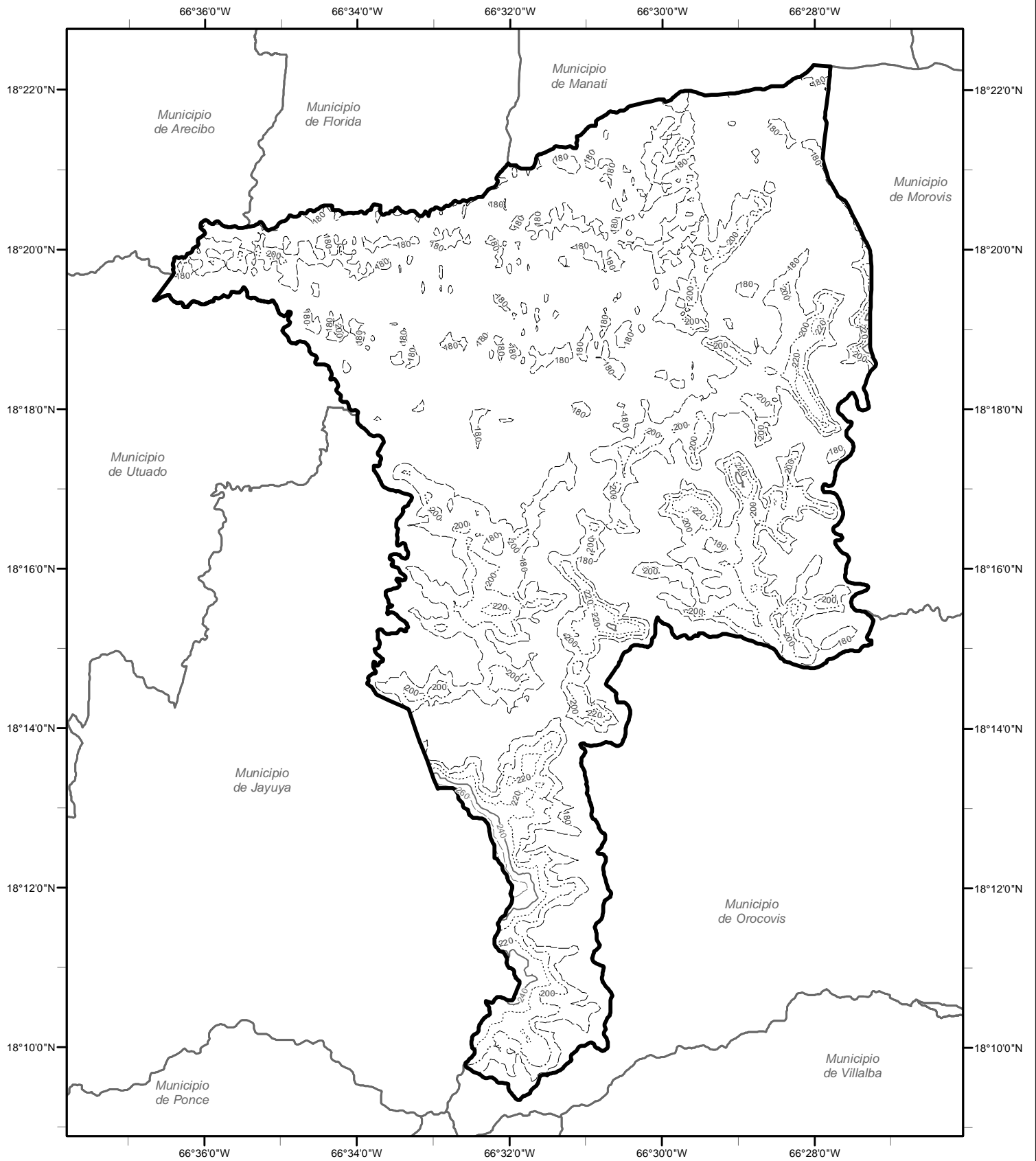
# Municipio de Ceiba Risk Category III Effective Wind Speed Map (mph)



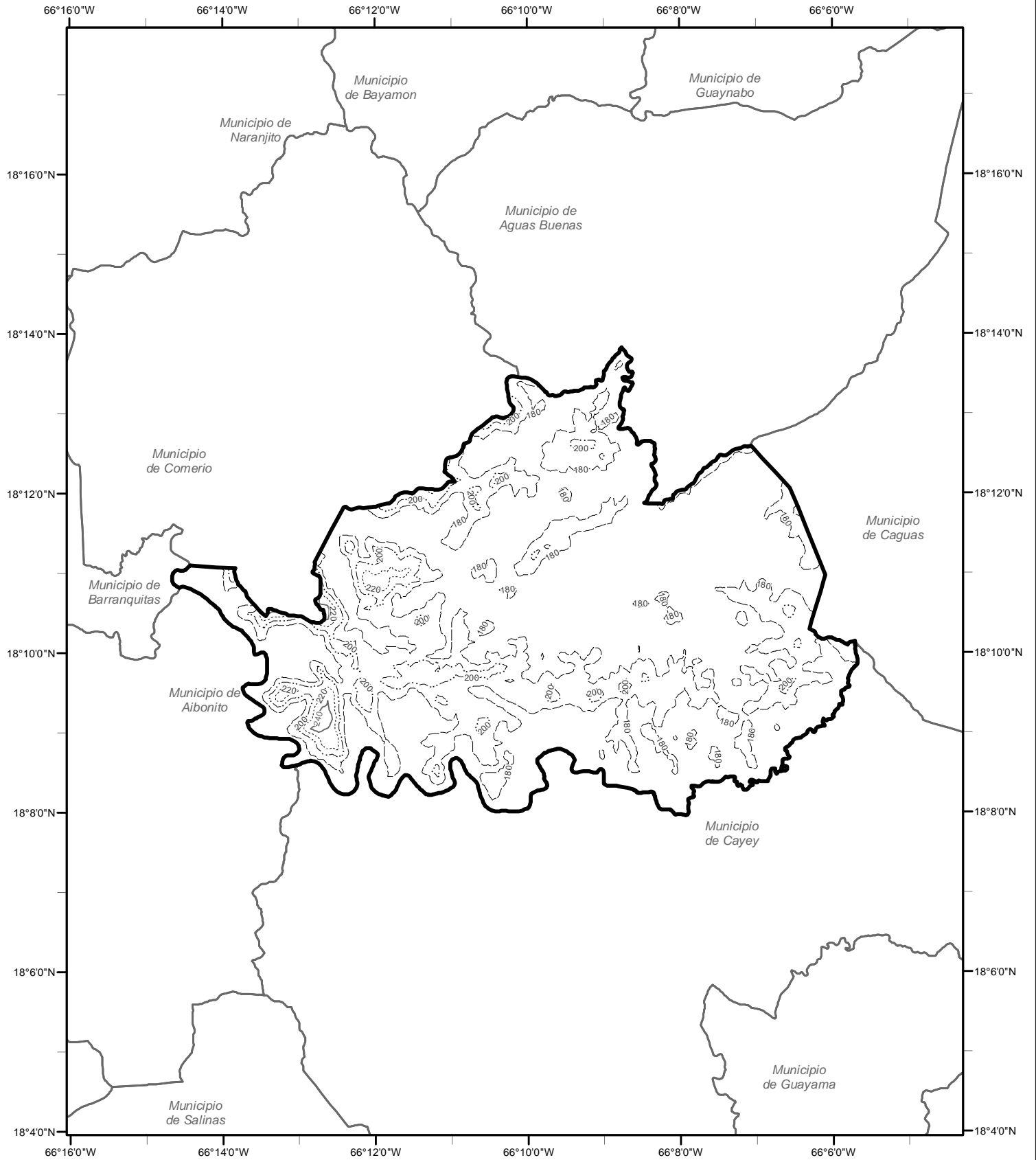


# Municipio de Ciales

## Risk Category III Effective Wind Speed Map (mph)

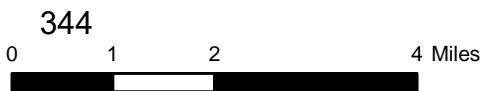


# Municipio de Cidra Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

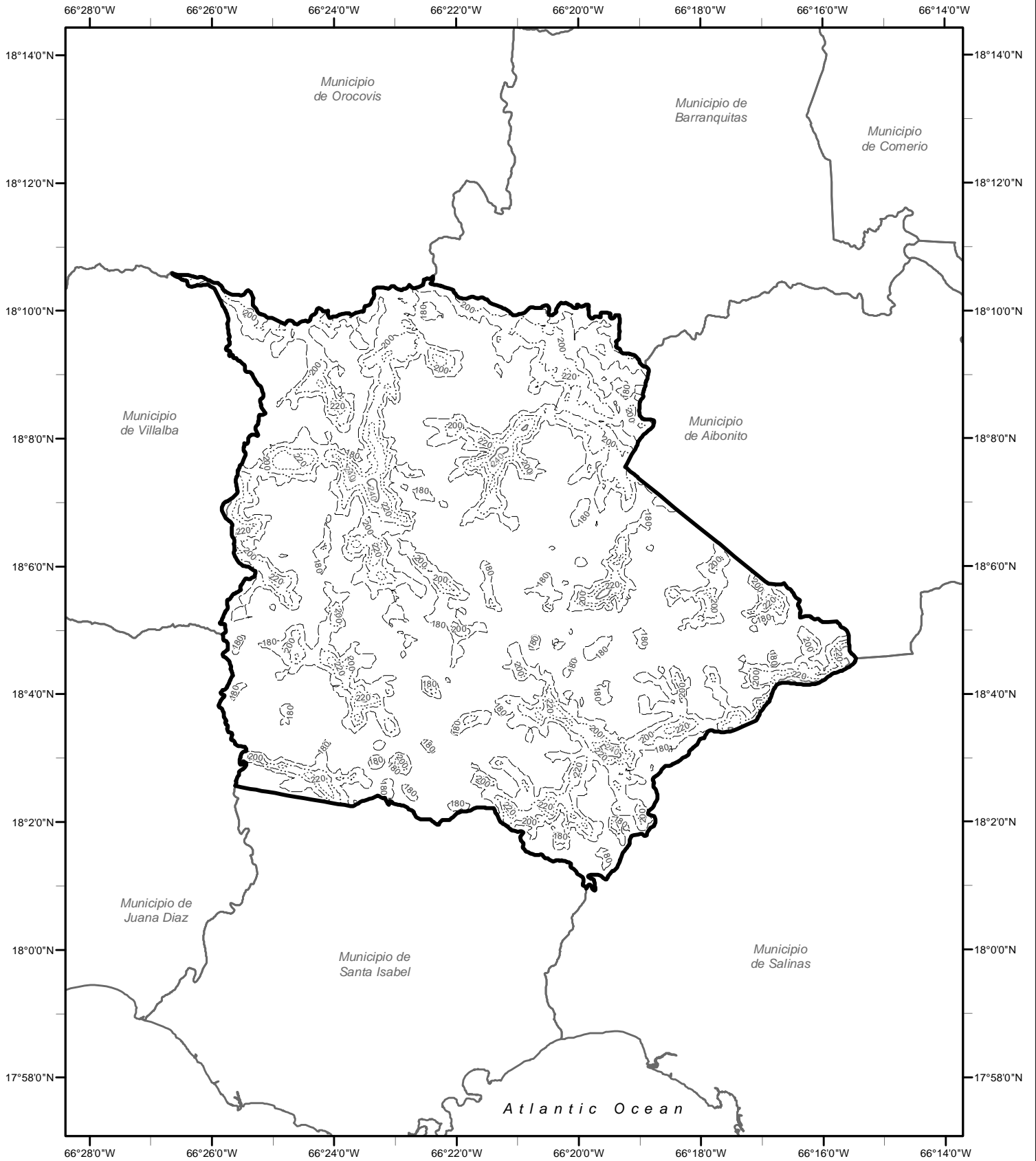
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220 ----- 280



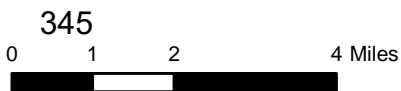
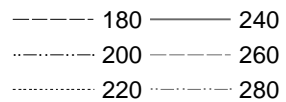
344

# Municipio de Coamo

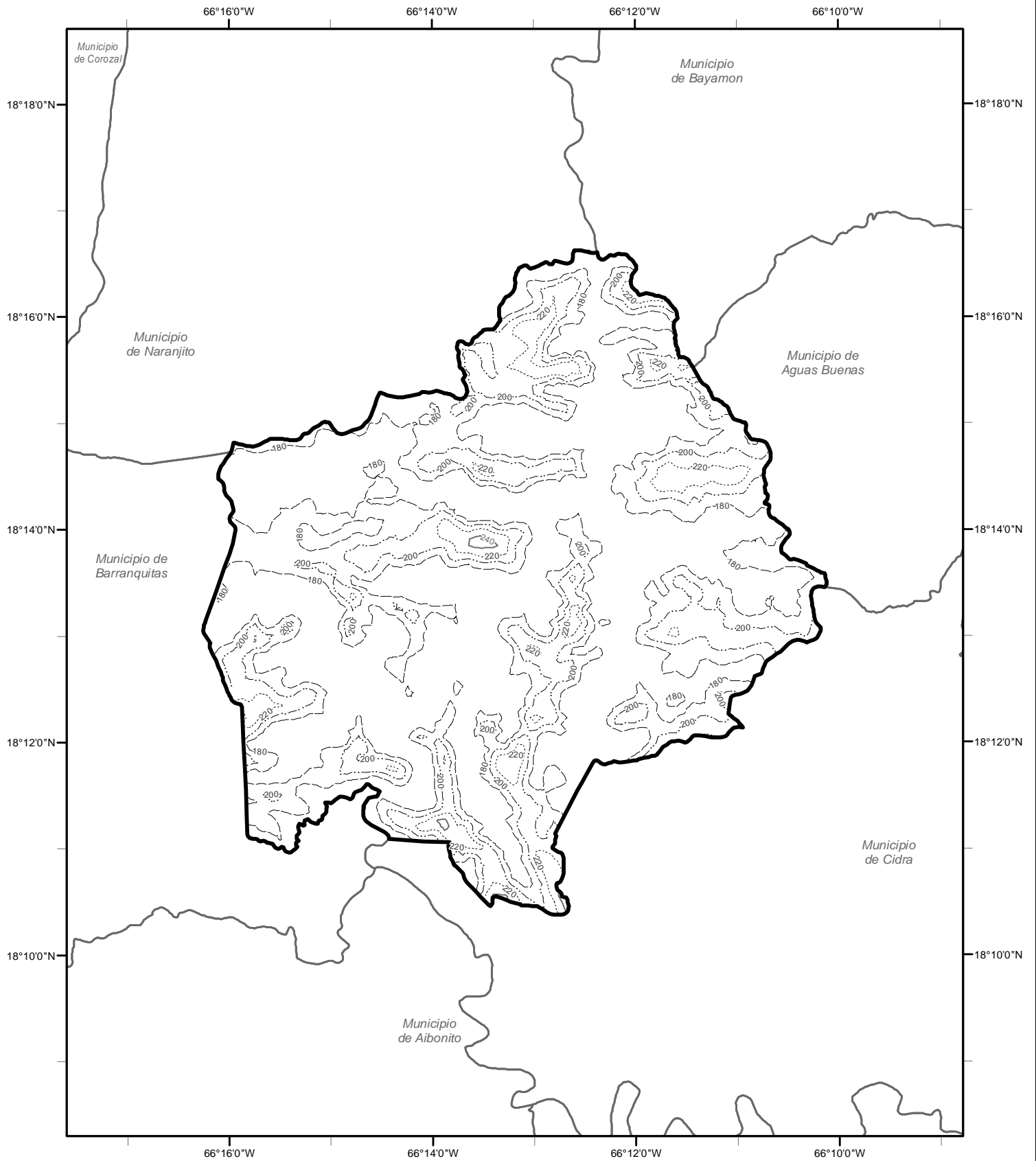
## Risk Category III Effective Wind Speed Map (mph)



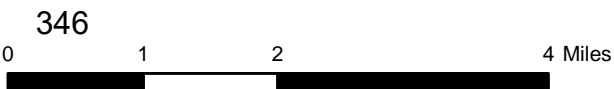
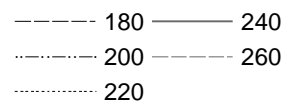
### Risk Category III Wind Contour (mph)



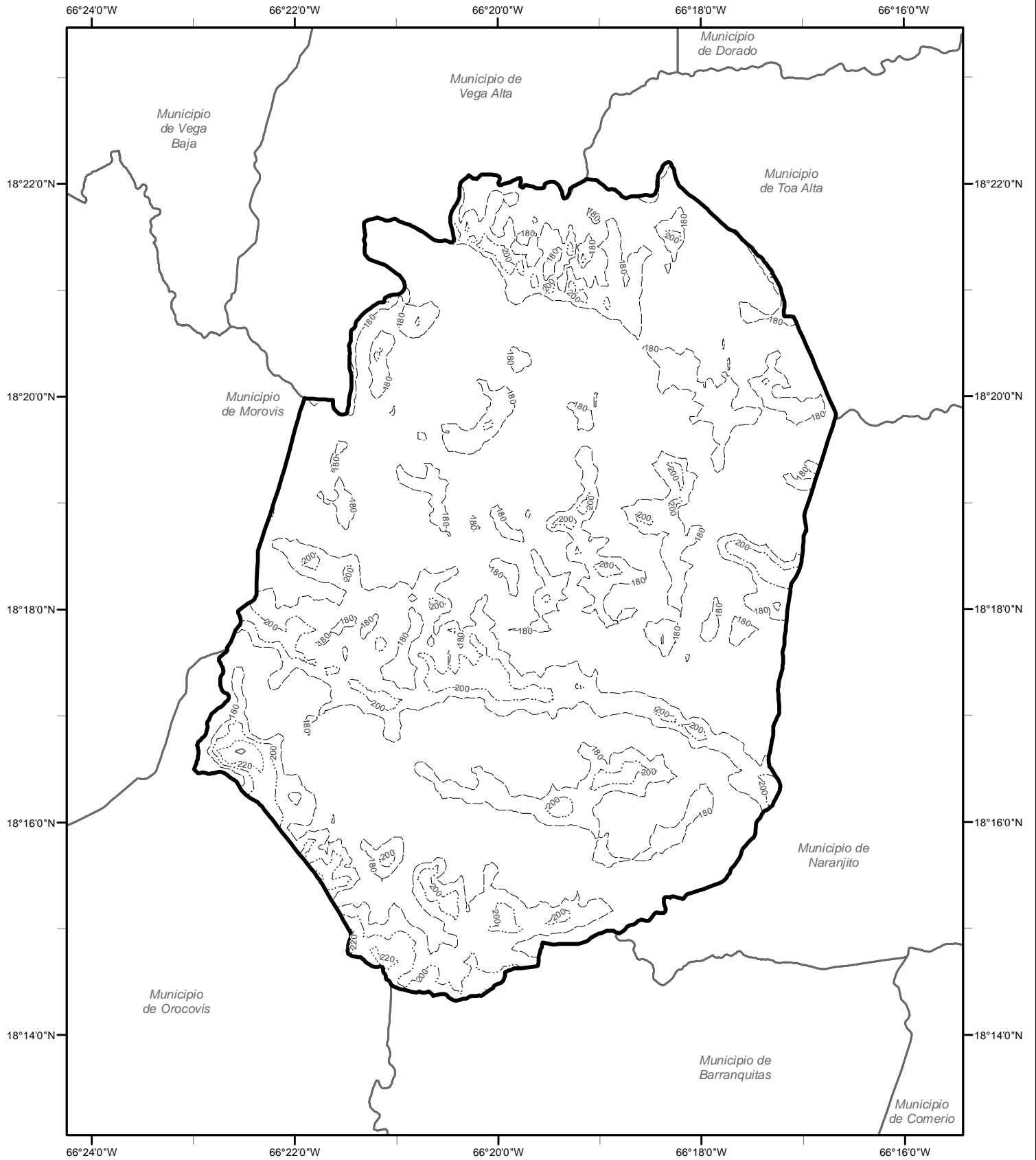
# Municipio de Comerio Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

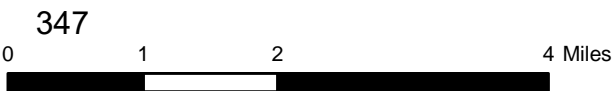


# Municipio de Corozal Risk Category III Effective Wind Speed Map (mph)



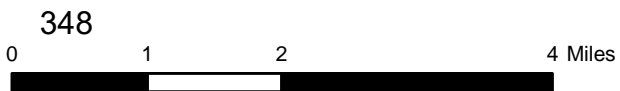
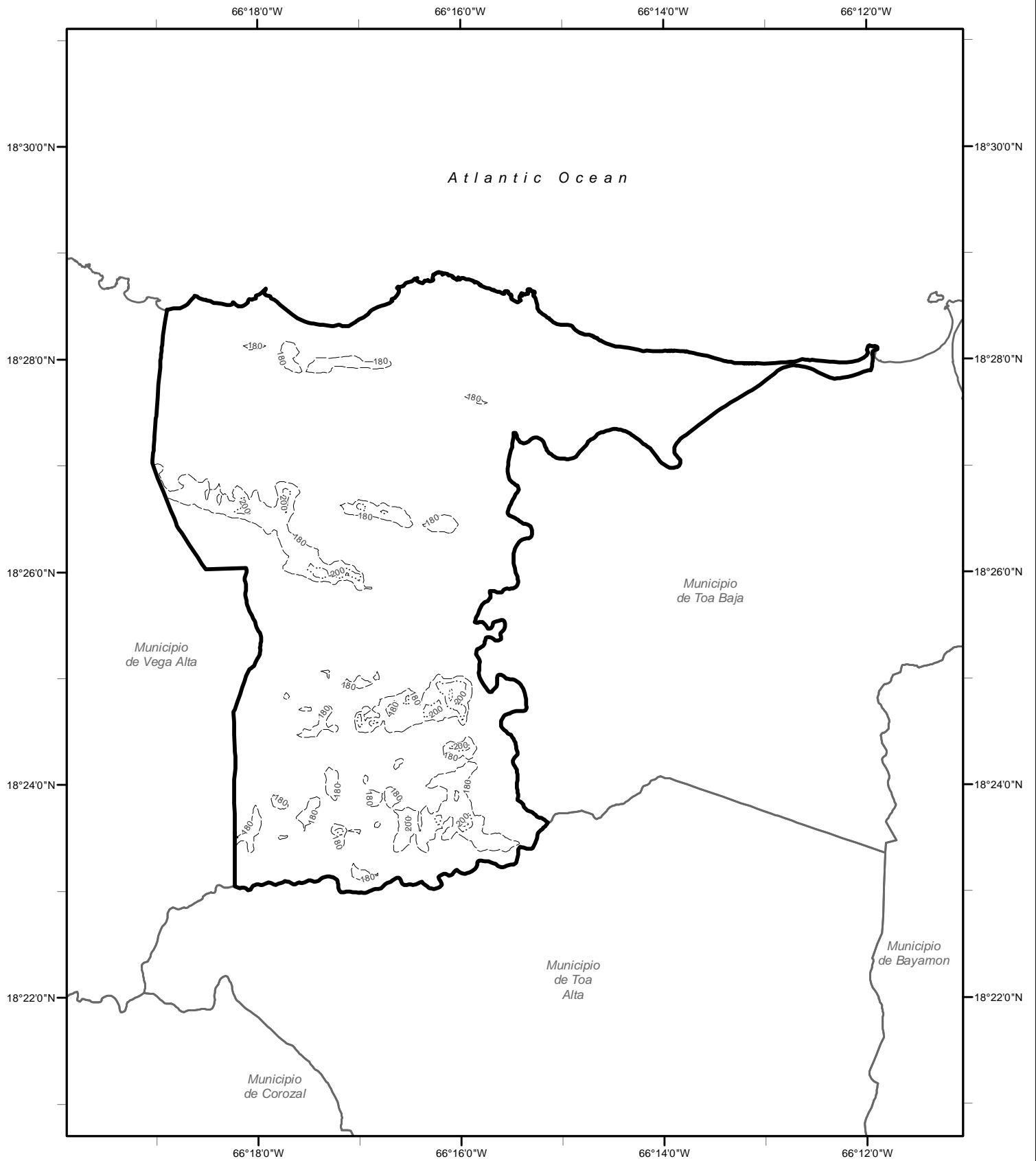
### Risk Category III Wind Contour (mph)

- 160
- - - - 180
- · - · 200
- · · · 220
- - - - 240

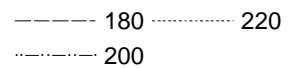


347

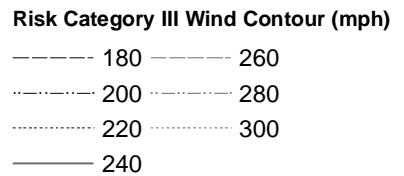
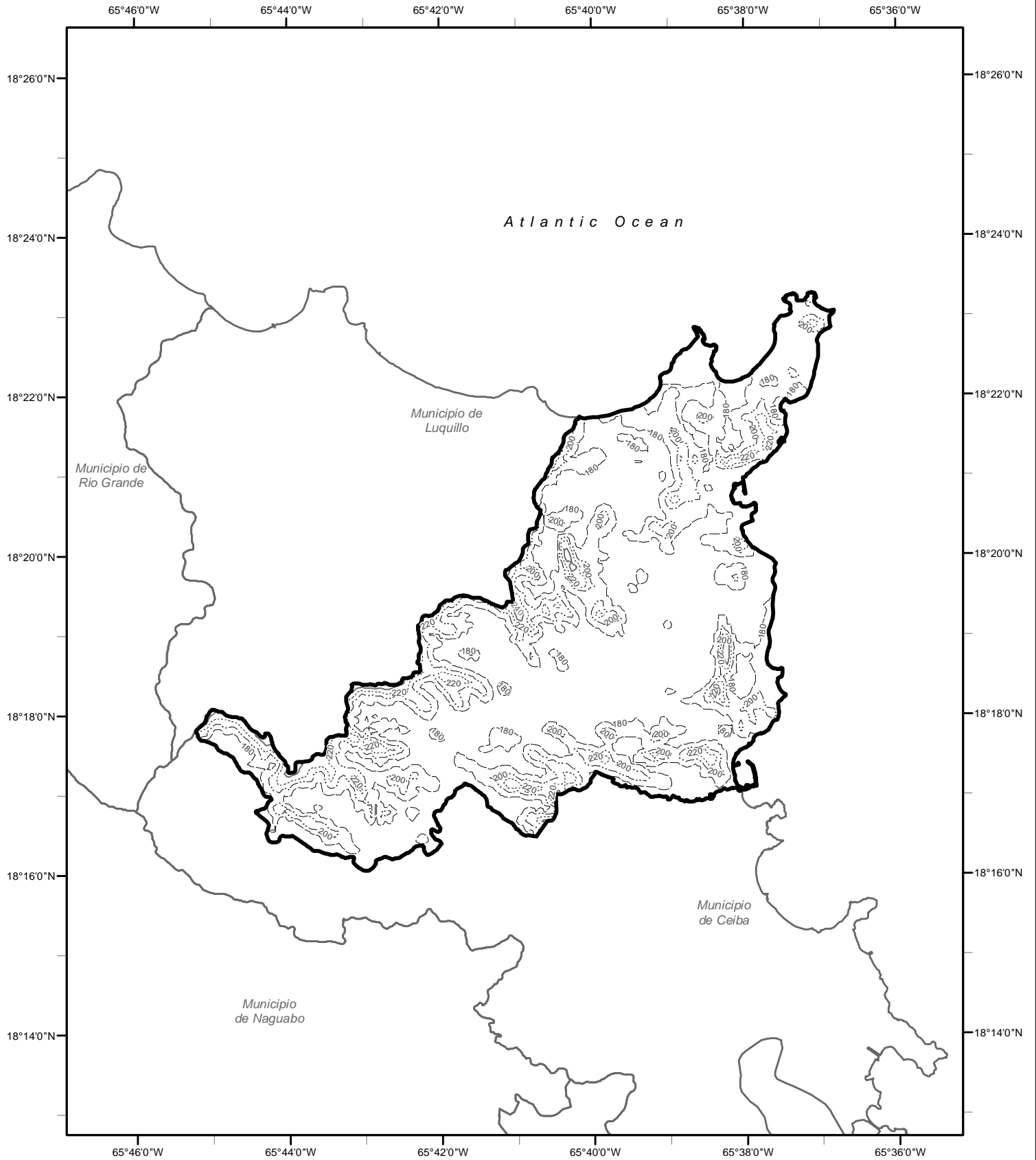
# Municipio de Dorado Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

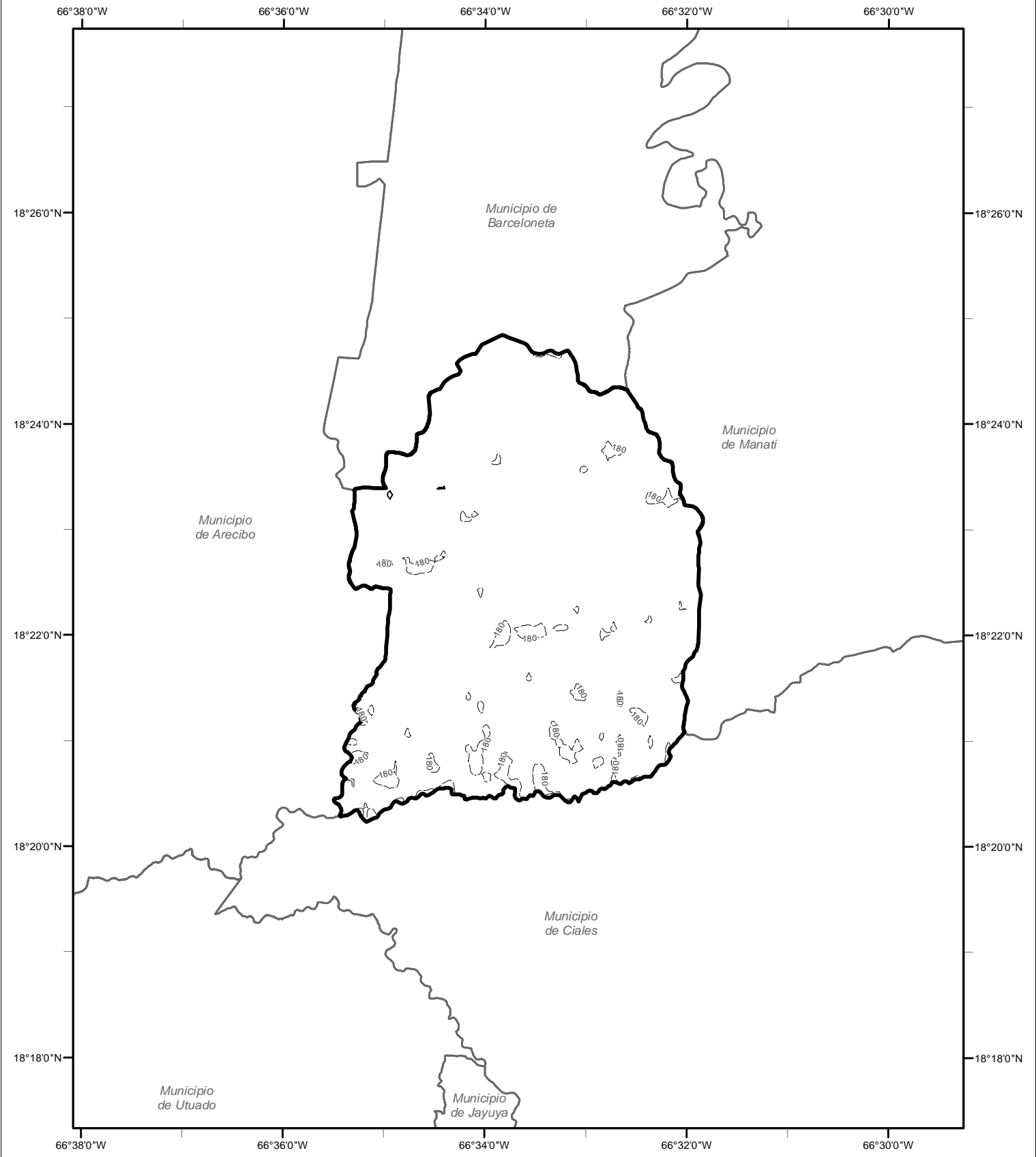


# Municipio de Fajardo Risk Category III Effective Wind Speed Map (mph)

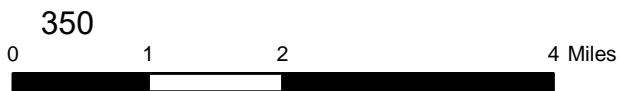
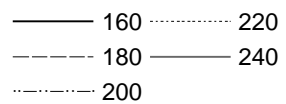


# Municipio de Florida

## Risk Category III Effective Wind Speed Map (mph)

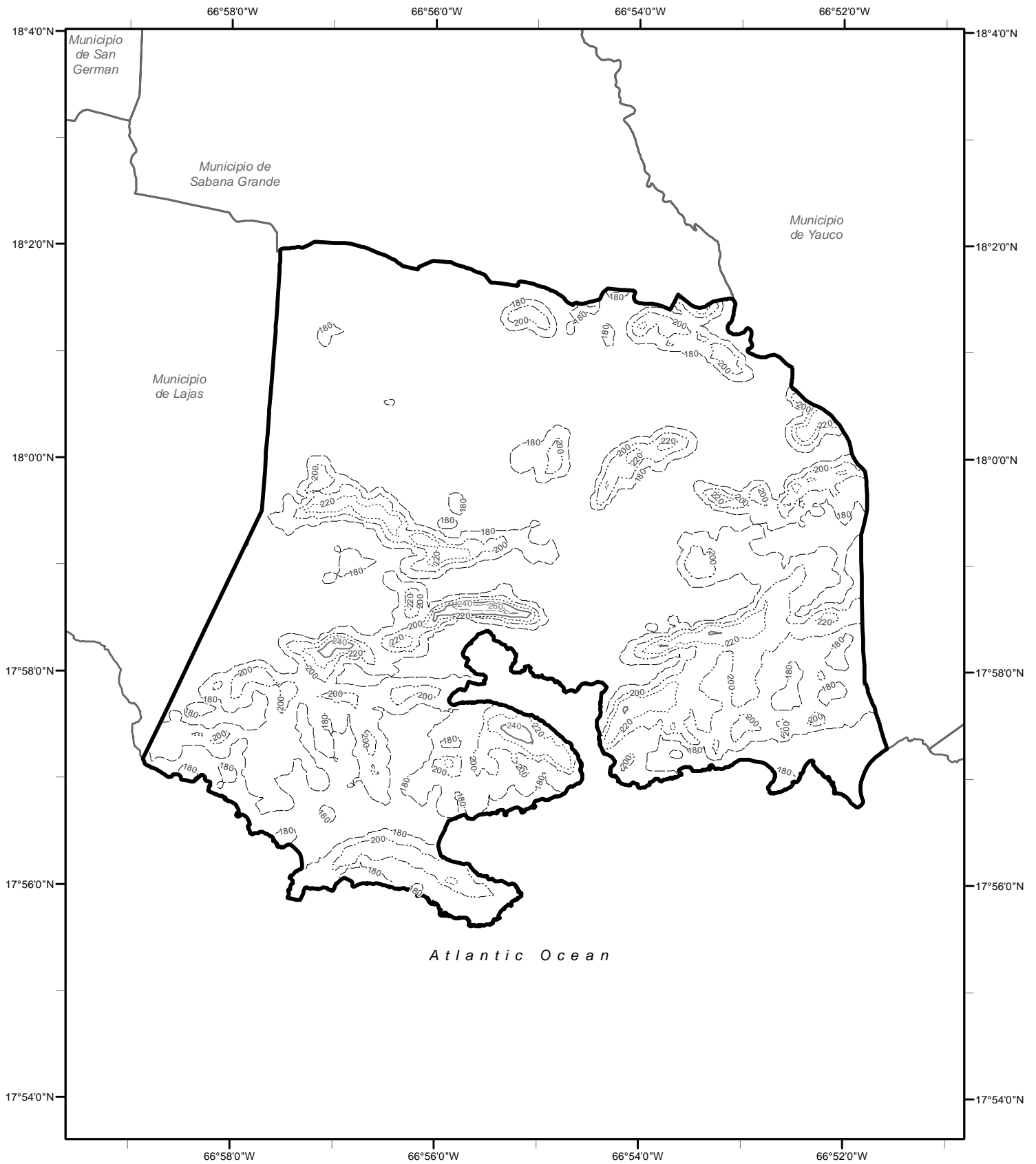


### Risk Category III Wind Contour (mph)

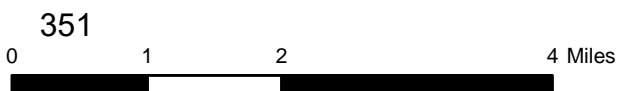
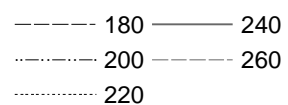




# Municipio de Guanica Risk Category III Effective Wind Speed Map (mph)

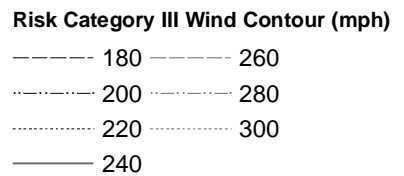
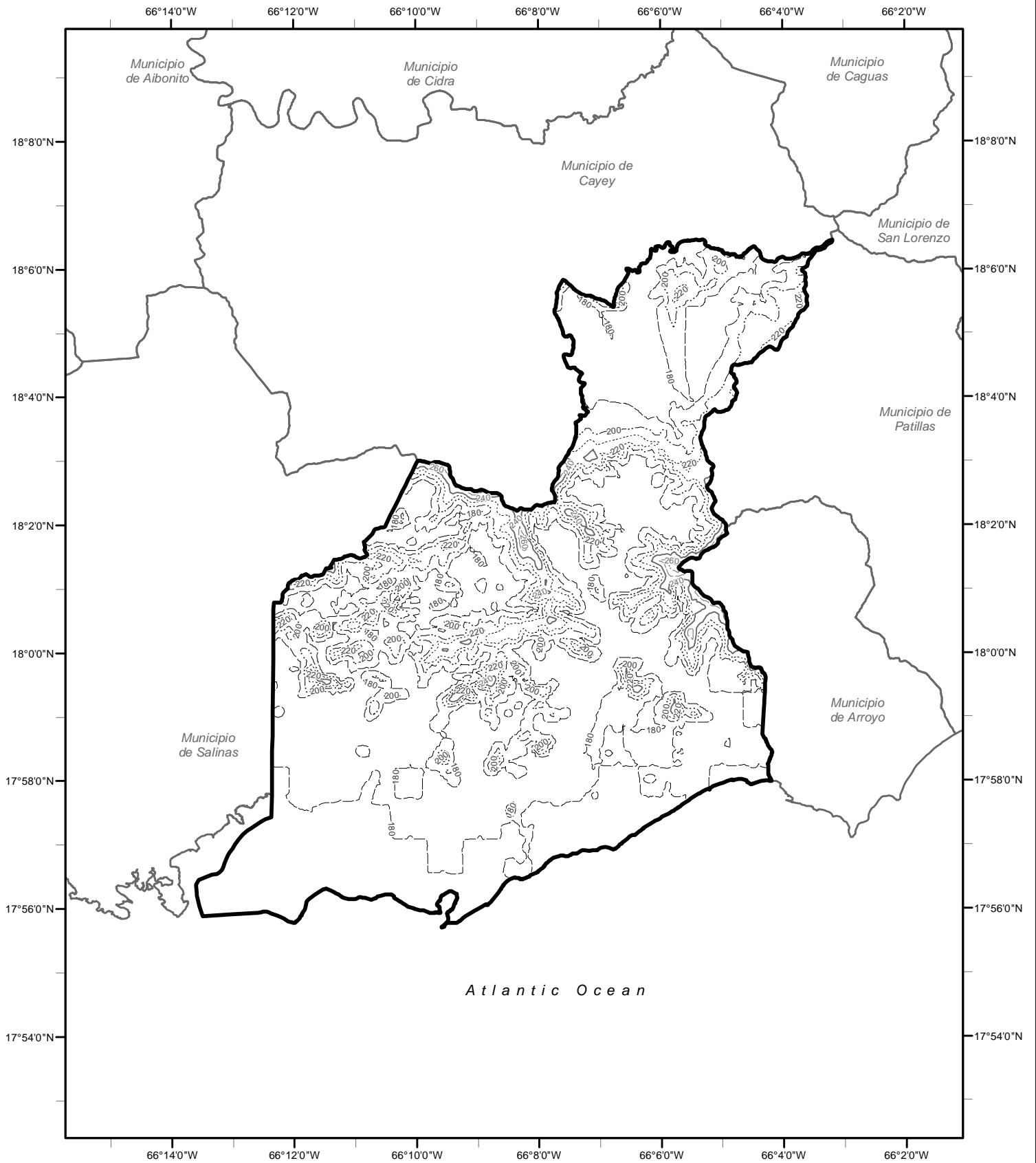


### Risk Category III Wind Contour (mph)

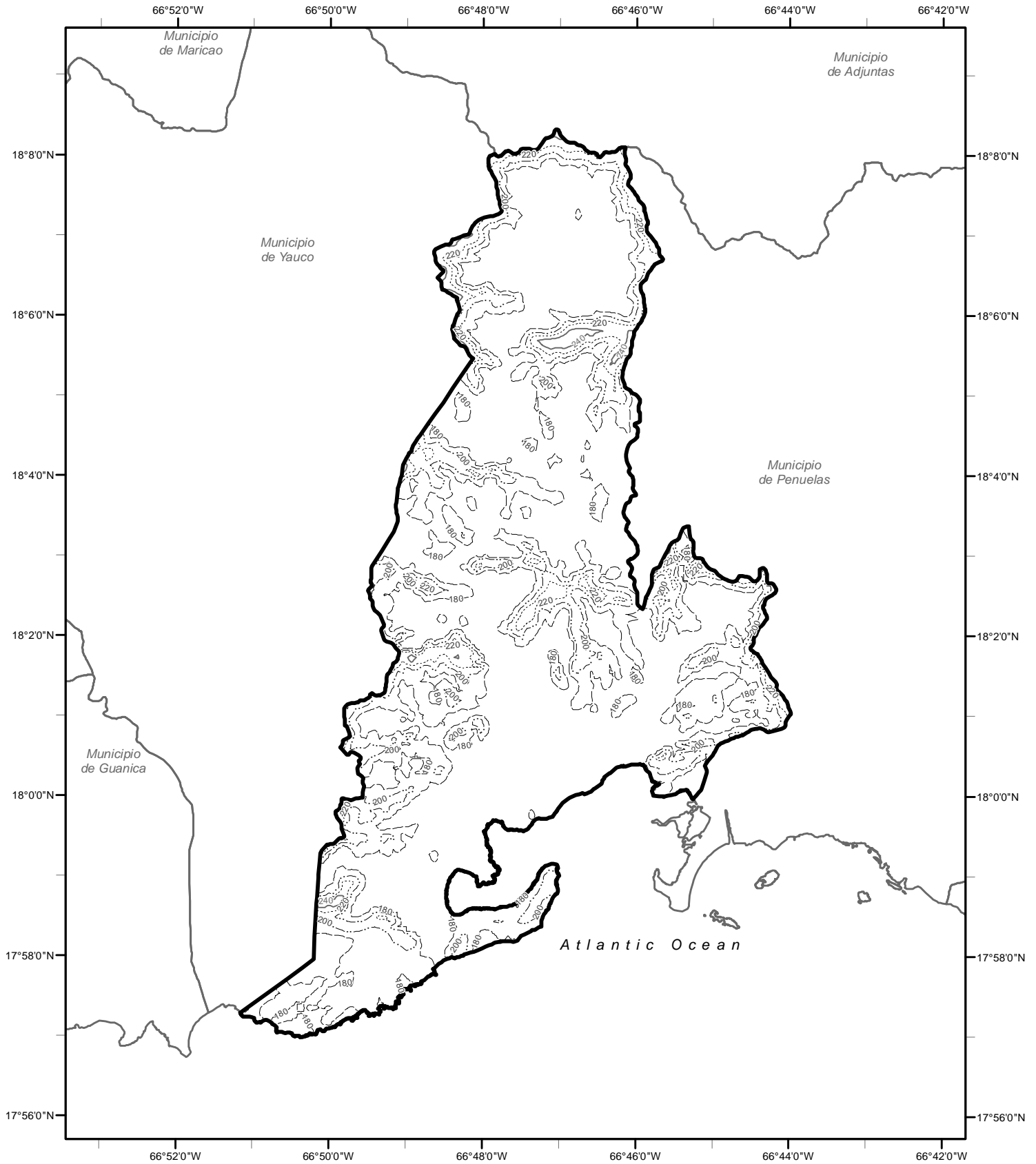


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# Municipio de Guayama Risk Category III Effective Wind Speed Map (mph)

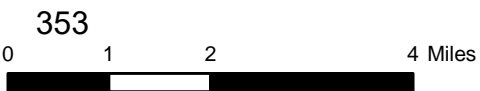


# Municipio de Guayanilla Risk Category III Effective Wind Speed Map (mph)

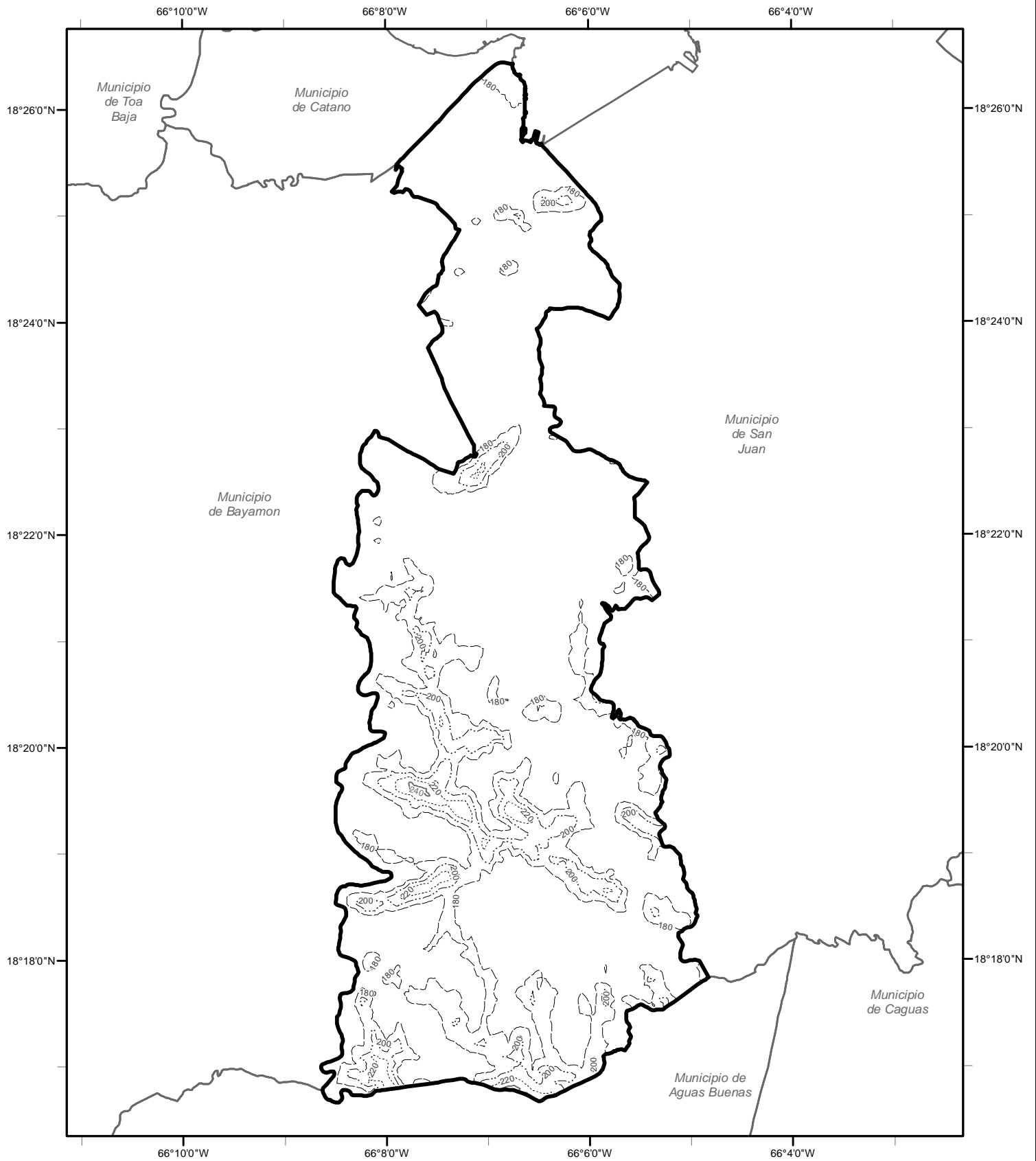


### Risk Category III Wind Contour (mph)

- 180
- ..... 200
- ..... 220
- 240
- 260



# Municipio de Guaynabo Risk Category III Effective Wind Speed Map (mph)



## Risk Category III Wind Contour (mph)

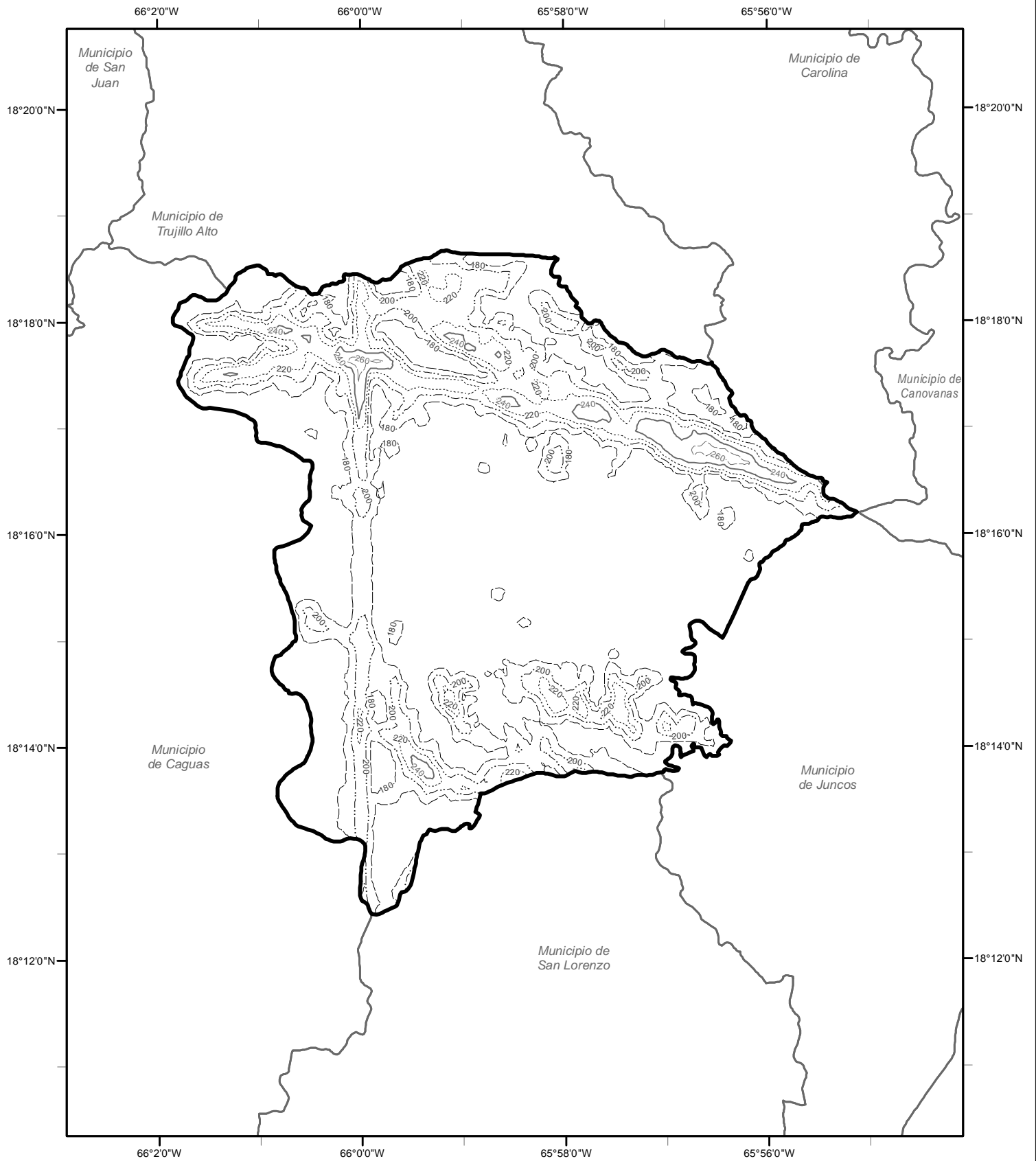
- 180
- ..... 200
- ..... 220
- 240

354

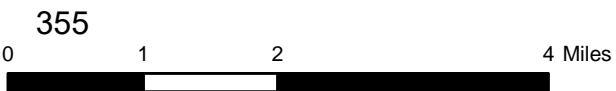
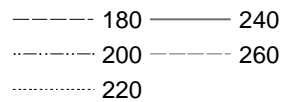
0 1 2 4 Miles

# Municipio de Gurabo

## Risk Category III Effective Wind Speed Map (mph)

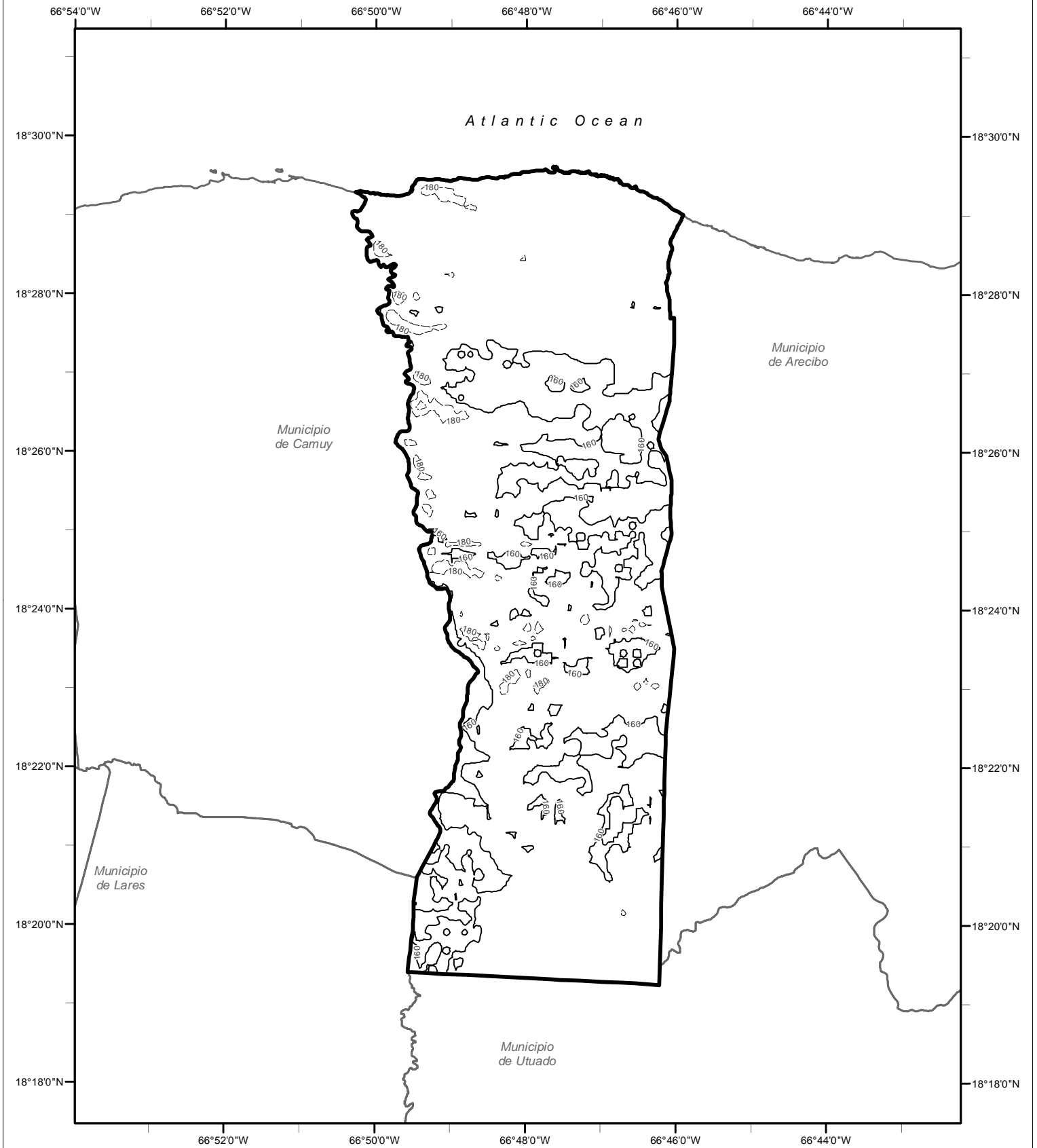


### Risk Category III Wind Contour (mph)



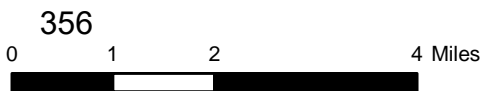
355

# Municipio de Hatillo Risk Category III Effective Wind Speed Map (mph)

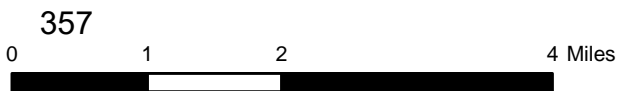
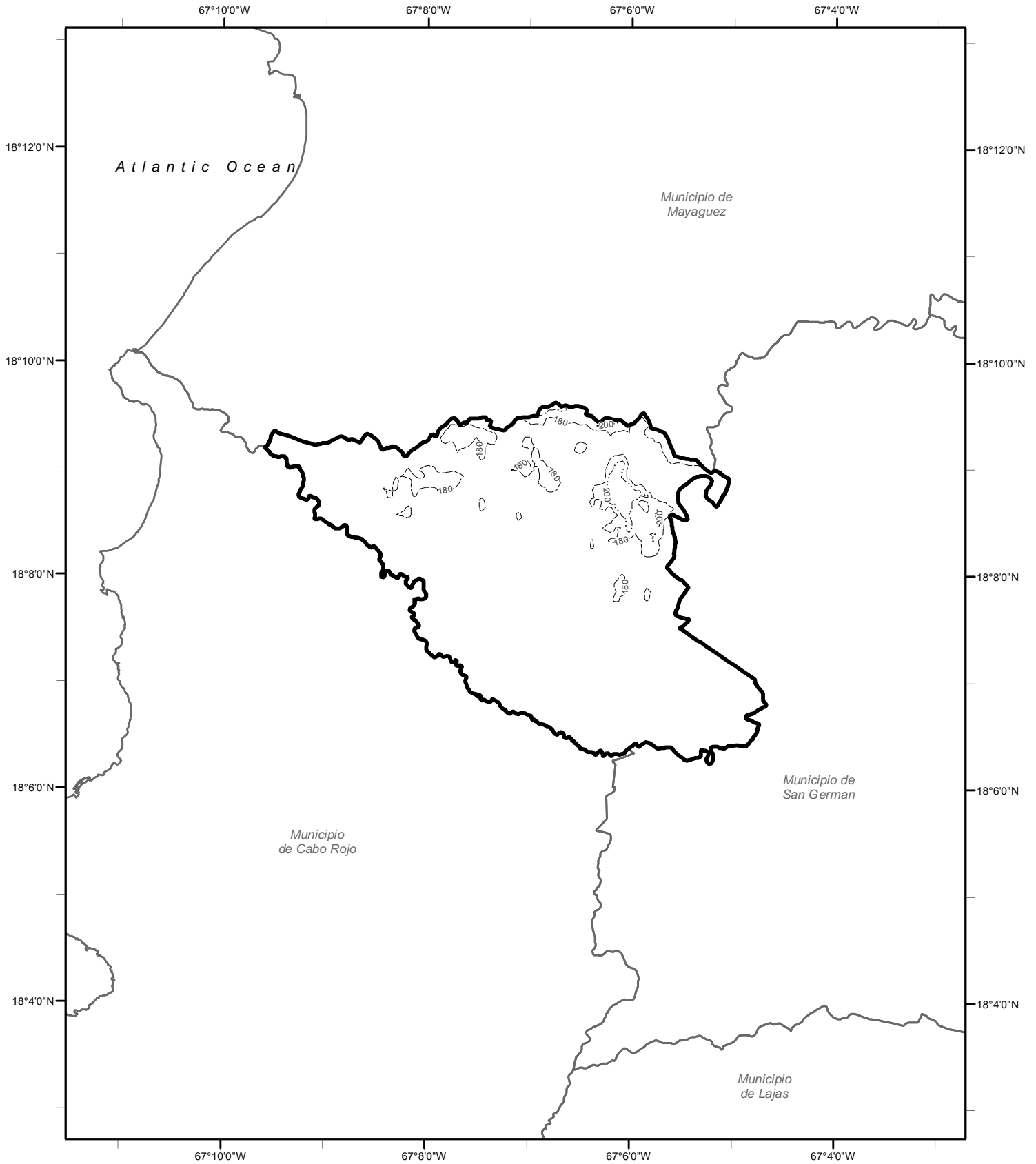


### Risk Category III Wind Contour (mph)

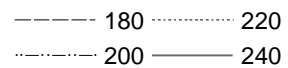
- 160    ····· 200
- - - 180    ····· 220



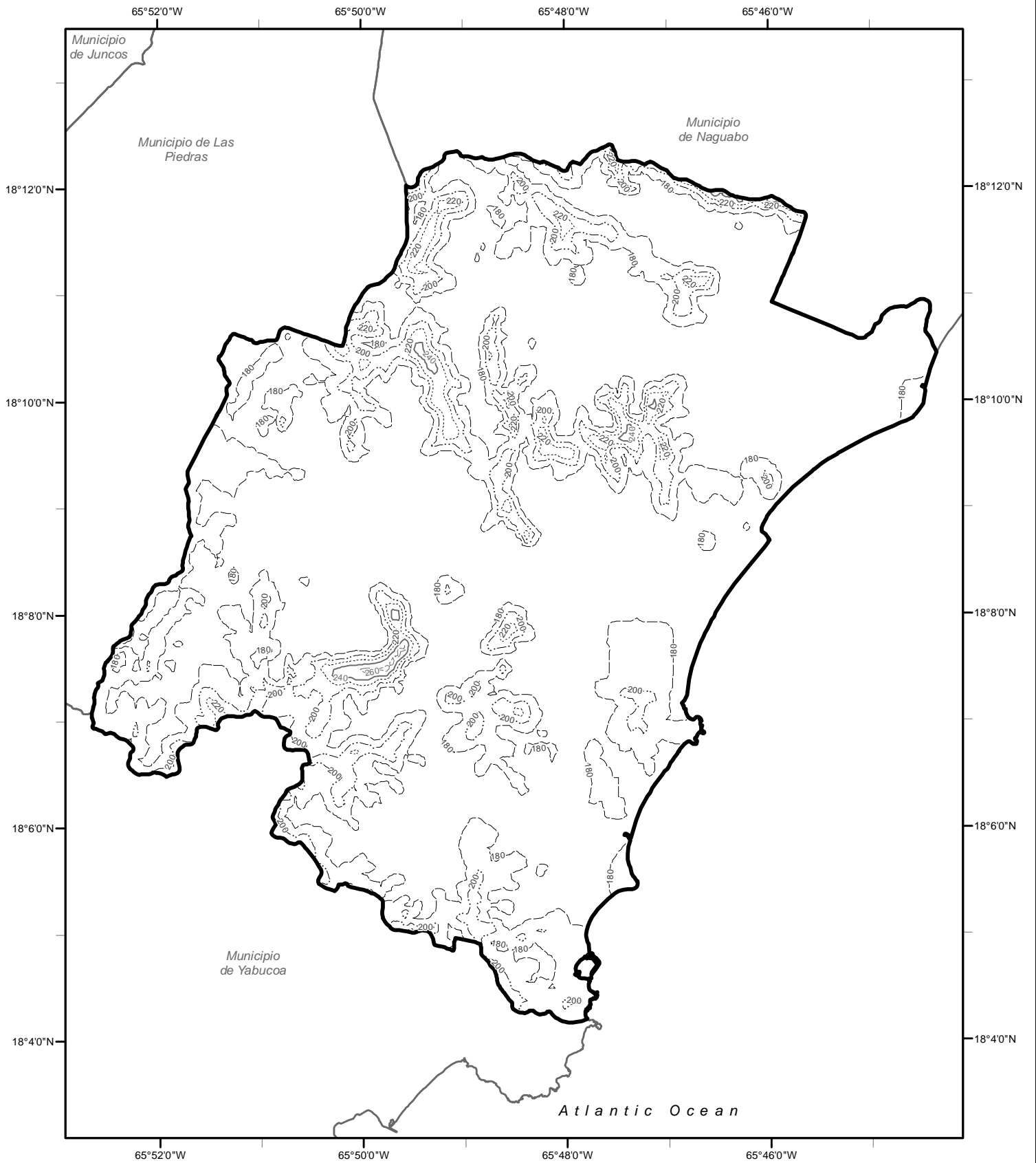
# Municipio de Hormigueros Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

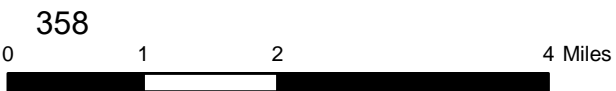


# Municipio de Humacao Risk Category III Effective Wind Speed Map (mph)



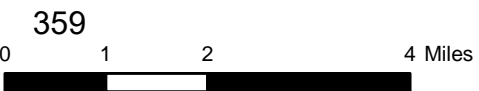
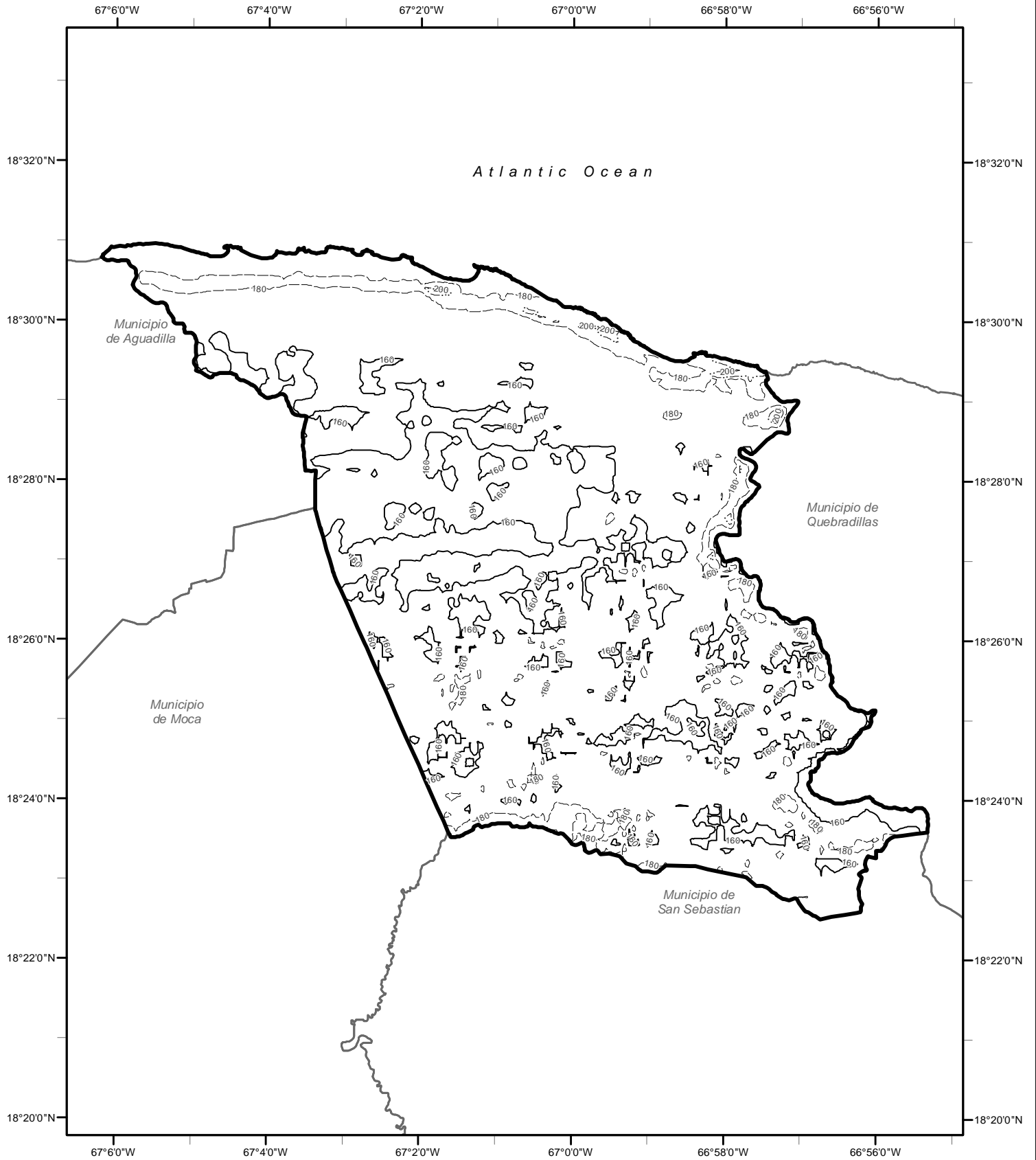
### Risk Category III Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260

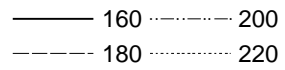




# Municipio de Isabela Risk Category III Effective Wind Speed Map (mph)

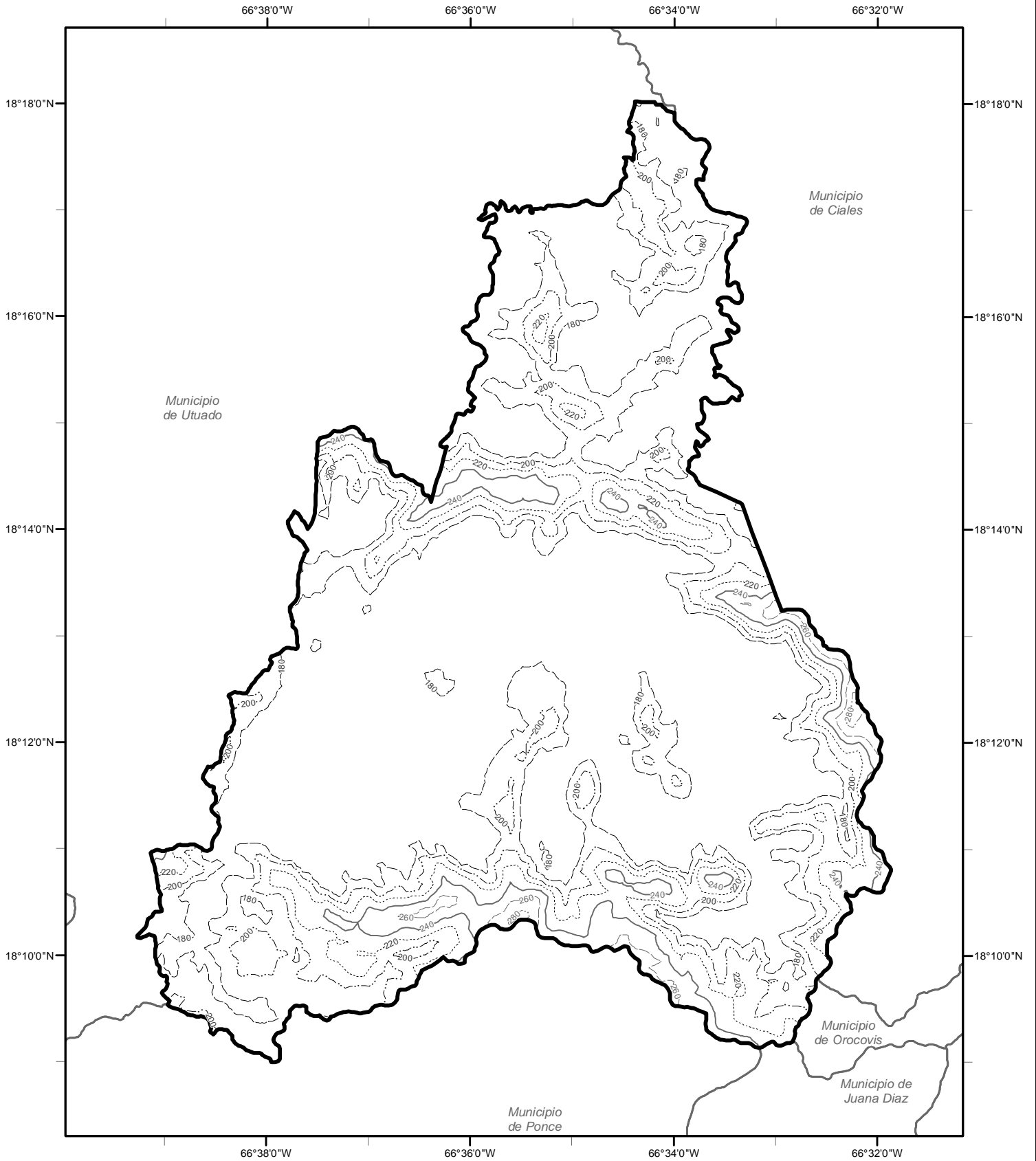


### Risk Category III Wind Contour (mph)

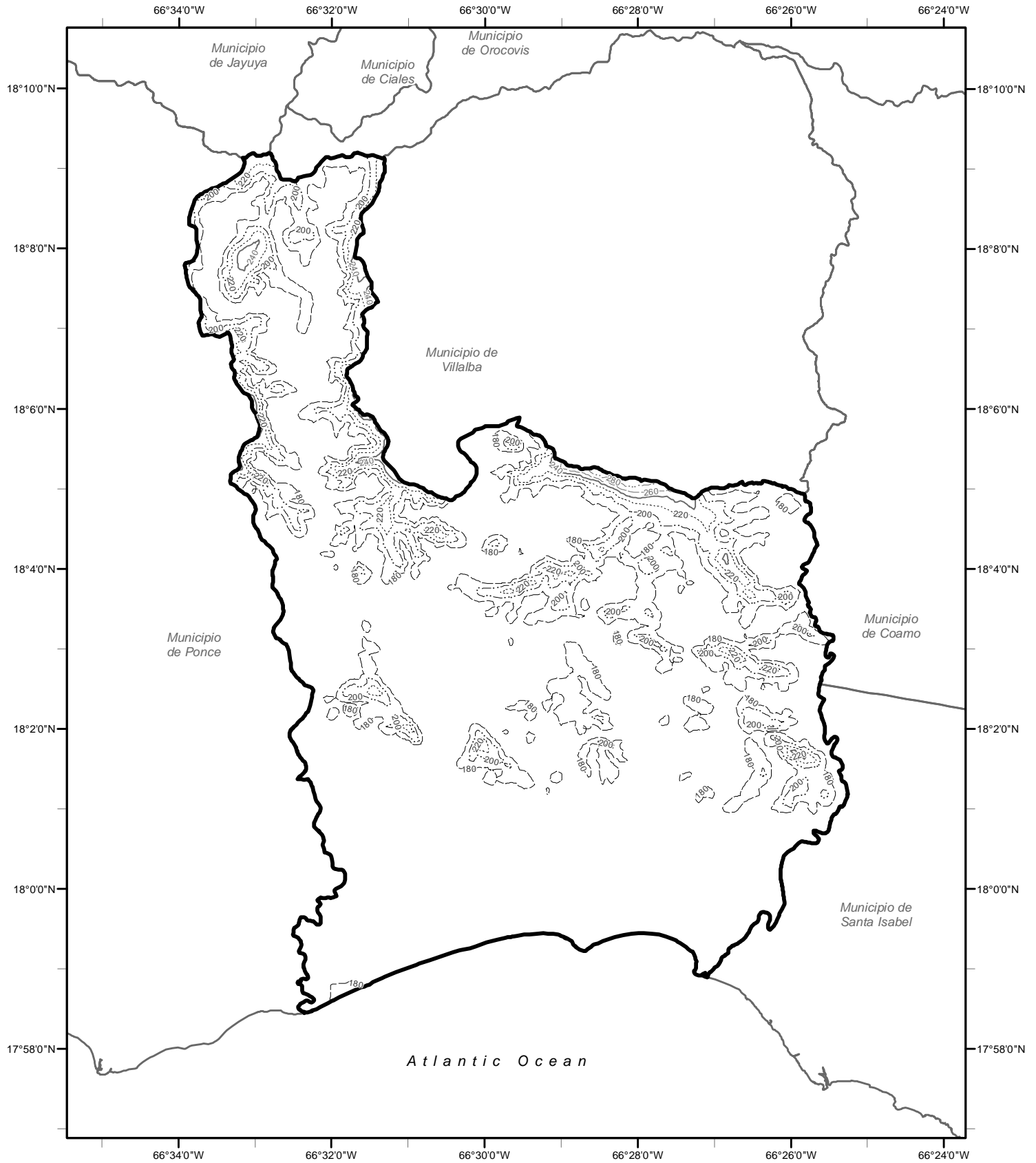


# Municipio de Jayuya

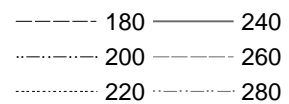
## Risk Category III Effective Wind Speed Map (mph)



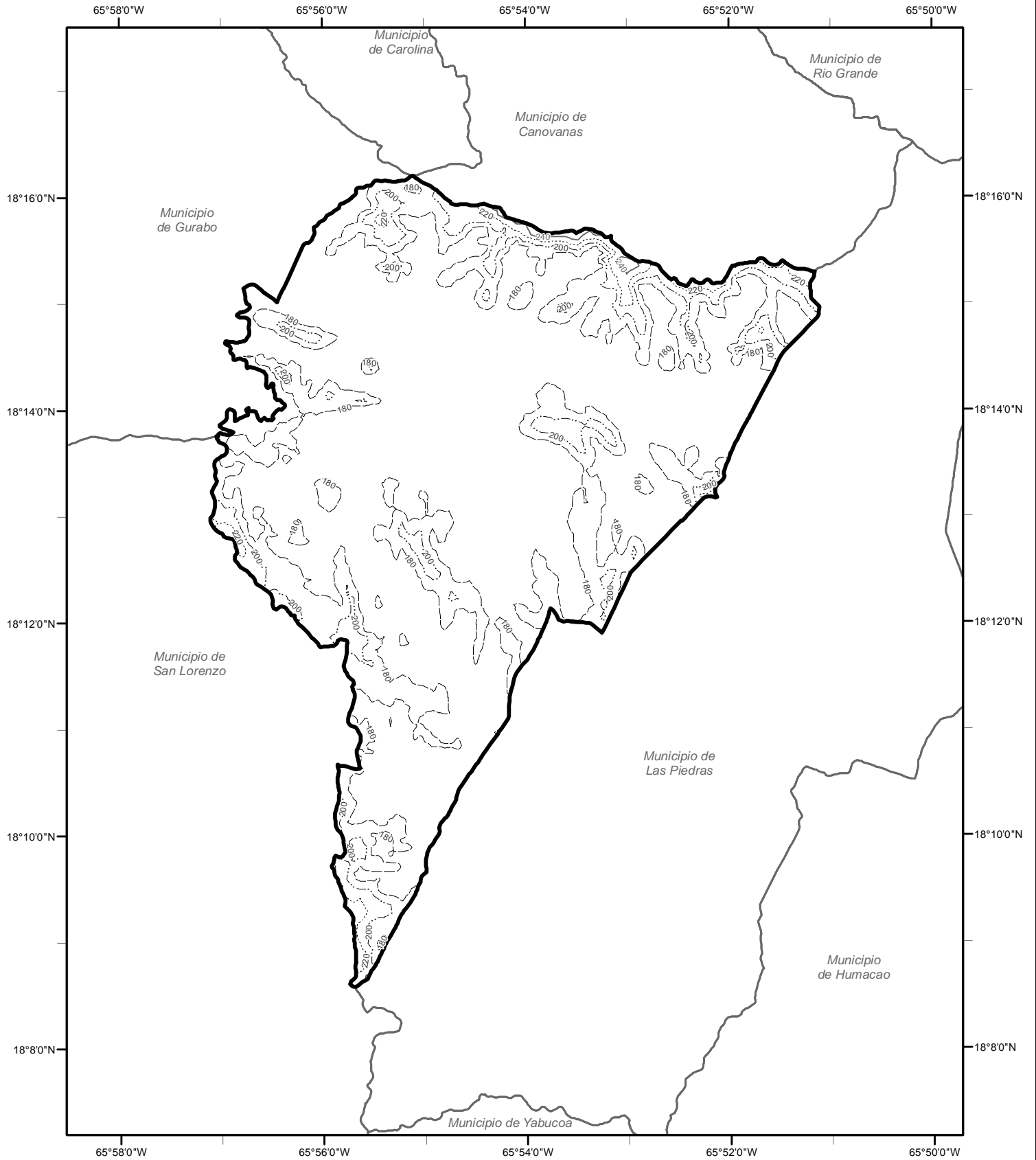
# Municipio de Juana Diaz Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

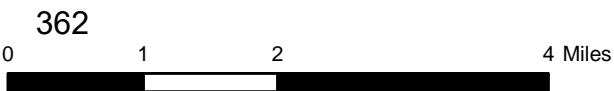


# Municipio de Juncos Risk Category III Effective Wind Speed Map (mph)



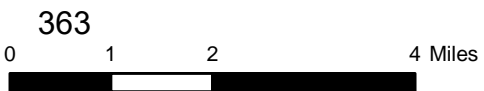
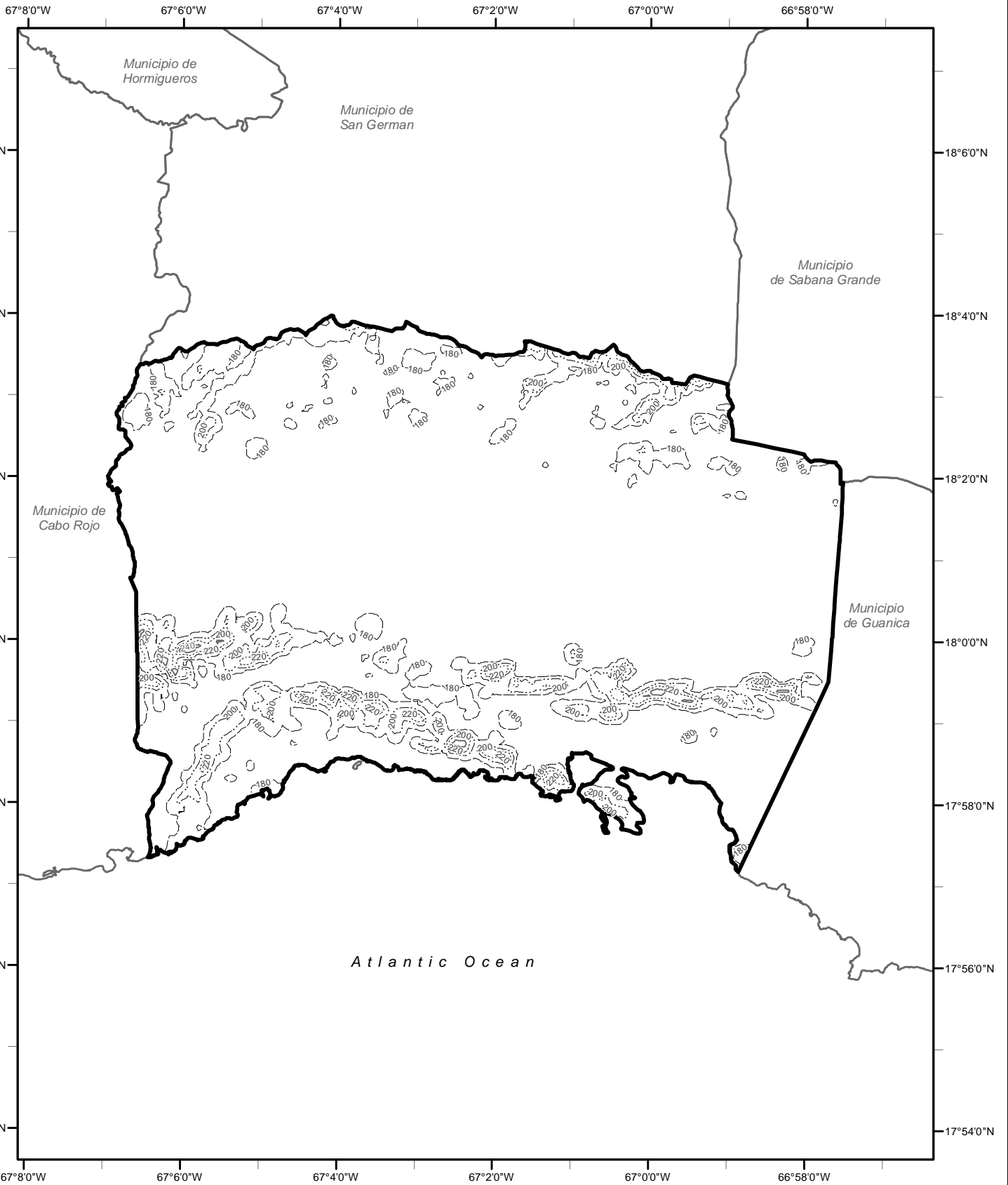
### Risk Category III Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260

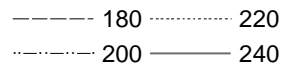


# Municipio de Lajas

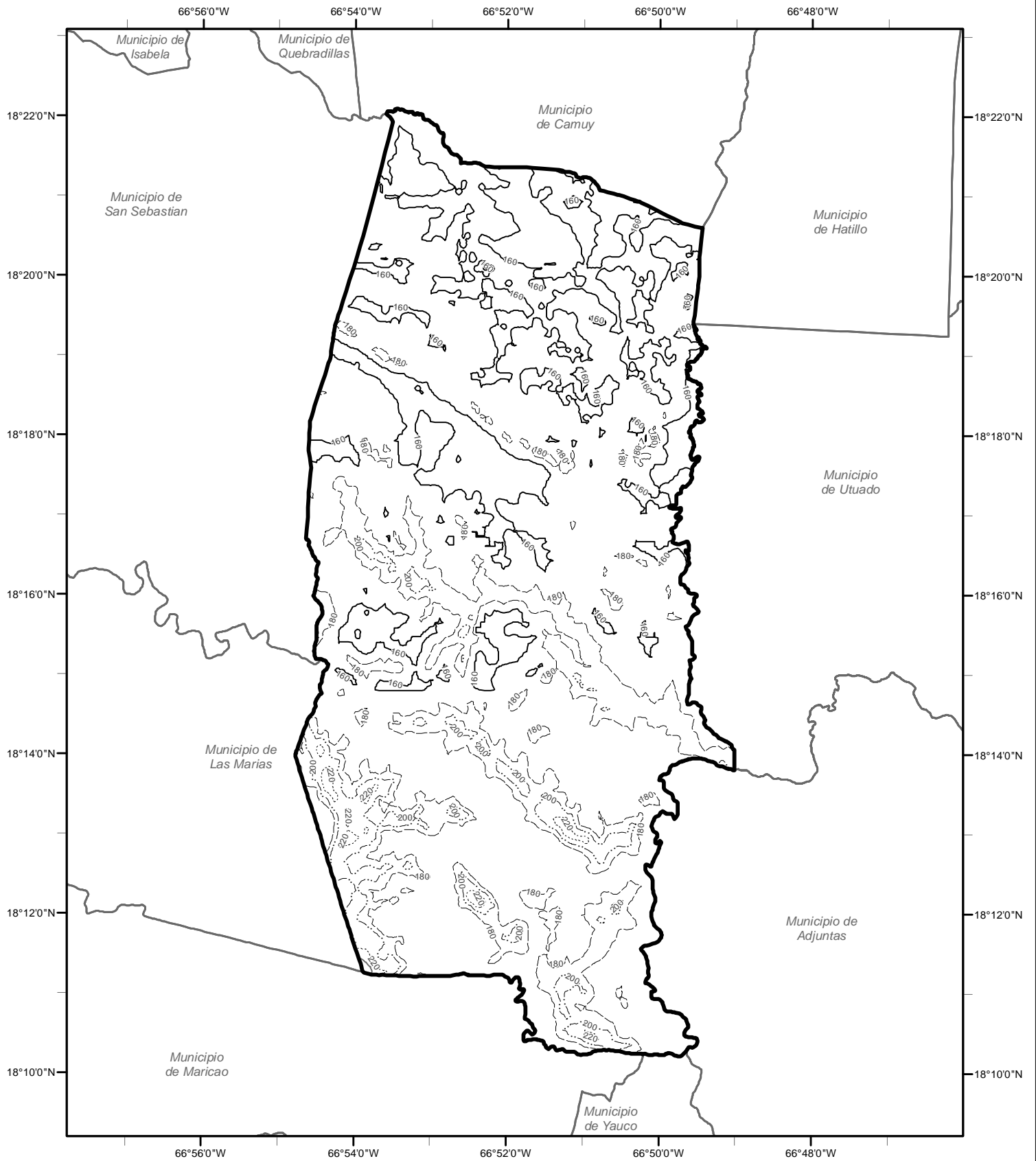
## Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)



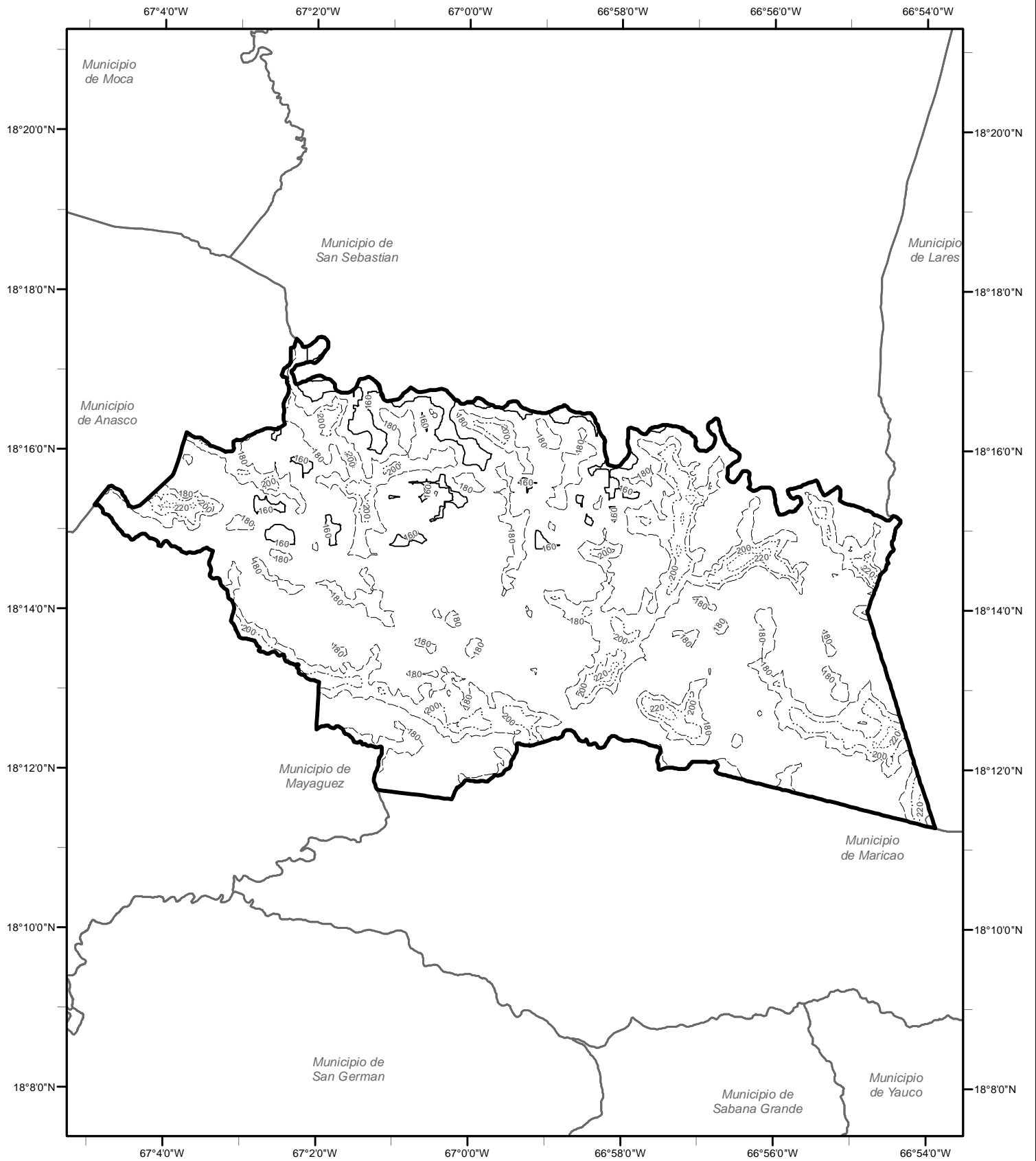
# Municipio de Lares Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

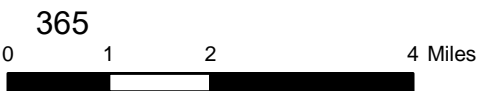
- 160      ····· 220
- - - - 180      ——— 240
- · · · · 200

# Municipio de Las Marias Risk Category III Effective Wind Speed Map (mph)

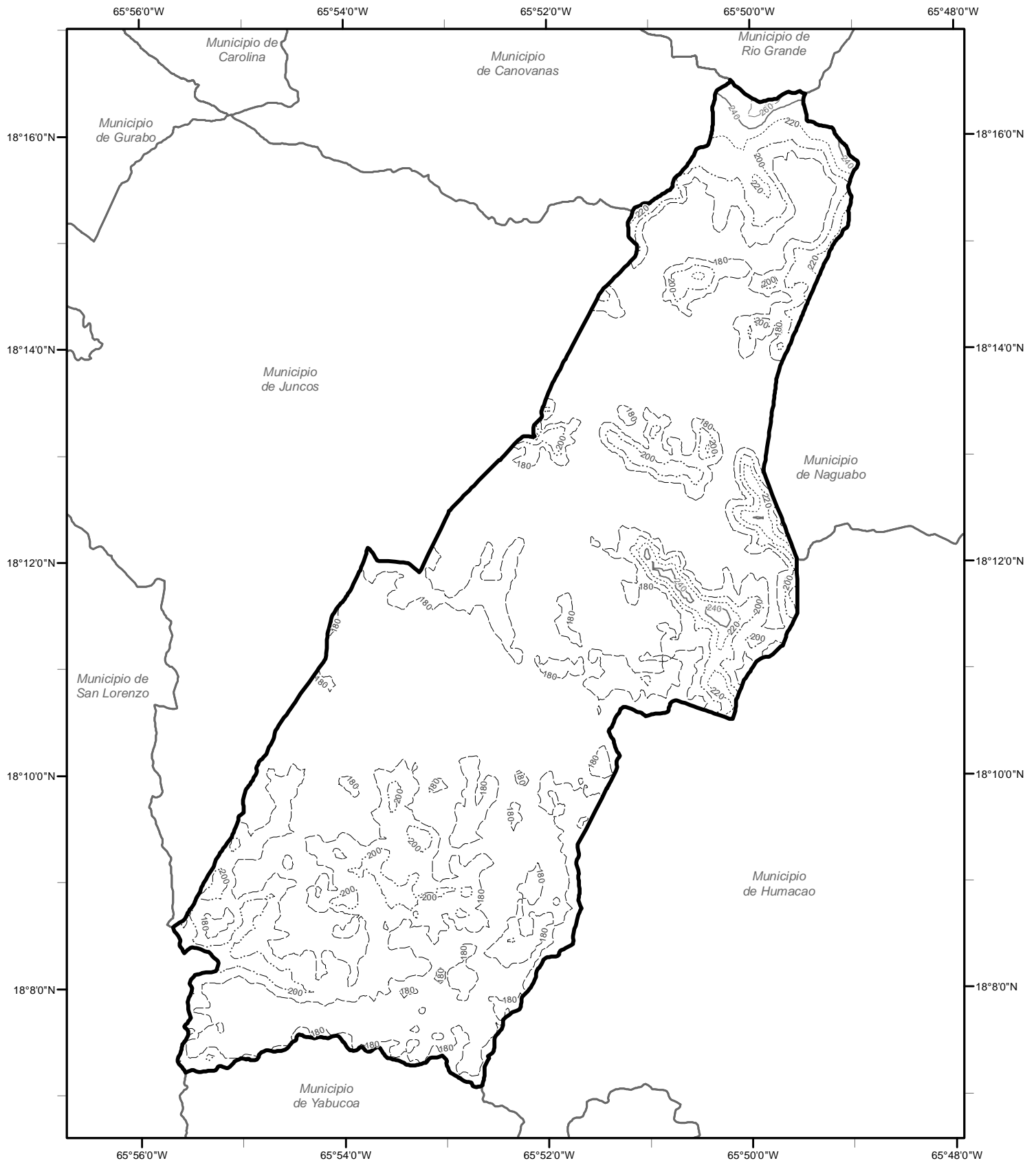


### Risk Category III Wind Contour (mph)

- 160      ····· 220
- - - - 180      ——— 240
- 200

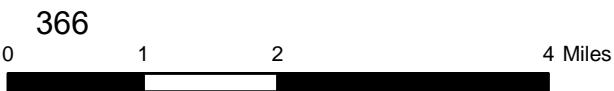


# Municipio de Las Piedras Risk Category III Effective Wind Speed Map (mph)



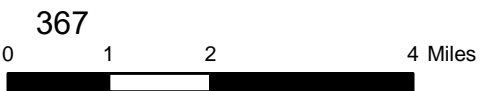
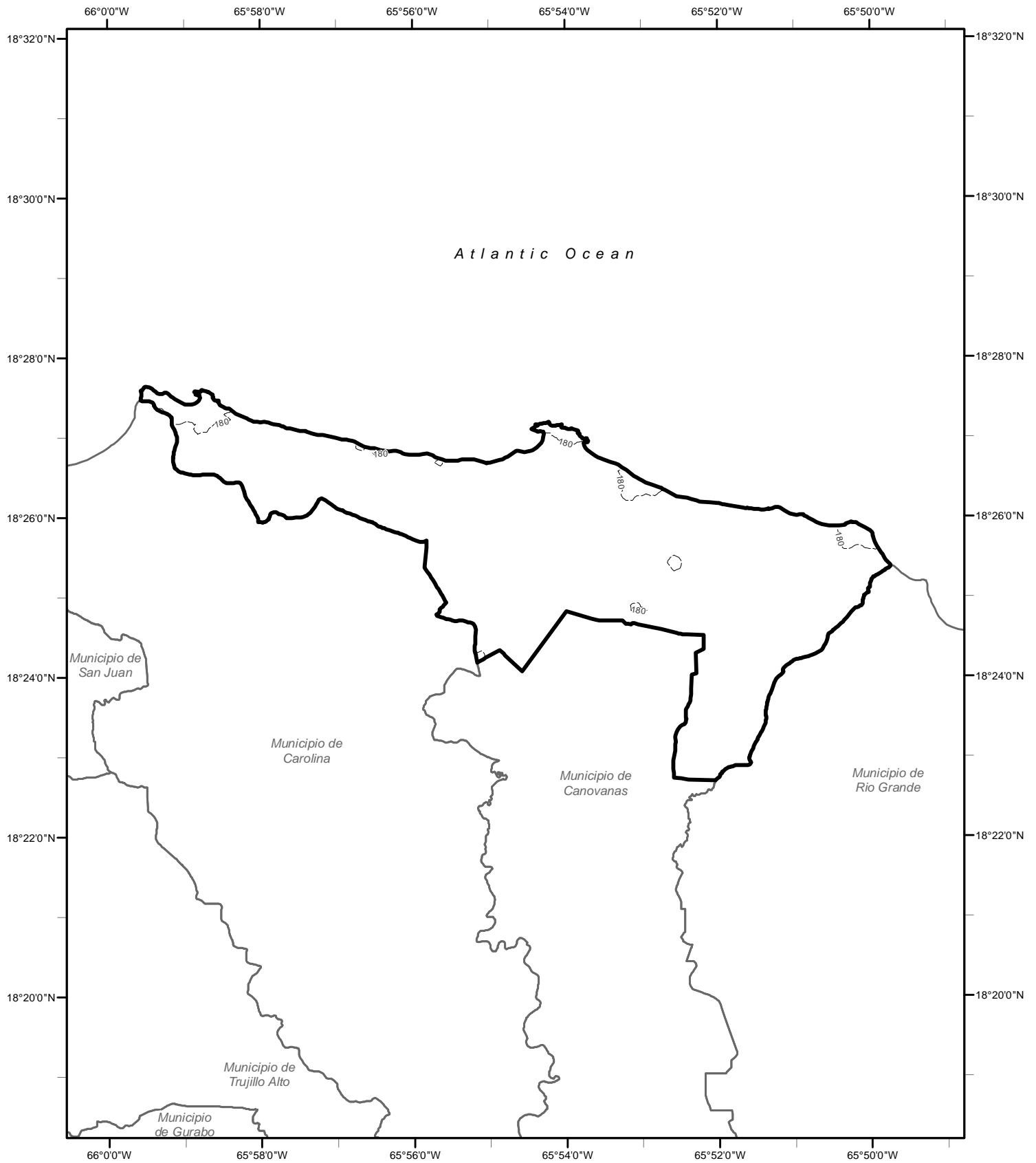
### Risk Category III Wind Contour (mph)

- 180
- ..... 200
- · - · 220
- 240
- 260

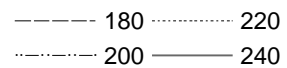




# Municipio de Loiza Risk Category III Effective Wind Speed Map (mph)

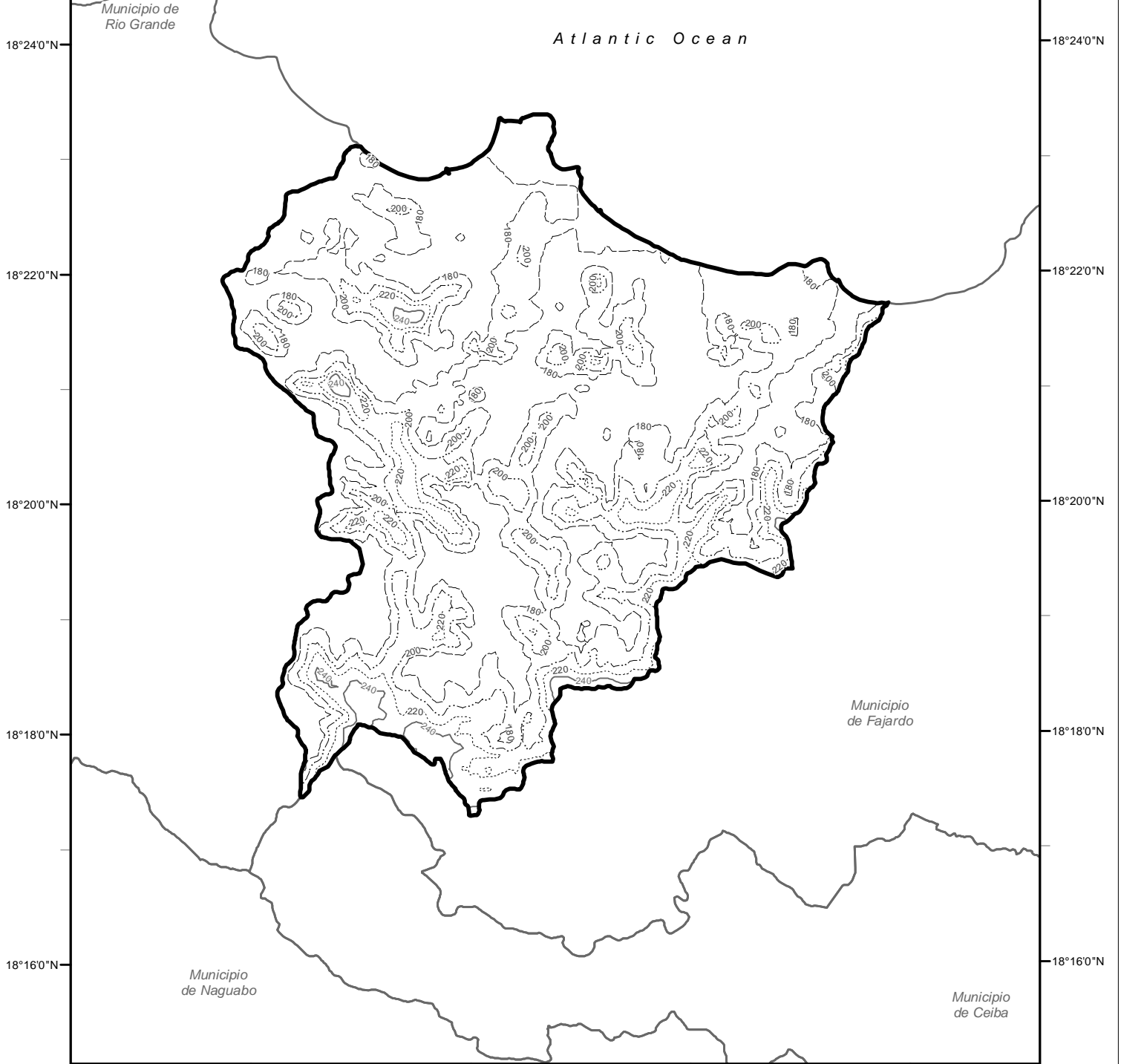


### Risk Category III Wind Contour (mph)



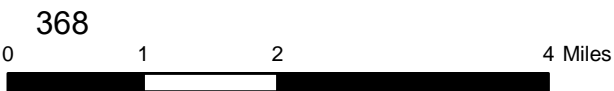
# Municipio de Luquillo Risk Category III Effective Wind Speed Map (mph)

65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W

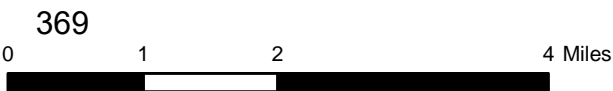
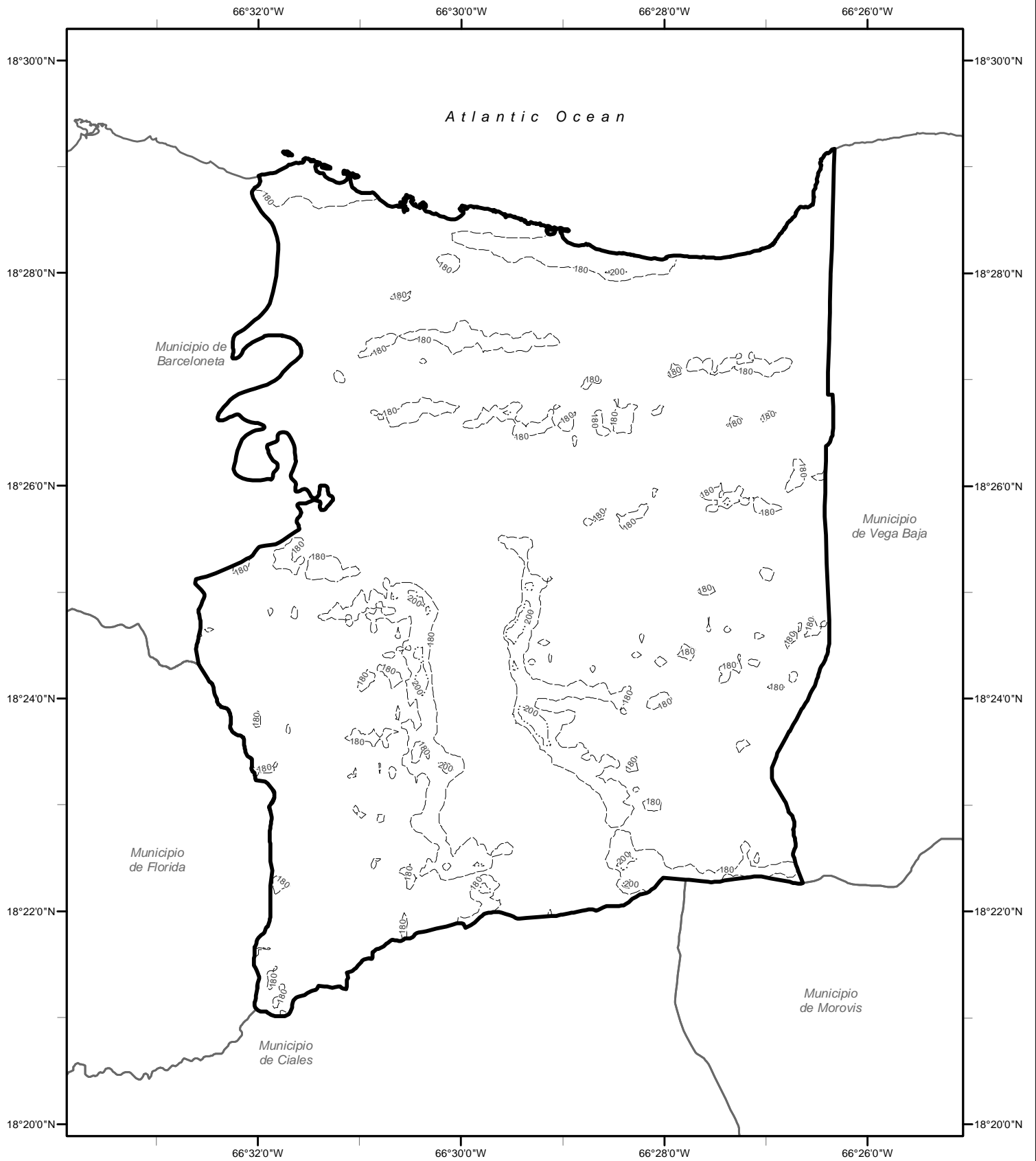


### Risk Category III Wind Contour (mph)

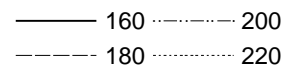
- 180 ----- 260
- ..... 200 ..... 280
- ..... 220 ..... 300
- 240



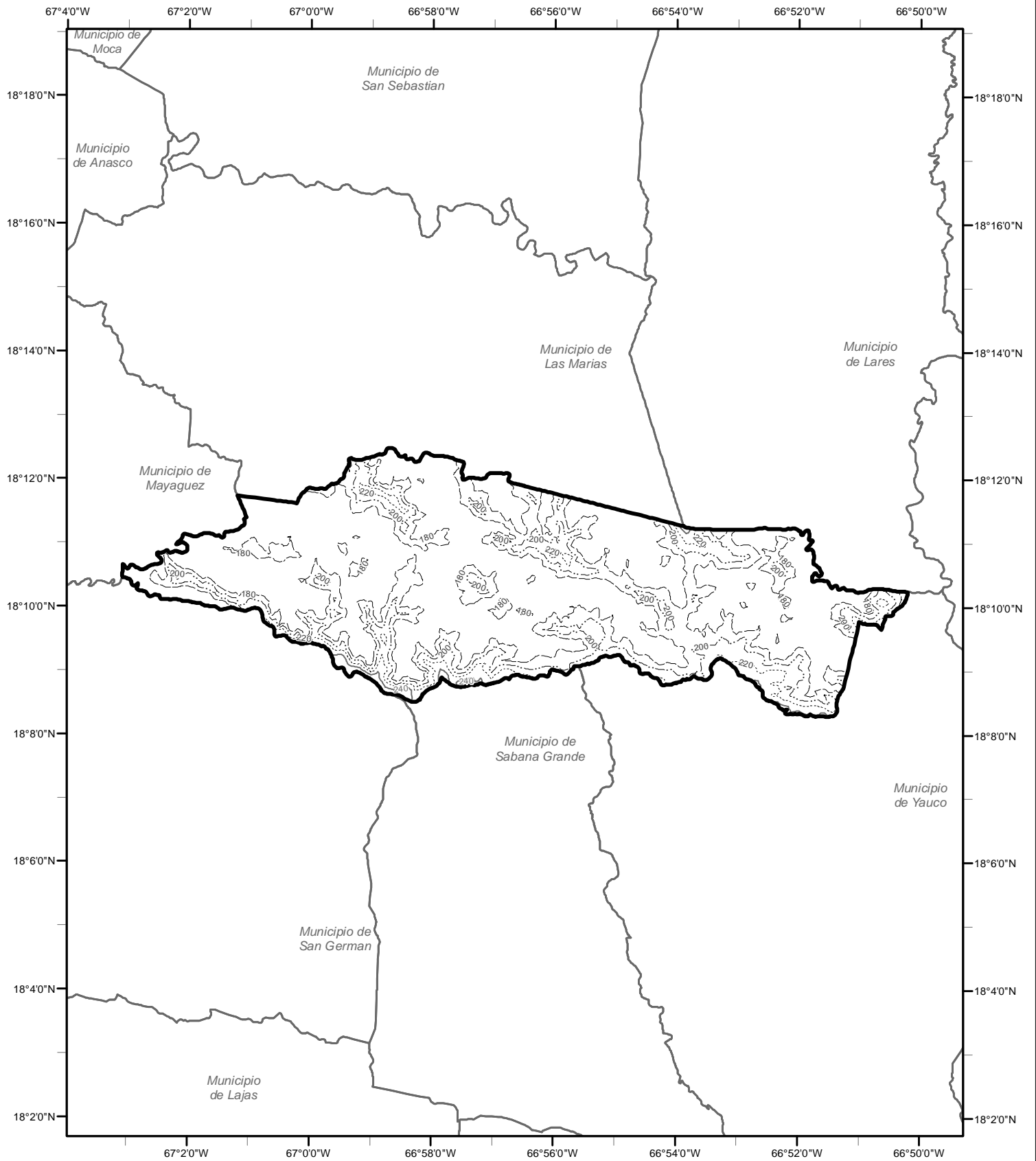
# Municipio de Manati Risk Category III Effective Wind Speed Map (mph)



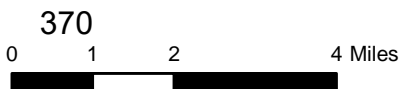
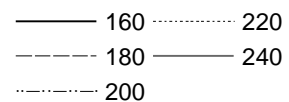
### Risk Category III Wind Contour (mph)



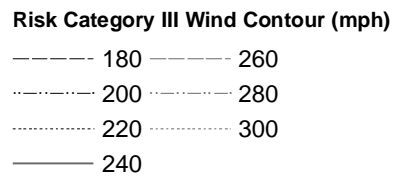
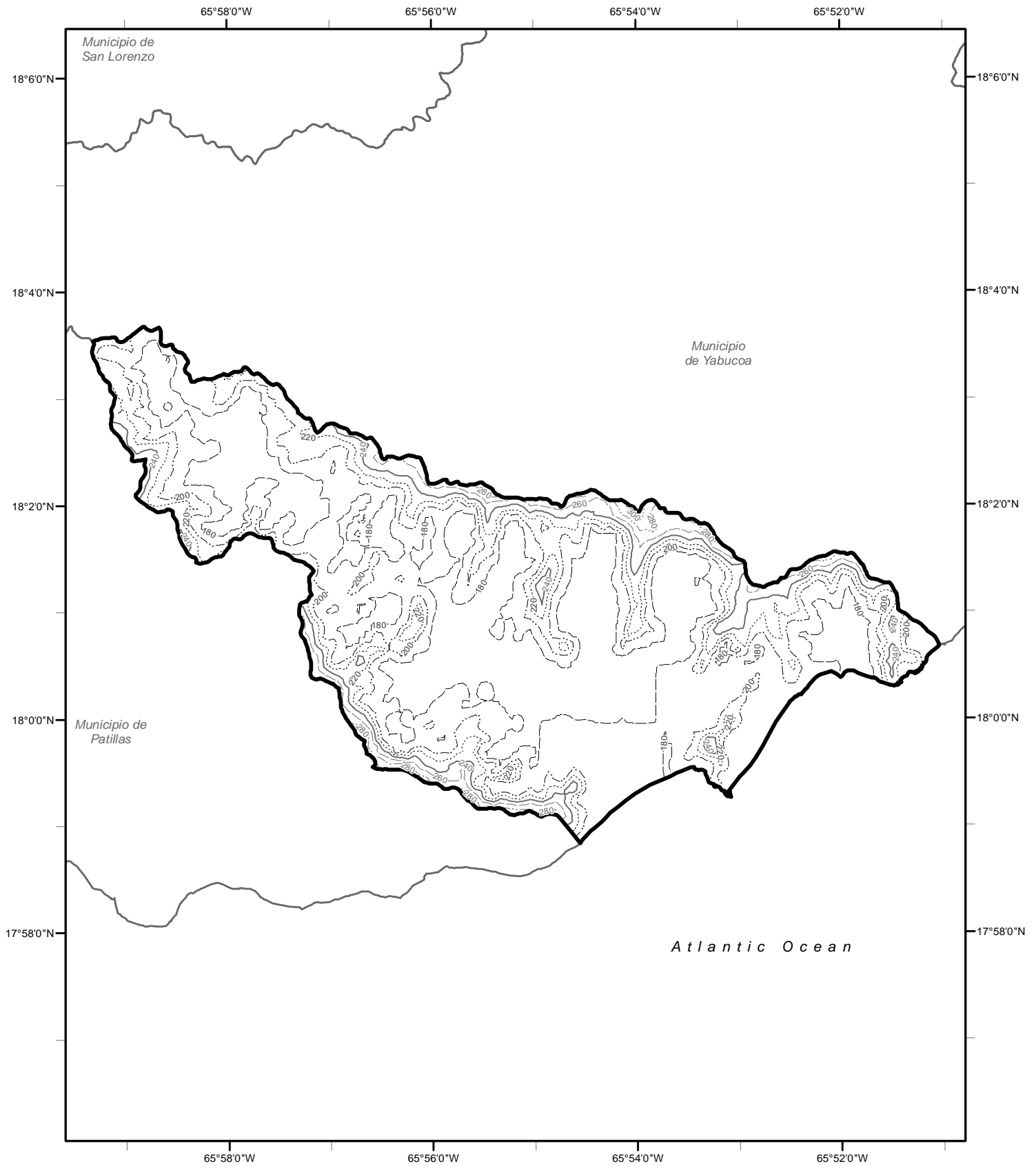
# Municipio de Maricao Risk Category III Effective Wind Speed Map (mph)



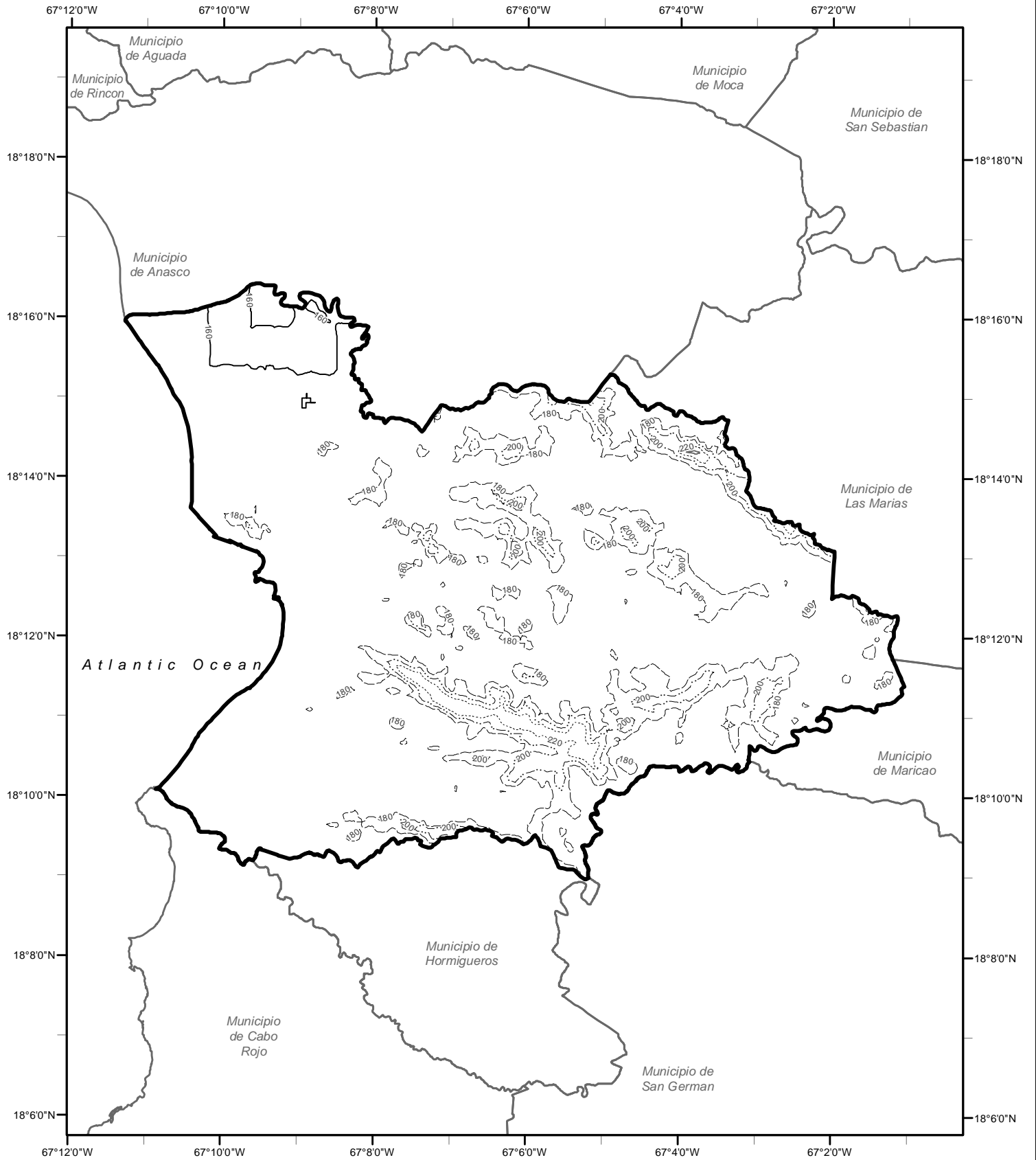
### Risk Category III Wind Contour (mph)



# Municipio de Maunabo Risk Category III Effective Wind Speed Map (mph)

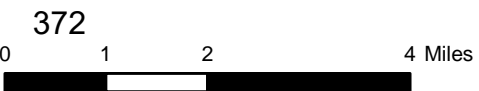


# Municipio de Mayaguez Risk Category III Effective Wind Speed Map (mph)



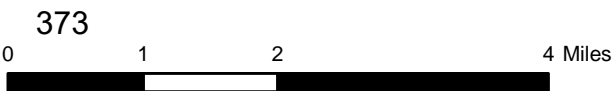
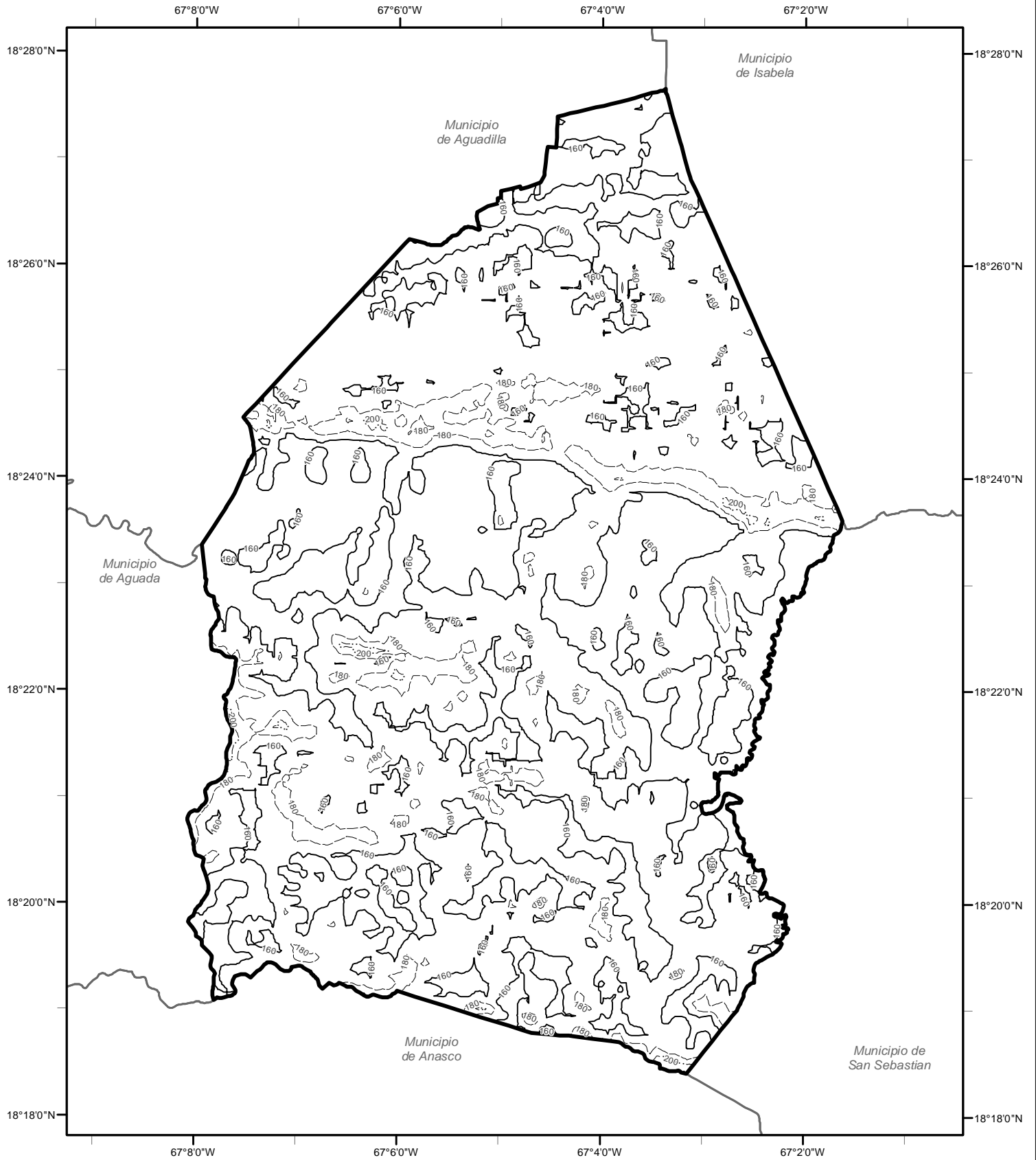
### Risk Category III Wind Contour (mph)

- 160      ····· 220
- - - - 180      ——— 240
- · · · · 200



# Municipio de Moca

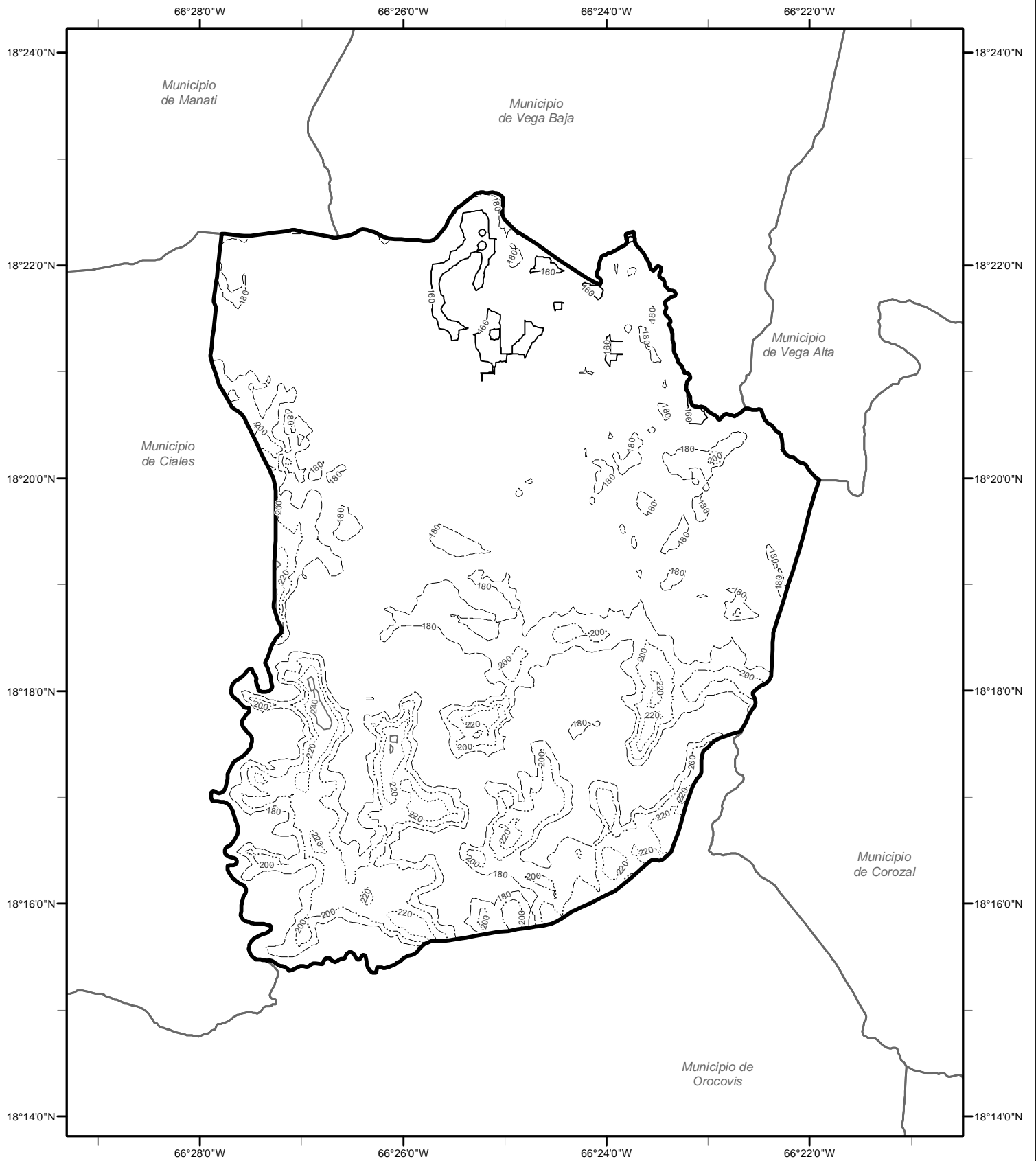
## Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

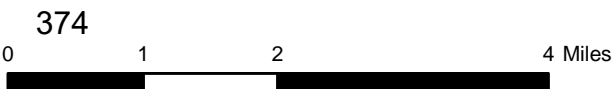
- 160
- - - 180
- · · 200
- - - 220

# Municipio de Morovis Risk Category III Effective Wind Speed Map (mph)



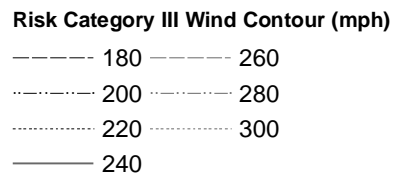
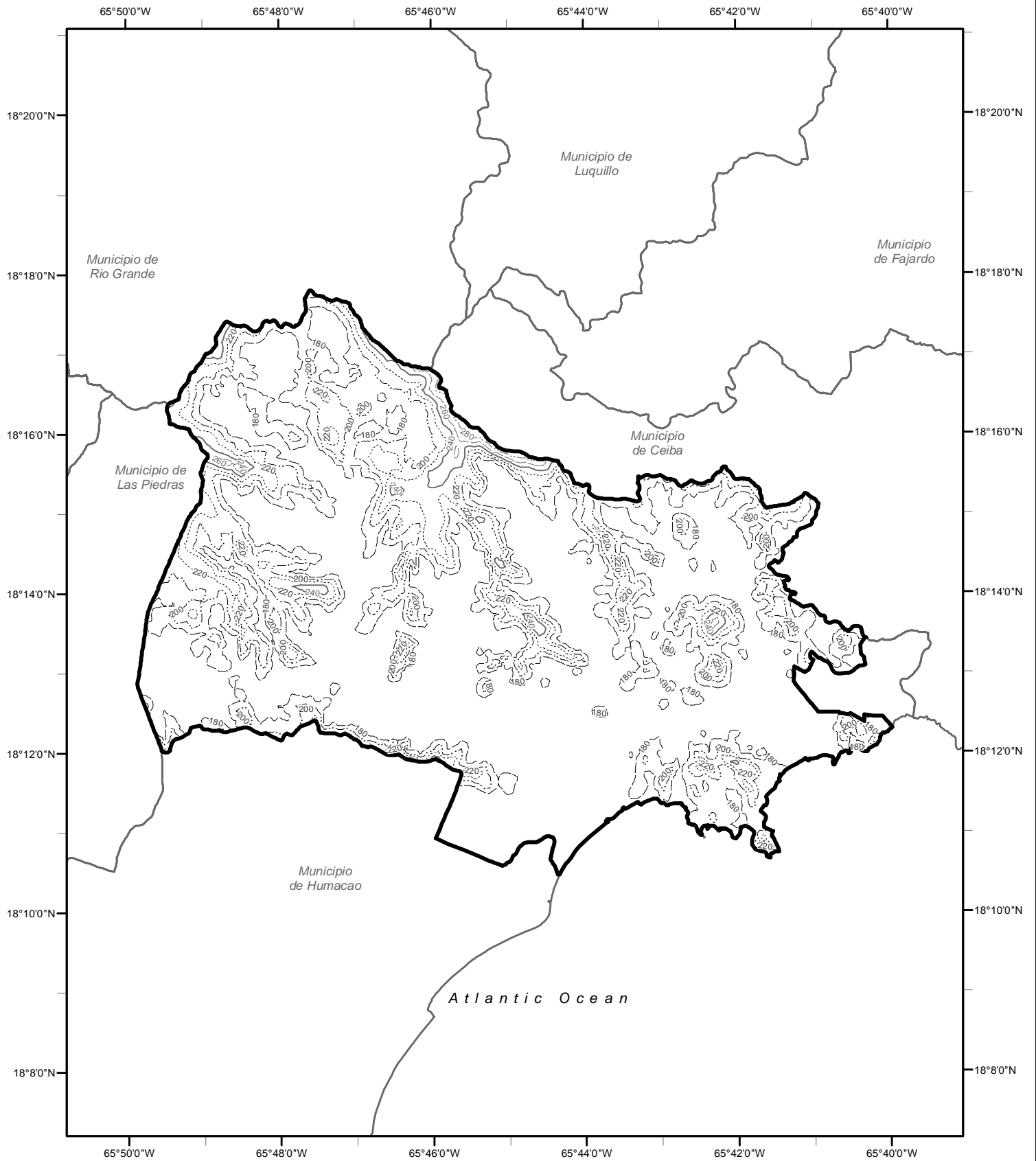
### Risk Category III Wind Contour (mph)

- 160      - - - - - 220
- - - - - 180      ——— 240
- · - · - 200

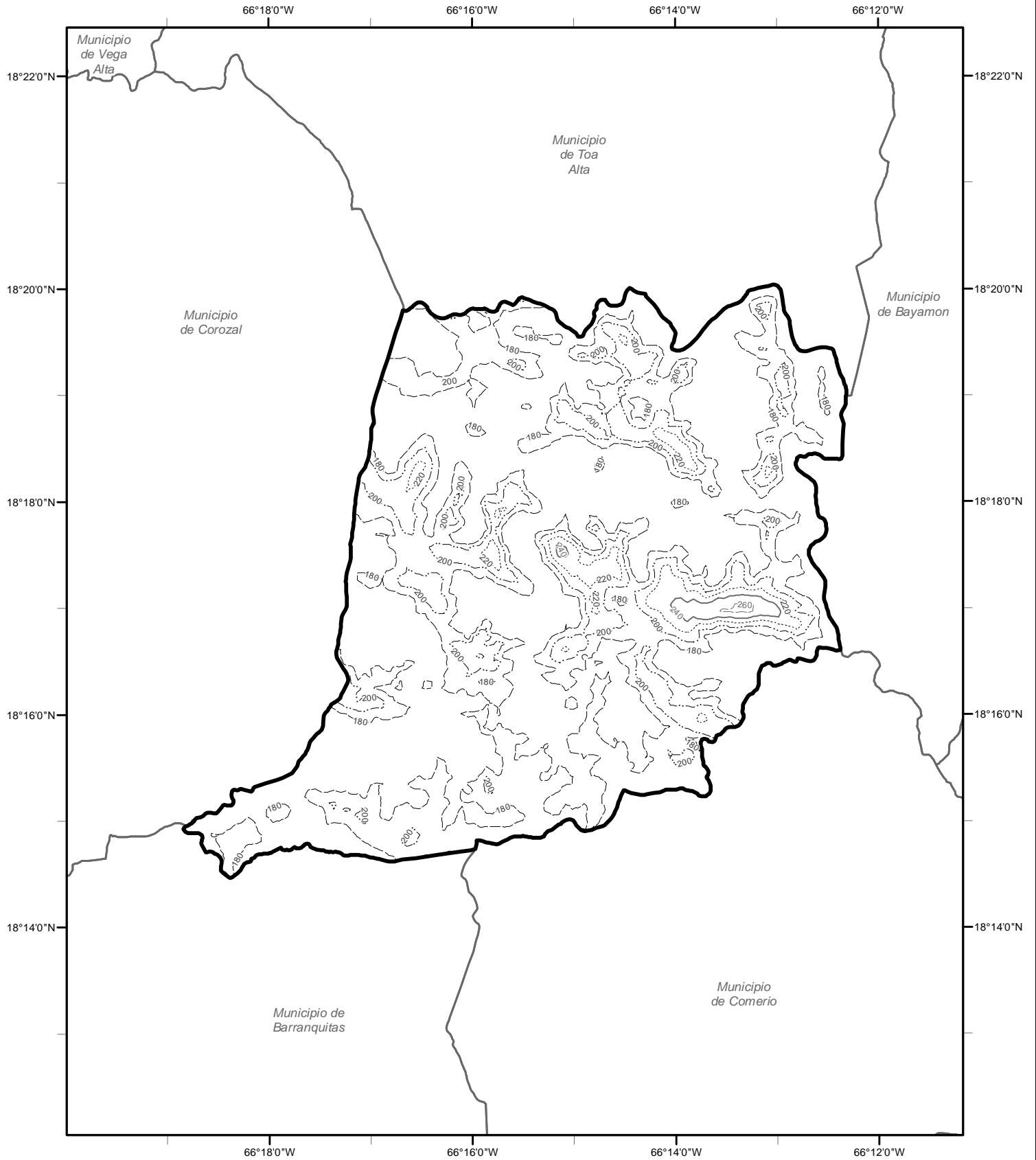




# Municipio de Naguabo Risk Category III Effective Wind Speed Map (mph)

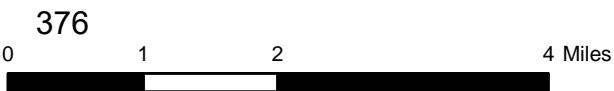


# Municipio de Naranjito Risk Category III Effective Wind Speed Map (mph)

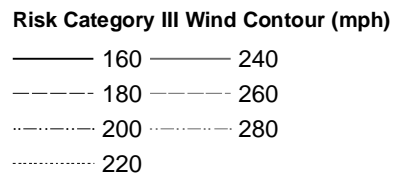
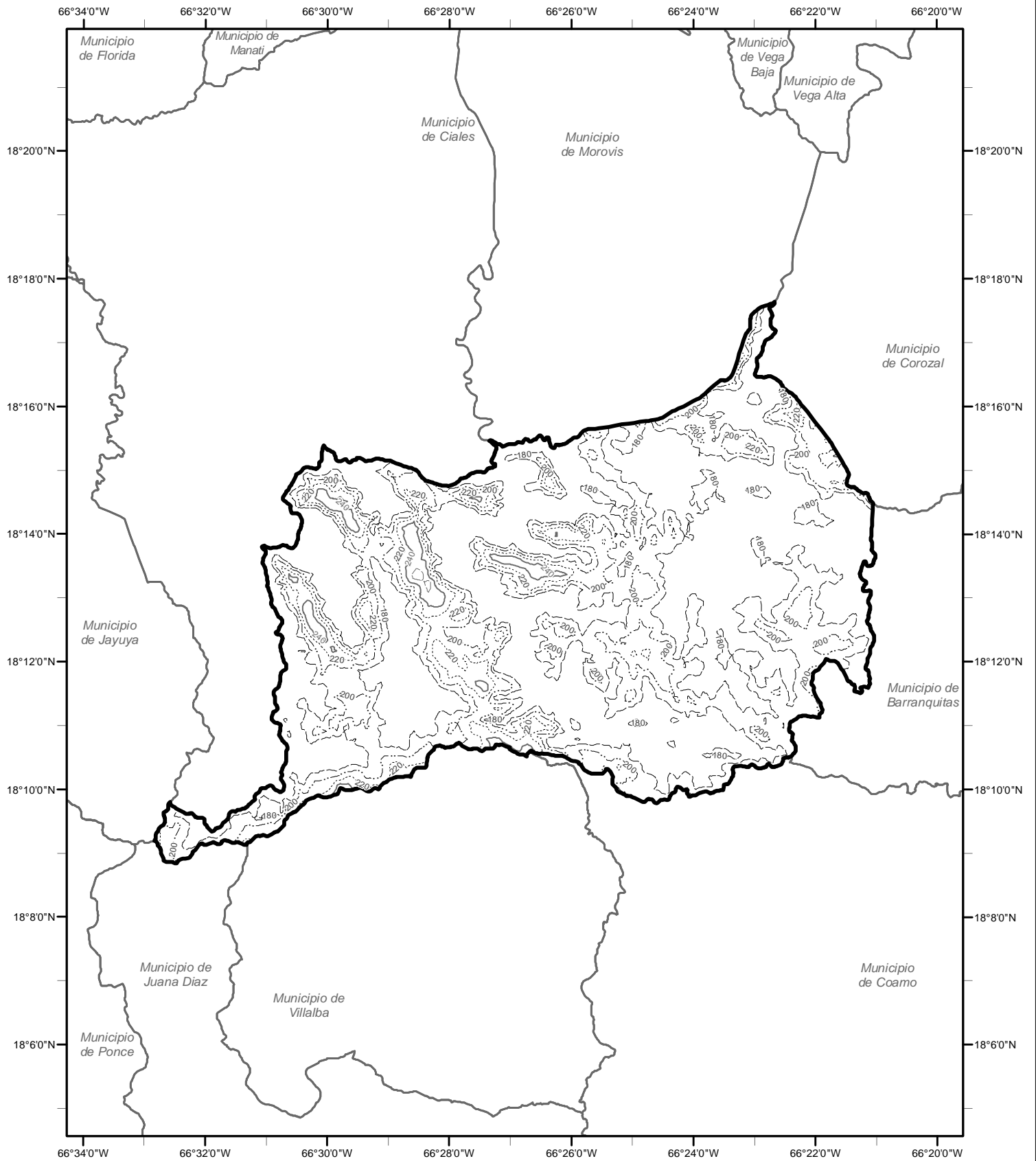


### Risk Category III Wind Contour (mph)

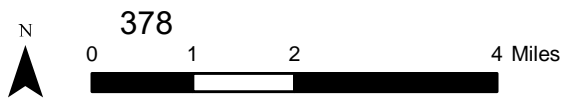
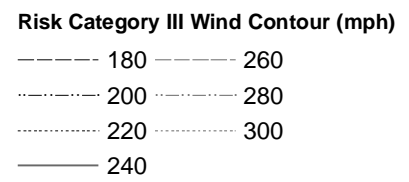
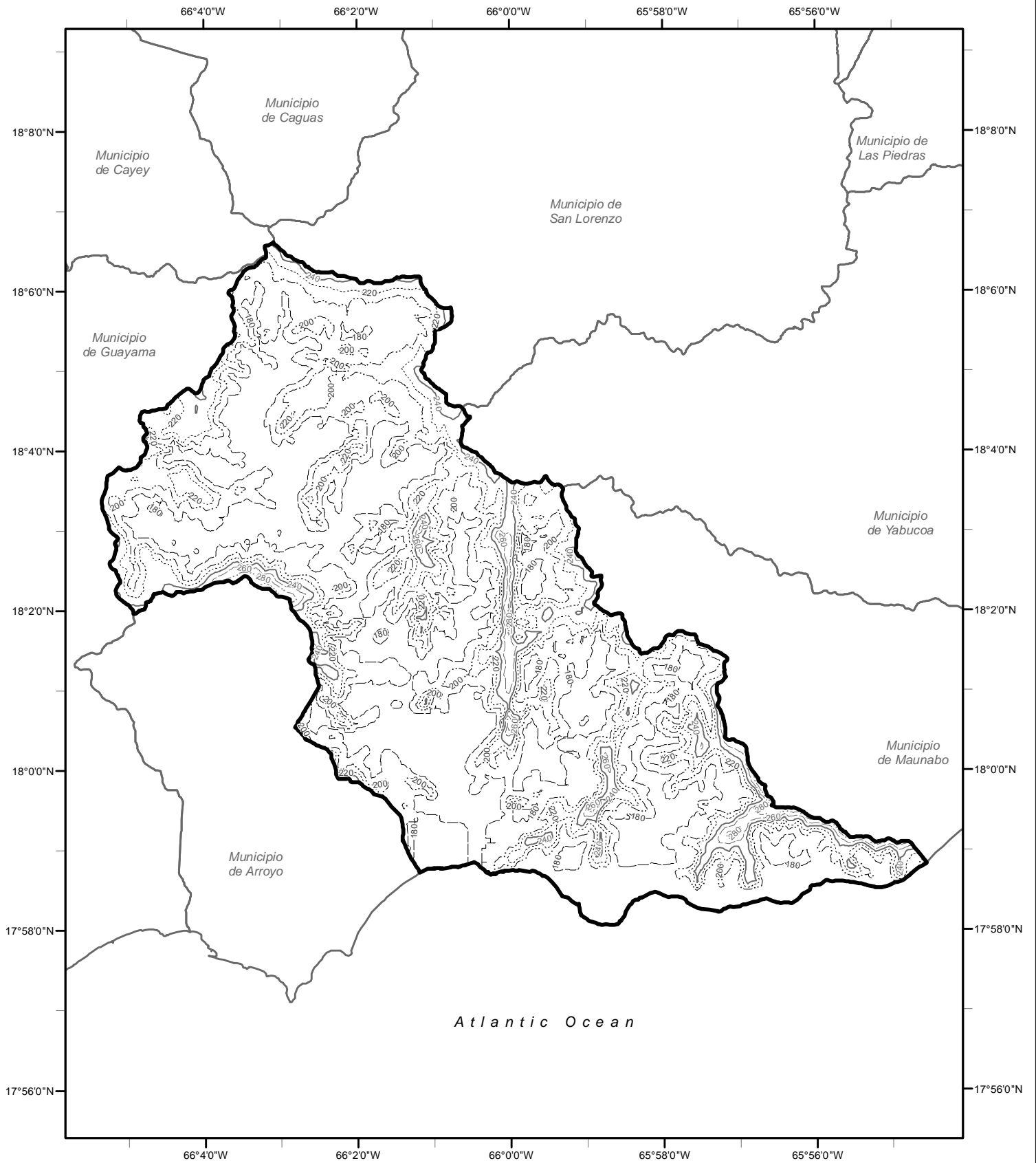
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



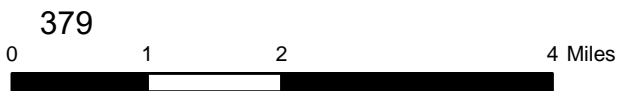
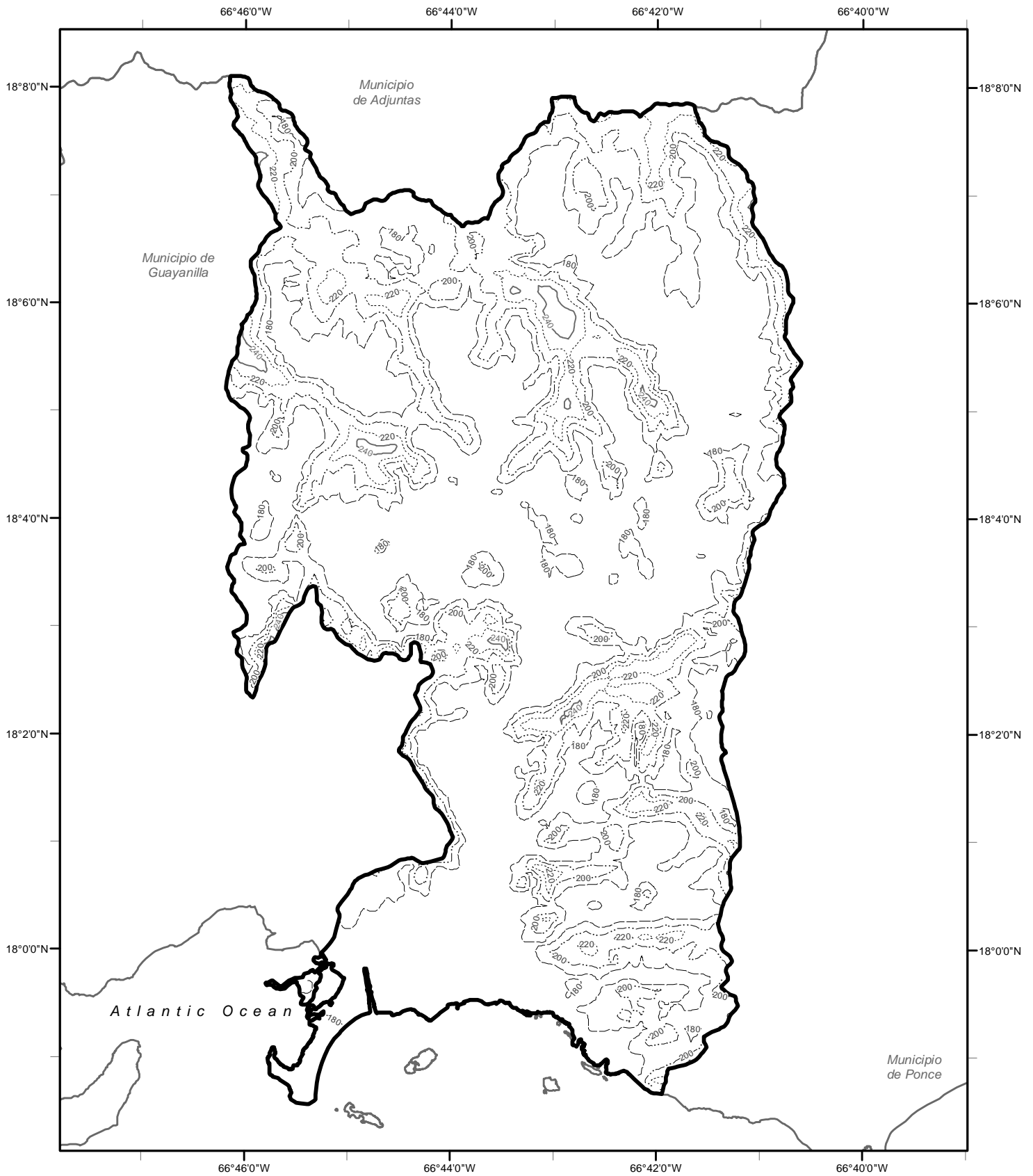
# Municipio de Orocovis Risk Category III Effective Wind Speed Map (mph)



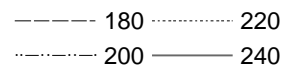
# Municipio de Patillas Risk Category III Effective Wind Speed Map (mph)



# Municipio de Penuelas Risk Category III Effective Wind Speed Map (mph)

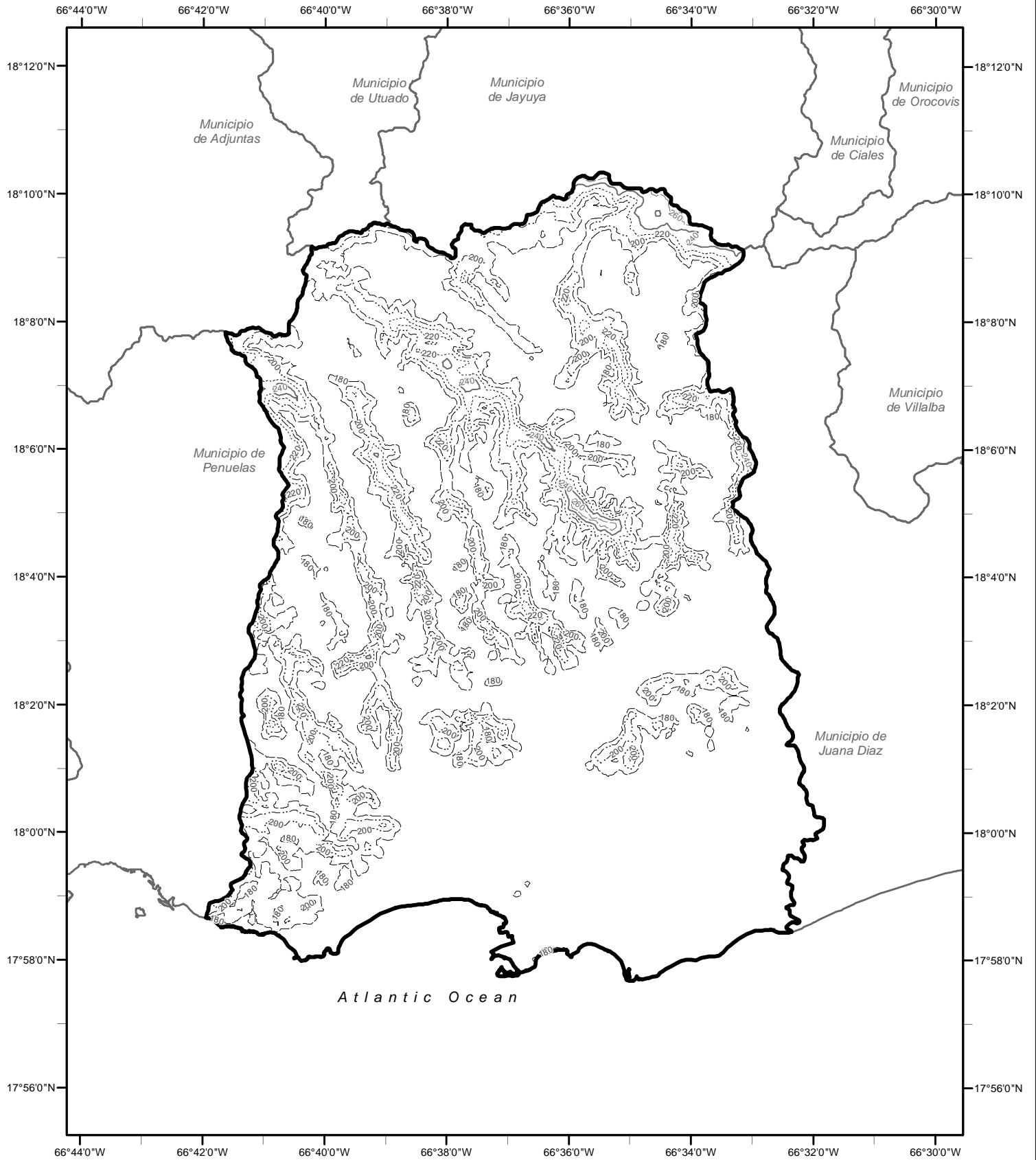


### Risk Category III Wind Contour (mph)

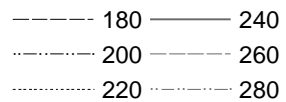


# Municipio de Ponce

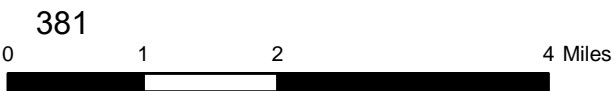
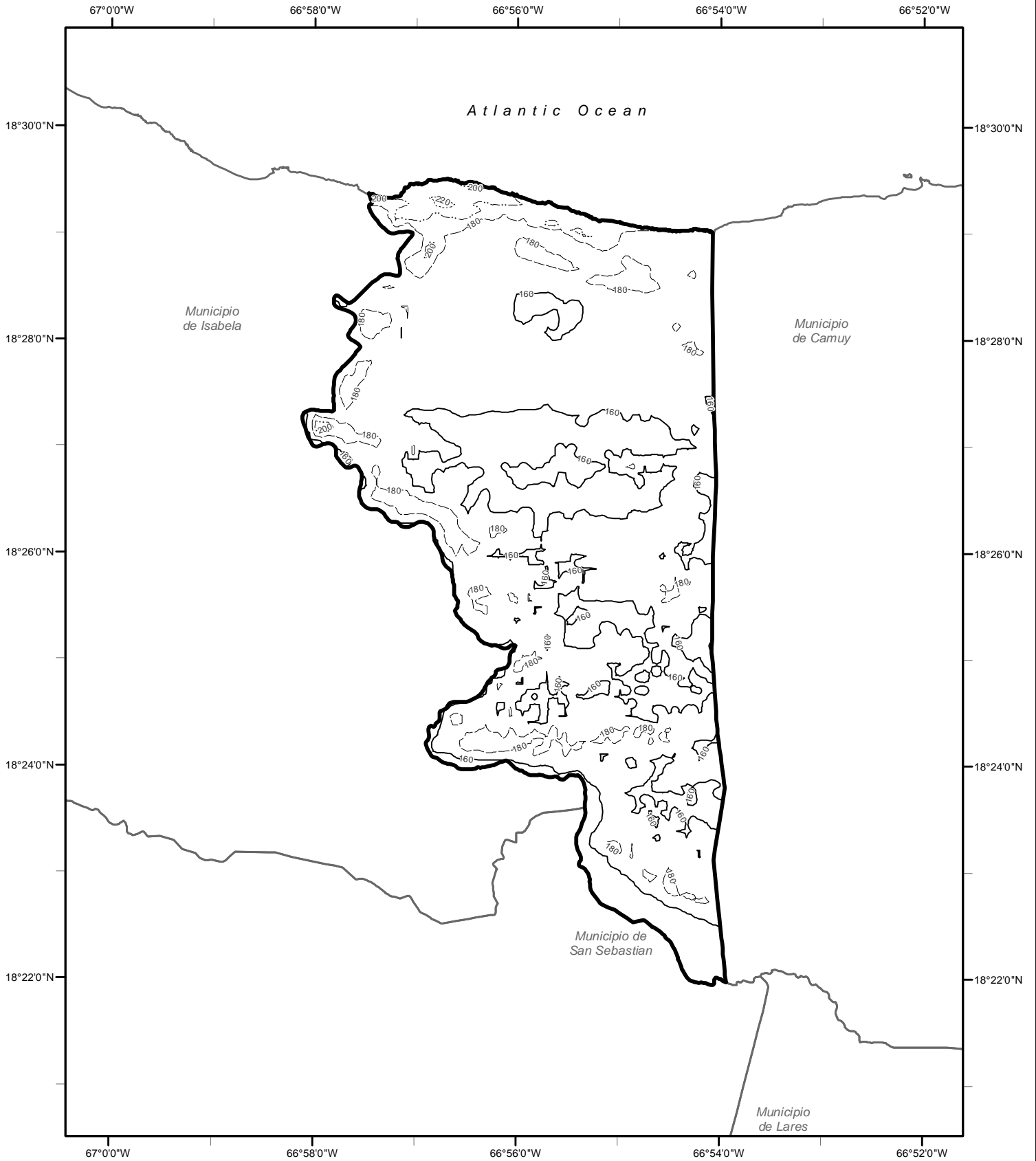
## Risk Category III Effective Wind Speed Map (mph)



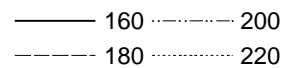
### Risk Category III Wind Contour (mph)



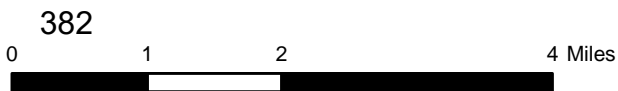
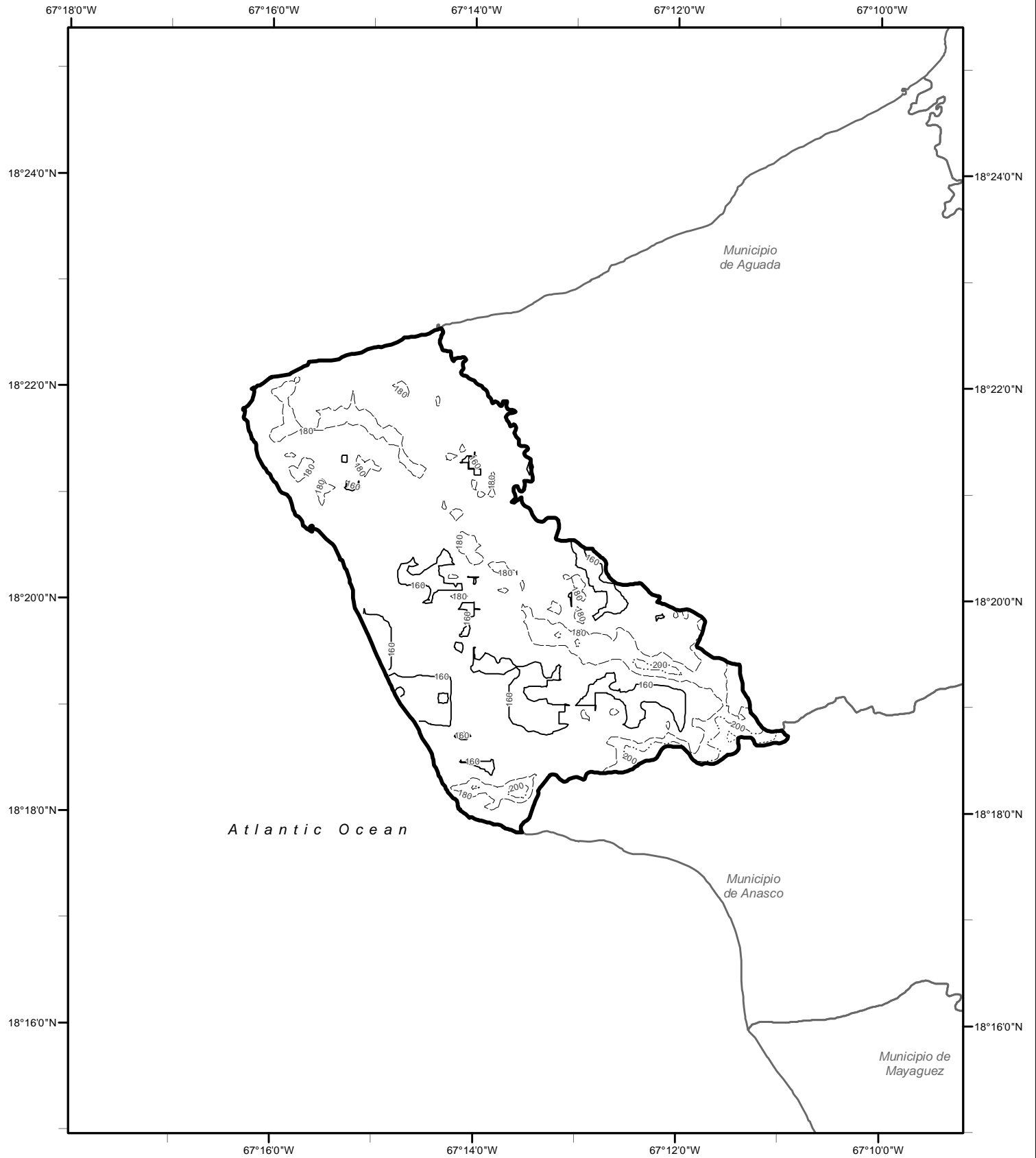
# Municipio de Quebradillas Risk Category III Effective Wind Speed Map (mph)



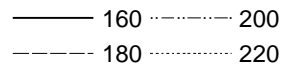
### Risk Category III Wind Contour (mph)



# Municipio de Rincon Risk Category III Effective Wind Speed Map (mph)

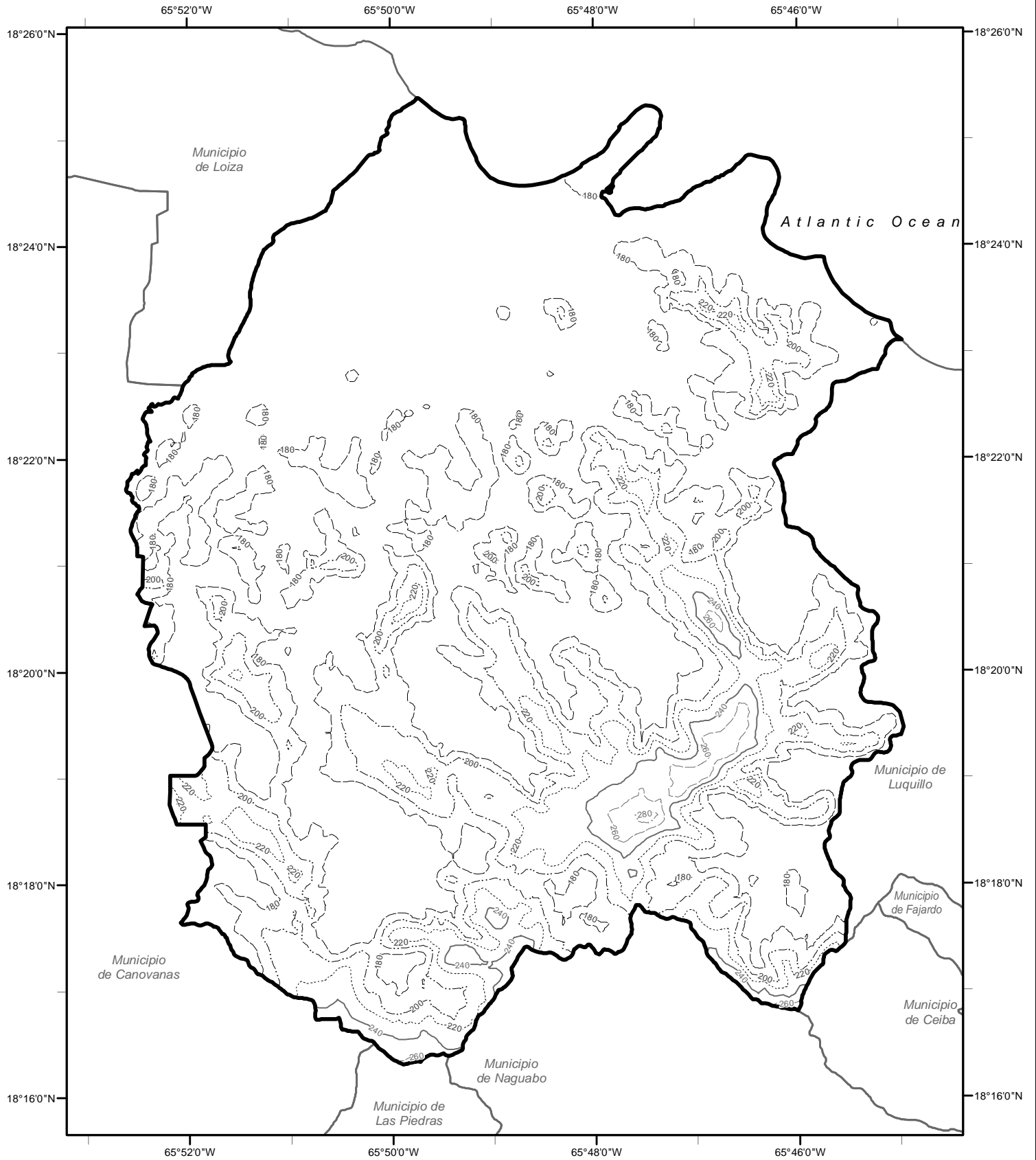


### Risk Category III Wind Contour (mph)





# Municipio de Rio Grande Risk Category III Effective Wind Speed Map (mph)

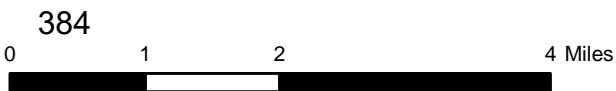
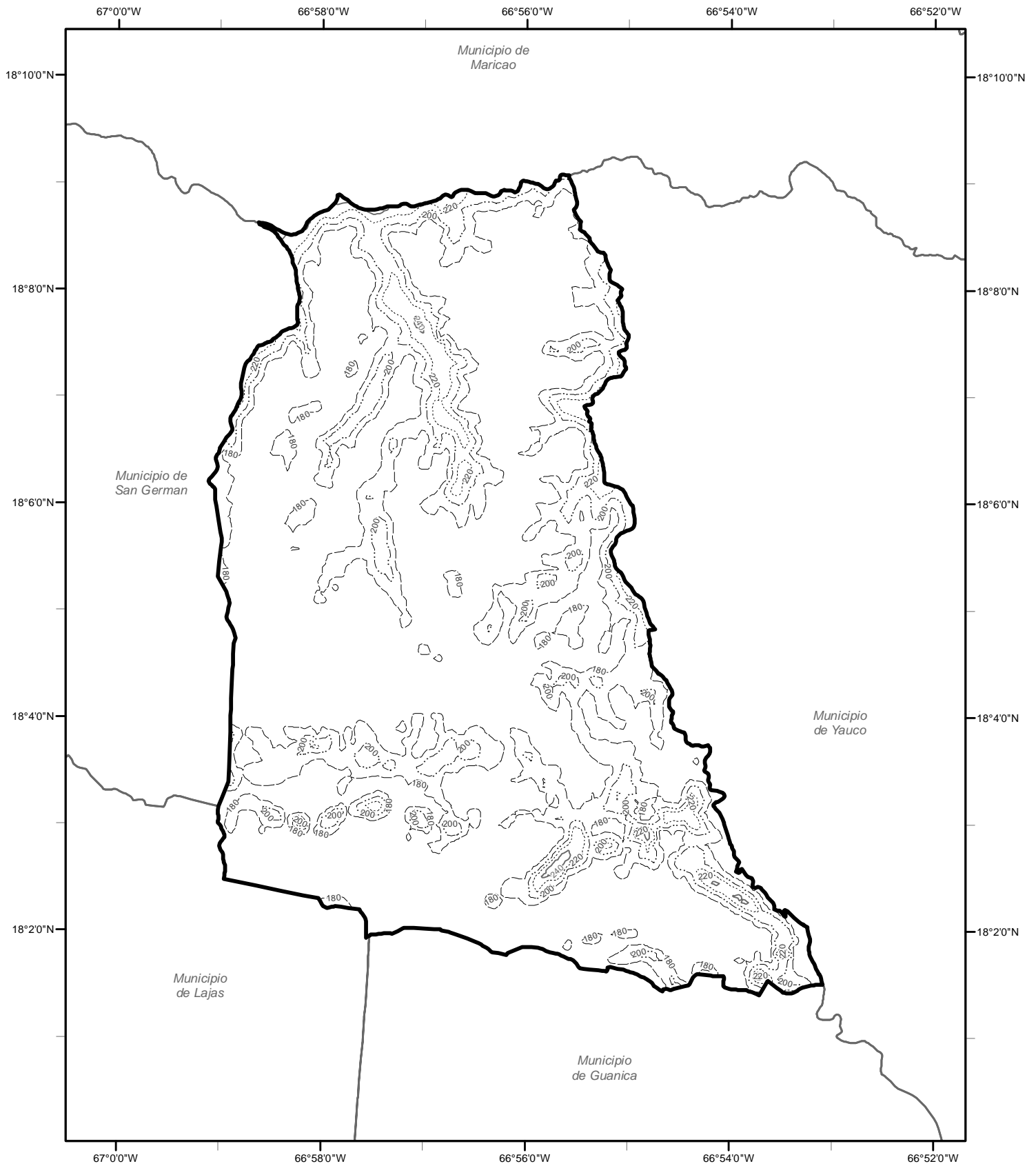


**Risk Category III Wind Contour (mph)**

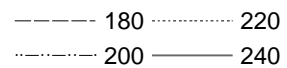
-----	180	-----	260
-----	200	-----	280
-----	220	-----	300
-----	240		



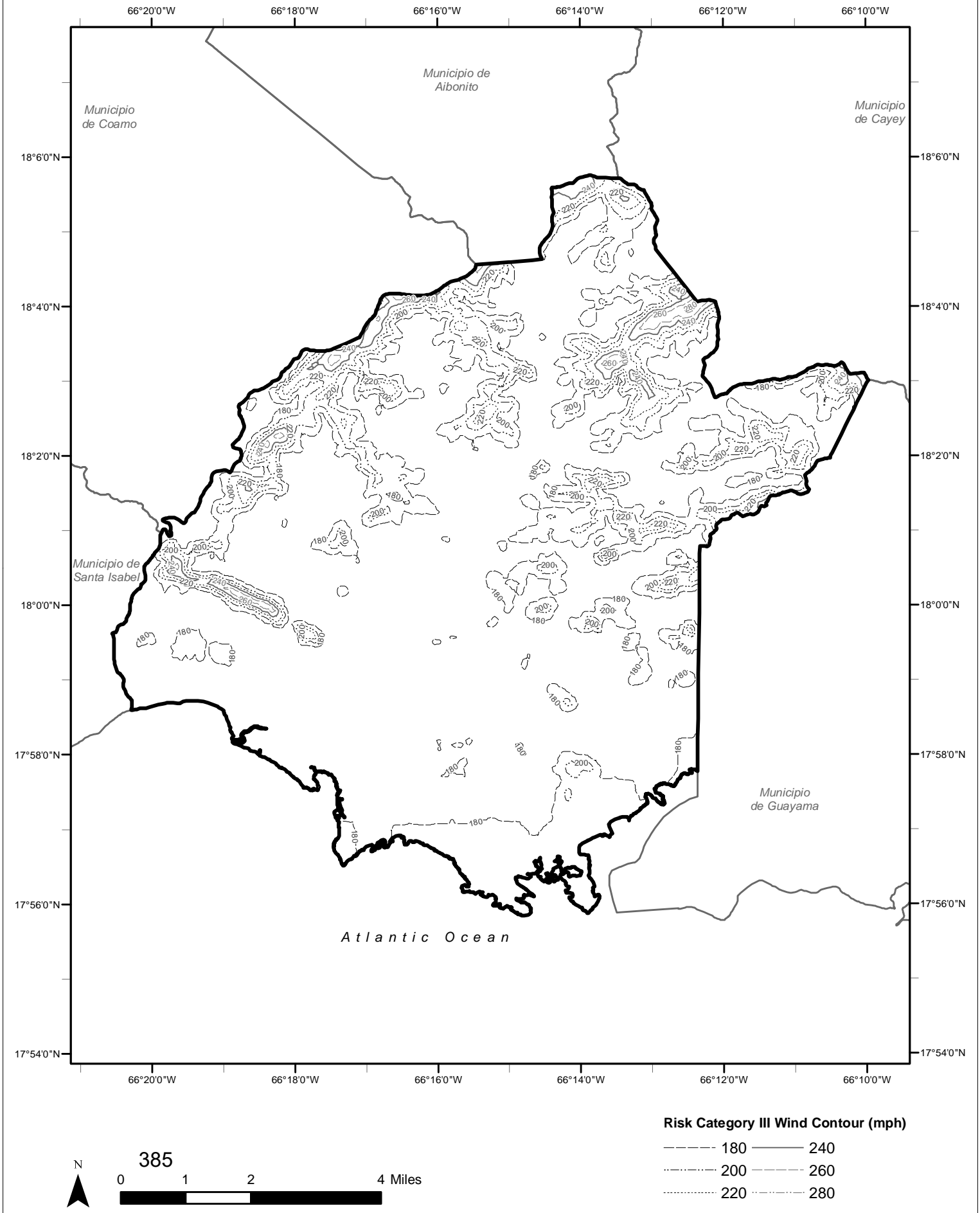
# Municipio de Sabana Grande Risk Category III Effective Wind Speed Map (mph)



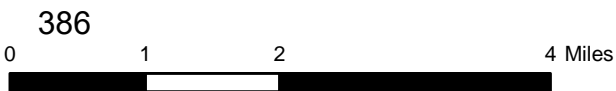
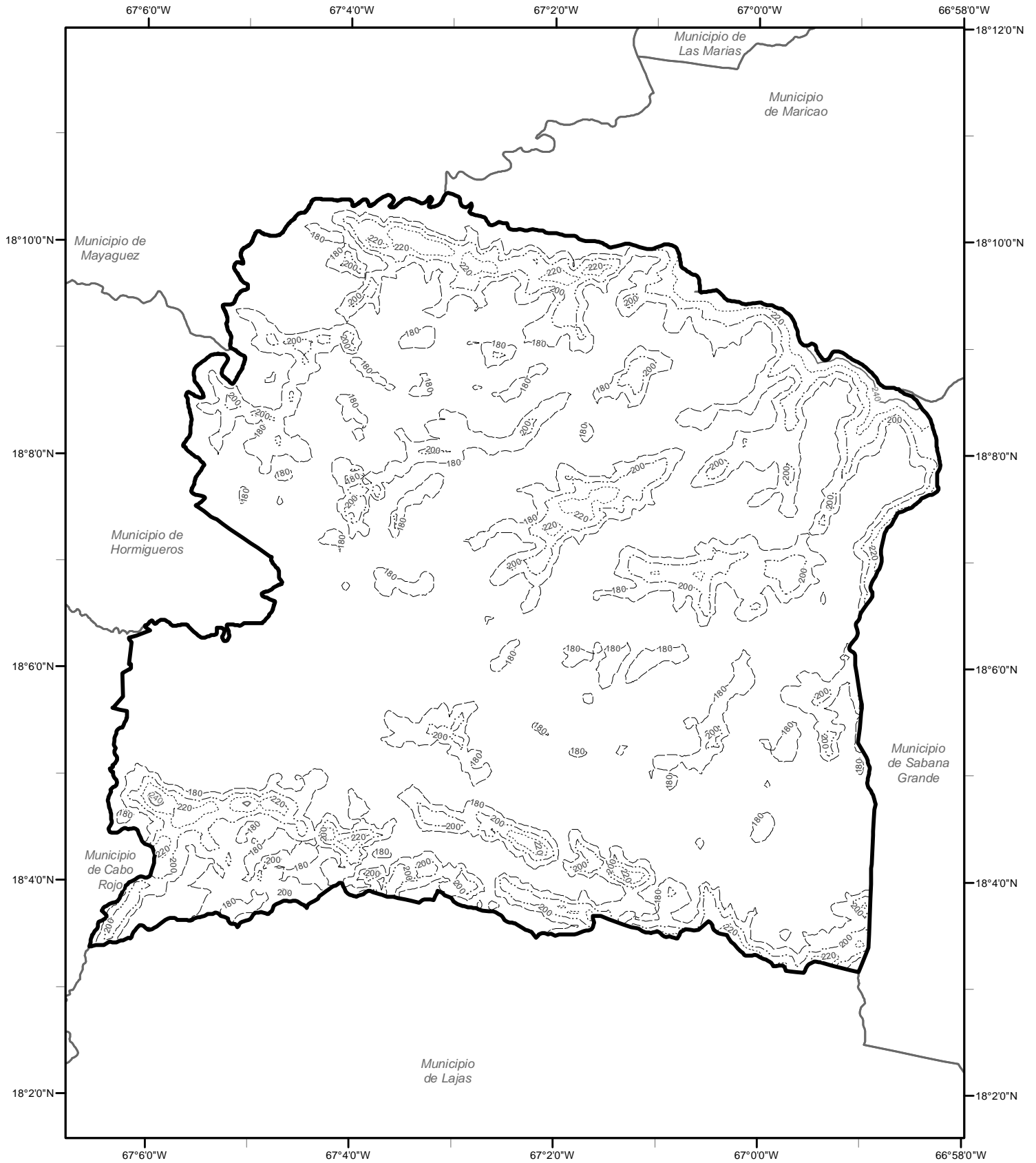
### Risk Category III Wind Contour (mph)



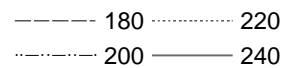
# Municipio de Salinas Risk Category III Effective Wind Speed Map (mph)



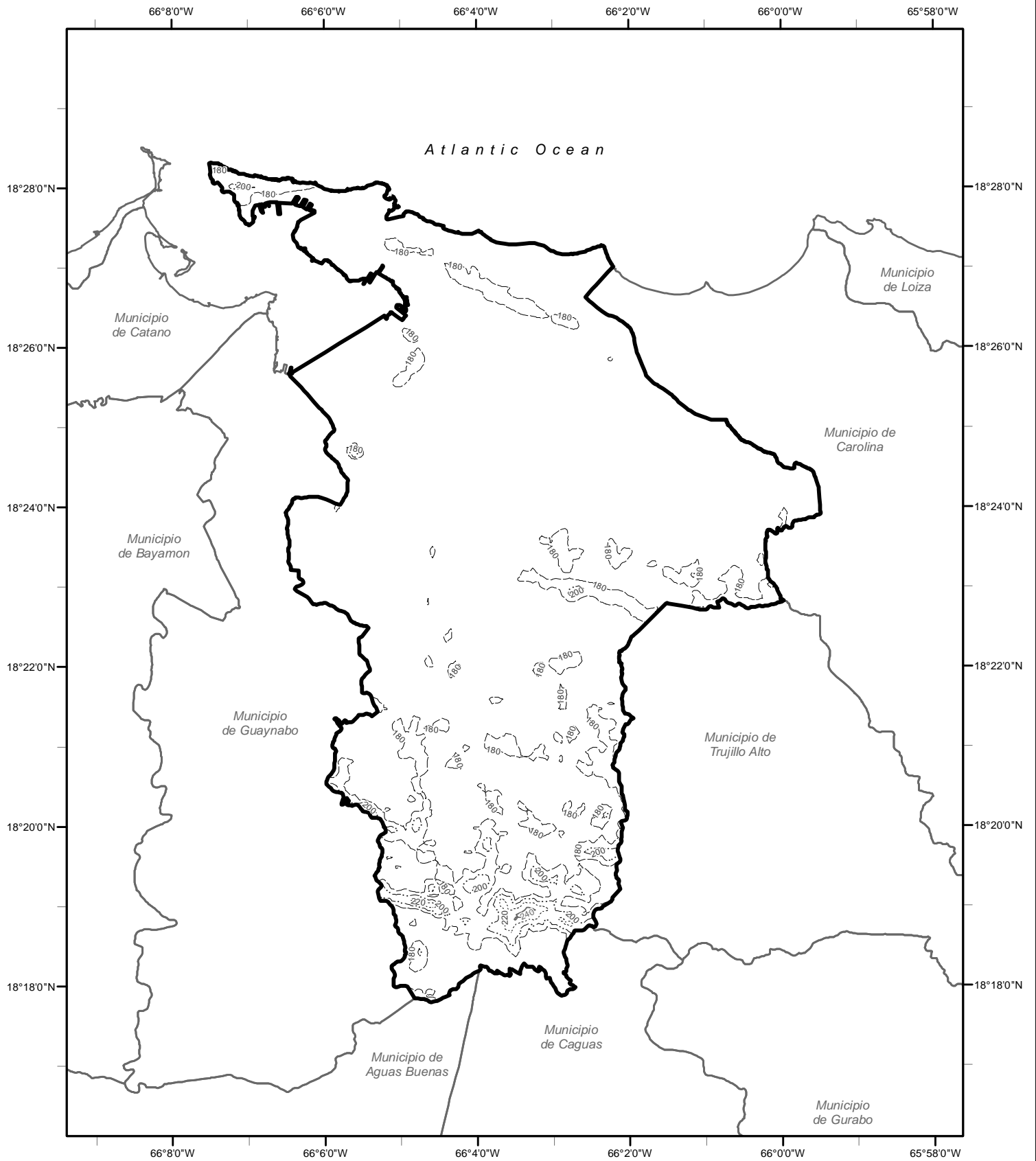
# Municipio de San Germain Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

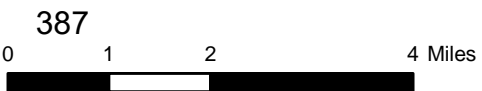


# Municipio de San Juan Risk Category III Effective Wind Speed Map (mph)

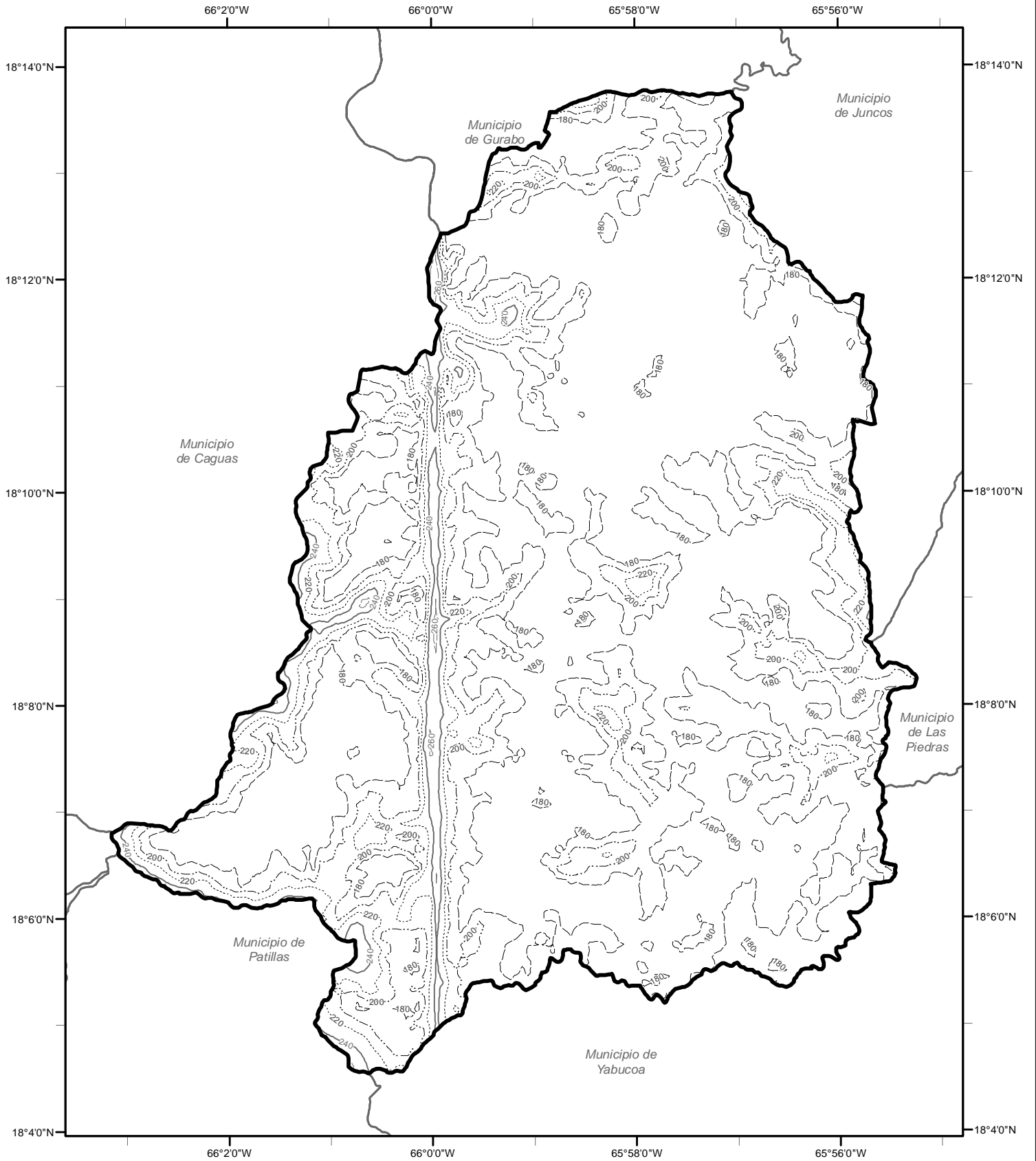


### Risk Category III Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260

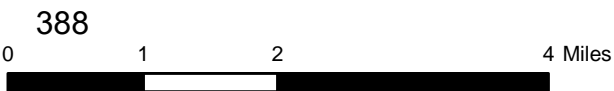


# Municipio de San Lorenzo Risk Category III Effective Wind Speed Map (mph)

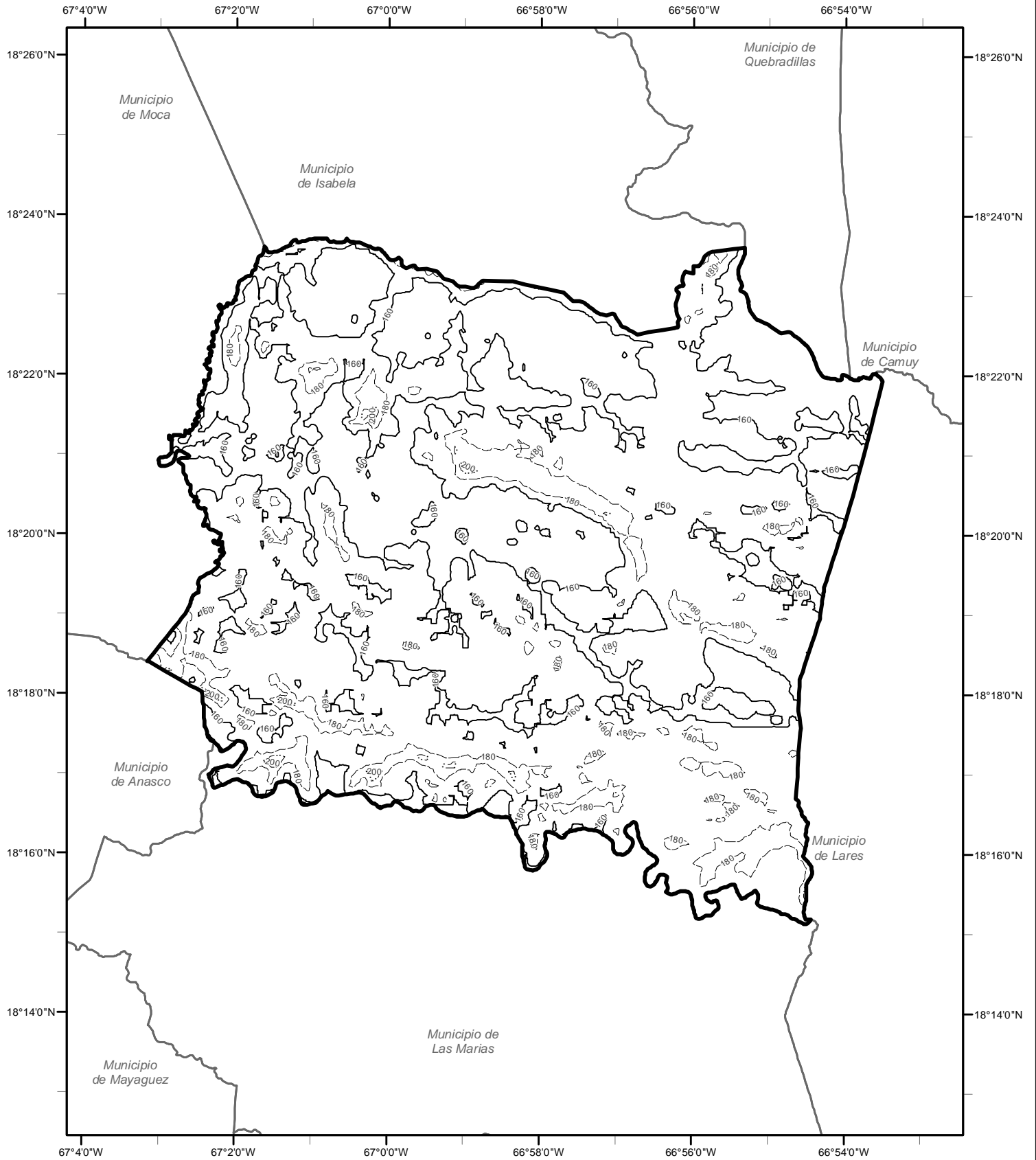


### Risk Category III Wind Contour (mph)

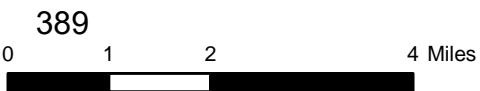
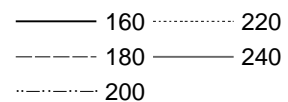
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



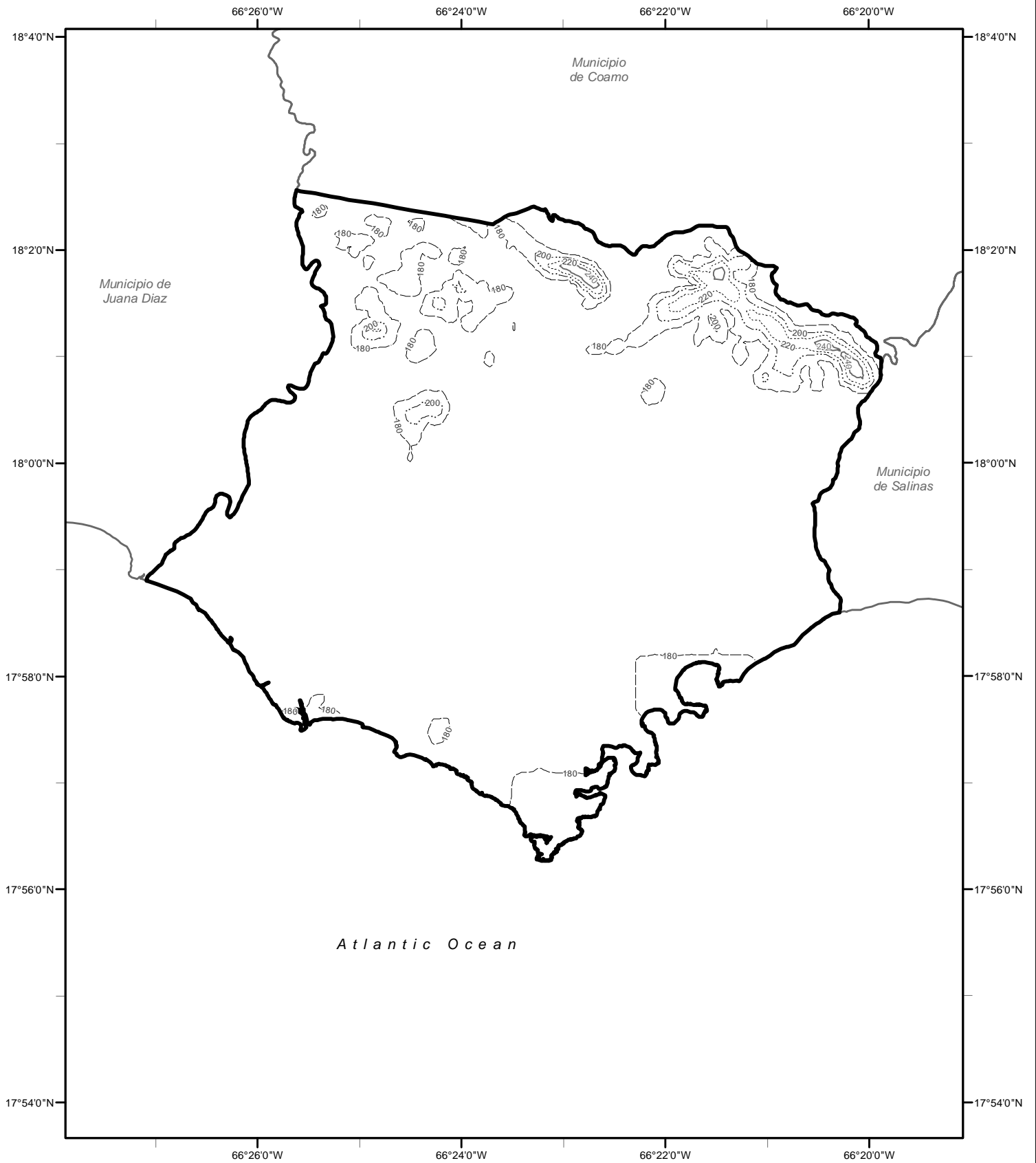
# Municipio de San Sebastian Risk Category III Effective Wind Speed Map (mph)



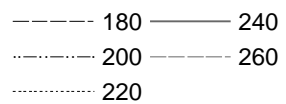
### Risk Category III Wind Contour (mph)



# Municipio de Santa Isabel Risk Category III Effective Wind Speed Map (mph)



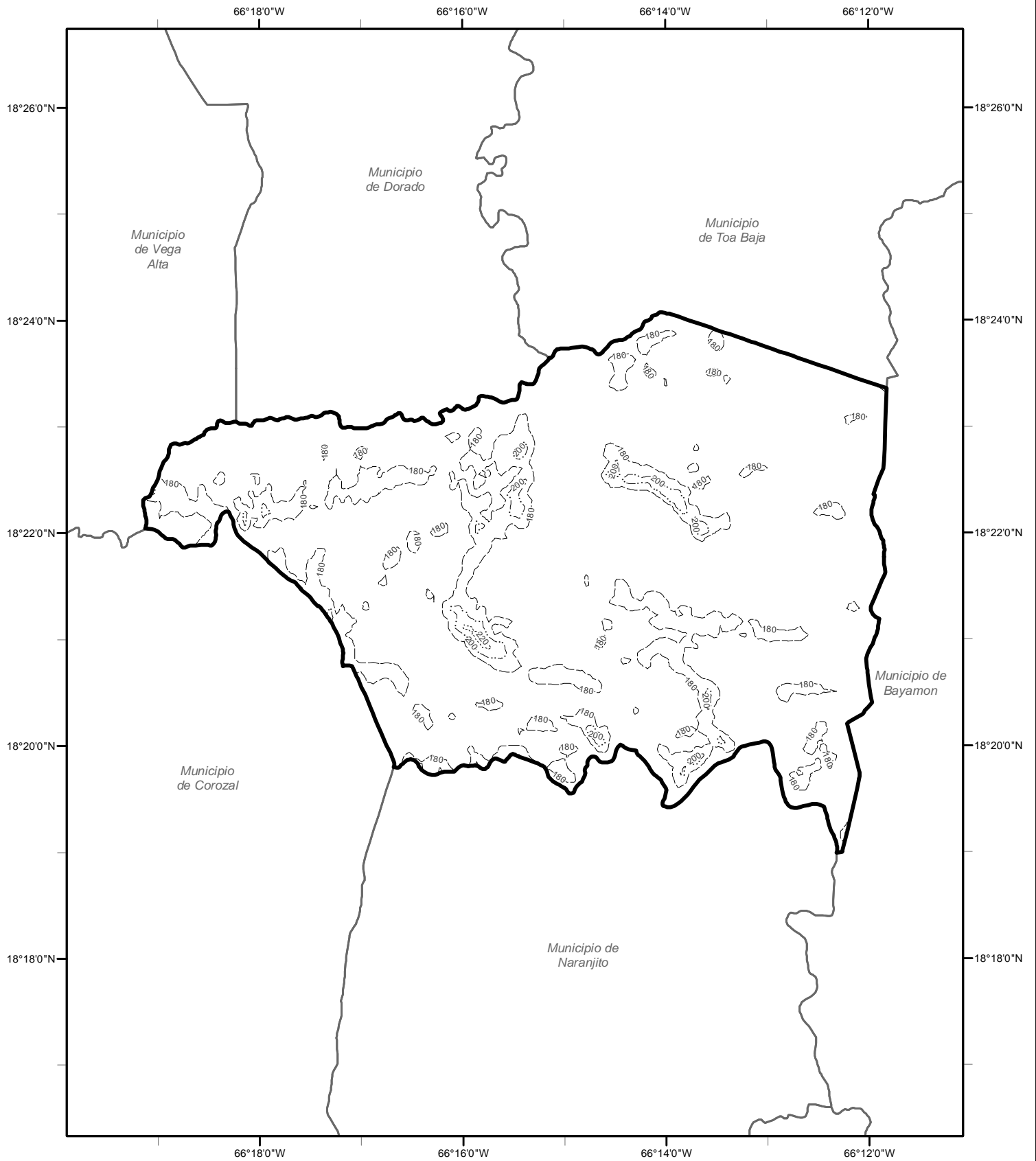
### Risk Category III Wind Contour (mph)



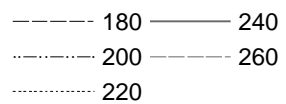


# Municipio de Toa Alta

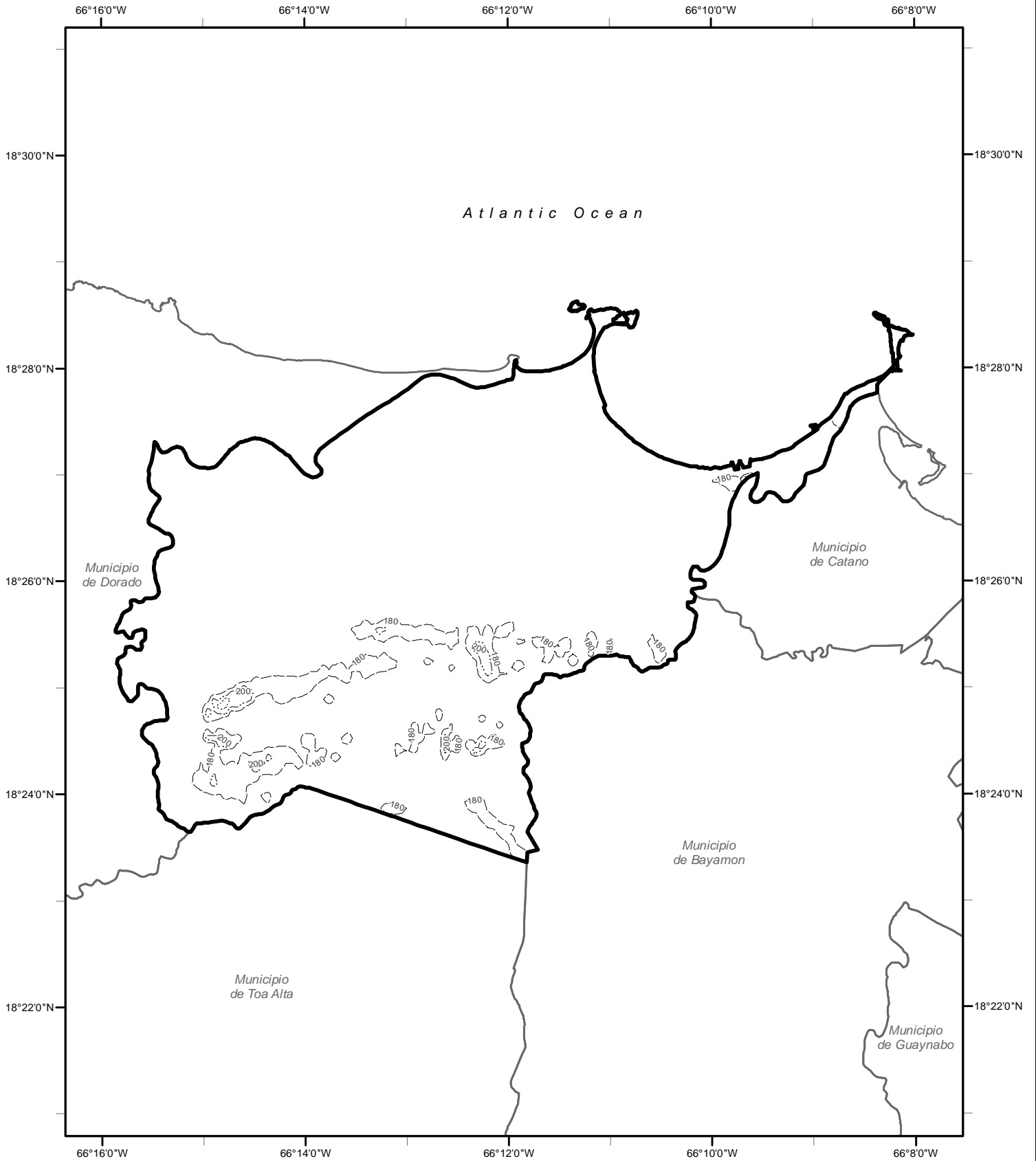
## Risk Category III Effective Wind Speed Map (mph)



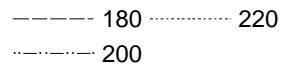
### Risk Category III Wind Contour (mph)



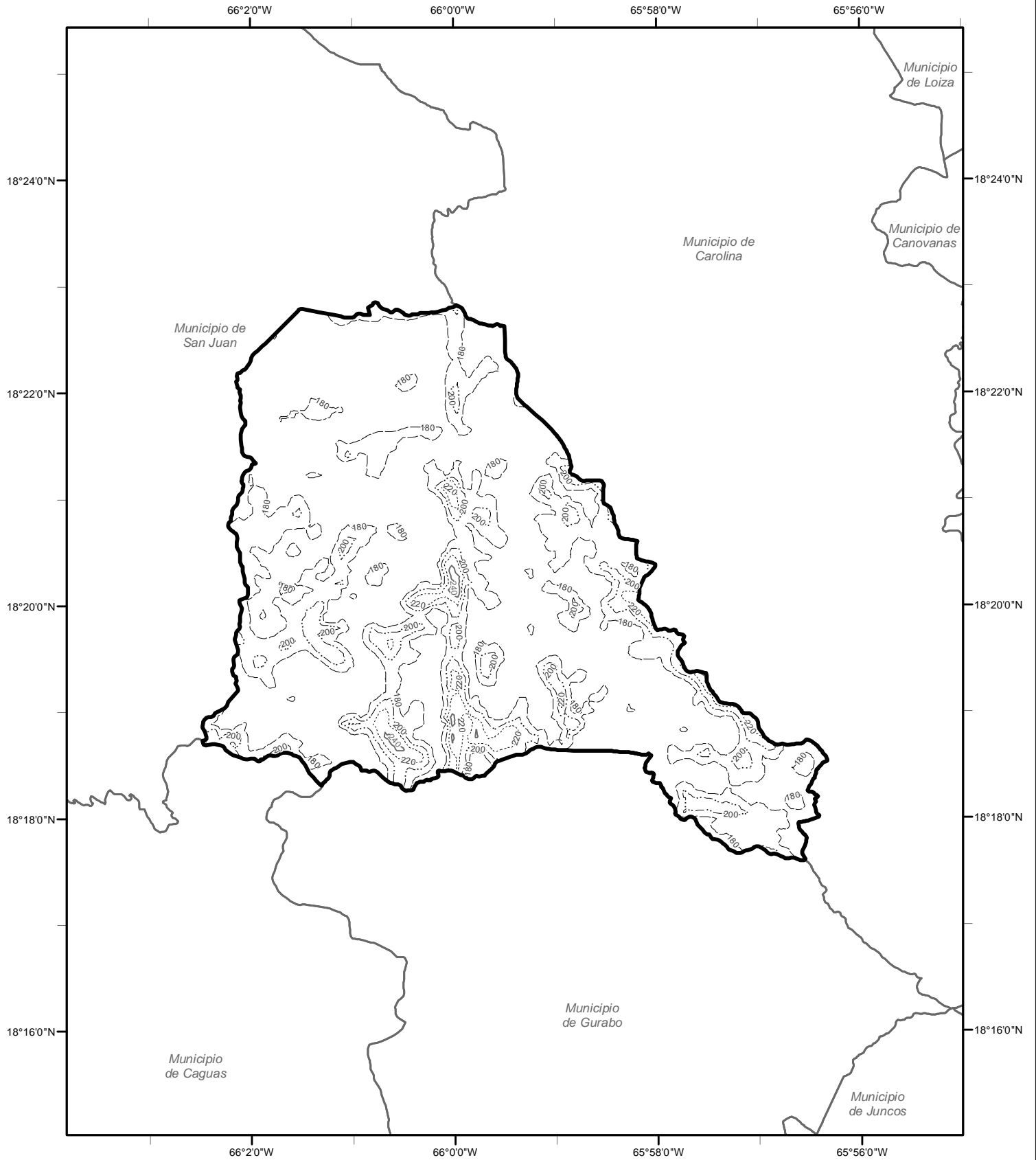
# Municipio de Toa Baja Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

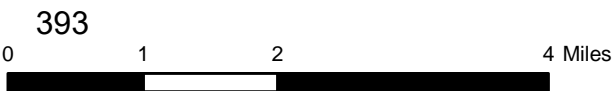


# Municipio de Trujillo Alto Risk Category III Effective Wind Speed Map (mph)



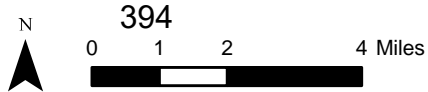
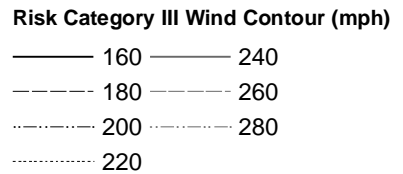
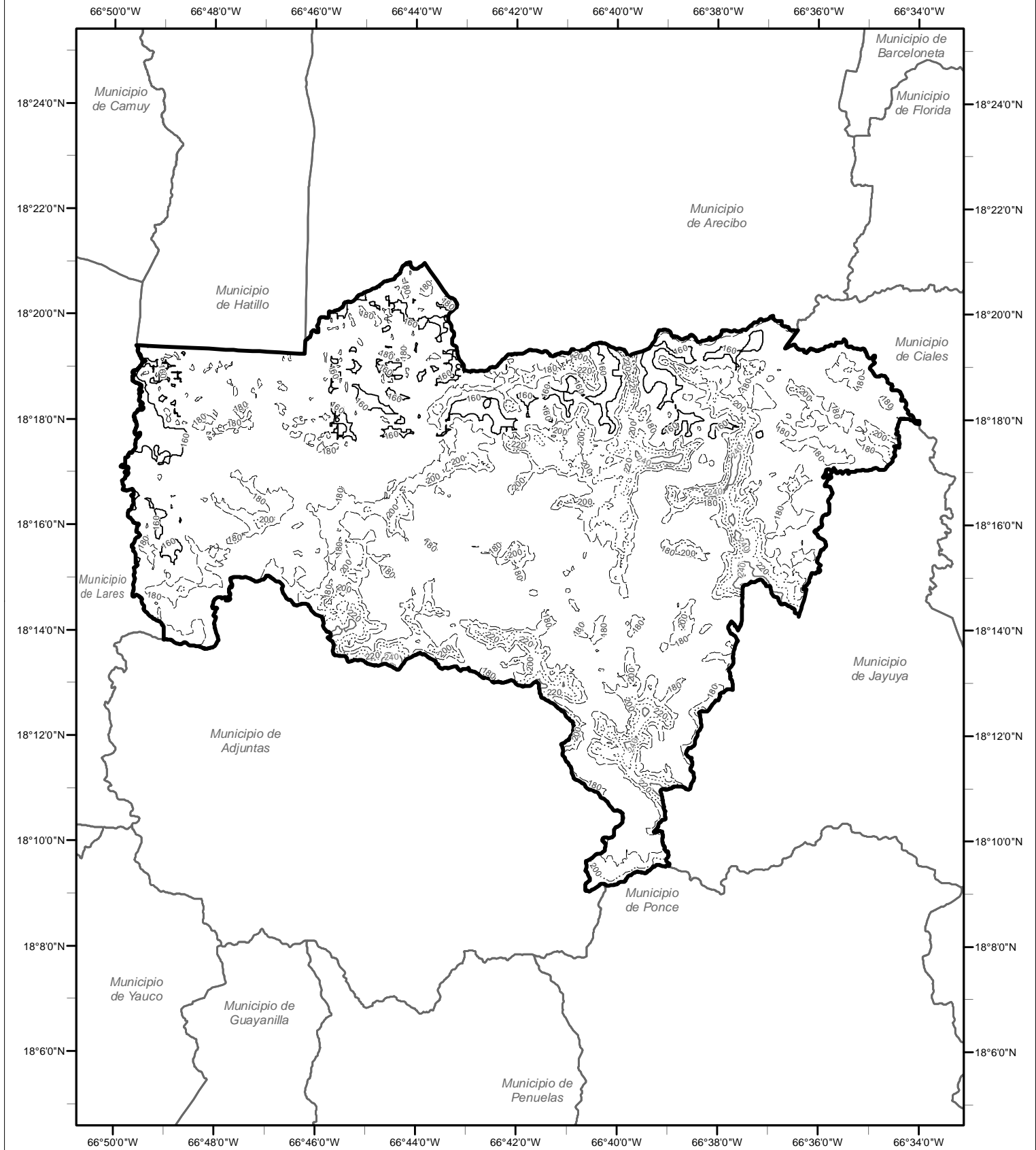
### Risk Category III Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260
- 280

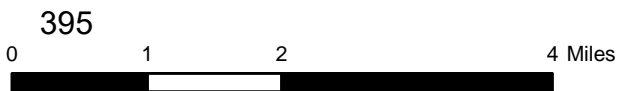
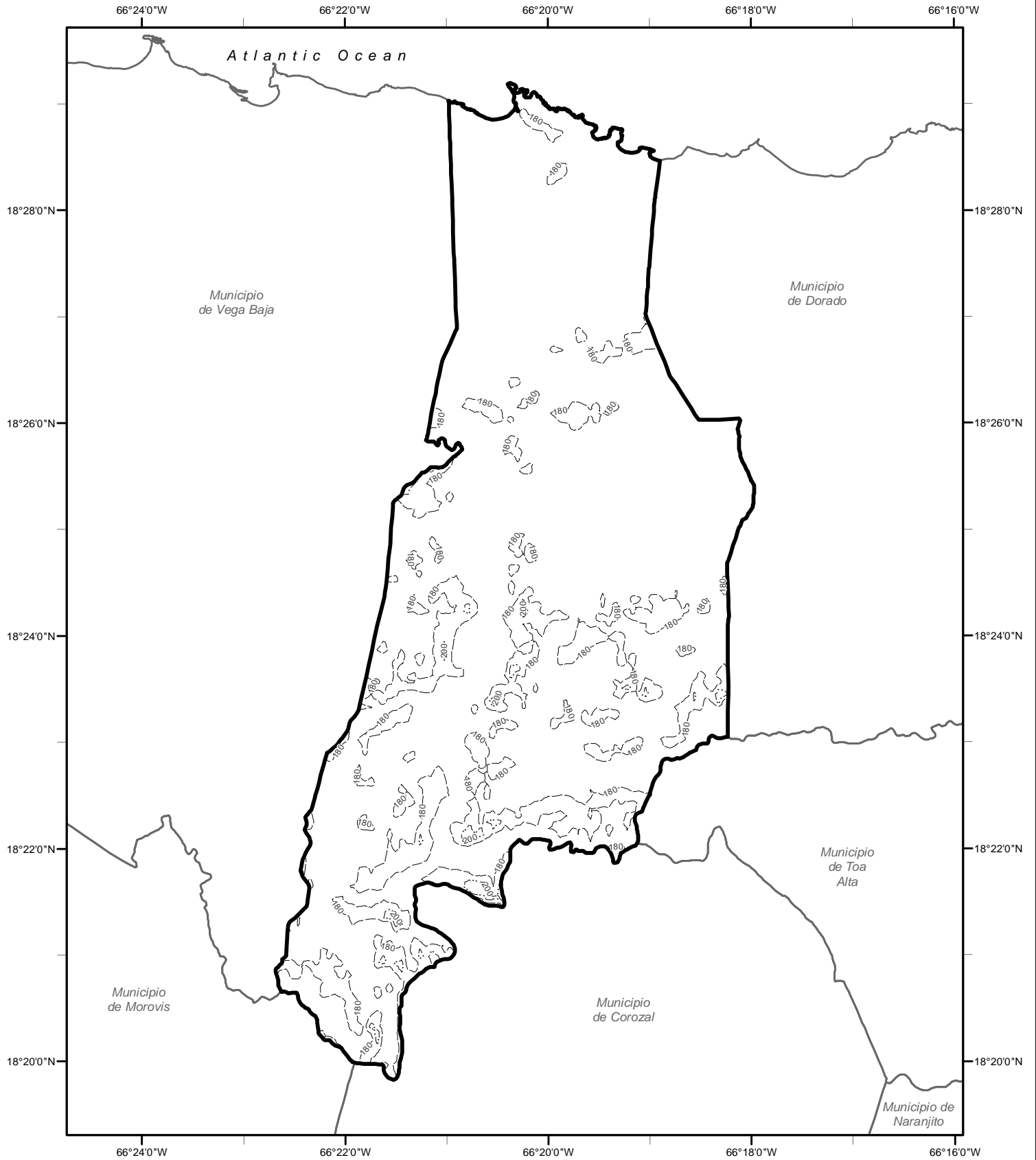


# Municipio de Utuado

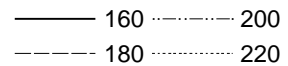
## Risk Category III Effective Wind Speed Map (mph)



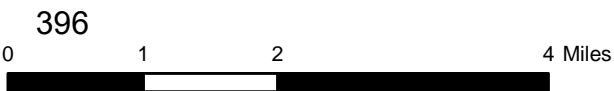
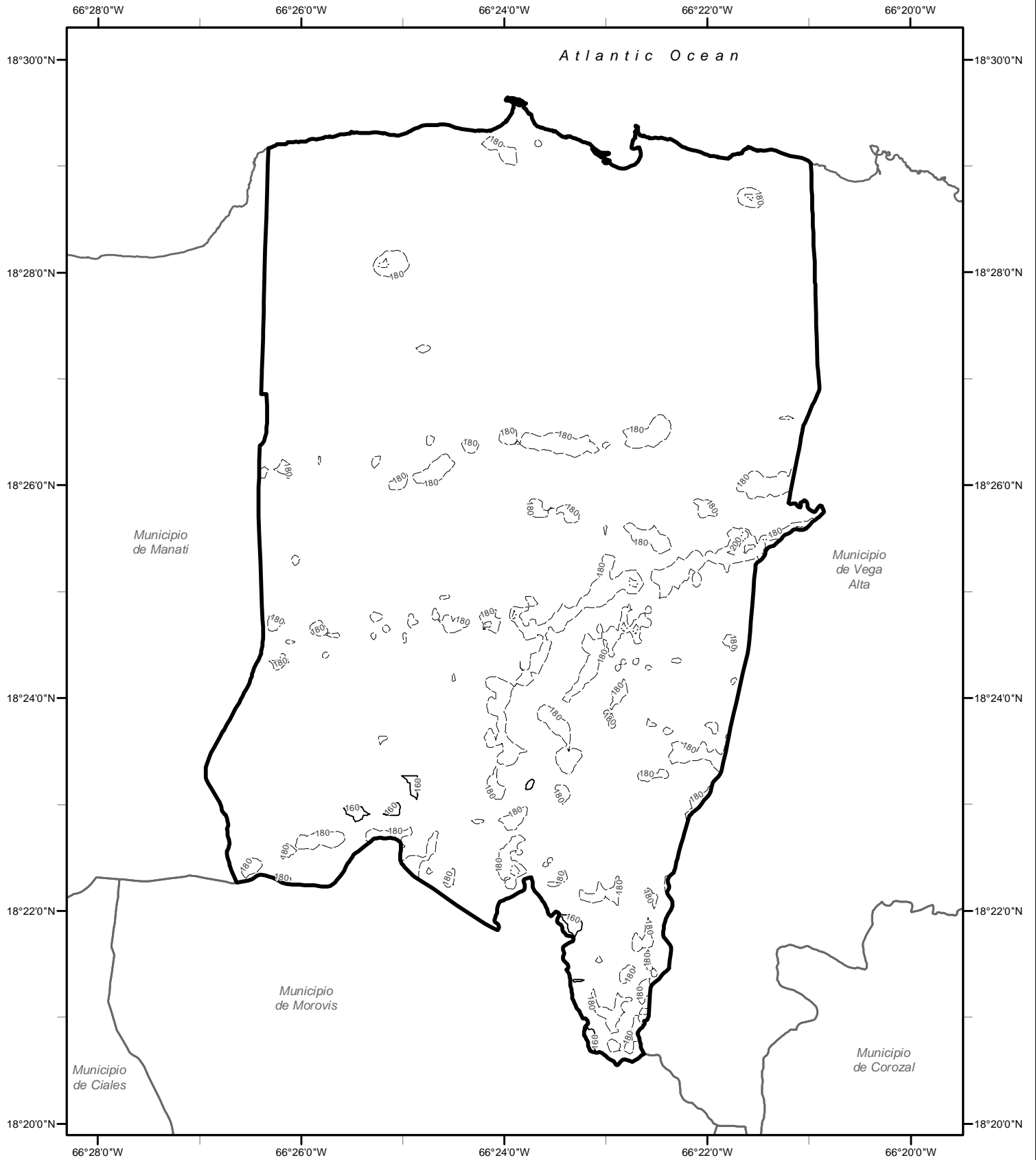
# Municipio de Vega Alta Risk Category III Effective Wind Speed Map (mph)



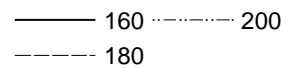
### Risk Category III Wind Contour (mph)



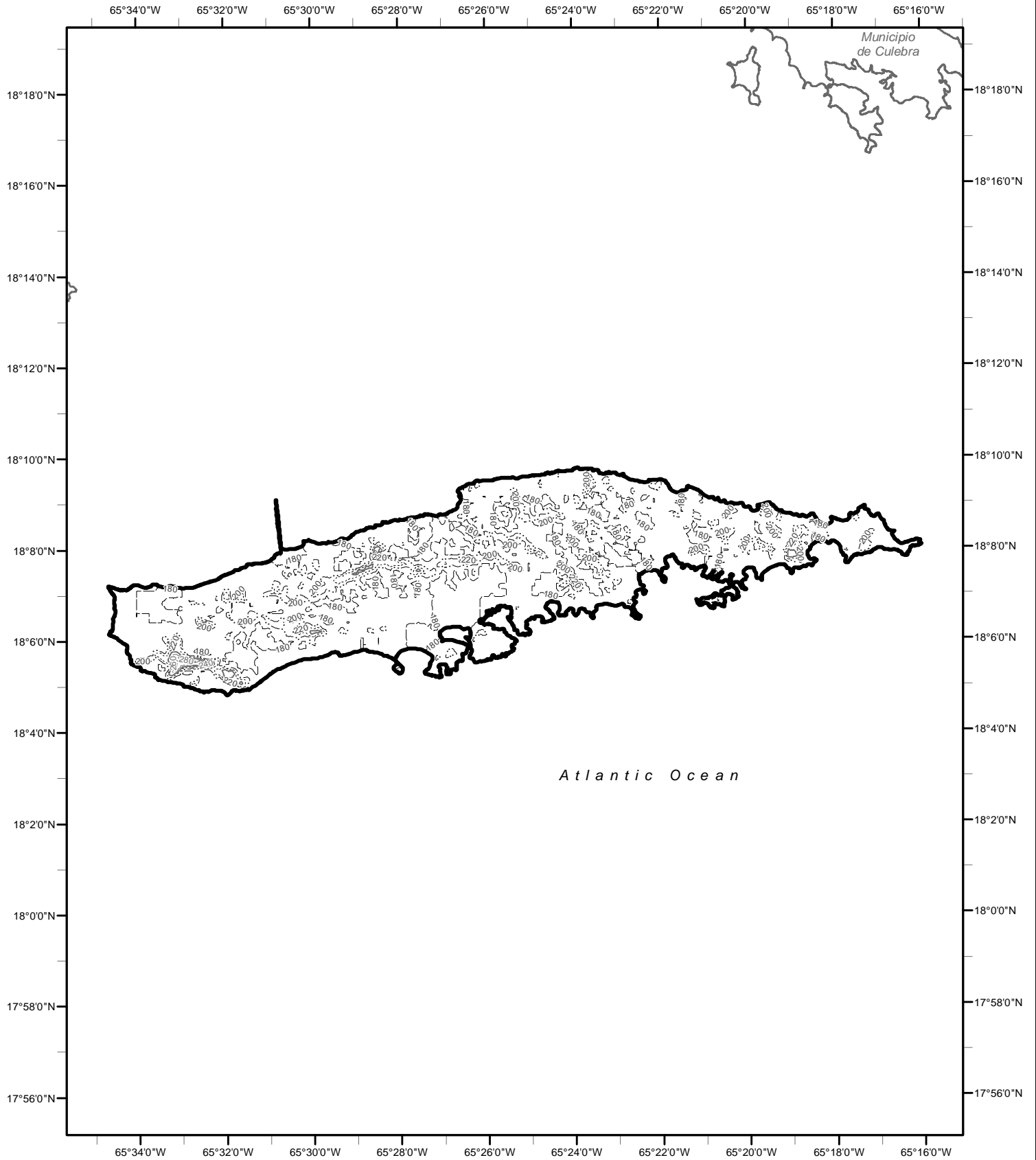
# Municipio de Vega Baja Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

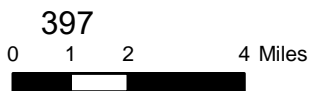


# Municipio de Vieques Risk Category III Effective Wind Speed Map (mph)



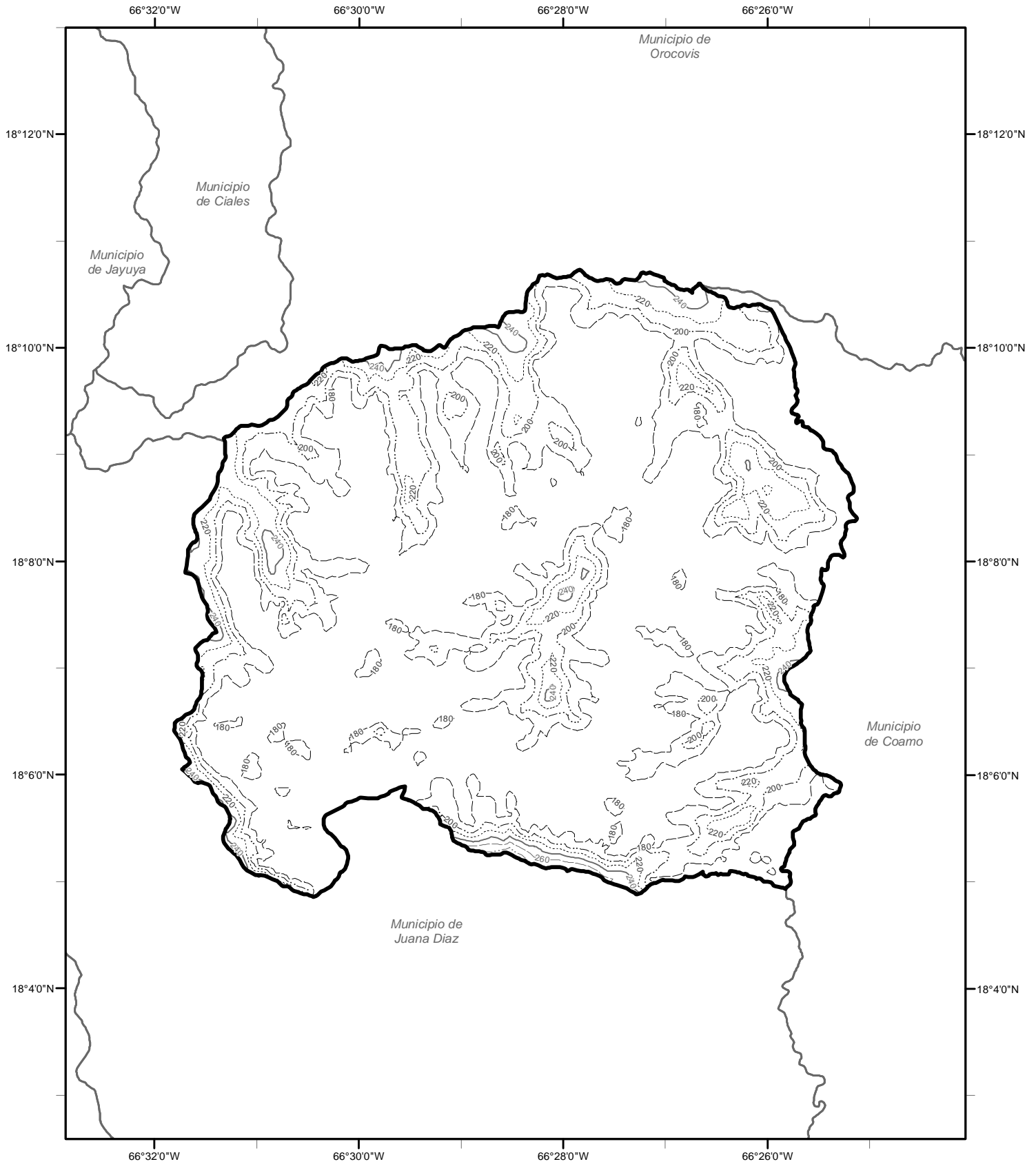
### Risk Category III Wind Contour (mph)

- 180 ----- 240
- ..... 200 ----- 260
- ..... 220 ----- 280



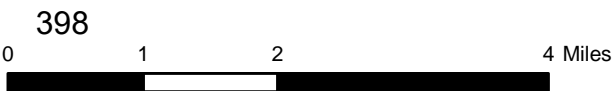
# Municipio de Villalba

## Risk Category III Effective Wind Speed Map (mph)



### Risk Category III Wind Contour (mph)

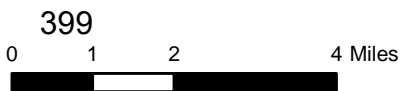
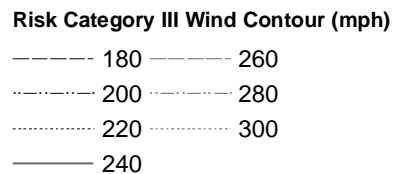
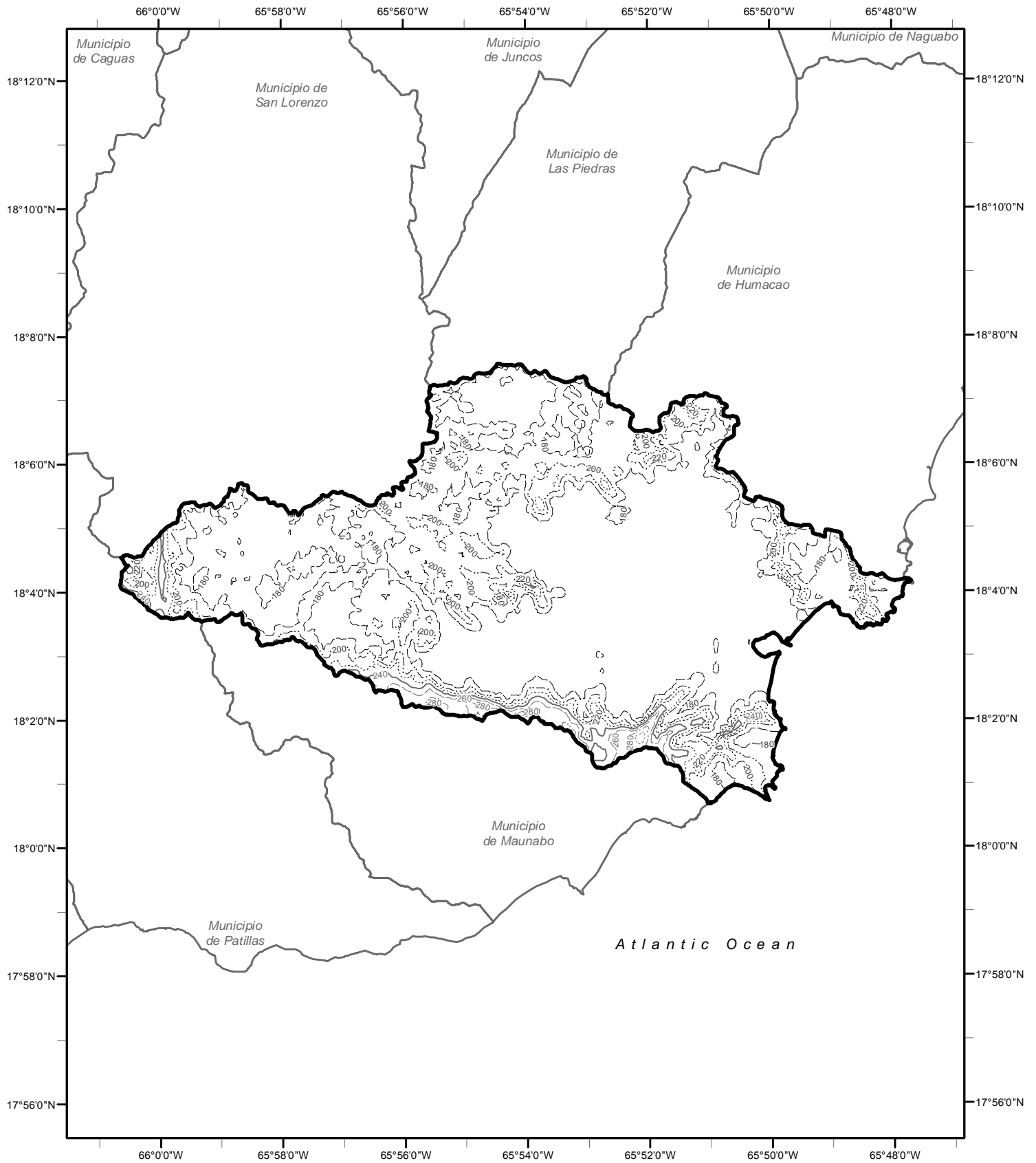
- 180 ----- 240
- ..... 200 ..... 260
- ..... 220 ..... 280



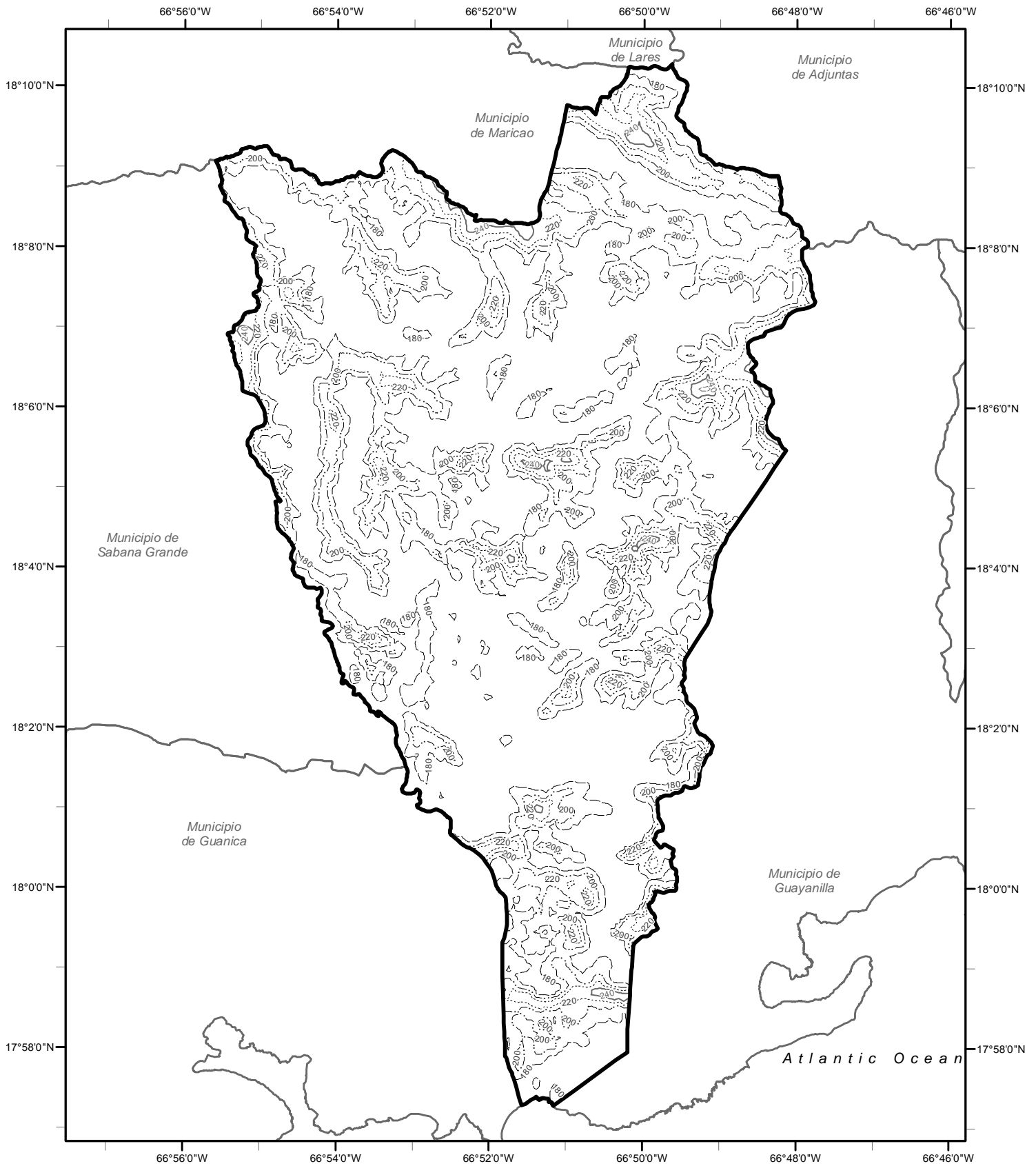


# Municipio de Yabucoa

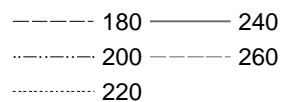
## Risk Category III Effective Wind Speed Map (mph)



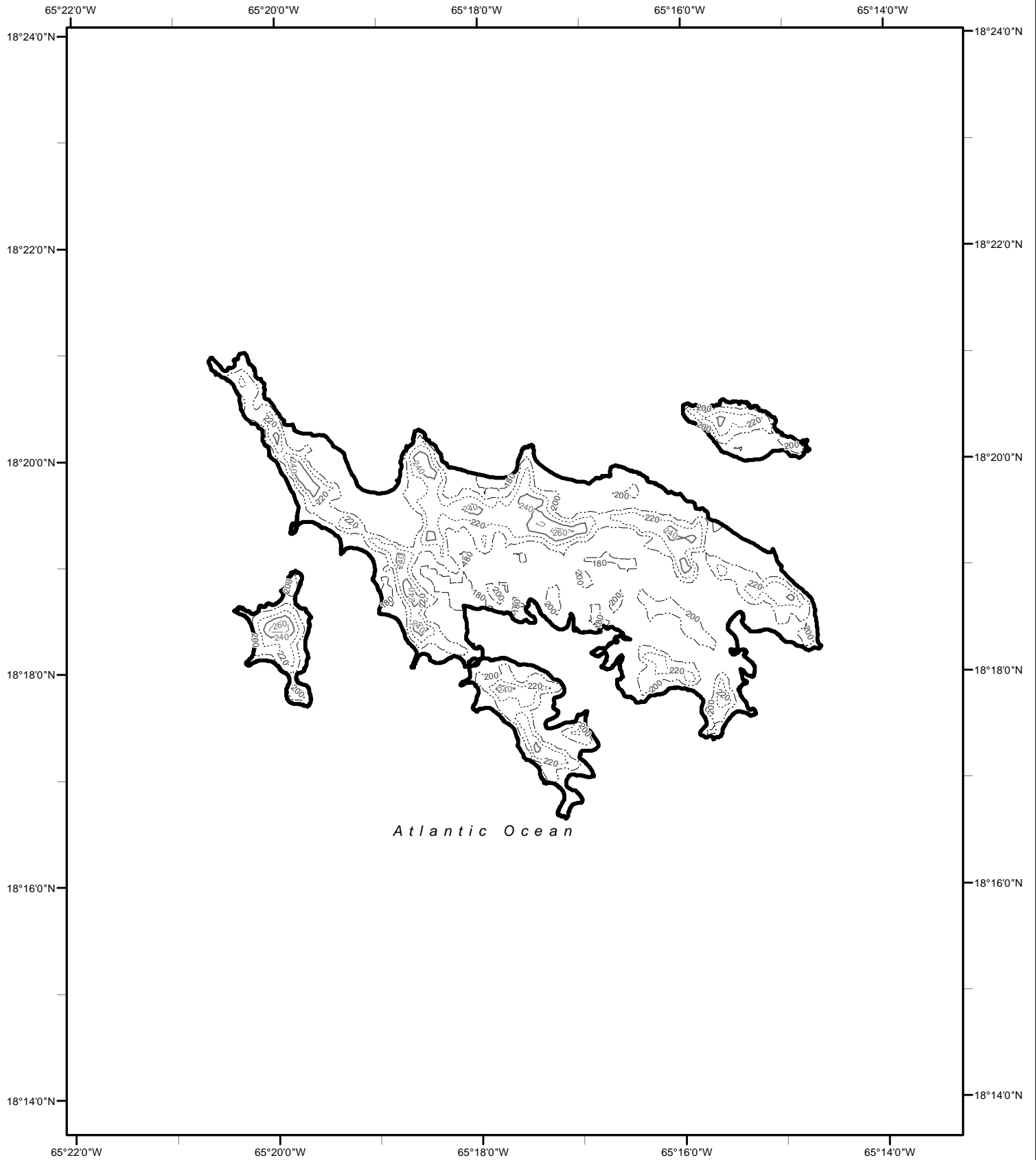
# Municipio de Yauco Risk Category III Effective Wind Speed Map (mph)



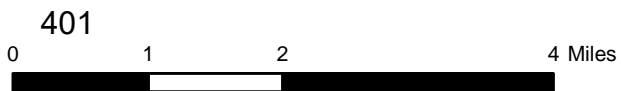
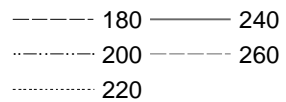
### Risk Category III Wind Contour (mph)



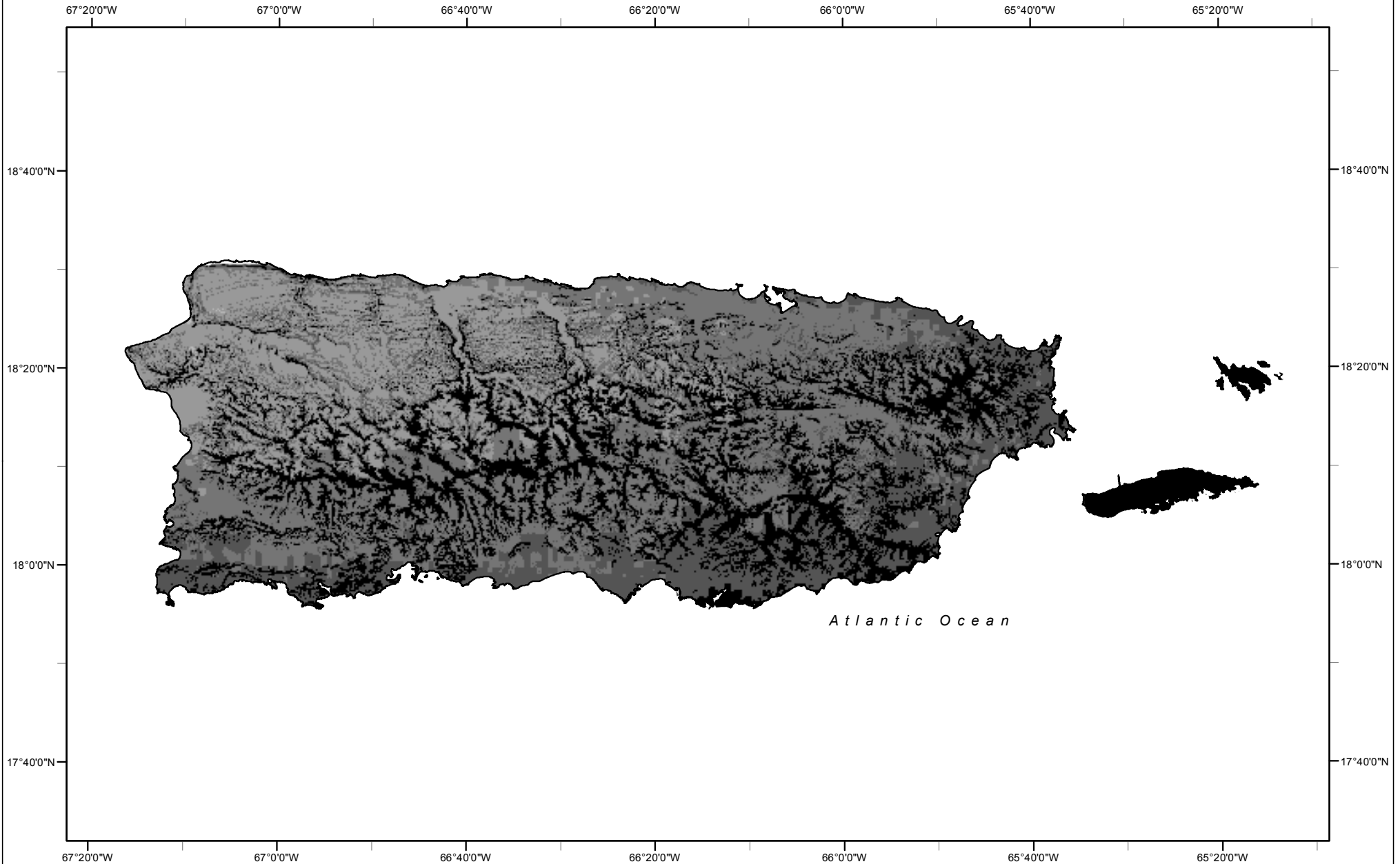
# Municipio de Culebra Risk Category III Effective Wind Speed Map (mph)



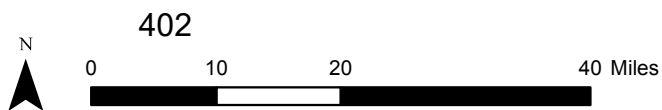
### Risk Category III Wind Contour (mph)



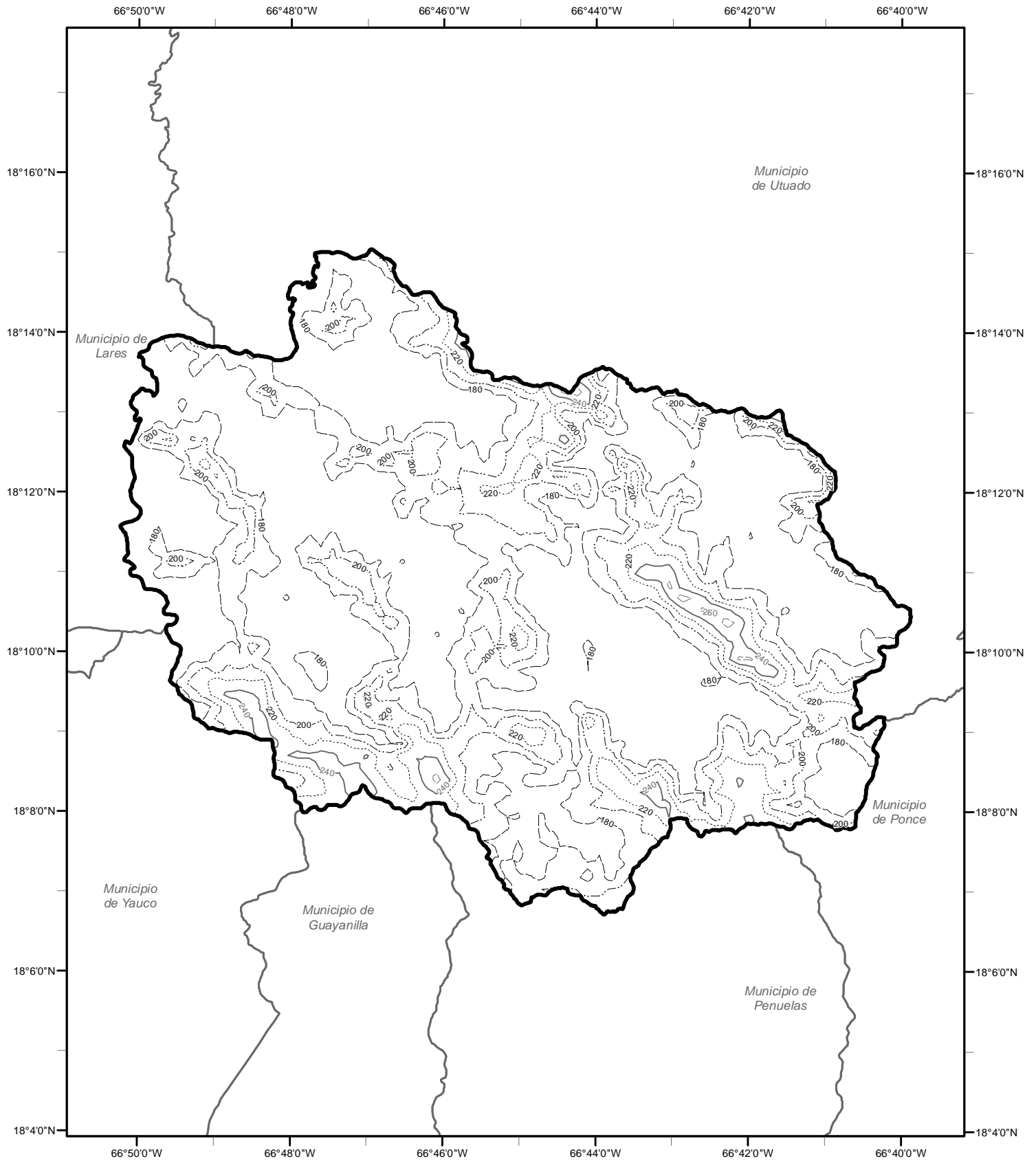
# Puerto Rico Risk Category IV Effective Wind Speed Map (mph)



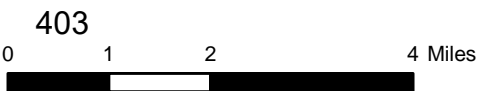
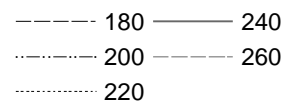
## Risk Category IV Wind Intervals (mph)



# Municipio de Adjuntas Risk Category IV Effective Wind Speed Map (mph)

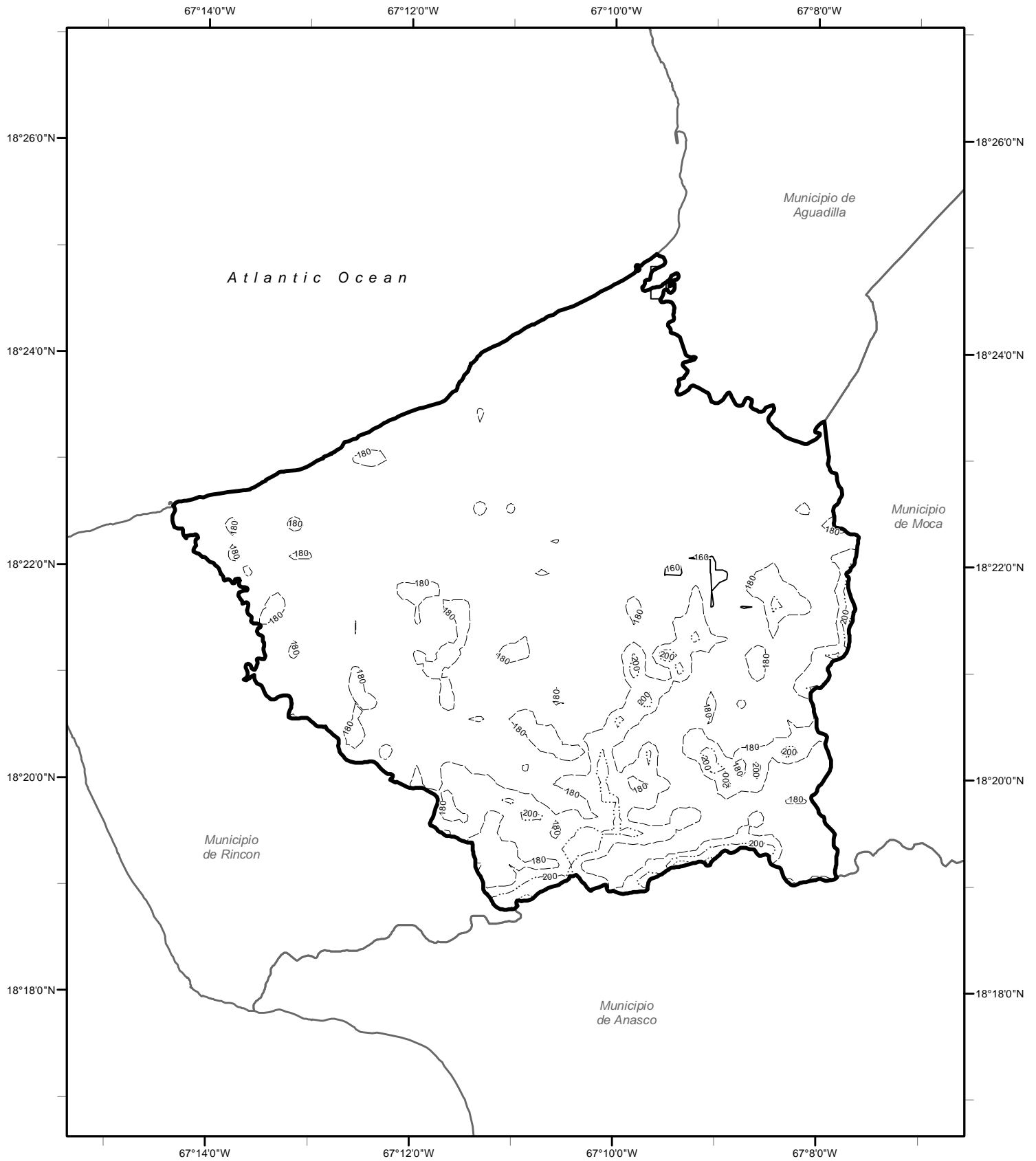


### Risk Category IV Wind Contour (mph)



403

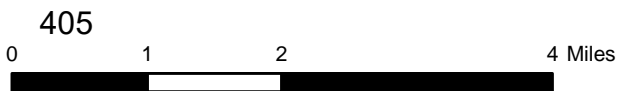
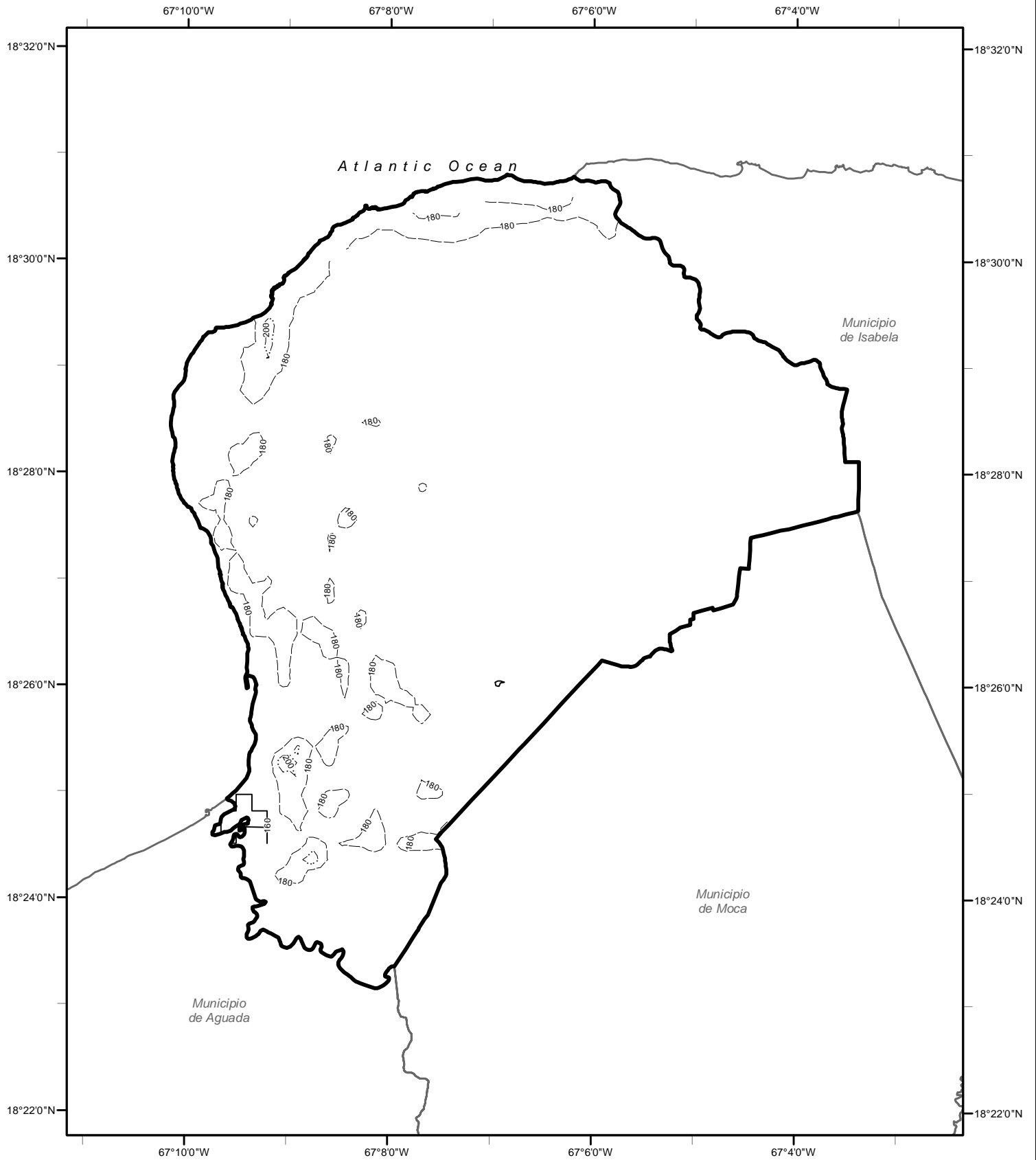
# Municipio de Aguada Risk Category IV Effective Wind Speed Map (mph)



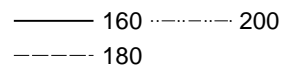
### Risk Category IV Wind Contour (mph)

- 160
- 180
- 200
- 220

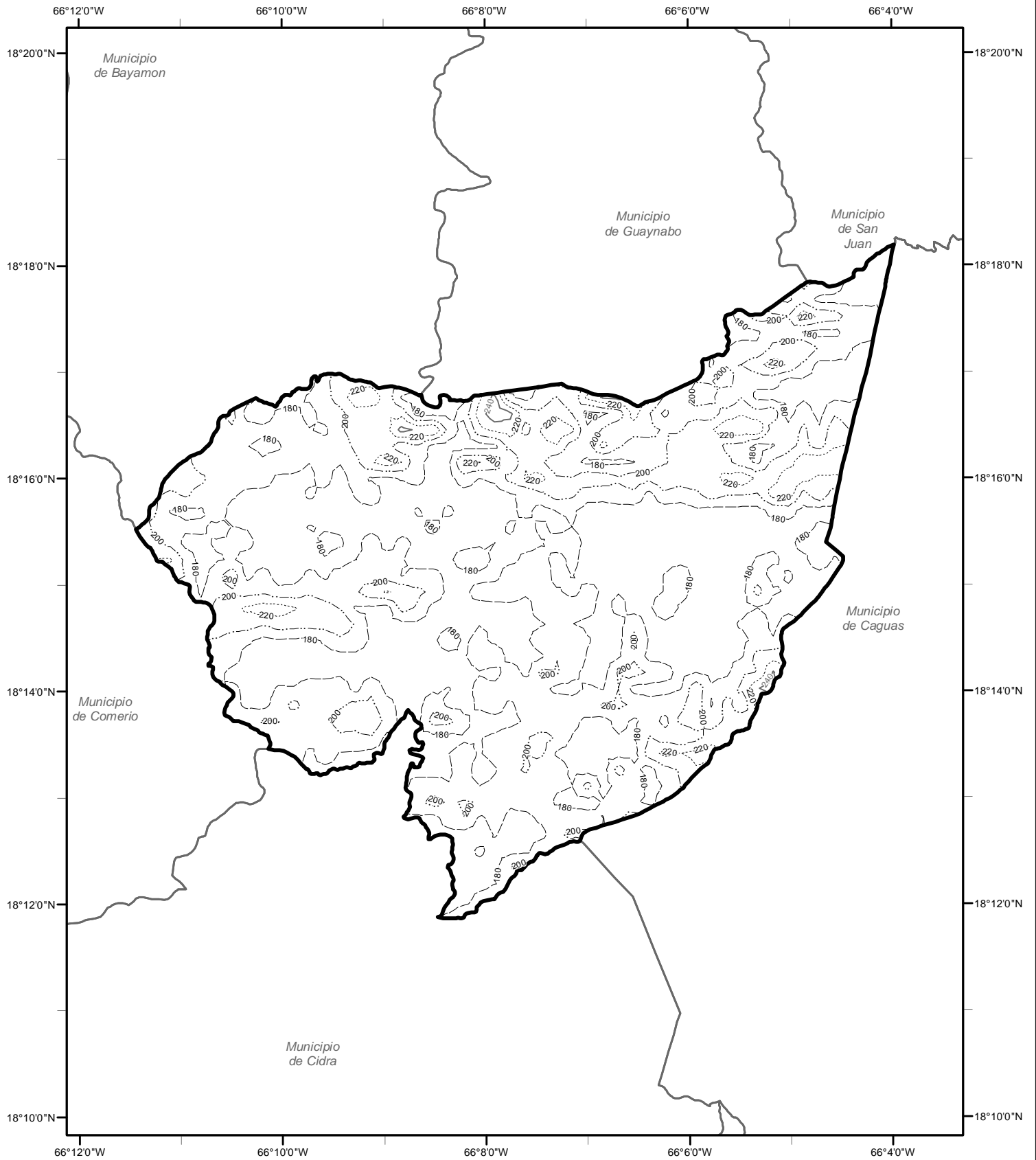
# Municipio de Aguadilla Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



# Municipio de Aguas Buenas Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

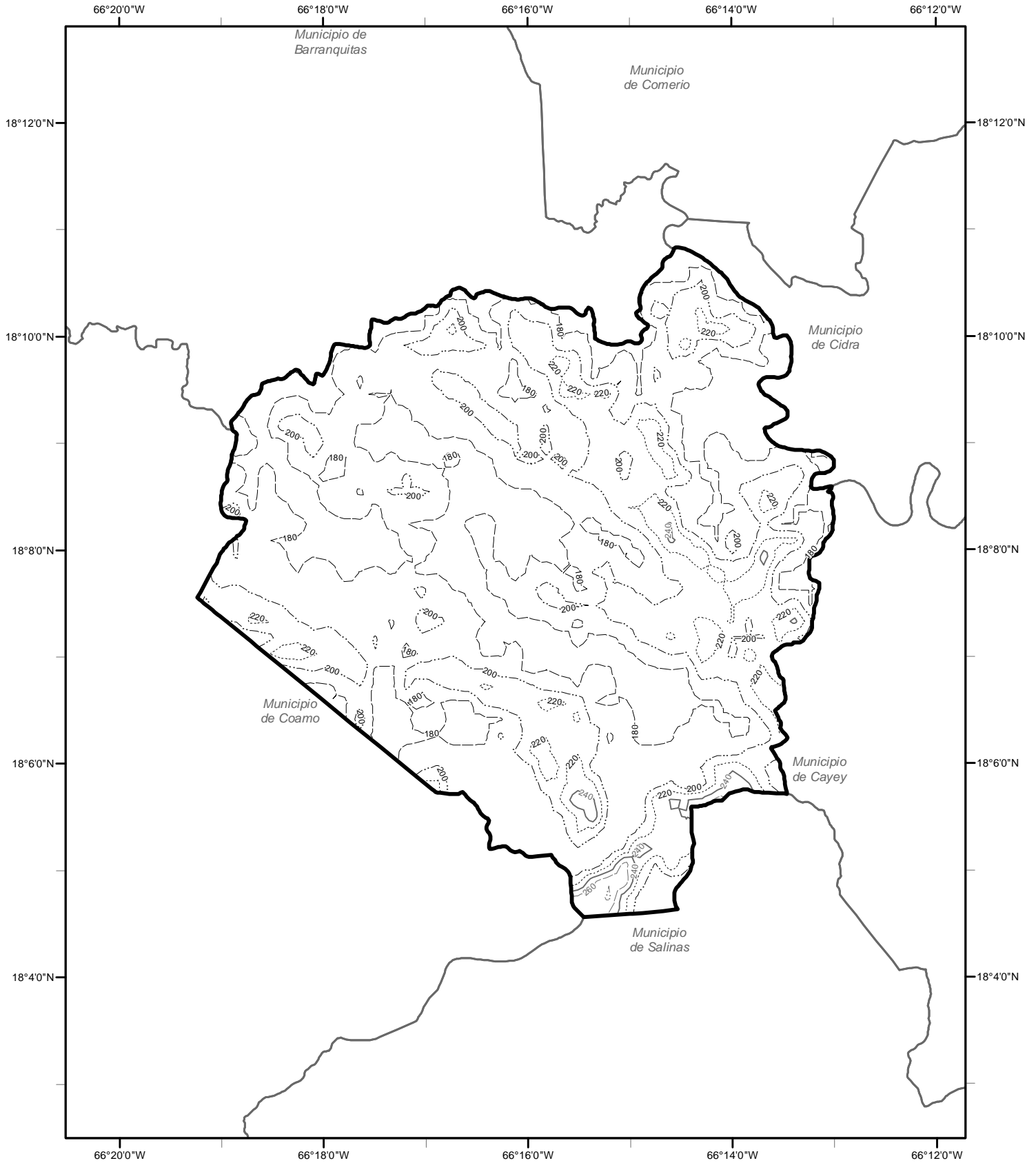
- 180
- ..... 200
- ..... 220
- 240



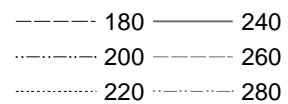


# Municipio de Aibonito

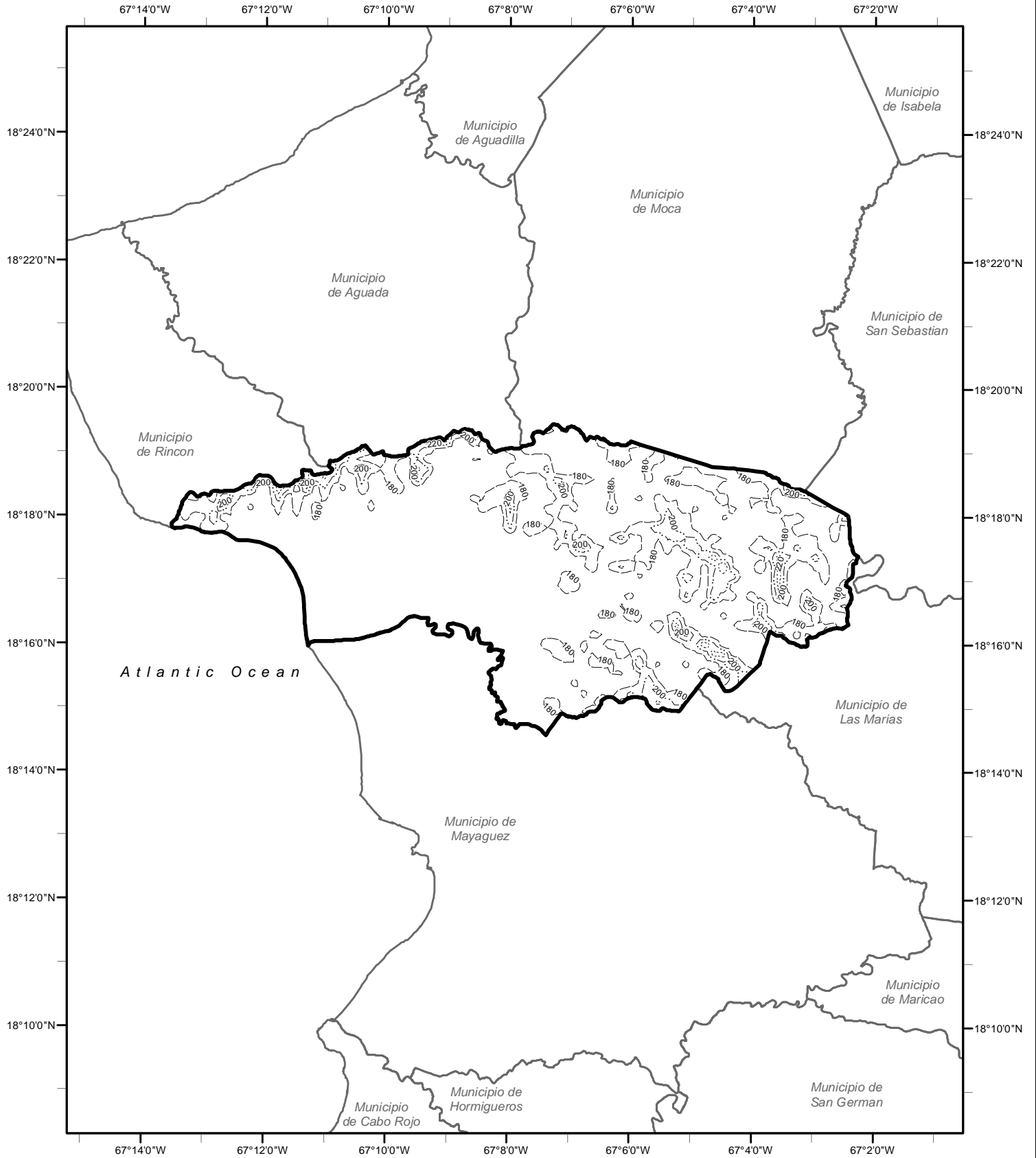
## Risk Category IV Effective Wind Speed Map (mph)



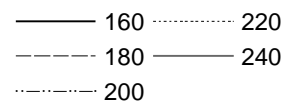
### Risk Category IV Wind Contour (mph)



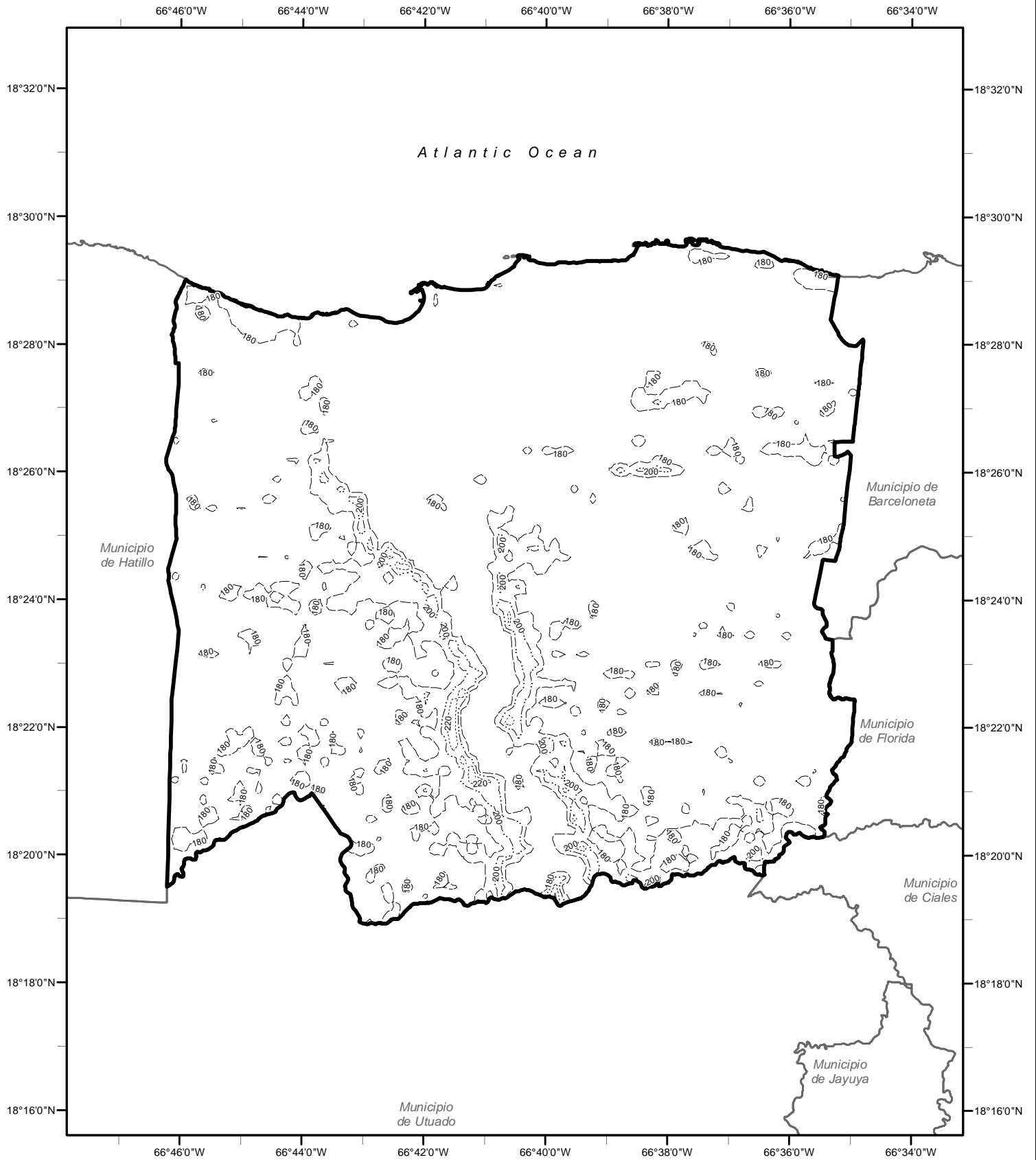
# Municipio de Anasco Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

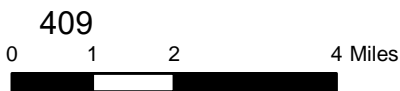


# Municipio de Arecibo Risk Category IV Effective Wind Speed Map (mph)

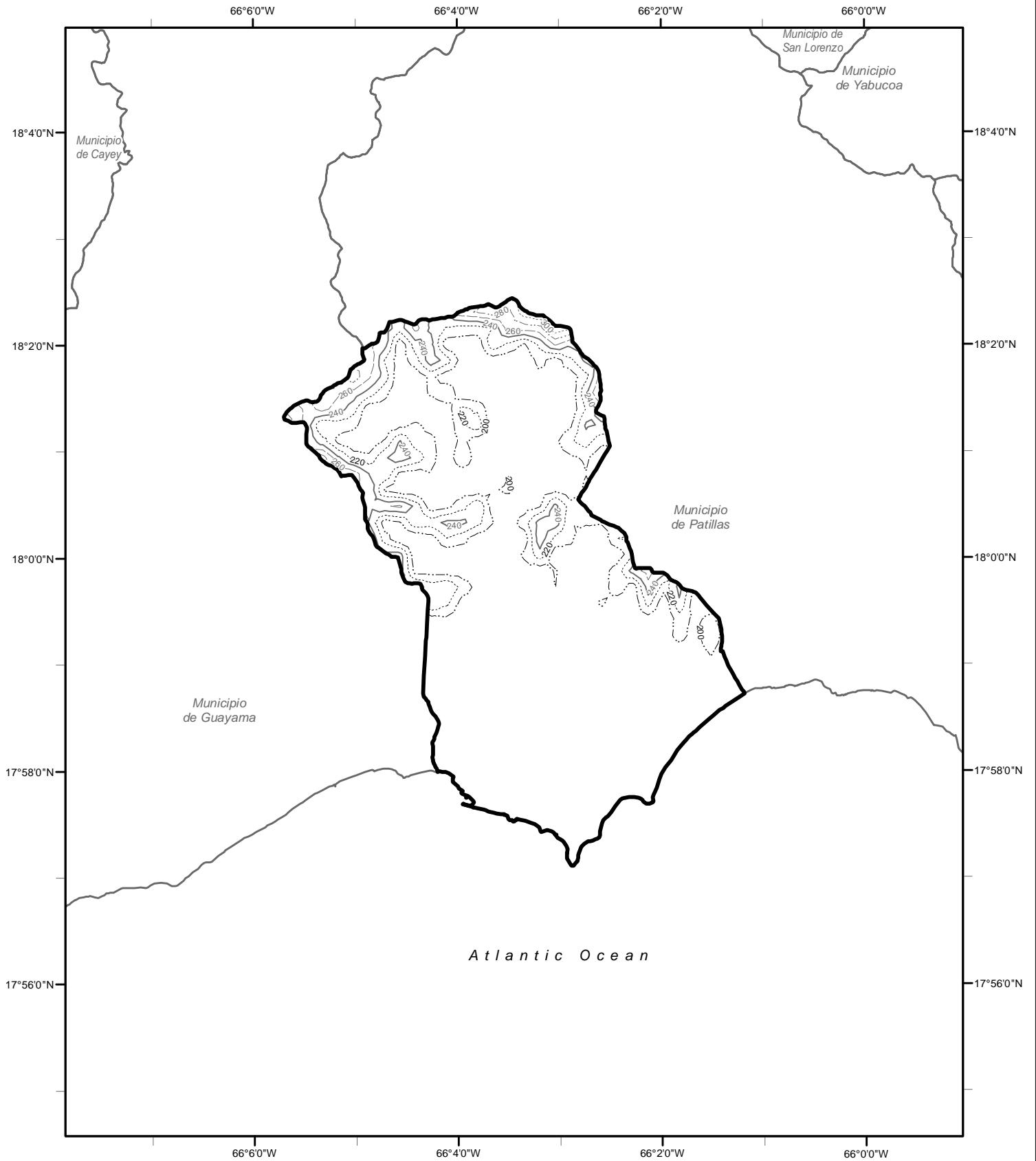


### Risk Category IV Wind Contour (mph)

- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



# Municipio de Arroyo Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

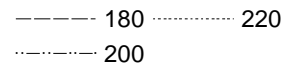
- 180 ----- 260
- ..... 200 ..... 280
- ..... 220 ..... 300
- 240 ----- 320



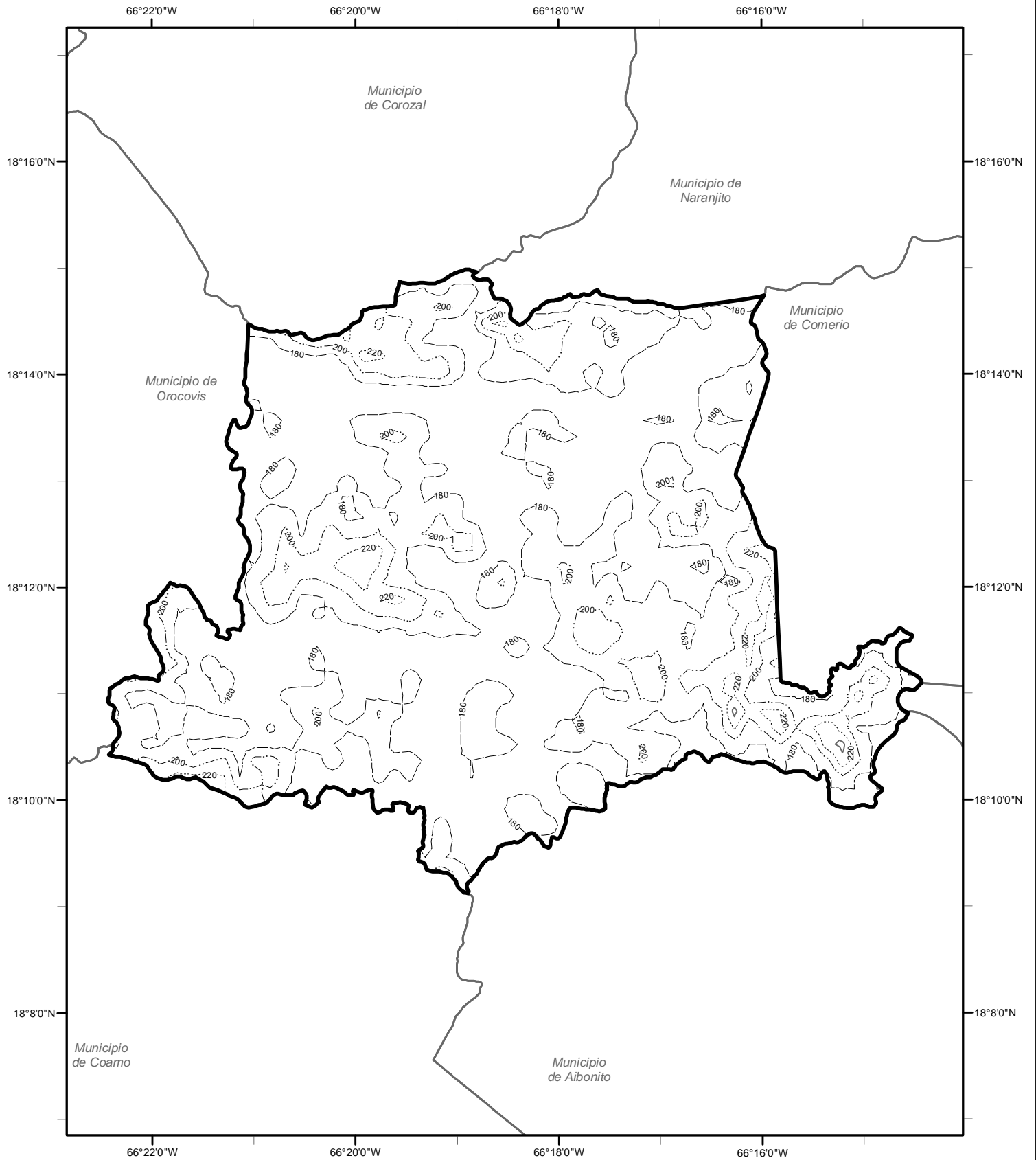
# Municipio de Barceloneta Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



# Municipio de Barranquitas Risk Category IV Effective Wind Speed Map (mph)

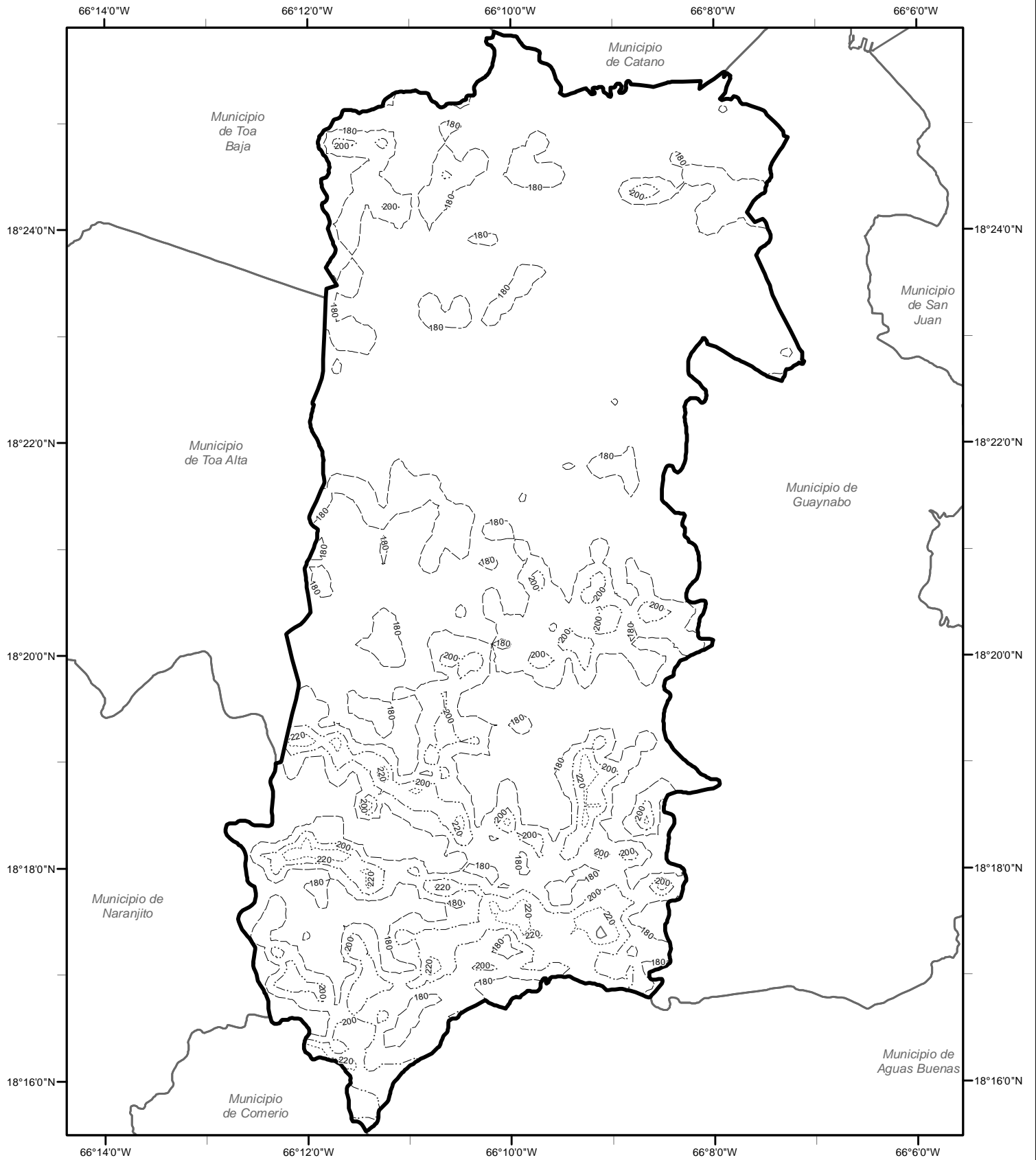


### Risk Category IV Wind Contour (mph)

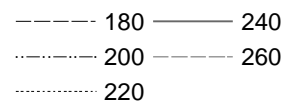
- 180
- ..... 200
- ..... 220
- 240

# Municipio de Bayamon

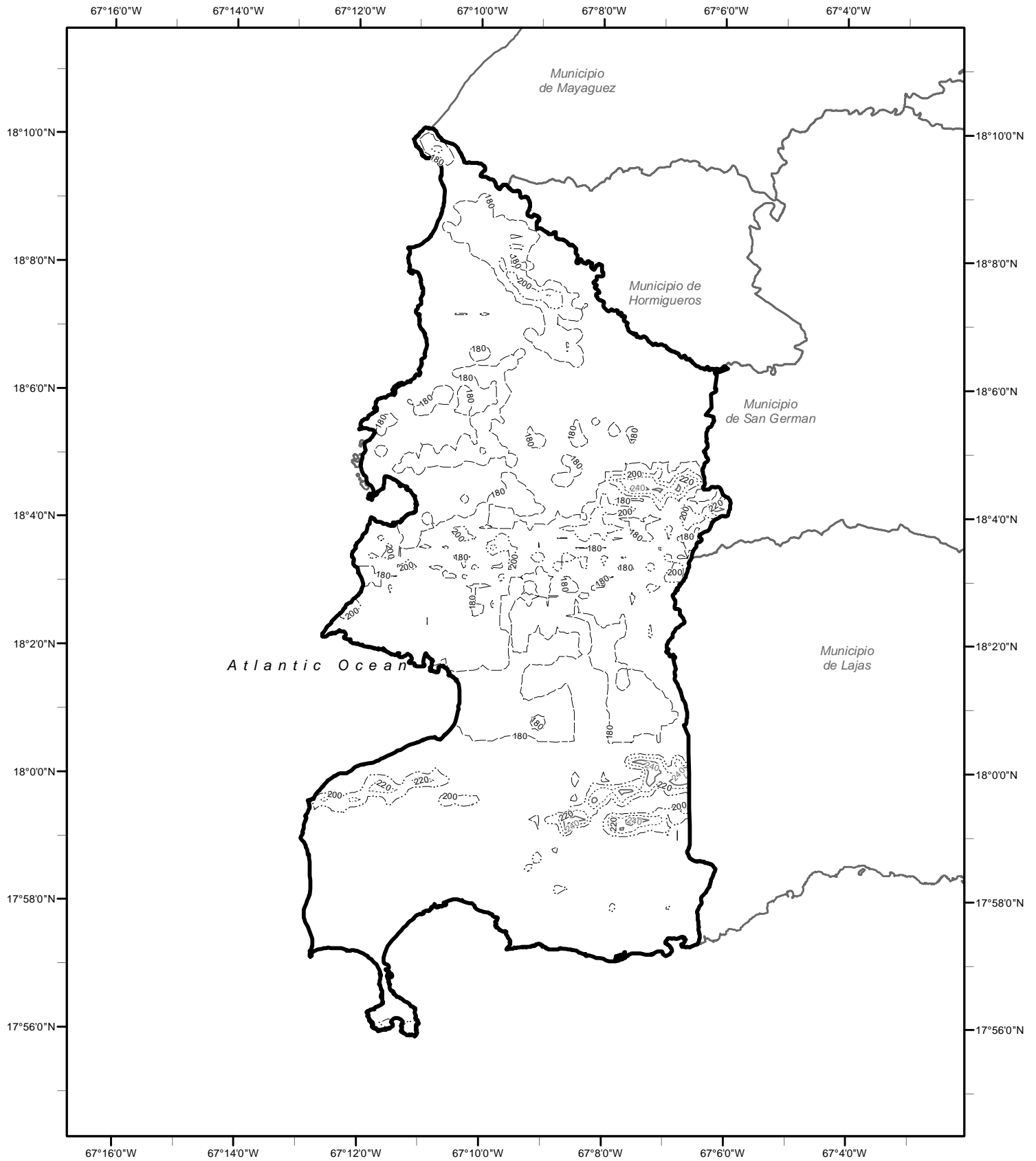
## Risk Category IV Effective Wind Speed Map (mph)



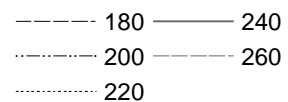
### Risk Category IV Wind Contour (mph)



# Municipio de Cabo Rojo Risk Category IV Effective Wind Speed Map (mph)

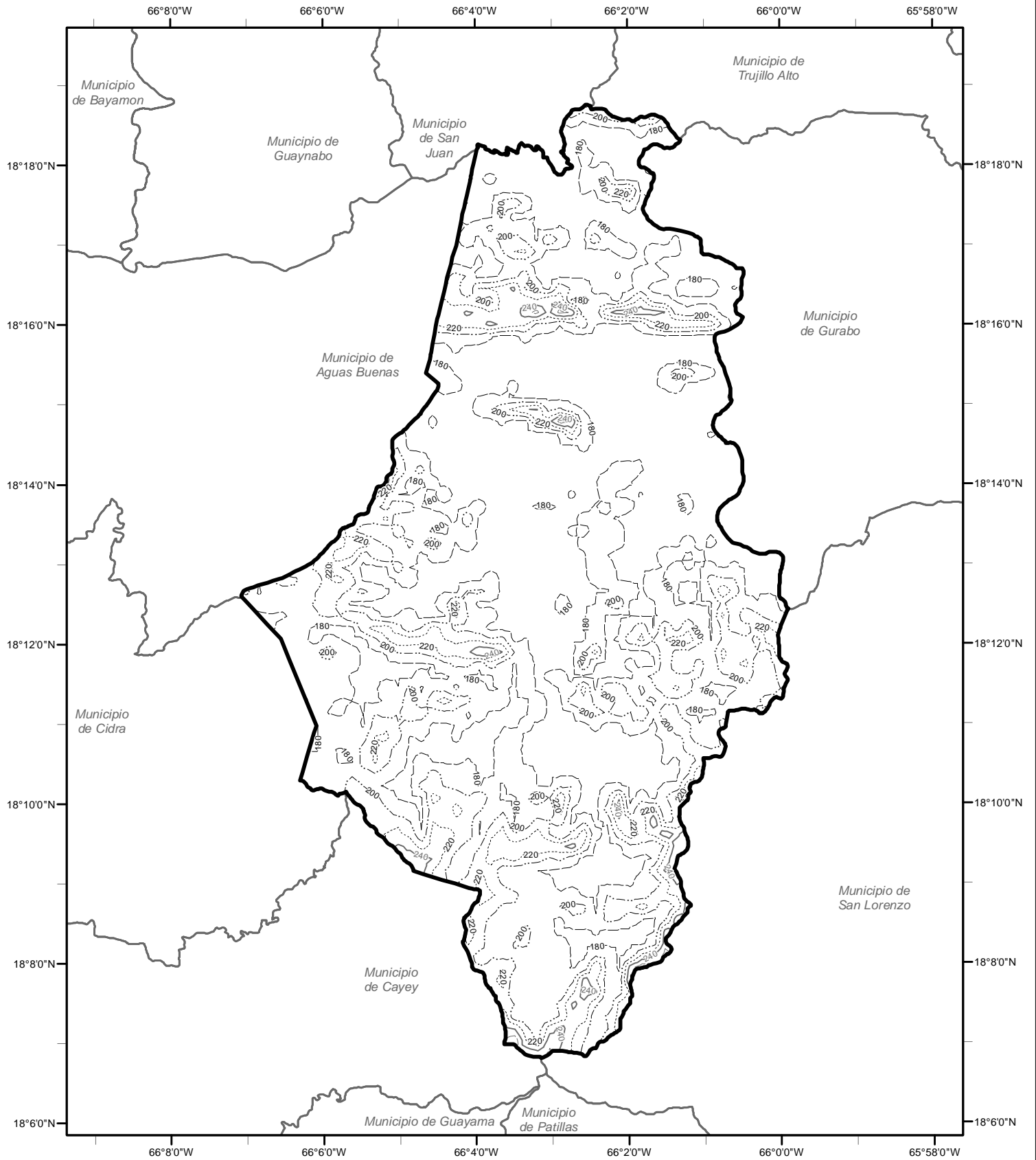


### Risk Category IV Wind Contour (mph)

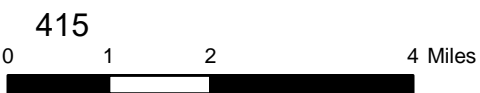
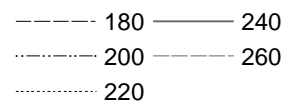




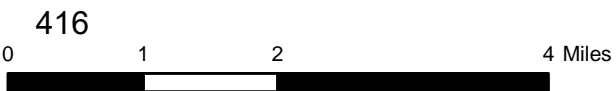
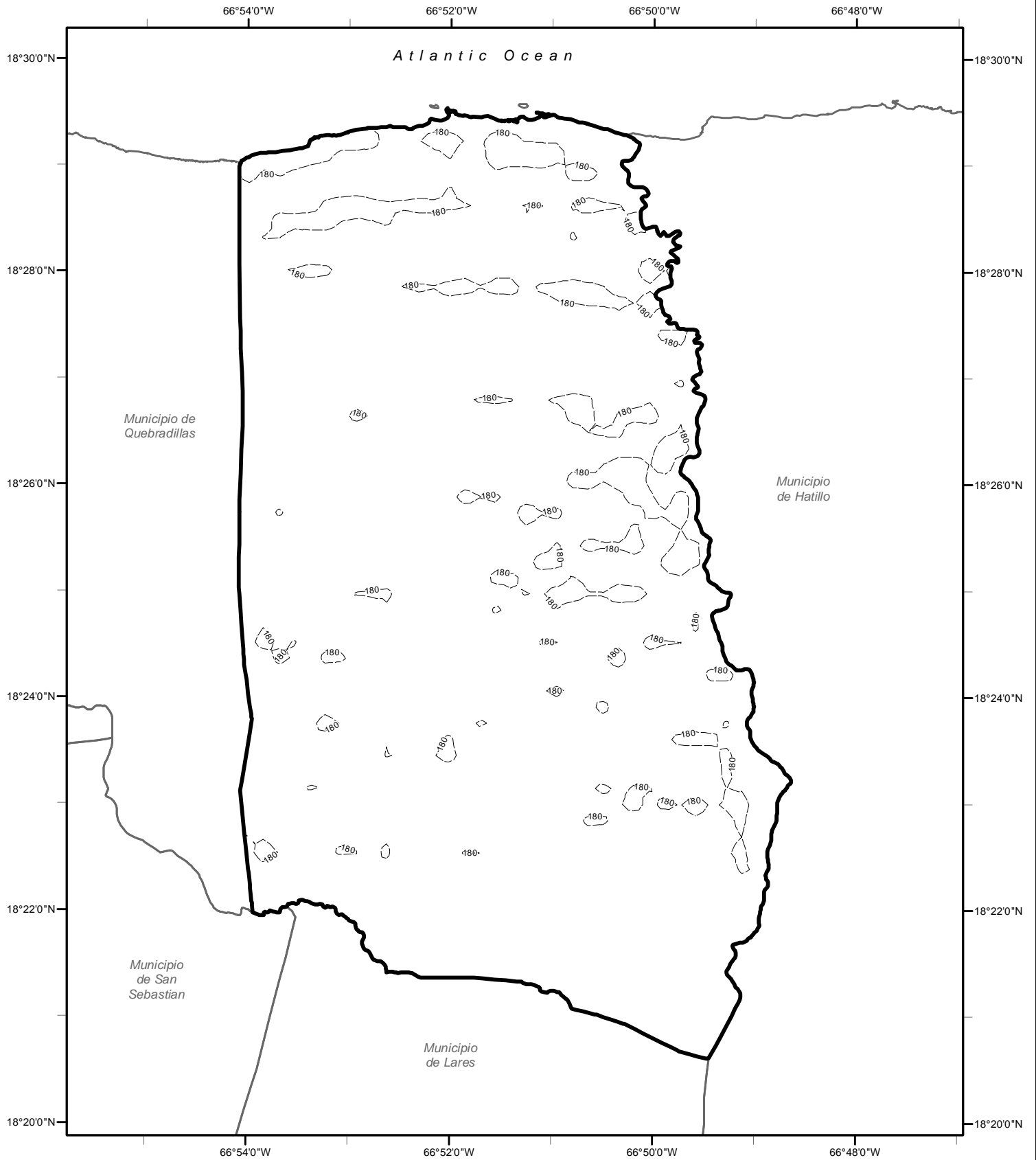
# Municipio de Caguas Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



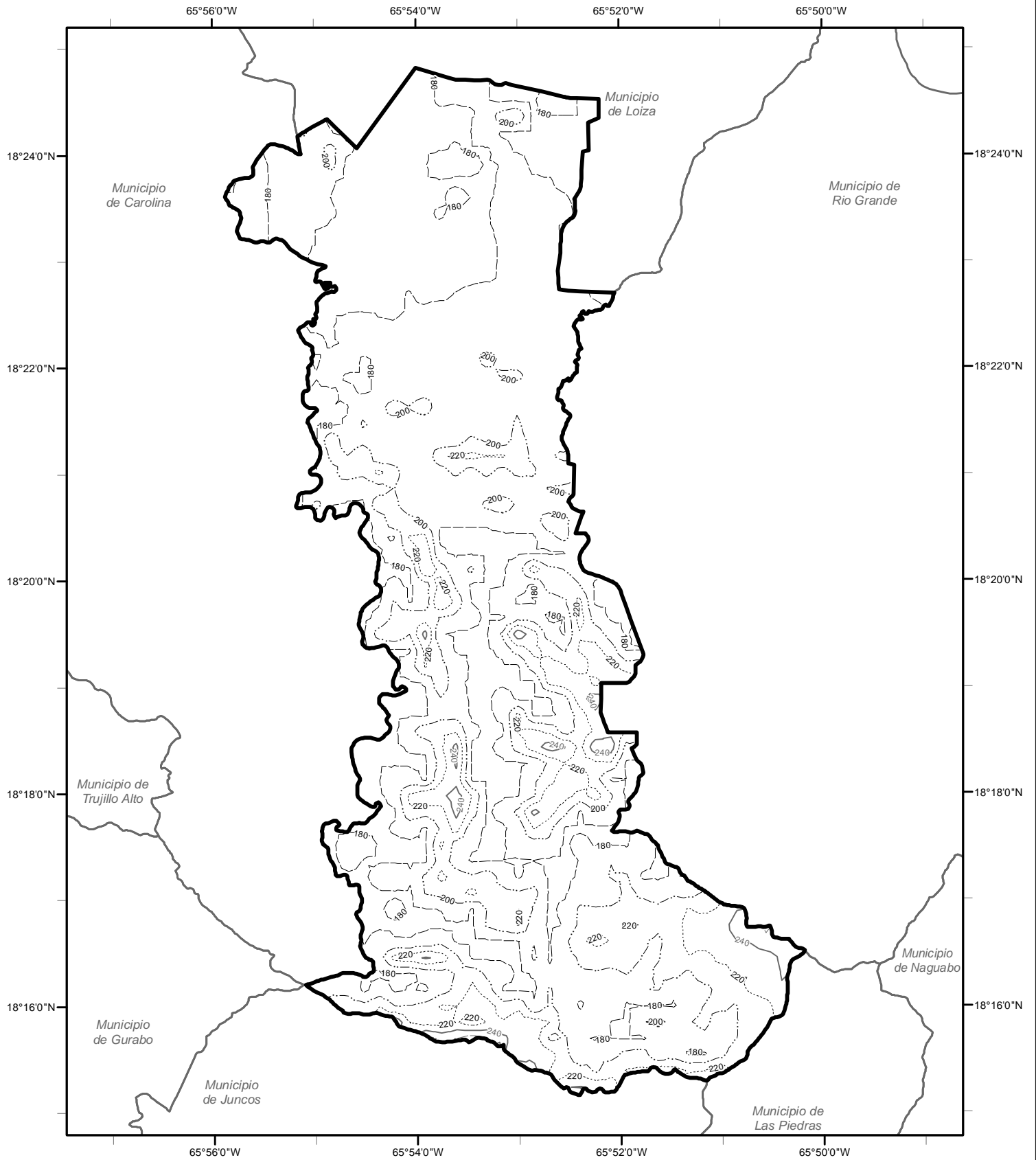
# Municipio de Camuy Risk Category IV Effective Wind Speed Map (mph)



Risk Category IV Wind Contour (mph)

----- 180 ..... 200

# Municipio de Canovanas Risk Category IV Effective Wind Speed Map (mph)



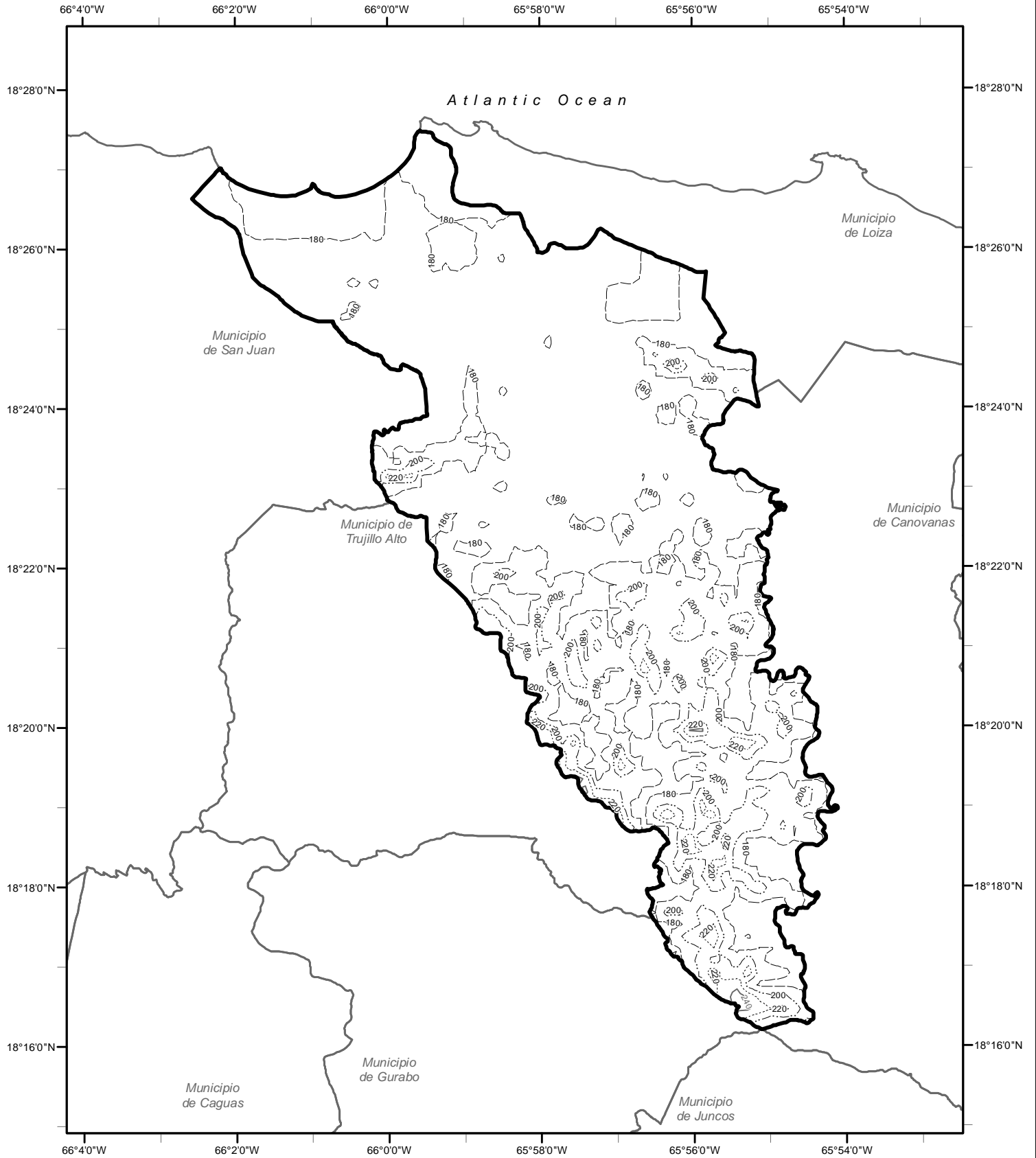
### Risk Category IV Wind Contour (mph)

- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



# Municipio de Carolina

## Risk Category IV Effective Wind Speed Map (mph)

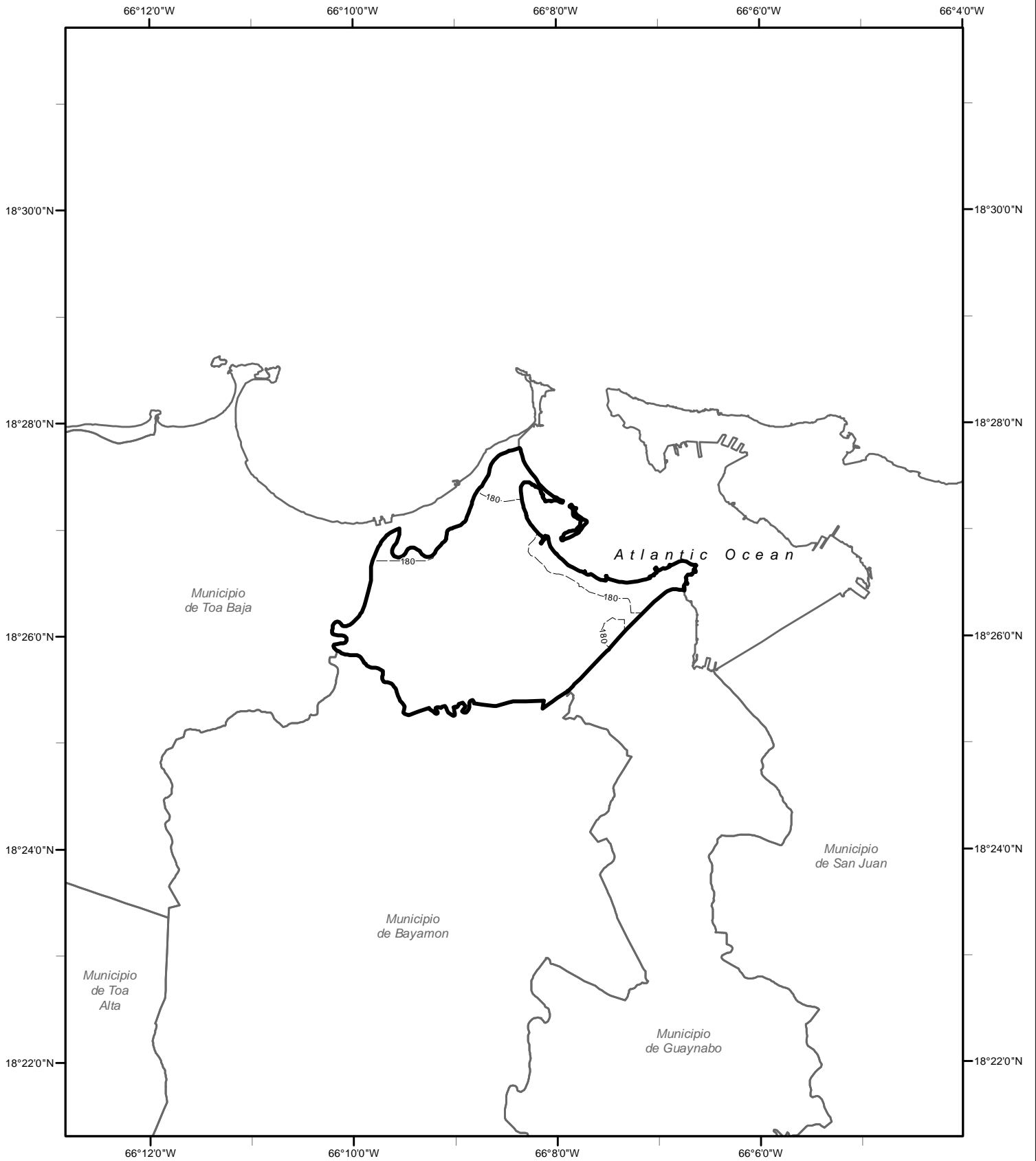


### Risk Category IV Wind Contour (mph)

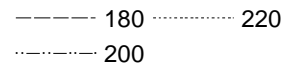
- 180
- 200
- 220
- 240
- 260



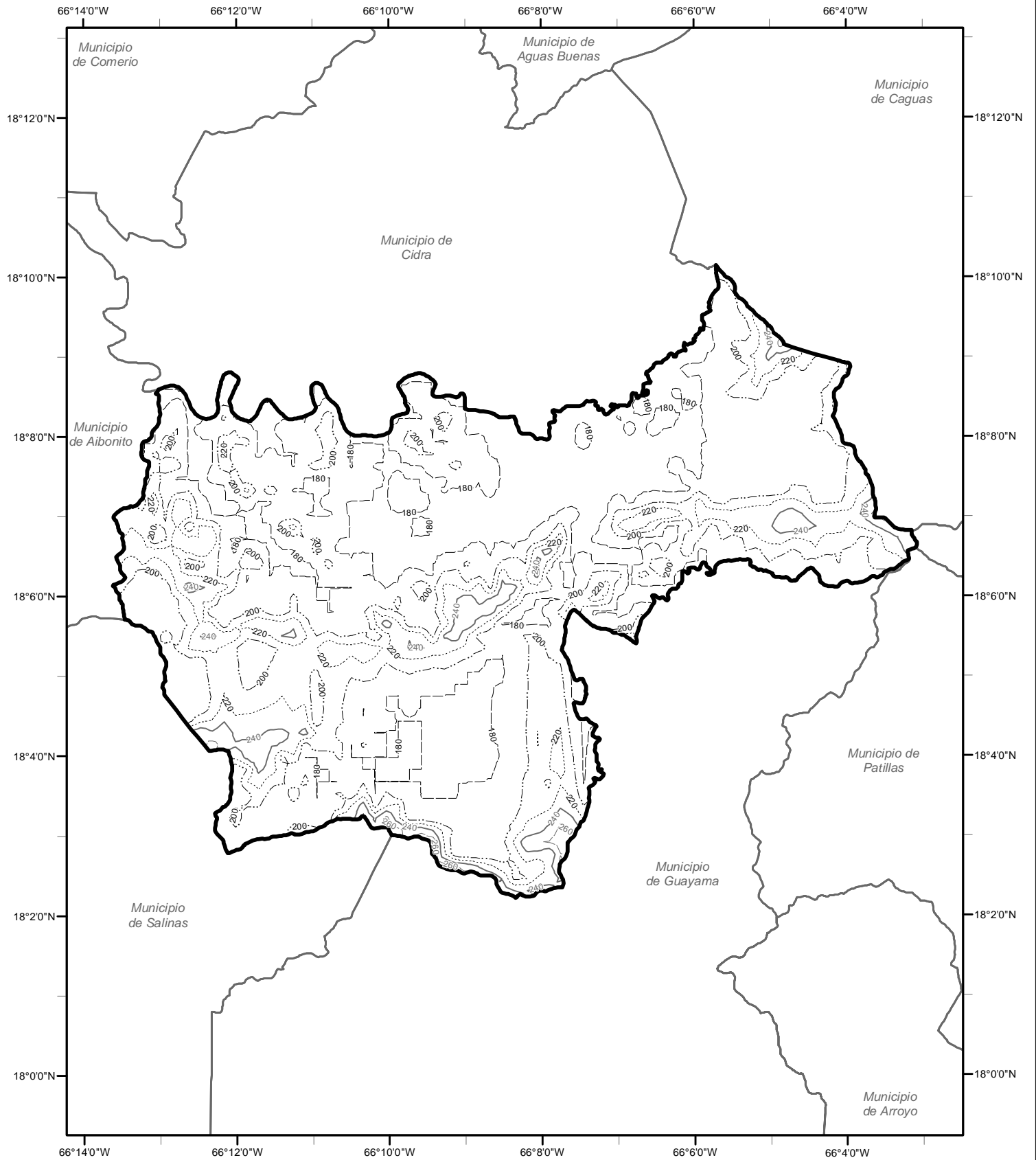
# Municipio de Catano Risk Category IV Effective Wind Speed Map (mph)



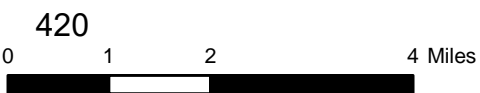
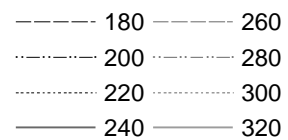
### Risk Category IV Wind Contour (mph)



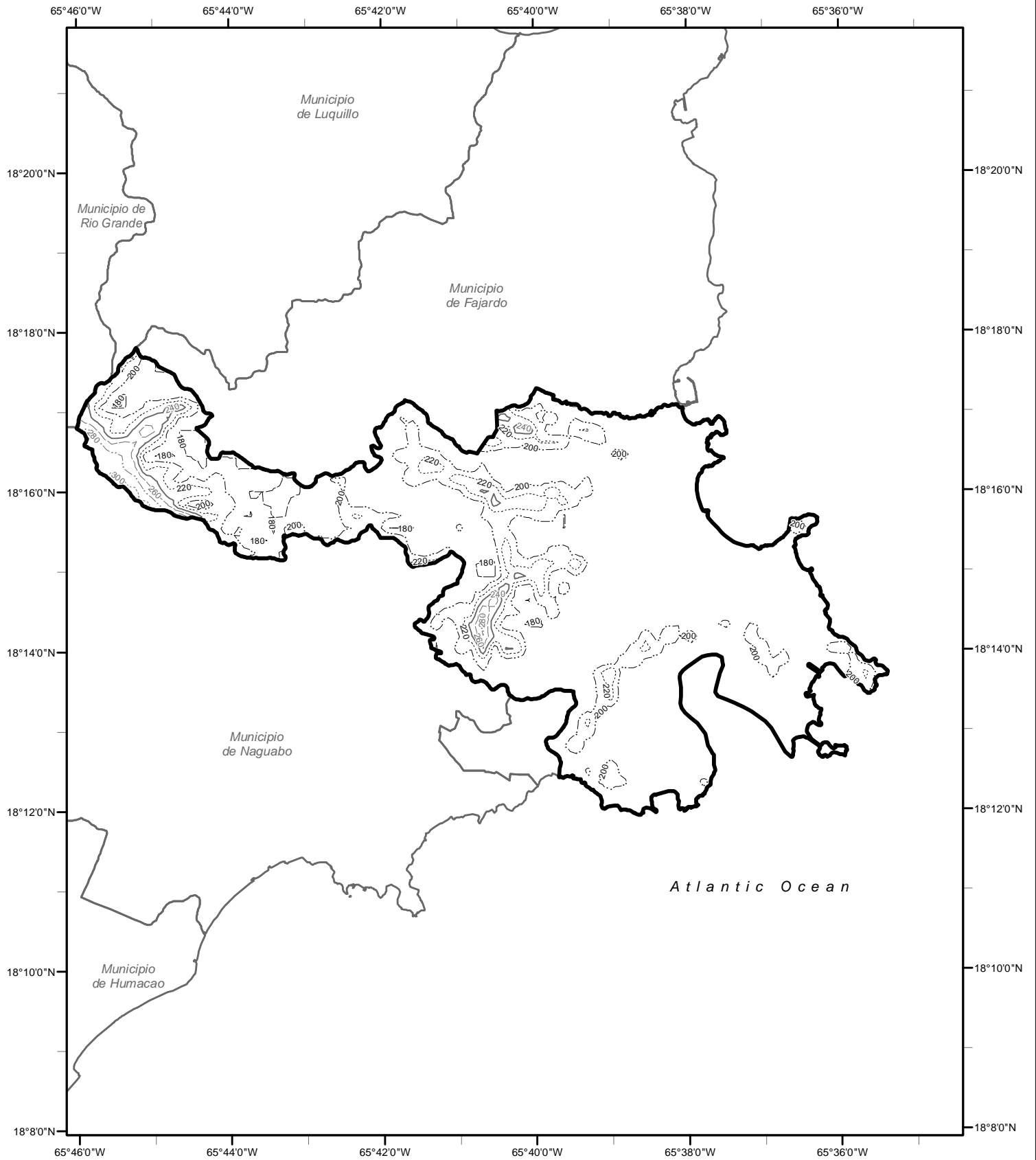
# Municipio de Cayey Risk Category IV Effective Wind Speed Map (mph)



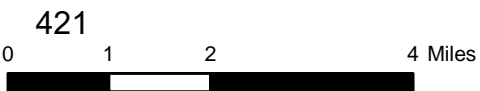
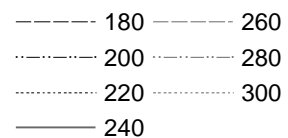
### Risk Category IV Wind Contour (mph)



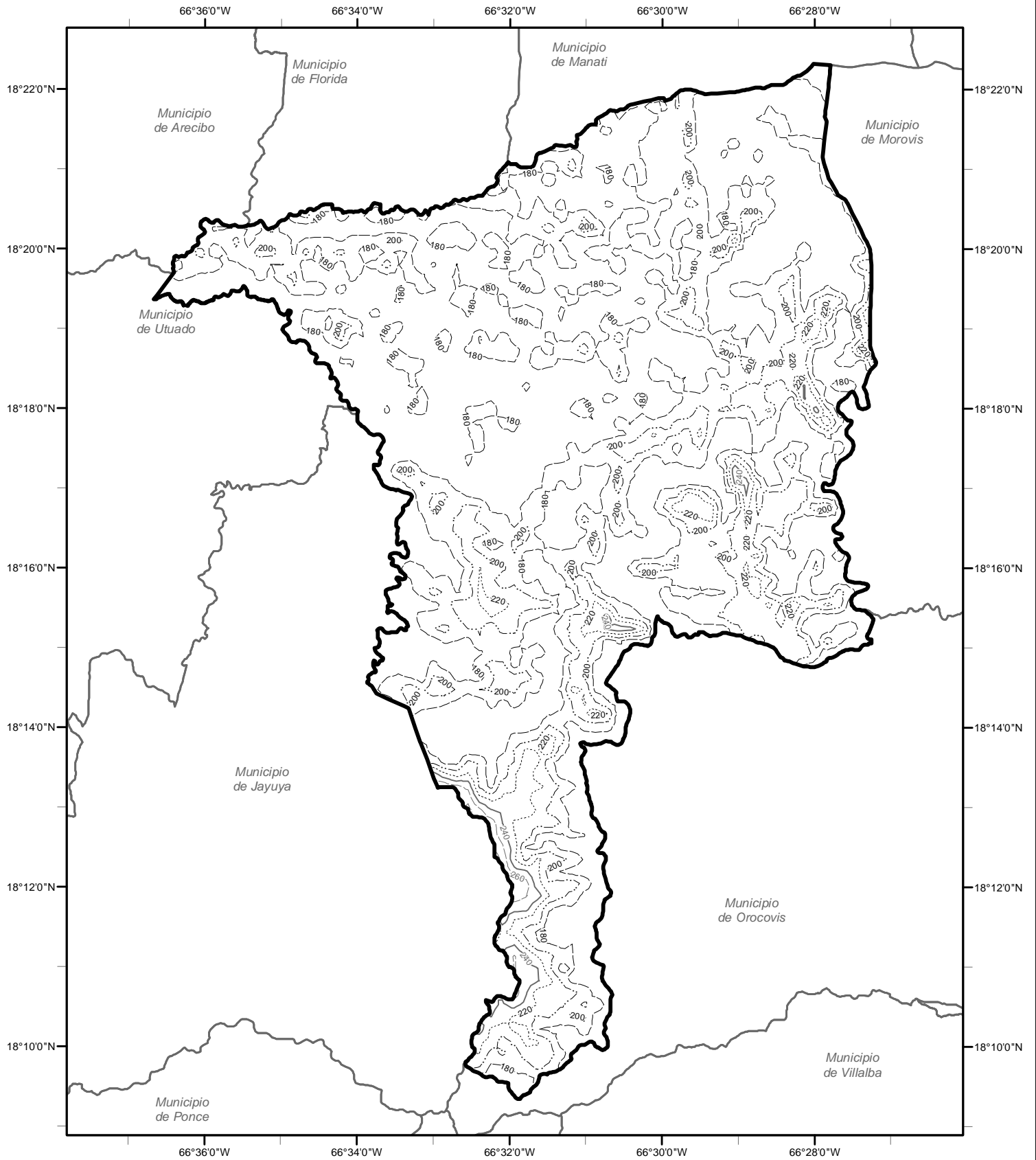
# Municipio de Ceiba Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



# Municipio de Ciales Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

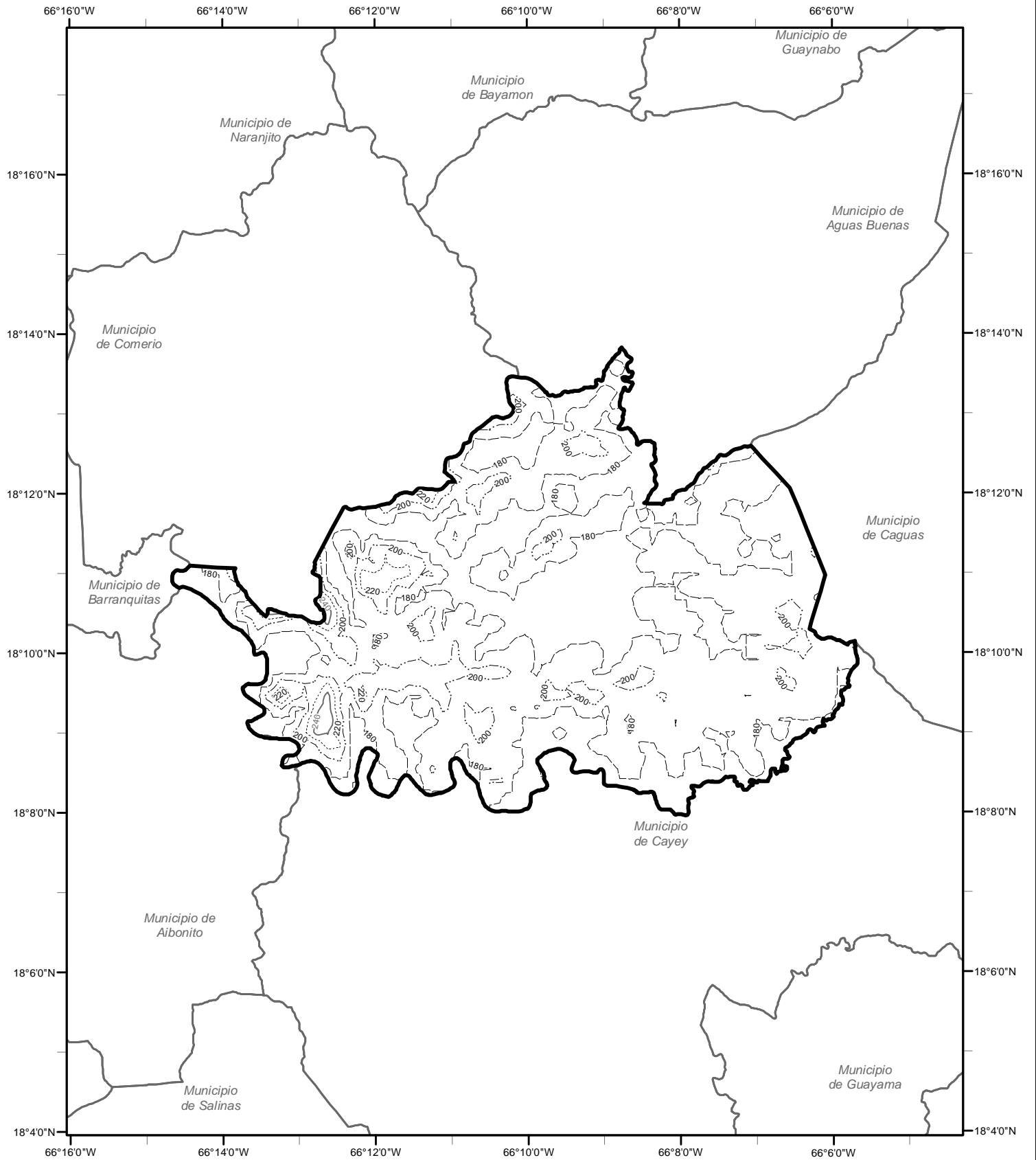
- |           |           |
|-----------|-----------|
| ----- 180 | ——— 240   |
| ..... 200 | ----- 260 |
| ..... 220 | ..... 280 |



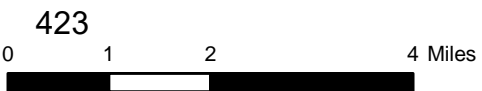
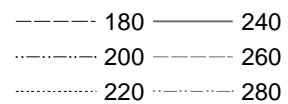


# Municipio de Cidra

## Risk Category IV Effective Wind Speed Map (mph)

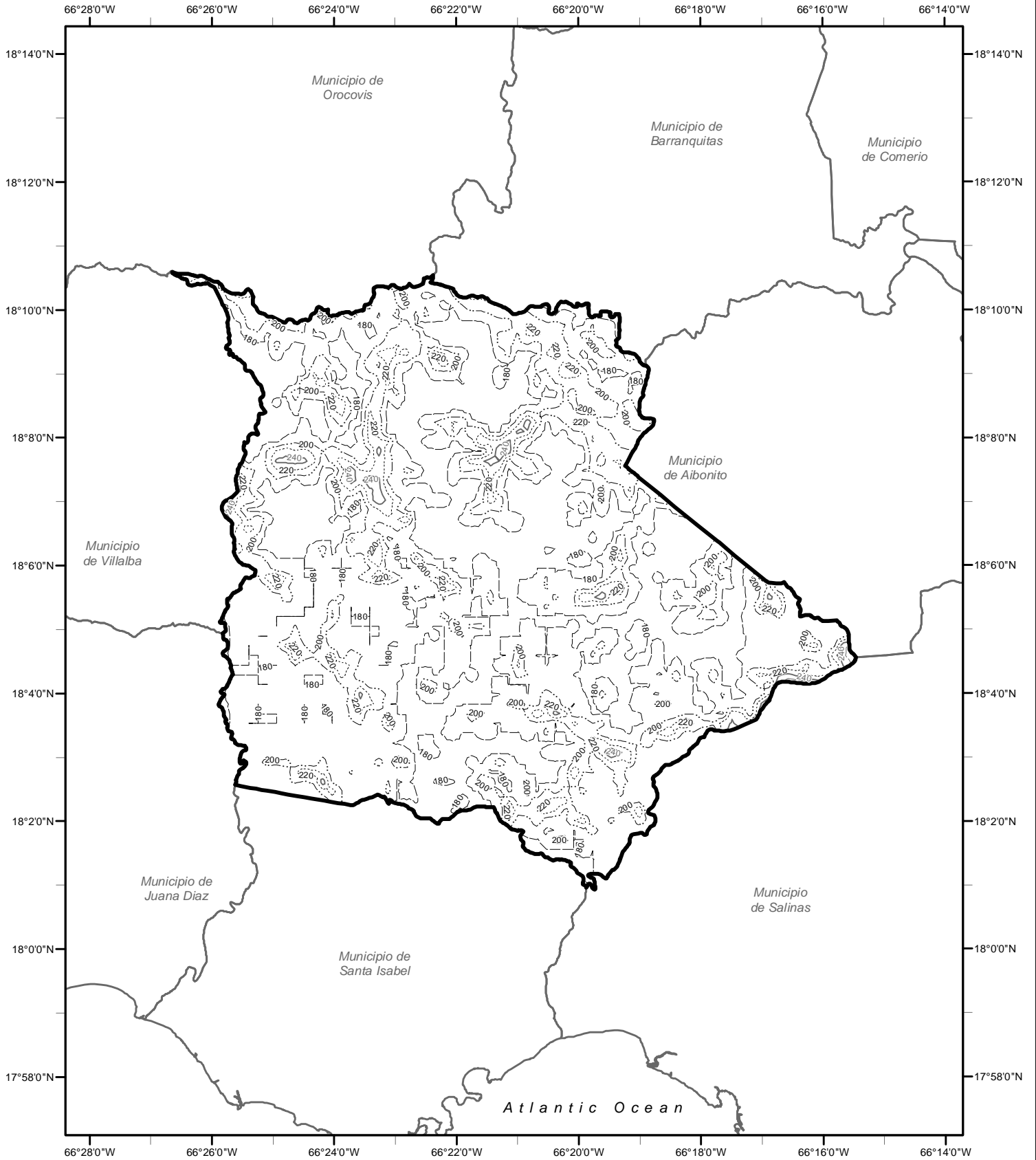


### Risk Category IV Wind Contour (mph)

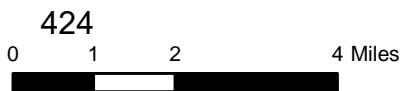
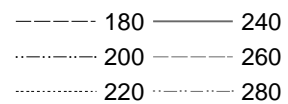


# Municipio de Coamo

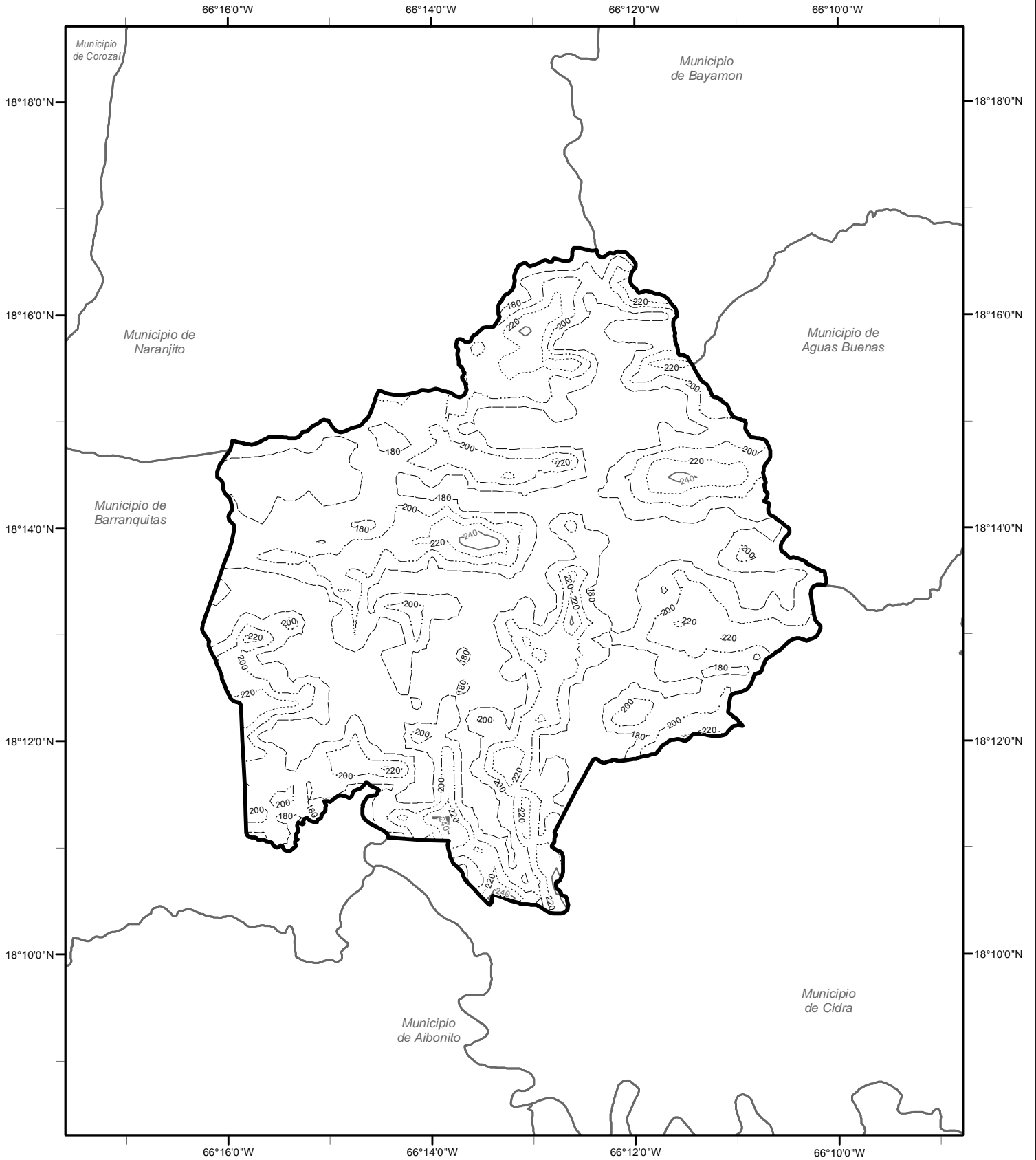
## Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



# Municipio de Comerio Risk Category IV Effective Wind Speed Map (mph)

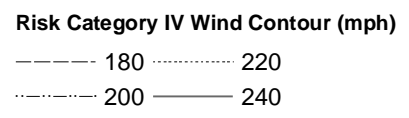
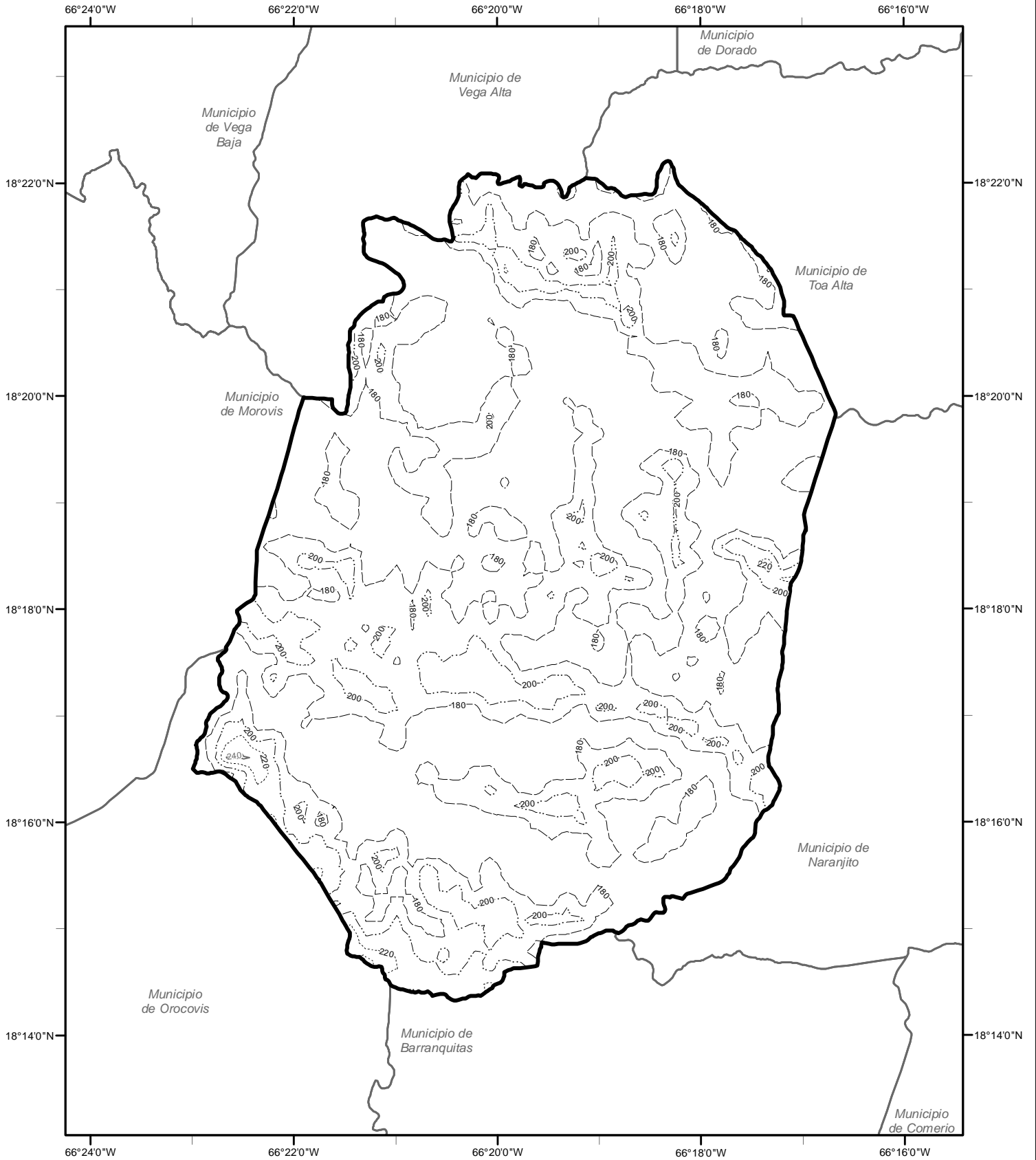


### Risk Category IV Wind Contour (mph)

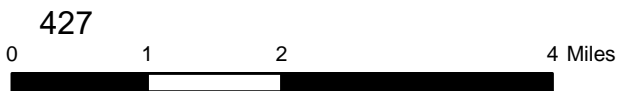
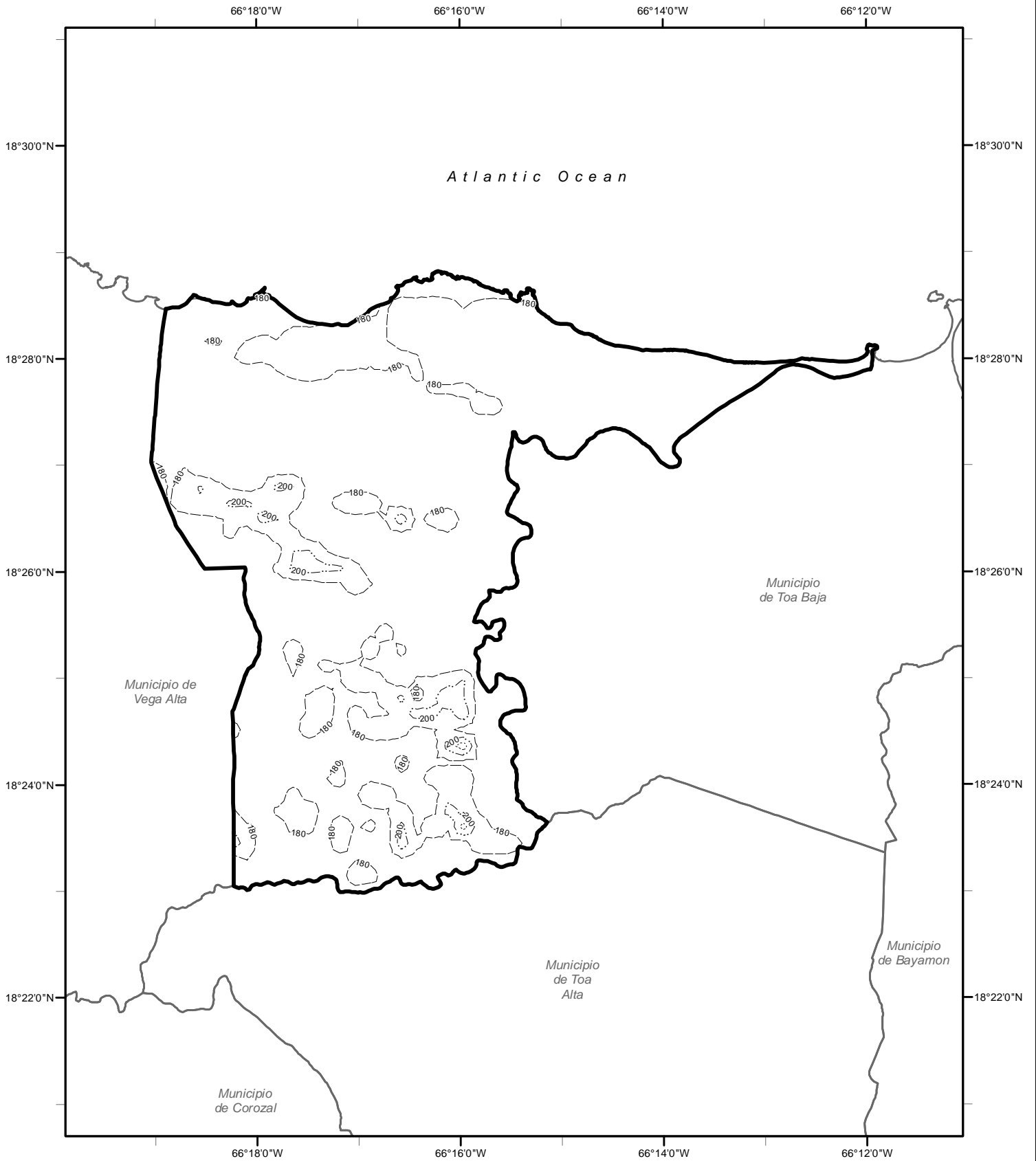
- 180
- 200
- 220
- 240
- 260



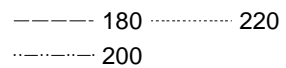
# Municipio de Corozal Risk Category IV Effective Wind Speed Map (mph)



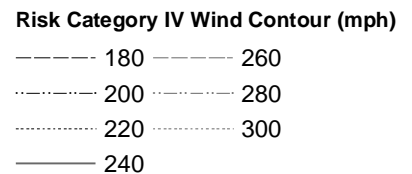
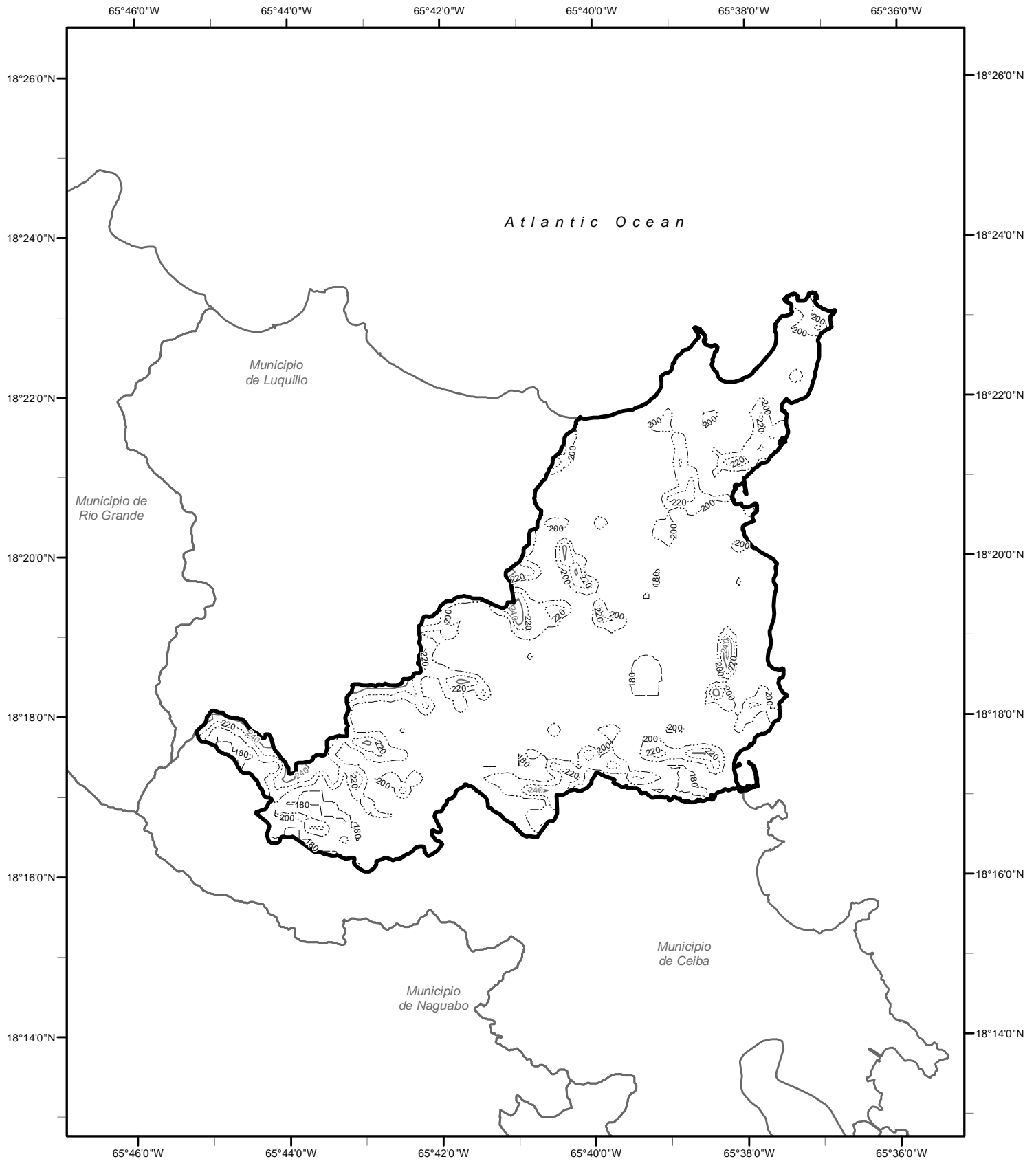
# Municipio de Dorado Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



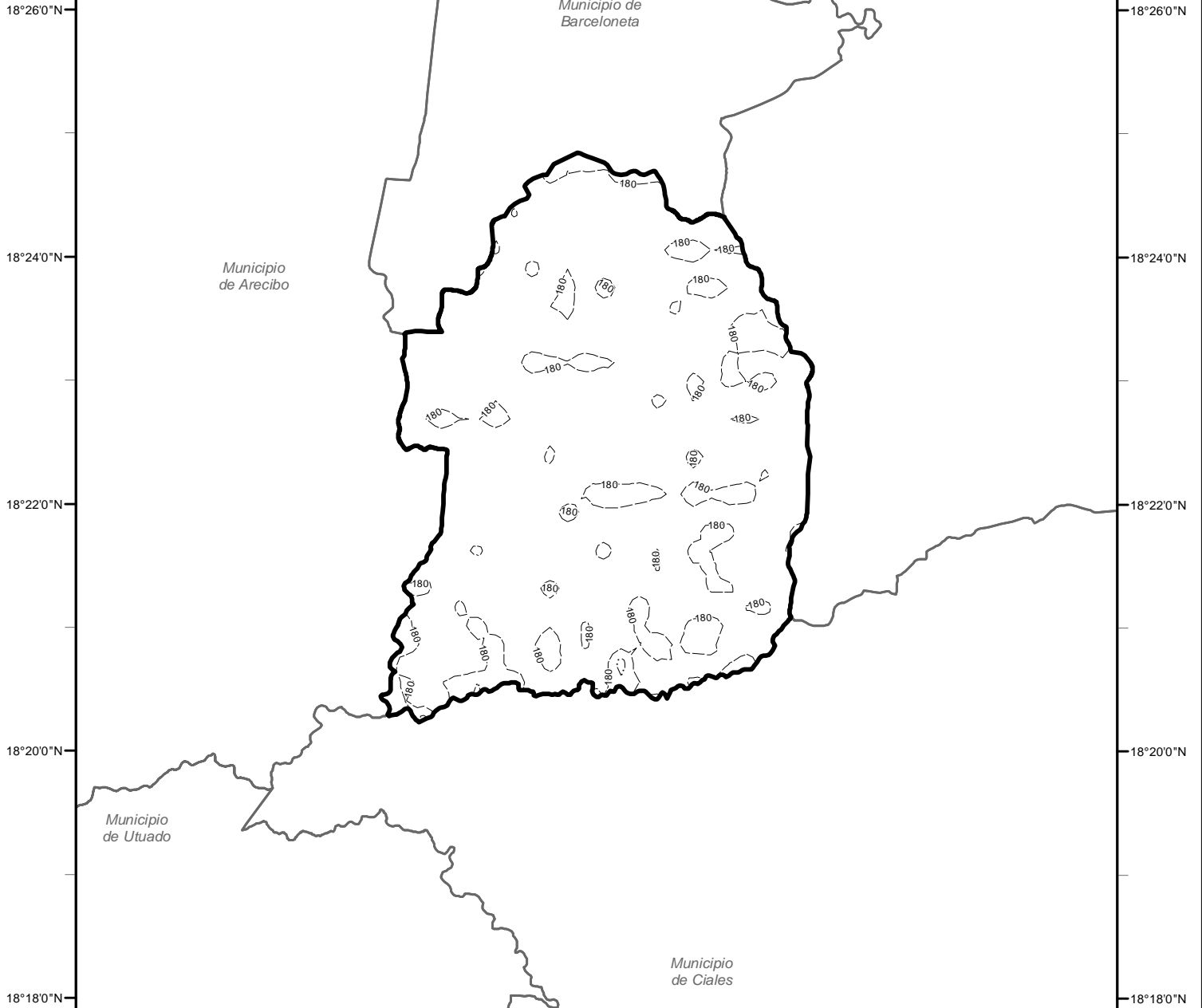
# Municipio de Fajardo Risk Category IV Effective Wind Speed Map (mph)



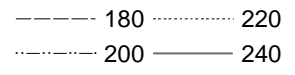
# Municipio de Florida

## Risk Category IV Effective Wind Speed Map (mph)

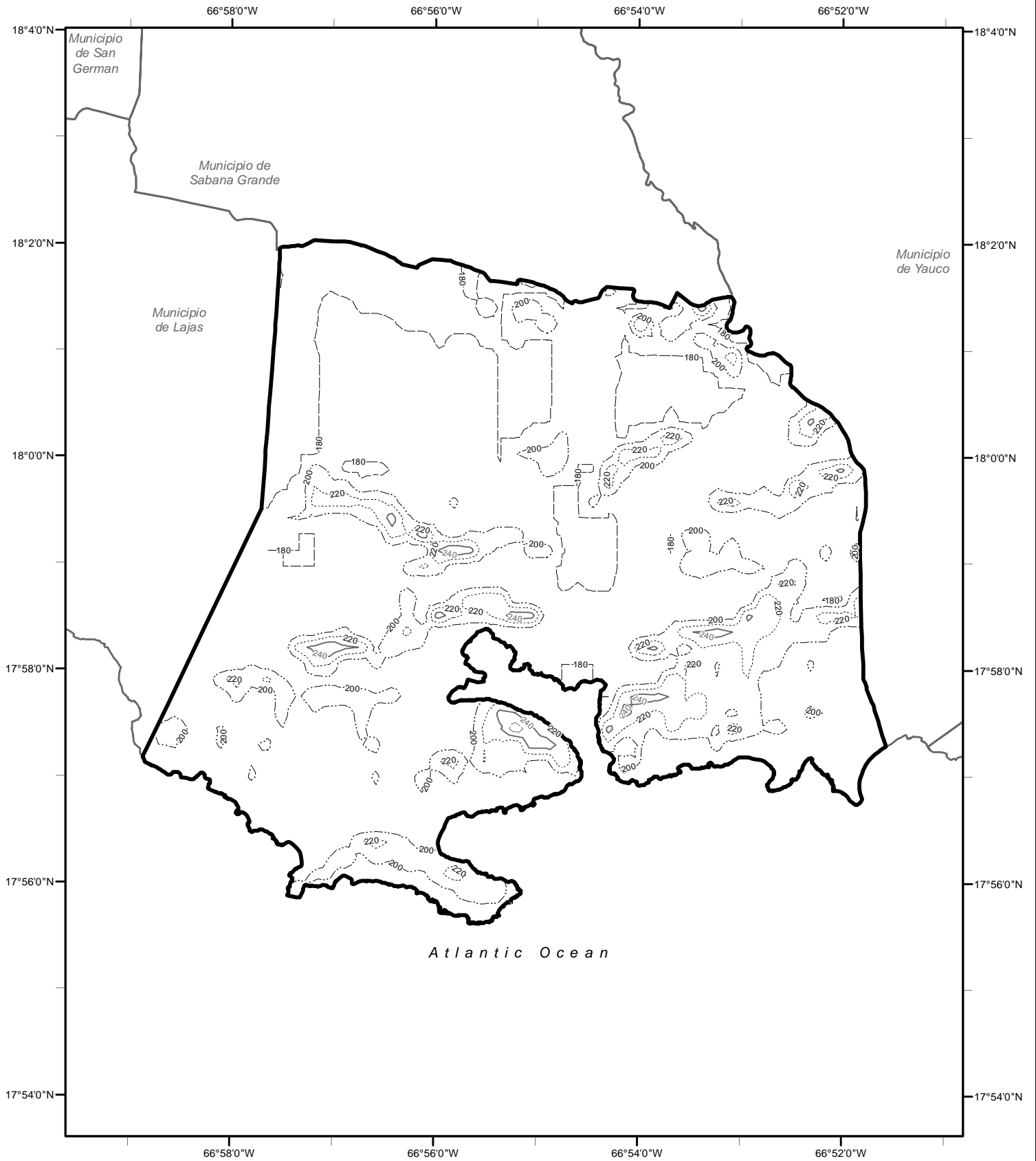
66°38'0"W      66°36'0"W      66°34'0"W      66°32'0"W      66°30'0"W



### Risk Category IV Wind Contour (mph)

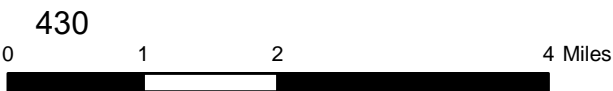


# Municipio de Guanica Risk Category IV Effective Wind Speed Map (mph)



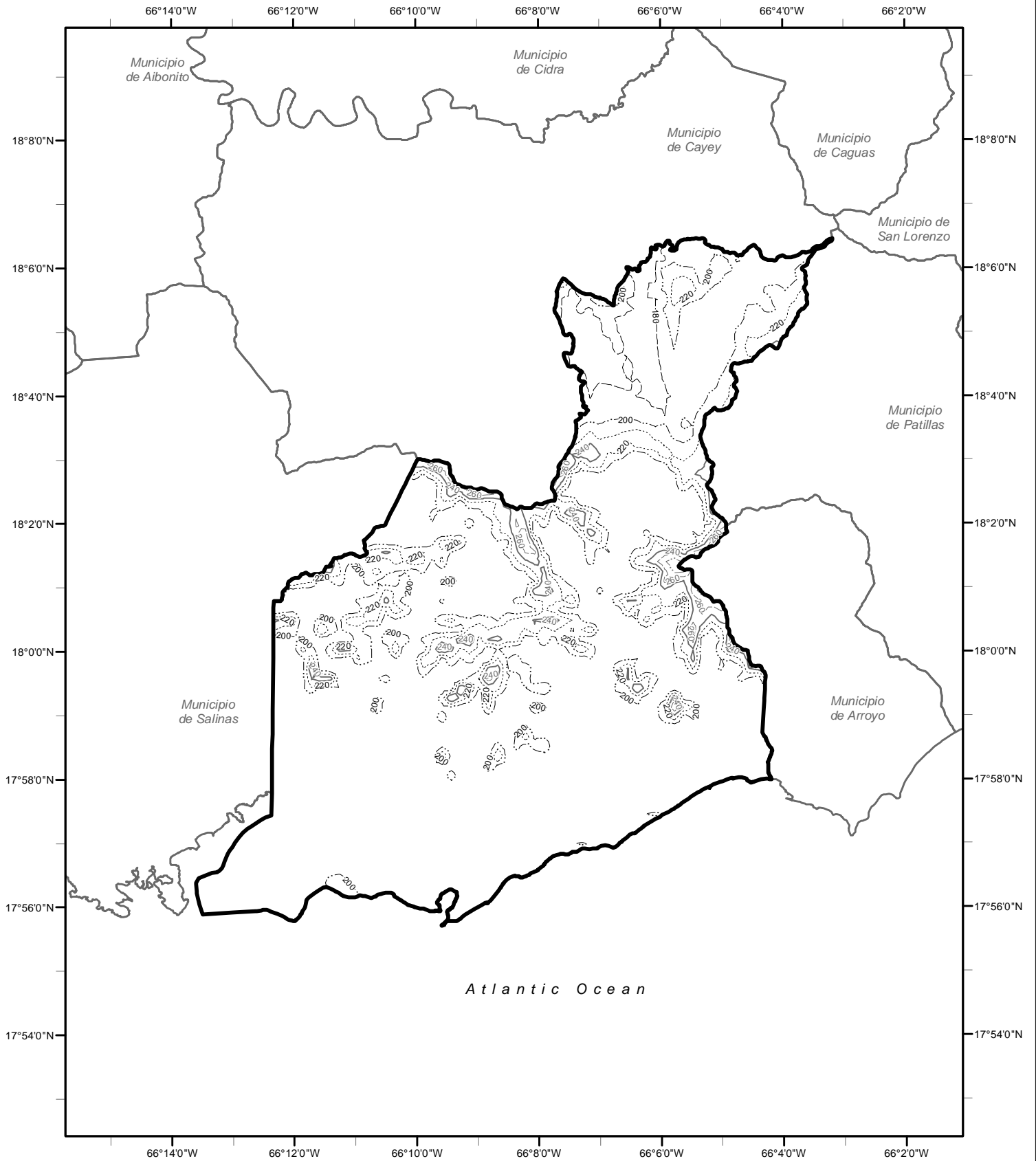
### Risk Category IV Wind Contour (mph)

- 180
- · - · - 200
- ..... 220
- 240
- 260





# Municipio de Guayama Risk Category IV Effective Wind Speed Map (mph)



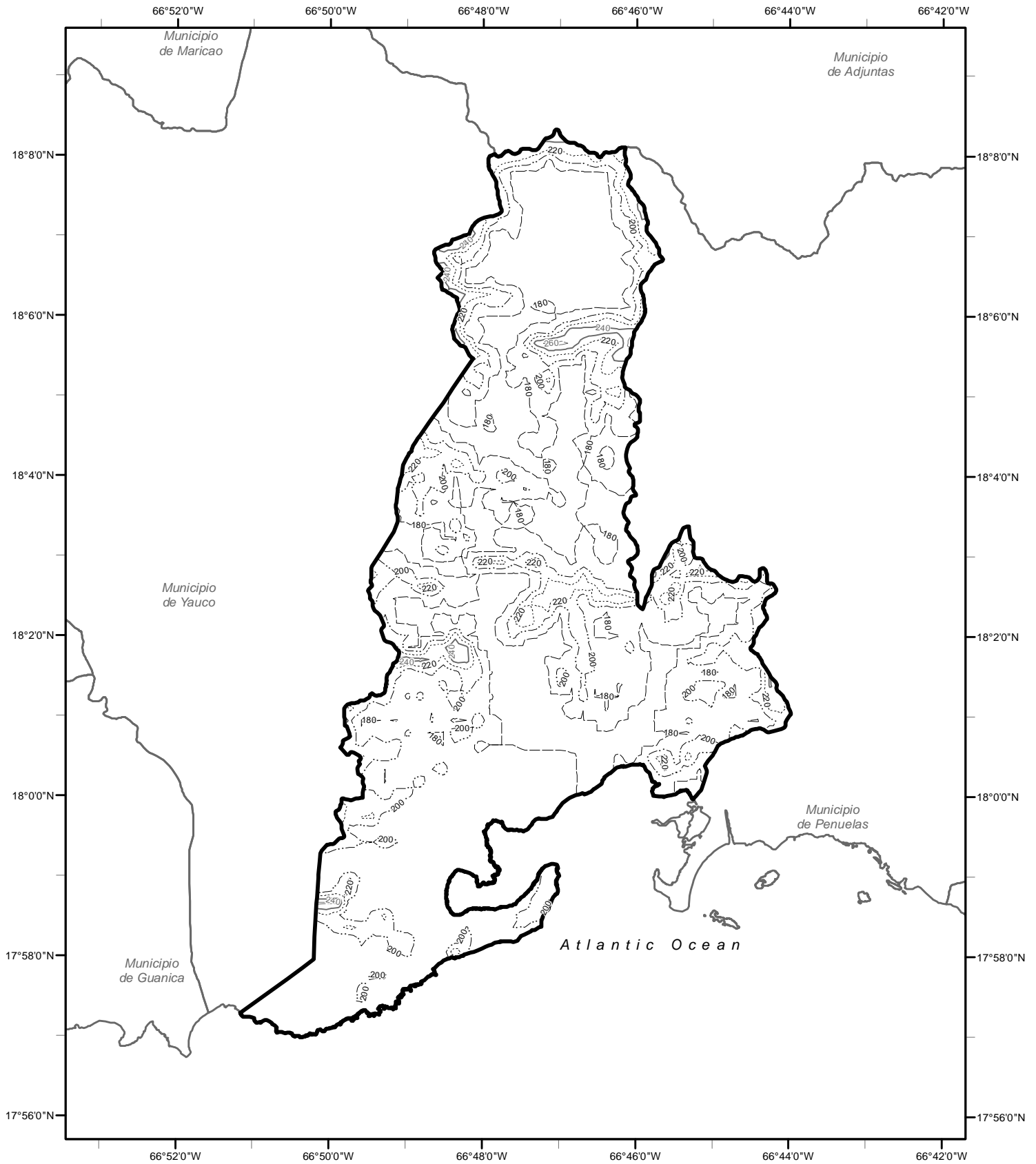
**Risk Category IV Wind Contour (mph)**

- 180 ----- 260
- ..... 200 ..... 280
- ..... 220 ..... 300
- 240 ----- 320

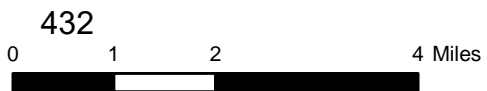
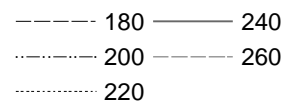


# Municipio de Guayanilla

## Risk Category IV Effective Wind Speed Map (mph)

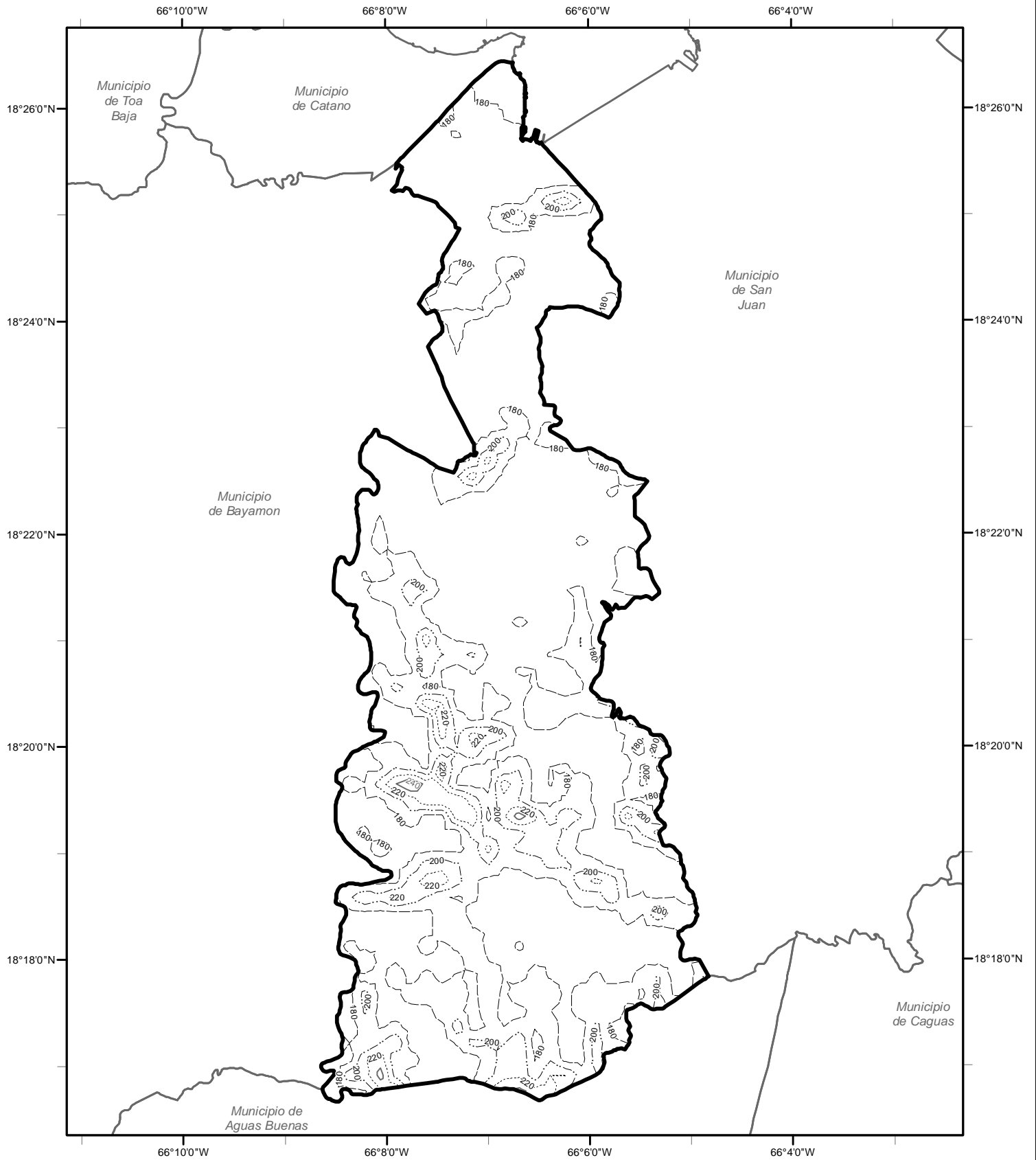


### Risk Category IV Wind Contour (mph)

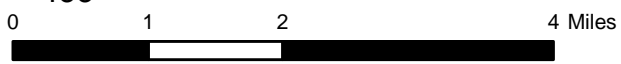


432

# Municipio de Guaynabo Risk Category IV Effective Wind Speed Map (mph)



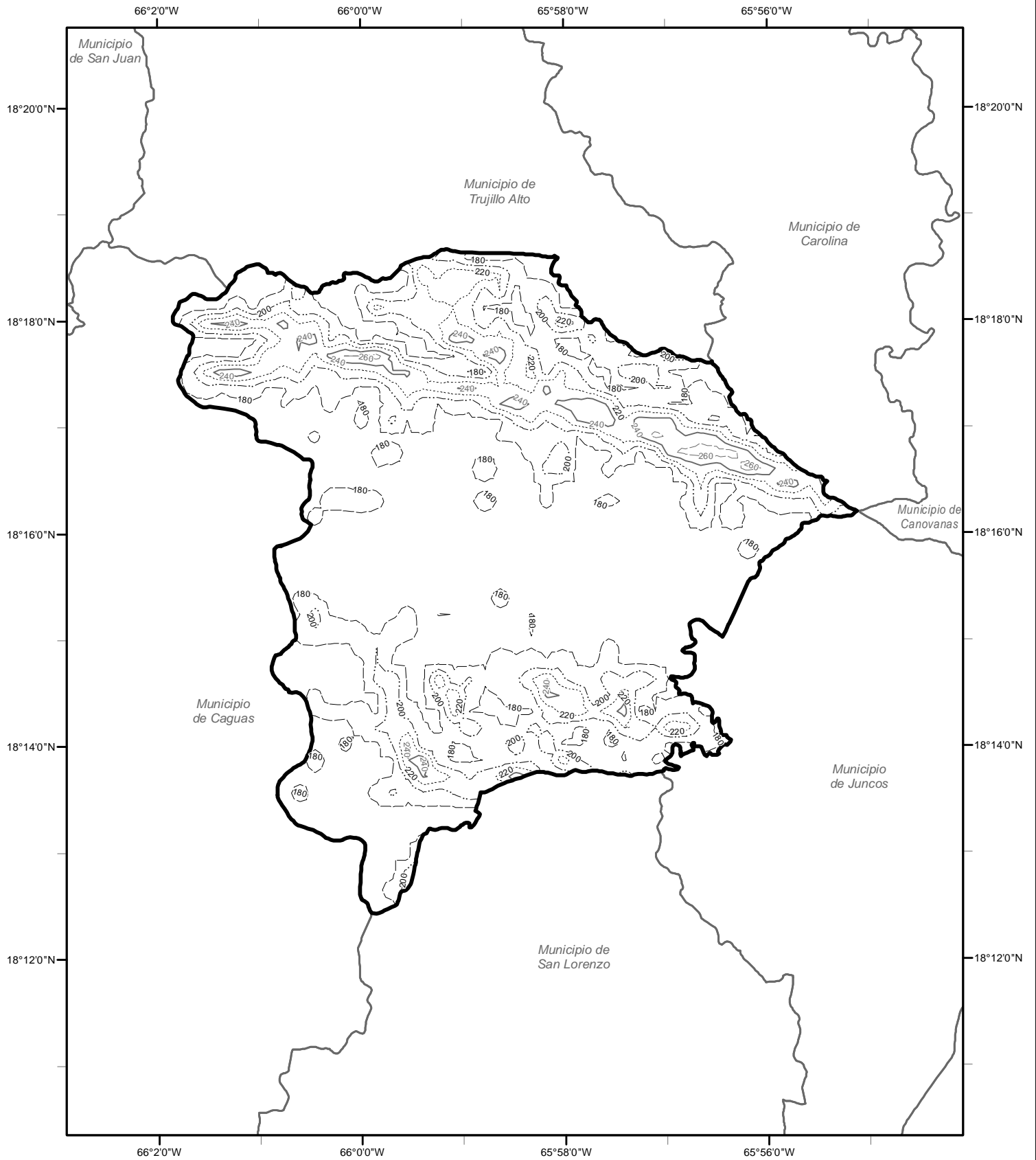
433



### Risk Category IV Wind Contour (mph)

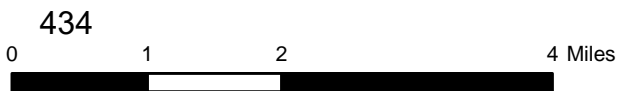
- 180
- ..... 200
- · - · - 220
- 240

# Municipio de Gurabo Risk Category IV Effective Wind Speed Map (mph)

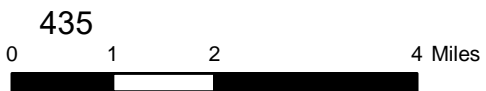
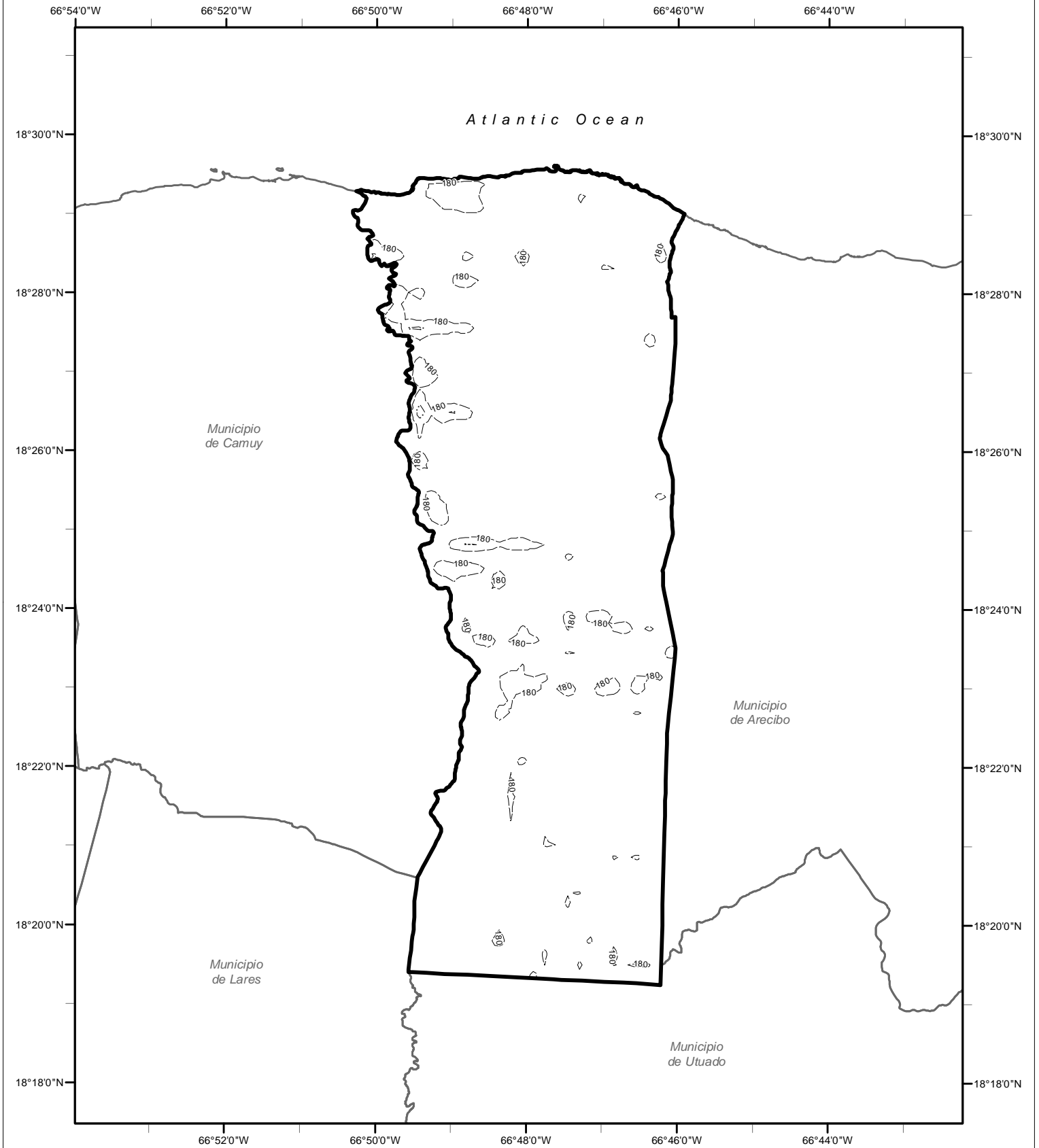


### Risk Category IV Wind Contour (mph)

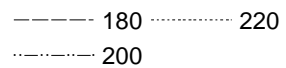
- 180
- 200
- 220
- 240
- 260



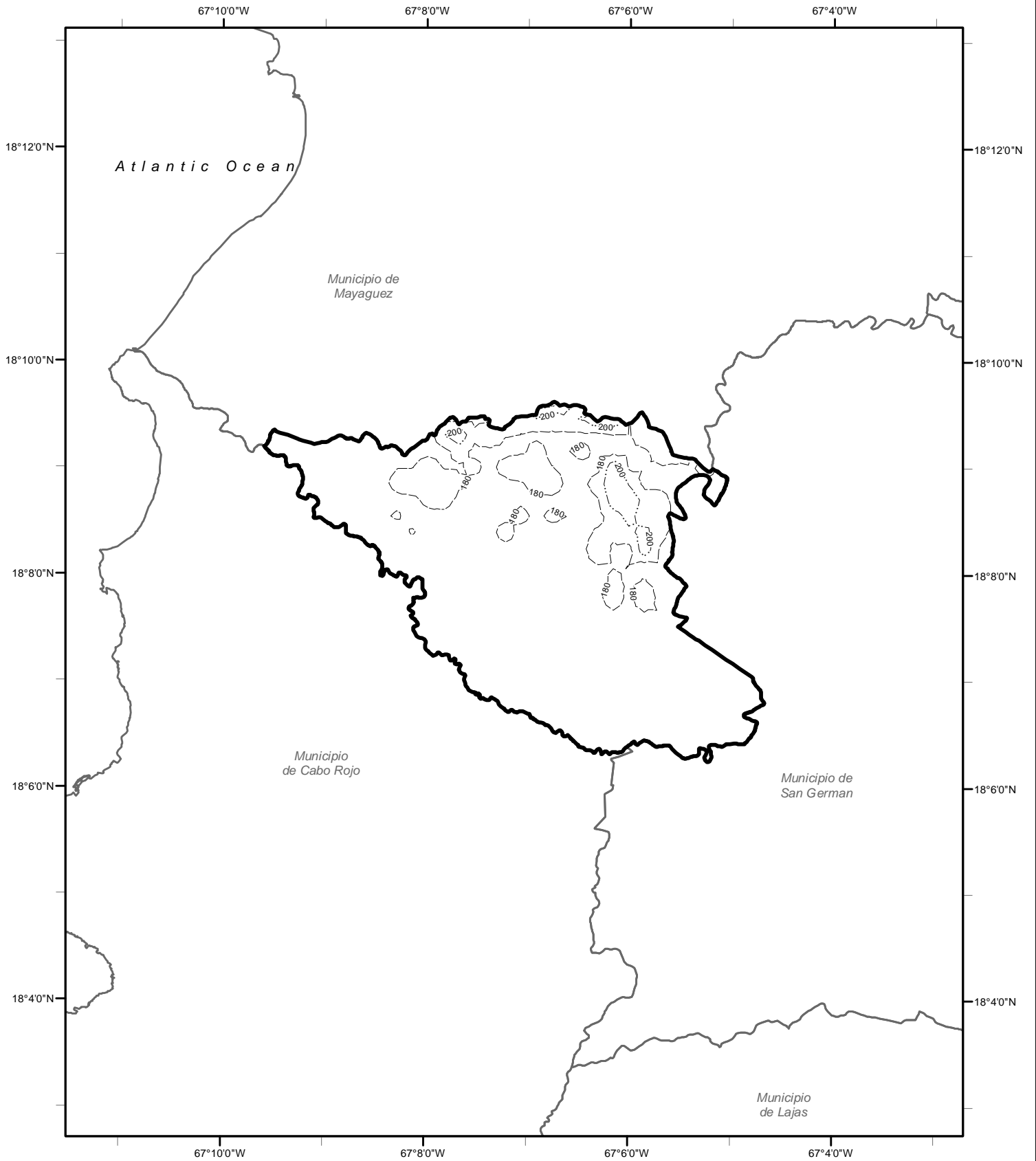
# Municipio de Hatillo Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



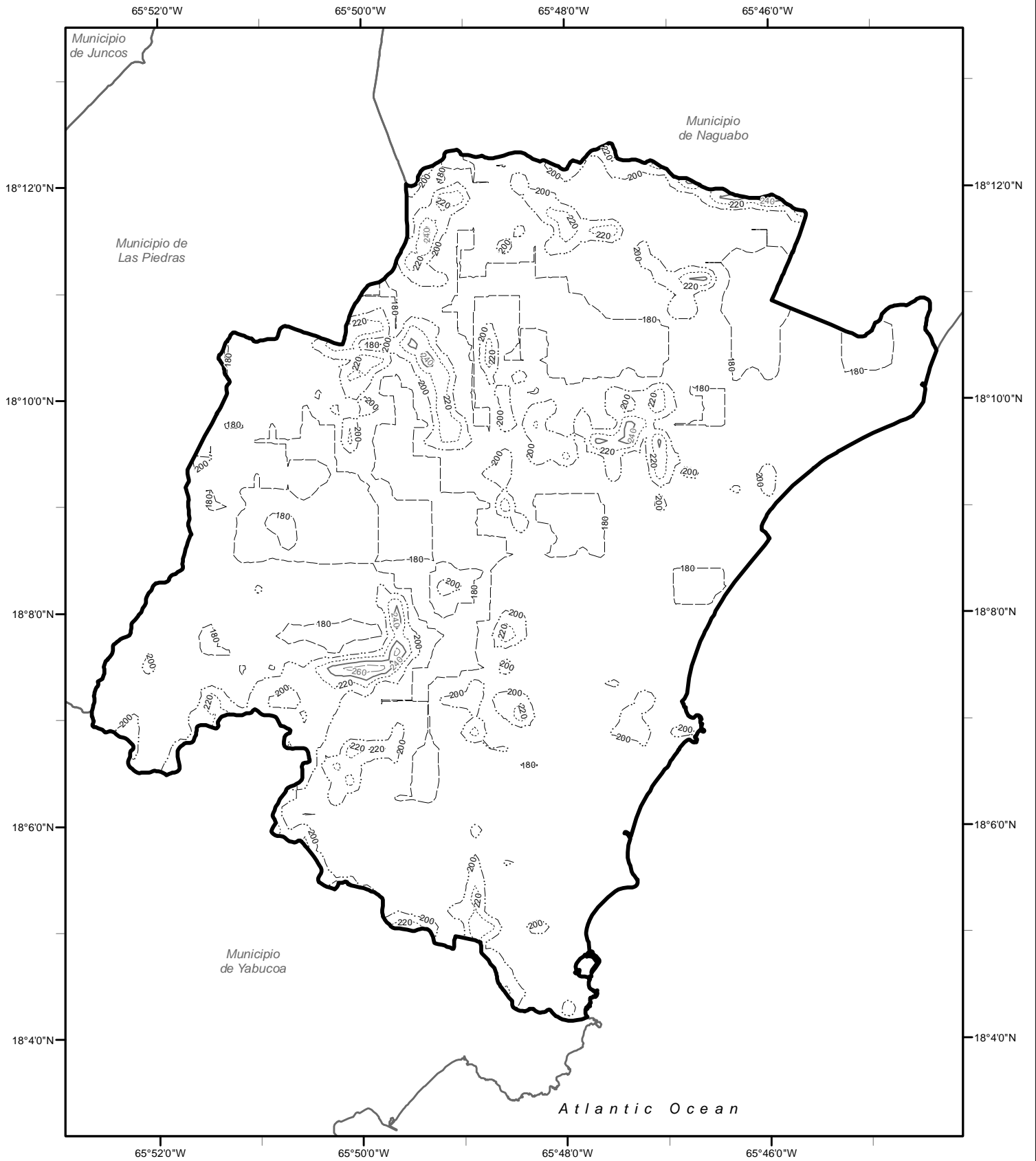
# Municipio de Hormigueros Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

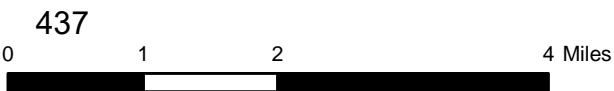
- 180
- ..... 200
- ..... 220
- 240

# Municipio de Humacao Risk Category IV Effective Wind Speed Map (mph)

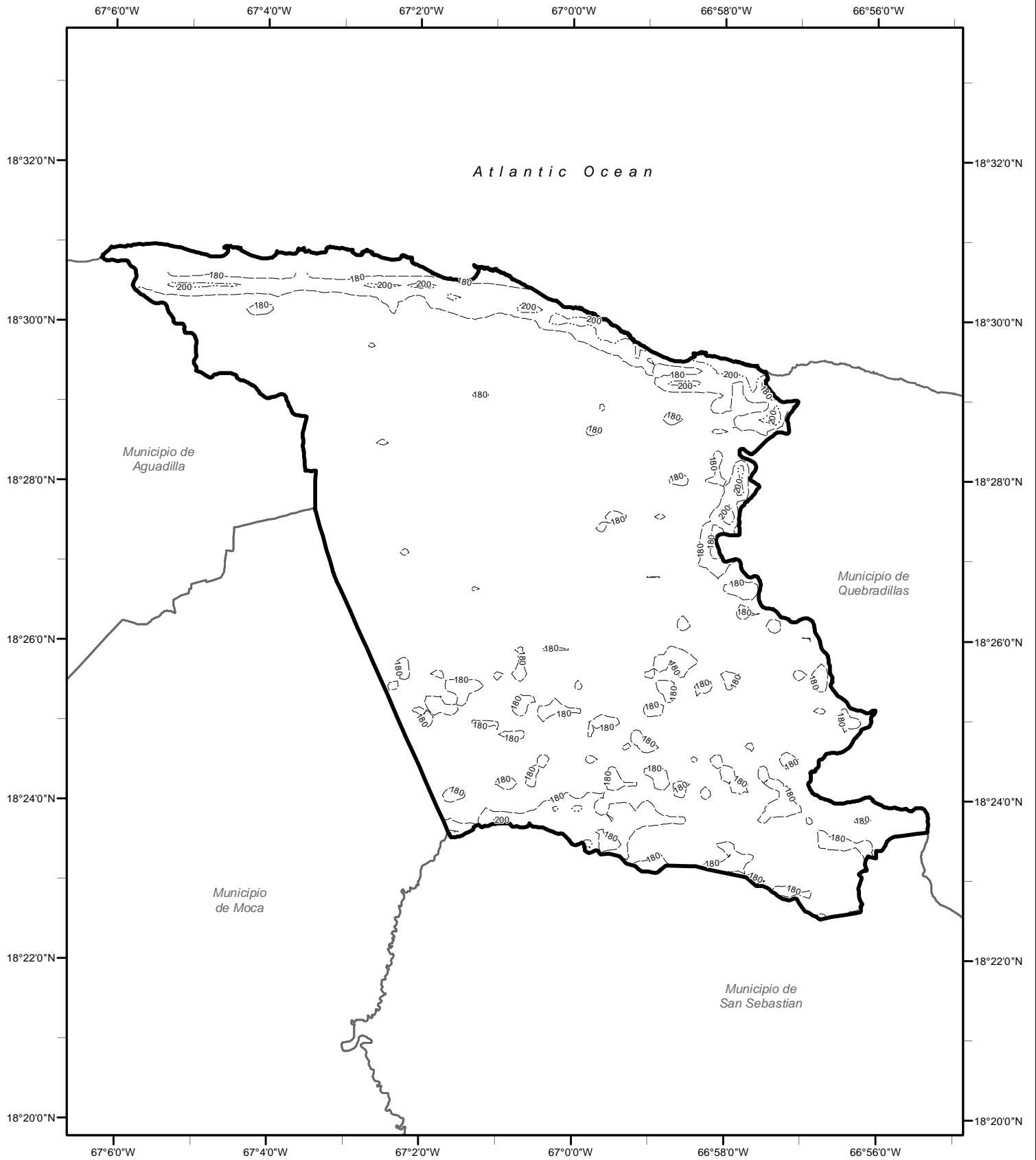


### Risk Category IV Wind Contour (mph)

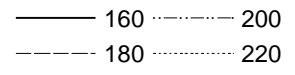
- 180
- 200
- 220
- 240
- 260



# Municipio de Isabela Risk Category IV Effective Wind Speed Map (mph)

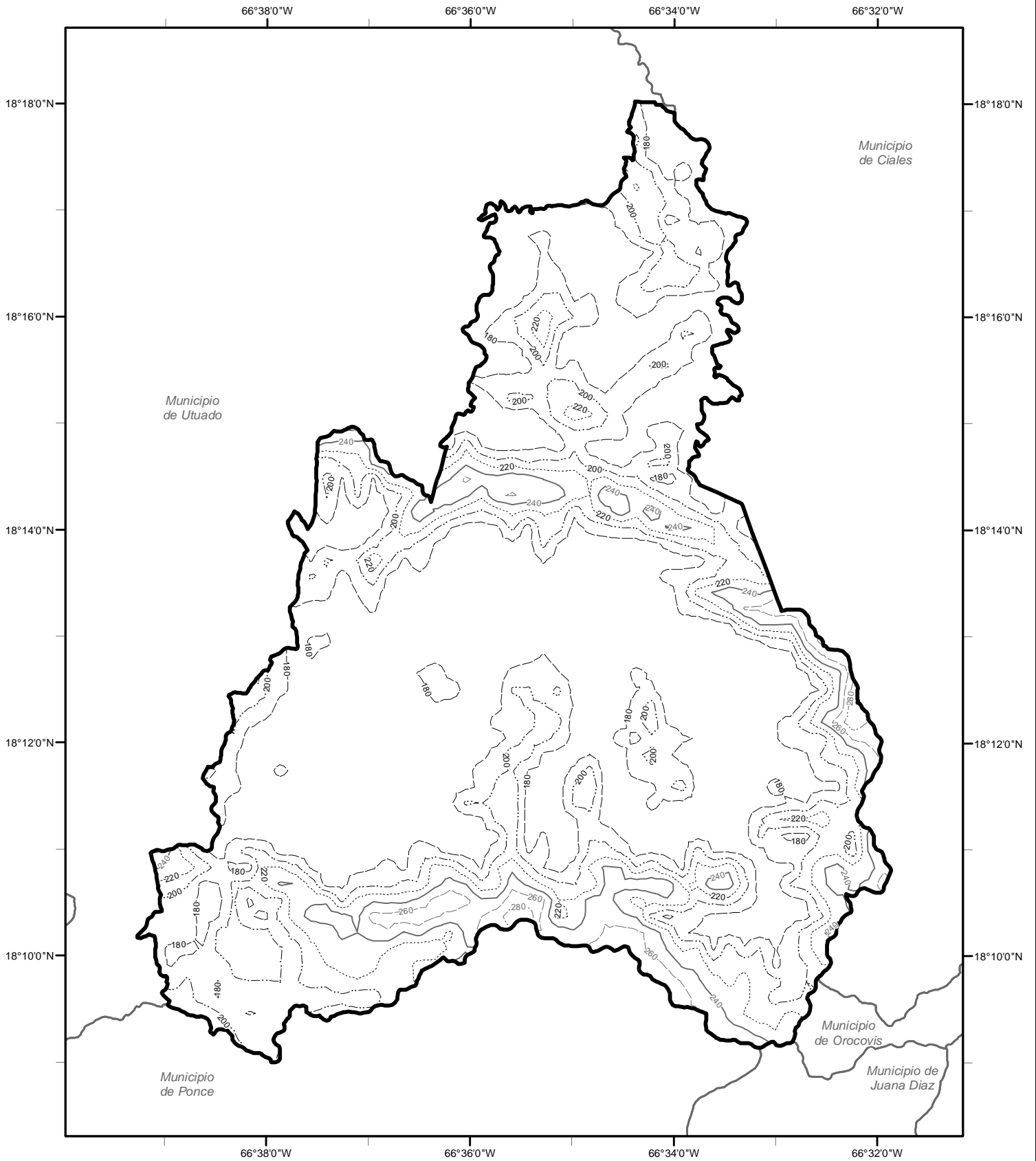


### Risk Category IV Wind Contour (mph)



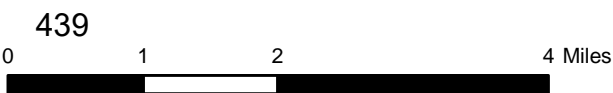


# Municipio de Jayuya Risk Category IV Effective Wind Speed Map (mph)

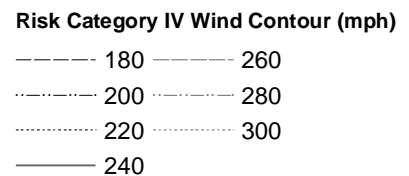
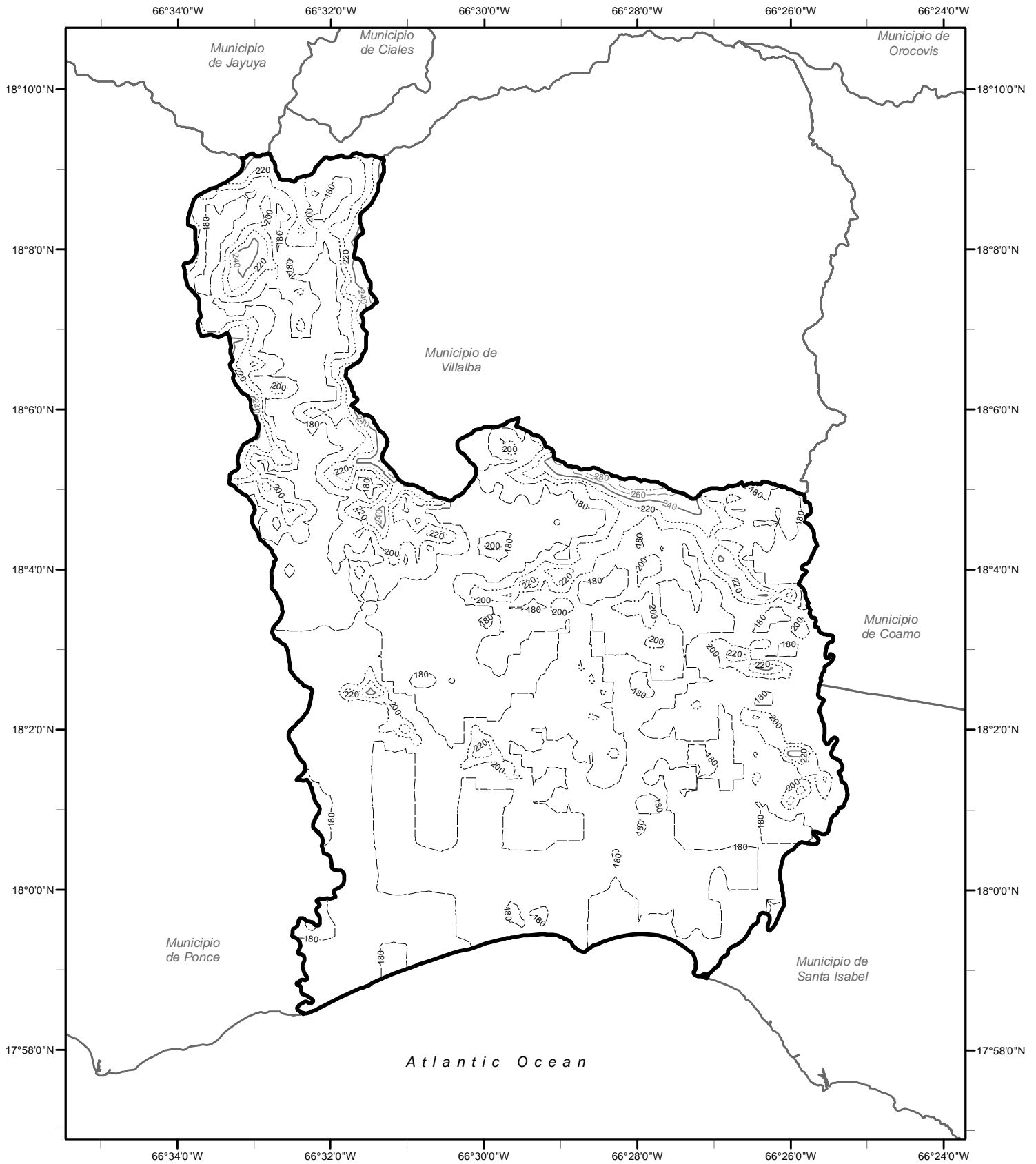


### Risk Category IV Wind Contour (mph)

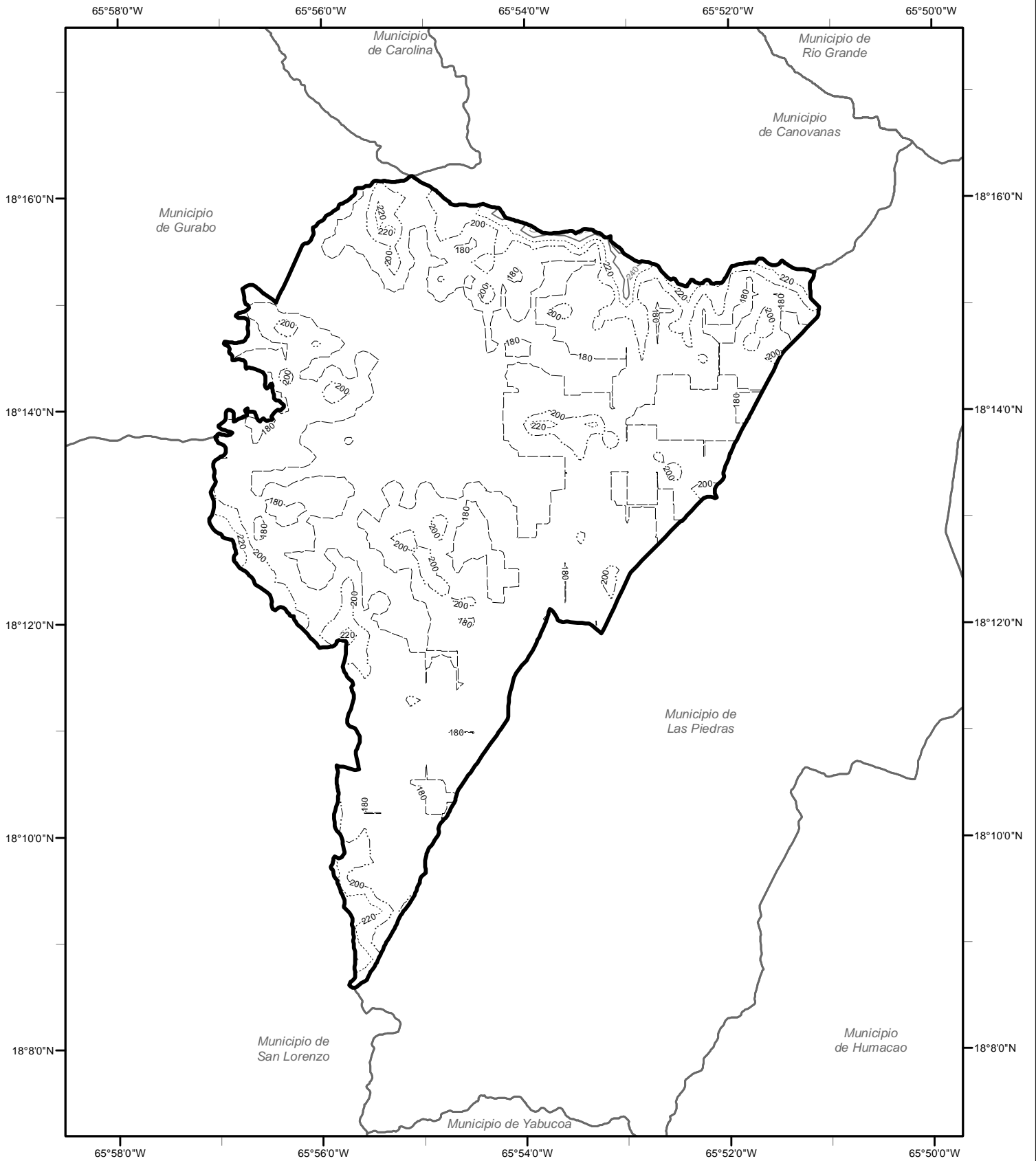
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220 ----- 280



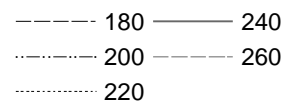
# Municipio de Juana Diaz Risk Category IV Effective Wind Speed Map (mph)



# Municipio de Juncos Risk Category IV Effective Wind Speed Map (mph)



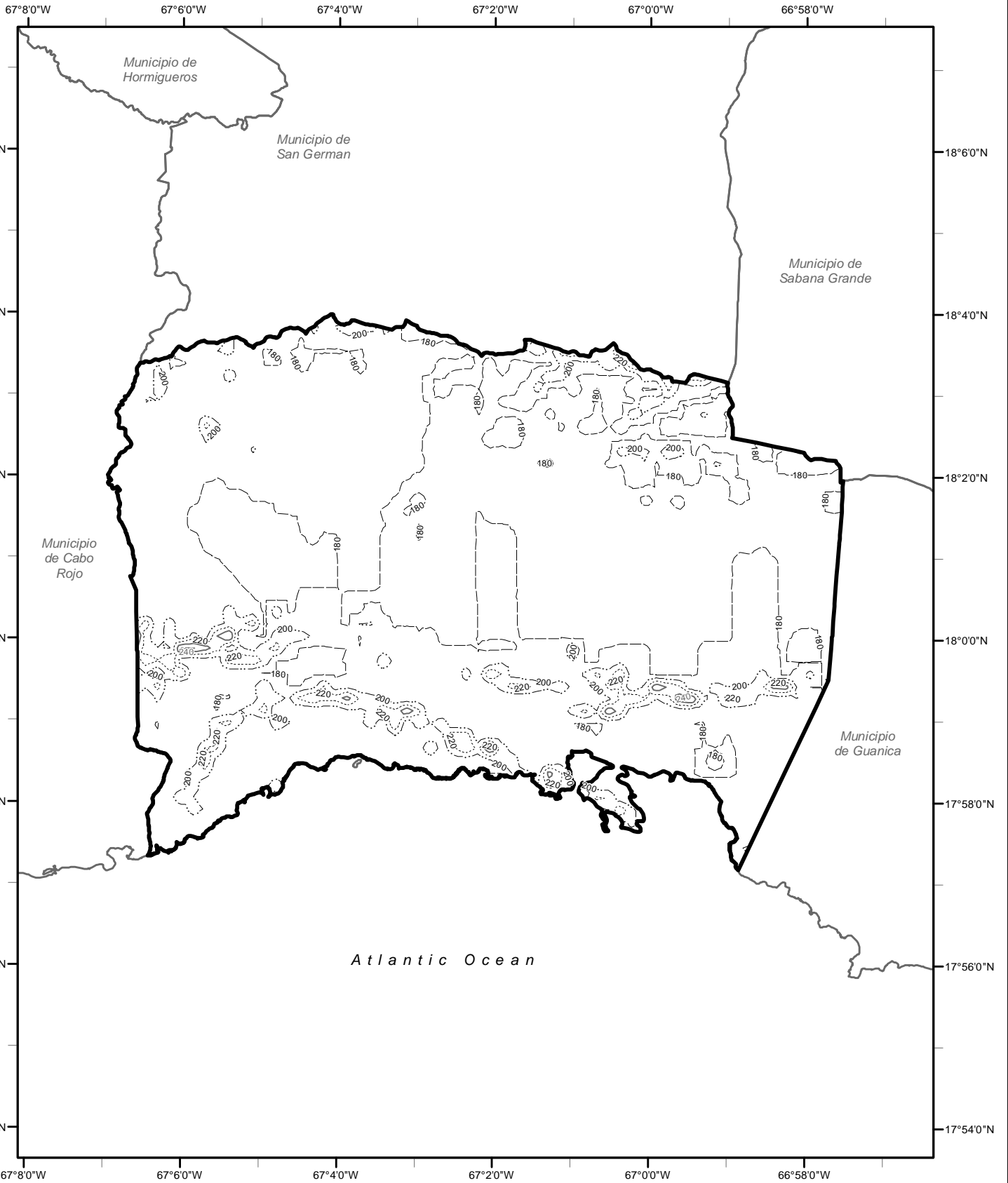
### Risk Category IV Wind Contour (mph)



441

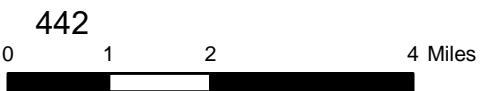
# Municipio de Lajas

## Risk Category IV Effective Wind Speed Map (mph)



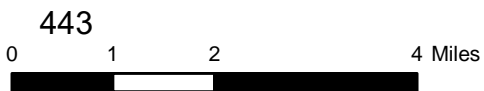
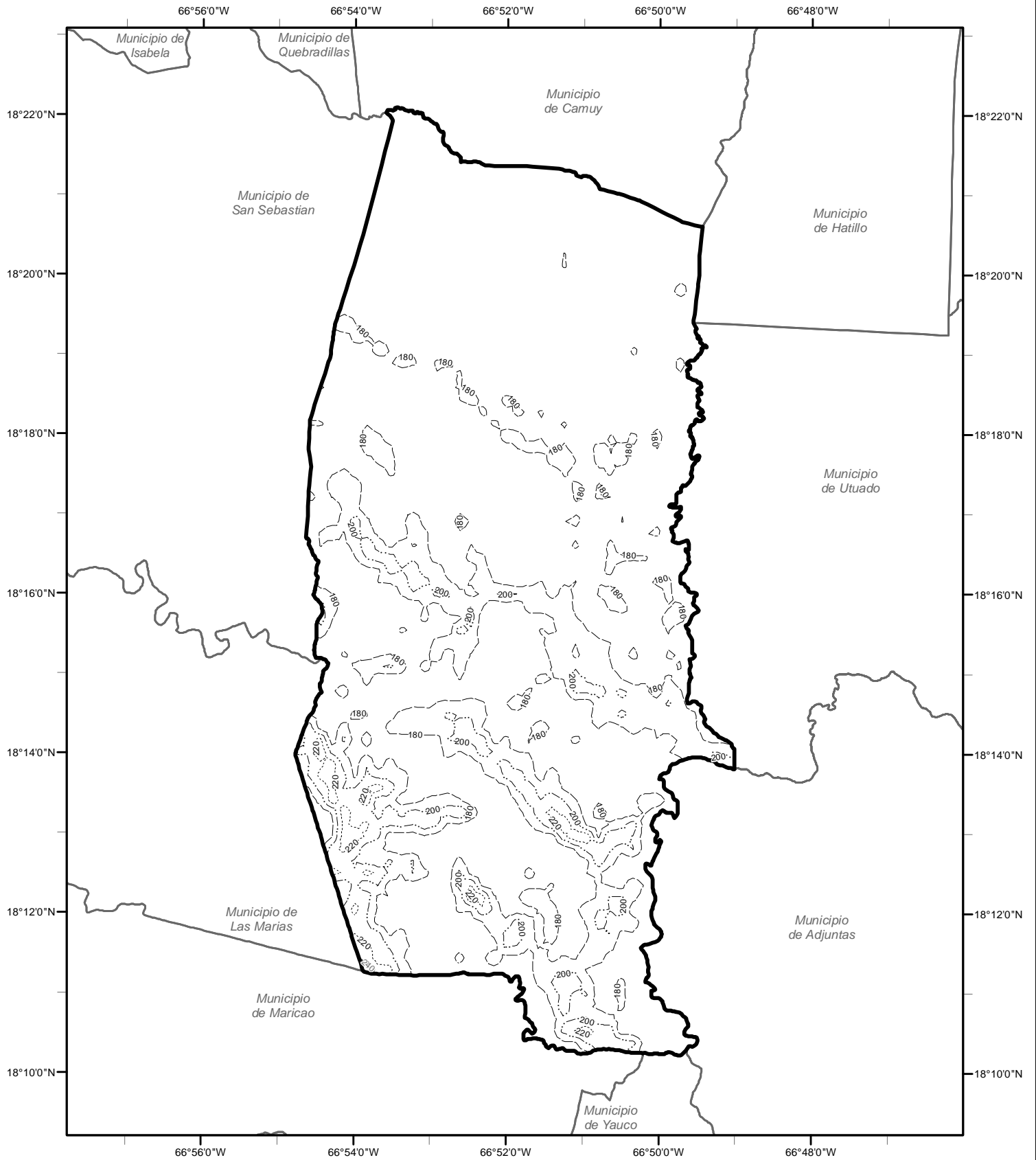
### Risk Category IV Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260

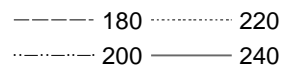


# Municipio de Lares

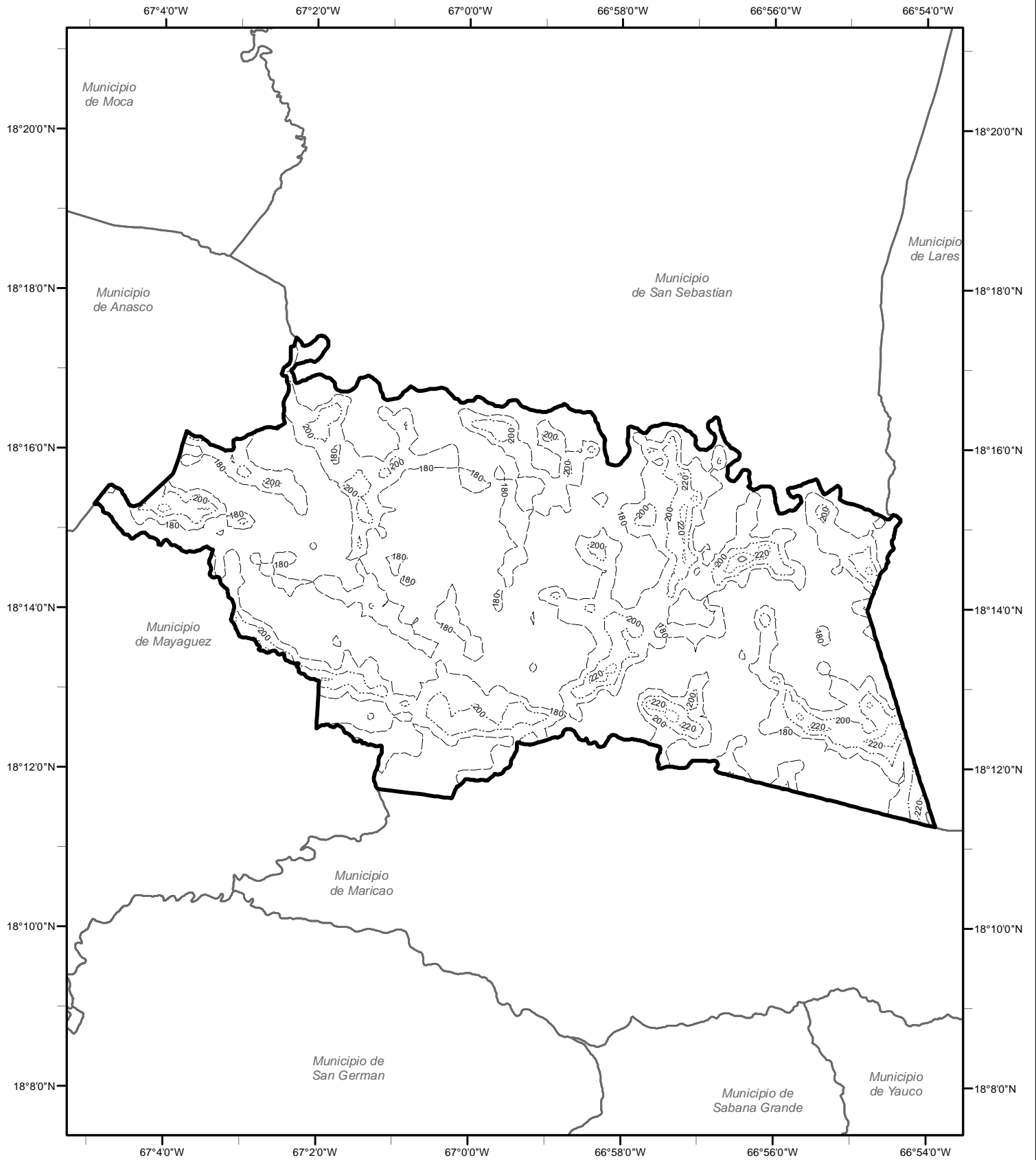
## Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

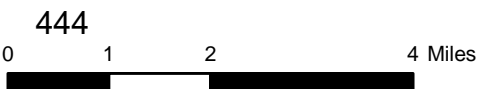


# Municipio de Las Marias Risk Category IV Effective Wind Speed Map (mph)

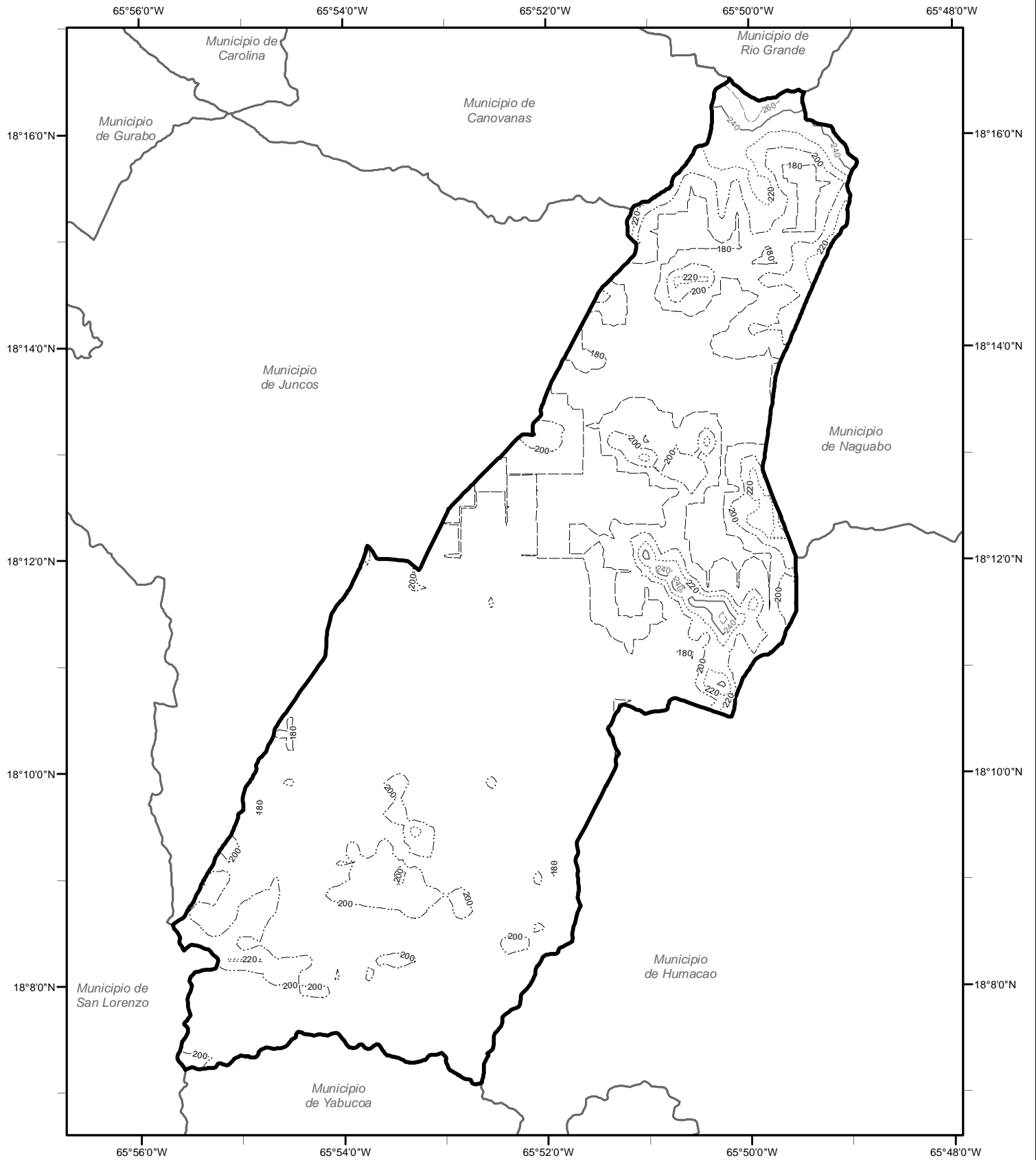


### Risk Category IV Wind Contour (mph)

- 180
- ..... 200
- · - · - 220
- 240
- 260

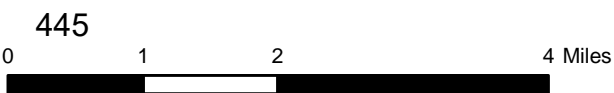


# Municipio de Las Piedras Risk Category IV Effective Wind Speed Map (mph)

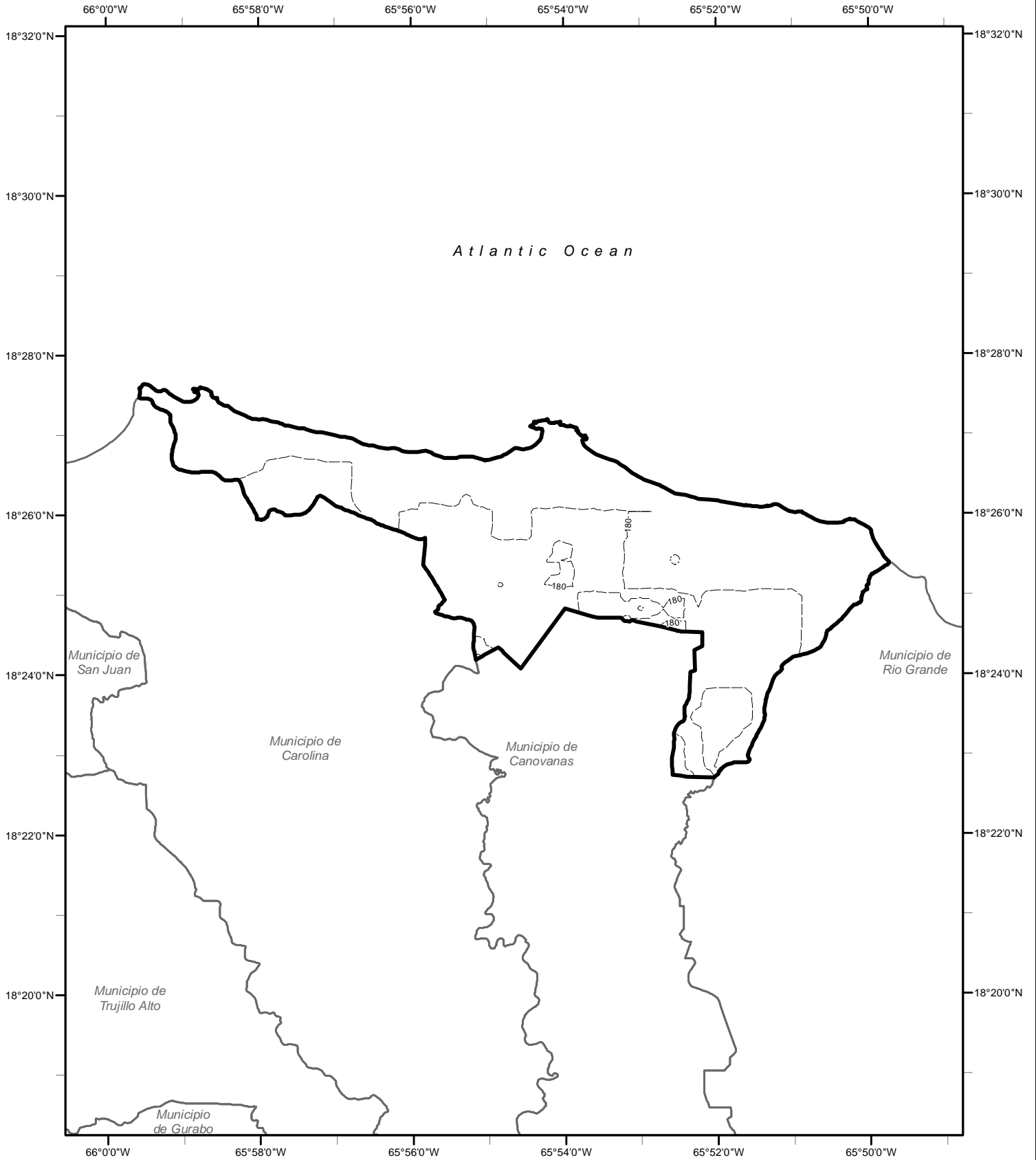


### Risk Category IV Wind Contour (mph)

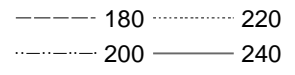
- 180
- 200
- 220
- 240
- 260



# Municipio de Loiza Risk Category IV Effective Wind Speed Map (mph)



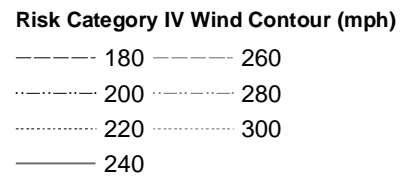
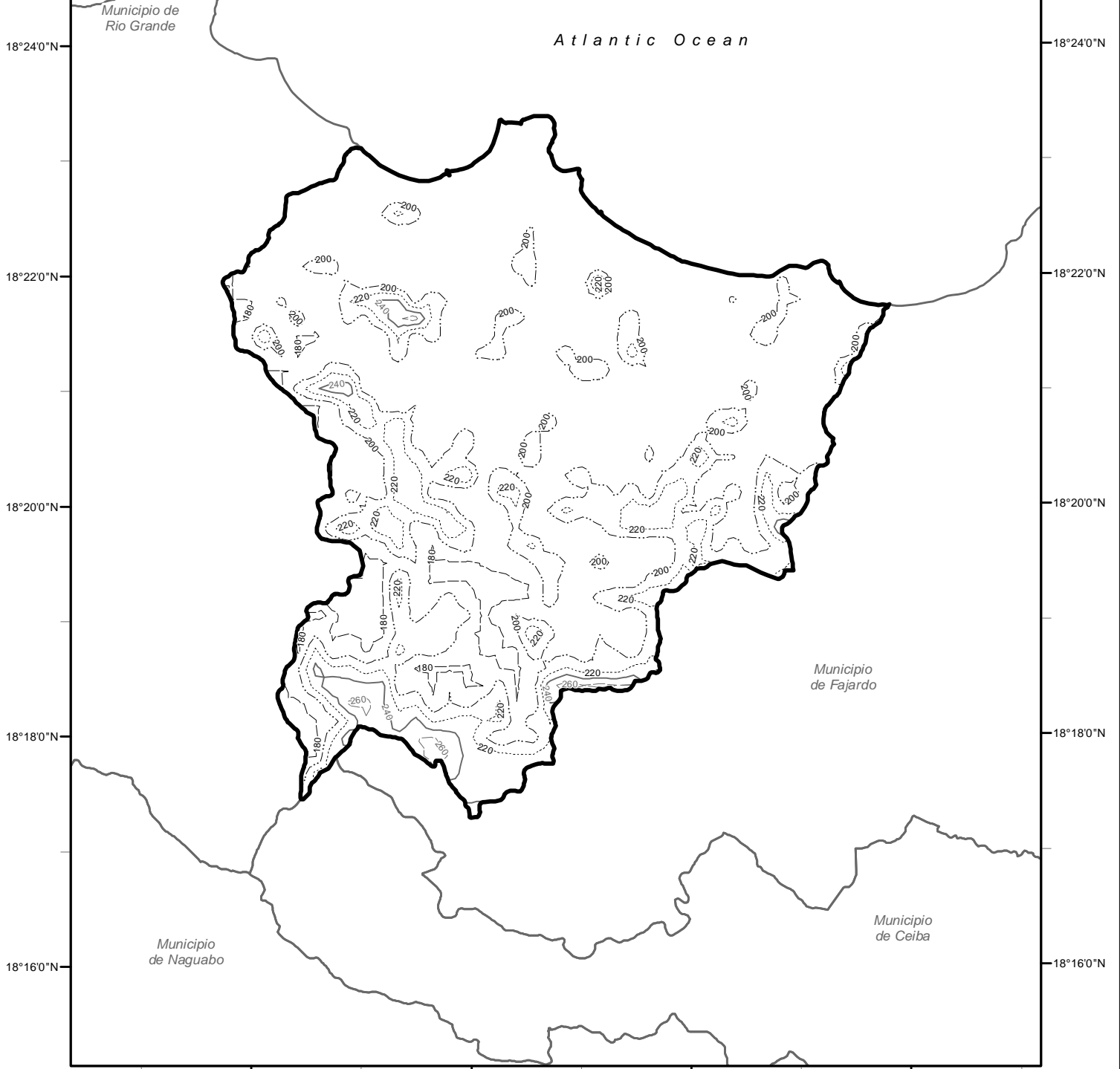
### Risk Category IV Wind Contour (mph)



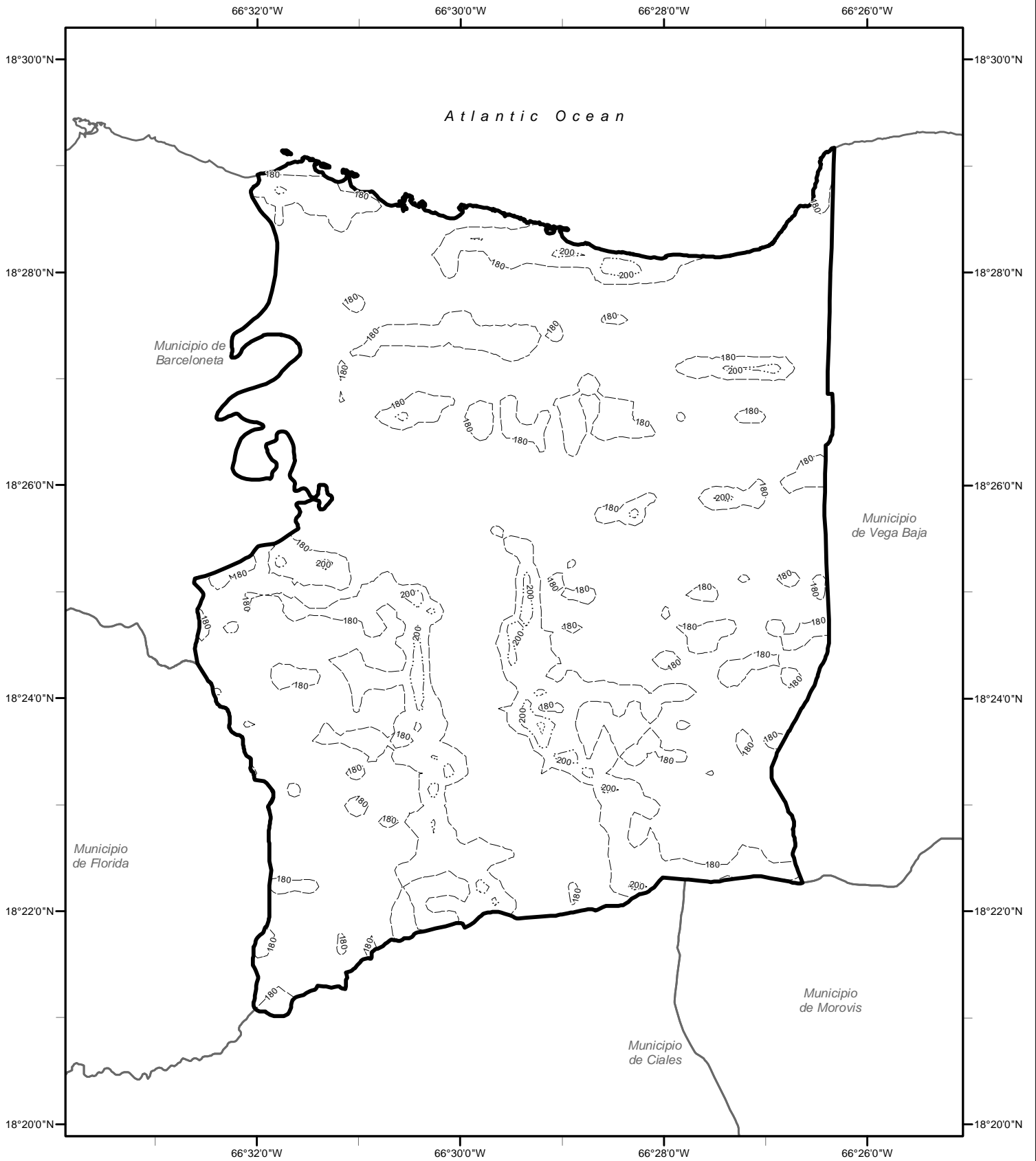


# Municipio de Luquillo Risk Category IV Effective Wind Speed Map (mph)

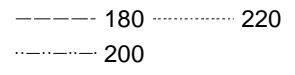
65°46'0"W      65°44'0"W      65°42'0"W      65°40'0"W



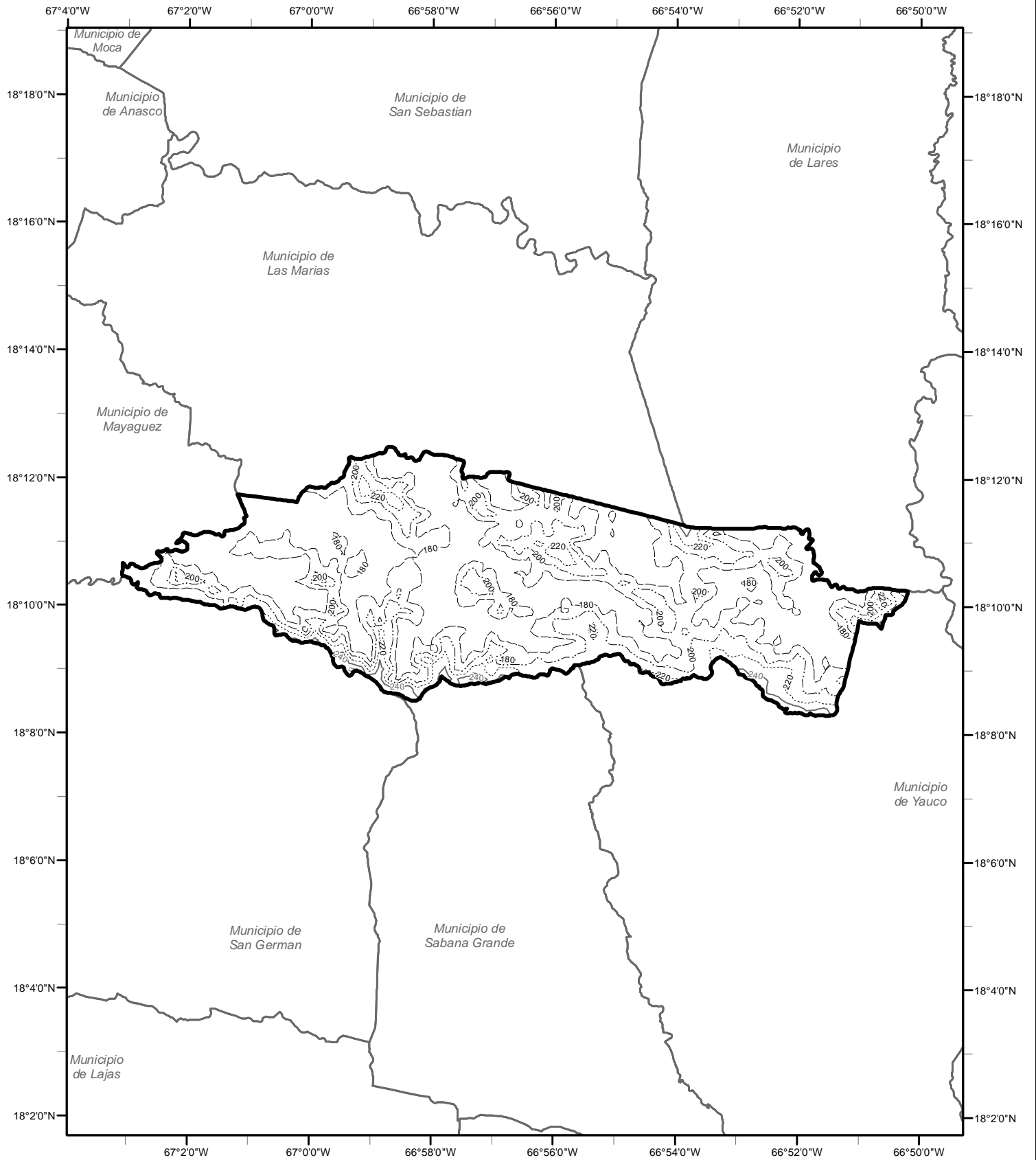
# Municipio de Manati Risk Category IV Effective Wind Speed Map (mph)



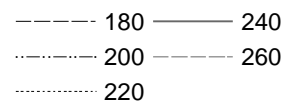
### Risk Category IV Wind Contour (mph)



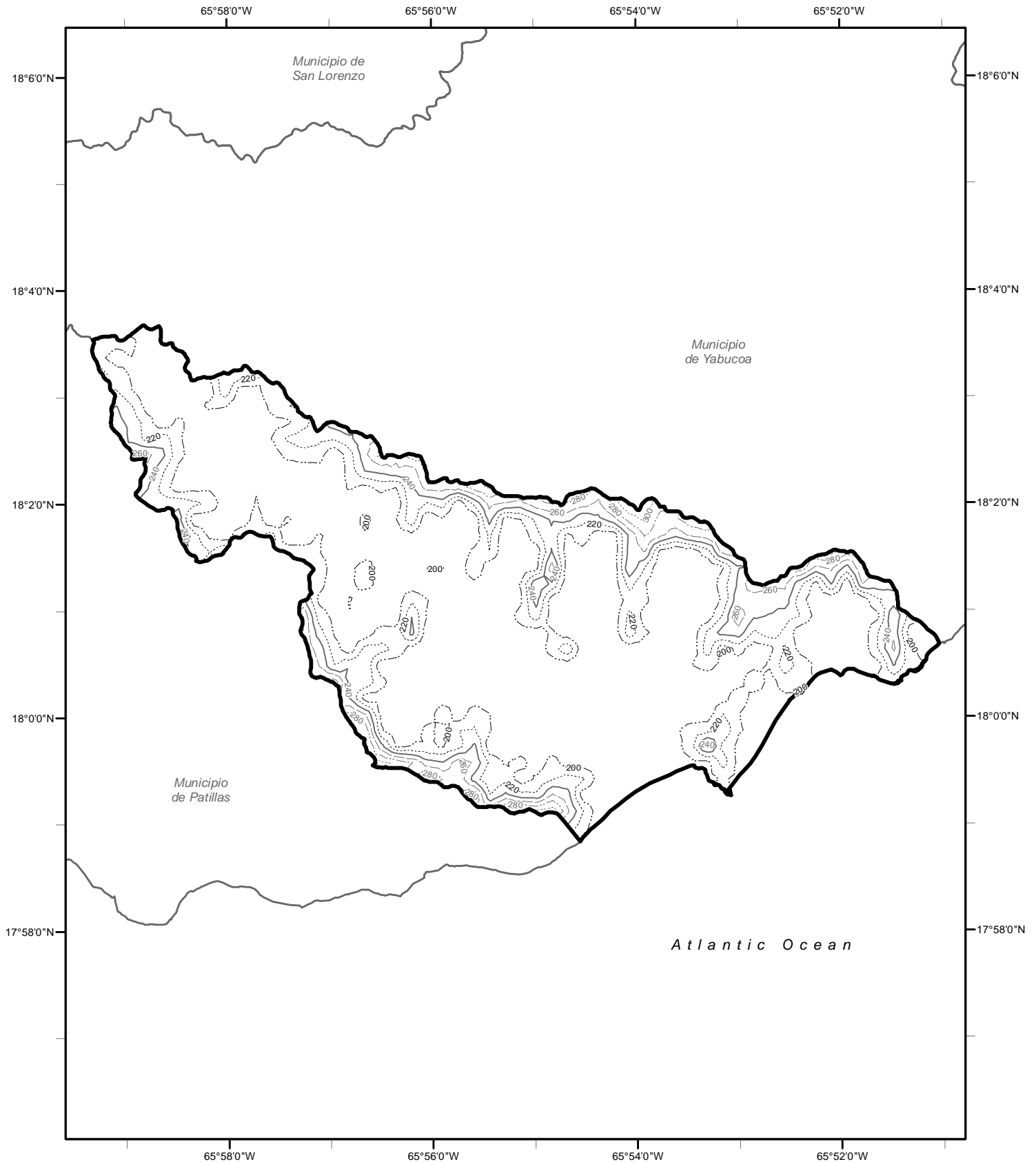
# Municipio de Maricao Risk Category IV Effective Wind Speed Map (mph)



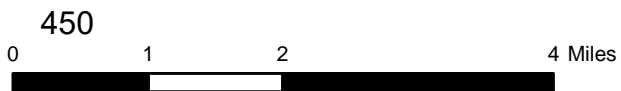
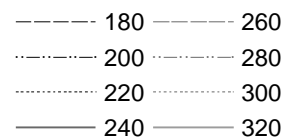
### Risk Category IV Wind Contour (mph)



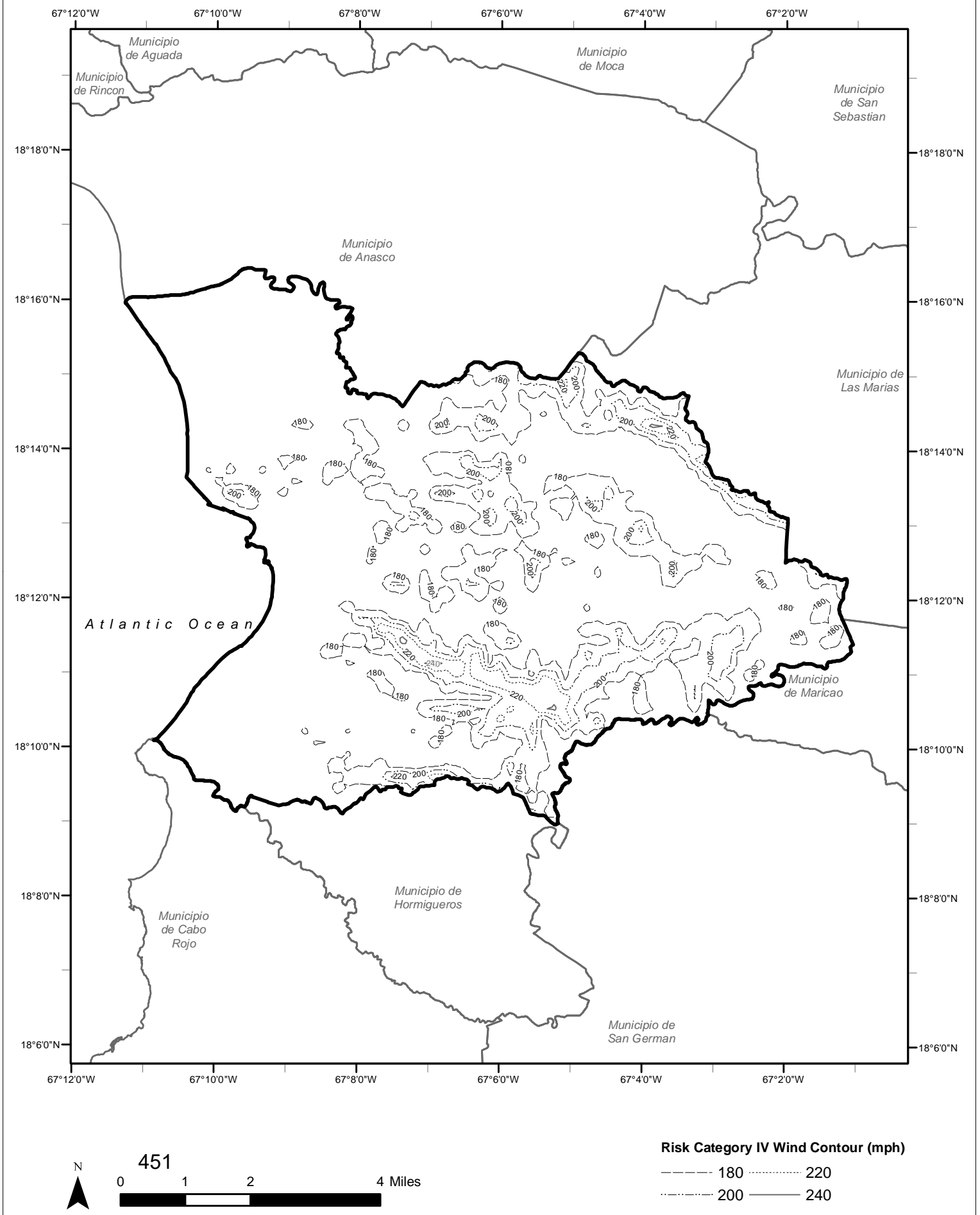
# Municipio de Maunabo Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

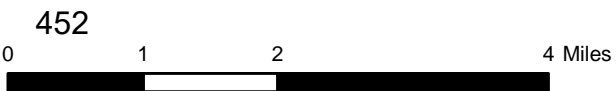
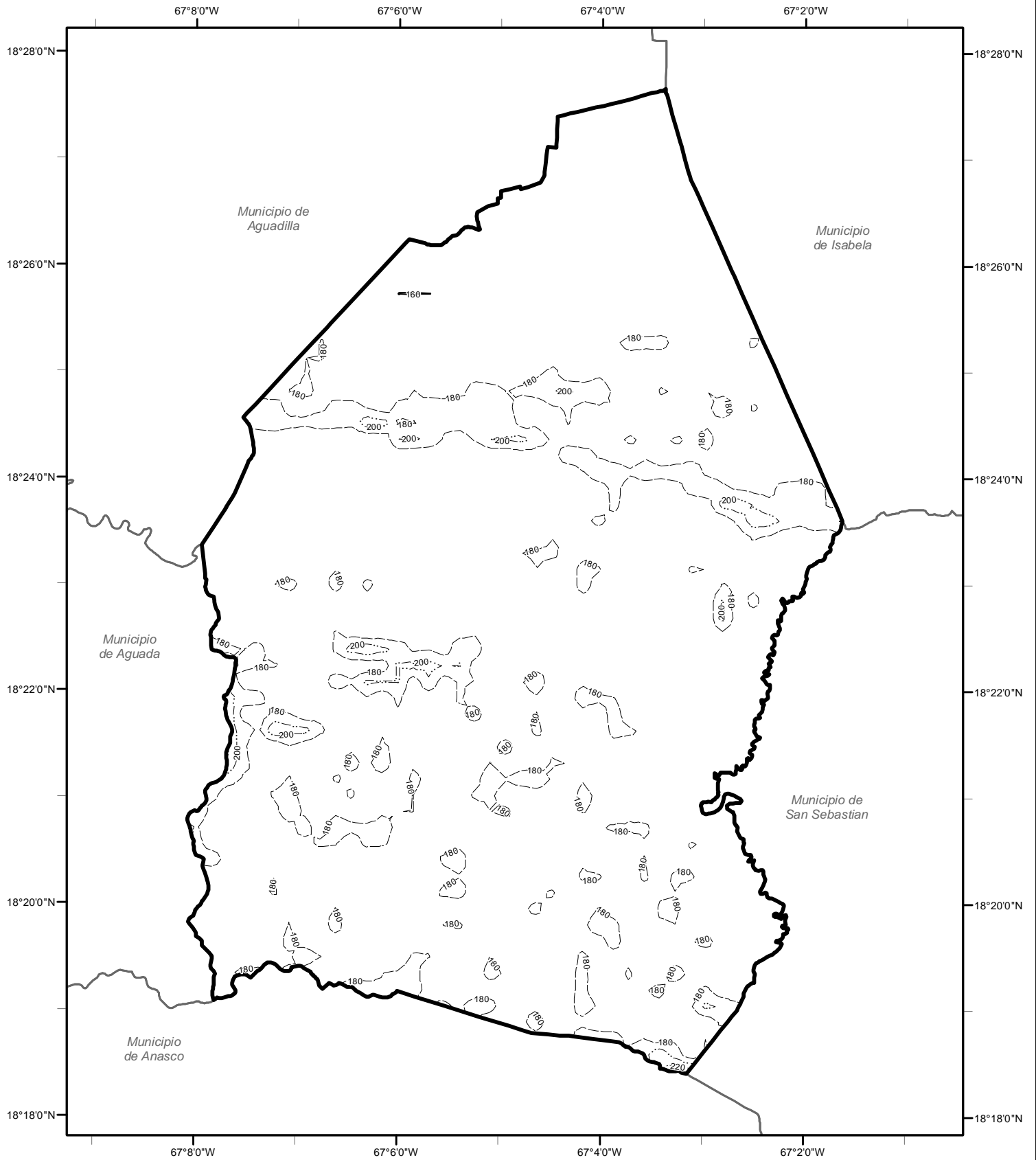


# Municipio de Mayaguez Risk Category IV Effective Wind Speed Map (mph)



# Municipio de Moca

## Risk Category IV Effective Wind Speed Map (mph)

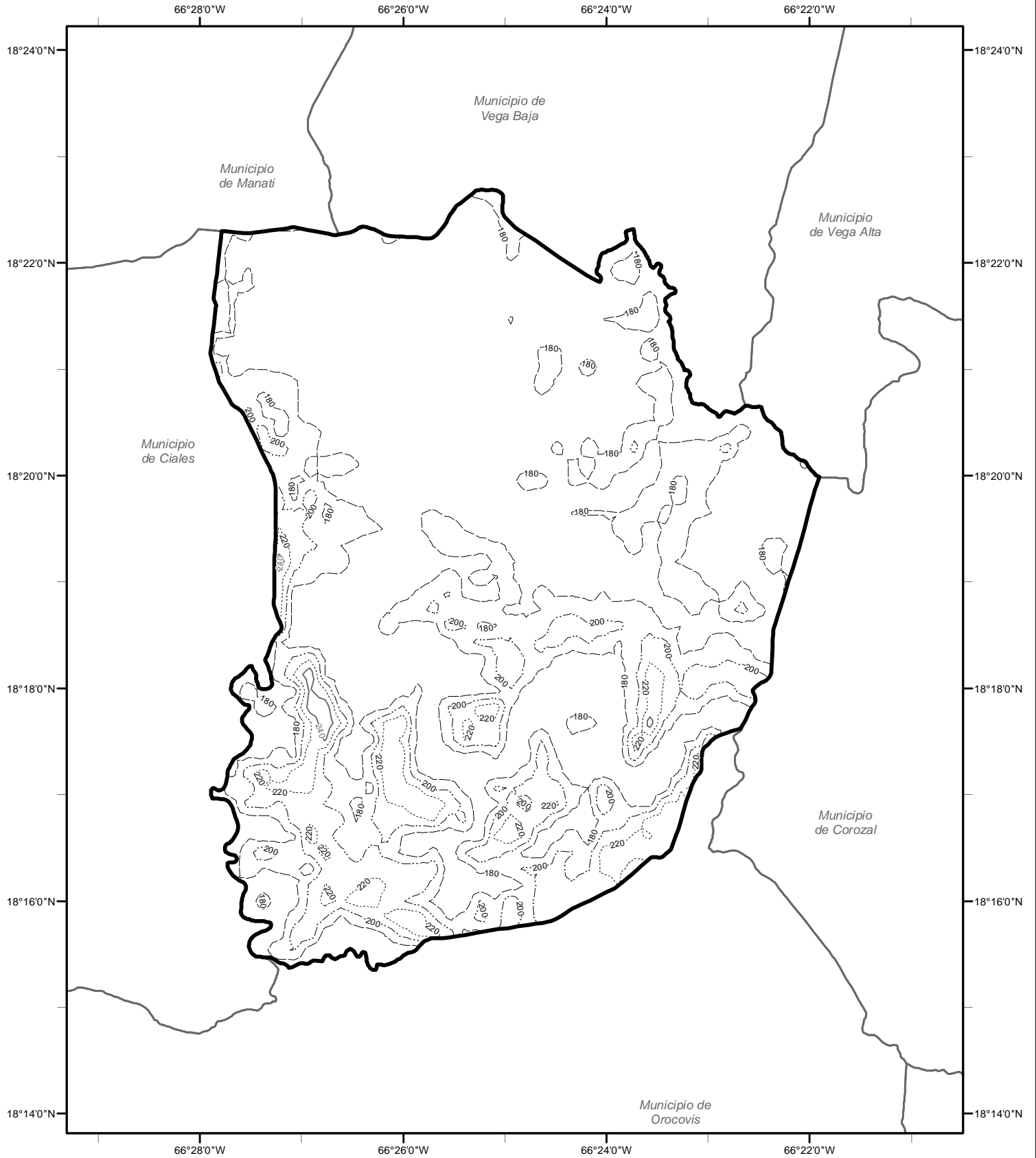


### Risk Category IV Wind Contour (mph)

- 160
- 180
- 200
- 220

# Municipio de Morovis

## Risk Category IV Effective Wind Speed Map (mph)

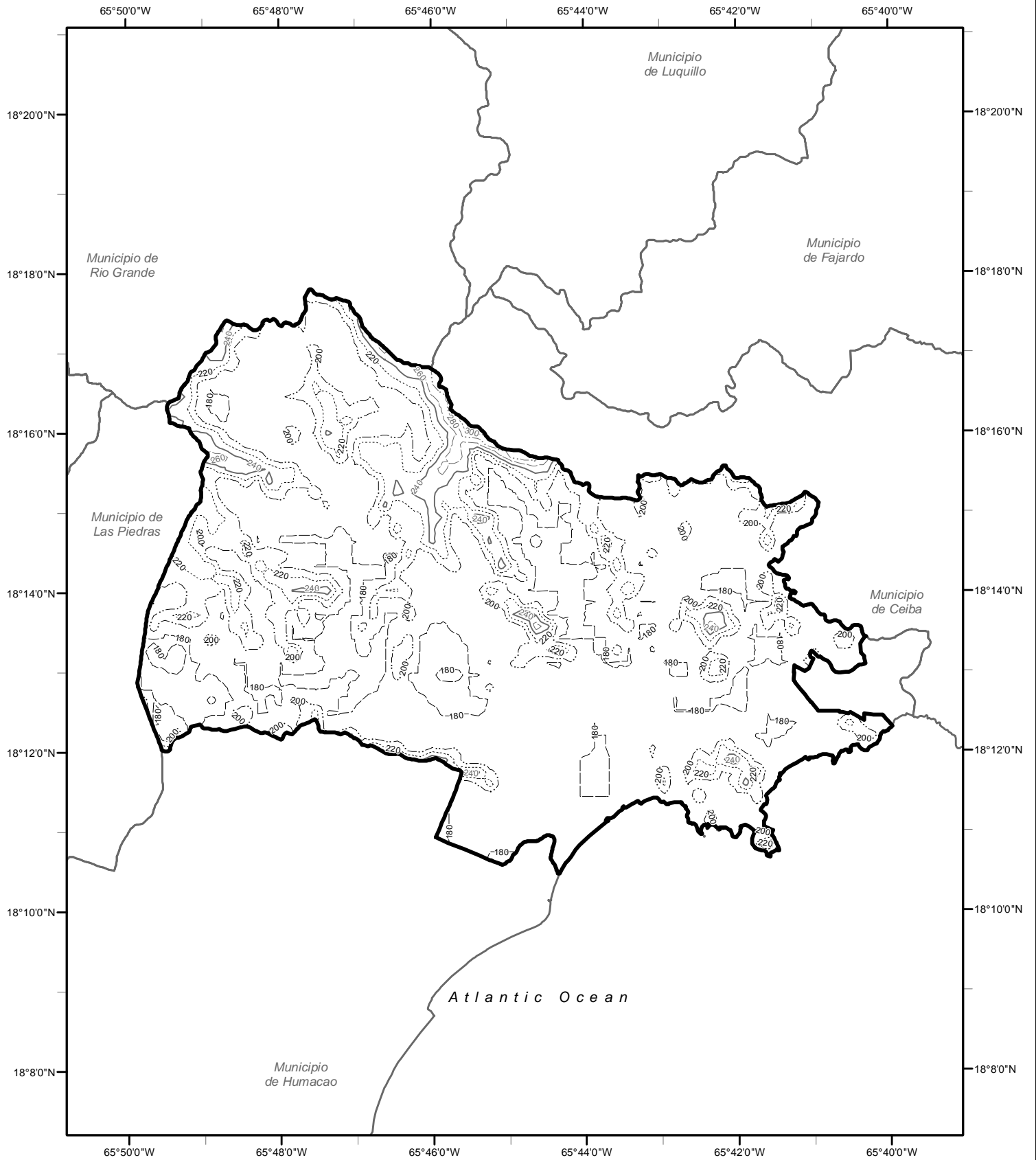


### Risk Category IV Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260

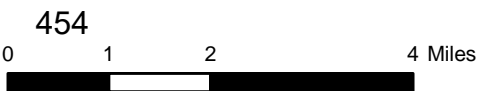


# Municipio de Naguabo Risk Category IV Effective Wind Speed Map (mph)



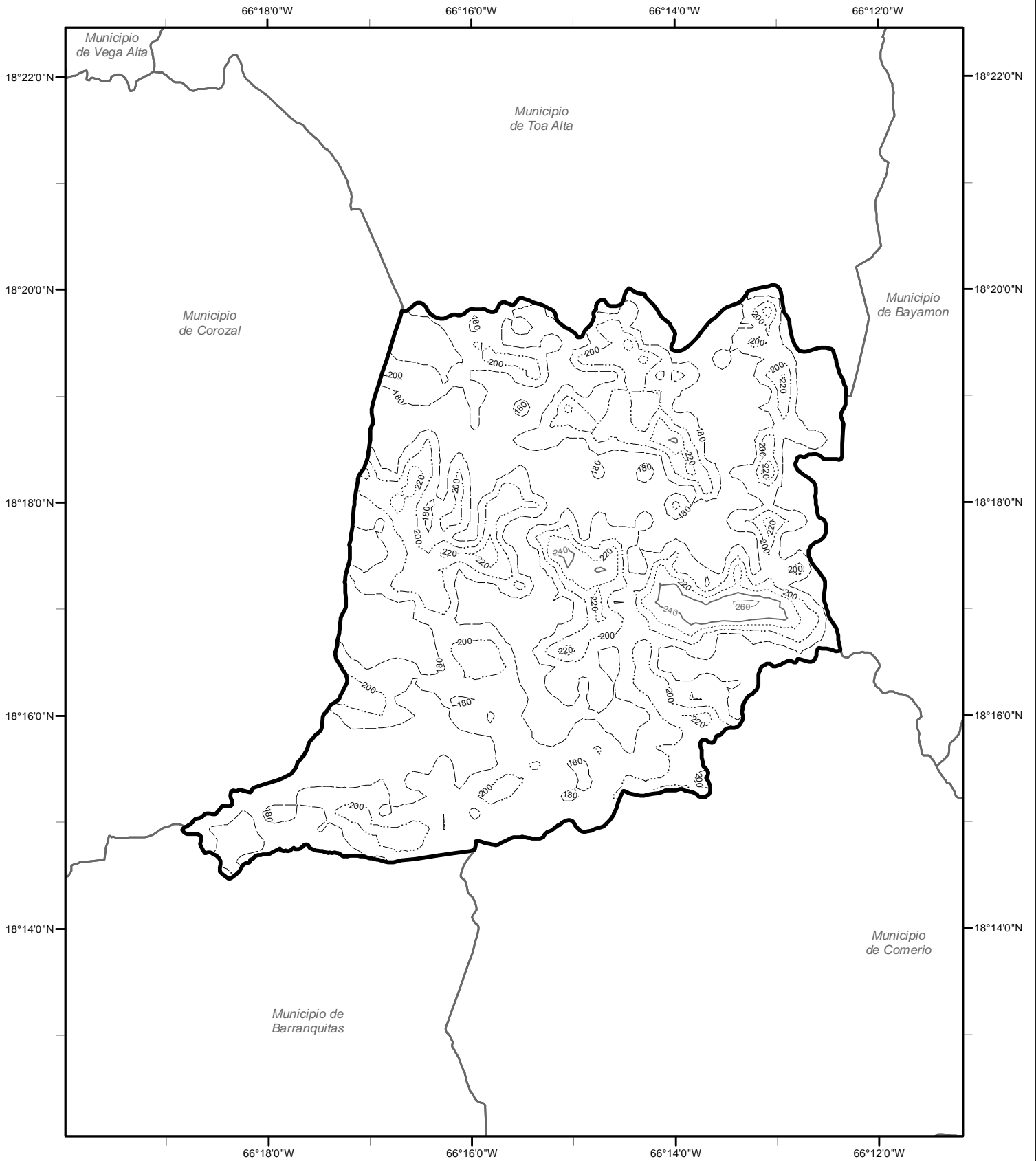
### Risk Category IV Wind Contour (mph)

- 180 ----- 260
- ..... 200 ..... 280
- ..... 220 ..... 300
- 240





# Municipio de Naranjito Risk Category IV Effective Wind Speed Map (mph)

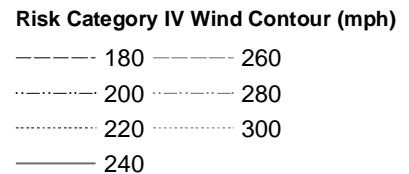
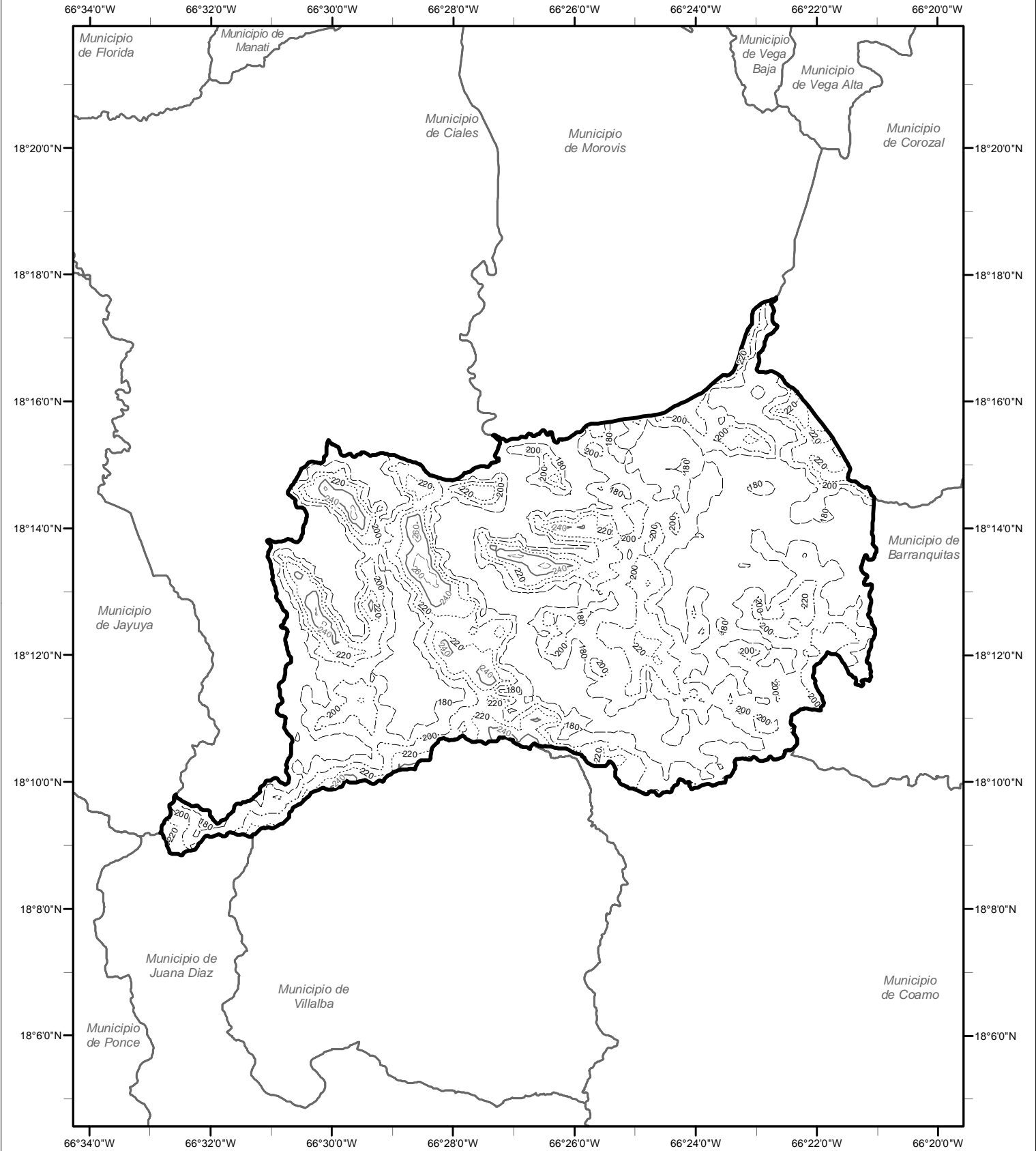


### Risk Category IV Wind Contour (mph)

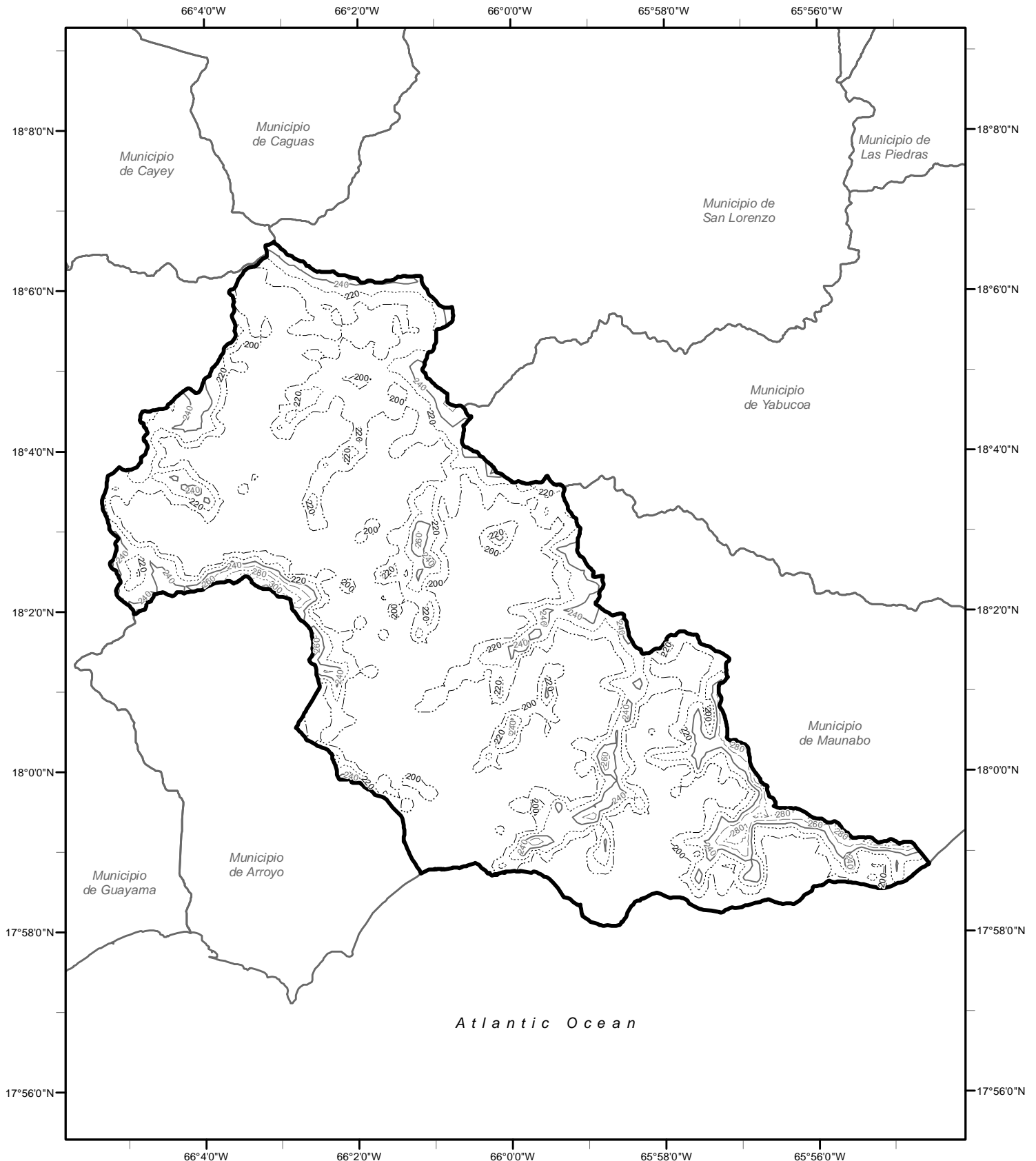
- 180
- 190
- 200
- 220
- 240
- 260



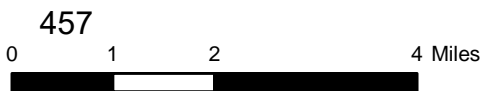
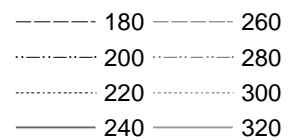
# Municipio de Orocovis Risk Category IV Effective Wind Speed Map (mph)



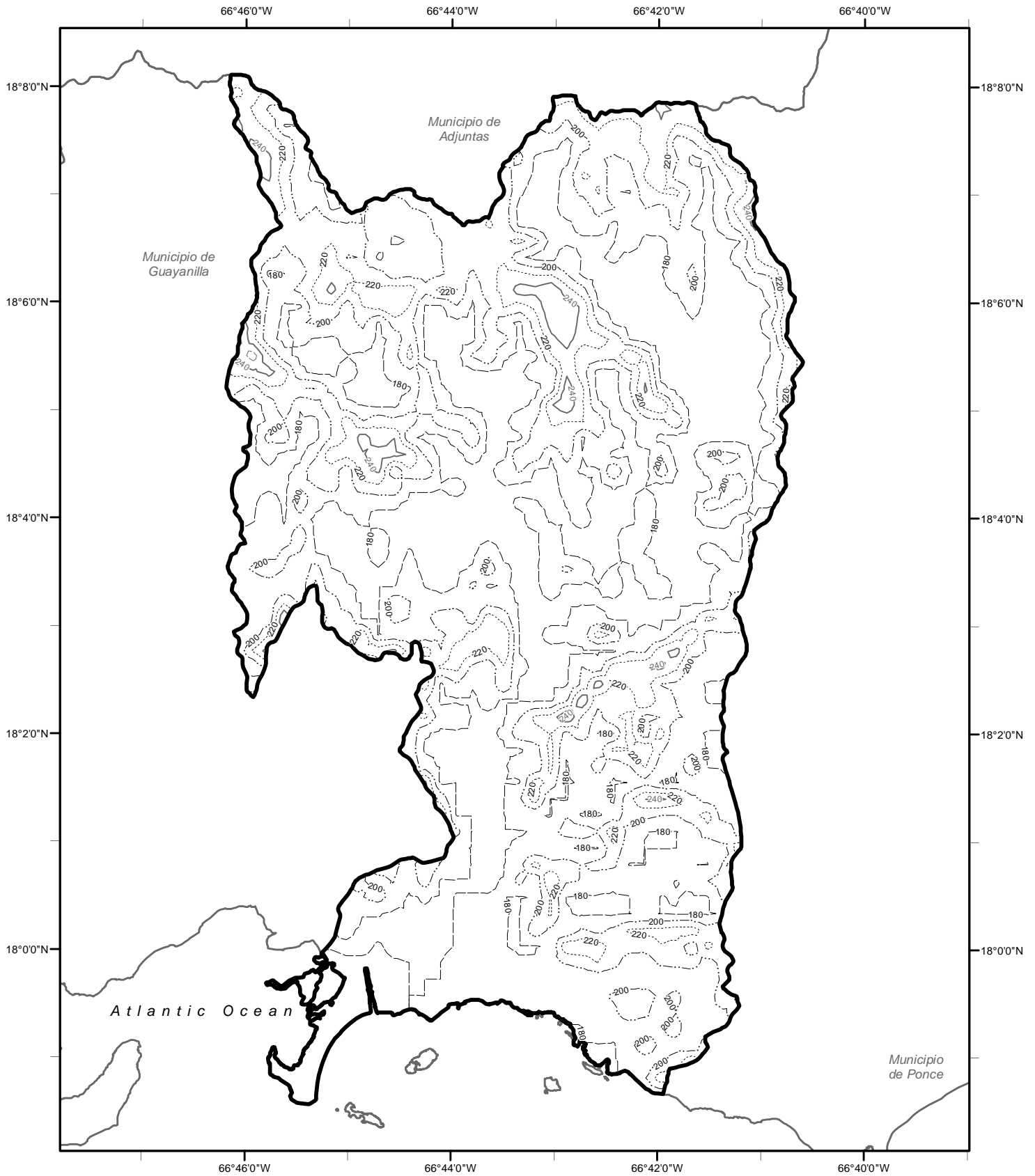
# Municipio de Patillas Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

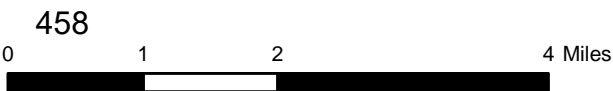


# Municipio de Penuelas Risk Category IV Effective Wind Speed Map (mph)

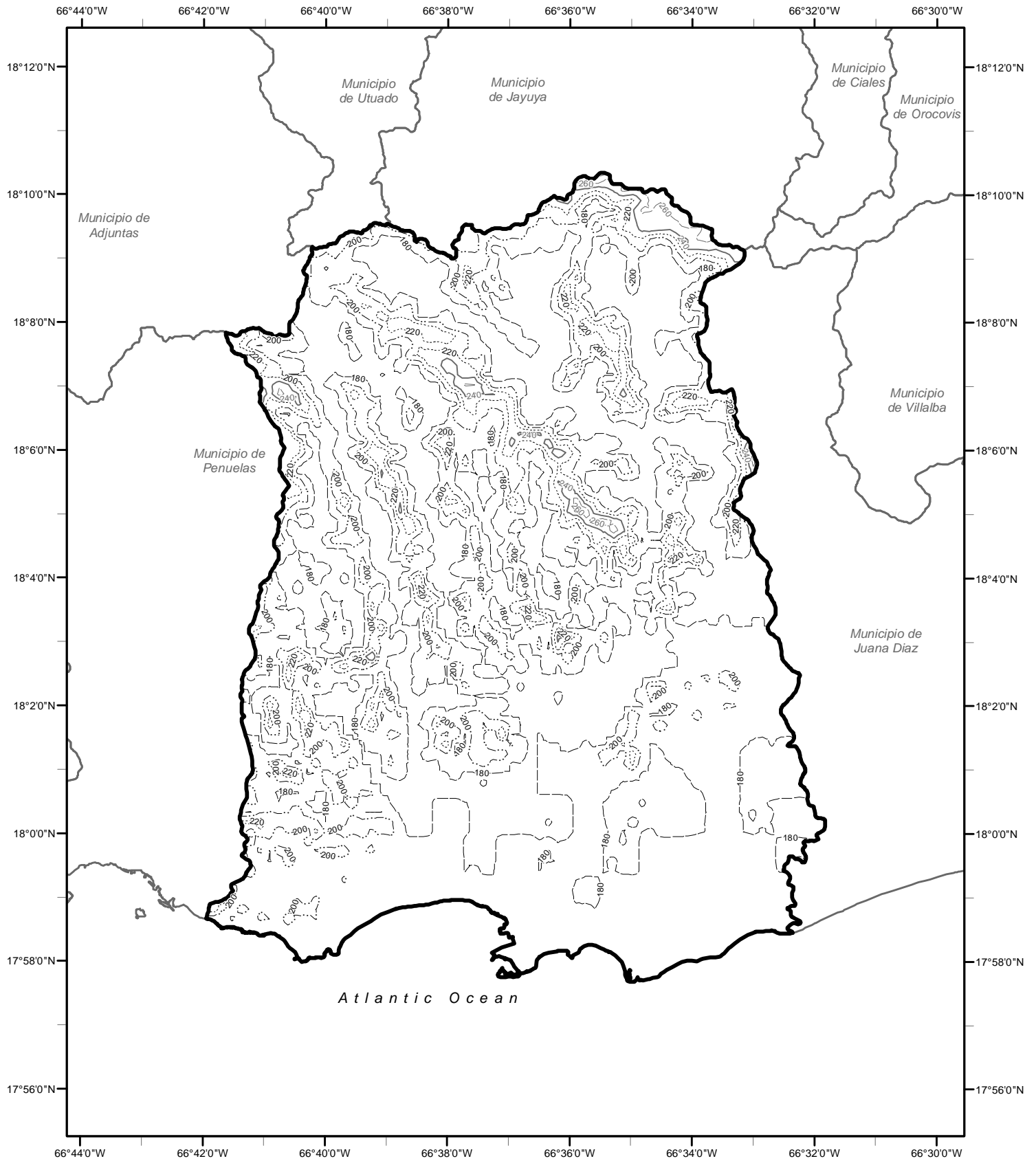


### Risk Category IV Wind Contour (mph)

- 180
- ..... 200
- ..... 220
- 240
- 260



# Municipio de Ponce Risk Category IV Effective Wind Speed Map (mph)

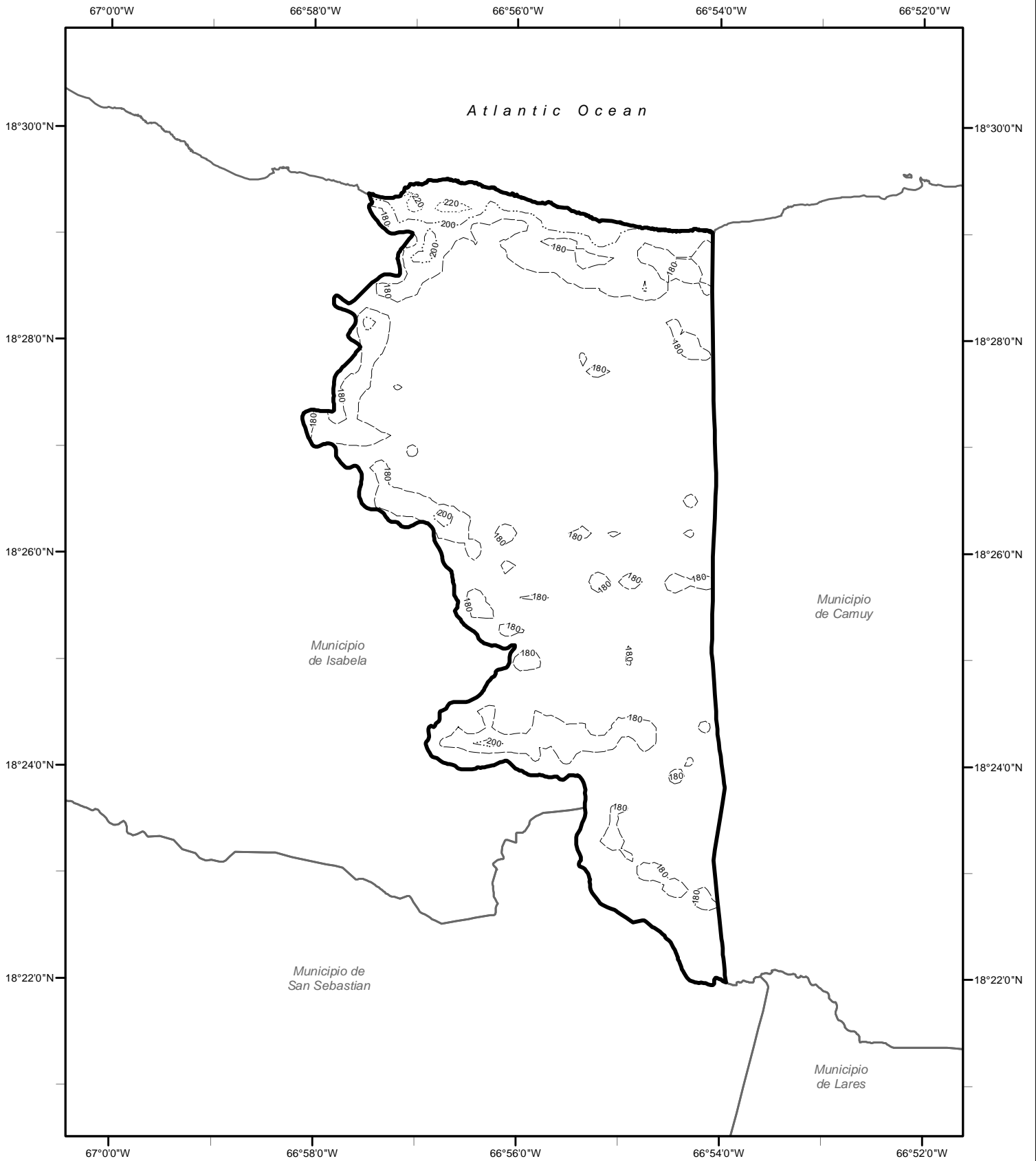


### Risk Category IV Wind Contour (mph)

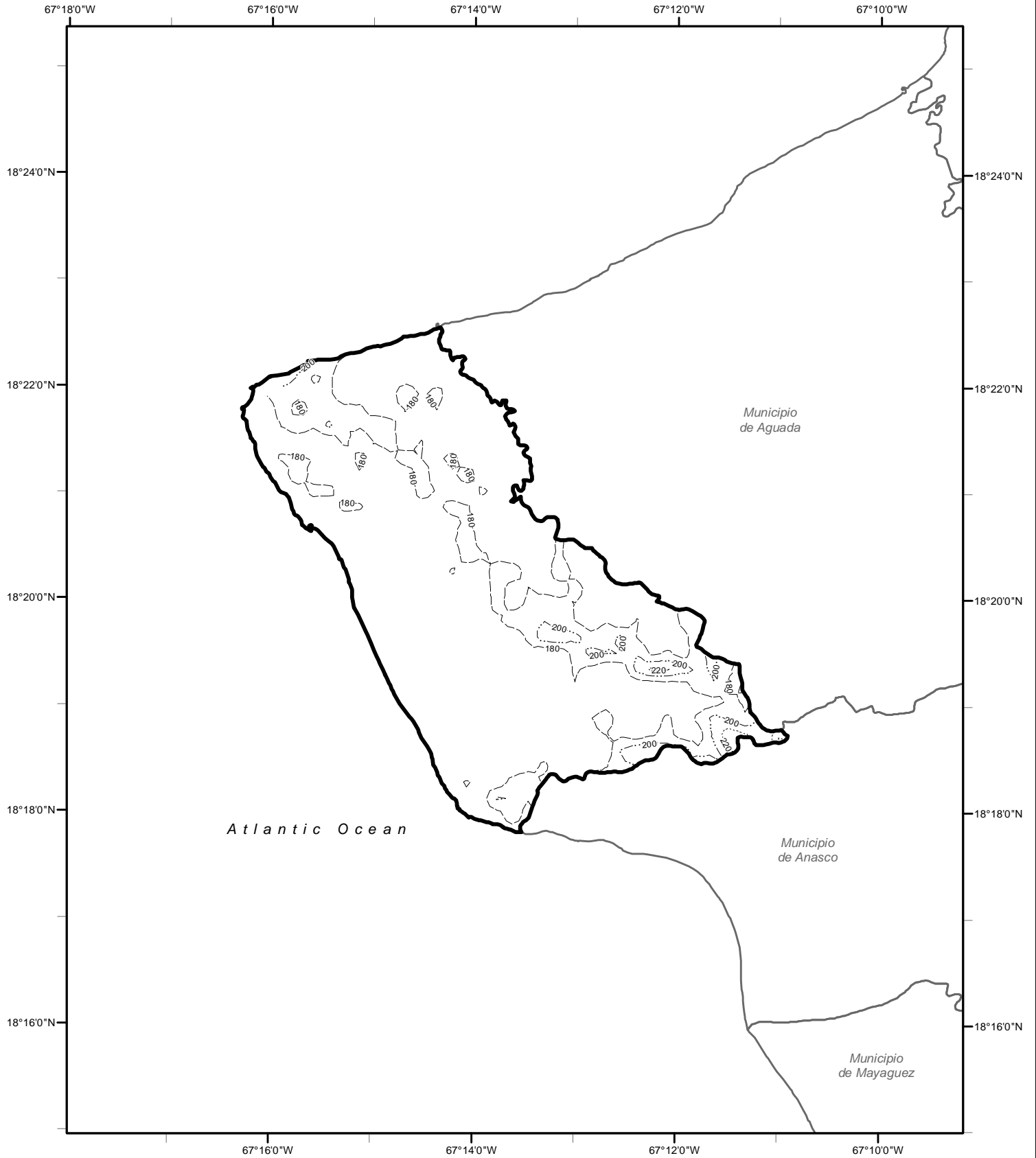
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220 ----- 280



# Municipio de Quebradillas Risk Category IV Effective Wind Speed Map (mph)



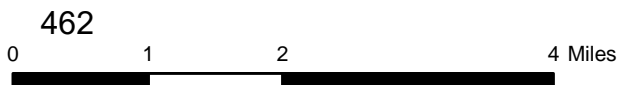
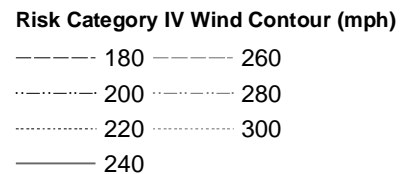
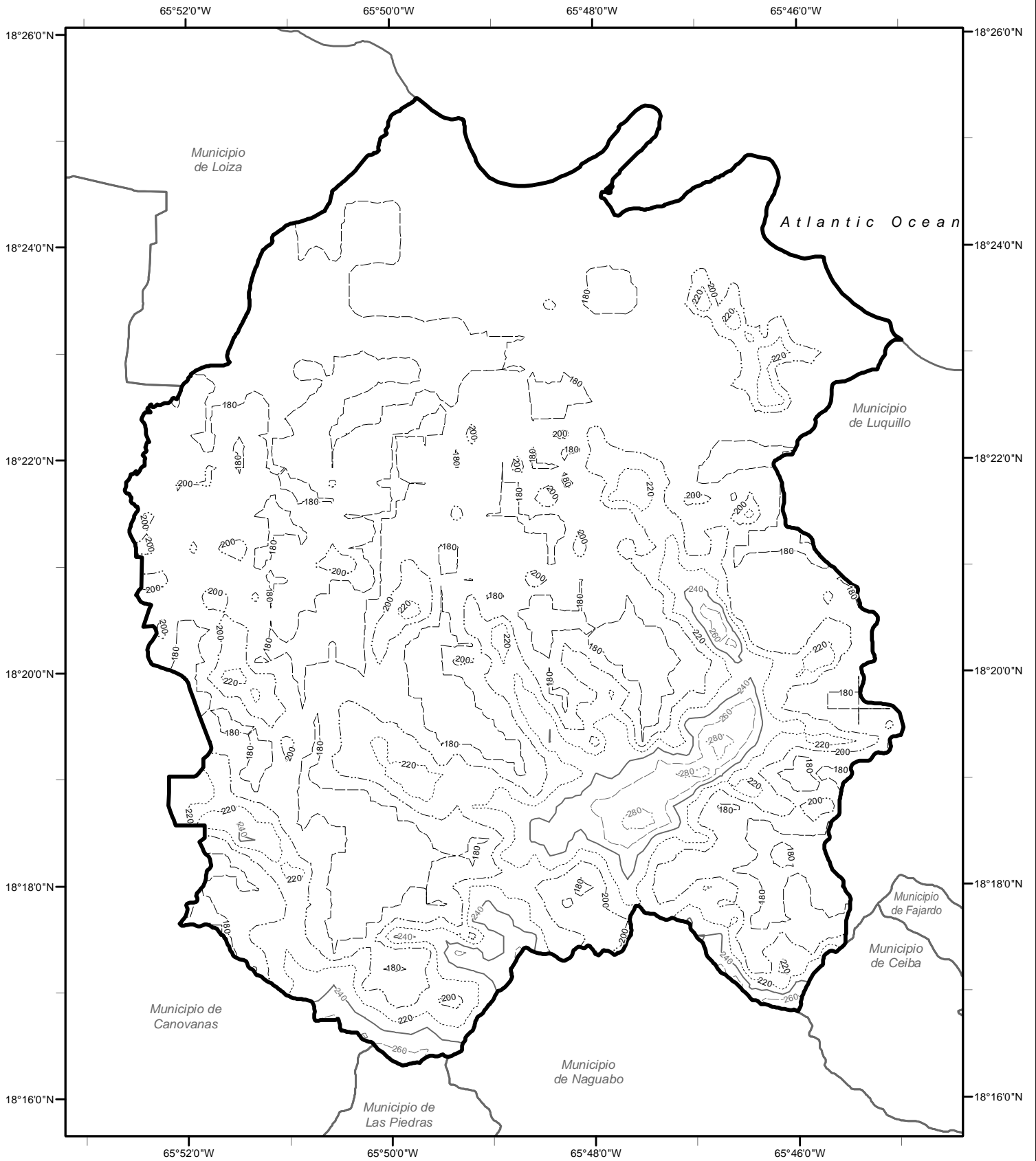
# Municipio de Rincon Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

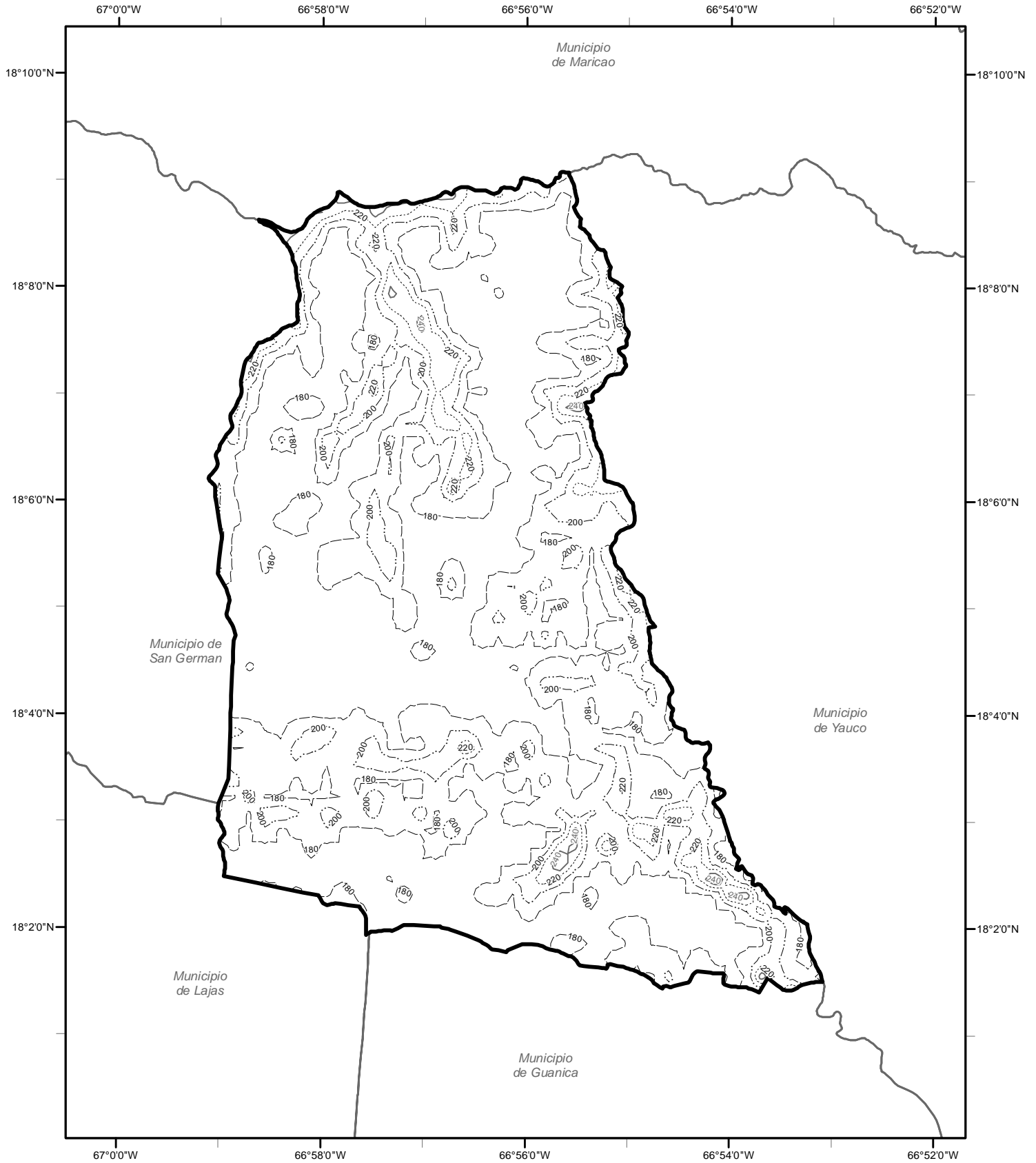
- 160
- 180
- 200
- 220

# Municipio de Rio Grande Risk Category IV Effective Wind Speed Map (mph)

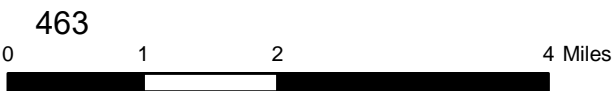
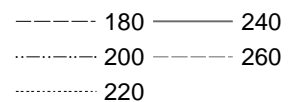




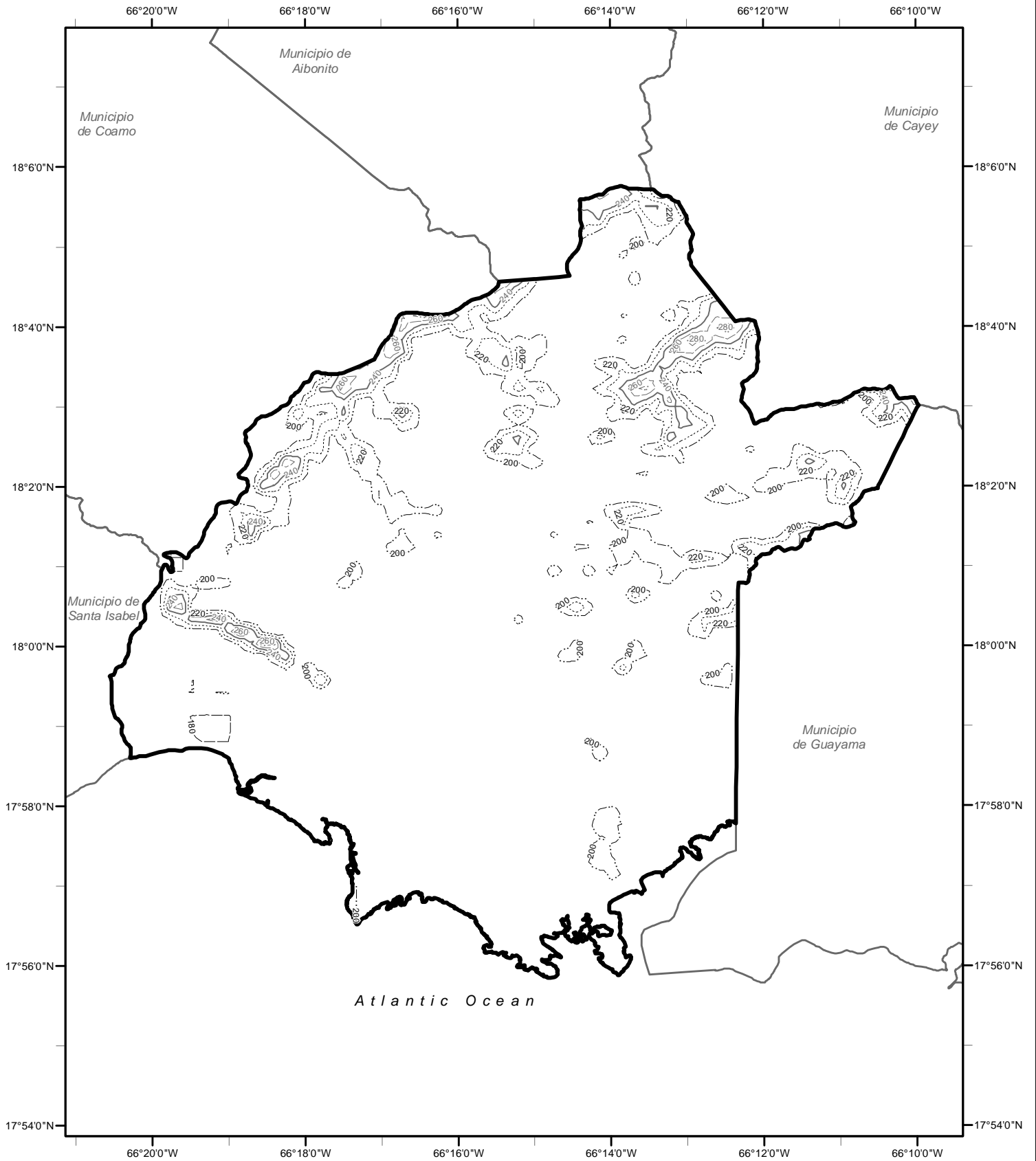
# Municipio de Sabana Grande Risk Category IV Effective Wind Speed Map (mph)



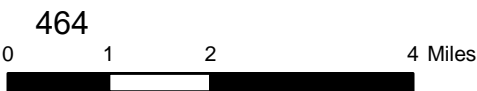
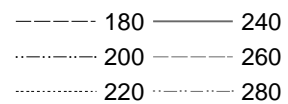
### Risk Category IV Wind Contour (mph)



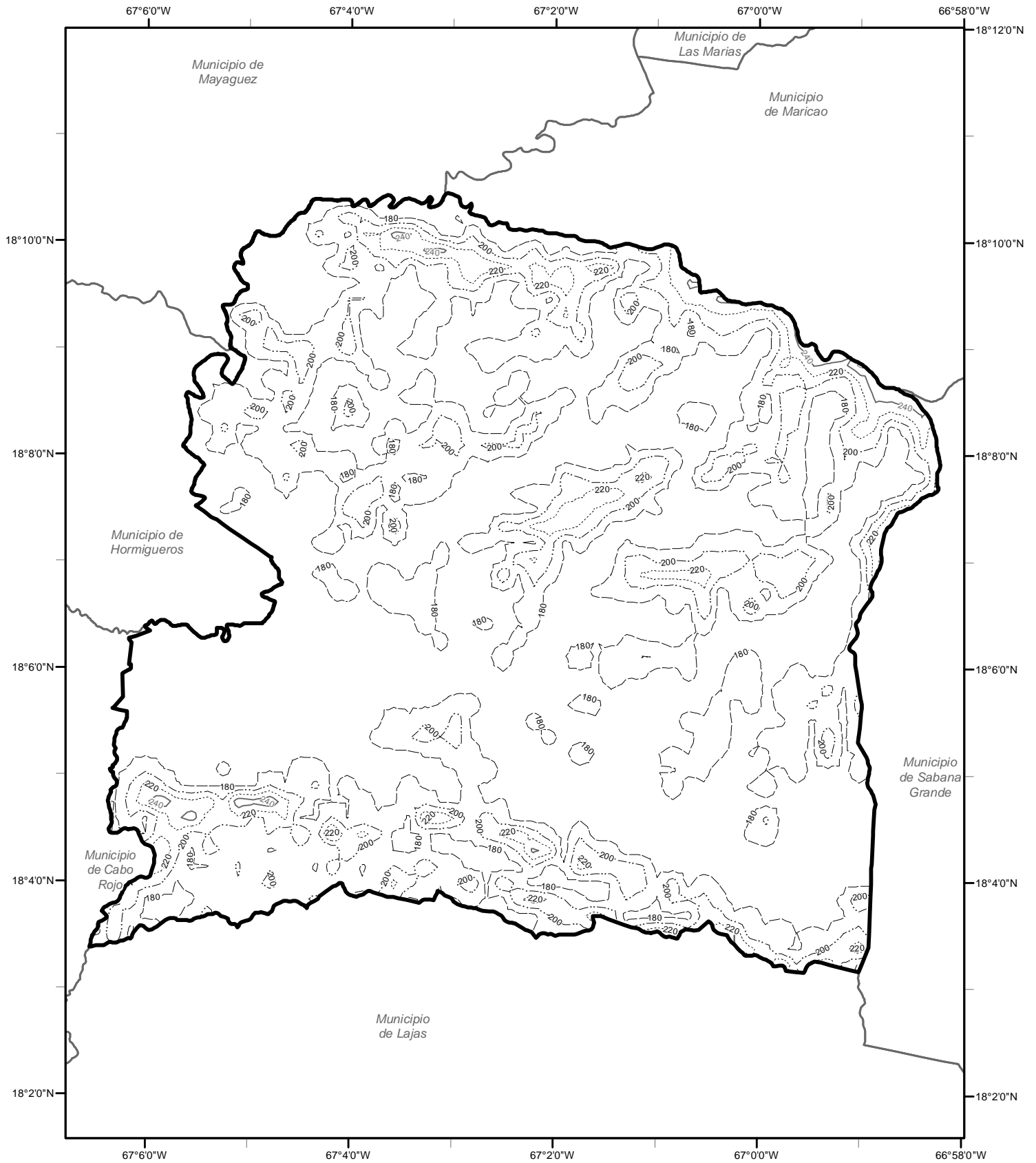
# Municipio de Salinas Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



# Municipio de San German Risk Category IV Effective Wind Speed Map (mph)

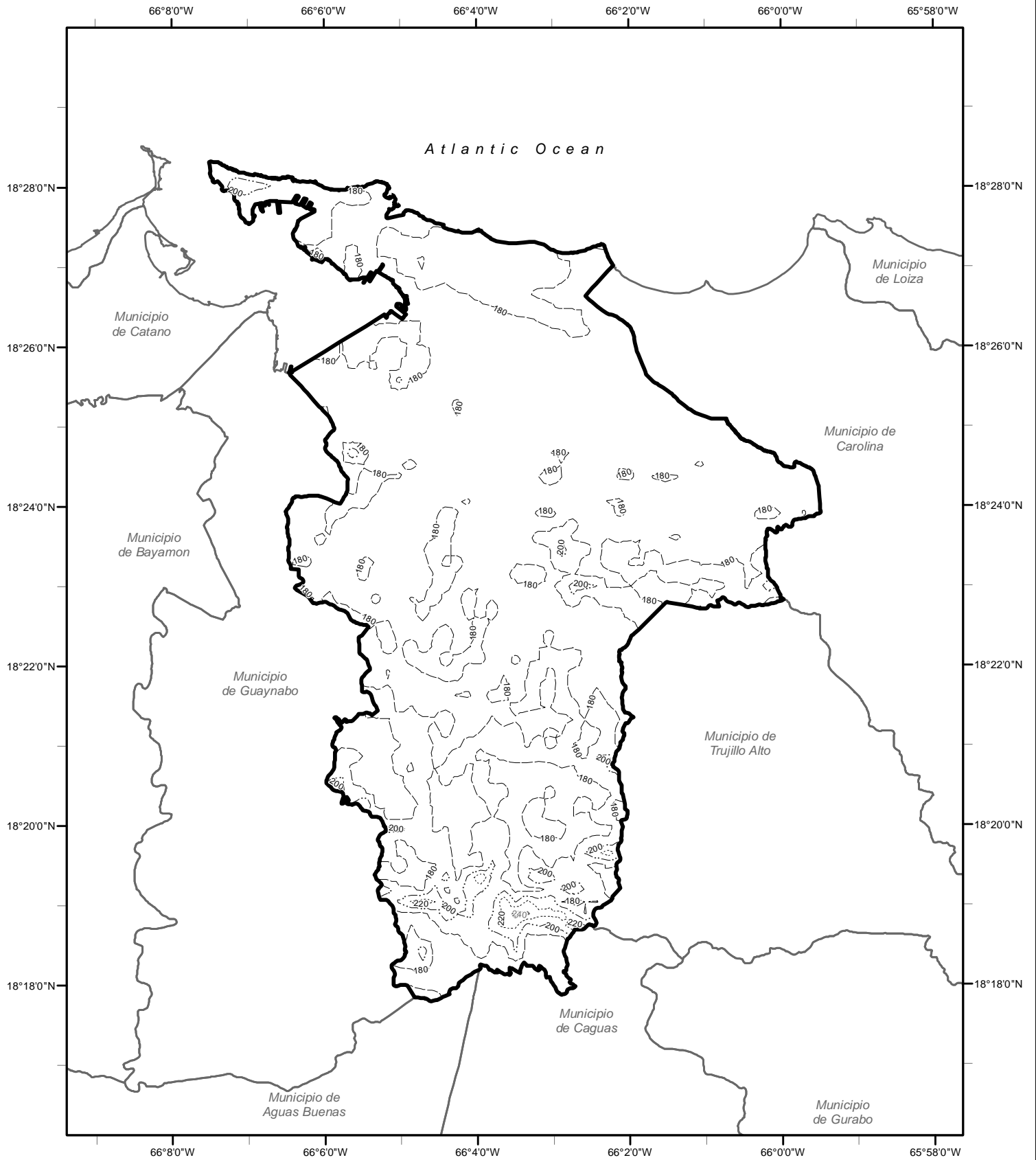


### Risk Category IV Wind Contour (mph)

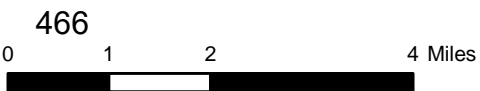
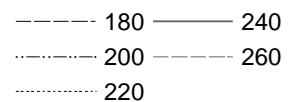
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220



# Municipio de San Juan Risk Category IV Effective Wind Speed Map (mph)

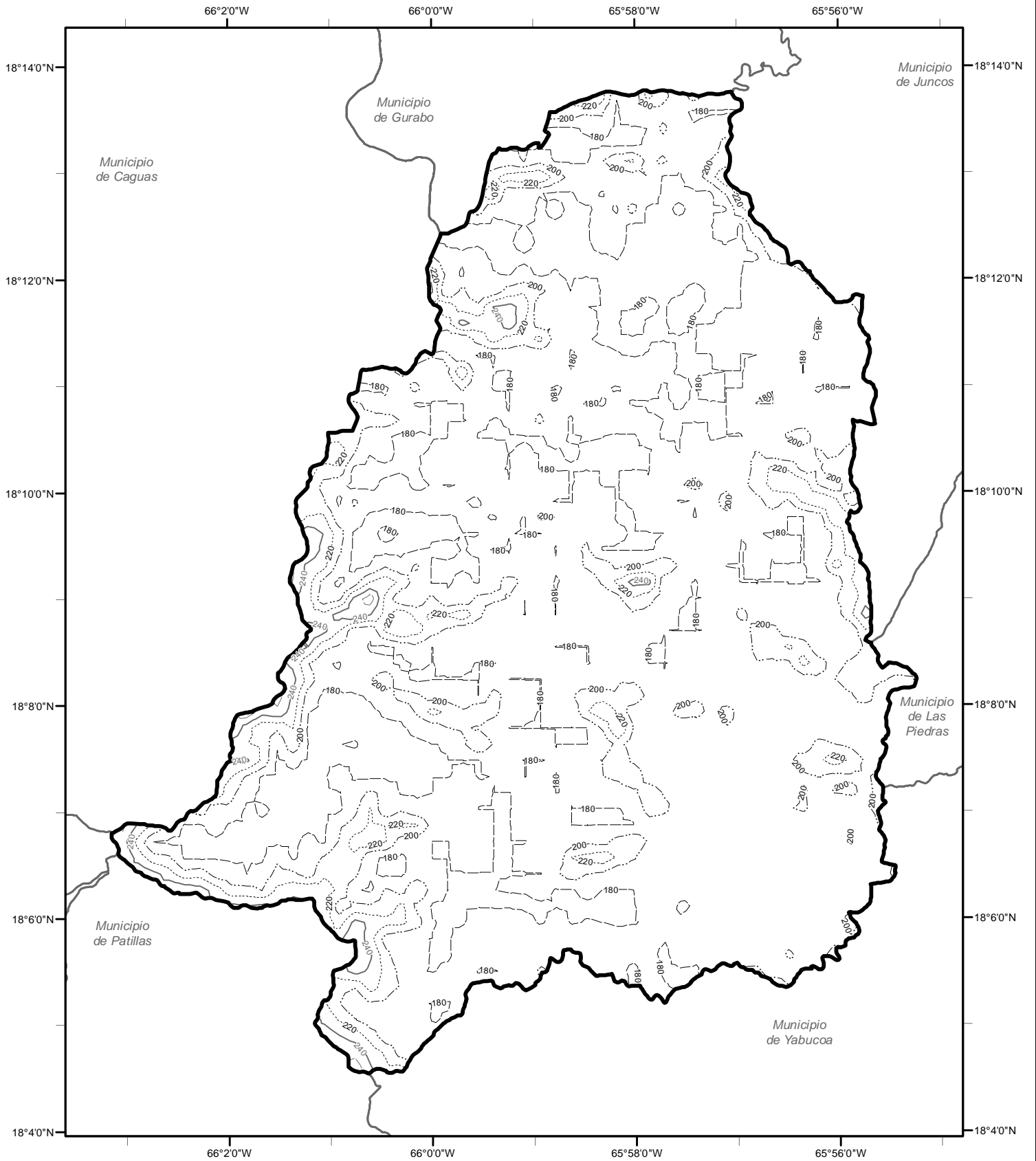


### Risk Category IV Wind Contour (mph)



# Municipio de San Lorenzo

## Risk Category IV Effective Wind Speed Map (mph)

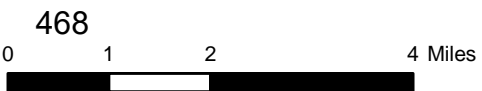
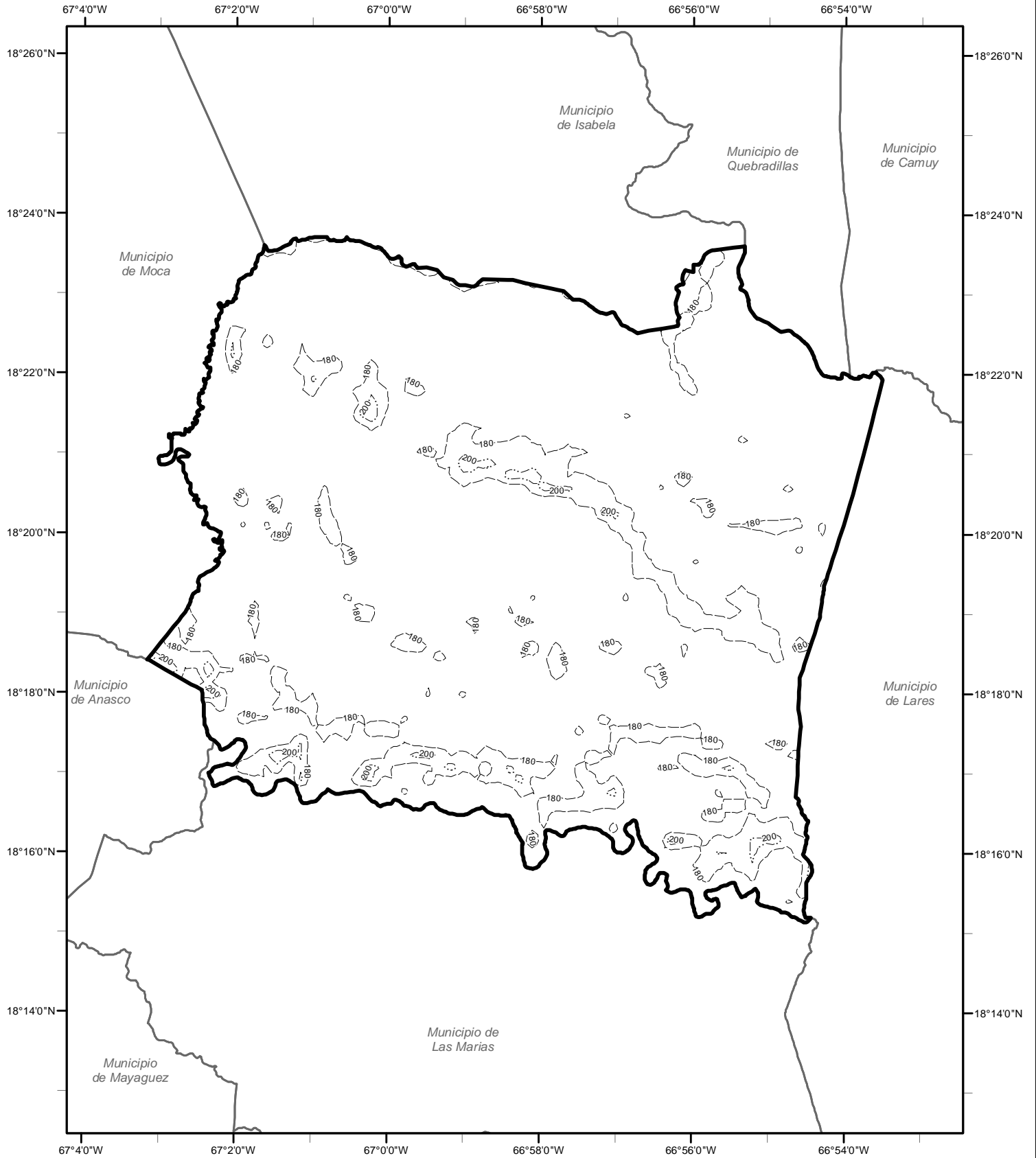


### Risk Category IV Wind Contour (mph)

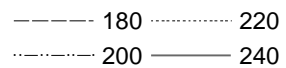
- 180
- 200
- 220
- 240
- 260



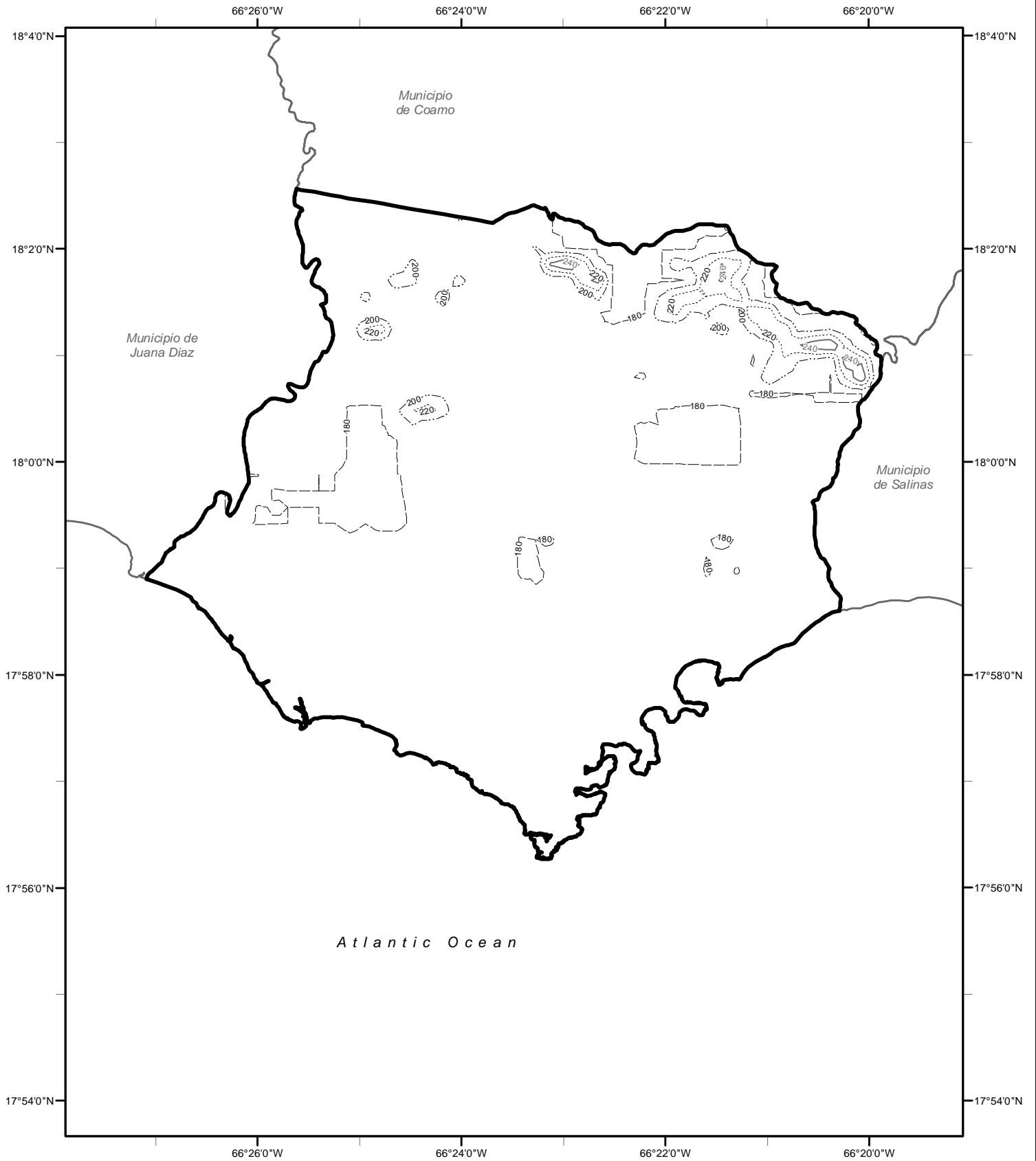
# Municipio de San Sebastian Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

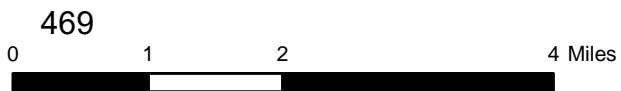


# Municipio de Santa Isabel Risk Category IV Effective Wind Speed Map (mph)

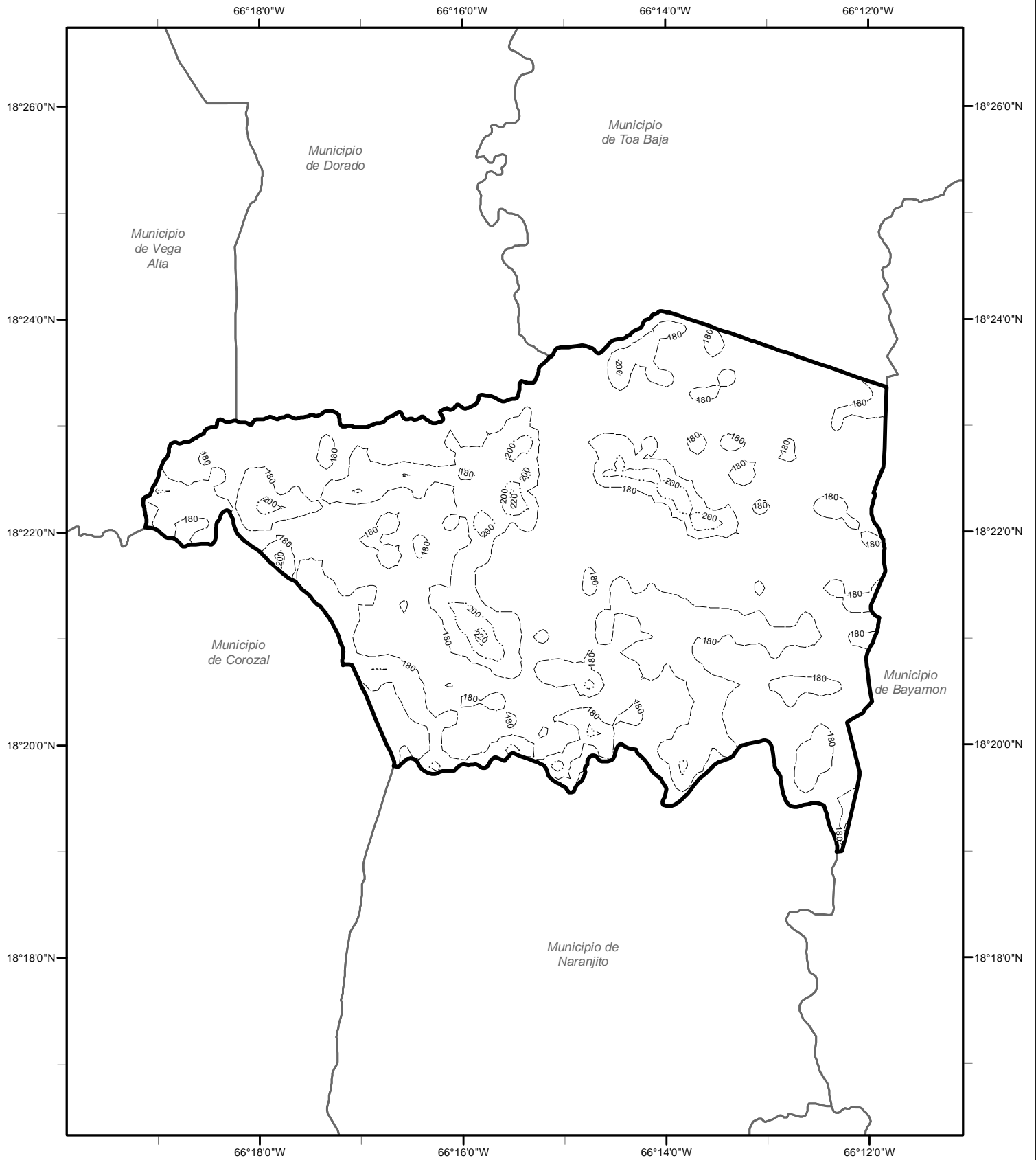


### Risk Category IV Wind Contour (mph)

- 180
- 200
- 220
- 240
- 260



# Municipio de Toa Alta Risk Category IV Effective Wind Speed Map (mph)



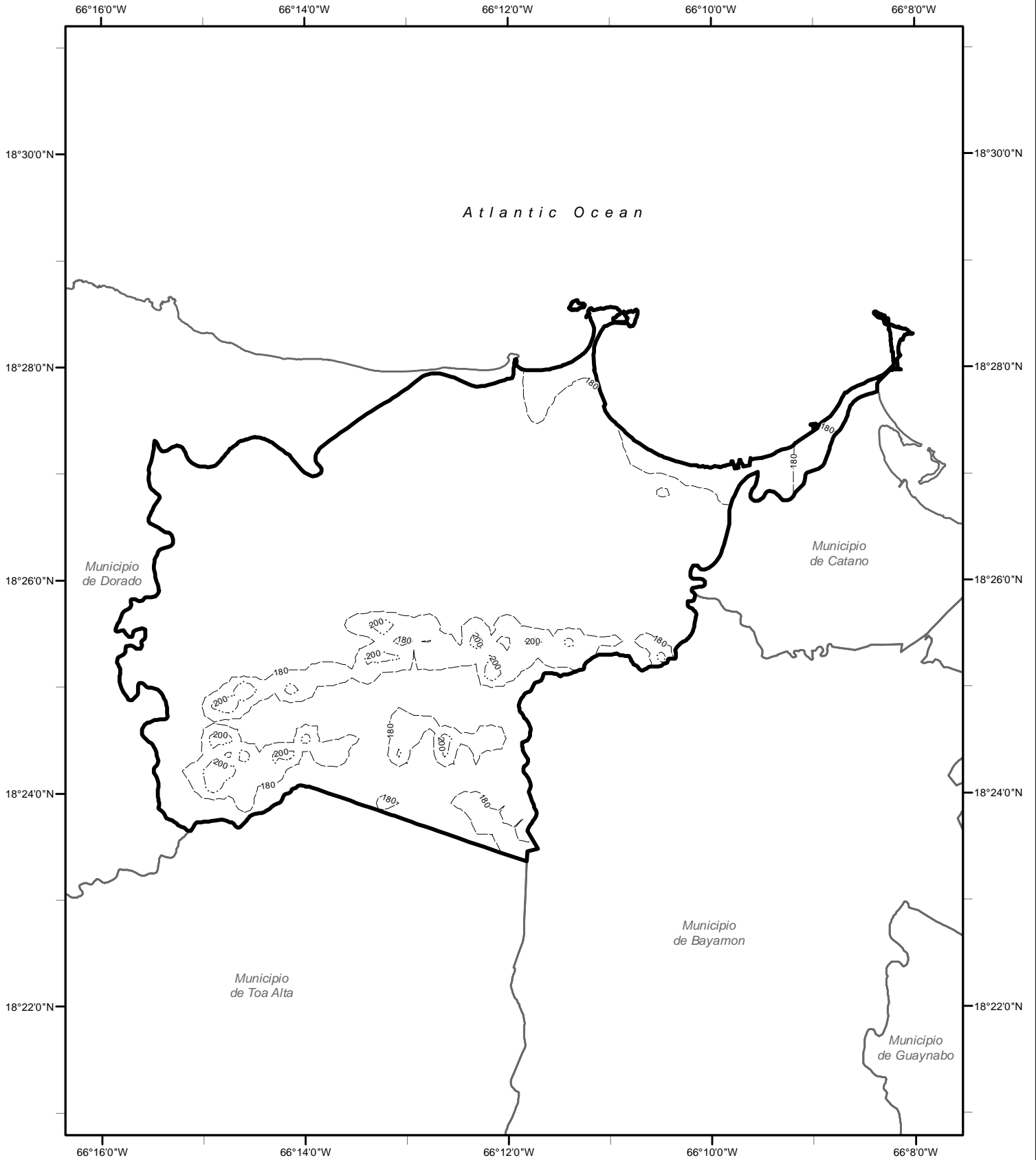
### Risk Category IV Wind Contour (mph)

- 180
- ..... 200
- ..... 220
- 240
- 260

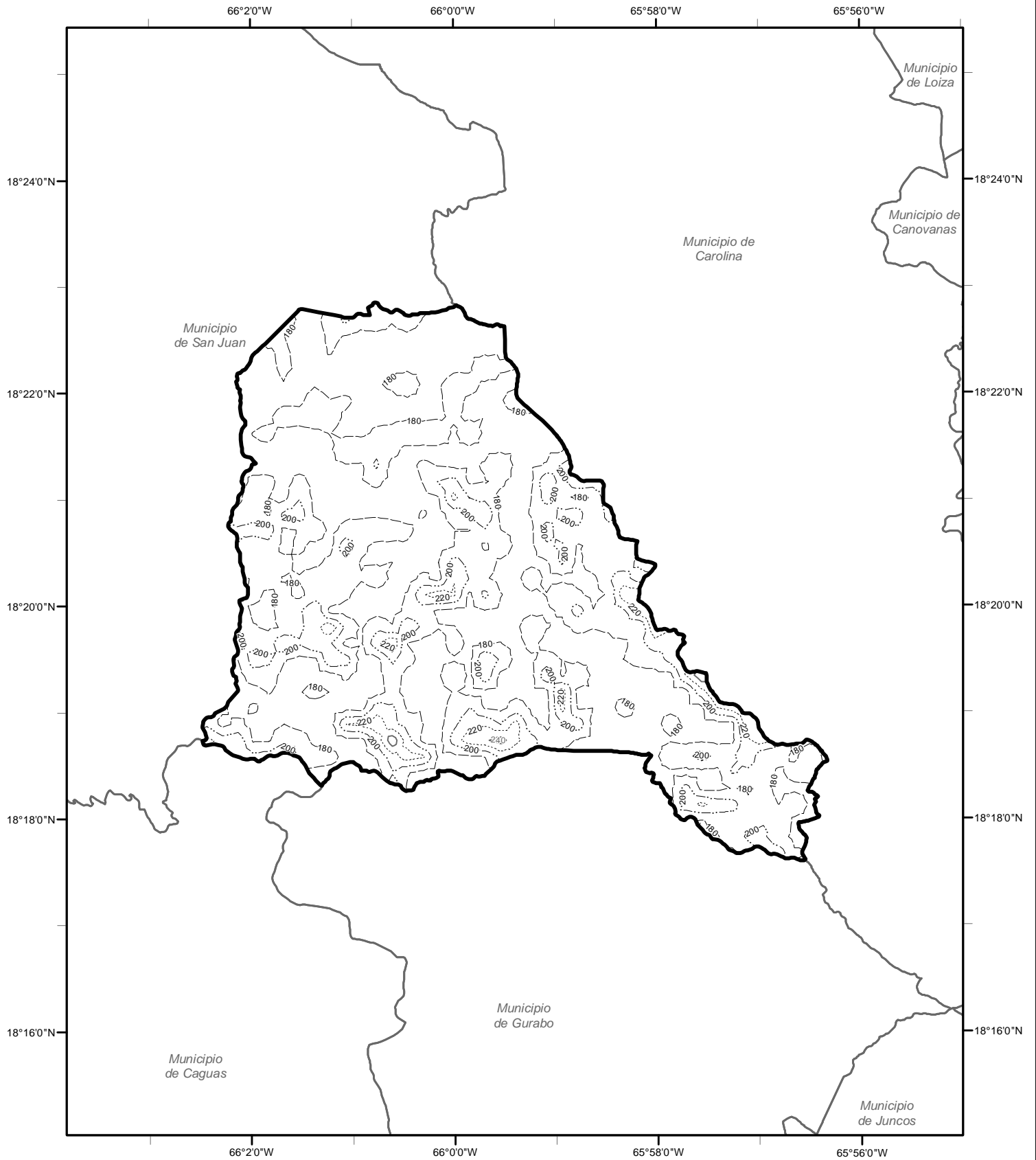




# Municipio de Toa Baja Risk Category IV Effective Wind Speed Map (mph)

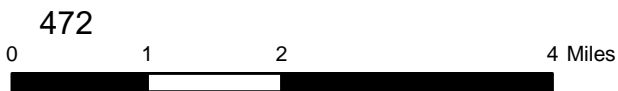


# Municipio de Trujillo Alto Risk Category IV Effective Wind Speed Map (mph)



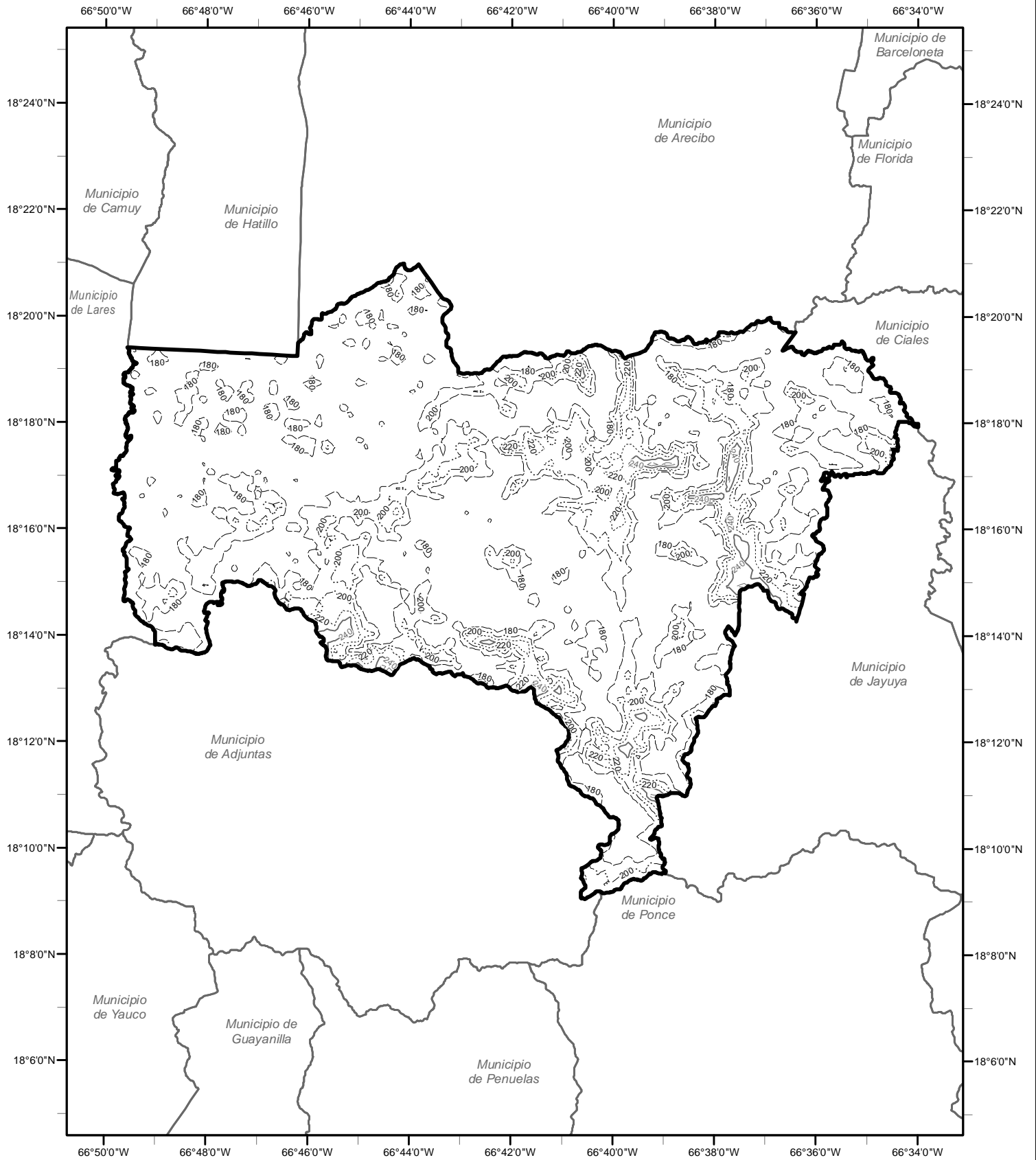
### Risk Category IV Wind Contour (mph)

- 180
- ..... 200
- ..... 220
- 240
- 260



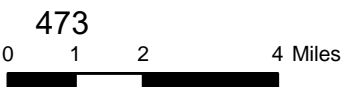
# Municipio de Utuado

## Risk Category IV Effective Wind Speed Map (mph)

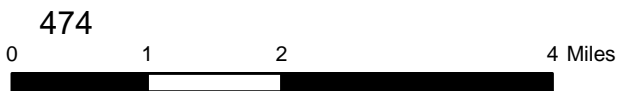
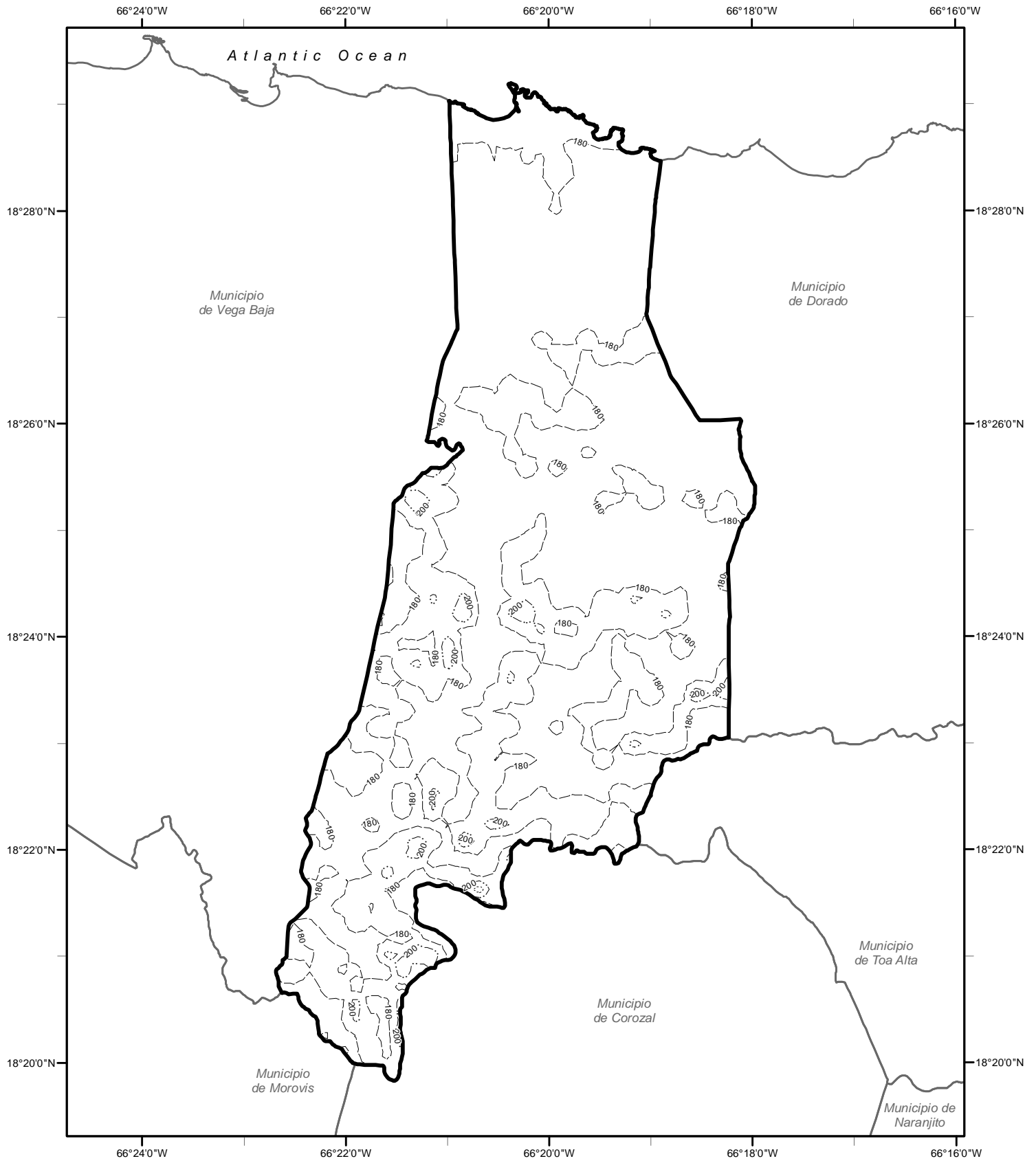


### Risk Category IV Wind Contour (mph)

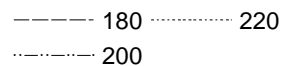
- 180 ----- 240
- ..... 200 ----- 260
- ..... 220 ----- 280



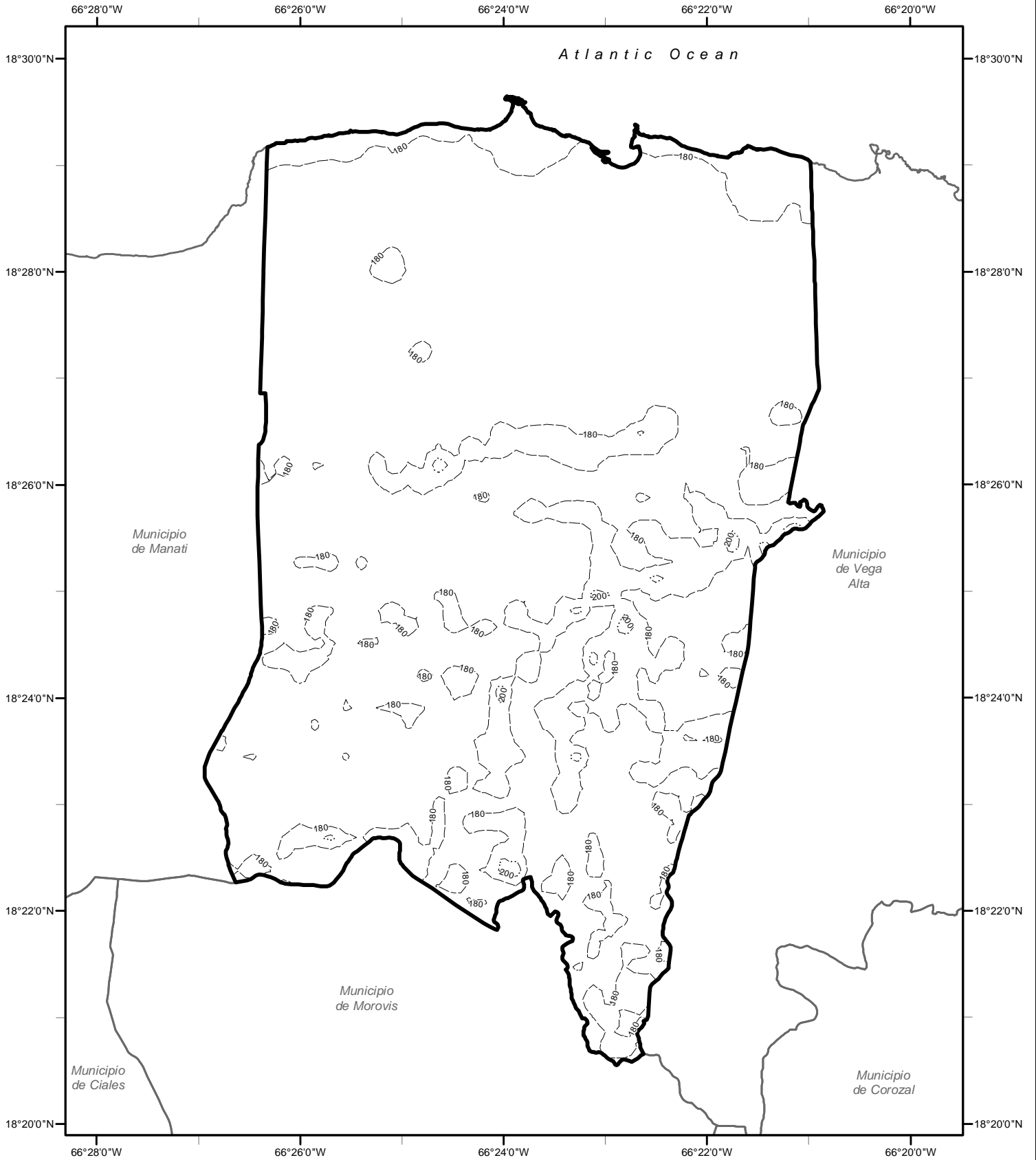
# Municipio de Vega Alta Risk Category IV Effective Wind Speed Map (mph)



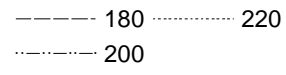
### Risk Category IV Wind Contour (mph)



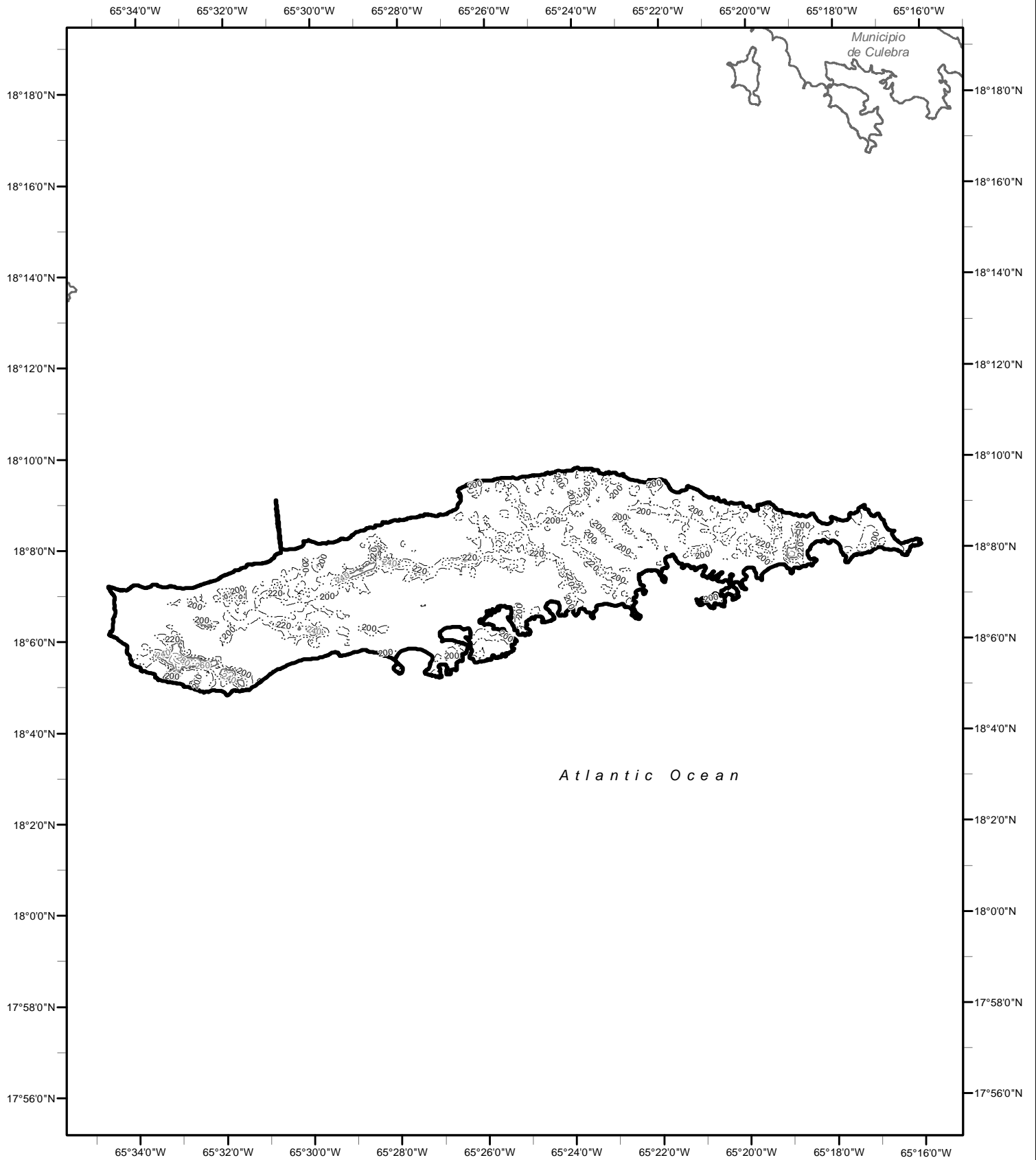
# Municipio de Vega Baja Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)

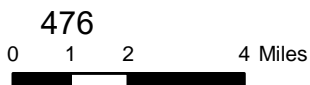
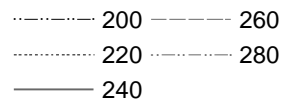


# Municipio de Vieques Risk Category IV Effective Wind Speed Map (mph)

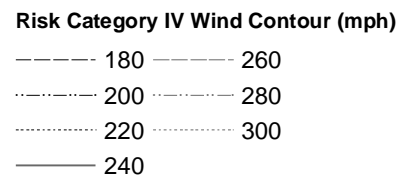
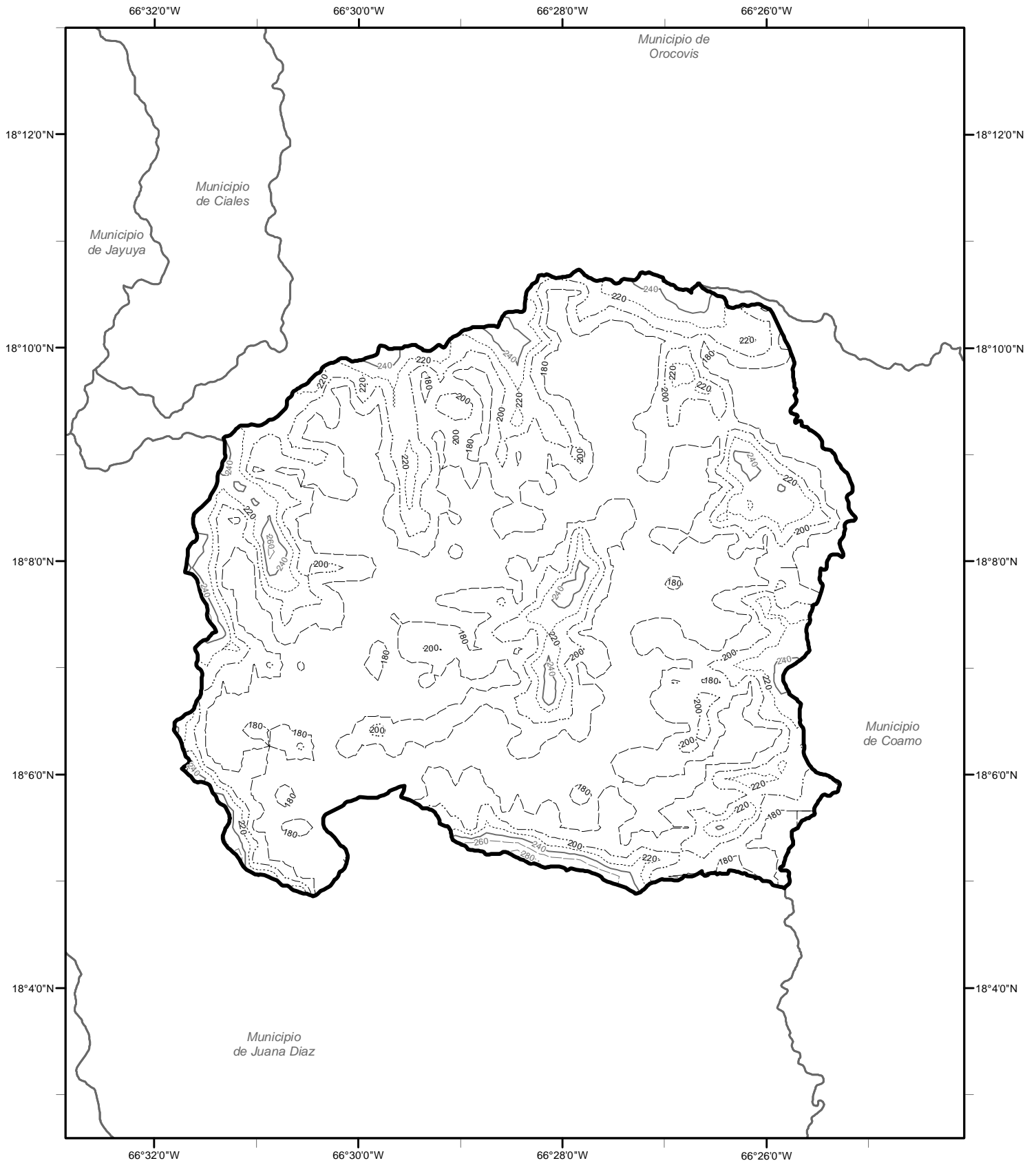


Atlantic Ocean

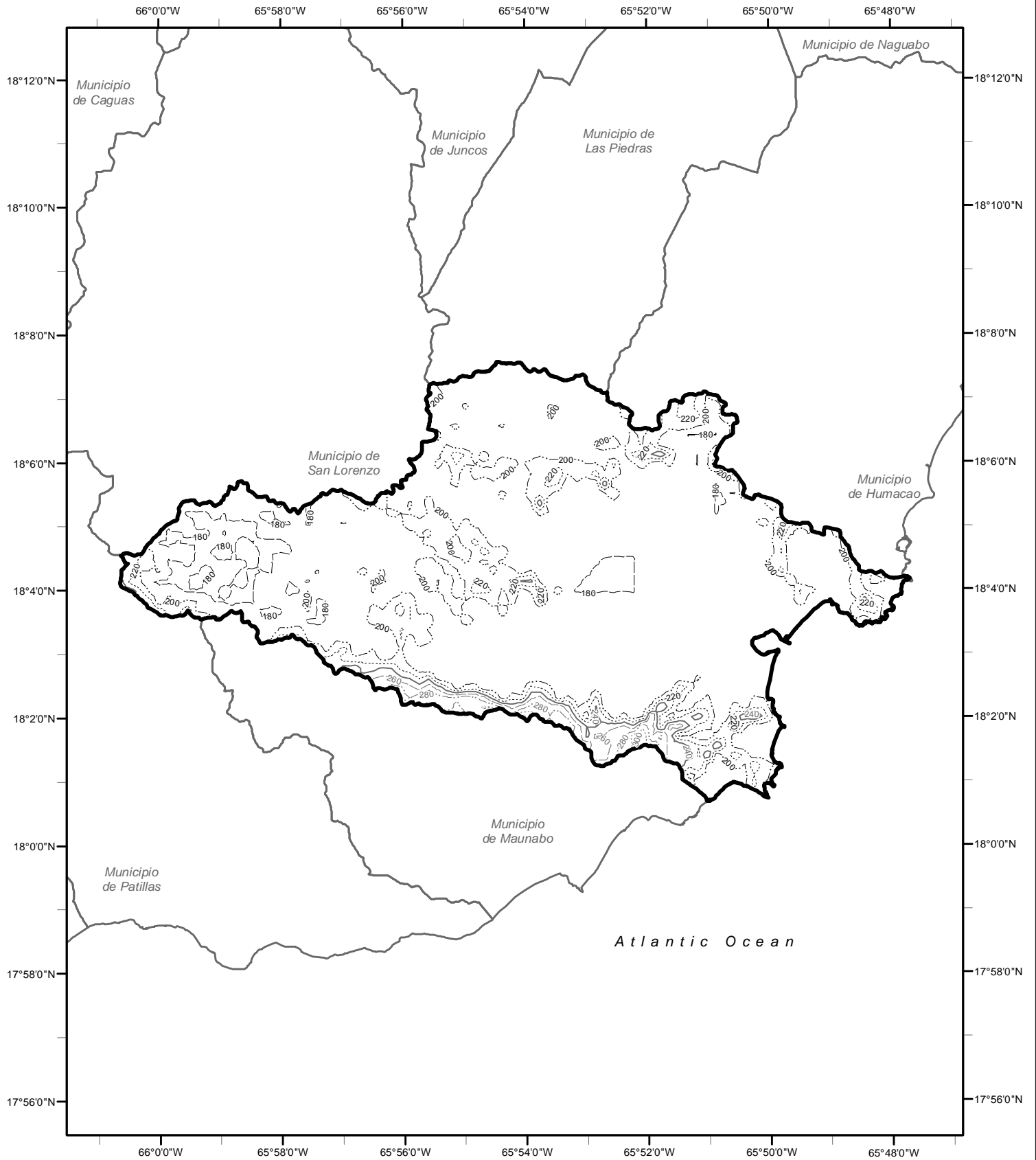
### Risk Category IV Wind Contour (mph)



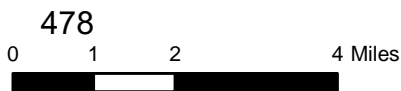
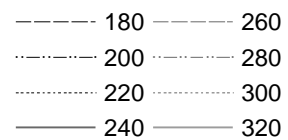
# Municipio de Villalba Risk Category IV Effective Wind Speed Map (mph)



# Municipio de Yabucoa Risk Category IV Effective Wind Speed Map (mph)

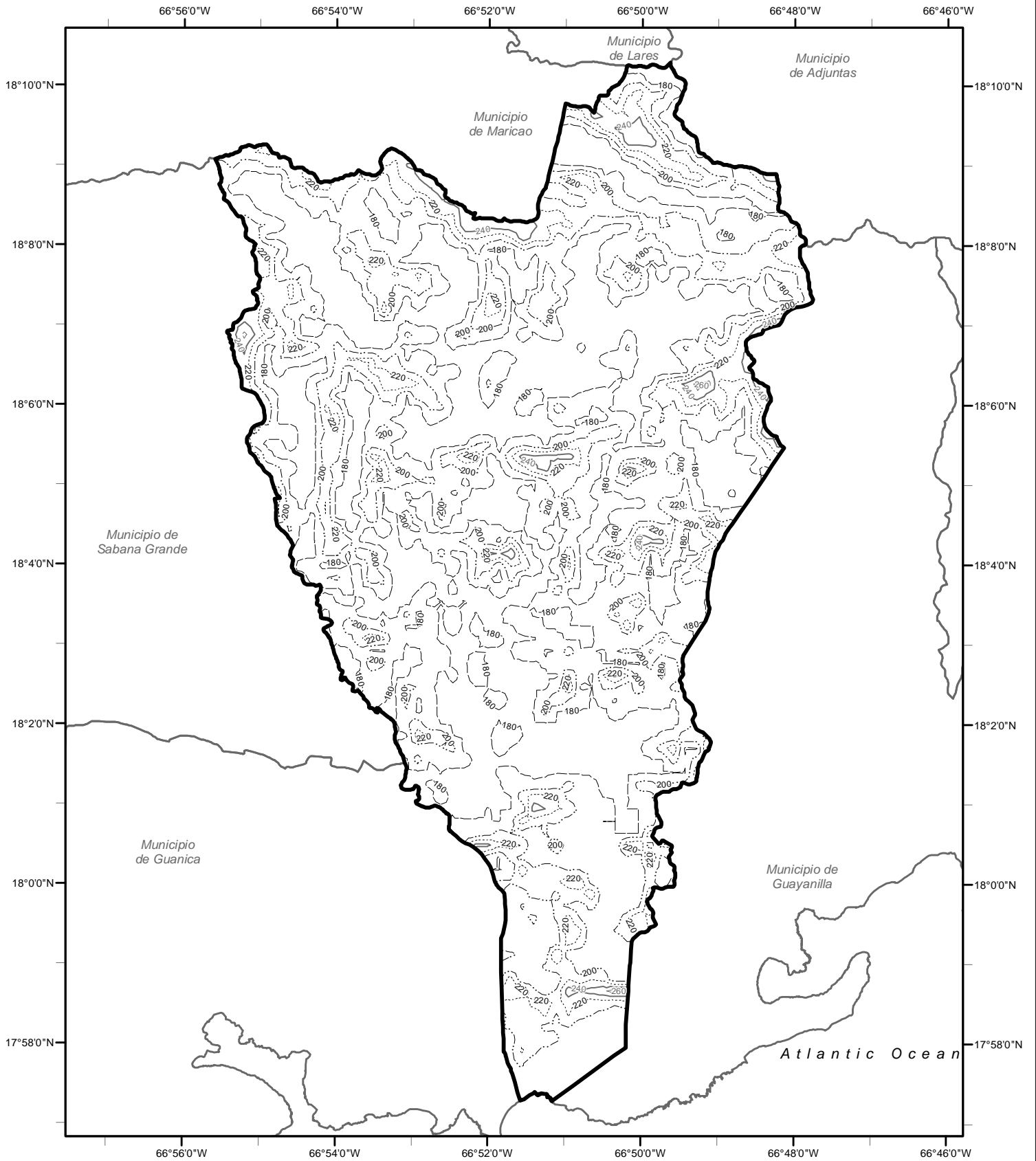


### Risk Category IV Wind Contour (mph)

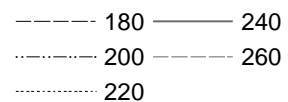




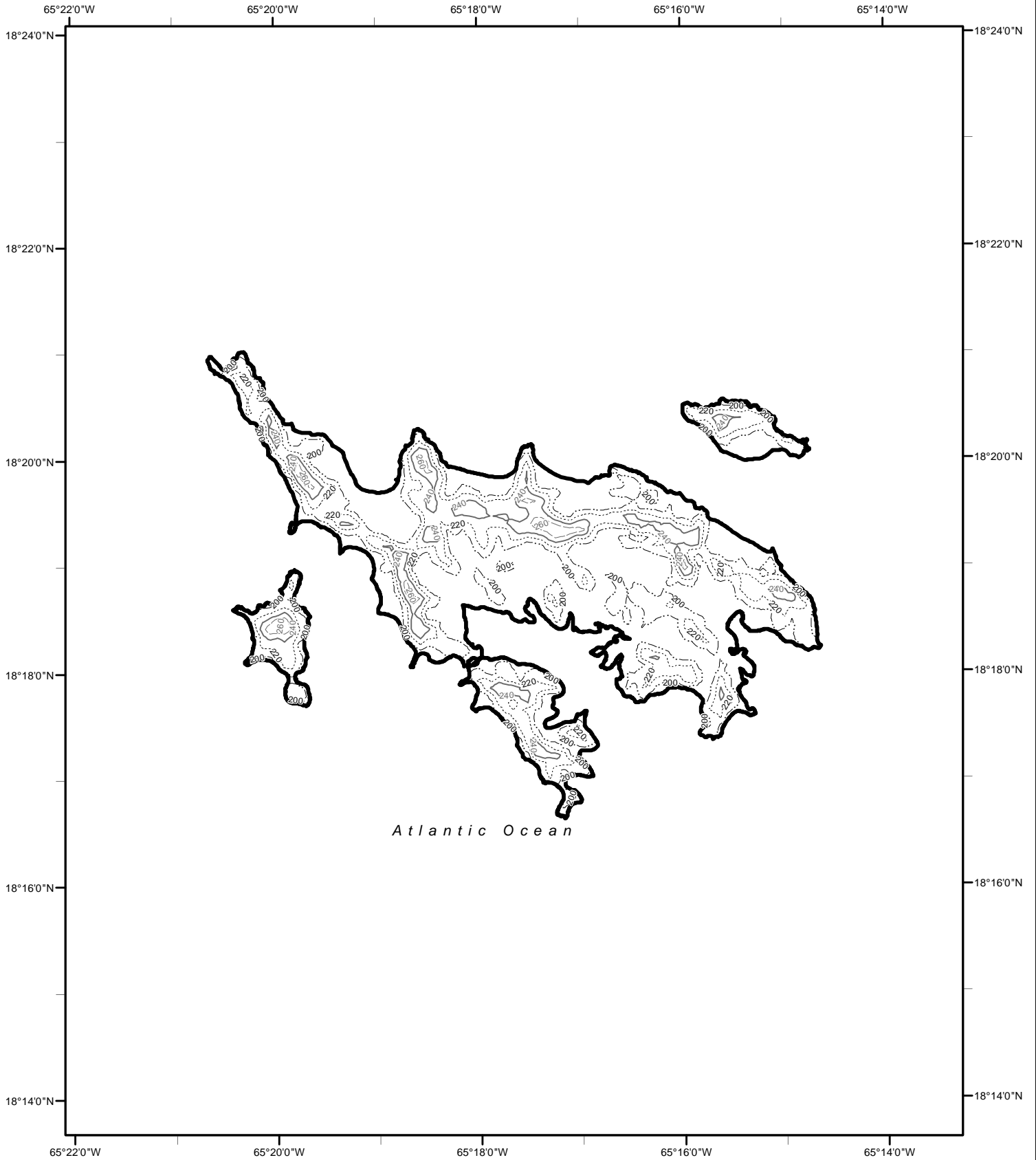
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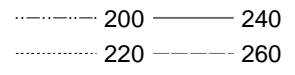
### Risk Category IV Wind Contour (mph)



# Municipio de Culebra Risk Category IV Effective Wind Speed Map (mph)



### Risk Category IV Wind Contour (mph)



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PUERTO RICO CODES

# PRRC

Puerto Rico Residencial Code





# **PUERTO RICO RESIDENTIAL CODE 2018**

## **As amended from INTERNATIONAL RESIDENTIAL CODE 2018**

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# CHAPTER 1 - SCOPE AND ADMINISTRATION

## PART 1 - SCOPE AND APPLICATION

### SECTION R101- GENERAL

**R101.1 Title.** These provisions shall be known as the *Puerto Rico Residential Code for One and Two-family Dwellings*, and shall be cited as such and will be referred to herein as “this code.”

**R101.2 Scope.** The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height.

**Exception:** The following shall be permitted to be constructed in accordance with this code where provided with a residential fire sprinkler system complying with Section P2904:

1. Live/work units located in townhouses and complying with the requirements of Section 419 of the *Puerto Rico Building Code*.
2. Owner-occupied lodging houses with five or fewer guestrooms.
3. A care facility with five or fewer persons receiving custodial care within a dwelling unit.
4. A care facility with five or fewer persons receiving medical care within a dwelling unit.
5. A care facility for five or fewer persons receiving care that are within a single-family dwelling.

**R101.3 Intent.** The purpose of this code is to establish mini-mum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, and to provide safety to fire fighters and emergency responders during emergency operations.

### SECTION R102 - APPLICABILITY

**R102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**R102.2 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**R102.3 Application of references.** References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

**R102.4 Referenced codes and standards.** The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections R102.4.1 and R102.4.2.

**Exception:** Where enforcement of a code provision would violate the conditions of the listing of the equipment or appliance, the conditions of the listing and manufacturer's instructions shall apply.

**R102.4.1 Conflicts.** Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

**R102.4.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

**R102.5 Appendices.** Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance.

**R102.6 Partial invalidity.** In the event any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

**R102.7 Existing structures.** The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the *Puerto Rico Fire Code*, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

**R102.7.1 Additions, alterations or repairs.** Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with the requirements of this code, unless otherwise stated. Additions, alterations, repairs and relocations shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation*.



## SECTION R103 – BUILDING ENFORCEMENT AGENCIES

**R103.1 Creation of enforcement agency.** Act 161 – 2009, as amended, designated the *Permit Management Office, Puerto Rico Planning Board*, and Autonomous Municipalities with I to V granted Hierarchy, as building enforcement authorities.

**R103.1.1** The appointed Auxiliary Secretary of the Permits Management Office shall be known as the *building official*.

**R103.2 Appointment.** The building official shall be appointed by the chief appointing authority of Puerto Rico.

**R103.3 Deputies.** In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the building official.

## SECTION R104 - DUTIES AND POWERS OF THE BUILDING OFFICIAL

**R104.1 General.** The *building official* is hereby authorized and directed to enforce the provisions of this code. The *building official* shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

**R104.2 Applications and permits.** The *building official* shall receive applications, review *construction documents* and issue *permits* for the erection and *alteration* of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

**R104.3 Notices and orders.** The *building official* shall issue necessary notices or orders to ensure compliance with this code.

**R104.4 Inspections.** The *building official* shall make the required inspections or receive certified reports of inspections made by the *designated inspector*, and the *building official* shall have the authority to accept reports of inspection by *approved agencies* or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such *approved agency* or by the responsible individual. The *building official* is authorized to engage such expert opinion as deemed necessary to report on unusual technical issues that arise, subject to the approval of the appointing authority.

**R104.5 Identification.** The *building official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

**R104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *building official* has reasonable cause to believe that there exists in a structure or upon a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the *building official* or designee is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the *building official* shall first make a reasonable effort to locate the owner, the owner's authorized agent, or other person having charge or control of the structure or premises and request entry. If entry is refused, the *building official* shall have recourse to the remedies provided by law to secure entry.

**R104.7 Department records.** The *building official* shall keep official records of applications received, *permits* and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for the retention of public records.

**R104.8 Liability.** The *building official*, member of the *interpretive advisory* Board of Code Revisions or employee charged with the enforcement of this code, while acting for the *jurisdiction* in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**R104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representatives of the *jurisdiction* until the final termination of the proceedings. The *building official* or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**R104.9 Approved materials and equipment.** Materials, *equipment* and devices *approved* by the *building official* as established in the construction documents shall be constructed and installed in accordance with such approval.

**R104.9.1 Used materials and equipment.** Used materials, *equipment* and devices shall not be reused unless *approved* by the *building official* as established in the construction documents.

**R104.10 Modifications.** Where there are practical difficulties involved in carrying out the provisions of this code, the *building official* shall have the authority to grant modifications for individual cases with the approval of the registered design professional, provided the *building official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the *OGPe-DDEC*.

**R104.10.1 Flood hazard areas.** The *building official* shall not grant modifications to any provisions required in flood hazard areas as established by Table R301.2(1) unless a determination has been made that:

1. There is good and sufficient cause showing that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section R322 inappropriate.
2. Failure to grant the modification would result in exceptional hardship by rendering the lot undevelopable.
3. The granting of modification will not result in increased flood heights, additional threats to public safety, extraordinary public expense, cause fraud on or victimization of the public, or conflict with existing laws or ordinances.
4. The modification is the minimum necessary to afford relief, considering the flood hazard.
5. Written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation and stating that construction below the design flood elevation increases risks to life and property, has been submitted to the applicant.

**R104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. The *building official* shall have the authority to approve an alternative material, design or method of construction upon application of the owner or the owner's authorized agent. The *building official* shall first find that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Compliance with the specific performance-based provisions of the Puerto Rico Codes shall be an alternative to the specific requirements of this code. Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons why the alternative was not *approved*.

**R104.11.1 Tests.** Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the *building official* shall have the authority to require tests as evidence of compliance to be made at no expense to the *jurisdiction*. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the *building official* shall approve the testing procedures. Tests shall be performed by an *approved* agency. Reports of such tests shall be retained by the *building official* for the period required for retention of public records.

## SECTION R105 - PERMITS

**R105.1 Required.** Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the *building official* and obtain the required *permit*.

**R105.2 Work exempt from permit.** Exemption from *permit* requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this *jurisdiction*. *Permits* shall not be required for the the works detailed in rule 3.2.4 of the Joint Regulation.

**R105.2.1 Emergency repairs.** Where *equipment* replacements and repairs must be performed in an emergency situation, the *permit* application shall be submitted within the next working business day to the *building official*.

**R105.2.2 Repairs.** Application or notice to the *building official* is not required for ordinary repairs to structures, replacement of lamps or the connection of *approved* portable electrical *equipment* to *approved* permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include *addition* to, *alteration* of, replacement or relocation of any water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

**R105.2.3 Public service agencies.** A *permit* shall not be required for the installation, *alteration* or repair of generation, transmission, distribution, metering or other related *equipment* that is under the ownership and control of public service agencies by established right.

**R105.3 Application for permit.** To obtain a *permit*, the applicant shall first file an application as established by the *Joint Regulation*. Such application shall:

1. Identify and describe the work to be covered by the *permit* for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by *construction documents* and other information as required in Section R106.1.
5. State the valuation of the proposed work.
6. Be signed by the applicant or the applicant's authorized agent.
7. Give such other data and information as required by the *building official*.

**R105.3.1 Action on application.** The *building official* shall examine or cause to be examined applications for *permits* and amendments thereto within the time established by the *Joint Regulation*. If the application or the *construction documents* do not conform to the requirements of pertinent laws, the *building official* shall reject such application in writing stating the reasons therefor. If the *building official* is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the *building official* shall issue a *permit* therefor as soon as practicable.

**R105.3.1.1 Determination of substantially improved or substantially damaged existing buildings in flood hazard areas.** For applications for reconstruction, rehabilitation, *addition*, alteration, repair or other improvement of existing buildings or structures located in a flood hazard area as established by Table R301.2(1), the *building official* shall examine or cause to be examined the *construction documents* and shall make a determination with regard to the value of the proposed work. For buildings that have sustained damage of any origin, the value of the proposed work shall include the cost to repair the building or structure to its predamaged condition. If the *building official* finds that the value of proposed work equals or exceeds 50 percent of the market value of the building or structure before the damage has occurred or the improvement is started, the proposed work is a substantial improvement or repair of substantial damage and the building official shall require existing portions of the entire building or structure to meet the requirements of Section R322.

For the purpose of this determination, a substantial improvement shall mean any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure before the improvement or repair is started. Where the building or structure has sustained substantial damage, repairs necessary to restore the building or structure to its predamaged condition shall be considered substantial improvements regardless of the actual repair work performed. The term shall not include either of the following:

1. Improvements to a building or structure that are required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to ensure safe living conditions.
2. Any alteration of a historic building or structure, provided that the alteration will not preclude the continued designation as a historic building or structure. For the purposes of this exclusion, a historic building or properties shall be any of the following:
  - 2.1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.
  - 2.2. Determined by the Secretary of the U.S. Department of Interior, *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly as contributing to the historic significance of a registered historic district or zone or a district preliminarily determined to qualify as an historic district or zone.
  - 2.3. Designated as historic or having historic significance under a applicable state or local law, ordinance, or resolution.

**R105.3.2 Time limitation of application.** An application for a *permit* for any proposed work shall be deemed to have been abandoned as established by the *Joint Regulation* unless such application has been pursued in good faith or a *permit* has been issued; except that the *building official* is authorized to grant one or more extensions of time. The extension shall be requested in writing and justifiable cause demonstrated.

**R105.4 Validity of permit.** The issuance or granting of a *permit* shall not be construed to be a *permit* for, or an *approval* of, any violation of any of the provisions of this code or of any other ordinance of the *jurisdiction*. *Permits* presuming to give authority to violate or cancel the provisions of this code or other ordinances of the *jurisdiction* shall not be valid. The issuance of a *permit* based on *construction documents* and other data shall not prevent the *building official* from requiring the correction of errors in the *construction documents* and other data. The *building official* is authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of *Puerto Rico*.

**R105.5 Expiration.** Every *permit* issued shall become invalid unless the work authorized by such *permit* is commenced as established by the *Joint Regulation*. The building official is authorized to grant, in writing, one or more extensions of time. The extension shall be requested in writing through the digital system and justifiable cause demonstrated.

**R105.6 Suspension or revocation.** The *building official* is authorized to suspend or revoke a *permit* issued under the Act 161-2009, as amended and established by the *Joint Regulation*.

**R105.7 Placement of permit.** The building *permit* or a copy shall be kept on the site of the work until the completion of the project, as established by the *Joint Regulation*.

**R105.8 Responsibility.** It shall be the duty of every person who performs work for the installation or repair of building, structure, electrical, gas, mechanical or plumbing systems, for which this code is applicable, to comply with this code.

**R105.9 Preliminary inspection.** Before issuing a *permit*, the *building official* is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.

## **SECTION R106 - CONSTRUCTION DOCUMENTS**

**R106.1 Submittal documents.** Submittal documents consisting of *construction documents*, and other data shall be submitted digital form with each application for a *permit*. The *construction documents* shall be prepared by a registered *design professional* where required by the statutes of Puerto Rico. Where special conditions exist, the *building official* is authorized to require additional *construction documents* to be prepared by a registered *design professional*.

**Exception:** The *building official* is authorized to waive the submission of *construction documents* and other data not required to be prepared by a registered *design professional* if it is found that the nature of the work applied for is such that reviewing of *construction*

*documents* is not necessary to obtain compliance with this code, as established by the *Joint Regulation*.

**R106.1.1 Information on construction documents.** *Construction documents* shall be drawn upon suitable material. Electronic media documents are permitted to be submitted where *approved* by the *building official*. *Construction documents* shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the *building official*, as established by the *Joint Regulation*.

**R106.1.2 Manufacturer's installation instructions.** Manufacturer's installation instructions, as required by this code, shall be available on the job site at the time of inspection.

**R106.1.3 Information on braced wall design.** For buildings and structures utilizing braced wall design, and where required by the *building official*, braced wall lines shall be identified on the *construction documents*. Pertinent information including, but not limited to, bracing methods, location and length of *braced wall panels* and foundation requirements of braced wall panels at top and bottom shall be provided.

**R106.1.4 Information for construction in flood hazard areas.** For buildings and structures located in whole or in part in flood hazard areas as established by Table R301.2(1), *construction documents* shall include:

1. Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation, as appropriate.
2. The elevation of the proposed lowest floor, including *basement*; in areas of shallow flooding (AO Zones), the height of the proposed lowest floor, including *basement*, above the highest adjacent *grade*.
3. The elevation of the bottom of the lowest horizontal structural member in coastal high-hazard areas (V Zone) and in Coastal A Zones where such zones are delineated on flood hazard maps identified in Table R301.2(1) or otherwise delineated by the jurisdiction. If elevations are not included on the community's Flood Insurance Rate Map (FIRM), the *building official* and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources.

**R106.2 Site plan or plot plan.** The *construction documents* submitted with the application for *permit* shall be accompanied by a site plan showing the size and location of new construction and existing structures on the site and distances from *lot lines*. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot, as established by the *Joint Regulation*.

**R106.3 Examination of documents.** The *building official* shall examine or cause to be examined *construction documents* for code compliance.

**R106.3.1 Approval of construction documents.** Where the *building official* issues a *permit*, the *construction documents* shall be *approved* in writing or by digital a stamp

that states “REVIEWED FOR CODE COMPLIANCE.” One set of *construction documents* in digital format, so reviewed shall be retained by the *building official*. A digital copy shall be returned to the applicant, and a printed copy shall be kept at the site of work and shall be open to inspection by the *building official* or a duly authorized representative.

**R106.3.2 Previous approvals.** This code shall not require changes in the *construction documents*, construction or designated occupancy of a structure for which a lawful *permit* has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith with this Code and the *Joint Regulation*.

**R106.3.3 Phased approval.** The *building official* is authorized to issue a *permit* for the construction of foundations or any other part of a building or structure before the *construction documents* for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such *permit* for the foundation or other parts of a building or structure shall proceed at the holder’s own risk with the building operation and without assurance that a *permit* for the entire structure will be granted.

**R106.4 Amended construction documents.** Work shall be installed in accordance with the *approved construction documents*, and any changes made during construction that are not in compliance with the *approved construction documents* shall be resubmitted for approval as an amended set of *construction documents*.

**R106.5 Retention of construction documents.** A digital set of *approved construction documents* shall be retained by the *building official*, as established by the *Joint Regulation*.

## **SECTION R107 - TEMPORARY STRUCTURES AND USES**

**R107.1 General.** The *building official* is authorized to issue a *permit* for temporary structures and temporary uses. Such *permits* shall be limited as to time of service, as established by the *Joint Regulation*.

**R107.2 Conformance.** Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, light, ventilation and sanitary requirements of this code, and the *Joint Regulation*, as necessary to ensure the public health, safety and general welfare.

**R107.3 Temporary power.** The *building official* is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70 and the Puerto Rico Electric Power Authority’s Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**R107.4 Termination of approval.** The *building official* is authorized to terminate such *permit* for a temporary structure or use and to order the temporary structure or use to be discontinued.



## SECTION R108 - FEES

**R108.1 Payment of fees.** A *permit* shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a *permit* be released until the additional fee, if any, has been paid.

**R108.2 Schedule of permit fees.** On buildings, structures, electrical, gas, mechanical and plumbing systems or *alterations* requiring a *permit*, a fee for each *permit* shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

**R108.3 Building permit valuations.** Building *permit* valuation shall include total value of the work for which a *permit* is being issued, such as electrical, gas, mechanical, plumbing *equipment* and other permanent systems, including materials and labor, as established by the *Joint Regulation*.

**R108.4 Related fees.** The payment of the fee for the construction, *alteration*, removal or demolition for work done in connection to or concurrently with the work authorized by a building *permit* shall not relieve the applicant or holder of the *permit* from the payment of other fees that are prescribed by law.

**R108.5 Refunds.** The *building official* is authorized to establish a refund policy.

**R108.6 Work commencing before permit issuance.** Any person who commences work requiring a *permit* on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to a fee established by the applicable governing authority that shall be in addition to the required *permit* fees.

## SECTION R109 - INSPECTIONS

**R109.1 Types of inspections.** For on-site construction, from time to time the *designated inspector* and the *building official*, upon notification from the *permit* holder or his agent, shall make or cause to be made any necessary inspections and shall either approve that portion of the construction as completed or shall notify the *permit* holder or his or her agent wherein the same fails to comply with this code.

**R109.1.1 Foundation inspection.** Inspection of the foundation shall be made after poles or piers are set or trenches or *basement* areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or *equipment* and special requirements for wood foundations.

**R109.1.2 Plumbing, mechanical, gas and electrical systems inspection.** Rough inspection of plumbing, mechanical, gas and electrical systems shall be made prior to covering or concealment, before fixtures or *appliances* are set or installed, and prior to framing inspection.

**Exception:** Backfilling of ground-source heat pump loop systems tested in accordance with Section M2105.28 prior to inspection shall be permitted.

**R109.1.3 Floodplain inspections.** For construction in flood hazard areas as established by Table R301.2(1), upon placement of the lowest floor, including *basement*, and prior to further vertical construction, the *building official* shall require submission of documentation, prepared and sealed by a registered *design professional*, of the elevation of the lowest floor, including *basement*, required in Section R322.

**R109.1.4 Frame and masonry inspection.** Inspection of framing and masonry construction shall be made after the roof, masonry, framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are *approved*.

**R109.1.5 Other inspections.** In addition to inspections in Sections R109.1.1 through R109.1.4, the *building official* shall have the authority to make or require any other inspections to ascertain compliance with this code and other laws enforced by the *building official*.

**R109.1.5.1 Fire-resistance-rated construction inspection.** Where fire-resistance-rated construction is required between dwelling units or due to location on property, the building official shall require an inspection of such construction after lathing or gypsum board or gypsum panel products are in place, but before any plaster is applied, or before board or panel joints and fasteners are taped and finished.

**R109.1.6 Final inspection.** Final inspection shall be made after the permitted work is complete and prior to occupancy.

**R109.1.6.1 Elevation documentation.** If located in a flood hazard area, the documentation of elevations required in Section R322.1.10 shall be submitted to the *building official* prior to the final inspection.

**R109.2 Inspection agencies.** The *building official* is authorized to accept reports of *approved* agencies, provided such agencies satisfy the requirements as to qualifications and reliability, as established by the *Joint Regulation*.

**R109.3 Inspection requests.** It shall be the duty of the *permit* holder or their agent to notify the *building official* that such work is ready for inspection. It shall be the duty of the person requesting any inspections required by this code to provide access to and means for inspection of such work.

**R109.4 Approval required.** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the *building official*. The *designated inspector* and/or the *building official*, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the *permit* holder or an agent of the *permit* holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the *building official*.

## SECTION R110 - CERTIFICATE OF OCCUPANCY

**R110.1 Use and occupancy.** A building or structure shall not be used or occupied, and a *change of occupancy* or change of use of a building or structure or portion thereof shall not be made, until the *building official* has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of *Puerto Rico*. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of *Puerto Rico* shall not be valid.

**Exception:** Certificates of occupancy are not required for work exempt from permits under the *Joint Regulation*.

**R110.2 Change in use.** Changes in the character or use of an existing structure shall not be made except as specified in Sections 407 and 408 of the *Puerto Rico Existing Building Code*.

**R110.3 Certificate issued.** After the *building official* inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the building enforcement agencies, the *building official* shall issue a certificate of occupancy containing the following:

1. The *permit* number.
2. The address of the structure.
3. The name and address of the owner or the owner's authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name of the *building official*.
7. The edition of the code under which the *permit* was issued.
8. If an automatic sprinkler system is provided and whether the sprinkler system is required.
9. Any special stipulations and conditions of the building *permit*.

**R110.4 Temporary occupancy.** The *building official* is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the *permit*, provided that such portion or portions shall be occupied safely. The *building official* shall set a time period during which the temporary certificate of occupancy is valid.

**R110.5 Revocation.** The *building official* shall, in writing, suspend or revoke a certificate of occupancy issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code and the *Joint Regulation*.

## SECTION R111 - SERVICE UTILITIES

**R111.1 Connection of service utilities.** A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a *permit* is required, until *approved* by the *building official*.

**R111.2 Temporary connection.** The *building official* shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel or power.

**R111.3 Authority to disconnect service utilities.** The *building official* and the government agencies with jurisdiction shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section R102.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section R111.1 or R111.2. The *building official* shall notify the government agencies with jurisdiction and where possible the owner or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, the owner, the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

## SECTION R112 - INTERPRETIVE ADVISORY BOARD

**R112.1 General.** An interpretive advisory board is created to advise the *building official* and/or the *administrative judge*. This interpretive advisory board shall be appointed by the Auxiliary Secretary of *OGPe-DDEC* to issue and handle binding recommendations on interpretive matters relating to aspects of this code, including its application and implementation.

The *administrative judge* may also require an interpretation from the board when a revision is requested where the application of the required code is in question.

**R112.2 Limitations on authority.** Request for interpretative revision shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

**R112.3 Qualifications.** The *interpretive advisory* board of code revisions shall consist of members who are qualified by experience and training to pass judgement on matters pertaining to building.

**R112.4 Administration.** The *building official* shall take immediate action in accordance with the decision of the board.

## SECTION R113 - VIOLATIONS

**R113.1 Unlawful acts.** It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish or occupy any building, structure or *equipment* regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

**R113.2 Notice of violation.** The *building official* is authorized to serve a notice of violation or order on the person responsible for the erection, construction, *alteration*, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a detail statement or a plan *approved* thereunder, or in violation of a *permit* or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

**R113.3 Prosecution of violation.** If the notice of violation is not complied with in the time prescribed by such notice, the *building official* is authorized to request the legal counsel of the *jurisdiction* to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

**R113.4 Violation penalties.** Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the *approved construction documents* or directive of the *building official*, or of a *permit* or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

## SECTION R114 - STOP WORK ORDER

**R114.1 Notice to owner or the owner's authorized agent.** Upon notice from the *building official* that work on any building or structure is being executed contrary to the provisions of this code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be issued in accordance with the *Joint Regulation*.

**R114.2 Unlawful continuance.** Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by law.

## CHAPTER 2 – DEFINITIONS

### SECTION R201 - GENERAL

**R201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

**R201.2 Interchangeability.** Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**R201.3 Terms defined in other codes.** Where terms are not defined in this code such terms shall have the meanings ascribed in other code publications of the International Code Council.

**R201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### SECTION R202 – DEFINITIONS

**[RE]ABOVE-GRADE WALL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ACCESS (TO).** That which enables a device, an appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction.

**[RE]ACCESSIBLE.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ACCESSORY STRUCTURE.** A structure that is accessory to and incidental to that of the *dwelling(s)* and that is located on the same *lot*.

**[RB]ADDITION.** An extension or increase in floor area, number of stories or height of a building or structure.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ADHERED STONE OR MASONRY VENEER.** Stone or masonry veneer secured and supported through the adhesion of an *approved* bonding material applied to an *approved* backing.

**[A]ADMINISTRATIVE JUDGE.** The director of the Administrative Revisions Division, as established by Act 161-2009, as amended.

**[MP]AIR ADMITTANCE VALVE.** A one-way valve designed to allow air into the plumbing drainage system where a negative pressure develops in the piping. This device shall close by

gravity and seal the terminal under conditions of zero differential pressure (no flow conditions) and under positive internal pressure.

**[RE]AIR BARRIER.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]AIR BREAK (DRAINAGE SYSTEM).** An arrangement where a discharge pipe from a fixture, *appliance* or device drains indirectly into a receptor below the flood-level rim of the receptor and above the trap seal.

**[MP]AIR CIRCULATION, FORCED.** A means of providing space conditioning utilizing movement of air through ducts or plenums by mechanical means.

**[MP]AIR-CONDITIONING SYSTEM.** A system that consists of heat exchangers, blowers, filters, supply, exhaust and return-air systems, and shall include any apparatus installed in connection therewith.

**[MP]AIR GAP, DRAINAGE SYSTEM.** The unobstructed vertical distance through free atmosphere between the outlet of a waste pipe and the flood-level rim of the fixture or receptor into which it is discharging.

**[MP]AIR GAP, WATER-DISTRIBUTION SYSTEM.** The unobstructed vertical distance through free atmosphere between the lowest opening from a water supply discharge to the flood-level rim of a plumbing fixture.

**[RB]AIR-IMPERMEABLE INSULATION.** An insulation having an air permanence equal to or less than  $0.02 \text{ L/s-m}^2$  at 75 Pa pressure differential as tested in accordance with ASTM E2178 or E283.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ALTERATION.** Any construction, retrofit or renovation to an existing structure other than repair or addition that requires a permit. Also, a change in a building, electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ALTERNATING TREAD DEVICE.** A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

**[RB]ANCHORED STONE OR MASONRY VENEER.** Stone or masonry veneer secured with *approved* mechanical fasteners to an *approved* backing.

**[MP]ANCHORS.** See “Supports.”

**[MP]ANTISIPHON.** A term applied to valves or mechanical devices that eliminate siphonage.

**[MP]APPLIANCE.** A device or apparatus that is manufactured and designed to utilize energy and for which this code provides specific requirements.

**[RB]APPROVED.** Acceptable to the *building official*.

**[RB]APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification, and has been *approved* by the building official.

For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]APPROVED SOURCE.** An independent person, firm or corporation, *approved* by the *building official*, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.

**[RB]ASPECT RATIO.** The ratio of longest to shortest perpendicular dimensions, or for wall sections, the ratio of height to length.

**[RB]ATTIC.** The unfinished space between the ceiling assembly and the roof assembly.

**[RB]ATTIC, HABITABLE.** A finished or unfinished *habitable space* within an *attic*.

**[RE]AUTOMATIC.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]BACKFLOW, DRAINAGE.** A reversal of flow in the drainage system.

**[MP]BACKFLOW PREVENTER.** A backflow prevention assembly, a backflow prevention device or other means or method to prevent backflow into the potable water supply.

**[MP]BACKFLOW PREVENTER, REDUCED-PRESSURE-ZONE TYPE.** A backflow-prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to atmosphere internally loaded to a normally open position between two tightly closing shutoff valves and with means for testing for tightness of the checks and opening of relief means.

**[MP]BACKFLOW, WATER DISTRIBUTION.** The flow of water or other liquids into the potable water-supply piping from any sources other than its intended source. Backsiphonage is one type of backflow.

**[MP]BACKPRESSURE.** Pressure created by any means in the water distribution system that by being in excess of the pressure in the water supply mains causes a potential backflow condition.



**[MP]BACKPRESSURE, LOW HEAD.** A pressure less than or equal to 4.33 psi (29.88 kPa) or the pressure exerted by a 10-foot (3048 mm) column of water.

**[MP]BACKSIPHONAGE.** The flowing back of used or contaminated water from piping into a potable water-supply pipe due to a negative pressure in such pipe.

**[MP]BACKWATER VALVE.** A device installed in a drain or pipe to prevent backflow of sewage.

**[RB]BASEMENT.** A *story* that is not a *story above grade plane*. (see “Story above grade plane”).

**[RE]BASEMENT WALL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]BASIC WIND SPEED.** Three-second gust speed at 33 feet (10 058 mm) above the ground in Exposure C (see Section R301.2.1) as given in Figure R301.2(5)A, and for Puerto Rico Figure R301.2(5)C.

**[MP]BATHROOM GROUP.** A group of fixtures, including or excluding a bidet, consisting of a water closet, lavatory, and bathtub or shower. Such fixtures are located together on the same floor level.

**[RB]BATTERY SYSTEM, STATIONARY STORAGE.** A rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls and associated electrical *equipment* designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

**[MP]BEND.** A drainage fitting, designed to provide a change in direction of a drain pipe of less than the angle specified by the amount necessary to establish the desired slope of the line (see “Elbow” and “Sweep”).

**[MP]BOILER.** A self-contained *appliance* from which hot water is circulated for heating purposes and then returned to the boiler, and that operates at water pressures not exceeding 160 pounds per square inch gage (psig) (1102 kPa gauge) and at water temperatures not exceeding 250°F (121°C).

**[RB]BOND BEAM.** A horizontal grouted element within masonry in which reinforcement is embedded.

**[RB]BRACED WALL LINE.** A straight line through the building plan that represents the location of the lateral resistance provided by the wall bracing.

**[RB]BRACED WALL LINE, CONTINUOUSLY SHEATHED.** A *braced wall line* with structural sheathing applied to all sheathable surfaces including the areas above and below openings.

**[RB]BRACED WALL PANEL.** A full-height section of wall constructed to resist in-plane shear loads through interaction of framing members, sheathing material and anchors.

The panel's length meets the requirements of its particular bracing method, and contributes toward the total amount of bracing required along its *braced wall line* in accordance with Section R602.10.1.

**[MP]BRANCH.** Any part of the piping system other than a riser, main or stack.

**[MP]BRANCH, FIXTURE.** See "Fixture branch, drainage."

**[MP]BRANCH, HORIZONTAL.** See "Horizontal branch, drainage."

**[MP]BRANCH INTERVAL.** A vertical measurement of distance, 8 feet (2438 mm) or more in *developed length*, between the connections of horizontal branches to a drainage stack. Measurements are taken down the stack from the highest horizontal branch connection.

**[MP]BRANCH, MAIN.** A water-distribution pipe that extends horizontally off a main or riser to convey water to branches or fixture groups.

**[MP]BRANCH, VENT.** A vent connecting two or more individual vents with a vent stack or stack vent.

**[MP]BTU/H.** The *listed* maximum capacity of an *appliance*, absorption unit or burner expressed in British thermal units input per hour.

**[RB]BUILDING.** Any one- or two-family dwelling or portion thereof, including *townhouses*, used or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, or any *accessory structure*.

For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]BUILDING DRAIN.** The lowest piping that collects the discharge from all other drainage piping inside the house and extends 30 inches (762 mm) in *developed length* of pipe, beyond the *exterior walls* and conveys the drainage to the *building sewer*.

**[RB]BUILDING, EXISTING.** Existing building is a building erected prior to the adoption of this code, or one for which a legal building *permit* has been issued.

**[RB]BUILDING-INTEGRATED PHOTOVOLTAIC PRODUCT.** A building product that incorporates photovoltaic modules and functions as a component of the building envelope.

**[RB]BUILDING-INTEGRATED PHOTOVOLTAIC ROOF PANEL (BIPV Roof Panel).** A *photovoltaic panel* that functions as a component of the building envelope.

**[RB]BUILDING LINE.** The line established by law, beyond which a building shall not extend, except as specifically provided by law. For the definition applicable in Chapter 11, see Section N1101.6.

**[A]BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**[MP]BUILDING SEWER.** That part of the drainage system that extends from the end of the *building drain* and conveys its discharge to a public sewer, private sewer, individual sewage-disposal system or other point of disposal.

**[RE]BUILDING SITE.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]BUILDING THERMAL ENVELOPE.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]BUILT-UP ROOF COVERING.** Two or more layers of felt cemented together and surfaced with a cap sheet, mineral aggregate, smooth coating or similar surfacing material.

**[RB]CAP PLATE.** The top plate of the double top plates used in structural insulated panel (SIP) construction. The cap plate is cut to match the panel thickness such that it overlaps the wood structural panel facing on both sides.

**[RB]CARBON MONOXIDE ALARM.** A single- or multiple-station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

**[RB]CARBON MONOXIDE DETECTOR.** A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

**[RB]CEILING HEIGHT.** The clear vertical distance from the finished floor to the finished ceiling.

**[RB]CEMENT PLASTER.** A mixture of portland or blended cement, Portland cement or blended cement and hydrated lime, masonry cement or plastic cement and aggregate and other *approved* materials as specified in this code.

**[MP]CHIMNEY.** A primary vertical structure containing one or more flues, for the purpose of carrying gaseous products of combustion and air from a fuel-burning *appliance* to the outside atmosphere.

**[RB]CHANGE OF OCCUPANCY.** A change in the use of a building or portion of a building that involves a change in the application of the requirements of this code.

**[MP]CHIMNEY CONNECTOR.** A pipe that connects a fuel-burning *appliance* to a chimney.

**[MP]CHIMNEY TYPES.**

**Residential-type appliance.** An *approved* chimney for removing the products of combustion from fuel-burning, residential-type *appliances* producing combustion gases not in excess of 1,000°F (538°C) under normal operating conditions, and capable of producing combustion gases of 1,400°F (760°C) during intermittent forces firing for periods up to 1 hour. All temperatures shall be measured at the *appliance* flue outlet. Residential-type *appliance* chimneys include masonry and factory-built types.

**[MP]CIRCUIT VENT.** A vent that connects to a horizontal drainage branch and vents two traps to not more than eight traps or trapped fixtures connected into a battery.

**[MP]CIRCULATING HOT WATER SYSTEM.** A specifically designed water distribution system where one or more pumps are operated in the service hot water piping to circulate heated water from the water-heating equipment to fixtures and back to the water-heating equipment.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]CLADDING.** The exterior materials that cover the surface of the building envelope that is directly loaded by the wind.

**[MP]CLEANOUT.** An opening in the drainage system used for the removal of possible obstruction and located to allow for *access*.

**[RE]CLIMATE ZONE.** A geographical region based on climatic criteria as specified in this code.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]CLOSET.** A small room or chamber used for storage.

**CODE OFFICIAL.** The officer or other designated authority of the government agency having jurisdiction responsible for the enforcement of the pertaining code, or a duly authorized representative.

**[RB]COLLAPSIBLE SOILS.** Soils that exhibit volumetric reduction in response to partial or full wetting under load.

**[MP]COLLECTION PIPE.** Unpressurized pipe used within the collection system that drains on-site non-potable water or rainwater to a storage tank by gravity.

**[MP]COMBINATION WASTE AND VENT SYSTEM.** A specially designed system of waste piping embodying the horizontal wet venting of one or more sinks, lavatories or floor drains by means of a common waste and vent pipe adequately sized to provide free movement of air above the flow line of the drain.

**[RB]COMBUSTIBLE MATERIAL.** Any material not defined as noncombustible.

**[MP]COMBUSTION AIR.** The air provided to fuel-burning *equipment* including air for fuel combustion, draft hood dilution and ventilation of the *equipment* enclosure.

**[MP]COMMON VENT.** A single pipe venting two trap arms within the same *branch interval*, either back-to-back or one above the other.

**[RB]COMPRESSIBLE SOILS.** Soils that exhibit volumetric reduction in response to the application of load even in the absence of wetting or drying.

**[MP]CONDENSATE.** The liquid that separates from a gas due to a reduction in temperature; for example, water that condenses from flue gases and water that condenses from air circulating through the cooling coil in air conditioning *equipment*.

**[MP]CONDENSING APPLIANCE.** An *appliance* that condenses water generated by the burning of fuels.

**[RB]CONDITIONED AIR.** Air treated to control its temperature, relative humidity or quality.

**[RE]CONDITIONED FLOOR AREA.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]CONDITIONED SPACE.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]CONSTRUCTION DOCUMENTS.** Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building *permit*. Construction drawings shall be drawn to an appropriate scale.

**[MP]CONTAMINATION.** A high-hazard or health-hazard impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids or waste.

**[RE]CONTINUOUS AIR BARRIER.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]CONTINUOUS INSULATION (ci).** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]CONTINUOUS WASTE.** A drain from two or more similar adjacent fixtures connected to a single trap.

**[MP]CONTROL, LIMIT.** An automatic control responsive to changes in liquid flow or level, pressure, or temperature for limiting the operation of an *appliance*.

**[MP]CONTROL, PRIMARY SAFETY.** A safety control responsive directly to flame properties that senses the presence or absence of flame and, in event of ignition failure or unintentional flame extinguishment, automatically causes shutdown of mechanical *equipment*.

**[MP]CONVECTOR.** A system incorporating a heating element in an enclosure in which air enters an opening below the heating element, is heated and leaves the enclosure through an opening located above the heating element.

**[RB]CORE.** The lightweight middle section of a structural insulated panel composed of foam plastic insulation, that provides the link between the two facing shells.

**[RB]CORROSION RESISTANCE.** The ability of a material to withstand deterioration of its surface or its properties where exposed to its environment.

**[RB]COURT.** A space, open and unobstructed to the sky, located at or above *grade* level on a *lot* and bounded on three or more sides by walls or a building.

**[RB]CRAWL SPACE.** An underfloor space that is not a basement.

**[RE]CRAWL SPACE WALL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]CRIPPLE WALL.** A framed wall extending from the top of the foundation to the underside of the floor framing of the first *story above grade plane*.

**[MP]CROSS CONNECTION.** Any connection between two otherwise separate piping systems that allows a flow from one system to the other.

**[RB]CROSS-LAMINATED TIMBER.** A prefabricated engineered wood product consisting of not less than three layers of solid-sawn lumber or *structural composite lumber* where the adjacent layers are cross-oriented and bonded with structural adhesive to form a solid wood element.

**[RE]CURTAIN WALL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]DALLE GLASS.** A decorative composite glazing material made of individual pieces of glass that are embedded in a cast matrix of concrete or epoxy.

**[MP]DAMPER, VOLUME.** A device that will restrict, retard or direct the flow of air in any duct, or the products of combustion of heat-producing *equipment*, vent connector, vent or chimney.

**[RB]DEAD LOADS.** The weight of the materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding, and other similarly incorporated architectural and structural items, and fixed service *equipment*.

**[RB]DECORATIVE GLASS.** A carved, leaded or Dalle glass or glazing material with a purpose that is decorative or artistic, not functional; with coloring, texture or other design qualities or components that cannot be removed without destroying the glazing material; and with a surface, or assembly into which it is incorporated, that is divided into segments.

**[RE]DEMAND RECIRCULATION WATER SYSTEM.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]DESIGN PROFESSIONAL.** See “*Registered design professional.*”

**[MP]DEVELOPED LENGTH.** The length of a pipeline measured along the center line of the pipe and fittings.

**[MP]DIAMETER.** Unless specifically stated, the term “diameter” is the nominal diameter as designated by the *approved* material standard.

**[RB]DIAPHRAGM.** A horizontal or nearly horizontal system acting to transmit lateral forces to the vertical resisting elements. Where the term “*diaphragm*” is used, it includes horizontal bracing systems.

**[MP]DILUTION AIR.** Air that enters a draft hood or draft regulator and mixes with flue gases.

**[MP]DIRECT SYSTEM.** A solar thermal system in which the gas or liquid in the solar collector loop is not separated from the load.

**[MP]DIRECT-VENT APPLIANCE.** A fuel-burning *appliance* with a sealed combustion system that draws all air for combustion from the outside atmosphere and discharges all flue gases to the outside atmosphere.

**[MP]DRAFT.** The pressure difference existing between the *appliance* or any component part and the atmosphere, that causes a continuous flow of air and products of combustion through the gas passages of the *appliance* to the atmosphere.

**Induced draft.** The pressure difference created by the action of a fan, blower or ejector, that is located between the *appliance* and the chimney or vent termination.

**Natural draft.** The pressure difference created by a vent or chimney because of its height, and the temperature difference between the flue gases and the atmosphere.

**[MP]DRAFT HOOD.** A device built into an *appliance*, or a part of the vent connector from an *appliance*, that is designed to provide for the ready escape of the flue gases from the *appliance* in the event of no draft, backdraft or stoppage beyond the draft hood; prevent a backdraft from entering the *appliance*; and neutralize the effect of stack action of the chimney or gas vent on the operation of the *appliance*.

**[MP]DRAFT REGULATOR.** A device that functions to maintain a desired draft in the *appliance* by automatically reducing the draft to the desired value.

**[RB]DRAFT STOP.** A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor-ceiling assemblies, roof-ceiling assemblies and *attics*.

**[MP]DRAIN.** Any pipe that carries soil and waterborne wastes in a building drainage system.

**[MP]DRAIN-BACK SYSTEM.** A solar thermal system in which the fluid in the solar collector loop is drained from the collector into a holding tank under prescribed circumstances.

**[MP]DRAINAGE FITTING.** A pipe fitting designed to provide connections in the drainage system that have provisions for establishing the desired slope in the system. These fittings are made from a variety of both metals and plastics. The methods of coupling provide for required slope in the system.

**[RE]DUCT.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]DUCT SYSTEM.** A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling *equipment* and *appliances*.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]DWELLING.** Any building that contains one or two *dwelling units* used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.

**[RB]DWELLING UNIT.** A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]DWV.** Abbreviated term for drain, waste and vent piping as used in common plumbing practice.

**[MP]EFFECTIVE OPENING.** The minimum cross-sectional area at the point of water-supply discharge, measured or expressed in terms of diameter of a circle and if the opening is not circular, the diameter of a circle of equivalent cross-sectional area. (This is applicable to air gap.)

**[MP]ELBOW.** A pressure pipe fitting designed to provide an exact change in direction of a pipe run. An elbow provides a sharp turn in the flow path (see “Bend” and “Sweep”).



**[RB]EMERGENCY ESCAPE AND RESCUE OPENING.** An operable exterior window, door or similar device that provides for a means of escape and access for rescue in the event of an emergency. (See also “Grade floor opening.”)

**[RE]ENERGY ANALYSIS.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]ENERGY COST.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]ENERGY SIMULATION TOOL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ENGINEERED WOOD RIM BOARD.** A full-depth structural composite lumber, wood structural panel, structural glued laminated timber or prefabricated wood I-joist member designed to transfer horizontal (shear) and vertical (compression) loads, provide attachment for *diaphragm* sheathing, siding and exterior deck ledgers and provide lateral support at the ends of floor or roof joists or rafters.

**[MP]EQUIPMENT.** Piping, ducts, vents, control devices and other components of systems other than *appliances* that are permanently installed and integrated to provide control of environmental conditions for buildings. This definition shall also include other systems specifically regulated in this code.

**[MP]EQUIVALENT LENGTH.** For determining friction losses in a piping system, the effect of a particular fitting equal to the friction loss through a straight piping length of the same nominal diameter.

**[RE]ERI REFERENCE DESIGN.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ESCARPMENT.** With respect to topographic wind effects, a cliff or steep slope generally separating two levels or gently sloping areas.

**[MP]ESSENTIALLY NONTOXIC TRANSFER FLUIDS.** Fluids having a Gosselin rating of 1, including propylene glycol; mineral oil; polydimethyl oil oxane; hydrochlorofluorocarbon, chlorofluorocarbon and hydrofluorocarbon refrigerants; and FDA-approved boiler water additives for steam boilers.

**[MP]ESSENTIALLY TOXIC TRANSFER FLUIDS.** Soil, water or gray water and fluids having a Gosselin rating of 2 or more including ethylene glycol, hydrocarbon oils, ammonia refrigerants and hydrazine.

**[MP]EVAPORATIVE COOLER.** A device used for reducing air temperature by the process of evaporating water into an airstream.

**[MP]EXCESS AIR.** Air that passes through the combustion chamber and the *appliance* flue in excess of what is theoretically required for complete combustion.

**[MP]EXHAUST HOOD, FULL OPENING.** An exhaust hood with an opening not less than the diameter of the connecting vent.

**[MP]EXISTING INSTALLATIONS.** Any plumbing system regulated by this code that was legally installed prior to the effective date of this code, or for which a *permit* to install has been issued.

**[RB]EXPANSIVE SOILS.** Soils that exhibit volumetric increase or decrease (swelling or shrinking) in response to partial or full wetting or drying under load.

**[RB]EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS).** EIFS are nonstructural, no-load-bearing *exterior wall* cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

**[RB]EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE.** An EIFS that incorporates a means of drainage applied over a water-resistive barrier.

**[RE]EXTERIOR WALL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]EXTERIOR WALL COVERING.** A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resistive barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments such as cornices, soffits, and fascias.

**[RB]FACING.** The wood structural panel facings that form the two outmost rigid layers of the structural insulated panel.

**[MP]FACTORY-BUILT CHIMNEY.** A *listed* and *labeled* chimney composed of factory-made components assembled in the field in accordance with the manufacturer's instructions and the conditions of the *listing*.

**[MP]FACTORY-MADE AIR DUCT.** A *listed* and *labeled* duct manufactured in a factory and assembled in the field in accordance with the manufacturer's instructions and conditions of the *listing*.

**[RE]FENESTRATION.** Products classified as either vertical fenestration or skylights and sloped glazing, installed in such a manner as to preserve the weather-resistant barrier of the wall or roof in which they are installed. Fenestration includes products with glass or other transparent or translucent materials.

For the definition applicable in Chapter 11, see Section N1101.6.

**Skylights.** For the definition applicable in Chapter 11, see Section N1101.6.

**Vertical fenestration.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]FENESTRATION, VERTICAL.** Windows that are fixed or movable, opaque doors, glazed doors, glazed block and combination opaque and glazed doors installed in a wall at less than 15 degrees from vertical.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]FENESTRATION PRODUCT, SITE-BUILT.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]FIBER-CEMENT (BACKERBOARD, SIDING, SOFFIT, TRIM AND UNDERLAYMENT) PRODUCTS.** Manufactured thin section composites of hydraulic cementitious matrices and discrete non-asbestos fibers.

**[RB]FIRE SEPARATION DISTANCE.** The distance measured from the building face to one of the following:

1. To the closest interior *lot line*.
2. To the centerline of a street, an alley or public way.
3. To an imaginary line between two buildings on the *lot*. The distance shall be measured at a right angle from the face of the wall.

**[RB]FIREBLOCKING.** Building materials or materials *approved* for use as fireblocking, installed to resist the free passage of flame to other areas of the building through concealed spaces.

**[RB]FIREPLACE.** An assembly consisting of a hearth and fire chamber of noncombustible material and provided with a chimney, for use with solid fuels.

**Factory-built fireplace.** A *listed* and *labeled* fireplace and chimney system composed of factory-made components, and assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

**Masonry fireplace.** A field-constructed fireplace composed of *solid masonry* units, bricks, stones or concrete.

**[MP]FIREPLACE STOVE.** A free-standing, chimney-connected solid-fuel-burning heater designed to be operated with the fire chamber doors in either the open or closed position.

**[RB]FIREPLACE THROAT.** The opening between the top of the firebox and the smoke chamber.

**[RB]FIRE-RETARDANT-TREATED WOOD.** Pressure treated lumber and plywood that exhibit reduced surface burning characteristics and resist propagation of fire.

**Other means during manufacture.** A process where the wood raw material is treated with a fire-retardant formulation while undergoing creation as a finished product.

**Pressure process.** A process for treating wood using an initial vacuum followed by the introduction of pressure above atmospheric.

**[MP]FIXTURE.** See “Plumbing fixture.”

**[MP]FIXTURE BRANCH, DRAINAGE.** A drain serving two or more fixtures that discharges into another portion of the drainage system.

**[MP]FIXTURE BRANCH, WATER-SUPPLY.** A water-supply pipe between the fixture supply and a main water-distribution pipe or fixture group main.

**[MP]FIXTURE DRAIN.** The drain from the trap of a fixture to the junction of that drain with any other drain pipe.

**[MP]FIXTURE FITTING.**

**Supply fitting.** A fitting that controls the volume or directional flow or both of water and that is either attached to or accessed from a fixture or is used with an open or atmospheric discharge.

**Waste fitting.** A combination of components that conveys the sanitary waste from the outlet of a fixture to the connection of the sanitary drainage system.

**[MP]FIXTURE GROUP, MAIN.** The main water-distribution pipe (or secondary branch) serving a plumbing fixture grouping such as a bath, kitchen or laundry area to which two or more individual fixture branch pipes are connected.

**[MP]FIXTURE SUPPLY.** The water-supply pipe connecting a fixture or fixture fitting to a fixture branch.

**[MP]FIXTURE UNIT, DRAINAGE (d.f.u.).** A measure of probable discharge into the drainage system by various types of plumbing fixtures, used to size DWV piping systems. The drainage fixture-unit value for a particular fixture depends on its volume rate of drainage discharge, on the time duration of a single drainage operation and on the average time between successive operations.

**[MP]FIXTURE UNIT, WATER-SUPPLY (w.s.f.u.).** A measure of the probable hydraulic demand on the water supply by various types of plumbing fixtures used to size water-piping systems. The water-supply fixture-unit value for a particular fixture depends on its volume rate

of supply, on the time duration of a single supply operation and on the average time between successive operations.

**[RB]FLAME SPREAD.** The propagation of flame over a surface.

**[RB]FLAME SPREAD INDEX.** A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84 or UL 723.

**[MP]FLEXIBLE AIR CONNECTOR.** A conduit for transferring air between an air duct or plenum and an air terminal unit, an air inlet or an air outlet. Such conduit is limited in its use, length and location.

**[RB]FLIGHT.** A continuous run of rectangular treads or winders or combination thereof from one landing to another.

**[MP]FLOOD-LEVEL RIM.** The edge of the receptor or fixture from which water overflows.

**[MP]FLOOR DRAIN.** A plumbing fixture for recess in the floor having a floor-level strainer intended for the purpose of the collection and disposal of wastewater used in cleaning the floor and for the collection and disposal of accidental spillage to the floor.

**[MP]FLOOR FURNACE.** A self-contained furnace suspended from the floor of the space being heated, taking air for combustion from outside such space, and with means for lighting the *appliance* from such space.

**[MP]FLOW PRESSURE.** The static pressure reading in the water-supply pipe near the faucet or water outlet while the faucet or water outlet is open and flowing at capacity.

**[MP]FLUE.** See “Vent.”

**[MP]FLUE, APPLIANCE.** The passages within an *appliance* through which combustion products pass from the combustion chamber to the flue collar.

**[MP]FLUE COLLAR.** The portion of a fuel-burning *appliance* designed for the attachment of a draft hood, vent connector or venting system.

**[MP]FLUE GASES.** Products of combustion plus excess air in *appliance* flues or heat exchangers.

**[MP]FLUSH VALVE.** A device located at the bottom of a flush tank that is operated to flush water closets.

**[MP]FLUSHOMETER TANK.** A device integrated within an air accumulator vessel that is designed to discharge a predetermined quantity of water to fixtures for flushing purposes.

**[MP]FLUSHOMETER VALVE.** A flushometer valve is a device that discharges a predetermined quantity of water fixtures for flushing purposes and is actuated by direct water pressure.

**[RB]FOAM BACKER BOARD.** Foam plastic used in siding applications where the foam plastic is a component of the siding.

**[RB]FOAM PLASTIC INSULATION.** A plastic that is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic containing voids consisting of open or closed cells distributed throughout the plastic for thermal insulating or acoustic purposes and that has a density less than 20 pounds per cubic foot (320 kg/m<sup>3</sup>) unless it is used as interior trim.

**[RB]FOAM PLASTIC INTERIOR TRIM.** Exposed foam plastic used as picture molds, chair rails, crown moldings, baseboards, handrails, ceiling beams, door trim and window trim and similar decorative or protective materials used in fixed applications.

**[MP]FUEL-PIPING SYSTEM.** All piping, tubing, valves and fittings used to connect fuel utilization *equipment* to the point of fuel delivery.

**[MP]FULL-OPEN VALVE.** A water control or shutoff component in the water supply system piping that, where adjusted for maximum flow, the flow path through the component's closure member is not a restriction in the component's through-flow area.

**[MP]FULLWAY VALVE.** A valve that in the full open position has an opening cross-sectional area that is not less than 85 percent of the cross-sectional area of the connecting pipe.

**[MP]FURNACE.** A vented heating *appliance* designed or arranged to discharge heated air into a *conditioned space* or through a duct or ducts.

**[RB]GLAZING AREA.** The interior surface area of all glazed fenestration, including the area of sash, curbing or other framing elements, that enclose *conditioned space*. Includes the area of glazed fenestration assemblies in walls bounding conditioned *basements*.

**[RB]GRADE.** The finished ground level adjoining the building at all *exterior walls*.

**[MP]GRADE, PIPING.** See "Slope."

**[RB]GRADE FLOOR OPENING.** A window or other opening located such that the sill height of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening. (See also "Emergency escape and rescue opening.")

**[RB]GRADE PLANE.** A reference plane representing the average of the finished ground level adjoining the building at all *exterior walls*. Where the finished ground level slopes away from the *exterior walls*, the reference plane shall be established by the lowest points within the area between the building and the *lot line* or, where the *lot line* is more than 6 feet (1829 mm) from the building between the structure and a point 6 feet (1829 mm) from the building.

**[MP]GRAY WATER.** Waste discharged from lavatories, bathtubs, showers, clothes washers and laundry trays.

**[MP]GRIDDED WATER DISTRIBUTION SYSTEM.** A water distribution system where every water distribution pipe is interconnected so as to provide two or more paths to each fixture supply pipe.

**[RB]GROSS AREA OF EXTERIOR WALLS.** The normal projection of all *exterior walls*, including the area of all windows and doors installed therein.

**[MP]GROUND-SOURCE HEAT PUMP LOOP SYSTEM.** Piping buried in horizontal or vertical excavations or placed in a body of water for the purpose of transporting heat transfer liquid to and from a heat pump. Included in this definition are closed loop systems in which the liquid is recirculated and open loop systems in which the liquid is drawn from a well or other source.

**[RB]GUARD.** A building component or a system of building components located near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to the lower level.

**[RB]GUESTROOM.** Any room or rooms used or intended to be used by one or more guests for living or sleeping purposes.

**[RB]GYPSUM BOARD.** The generic name for a family of sheet products consisting of a noncombustible core primarily of gypsum with paper surfacing. Gypsum wallboard, gypsum sheathing, gypsum base for gypsum *veneer* plaster, exterior gypsum soffit board, predecorated gypsum board and water-resistant gypsum backing board complying with the standards listed in Section R702.3 and Part IX of this code are types of gypsum board.

**[RB]GYPSUM PANEL PRODUCT.** The general name for a family of sheet products consisting essentially of gypsum.

**[RB]HABITABLE SPACE.** A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered *habitable spaces*.

**[RB]HANDRAIL.** A horizontal or sloping rail intended for grasping by the hand for guidance or support.

**[MP]HANGERS.** See “Supports.”

**[MP]HAZARDOUS LOCATION.** Any location considered to be a fire hazard for flammable vapors, dust, combustible fibers or other highly combustible substances.

**[MP]HEAT PUMP.** An *appliance* having heating or heating and cooling capability and that uses refrigerants to extract heat from air, liquid or other sources.

**[RE]HEATED SLAB.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]HEIGHT, BUILDING.** The vertical distance from *grade plane* to the average height of the highest roof surface.

**[RB]HEIGHT, STORY.** The vertical distance from top to top of two successive tiers of beams or finished floor surfaces; and, for the topmost *story*, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

**[RE]HIGH-EFFICACY LAMPS.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]HIGH-TEMPERATURE (H.T.) CHIMNEY.** A high temperature chimney complying with the requirements of UL103. A Type H.T. chimney is identifiable by the markings “Type H.T.” on each chimney pipe section.

**[RB]HILL.** With respect to topographic wind effects, a land surface characterized by strong relief in any horizontal direction.

**[RB]HISTORIC BUILDING OR PROPERTY.** Any building or structure site, object, place, location, district or zone, or collection of structures and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal governmental jurisdiction and as defined by the “*Reglamento Conjunto para la Evaluación y Expedición de Permisos Relacionados al Desarrollo, Uso de Terrenos y Operación de Negocios (Reglamento Conjunto)*”, según la Ley Número 161 De 2009, según enmendada”. This include historical buildings or properties:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic or having historic significance under an applicable state or local law, ordinance or resolution.
3. Designated as historic or having historic significance by the *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly.
4. Certified as a contributing or eligible resource within a National Register, state designated or locally designated historic district or zone.

**[MP]HORIZONTAL BRANCH, DRAINAGE.** A drain pipe extending laterally from a soil or waste stack or *building drain*, that receives the discharge from one or more *fixture drains*.

**[MP]HORIZONTAL PIPE.** Any pipe or fitting that makes an angle of less than 45 degrees (0.79 rad) with the horizontal.

**[MP]HOT WATER.** Water at a temperature greater than or equal to 110°F (43°C).



**[RB]HURRICANE-PRONE REGIONS.** Areas vulnerable to hurricanes, defined as the U.S. Atlantic Ocean and Gulf of Mexico coasts where the ultimate design wind speed,  $V_{ult}$ , is greater than 115 miles per hour (51 m/s), and Hawaii, Puerto Rico, Guam, Virgin Islands and America Samoa.

**[MP]HYDROGEN-GENERATING APPLIANCE.** A self-contained package or factory-matched packages of integrated systems for generating gaseous hydrogen. Hydrogen-generating *appliances* utilize electrolysis, reformation, chemical or other processes to generate hydrogen.

**[MP]IGNITION SOURCE.** A flame, spark or hot surface capable of igniting flammable vapors or fumes. Such sources include *appliance* burners, burner ignitions and electrical switching devices.

**[RB]IMPACT PROTECTIVE SYSTEM.** Construction that has been shown by testing to withstand the impact of test missiles and that is applied, attached, or locked over exterior glazing.

**[MP]INDIRECT SYSTEM.** A solar thermal system in which the gas or liquid in the solar collector loop circulates between the solar collector and a heat exchanger and such gas or liquid is not drained from the system or supplied to the load during normal operation.

**[MP]INDIRECT WASTE PIPE.** A waste pipe that discharges into the drainage system through an *air gap* into a trap, fixture or receptor.

**[MP]INDIVIDUAL SEWAGE DISPOSAL SYSTEM.** A system for disposal of sewage by means of a septic tank or mechanical treatment, designed for use apart from a public sewer to serve a single establishment or building.

**[MP]INDIVIDUAL VENT.** A pipe installed to vent a single *fixture drain* that connects with the vent system above or terminates independently outside the building.

**[MP]INDIVIDUAL WATER SUPPLY.** A supply other than an approved public water supply that serves one or more families.

**[RE]INFILTRATION.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]INSULATED SIDING.** A type of continuous insulation, with manufacturer-installed insulating material as an integral part of the cladding product, having a minimum *R*value of R-2.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]INSULATED VINYL SIDING.** A vinyl cladding product, with manufacturer-installed foam plastic insulating material as an integral part of the cladding product, having a thermal resistance of not less than R-2.

**[RB]INSULATING CONCRETE FORM (ICF).** A concrete forming system using stay-in-place forms of rigid foam plastic insulation, a hybrid of cement and foam insulation, a hybrid of cement and wood chips, or other insulating material for constructing cast-in-place concrete walls.

**[RB]INSULATING SHEATHING.** An insulating board having a thermal resistance of not less than R-2 of the core material.

For the definition applicable in Chapter 11, see Section N1101.6.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “*Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)*” as established by the Act No. 161 of December 1, 2009, “*Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended*”.

**[RB]JURISDICTION.** The governmental unit that has adopted this code.

**[RB]KITCHEN.** Kitchen shall mean an area used, or designated to be used, for the preparation of food.

**[RB]LABEL.** An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an *approved agency* and that indicates that the representative sample of the product or material has been tested and evaluated by an *approved agency*. (See also “Manufacturer’s designation” and “Mark.”)

**[RB]LABELED.** *Equipment*, materials or products to which have been affixed a *label*, seal, symbol or other identifying *mark* of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of such *labeled* items and whose labeling indicates either that the *equipment*, material or product meets identified standards or has been tested and found suitable for a specified purpose.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]LIGHT-FRAME CONSTRUCTION.** Construction whose vertical and horizontal structural elements are primarily formed by a system of repetitive wood or cold-formed steel framing members.

**[RB]LISTED.** *Equipment*, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of *listed equipment* or materials or periodic evaluation of services and whose listing states either that the *equipment*, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]LIVE LOADS.** Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.

**[MP]LIVING SPACE.** Space within a *dwelling unit* utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes.

**[MP]LOCAL EXHAUST.** An exhaust system that uses one or more fans to exhaust air from a specific room or rooms within a dwelling.

**[MP]LOCKING-TYPE TAMPER-RESISTANT CAP.** A cap designed to be unlocked by a specially designed tool or key to prevent removal of the cap by means of hand-loosening or by commonly available tools.

**[RB]LODGING HOUSE.** A one-family dwelling where one or more occupants are primarily permanent in nature, and rent is paid for guestrooms.

**[RB]LOT.** A portion or parcel of land considered as a unit.

**[RB]LOT LINE.** A line dividing one *lot* from another, or from a street or any public place.

**[RE]LOW-VOLTAGE LIGHTING.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]MACERATING TOILET SYSTEMS.** A system comprised of a sump with macerating pump and with connections for a water closet and other plumbing fixtures, that is designed to accept, grind and pump wastes to an *approved* point of discharge.

**[MP]MAIN.** The principal pipe artery to which branches may be connected.

**[MP]MAIN SEWER.** See “Public sewer.”

**[MP]MANIFOLD WATER DISTRIBUTION SYSTEMS.** A fabricated piping arrangement in which a large supply main is fitted with multiple branches in close proximity in which water is distributed separately to fixtures from each branch.

**[RE]MANUAL.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]MANUFACTURED HOME.** *Manufactured home* means a structure, transportable in one or more sections, that in the traveling mode is 8 body feet (2438 body mm) or more in width or 40 body feet (12 192 body mm) or more in length, or, where erected on site, is 320 square feet (30 m<sup>2</sup>) or more, and that is built on a permanent chassis and designed to be used as a *dwelling* with or without a permanent foundation where connected to the required utilities, and includes the plumbing, heating, air-conditioning and electrical systems contained therein; except that such term

shall include any structure that meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the secretary (HUD) and complies with the standards established under this title. For mobile homes built prior to June 15, 1976, a *label* certifying compliance to the Standard for Mobile Homes, NFPA 501, in effect at the time of manufacture is required. For the purpose of these provisions, a mobile home shall be considered to be a *manufactured home*.

**[RB]MANUFACTURER'S DESIGNATION.** An identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules. (See also "Mark" and "Label.")

**[RB] MANUFACTURER'S INSTALLATION INSTRUCTIONS.** Printed instructions included with *equipment* as part of the conditions of their *listing* and *labeling*.

**[RB]MARK.** An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material. (See also "Manufacturer's designation" and "Label.")

**[RB]MASONRY CHIMNEY.** A field-constructed chimney composed of solid masonry units, bricks, stones or concrete.

**[RB]MASONRY HEATER.** A masonry heater is a solid fuel burning heating *appliance* constructed predominantly of concrete or solid masonry having a mass of not less than 1,100 pounds (500 kg), excluding the chimney and foundation. It is designed to absorb and store a substantial portion of heat from a fire built in the firebox by routing exhaust gases through internal heat exchange channels in which the flow path downstream of the firebox includes not less than one 180-degree (3.14-rad) change in flow direction before entering the chimney and that deliver heat by radiation through the masonry surface of the heater.

**[RB]MASONRY, SOLID.** Masonry consisting of solid masonry units laid contiguously with the joints between the units filled with mortar.

**[RB]MASONRY UNIT.** Brick, tile, stone, architectural cast stone, glass block or concrete block conforming to the requirements specified in Section 2103 of the *Puerto Rico Building Code*.

**Clay.** A building unit larger in size than a brick, composed of burned clay, shale, fire clay or mixtures thereof.

**Concrete.** A building unit or block larger in size than 12 inches by 4 inches by 4 inches (305 mm by 102 mm by 102 mm) made of cement and suitable aggregates.

**Glass.** No-load-bearing masonry composed of glass units bonded by mortar.

**Hollow.** A masonry unit with a net cross-sectional area in any plane parallel to the loadbearing surface that is less than 75 percent of its gross cross-sectional area measured in the same plane.

**Solid.** A masonry unit with a net cross-sectional area in every plane parallel to the loadbearing surface that is 75 percent or more of its cross-sectional area measured in the same plane.

**[RB]MEAN ROOF HEIGHT.** The average of the roof eave height and the height to the highest point on the roof surface, except that eave height shall be used for roof angle of less than or equal to 10 degrees (0.18 rad).

**[MP]MECHANICAL DRAFT SYSTEM.** A venting system designed to remove flue or vent gases by mechanical means, that consists of an induced draft portion under non-positive static pressure or a forced draft portion under positive static pressure.

**Forced draft venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under positive static pressure.

**Induced draft venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under non-positive static vent pressure.

**Power venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under positive static vent pressure.

**[MP]MECHANICAL EXHAUST SYSTEM.** A system for removing air from a room or space by mechanical means.

**[MP]MECHANICAL JOINT.**

1. A connection between pipes, fittings or pipes and fittings that is not welded, brazed, caulked, soldered, solvent cemented or heat-fused.
2. A general form of gas or liquid-tight connections obtained by the joining of parts through a positive holding mechanical construction such as, but not limited to, flanged, screwed, clamped or flared connections.

**[MP]MECHANICAL SYSTEM.** A system specifically addressed and regulated in this code and composed of components, devices, *appliances* and *equipment*.

**[RB]METAL ROOF PANEL.** An interlocking metal sheet having an installed weather exposure of not less than 3 square feet (0.28 m<sup>2</sup>) per sheet.

**[RB]METAL ROOF SHINGLE.** An interlocking metal sheet having an installed weather exposure less than 3 square feet (0.28 m<sup>2</sup>) per sheet.

**[RB]MEZZANINE.** An intermediate level or levels between the floor and ceiling of any *story*.

**[RB]MODIFIED BITUMEN ROOF COVERING.** One or more layers of polymer modified asphalt sheets. The sheet materials shall be fully adhered or mechanically attached to the substrate or held in place with an *approved* ballast layer.

**[RB]MULTIPLE-STATION SMOKE ALARM.** Two or more single-station alarm devices that are capable of interconnection such that actuation of one causes all integral or separate audible alarms to operate.

**[RB]NAILABLE SUBSTRATE.** A product or material such as framing, sheathing or furring, composed of wood or wood-based materials, or other materials and fasteners providing equivalent fastener withdrawal resistance.

**[MP]NATURAL DRAFT SYSTEM.** A venting system designed to remove flue or vent gases under non-positive static vent pressure entirely by natural draft.

**[RB]NATURALLY DURABLE WOOD.** The heartwood of the following species with the exception that an occasional piece with corner sapwood is permitted if 90 percent or more of the width of each side on which it occurs is heartwood.

**Decay resistant.** Redwood, cedar, black locust and black walnut.

**Termite resistant.** Alaska yellow cedar, redwood, Eastern red cedar and Western red cedar including all sapwood of Western red cedar.

**[RB]NONCOMBUSTIBLE MATERIAL.** Materials that pass the test procedure for defining non-combustibility of elementary materials set forth in ASTM E136.

**[RB]NOSING.** The leading edge of treads of stairs and of landings at the top of stairway flights.

**[RB]OCCUPIED SPACE.** The total area of all buildings or structures on any *lot* or parcel of ground projected on a horizontal plane, excluding permitted projections as allowed by this code.

**[MP]OFFSET.** A combination of fittings that makes two changes in direction, bringing one section of the pipe out of line and into a line parallel with the other section.

**(OGPE-DDEC) PERMITS MANAGEMENT OFFICE:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**[MP]ON-SITE NONPOTABLE WATER REUSE SYSTEMS.** Water systems for the collection, treatment, storage, distribution, and reuse of non-potable water generated on site, including but not limited to graywater systems. This definition does not include rainwater harvesting systems.

**[RE]OPAQUE DOOR.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]OWNER.** Any person, agent, firm or corporation having a legal or equitable interest in the property.

**[RB]PAN FLASHING.** Corrosion-resistant flashing at the base of an opening that is integrated into the building exterior wall to direct water to the exterior and is premanufactured, fabricated, formed or applied at the job site.

**[RB]PANEL THICKNESS.** Thickness of core plus two layers of structural wood panel facings.

**[MP]PELLET FUEL-BURNING APPLIANCE.** A closed combustion, vented *appliance* equipped with a fuel feed mechanism for burning processed pellets of solid fuel of a specified size and composition.

**[MP]PELLET VENT.** A vent *listed* and *labeled* for use with a *listed* pellet fuel-burning *appliance*.

**[RB]PERFORMANCE CATEGORY.** A designation of wood structural panels as related to the panel performance used in Chapters 4, 5, 6 and 8.

**[RB]PERMIT.** An official document or certificate issued by the *building official* that authorizes performance of a specified activity.

**[RB]PERSON.** An individual, heirs, executors, administrators or assigns, and a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

**[RB]PHOTOVOLTAIC MODULE.** A complete, environmentally protected unit consisting of solar cells, optics and other components, exclusive of a tracker, designed to generate DC power where exposed to sunlight.

**[RB]PHOTOVOLTAIC PANEL.** A collection of photovoltaic modules mechanically fastened together, wired, and designed to provide a field-installable unit.

**[RB]PHOTOVOLTAIC PANEL SYSTEM.** A system that incorporates discrete photovoltaic panels that convert solar radiation into electricity, including rack support systems.

**[RB]PHOTOVOLTAIC SHINGLES.** A *roof covering* that resembles shingles and that incorporates photovoltaic modules.

**[MP]PITCH.** See “Slope.”

**[RB]PLASTIC COMPOSITE.** A generic designation that refers to wood-plastic composites and plastic lumber.

**[RB]PLATFORM CONSTRUCTION.** A method of construction by which floor framing bears on load bearing walls that are not continuous through the *story* levels or floor framing.

**[MP]PLENUM.** A chamber that forms part of an air-circulation system other than the *occupied space* being conditioned.

**[MP]PLUMBING.** For the purpose of this code, plumbing refers to those installations, repairs, maintenance and *alterations* regulated by Chapters 25 through 33.

**[MP]PLUMBING APPLIANCE.** An energized household *appliance* with plumbing connections, such as a dishwasher, food waste disposer, clothes washer or water heater.

**[MP]PLUMBING APPURTENANCE.** A device or assembly that is an adjunct to the basic plumbing system and does not demand additional water supply or add any discharge load to the system. It is presumed that it performs some useful function in the operation, maintenance, servicing, economy or safety of the plumbing system. Examples include filters, relief valves and aerators.

**[MP]PLUMBING FIXTURE.** A receptacle or device that is connected to a water supply system or discharges to a drainage system or both. Such receptacles or devices require a supply of water; or discharge liquid waste or liquid-borne solid waste; or require a supply of water and discharge waste to a drainage system.

**[MP]PLUMBING SYSTEMS.** Includes the water distribution pipes; plumbing fixtures and traps; water-treating or water-using *equipment*; soil, waste and vent pipes; and building drains; in addition to their respective connections, devices and appurtenances within a structure or premises; and the water service, building sewer and building storm sewer serving such structure or premises.

**[MP]POLLUTION.** A low-hazard or non-health-hazard impairment of the quality of the potable water to a degree that does not create a hazard to the public health and that does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use.

**[RB]POLYPROPYLENE SIDING.** A shaped material, made principally from polypropylene homopolymer, or copolymer, that in some cases contains fillers or reinforcements, that is used to clad *exterior walls* or buildings.

**[MP]PORTABLE-FUEL-CELL APPLIANCE.** A fuel cell generator of electricity that is not fixed in place. A portable-fuel-cell *appliance* utilizes a cord and plug connection to a grid-isolated load and has an integral fuel supply.

**[RB]POSITIVE ROOF DRAINAGE.** The drainage condition in which consideration has been made for the loading deflections of the roof deck, and additional slope has been provided to ensure drainage of the roof within 48 hours of precipitation.



**[MP]POTABLE WATER.** Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects and conforming in bacteriological and chemical quality to the requirements of the public health authority having jurisdiction.

**[RB]PRECAST CONCRETE.** A structural concrete element cast elsewhere than its final position in the structure.

**[RB]PRECAST CONCRETE FOUNDATION WALLS.** Preengineered, precast concrete wall panels that are designed to withstand specified stresses and used to build below-*grade* foundations.

**[MP]PRESSURE-RELIEF VALVE.** A pressure-actuated valve held closed by a spring or other means and designed to automatically relieve pressure at the pressure at which it is set.

**[RE]PROPOSED DESIGN.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]PUBLIC SEWER.** A common sewer directly controlled by public authority.

**[MP]PUBLIC WATER MAIN.** A water-supply pipe for public use controlled by public authority.

**[RB]PUBLIC WAY.** Any street, alley or other parcel of land open to the outside air leading to a public street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and that has a clear width and height of not less than 10 feet (3048 mm).

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**[MP]PURGE.** To clear of air, gas or other foreign substances.

**[MP]QUICK-CLOSING VALVE.** A valve or faucet that closes automatically where released manually or controlled by mechanical means for fast-action closing.

**[RB]RAMP.** A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope).

**[RE]RATED DESIGN.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]READILY ACCESSIBLE.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]READY ACCESS (TO).** That which enables a device, *appliance* or *equipment* to be directly reached, without requiring the removal or movement of any panel, door or similar obstruction.

**[MP]RECEPTOR.** A fixture or device that receives the discharge from indirect waste pipes.

**[MP]RECLAIMED WATER.** Non-potable water that has been derived from the treatment of wastewater by a facility or system licensed or permitted to produce water meeting the *jurisdiction's* water requirements for its intended uses. Also known as "Recycled water."

**[MP]REFRIGERANT.** A substance used to produce refrigeration by its expansion or evaporation.

**[MP]REFRIGERANT COMPRESSOR.** A specific machine, with or without accessories, for compressing a given refrigerant vapor.

**[MP]REFRIGERATING SYSTEM.** A combination of interconnected parts forming a closed circuit in which refrigerant is circulated for the purpose of extracting, then rejecting, heat. A direct refrigerating system is one in which the evaporator or condenser of the refrigerating system is in direct contact with the air or other substances to be cooled or heated. An indirect refrigerating system is one in which a secondary coolant cooled or heated by the refrigerating system is circulated to the air or other substance to be cooled or heated.

**REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**[RB]REPAIR.** The reconstruction, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]REROOFING.** The process of recovering or replacing an existing roof covering. See "Roof recover."

For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]RESIDENTIAL BUILDING.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]RETURN AIR.** Air removed from an *approved conditioned space* or location and recirculated or exhausted.

**[RB]RIDGE.** With respect to topographic wind effects, an elongated crest of a *hill* characterized by strong relief in two directions.

**[MP]RISER (PLUMBING).** A water pipe that extends vertically one full *story* or more to convey water to branches or to a group of fixtures.

**[RB]RISER (STAIR).** The vertical component of a step or stair.

**[RB]ROOF ASSEMBLY.** A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof deck, underlayment and *roof covering*, and can also include a thermal barrier, ignition barrier, insulation or a vapor retarder.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ROOF COATING.** A fluid-applied, adhered coating used for roof maintenance or *roof repair*, or as a component of a *roof covering* system or *roof assembly*.

**[RB]ROOF COVERING.** The covering applied to the roof deck for weather resistance, fire classification or appearance.

**[RB]ROOF COVERING SYSTEM.** See “Roof assembly.”

**[RB]ROOF DECK.** The flat or sloped surface not including its supporting members or vertical supports.

**[RB]ROOF RECOVER.** The process of installing an additional *roof covering* over a prepared existing roof covering without removing the existing roof covering.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]ROOF REPLACEMENT.** The process of removing the existing *roof covering*, repairing any damaged substrate and installing a new *roof covering*.

For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]ROOM HEATER.** A free-standing heating *appliance* installed in the space being heated and not connected to ducts.

**[MP]ROUGH-IN.** The installation of the parts of the plumbing system that must be completed prior to the installation of fixtures. This includes DWV, water supply and built-in fixture supports.

**[RB]RUNNING BOND.** The placement of masonry units such that head joints in successive courses are horizontally offset not less than one-quarter the unit length.

**[RE]R-VALUE (THERMAL RESISTANCE).** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]SANITARY SEWER.** A sewer that carries sewage and excludes storm, surface and groundwater.

**[RB]SCUPPER.** An opening in a wall or parapet that allows water to drain from a roof.

**[RB]SEISMIC DESIGN CATEGORY (SDC).** A classification assigned to a structure based on its occupancy category and the severity of the design earthquake ground motion at the site.

**[MP]SEPTIC TANK.** A water-tight receptor that receives the discharge of a building sanitary drainage system and is constructed so as to separate solids from the liquid, digest organic matter through a period of detention, and allow the liquids to discharge into the soil outside of the tank through a system of open joint or perforated piping or a seepage pit.

**[RE]SERVICE WATER HEATING.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]SEWAGE.** Any liquid waste containing animal matter, vegetable matter or other impurity in suspension or solution.

**[MP]SEWAGE PUMP.** A permanently installed mechanical device for removing sewage or liquid waste from a sump.

**[RB]SHALL.** The term, where used in the code, is construed as mandatory.

**[RB]SHEAR WALL.** A general term for walls that are designed and constructed to resist racking from seismic and wind by use of masonry, concrete, cold-formed steel or wood framing in accordance with Chapter 6 of this code and the associated limitations in Section R301.2 of this code.

**[RB]SHINGLE FASHION.** A method of installing roof or wall coverings, water-resistive barriers, flashing or other building components such that upper layers of material are placed overlapping lower layers of material to provide drainage and protect against water intrusion at unsealed penetrations and joints or in combination with sealed joints.

**[RB]SINGLE-PLY MEMBRANE.** A roofing membrane that is field applied using one layer of membrane material (either homogeneous or composite) rather than multiple layers.

**[RB]SINGLE-STATION SMOKE ALARM.** An assembly incorporating the detector, control *equipment* and alarm sounding device in one unit that is operated from a power supply either in the unit or obtained at the point of installation.

**[RE]SKYLIGHT.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]SKYLIGHT, UNIT.** A factory assembled, glazed fenestration unit, containing one panel of glazing material, that allows for natural daylighting through an opening in the roof assembly while preserving the weather-resistant barrier of the roof.

**[RB]SKYLIGHTS AND SLOPED GLAZING.** Glass or other transparent or translucent glazing material installed at a slope of 15 degrees (0.26 rad) or more from vertical. Unit skylights, tubular daylighting devices and glazing materials in solariums, sunrooms, roofs and sloped walls are included in this definition.

For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]SLIP JOINT.** A mechanical-type joint used primarily on fixture traps. The joint tightness is obtained by compressing a friction-type washer such as rubber, nylon, neoprene, lead or special packing material against the pipe by the tightening of a (slip) nut.

**[MP]SLOPE.** The fall (pitch) of a line of pipe in reference to a horizontal plane. In drainage, the slope is expressed as the fall in units vertical per units horizontal (percent) for a length of pipe.

**[RB]SMOKE-DEVELOPED INDEX.** A comparative measure, expressed as a dimensionless number, derived from measurements of smoke obscuration versus time for a material tested in accordance with ASTM E84 or UL 723.

**[MP]SOIL STACK OR PIPE.** A pipe that conveys sewage containing fecal material.

**[RB]SOLAR ENERGY SYSTEM.** A system that converts solar radiation to usable energy, including *photovoltaic panel systems* and *solar thermal systems*.

**[RE]SOLAR HEAT GAIN COEFFICIENT (SHGC).** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]SOLAR THERMAL COLLECTOR.** Components in a *solar thermal system* that collect and convert solar radiation to thermal energy.

**[MP]SOLAR THERMAL SYSTEM.** A system that converts solar radiation to thermal energy for use in heating or cooling.

**[RB]SOLID MASONRY.** Load-bearing or no-load-bearing construction using masonry units where the net cross-sectional area of each unit in any plane parallel to the bearing surface is not less than 75 percent of its gross cross-sectional area. Solid masonry units shall conform to ASTM C55, C62, C73, C145 or C216.

**[RB]SPLINE.** A strip of wood structural panel cut from the same material used for the panel facings, used to connect two structural insulated panels. The strip (spline) fits into a groove cut into the vertical edges of the two structural insulated panels to be joined. Splines are used behind each facing of the structural insulated panels being connected as shown in Figure R610.8.

**[MP]STACK.** Any main vertical DWV line, including offsets, that extends one or more stories as directly as possible to its vent terminal.

**[RB]STACK BOND.** The placement of masonry units in a bond pattern is such that head joints in successive courses are vertically aligned. For the purpose of this code, requirements for stack bond shall apply to all masonry laid in other than running bond.

**[MP]STACK VENT.** The extension of soil or waste stack above the highest horizontal drain connected.

**[RB]STAIR.** A change in elevation, consisting of one or more risers.

**[RB]STAIRWAY.** One or more flights of stairs, either interior or exterior, with the necessary landings and connecting platforms to form a continuous and uninterrupted passage from one level to another within or attached to a building, porch or deck.

**[RB]STAIRWAY, SPIRAL.** A stairway with a plan view of closed circular form and uniform section-shaped treads radiating from a minimum-diameter circle.

**[RE]STANDARD REFERENCE DESIGN.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]STANDARD TRUSS.** Any construction that does not permit the roof-ceiling insulation to achieve the required *R*value over the *exterior walls*.

**[MP]STATIONARY FUEL CELL POWER PLANT.** A self-contained package or factory-matched packages that constitute an automatically-operated assembly of integrated systems for generating useful electrical energy and recoverable thermal energy that is permanently connected and fixed in place.

**[MP]STORM SEWER, DRAIN.** A pipe used for conveying rainwater, surface water, subsurface water and similar liquid waste.

**[RB]STORY.** That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above.

**[RB]STORY ABOVE GRADE PLANE.** Any *story* having its finished floor surface entirely above *grade plane*, or in which the finished surface of the floor next above is either of the following:

1. More than 6 feet (1829 mm) *above grade plane*.
2. More than 12 feet (3658 mm) above the finished ground level at any point.

**[RB]STRUCTURAL COMPOSITE LUMBER.** Structural members manufactured using wood elements bonded together with exterior adhesives.

Examples of structural composite lumber are:

**Laminated strand lumber (LSL).** A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood

strand elements is 0.10 inch (2.54 mm) or less and their average lengths are not less than 150 times the least dimension of the wood strand elements.

**Laminated veneer lumber (LVL).** A composite of wood veneer elements with wood fibers primarily oriented along the length of the member, where the veneer element thicknesses are 0.25 inch (6.4 mm) or less.

**Oriented strand lumber (OSL).** A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inch (2.54 mm) or less and their average lengths are not less than 75 times and less than 150 times the least dimension of the wood strand elements.

**Parallel strand lumber (PSL).** A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.25 inch (6.4 mm) or less and their average lengths are not less than 300 times the least dimension of the wood strand elements.

**[RB]STRUCTURAL INSULATED PANEL (SIP).** A structural sandwich panel that consists of a lightweight foam plastic core securely laminated between two thin, rigid wood structural panel facings.

**[RB]STRUCTURE.** That which is built or constructed.

**[RB]SUBSOIL DRAIN.** A drain that collects subsurface water or seepage water and conveys such water to a place of disposal.

**[MP]SUMP.** A tank or pit that receives sewage or waste, located below the normal *grade* of the gravity system and that must be emptied by mechanical means.

**[MP]SUMP PUMP.** A pump installed to empty a sump. These pumps are used for removing storm water only. The pump is selected for the specific head and volume of the load and is usually operated by level controllers.

**[RB]SUNROOM.** A one-story structure attached to a *dwelling* with a *glazing area* in excess of 40 percent of the gross area of the structure's *exterior walls* and roof.

For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]SUPPLY AIR.** Air delivered to a *conditioned space* through ducts or plenums from the heat exchanger of a heating, cooling or ventilating system.

**[MP]SUPPORTS.** Devices for supporting, hanging and securing pipes, fixtures and *equipment*.

**[MP]SWEEP.** A drainage fitting designed to provide a change in direction of a drain pipe of less than the angle specified by the amount necessary to establish the desired slope of the line. Sweeps

provide a longer turning radius than bends and a less turbulent flow pattern (see “Bend” and “Elbow”).

**[MP]TEMPERATUREAND PRESSURE-RELIEF (T AND P) VALVE.** A combination relief valve designed to function as both a temperature-relief and pressure-relief valve.

**[MP]TEMPERATURE-RELIEF VALVE.** A temperature-actuated valve designed to discharge automatically at the temperature at which it is set.

**[RB]TERMITE-RESISTANT MATERIAL.** Pressure-preservative-treated wood in accordance with the AWPA standards in Section R317.1, naturally durable termite-resistant wood, steel, concrete, masonry or other *approved* material.

**[RE]THERMAL ISOLATION.** For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]THERMAL RESISTANCE, R-VALUE.** See “Rvalue.”

**[RE]THERMAL TRANSMITTANCE, U-FACTOR.** See “U-factor.”

**[RE]THERMOSTAT.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]THIRD-PARTY CERTIFICATION AGENCY.** An approved agency operating a product or material certification system that incorporates initial product testing, assessment and surveillance of a manufacturer’s quality control system.

**[MP]THIRD-PARTY CERTIFIED.** Certification obtained by the manufacturer indicating that the function and performance characteristics of a product or material have been determined by testing and ongoing surveillance by an approved third-party certification agency. Assertion of certification is in the form of identification in accordance with the requirements of the third-party certification agency.

**[RB]TOWNHOUSE.** A single-family *dwelling unit* constructed in a group of three or more attached units in which each unit extends from foundation to roof and with a *yard* or public way on not less than two sides.

**[MP]TRAP.** A fitting, either separate or built into a fixture, that provides a liquid seal to prevent the emission of sewer gases without materially affecting the flow of sewage or wastewater through it.

**[MP]TRAP ARM.** That portion of a *fixture drain* between a trap weir and the vent fitting.

**[MP]TRAP PRIMER.** A device or system of piping to maintain a water seal in a trap, typically installed where infrequent use of the trap would result in evaporation of the trap seal, such as floor drains.



**[MP]TRAP SEAL.** The trap seal is the maximum vertical depth of liquid that a trap will retain, measured between the crown weir and the top of the dip of the trap.

**[RB]TRIM.** Picture molds, chair rails, baseboards, handrails, door and window frames, and similar decorative or protective materials used in fixed applications.

**[RB]TRUSS DESIGN DRAWING.** The graphic depiction of an individual truss, that describes the design and physical characteristics of the truss.

**[RB]TUBULAR DAYLIGHTING DEVICE (TDD).** A non-operable fenestration unit primarily designed to transmit daylight from a roof surface to an interior ceiling via a tubular conduit. The basic unit consists of an exterior glazed weathering surface, a light-transmitting tube with a reflective interior surface, and an interior-sealing device such as a translucent ceiling panel. The unit may be factory assembled, or field assembled from a manufactured kit.

**[MP]TYPE L VENT.** A *listed and labeled* vent conforming to UL 641 for venting oil-burning *appliances listed* for use with Type L vents or with gas *appliances listed* for use with Type B vents.

**[RE]U-FACTOR (THERMAL TRANSMITTANCE).** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]UNDERLAYMENT.** One or more layers of felt, sheathing paper, nonbituminous saturated felt, or other *approved* material over which a roof covering, with a slope of 2 to 12 (17-percent slope) or greater, is applied.

**[MP]VACUUM BREAKER.** A device that prevents backsiphonage of water by admitting atmospheric pressure through ports to the discharge side of the device.

**[RB]VAPOR DIFFUSION PORT.** A passageway for conveying water vapor from an unvented *attic* to the outside atmosphere.

**[RB]VAPOR PERMEABLE.** The property of having a moisture vapor permeance rating of 5 perms ( $2.9 \times 10^{-10}$  kg/ Pa • s • m<sup>2</sup>) or greater, where tested in accordance with the desiccant method using Procedure A of ASTM E96. A vapor permeable material permits the passage of moisture vapor.

**[RB]VAPOR RETARDER CLASS.** A measure of the ability of a material or assembly to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E96 as follows:

Class I:  $\leq 0.1$  perm rating

Class II:  $> 0.1$  to  $\leq 1.0$  perm rating

Class III:  $> 1.0$  to  $\leq 10$  perm rating

**[MP]VENT.** A passageway for conveying flue gases from fuel-fired *appliances*, or their vent connectors, to the outside atmosphere.

**[MP]VENT COLLAR.** See “Flue collar.”

**[MP]VENT CONNECTOR.** That portion of a venting system that connects the flue collar or draft hood of an *appliance* to a vent.

**[MP]VENT DAMPER DEVICE, AUTOMATIC.** A device intended for installation in the venting system, in the outlet of an individual, automatically operated fuel burning *appliance* and that is designed to open the venting system automatically where the *appliance* is in operation and to close off the venting system automatically where the *appliance* is in a standby or shutdown condition.

**[MP]VENT GASES.** Products of combustion from fuel-burning *appliances*, plus excess air and dilution air, in the venting system above the draft hood or draft regulator.

**[MP]VENT STACK.** A vertical vent pipe installed to provide circulation of air to and from the drainage system and that extends through one or more stories.

**[MP]VENT SYSTEM.** Piping installed to equalize pneumatic pressure in a drainage system to prevent trap seal loss or blowback due to siphonage or back pressure.

**[RB]VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RE]VENTILATION AIR.** For the definition applicable in Chapter 11, see Section N1101.6.

**[MP]VENTING.** Removal of combustion products to the outdoors.

**[MP]VENTING SYSTEM.** A continuous open passageway from the flue collar of an *appliance* to the outside atmosphere for the purpose of removing flue or vent gases. A venting system is usually composed of a vent or a chimney and vent connector, if used, assembled to form the open passageway.

**[MP]VERTICAL PIPE.** Any pipe or fitting that makes an angle of 45 degrees (0.79 rad) or more with the horizontal.

**[RB]VINYL SIDING.** A shaped material, made principally from rigid polyvinyl chloride (PVC), that is used to cover exterior walls of buildings.

**[RE]VISIBLE TRANSMITTANCE (VT).** For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]WALL, RETAINING.** A wall not laterally supported at the top, that resists lateral soil load and other imposed loads.

**Load-bearing wall.** A wall supporting any vertical load in addition to its own weight.

**Nonbearing wall.** A wall which does not support vertical loads other than its own weight.

**[MP]WASTE.** Liquid-borne waste that is free of fecal matter.

**[MP]WASTE PIPE OR STACK.** Piping that conveys only liquid sewage not containing fecal material.

**[MP]WASTE RECEPTOR.** A floor sink, standpipe, hub drain or a floor drain that receives the discharge of one or more indirect waste pipes.

**[MP]WATER DISTRIBUTION SYSTEM.** Piping that conveys water from the service to the plumbing fixtures, *appliances*, appurtenances, *equipment*, devices or other systems served, including fittings and control valves.

**[MP]WATER HEATER.** Any heating *appliance* or *equipment* that heats potable water and supplies such water to the potable hot water distribution system.

**[MP]WATER MAIN.** A water supply pipe for public use.

**[MP]WATER OUTLET.** A valved discharge opening, including a hose bibb, through which water is removed from the potable water system supplying water to a plumbing fixture or plumbing *appliance* that requires either an *air gap* or backflow prevention device for protection of the supply system.

**[RB]WATER-RESISTIVE BARRIER.** A material behind an *exterior wall* covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the *exterior wall* assembly.

**[MP]WATER SERVICE PIPE.** The outside pipe from the water main or other source of potable water supply to the water distribution system inside the building, terminating at the service valve.

**[MP]WATER SUPPLY SYSTEM.** The water service pipe, the water-distributing pipes and the necessary connecting pipes, fittings, control valves and appurtenances in or adjacent to the building or premises.

**[MP]WET VENT.** A vent that receives the discharge of wastes from other fixtures.

**[MP]WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM.** An exhaust system, supply system, or combination thereof that is designed to mechanically exchange indoor air for outdoor air where operating continuously or through a programmed intermittent schedule to satisfy the whole-house ventilation rate.

For the definition applicable in Chapter 11, see Section N1101.6.

**[RB]WINDBORNE DEBRIS REGION.** Areas within *hurricane-prone regions* located in accordance with one of the following:

1. Within 1 mile (1.61 km) of the coastal mean high-water line where the ultimate design wind speed,  $V_{ult}$ , is 130 mph (58 m/s) or greater.
2. In areas where the ultimate design wind speed,  $V_{ult}$ , is 140 mph (63.6 m/s) or greater; or Hawaii.

**[RB]WINDER.** A tread with nonparallel edges.

**[RB]WOOD STRUCTURAL PANEL.** A panel manufactured from veneers; or wood strands or wafers; bonded together with waterproof synthetic resins or other suitable bonding systems. Examples of wood structural panels are plywood, orientated strand board (OSB) or composite panels.

**[RB]YARD.** An open space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this code, on the *lot* on which a building is situated.

**[RE]ZONE.** For the definition applicable in Chapter 11, see Section N1101.6.

## CHAPTER 3 – BUILDING PLANNING

### SECTION R301 - DESIGN CRITERIA

**R301.2 Climatic and geographic design criteria.** Buildings shall be constructed in accordance with the provisions of this code as limited by the provisions of this section. Additional criteria shall be established by the local *jurisdiction* and set forth in Table R301.2(1).

**R301.2.1 Wind design criteria.** Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed in Table R301.2(1) as determined from Figure R301.2 (5)A. The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) shall be used to determine design

load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section R802.11.1 from the roof assembly to the foundation.

**R301.2.1.1 Wind limitations and wind design required.** The wind provisions of this code shall not apply to the design of buildings where wind design is required in accordance with Figure R301.2(5)B.

**Exceptions:**

1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R404 and R608.
2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R610.
3. For cold-formed steel light-frame construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R505, R603 and R804.

In regions where wind design is required in accordance with Figure R301.2(5)B, the design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. *AWC Wood Frame Construction Manual (WFCM).*
2. *ICC Standard for Residential Construction in High-Wind Regions (ICC 600).*
3. *ASCE Minimum Design Loads for Buildings and Other Structures (ASCE 7).*
4. *AISI Standard for Cold-Formed Steel Framing— Prescriptive Method For One- and Two-Family Dwellings (AISI S230).*
5. *Puerto Rico-Building Code.*

The elements of design not addressed by the methods in Items 1 through 5 shall be in accordance with the provisions of this code.

Where ASCE 7 or the *Puerto Rico Building Code* is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the *Puerto Rico Building Code* shall be used.

**R301.2.1.2 Protection of openings.** Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E1996 and ASTM E1886 as modified in Section 301.2.1.2.1. Garage door glazed opening protection for windborne debris shall meet the requirements of an *approved* impact-resisting standard or ANSI/DASMA 115

**Exception:** Tested and certified Storm Shutter systems or Wood structural panels with a thickness of not less than 7/16 inch (11 mm) and a span of not more than 8 feet (2438 mm) shall be permitted for opening protection. Panels shall be precut and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2(2) or ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table R301.2.1.2 is permitted for buildings with a *mean roof height* of 45 feet (13 728 mm) or less where the ultimate design wind speed,  $V_{ult}$ , is 180 mph (290 kph) or less.

**R301.2.1.3 Wind speed conversion.** Where referenced documents are based on nominal design wind speeds and do not provide the means for conversion between ultimate design wind speeds and nominal design wind speeds, the ultimate design wind speeds,  $V_{ult}$ , of Figure R301.2(5)A, shall be converted to nominal design wind speeds,  $V_{asd}$ , using Table R301.2.1.3.

**R301.2.5 Atmospheric corrosion.** All the environment of Puerto Rico is extremely corrosive to exposed materials. Corrosion-resistant materials or protection shall be provided for all structural members, connections, fasteners, metal straps, and anchoring mechanism.

**Table R301.2(2)**  
**COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF**  
**HEIGHT OF 30FEET LOCATED IN EXPOSURE B (ASD) (psf) <sup>a, b, d, e</sup>**

	Zone	Effective Wind Area	150		155		160		165		170	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
Roof 0 to 7 degrees	1	10	9.9	-38.7	10.5	-41.3	11.2	-44.0	12.0	-46.8	12.7	-49.7
	1	20	9.3	-36.1	9.9	-38.5	10.5	-41.1	11.2	-43.7	11.9	-46.4
	1	50	8.4	-32.6	9.0	-34.9	9.6	-37.1	10.2	-39.5	10.8	-41.9
	1	100	7.8	-30.0	8.4	-32.1	8.9	-34.2	9.5	-36.4	10.0	-38.6
	2	10	9.9	-51.0	10.5	-54.5	11.2	-58.1	12.0	-61.8	12.7	-65.6
	2	20	9.3	-47.8	9.9	-51.0	10.5	-54.3	11.2	-57.8	11.9	-61.4
	2	50	8.4	-43.4	9.0	-46.3	9.6	-49.4	10.2	-52.5	10.8	-55.8
	2	100	7.8	-40.1	8.4	-42.9	8.9	-45.7	9.5	-48.6	10.0	-51.5
	3	10	9.9	-69.6	10.5	-74.3	11.2	-79.1	12.0	-84.2	12.7	-89.4
	3	20	9.3	-62.9	9.9	-67.2	10.5	-71.6	11.2	-76.1	11.9	-80.8
	3	50	8.4	-54.0	9.0	-57.7	9.6	-61.4	10.2	-65.3	10.8	-69.4
	3	100	7.8	-47.3	8.4	-50.5	8.9	-53.9	9.5	-57.3	10.0	-60.8
Roof >7 to 20 degrees	1, 2e	10	15.0	-44.9	16.0	-47.9	17.1	-51.0	18.2	-54.3	19.3	-57.6
	1, 2e	20	13.5	-44.9	14.4	-47.9	15.3	-51.0	16.3	-54.3	17.3	-57.6
	1, 2e	50	11.4	-27.4	12.2	-29.2	13.0	-31.1	13.8	-33.1	14.7	-35.2
	1, 2e	100	9.9	-14.0	10.5	-14.9	11.2	-15.9	12.0	-16.9	12.7	-18.0
	2n,2r,3e	10	15.0	-65.4	16.0	-69.9	17.1	-74.5	18.2	-79.2	19.3	-84.1
	2n,2r,3e	20	13.5	-56.5	14.4	-60.3	15.3	-64.3	16.3	-68.4	17.3	-72.6
	2n,2r,3e	50	11.4	-44.6	12.2	-47.6	13.0	-50.7	13.8	-53.9	14.7	-57.2
	2n,2r,3e	100	9.9	-35.6	10.5	-38.0	11.2	-40.5	12.0	-43.1	12.7	-45.7
	3r	10	15.0	-77.8	16.0	-83.1	17.1	-88.5	18.2	-94.1	19.3	-99.9
	3r	20	13.5	-66.7	14.4	-71.2	15.3	-75.9	16.3	-80.7	17.3	-85.6
	3r	50	11.4	-51.9	12.2	-55.4	13.0	-59.0	13.8	-62.8	14.7	-66.6
	3r	100	9.9	-40.8	10.5	-43.5	11.2	-46.4	12.0	-49.3	12.7	-52.3
Roof >20 to 27 degrees	1, 2e	10	15.0	-34.6	16.0	-36.9	17.1	-39.3	18.2	-41.8	19.3	-44.4
	1, 2e	20	13.5	-34.6	14.4	-36.9	15.3	-39.3	16.3	-41.8	17.3	-44.4
	1, 2e	50	11.4	-29.4	12.2	-31.4	13.0	-33.5	13.8	-35.6	14.7	-37.8
	1, 2e	100	9.9	-25.3	10.5	-27.0	11.2	-28.8	12.0	-30.6	12.7	-32.5
	2n,2r,3e	10	15.0	-55.2	16.0	-58.9	17.1	-62.8	18.2	-66.7	19.3	-70.8
	2n,2r,3e	20	13.5	-48.4	14.4	-51.6	15.3	-55.0	16.3	-58.5	17.3	-62.1
	2n,2r,3e	50	11.4	-39.3	12.2	-42.0	13.0	-44.7	13.8	-47.6	14.7	-50.5
	2n,2r,3e	100	9.9	-32.5	10.5	-34.7	11.2	-37.0	12.0	-39.3	12.7	-41.8
	3r	10	15.0	-60.3	16.0	-64.4	17.1	-68.6	18.2	-73.0	19.3	-77.5
	3r	20	13.5	-52.1	14.4	-55.6	15.3	-59.2	16.3	-63.0	17.3	-66.9
	3r	50	11.4	-40.8	12.2	-43.5	13.0	-46.4	13.8	-49.3	14.7	-52.3
	3r	100	9.9	-40.8	10.5	-43.5	11.2	-46.4	12.0	-49.3	12.7	-52.3

	Zone	Effective Wind Area	150		155		160		165		170	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
Roof >27 to 45 degrees	1,2e,2r	10	22.2	-40.8	23.7	-43.5	25.3	-46.4	26.9	-49.3	28.5	-52.3
	1,2e,2r	20	19.8	-34.6	21.1	-36.9	22.5	-39.3	23.9	-41.8	25.4	-44.4
	1,2e,2r	50	16.5	-26.3	17.6	-28.1	18.7	-30.0	19.9	-31.9	21.1	-33.8
	1,2e,2r	100	14.0	-20.2	14.9	-21.5	15.9	-22.9	16.9	-24.4	18.0	-25.9
	2n, 3r	10	22.2	-44.9	23.7	-47.9	25.3	-51.0	26.9	-54.3	28.5	-57.6
	2n, 3r	20	19.8	-40.1	21.1	-42.8	22.5	-45.6	23.9	-48.5	25.4	-51.5
	2n, 3r	50	16.5	-33.8	17.6	-36.1	18.7	-38.4	19.9	-40.9	21.1	-43.4
	2n, 3r	100	14.0	-29.0	14.9	-31.0	15.9	-33.0	16.9	-35.1	18.0	-37.3
	3e	10	22.2	-55.2	23.7	-58.9	25.3	-62.8	26.9	-66.7	28.5	-70.8
	3e	20	19.8	-49.0	21.1	-52.3	22.5	-55.7	23.9	-59.3	25.4	-62.9
	3e	50	16.5	-40.8	17.6	-43.5	18.7	-46.4	19.9	-49.3	21.1	-52.3
	3e	100	14.0	-34.6	14.9	-36.9	15.9	-39.3	16.9	-41.8	18.0	-44.4
Wall	4	10	24.3	-26.3	25.9	-28.1	27.6	-30.0	29.4	-31.9	31.2	-33.8
	4	20	23.2	-25.3	24.8	-27.0	26.4	-28.7	28.1	-30.6	29.8	-32.4
	4	50	21.7	-23.8	23.2	-25.4	24.7	-27.1	26.3	-28.8	27.9	-30.6
	4	100	20.6	-22.7	22.0	-24.2	23.5	-25.8	25.0	-27.5	26.5	-29.2
	4	500	18.1	-20.2	19.3	-21.5	20.6	-22.9	21.9	-24.4	23.3	-25.9
	5	10	24.3	-32.5	25.9	-34.7	27.6	-37.0	29.4	-39.3	31.2	-41.8
	5	20	23.2	-30.3	24.8	-32.4	26.4	-34.5	28.1	-36.7	29.8	-39.0
	5	50	21.7	-27.4	23.2	-29.3	24.7	-31.2	26.3	-33.2	27.9	-35.2
	5	100	20.6	-25.2	22.0	-26.9	23.5	-28.7	25.0	-30.5	26.5	-32.4
	5	500	18.1	-20.2	19.3	-21.5	20.6	-22.9	21.9	-24.4	23.3	-25.9

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not less than one-third the span

length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.

b. For effective areas between those given, the load shall be interpolated or the load associated with the lower effective area shall be used.

c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).

d. See Figure R301.2(8) for location of zones.

e. Plus and minus signs signify pressures acting toward and away from the building surfaces.



**Table R301.2(2) (Continued)**  
**COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF**  
**HEIGHT OF 30FEET LOCATED IN EXPOSURE B (ASD) (psf) <sup>a, b, d, e</sup>**

	Zone	Effective Wind Area	175		180		185		190		195	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
Roof 0 to 7 degrees	1	10	13.4	-52.7	14.2	-55.7	15.0	-58.9	15.8	-62.1	16.7	-65.4
	1	20	12.6	-49.1	13.3	-52.0	14.1	-54.9	14.9	-57.9	15.7	-61.0
	1	50	11.5	-44.4	12.2	-47.0	12.8	-49.7	13.5	-52.4	14.3	-55.2
	1	100	10.6	-40.9	11.3	-43.3	11.9	-45.7	12.5	-48.2	13.2	-50.8
	2	10	13.4	-69.5	14.2	-73.5	15.0	-77.6	15.8	-81.9	16.7	-86.3
	2	20	12.6	-65.0	13.3	-68.8	14.1	-72.7	14.9	-76.6	15.7	-80.7
	2	50	11.5	-59.1	12.2	-62.5	12.8	-66.0	13.5	-69.6	14.3	-73.4
	2	100	10.6	-54.6	11.3	-57.8	11.9	-61.0	12.5	-64.4	13.2	-67.8
	3	10	13.4	-94.7	14.2	-100.2	15.0	-105.8	15.8	-111.6	16.7	-117.6
	3	20	12.6	-85.6	13.3	-90.6	14.1	-95.7	14.9	-100.9	15.7	-106.3
	3	50	11.5	-73.5	12.2	-77.8	12.8	-82.1	13.5	-86.6	14.3	-91.3
	3	100	10.6	-64.4	11.3	-68.2	11.9	-72.0	12.5	-75.9	13.2	-80.0
Roof >7 to 20 degrees	1, 2e	10	20.4	-61.1	21.6	-64.6	22.9	-68.2	24.1	-72.0	25.4	-75.8
	1, 2e	20	18.3	-61.1	19.4	-64.6	20.5	-68.2	21.6	-72.0	22.8	-75.8
	1, 2e	50	15.5	-37.3	16.4	-39.4	17.4	-41.6	18.3	-43.9	19.3	-46.3
	1, 2e	100	13.4	-19.0	14.2	-20.2	15.0	-21.3	15.8	-22.5	16.7	-23.7
	2n,2r,3e	10	20.4	-89.1	21.6	-94.2	22.9	-99.6	24.1	-105.0	25.4	-110.6
	2n,2r,3e	20	18.3	-76.9	19.4	-81.4	20.5	-85.9	21.6	-90.6	22.8	-95.5
	2n,2r,3e	50	15.5	-60.6	16.4	-64.2	17.4	-67.8	18.3	-71.5	19.3	-75.3
	2n,2r,3e	100	13.4	-48.5	14.2	-51.3	15.0	-54.2	15.8	-57.1	16.7	-60.2
	3r	10	20.4	-105.9	21.6	-112.0	22.9	-118.3	24.1	-124.8	25.4	-131.5
	3r	20	18.3	-90.8	19.4	-96.0	20.5	-101.4	21.6	-107.0	22.8	-112.7
	3r	50	15.5	-70.6	16.4	-74.7	17.4	-78.9	18.3	-83.2	19.3	-87.6
	3r	100	13.4	-55.5	14.2	-58.7	15.0	-62.0	15.8	-65.4	16.7	-68.9
Roof >20 to 27 degrees	1, 2e	10	20.4	-47.1	21.6	-49.8	22.9	-52.6	24.1	-55.5	25.4	-58.4
	1, 2e	20	18.3	-47.1	19.4	-49.8	20.5	-52.6	21.6	-55.5	22.8	-58.4
	1, 2e	50	15.5	-40.1	16.4	-42.4	17.4	-44.8	18.3	-47.2	19.3	-49.7
	1, 2e	100	13.4	-34.5	14.2	-36.5	15.0	-38.5	15.8	-40.6	16.7	-42.8
	2n,2r,3e	10	20.4	-75.1	21.6	-79.4	22.9	-83.9	24.1	-88.5	25.4	-93.2
	2n,2r,3e	20	18.3	-65.8	19.4	-69.6	20.5	-73.6	21.6	-77.6	22.8	-81.7
	2n,2r,3e	50	15.5	-53.5	16.4	-56.6	17.4	-59.8	18.3	-63.1	19.3	-66.4
	2n,2r,3e	100	13.4	-44.3	14.2	-46.8	15.0	-49.5	15.8	-52.2	16.7	-55.0
	3r	10	20.4	-82.1	21.6	-86.8	22.9	-91.7	24.1	-96.8	25.4	-101.9
	3r	20	18.3	-70.9	19.4	-75.0	20.5	-79.2	21.6	-83.5	22.8	-88.0
	3r	50	15.5	-55.5	16.4	-58.7	17.4	-62.0	18.3	-65.4	19.3	-68.9
	3r	100	13.4	-55.5	14.2	-58.7	15.0	-62.0	15.8	-65.4	16.7	-68.9
Roof	1,2e,2r	10	30.3	-55.5	32.0	-58.7	33.8	-62.0	35.7	-65.4	37.6	-68.9

	Zone	Effective Wind Area	175		180		185		190		195	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
	1,2e,2r	20	26.9	-47.1	28.5	-49.8	30.1	-52.6	31.7	-55.5	33.4	-58.4
	1,2e,2r	50	22.4	-35.9	23.7	-37.9	25.0	-40.1	26.4	-42.3	27.8	-44.5
	1,2e,2r	100	19.0	-27.5	20.2	-29.0	21.3	-30.7	22.5	-32.4	23.7	-34.1
	2n, 3r	10	30.3	-61.1	32.0	-64.6	33.8	-68.2	35.7	-72.0	37.6	-75.8
	2n, 3r	20	26.9	-54.6	28.5	-57.8	30.1	-61.0	31.7	-64.4	33.4	-67.8
	2n, 3r	50	22.4	-46.0	23.7	-48.6	25.0	-51.4	26.4	-54.2	27.8	-57.1
	2n, 3r	100	19.0	-39.5	20.2	-41.8	21.3	-44.1	22.5	-46.6	23.7	-49.0
	3e	10	30.3	-75.1	32.0	-79.4	33.8	-83.9	35.7	-88.5	37.6	-93.2
	3e	20	26.9	-66.7	28.5	-70.5	30.1	-74.5	31.7	-78.6	33.4	-82.8
	3e	50	22.4	-55.5	23.7	-58.7	25.0	-62.0	26.4	-65.4	27.8	-68.9
	3e	100	19.0	-47.1	20.2	-49.8	21.3	-52.6	22.5	-55.5	23.7	-58.4
Wall	4	10	33.1	-35.9	35.0	-37.9	36.9	-40.1	39.0	-42.3	41.0	-44.5
	4	20	31.6	-34.4	33.4	-36.4	35.3	-38.4	37.2	-40.5	39.2	-42.7
	4	50	29.6	-32.4	31.3	-34.3	33.1	-36.2	34.9	-38.2	36.7	-40.2
	4	100	28.1	-30.9	29.7	-32.7	31.4	-34.5	33.1	-36.4	34.9	-38.4
	4	500	24.7	-27.5	26.1	-29.0	27.5	-30.7	29.1	-32.4	30.6	-34.1
	5	10	33.1	-44.3	35.0	-46.8	36.9	-49.5	39.0	-52.2	41.0	-55.0
	5	20	31.6	-41.3	33.4	-43.7	35.3	-46.1	37.2	-48.7	39.2	-51.3
	5	50	29.6	-37.3	31.3	-39.5	33.1	-41.7	34.9	-44.0	36.7	-46.3
	5	100	28.1	-34.3	29.7	-36.3	31.4	-38.4	33.1	-40.5	34.9	-42.6
	5	500	24.7	-27.5	26.1	-29.0	27.5	-30.7	29.1	-32.4	30.6	-34.1

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not less than one-third the span

length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.

b. For effective areas between those given, the load shall be interpolated or the load associated with the lower effective area shall be used.

c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).

d. See Figure R301.2(8) for location of zones.

e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

**Table R301.2(2) (Continued)**  
**COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF**  
**HEIGHT OF 30FEET LOCATED IN EXPOSURE B (ASD) (psf) <sup>a, b, d, e</sup>**

	Zone	Effective Wind Area	150		155		160		165		170	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
Roof 7 to 20 degrees	1	10	18.1	-40.8	19.3	-43.5	20.6	-46.4	21.9	-49.3	23.3	-52.3
	1	20	15.6	-40.8	16.7	-43.5	17.8	-46.4	18.9	-49.3	20.1	-52.3
	1	50	12.3	-31.5	13.2	-33.6	14.0	-35.8	14.9	-38.1	15.9	-40.4
	1	100	9.9	-24.3	10.5	-25.9	11.2	-27.6	12.0	-29.4	12.7	-31.2
	2r	10	18.1	-53.1	19.3	-56.7	20.6	-60.4	21.9	-64.2	23.3	-68.2
	2r	20	15.6	-47.9	16.7	-51.1	17.8	-54.4	18.9	-57.9	20.1	-61.5
	2r	50	12.3	-40.9	13.2	-43.6	14.0	-46.5	14.9	-49.4	15.9	-52.5
	2r	100	9.9	-35.6	10.5	-38.0	11.2	-40.5	12.0	-43.1	12.7	-45.7
	2e, 3	10	18.1	-57.2	19.3	-61.1	20.6	-65.1	21.9	-69.2	23.3	-73.5
	2e, 3	20	15.6	-51.5	16.7	-55.0	17.8	-58.6	18.9	-62.3	20.1	-66.1
	2e, 3	50	12.3	-43.8	13.2	-46.8	14.0	-49.9	14.9	-53.0	15.9	-56.3
	2e, 3	100	9.9	-38.1	10.5	-40.7	11.2	-43.3	12.0	-46.1	12.7	-48.9
Roof >20 to 27 degrees	1	10	18.1	-32.5	19.3	-34.7	20.6	-37.0	21.9	-39.3	23.3	-41.8
	1	20	15.6	-28.8	16.7	-30.8	17.8	-32.8	18.9	-34.9	20.1	-37.0
	1	50	12.3	-23.9	13.2	-25.5	14.0	-27.2	14.9	-28.9	15.9	-30.7
	1	100	9.9	-20.2	10.5	-21.5	11.2	-22.9	12.0	-24.4	12.7	-25.9
	2e,2r,3	10	18.1	-44.9	19.3	-47.9	20.6	-51.0	21.9	-54.3	23.3	-57.6
	2e,2r,3	20	15.6	-40.1	16.7	-42.8	17.8	-45.6	18.9	-48.5	20.1	-51.5
	2e,2r,3	50	12.3	-33.8	13.2	-36.1	14.0	-38.4	14.9	-40.9	15.9	-43.4
	2e,2r,3	100	9.9	-29.0	10.5	-31.0	11.2	-33.0	12.0	-35.1	12.7	-37.3
Roof >27 to 45 degrees	1	10	17.3	-34.6	18.5	-36.9	19.7	-39.3	20.9	-41.8	22.2	-44.4
	1	20	15.1	-30.7	16.1	-32.8	17.1	-34.9	18.2	-37.1	19.4	-39.4
	1	50	12.1	-25.5	12.9	-27.2	13.8	-29.0	14.6	-30.9	15.5	-32.8
	1	100	9.9	-21.6	10.5	-23.1	11.2	-24.6	12.0	-26.1	12.7	-27.8
	2e	10	17.3	-41.2	18.5	-44.0	19.7	-46.8	20.9	-49.8	22.2	-52.9
	2e	20	15.1	-32.5	16.1	-34.7	17.1	-37.0	18.2	-39.3	19.4	-41.8
	2e	50	12.1	-20.2	12.9	-21.5	13.8	-22.9	14.6	-24.4	15.5	-25.9
	2e	100	9.9	-20.2	10.5	-21.5	11.2	-22.9	12.0	-24.4	12.7	-25.9
	2r	10	17.3	-52.1	18.5	-55.6	19.7	-59.2	20.9	-63.0	22.2	-66.9
	2r	20	15.1	-43.7	16.1	-46.7	17.1	-49.8	18.2	-52.9	19.4	-56.2
	2r	50	12.1	-32.6	12.9	-34.8	13.8	-37.1	14.6	-39.5	15.5	-41.9
	2r	100	9.9	-24.3	10.5	-25.9	11.2	-27.6	12.0	-29.4	12.7	-31.2
	3	10	17.3	-55.6	18.5	-59.3	19.7	-63.2	20.9	-67.2	22.2	-71.4
	3	20	15.1	-41.8	16.1	-44.6	17.1	-47.5	18.2	-50.6	19.4	-53.7
	3	50	12.1	-24.3	12.9	-25.9	13.8	-27.6	14.6	-29.4	15.5	-31.2
	3	100	9.9	-24.3	10.5	-25.9	11.2	-27.6	12.0	-29.4	12.7	-31.2
Wal —	4	10	24.3	-26.3	25.9	-28.1	27.6	-30.0	29.4	-31.9	31.2	-33.8

Zone	Effective Wind Area	150		155		160		165		170	
		Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
4	20	23.2	-25.2	24.7	-26.9	26.4	-28.7	28.0	-30.5	29.8	-32.4
4	50	21.8	-23.8	23.2	-25.4	24.8	-27.1	26.3	-28.8	27.9	-30.6
4	100	20.6	-22.7	22.0	-24.2	23.5	-25.8	25.0	-27.5	26.5	-29.2
4	500	18.1	-20.2	19.3	-21.5	20.6	-22.9	21.9	-24.4	23.3	-25.9
5	10	24.3	-32.5	25.9	-34.7	27.6	-37.0	29.4	-39.3	31.2	-41.8
5	20	23.2	-30.3	24.7	-32.3	26.4	-34.5	28.0	-36.7	29.8	-38.9
5	50	21.8	-27.5	23.2	-29.3	24.8	-31.2	26.3	-33.2	27.9	-35.3
5	100	20.6	-25.2	22.0	-26.9	23.5	-28.7	25.0	-30.5	26.5	-32.4
5	500	18.1	-20.2	19.3	-21.5	20.6	-22.9	21.9	-24.4	23.3	-25.9

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

- a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.
- b. For effective areas between those given, the load shall be interpolated or the load associated with the lower effective area shall be used.
- c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).
- d. See Figure R301.2(8) for location of zones.
- e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

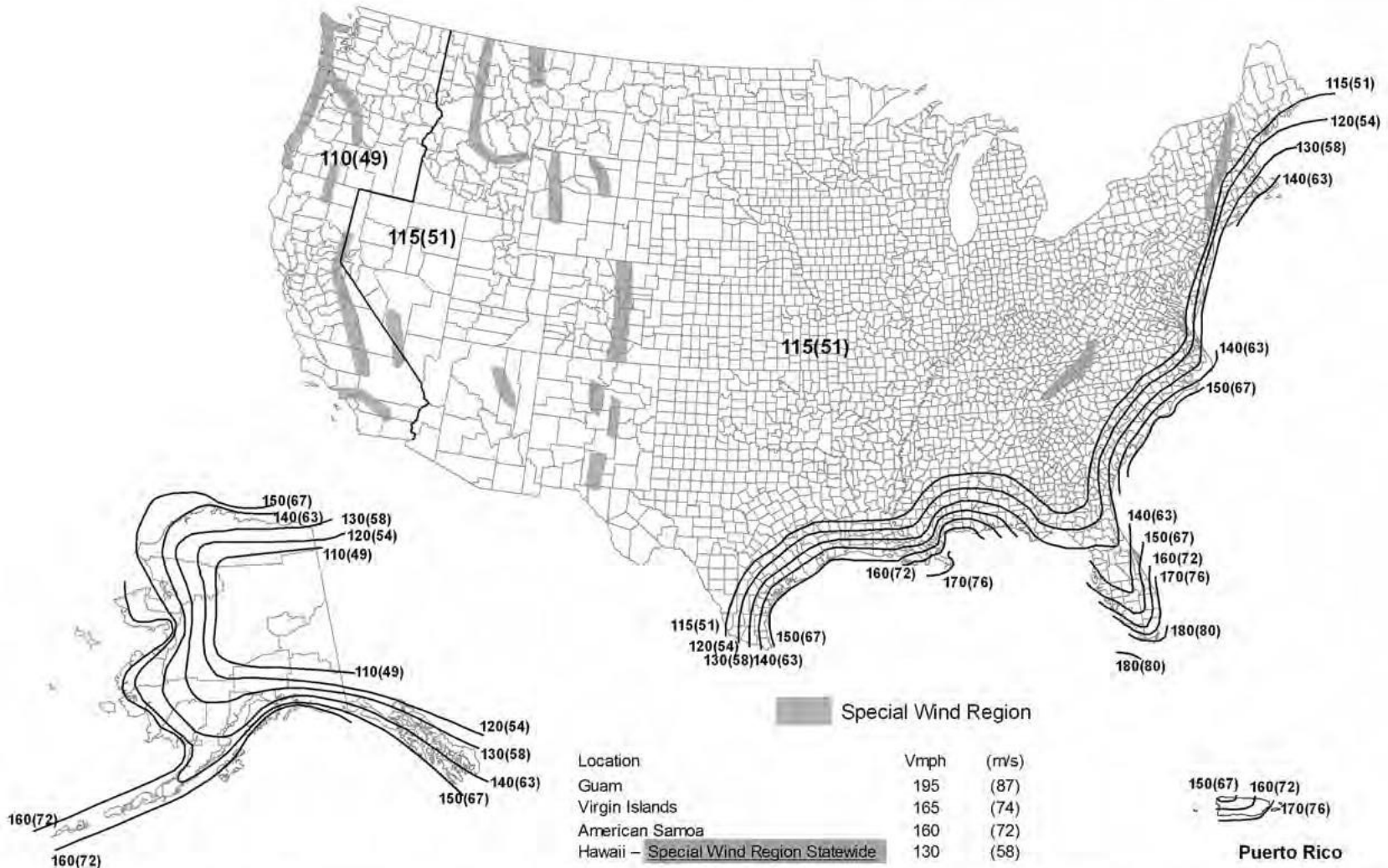
**Table R301.2(2) (Continued)**  
**COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF**  
**HEIGHT OF 30FEET LOCATED IN EXPOSURE B (ASD) (psf) <sup>a, b, d, e</sup>**

	Zone	Effective Wind Area	175		180		185		190		195	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
Roof 7 to 20 degrees	1	10	24.7	-55.5	26.1	-58.7	27.5	-62.0	29.1	-65.4	30.6	-68.9
	1	20	21.3	-55.5	22.5	-58.7	23.8	-62.0	25.1	-65.4	26.4	-68.9
	1	50	16.8	-42.9	17.8	-45.3	18.8	-47.9	19.8	-50.5	20.9	-53.2
	1	100	13.4	-33.1	14.2	-35.0	15.0	-36.9	15.8	-39.0	16.7	-41.0
	2r	10	24.7	-72.3	26.1	-76.5	27.5	-80.8	29.1	-85.2	30.6	-89.7
	2r	20	21.3	-65.1	22.5	-68.9	23.8	-72.8	25.1	-76.8	26.4	-80.9
	2r	50	16.8	-55.6	17.8	-58.8	18.8	-62.1	19.8	-65.5	20.9	-69.0
	2r	100	13.4	-48.5	14.2	-51.3	15.0	-54.2	15.8	-57.1	16.7	-60.2
	2e, 3	10	24.7	-77.9	26.1	-82.4	27.5	-87.0	29.1	-91.8	30.6	-96.7
	2e, 3	20	21.3	-70.1	22.5	-74.1	23.8	-78.3	25.1	-82.6	26.4	-87.0
	2e, 3	50	16.8	-59.6	17.8	-63.1	18.8	-66.6	19.8	-70.3	20.9	-74.1
	2e, 3	100	13.4	-51.8	14.2	-54.8	15.0	-57.9	15.8	-61.1	16.7	-64.3
Roof >20 to 27 degrees	1	10	24.7	-44.3	26.1	-46.8	27.5	-49.5	29.1	-52.2	30.6	-55.0
	1	20	21.3	-39.2	22.5	-41.5	23.8	-43.8	25.1	-46.2	26.4	-48.7
	1	50	16.8	-32.5	17.8	-34.4	18.8	-36.3	19.8	-38.3	20.9	-40.3
	1	100	13.4	-27.5	14.2	-29.0	15.0	-30.7	15.8	-32.4	16.7	-34.1
	2e,2r,3	10	24.7	-61.1	26.1	-64.6	27.5	-68.2	29.1	-72.0	30.6	-75.8
	2e,2r,3	20	21.3	-54.6	22.5	-57.8	23.8	-61.0	25.1	-64.4	26.4	-67.8
	2e,2r,3	50	16.8	-46.0	17.8	-48.6	18.8	-51.4	19.8	-54.2	20.9	-57.1
	2e,2r,3	100	13.4	-39.5	14.2	-41.8	15.0	-44.1	15.8	-46.6	16.7	-49.0
Roof >27 to 45 degrees	1	10	23.5	-47.1	24.9	-49.8	26.3	-52.6	27.7	-55.5	29.2	-58.4
	1	20	20.5	-41.8	21.7	-44.2	22.9	-46.7	24.2	-49.2	25.5	-51.9
	1	50	16.5	-34.7	17.4	-36.7	18.4	-38.8	19.4	-40.9	20.5	-43.1
	1	100	13.4	-29.4	14.2	-31.1	15.0	-32.9	15.8	-34.7	16.7	-36.5
	2e	10	23.5	-56.0	24.9	-59.3	26.3	-62.6	27.7	-66.0	29.2	-69.6
	2e	20	20.5	-44.3	21.7	-46.8	22.9	-49.5	24.2	-52.2	25.5	-55.0
	2e	50	16.5	-27.5	17.4	-29.0	18.4	-30.7	19.4	-32.4	20.5	-34.1
	2e	100	13.4	-27.5	14.2	-29.0	15.0	-30.7	15.8	-32.4	16.7	-34.1
	2r	10	23.5	-70.9	24.9	-75.0	26.3	-79.2	27.7	-83.5	29.2	-88.0
	2r	20	20.5	-59.5	21.7	-63.0	22.9	-66.5	24.2	-70.2	25.5	-73.9
	2r	50	16.5	-44.4	17.4	-47.0	18.4	-49.6	19.4	-52.3	20.5	-55.1
	2r	100	13.4	-33.1	14.2	-35.0	15.0	-36.9	15.8	-39.0	16.7	-41.0
	3	10	23.5	-75.6	24.9	-80.0	26.3	-84.5	27.7	-89.2	29.2	-93.9
	3	20	20.5	-56.9	21.7	-60.2	22.9	-63.6	24.2	-67.0	25.5	-70.6
	3	50	16.5	-33.1	17.4	-35.0	18.4	-36.9	19.4	-39.0	20.5	-41.0
	3	100	13.4	-33.1	14.2	-35.0	15.0	-36.9	15.8	-39.0	16.7	-41.0
Wal —	4	10	33.1	-35.9	35.0	-37.9	36.9	-40.1	39.0	-42.3	41.0	-44.5

Zone	Effective Wind Area	175		180		185		190		195	
		Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
4	20	31.5	-34.3	33.4	-36.3	35.3	-38.4	37.2	-40.5	39.2	-42.6
4	50	29.6	-32.4	31.3	-34.3	33.1	-36.2	34.9	-38.2	36.8	-40.2
4	100	28.1	-30.9	29.7	-32.7	31.4	-34.5	33.1	-36.4	34.9	-38.4
4	500	24.7	-27.5	26.1	-29.0	27.5	-30.7	29.1	-32.4	30.6	-34.1
5	10	33.1	-44.3	35.0	-46.8	36.9	-49.5	39.0	-52.2	41.0	-55.0
5	20	31.5	-41.2	33.4	-43.6	35.3	-46.1	37.2	-48.6	39.2	-51.2
5	50	29.6	-37.4	31.3	-39.5	33.1	-41.8	34.9	-44.0	36.8	-46.4
5	100	28.1	-34.3	29.7	-36.3	31.4	-38.4	33.1	-40.5	34.9	-42.6
5	500	24.7	-27.5	26.1	-29.0	27.5	-30.7	29.1	-32.4	30.6	-34.1

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

- a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.
- b. For effective areas between those given, the load shall be interpolated or the load associated with the lower effective area shall be used.
- c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).
- d. See Figure R301.2(8) for location of zones.
- e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

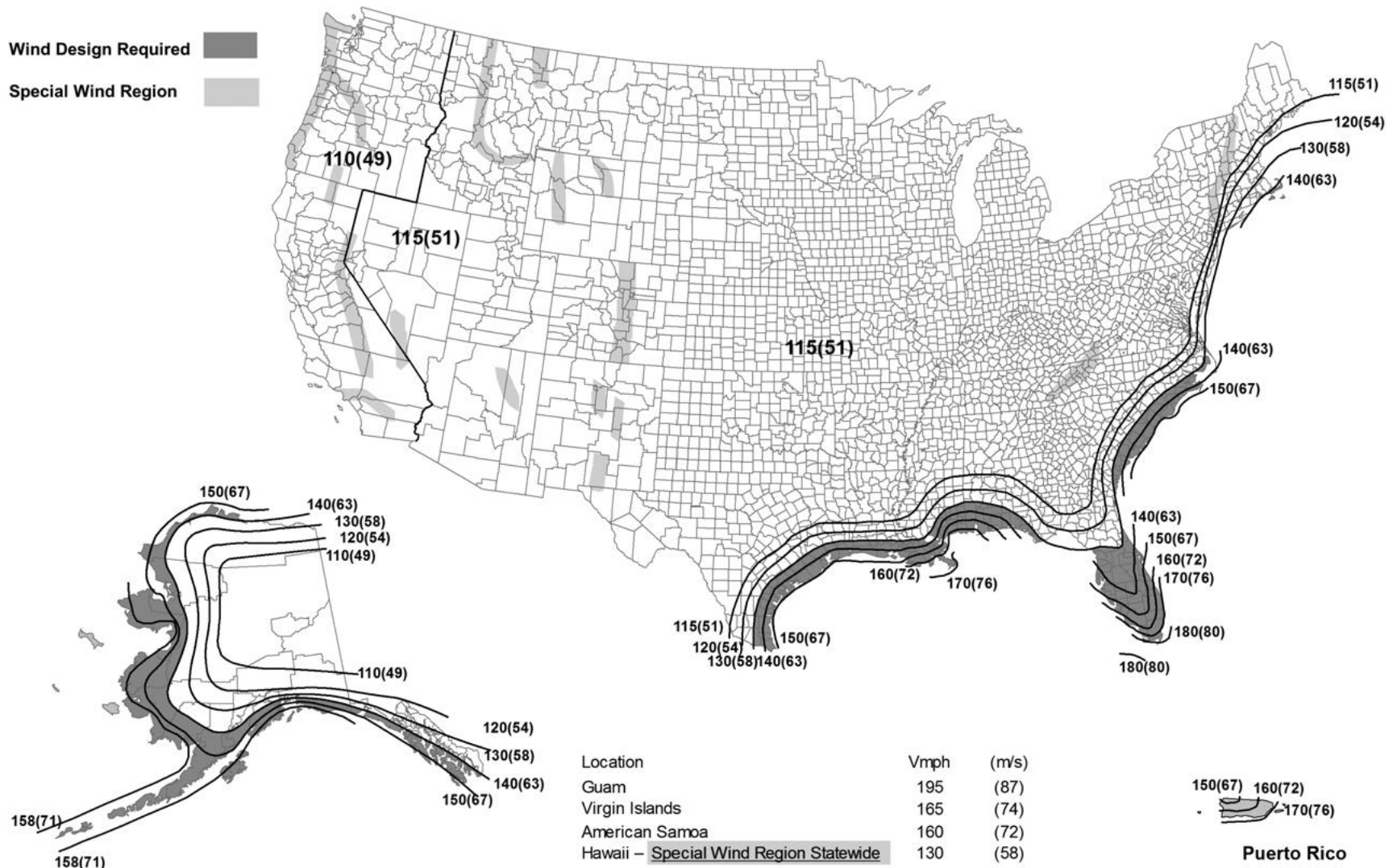


**Notes:**

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).

PUERTO RICO – Special Wind Region (lookup tool <http://hazards.actcouncil.org> or Appendix P PRBC 2018)

Wind Design Required   
 Special Wind Region 



**Notes:**

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).

PUERTO RICO – Special Wind Region (lookup tool <http://hazards.actcouncil.org> or Appendix P PRBC 2018)



## SECTION R313 - AUTOMATIC FIRE SPRINKLERS SYSTEM

**R313.1 Townhouse automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall not be installed in *townhouses*.

**Exception:**

1. Spaces with walls, ceilings, and floor with less than 1 hour fire rating.
2. Places where mixed occupancy would cause the fire load to increase.

**R313.1.1 Design and installation.** Automatic residential fire sprinkler systems for *townhouses* shall be designed and installed in accordance with Section P2904 or NFPA 13D.

**R313.2 One- and two-family dwellings automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall not be installed in one- and two-family *dwellings*.

**Exception:**

1. Spaces with walls, ceilings, and floor with less than 1 hour fire rating.
2. Places where mixed occupancy would cause the fire load to increase.

**R313.2.1 Design and installation.** Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.

## SECTION R324 - SOLAR ENERGY SYSTEMS

**R324.3 Photovoltaic systems.** Photovoltaic systems shall be designed and installed in accordance with Sections R324.3.1 through R324.7.1, NFPA 70, the *Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta* (Regulation 8915) and the manufacturer's installation instructions.

**R324.3.1 Equipment listings.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703. Inverters shall be *listed* and *labeled* in accordance with UL 1741. Systems connected to the utility grid shall use inverters *listed* for utility interaction. Photovoltaic panels, modules and inverters shall be approved and certified by the *authority having jurisdiction in Puerto Rico*).

## SECTION R327 - STATIONARY STORAGE BATTERY SYSTEMS

**R327.4 Electrical installation.** *Stationary storage battery systems* shall be installed in accordance with NFPA 70. Inverters shall be *listed* and *labeled* in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters listed for utility interaction with the *Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta*

(Regulation 8915). Stationary storage batteries, charge controllers and inverters shall be approved and certified by the *authority having jurisdiction in Puerto Rico*.

## **CHAPTER 4 – FOUNDATIONS**

No amendments.

## **CHAPTER 5 – FLOORS**

No amendments.

## **CHAPTER 6 – WALL CONSTRUCTION**

No amendments.

## **CHAPTER 7 – WALL COVERING**

No amendments.

## **CHAPTER 8 – ROOF-CEILING CONSTRUCTION**

No amendments.

## **CHAPTER 9 – ROOF ASSEMBLIES**

No amendments.

## **CHAPTER 10 – CHIMNEYS AND FIREPLACES**

No amendments.

## **CHAPTER 11 – ENERGY EFFICIENCY**

No amendments.

## **CHAPTER 12 – MECHANICAL ADMINISTRATION**

No amendments.

## **CHAPTER 13 – GENERAL MECHANICAL SYSTEM REQUIREMENTS**

No amendments.

## **CHAPTER 14 – HEATING AND COOLING EQUIPMENT AND APPLIANCES**

No amendments.

## **CHAPTER 15 – EXHAUST SYSTEMS**

No amendments.

## **CHAPTER 16 – DUCT SYSTEMS**

No amendments.

## **CHAPTER 17 – COMBUSTION AIR**

No amendments.

## **CHAPTER 18 – CHIMNEYS AND VENTS**

No amendments.

## **CHAPTER 19 – SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS**

No amendments.

## **CHAPTER 20 – BOILERS AND WATER HEATERS**

No amendments.

## **CHAPTER 21 – HYDRONIC PIPING**

No amendments.

## **CHAPTER 22 – SPECIAL PIPING AND STORAGE SYSTEMS**

No amendments.

## **CHAPTER 23 – SOLAR THERMAL ENERGY SYSTEMS**

No amendments.

## **CHAPTER 24 – FUEL GAS**

No amendments.

## **CHAPTER 25 – PLUMBING ADMINISTRATION**

No amendments.

## **CHAPTER 26 – GENERAL PLUMBING REQUIREMENTS**

No amendments.

## **CHAPTER 27 – PLUMBING FIXTURES**

No amendments.

## **CHAPTER 28 – WATER HEATERS**

No amendments.

## **CHAPTER 29 – WATER SUPPLY AND DISTRIBUTION**

No amendments.

## **CHAPTER 30 – SANITARY DRAINAGE**

No amendments.

## **CHAPTER 31 – VENTS**

No amendments.

## **CHAPTER 32 – TRAPS**

No amendments.

## **CHAPTER 33 – STORM DRAINAGE**

No amendments.

## **CHAPTER 34 – GENERAL REQUIREMENTS**

### **SECTION E3401 – GENERAL**

**E3401.1 Applicability.** The provisions of Chapters 34 through 43 shall establish the general scope of the electrical system and equipment requirements of this code. Chapters 34 through 43 cover those wiring methods and materials most commonly encountered in the construction of one- and two- family dwellings and structures regulated by this code. Other wiring methods, materials and subject matter covered in NFPA 70 are also allowed by this code. The wiring methods and materials shall also comply with the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**E3401.2 Scope.** Chapters 34 through 43 shall cover the installation of electrical systems, equipment and components indoors and outdoors that are within the scope of this code, including services, power distribution systems, fixtures, appliances, devices and appurtenances. Services within the scope of this code shall be limited to 120/240-volt, 0- to 400-ampere, single-phase systems. These chapters specifically cover the equipment, fixtures, appliances, wiring methods and materials that are most commonly used in the construction or alteration of one- and two-family dwellings and accessory structures regulated by this code. The omission from these chapters of any material or method of construction provided for in the referenced standard NFPA 70 shall not be construed as prohibiting the use of such material or method of construction. Electrical systems, equipment or components not specifically covered in these chapters shall comply with the applicable provisions of NFPA 70. Electrical systems, equipment and components shall also comply with the Puerto Rico Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

# SECTION E3404 - GENERAL EQUIPMENT REQUIREMENTS

TABLE E3404.4 (Table) 110.28

## ENCLOSURE SELECTION

PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIROMENTAL CONDITIONS	FOR OUTDOOR USE									
	Enclosure-type number									
	3	3R	3S	3X	3RX	3SX	4	4X	6	6P
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Windblown dust	X	----	X	X	----	X	X	X	X	X
Hosedown	----	----	----	----	----	----	X	X	X	X
Corrosive agents	----	----	----	X	X	X	----	X	----	X
Temporary submersion	----	----	----	----	----	----	----	----	X	X
Prolonged submersion	----	----	----	----	----	----	----	----	----	X
PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIROMENTAL CONDITIONS	FOR INDOOR USE									
	Enclosure-type number									
	1	2	4	4X	5	6	6P	12	12K	13
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Falling dirt	X	X	X	X	X	X	X	X	X	X
Falling liquids and light splashing	----	X	X	X	X	X	X	X	X	X
Circulating dust, lint, fibers and flyings	----	----	X	X	----	X	X	X	X	X
Settling airborne dust, lint, fibers and flyings	----	----	X	X	X	X	X	X	X	X
Hosedown and splashing water	----	----	X	X	----	X	X	----	----	----
Oil and coolant seepage	----	----	----	----	----	----	----	X	X	X
Oil and coolant spraying and splashing	----	----	----	----	----	----	----	----	----	X
Corrosive agents	----	----	----	X	----	----	X	----	----	----
Temporary submersion	----	----	----	----	----	X	X	----	----	----
Prolonged submersion	----	----	----	----	----	----	X	----	----	----

Note 1: The term rain tight is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 4, 4X, 6 and 6P. The term rain proof is typically used in conjunction with Enclosure Types 3R and 3RX. The term watertight is typically used in conjunction with Enclosure Types 4, 4X, 6 and 6P. The term driptight is typically used in conjunction with Enclosure Types 2, 5, 12, 12K and 13. The term dusttight is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 5, 12, 12K and 13.

Note 2: Ingress protection (IP) ratings are found in ANSI/NEMA 60529, Degrees of Protection Provided by Enclosures. IP ratings are not a substitute for enclosure-type ratings.

## **SECTION E3406 - ELECTRICAL CONDUCTORS AND CONNECTIONS**

**E3406.1 General.** This section provides general requirements for conductors, connections and splices. These requirements do not apply to conductors that form an integral part of equipment, such as motors, appliances and similar equipment, or to conductors specifically provided for elsewhere in Chapters 34 through 43. (310.1) Electrical conductors and connections shall also comply with the Puerto Rico Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **CHAPTER 35 – ELECTRICAL DEFINITIONS**

### **SECTION E350 - GENERAL**

**SERVICE-ENTRANCE CONDUCTORS, UNDERGROUND SYSTEM.** The service conductors between the terminals of the service equipment and the point of connection to the electric utility supply system.

**SERVICE LATERAL.** The underground service conductors between the electric utility supply street main, including any risers at a pole or other structure or from transformers, and the first point of connection to the service-entrance conductors in a terminal box or meter or other enclosure, inside or outside the building wall. Where there are no terminal box, meter or other enclosure with adequate space, the point of connection shall be the point of entrance of the service conductors into the building.

## **CHAPTER 36 – SERVICES**

### **SECTION E3601 - GENERAL SERVICES**

**E3601.1 Scope.** This chapter covers service conductors and equipment for the control and protection of services and their installation requirements. (230.1) The provisions covered by this chapter shall also comply with the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **CHAPTER 37 – BRANCH CIRCUIT AND FEEDER REQUIREMENTS**

No amendments.

## **CHAPTER 38 – WIRING METHODS**

### **SECTION E3801 - GENERAL REQUIREMENTS**

**E3801.1 Scope.** This chapter covers the wiring methods for services, feeders and branch circuits for electrical power and distribution. (300.1) The wiring methods and materials shall also comply with the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

### **SECTION E3804 - TELECOMMUNICATIONS**

**E3804.1 Scope.** The provisions of this chapter and the Telecommunications Industry Association (TIA) Common Standards and Premise Standards shall govern the design and construction of the telecommunication infrastructure, and the installation of components, appliances, equipment and systems used in buildings and structures covered by this code.

**E3804.2 Design.** TIA-570 shall govern the design, construction and installation of the telecommunications components, appliances, equipment and systems used in buildings and structures covered by this code. The Puerto Rico Telecommunication Regulatory Board may, by way of Technical Bulletins and or Regulations amend or clarify the Telecommunications Industry Association (TIA) adopted standards.

## **CHAPTER 39 – POWER AND LIGHTING DISTRIBUTION.**

No amendments.

## **CHAPTER 40 – DEVICES AND LUMINAIRES**

### **SECTION E4003 – LUMINAIRES**

**E4003.14 Environmental Luminaries.** Any luminary or sign on building with illumination shall be replaced with full-cutoff lamps and shall comply with the Reglamento para el Control y la Prevención de la Contaminación Lumínica issued by the Puerto Rico Environmental Quality Board.

## **CHAPTER 41 – APPLIANCE INSTALLATION**

No amendments.

## **CHAPTER 42 – SWIMMING POOLS**

No amendments.

## **CHAPTER 43 – CLASS 2 REMOTE-CONTROL, SIGNALING AND POWERLIMITED CIRCUITS**

No amendments.

## **CHAPTER 44 – REFERENCED STANDARDS**

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### **PREPA**

Puerto Rico Power Authority PO  
Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
E3401.1, E3401.2, E3406.1, E3601.1, E3801.1

8915-2017: Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
R324.3

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### **JCA**

Puerto Rico Environmental Quality Board  
Apartado 11488  
Santurce, PR 00910

8786-2016: Reglamento para el Control y la Prevención de la Contaminación Lumínica  
E4003.14

## **APPENDIX A – SIZING AND CAPACITIES OF GAS PIPING**

No amendments.

## **APPENDIX B – SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES, AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS**

No amendments.

## **APPENDIX C – EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS**

No amendments.

## **APPENDIX D – RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION**

No amendments.



## **APPENDIX E – MANUFACTURED HOUSING USED AS DWELLINGS**

No amendments.

## **APPENDIX F – RADON CONTROL METHODS**

No amendments.

## **APPENDIX G – PIPING STANDARDS FOR VARIOUS APPLICATIONS**

No amendments.

## **APPENDIX H – PATIO COVERS**

No amendments.

## **APPENDIX I – PRIVATE SEWAGE DISPOSAL**

No amendments.

## **APPENDIX J – EXISTING BUILDINGS AND STRUCTURES**

No amendments.

## **APPENDIX K – SOUND TRANSMISSION**

No amendments.

## **APPENDIX L – PERMIT FEES**

No amendments.

## **APPENDIX M – HOME DAY CARE—R-3 OCCUPANCY**

No amendments.

## **APPENDIX N – VENTING METHODS**

No amendments.

## **APPENDIX O – AUTOMATIC VEHICULAR GATES**

No amendments.

## **APPENDIX P – SIZING OF WATER PIPING SYSTEM**

No amendments.

## **APPENDIX Q – TINY HOUSES**

No amendments.

## **APPENDIX R – LIGHT STRAW-CLAY CONSTRUCTION**

No amendments.

## **APPENDIX S – STRAWBALE CONSTRUCTION**

No amendments.

## **APPENDIX T – SOLAR-READY PROVISIONS - DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES)**

No amendments.

2 0 1 8

PUERTO RICO CODES

# PRMC

Puerto Rico Mechanical Code





# **PUERTO RICO MECHANICAL CODE 2018**

## **As amended from INTERNATIONAL MECHANICAL CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## PART 1 SCOPE AND APPLICATION

### SECTION 101 - GENERAL

[A]101.1 **Title.** These regulations shall be known as the *Puerto Rico Mechanical*, hereinafter referred to as “this code.”

[A]101.2 **Scope.** This code shall regulate the design, installation, maintenance, *alteration* and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate those mechanical systems, system components, *equipment* and appliances specifically addressed herein. The installation of fuel gas distribution piping and *equipment*, fuel gas-fired appliances and fuel gas-fired *appliance* venting systems shall be regulated by the *Puerto Rico Fuel Gas Code*.

**Exception:** Detached one and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the *Puerto Rico Residential Code*.

[A]101.2.1 **Appendices.** Provisions in the appendices shall not apply unless specifically adopted.

[A]101.3 **Intent.** The purpose of this code is to establish minimum standards to provide a reasonable level of safety, health, property protection and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of mechanical systems.

[A]101.4 **Severability.** If a section, subsection, sentence, clause or phrase of this code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

### SECTION 102 - APPLICABILITY

[A]102.1 **General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

[A]102.2 **Existing installations.** Except as otherwise provided for in this chapter, a provision in this code shall not require the removal, *alteration* or abandonment of, nor prevent the continued utilization and maintenance of, a mechanical system lawfully in existence at the time of the adoption of this code.

[A]102.2.1 **Existing buildings.** Additions, alterations, renovations or repairs related to building or structural issues shall be regulated by the *Puerto Rico Existing Building Code*.

**[A]102.3 Maintenance.** Mechanical systems, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards that are required by this code shall be maintained in compliance with the edition of the code under which they were installed. The owner or the owner's authorized agent shall be responsible for maintenance of mechanical systems. To determine compliance with this provision, the code official shall have the authority to require a mechanical system to be reinspected.

The inspection for maintenance of HVAC systems shall be performed in accordance with ASHRAE/ACCA/ANSI Standard 180.

**[A]102.4 Additions, alterations or repairs.** Additions, alterations, renovations or repairs to a mechanical system shall conform to that required for a new mechanical system without requiring the existing mechanical system to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing mechanical system to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing mechanical systems shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is *approved*.

**[A]102.5 Change in occupancy.** It shall be unlawful to make a change in the *occupancy* of any structure that will subject the structure to any special provision of this code applicable to the new *occupancy* without approval. Change in the occupancy or a new occupancy, shall comply with the *Puerto Rico Building Code* and the *Joint Regulation*.

**[A]102.6 Historic buildings.** The provisions of this code relating to the construction, *alteration*, repair, enlargement, restoration, relocation or moving of buildings or structures shall not be mandatory for existing buildings or structures identified and classified by the state or local jurisdiction as historic buildings where such buildings or structures are judged by the code official to be safe and in the public interest of health, safety and welfare regarding any proposed construction, *alteration*, repair, enlargement, restoration, relocation or moving of buildings.

**[A]102.7 Moved buildings.** Except as determined by Section 102.2, mechanical systems that are a part of buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new installations.

**[A]102.8 Referenced codes and standards.** The codes and standards referenced herein shall be those that are listed in Chapter 15 and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.8.1 and 102.8.2.

**Exception:** Where enforcement of a code provision would violate the conditions of the listing of the *equipment* or *appliance*, the conditions of the listing and the manufacturer's installation instructions shall apply.



**[A]102.8.1 Conflicts.** Where conflicts occur between provisions of this code and the referenced standards, the provisions of this code shall apply.

**[A]102.8.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

**[A]102.9 Requirements not covered by this code.** Requirements necessary for the strength, stability or proper operation of an existing or proposed mechanical system, or for the public safety, health and general welfare, not specifically covered by this code, shall be determined by the code official.

**[A]102.10 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**[A]102.11 Application of references.** Reference to chapter section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

## **PART 2 - ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation* and the *Puerto Rico Building Code*.

### **SECTION 103 - ADMINISTRATIVE PROVISIONS**

**[A]103.1 General.** The administrative provisions of this Code will be those established by the *Puerto Rico Mechanical Code*, the *Puerto Rico Building Code*, the OGP, the *Puerto Rico Planning Board* and the Puerto Rico Department of Labor and Human Resources.

## **CHAPTER 2 – DEFINITIONS**

### **SECTION 201 - GENERAL**

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the Puerto Rico Building Code, Puerto Rico Fire Code, Puerto Rico Fuel Gas Code or the Puerto

Rico Plumbing Code, such terms shall have meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

## **SECTION 202 - GENERAL DEFINITIONS**

**ABRASIVE MATERIALS.** Moderately abrasive particulate in high concentrations, and highly abrasive particulate in moderate and high concentrations, such as alumina, bauxite, iron silicate, sand and slag.

**ABSORPTION SYSTEM.** A refrigerating system in which refrigerant is pressurized by pumping a chemical solution of refrigerant in absorbent, and then separated by the addition of heat in a generator, condensed (to reject heat), expanded, evaporated (to provide refrigeration), and reabsorbed in an absorber to repeat the cycle; the system can be single or multiple effect, the latter using multiple stages or internally cascaded use of heat to improve efficiency.

**ACCESS (TO).** That which enables a device, *appliance* or *equipment* to be reached by ready access or by a means that first requires the removal or movement of a panel or similar obstruction [see also “Ready access (to)”].

**AIR.** Air supplied to mechanical *equipment* and appliances for *combustion*, ventilation, cooling and similar purposes. Standard air is air at standard temperature and pressure, namely, 70°F (21°C) and 29.92 inches of mercury (101.3 kPa).

**AIR CONDITIONING.** The treatment of air so as to control simultaneously the temperature, humidity, cleanness and distribution of the air to meet the requirements of a conditioned space.

**AIR-CONDITIONING SYSTEM.** A system that consists of heat exchangers, blowers, filters, supply, exhaust and return ducts, and shall include any apparatus installed in connection therewith.

**AIR DISPERSION SYSTEM.** Any diffuser system designed to both convey air within a room, space or area and diffuse air into that space while operating under positive pressure. Systems are commonly constructed of, but not limited to, fabric or plastic film.

**AIR DISTRIBUTION SYSTEM.** Any system of ducts, plenums and air-handling *equipment* that circulates air within a space or spaces and includes systems made up of one or more air-handling units.

**AIR, EXHAUST.** Air being removed from any space, *appliance* or piece of *equipment* and conveyed directly to the atmosphere by means of openings or ducts.

**AIR-HANDLING UNIT.** A blower or fan used for the purpose of distributing supply air to a room, space or area.

**AIR, MAKEUP.** Any combination of outdoor and transfer air intended to replace exhaust air and exfiltration.

**AIR, OUTDOOR.** Ambient air that enters a building through a ventilation system, through intentional openings for natural ventilation, or by infiltration.

**AIR, TRANSFER.** Air moved from one indoor space to another.

**[A]ALTERATION.** A change in a mechanical system that involves an extension, addition or change to the arrangement, type or purpose of the original installation.

**APPLIANCE.** A device or apparatus that is manufactured and designed to utilize energy and for which this code provides specific requirements.

**APPLIANCE, EXISTING.** Any *appliance* regulated by this code that was legally installed prior to the effective date of this code, or for which a permit to install has been issued.

#### **APPLIANCE TYPE.**

**High-heat appliance.** Any *appliance* in which the products of *combustion* at the point of entrance to the flue under normal operating conditions have a temperature greater than 2,000°F (1093°C).

**Low-heat appliance (residential appliance).** Any *appliance* in which the products of *combustion* at the point of entrance to the flue under normal operating conditions have a temperature of 1,000°F (538°C) or less.

**Medium-heat appliance.** Any *appliance* in which the products of *combustion* at the point of entrance to the flue under normal operating conditions have a temperature of more than 1,000°F (538°C), but not greater than 2,000°F (1093°C).

**APPLIANCE, VENTED.** An *appliance* designed and installed in such a manner that all of the products of *combustion* are conveyed directly from the *appliance* to the outdoor atmosphere through an *approved chimney* or vent system.

**[A]APPROVED.** Acceptable to the code official.

**[A]APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification where such agency has been approved by the code official.

**AUTOMATIC BOILER.** Any class of boiler that is equipped with the controls and limit devices specified in Chapter 10.

**BATHROOM.** A room containing a bathtub, shower, spa or similar bathing fixture.

**BOILER.** A closed heating *appliance* intended to supply hot water or steam for space heating, processing or power purposes. Low-pressure boilers operate at pressures less than or equal to 15 pounds per square inch (psi) (103 kPa) for steam and 160 psi (1103 kPa) for water. High-pressure boilers operate at pressures exceeding those pressures.

**BOILER ROOM.** A room primarily utilized for the installation of a boiler.

**BRAZED JOINT.** A gas-tight joint obtained by the joining of metal parts with metallic mixtures or alloys that melt at a temperature above 1,000°F (538°C), but lower than the melting temperature of the parts to be joined.

**BRAZING.** A metal joining process wherein coalescence is produced by the use of a nonferrous filler metal having a melting point above 1,000°F (538°C), but lower than that of the base metal being joined. The filler material is distributed between the closely fitted surfaces of the joint by capillary attraction.

**BREATHING ZONE.** The region within an occupied space between planes 3 and 72 inches (76 and 1829 mm) above the floor and more than 2 feet (610 mm) from the walls of the space or from fixed air-conditioning *equipment*.

**BTU.** Abbreviation for British thermal unit, which is the quantity of heat required to raise the temperature of 1 pound (454 g) of water 1°F (0.56°C) (1 Btu = 1055 J).

**[A]BUILDING.** Any structure utilized or intended for supporting or sheltering any *occupancy*.

**[A]BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**[BF]CEILING RADIATION DAMPER.** A *listed* device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening.

**CHIMNEY.** A primarily vertical structure containing one or more flues, for the purpose of carrying gaseous products of *combustion* and air from a fuel-burning *appliance* to the outdoor atmosphere.

**Factory-built chimney.** A *listed* and *labeled chimney* composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

**Masonry chimney.** A field constructed *chimney* composed of solid masonry units, bricks, stones or concrete.

**Metal chimney.** A field-constructed *chimney* of metal.

**CHIMNEY CONNECTOR.** A pipe that connects a fuel-burning *appliance* to a *chimney*.

**CLEARANCE.** The minimum distance through air measured between the heat-producing surface of the mechanical *appliance*, device or *equipment* and the surface of the combustible material or assembly.

**CLOSED COMBUSTION SOLID-FUEL-BURNING APPLIANCE.** A heat-producing *appliance* that employs a *combustion* chamber that does not have openings other than the flue collar, fuel charging door and adjustable openings provided to control the amount of *combustion air* that enters the *combustion* chamber.

**CLOTHES DRYER.** An *appliance* used to dry wet laundry by means of heat.

**[A]CODE.** These regulations, subsequent amendments thereto, or any emergency rule or regulation that the administrative authority having jurisdiction has lawfully adopted.

**CODE OFFICIAL.** The officer or other designated authority of the government agency having jurisdiction responsible for the enforcement of the pertaining code, or a duly authorized representative.

**[BF]COMBINATION FIRE/SMOKE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to close automatically upon the detection of heat and resist the passage of flame and smoke. The device is installed to operate automatically, be controlled by a smoke detection system, and where required, is capable of being positioned from a fire command center.

**COMBUSTIBLE ASSEMBLY.** Wall, floor, ceiling or other assembly constructed of one or more component materials that are not defined as noncombustible.

**[F]COMBUSTIBLE LIQUID.** A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

**Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB.** Liquids having a closed cup flash point at or above 200°F (93°C).

The category of combustible liquids does not include compressed gases or cryogenic fluids.

**COMBUSTIBLE MATERIAL.** Any material not defined as noncombustible.

**COMBUSTION.** In the context of this code, refers to the rapid oxidation of fuel accompanied by the production of heat or heat and light.

**COMBUSTION AIR.** Air necessary for complete *combustion* of a fuel, including *theoretical air* and excess air.

**COMBUSTION CHAMBER.** The portion of an *appliance* within which *combustion* occurs.

**COMBUSTION PRODUCTS.** Constituents resulting from the *combustion* of a fuel with the oxygen of the air, including the inert gases, but excluding excess air.

**COMMERCIAL COOKING APPLIANCES.** Appliances used in a commercial food service establishment for heating or cooking food. For the purpose of this definition, a commercial food service establishment is where food is prepared for sale or is prepared on a scale that is by volume and frequency not representative of domestic household cooking.

**COMMERCIAL COOKING RECIRCULATING SYSTEM.** Self-contained system consisting of the exhaust hood, the cooking *equipment*, the filters and the fire suppression system. The system is designed to capture cooking vapors and residues generated from commercial cooking *equipment*. The system removes contaminants from the *exhaust air* and recirculates the air to the space from which it was withdrawn.

#### **COMMERCIAL KITCHEN HOODS.**

**Backshelf hood.** A backshelf hood is also referred to as a low-proximity hood, or as a sidewall hood where wall mounted. Its front lower lip is low over the *appliance(s)* and is “set back” from the front of the *appliance(s)*. It is always closed to the rear of the appliances by a panel where free-standing, or by a panel or wall where wall mounted, and its height above the cooking surface varies. (This style of hood can be constructed with partial end panels to increase its effectiveness in capturing the effluent generated by the cooking operation).

**Double island canopy hood.** A double island canopy hood is placed over back-to-back appliances or *appliance* lines. It is open on all sides and overhangs both fronts and the sides of the *appliance(s)*. It could have a wall panel between the backs of the appliances. (The fact that *exhaust air* is drawn from both sides of the double canopy to meet in the center causes each side of this hood to emulate a wall canopy hood, and thus it functions much the same with or without an actual wall panel between the backs of the appliances).

**Eyebrow hood.** An eyebrow hood is mounted directly to the face of an *appliance*, such as an oven and dishwasher, above the opening(s) or door(s) from which effluent is emitted, extending past the sides and overhanging the front of the opening to capture the effluent.

**Pass-over hood.** A pass-over hood is a free-standing form of a backshelf hood constructed low enough to pass food over the top.

**Single island canopy hood.** A single island canopy hood is placed over a single *appliance* or *appliance* line. It is open on all sides and overhangs the front, rear and sides of the *appliance(s)*. A single island canopy is more susceptible to cross drafts and requires a greater *exhaust air* flow than an equivalent sized wall-mounted canopy to capture and contain effluent generated by the cooking operation(s).

**Wall canopy hood.** A wall canopy exhaust hood is mounted against a wall above a single *appliance* or line of *appliance(s)*, or it could be free-standing with a back panel from the rear of the appliances to the hood. It overhangs the front and sides of the *appliance(s)* on all open sides.

The wall acts as a back panel, forcing the *makeup air* to be drawn across the front of the cooking *equipment*, thus increasing the effectiveness of the hood to capture and contain effluent generated by the cooking operation(s).

**COMPENSATING HOODS.** *Compensating hoods* are those having integral (built-in) *makeup air* supply. The *makeup air* supply for such hoods is generally supplied from: short-circuit flow from inside the hood, air curtain flow from the bottom of the front face, and front face discharge from the outside front wall of the hood. The compensating makeup airflow can also be supplied from the rear or side of the hood, or the rear, front or sides of the cooking *equipment*. The makeup airflow can be one or a combination of methods.

**COMPRESSOR.** A specific machine, with or without accessories, for compressing a gas.

**COMPRESSOR, POSITIVE DISPLACEMENT.** A compressor in which increase in pressure is attained by changing the internal volume of the compression chamber.

**COMPRESSOR UNIT.** A compressor with its prime mover and accessories.

**CONCEALED LOCATION.** A location that cannot be accessed without damaging permanent parts of the building structure or finish surface. Spaces above, below or behind readily removable panels or doors shall not be considered as concealed.

**CONDENSATE.** The liquid that condenses from a gas (including flue gas) caused by a reduction in temperature.

**CONDENSER.** A heat exchanger designed to liquefy refrigerant vapor by removal of heat.

**CONDENSING UNIT.** A specific refrigerating machine combination for a given refrigerant, consisting of one or more power-driven compressors, condensers and, where required, liquid receivers, and the regularly furnished accessories.

**CONDITIONED SPACE.** An area, room or space that is enclosed within the building thermal envelope and that is directly heated or cooled or that is indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces,

where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

**[A]CONSTRUCTION DOCUMENTS.** The written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit. The construction drawings shall be drawn to an appropriate scale.

**CONTROL.** A manual or automatic device designed to regulate the gas, air, water or electrical supply to, or operation of, a mechanical system.

**CONVERSION BURNER.** A burner designed to supply gaseous fuel to an *appliance* originally designed to utilize another fuel.

**COOKING APPLIANCE.** See “*Commercial cooking appliances.*”

**DAMPER.** A manually or automatically controlled device to regulate draft or the rate of flow of air or *combustion* gases.

**Volume damper.** A device that, where installed, will restrict, retard or direct the flow of air in a duct, or the products of *combustion* in a heat-producing *appliance*, its vent connector, vent or *chimney* therefrom.

**[BS]DESIGN FLOOD ELEVATION.** The elevation of the “design flood,” including wave height, relative to the datum specified on the community’s legally designated flood hazard area map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the building’s perimeter plus the depth number, in feet, specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

**DESIGN WORKING PRESSURE.** The maximum allowable working pressure for which a specific part of a system is designed.

**DIRECT REFRIGERATION SYSTEM.** A system in which the evaporator or condenser of the refrigerating system is in direct contact with the air or other substances to be cooled or heated.

**DIRECT SOLAR SYSTEM.** A solar thermal system in which the gas or liquid in the solar collector loop is not separated from the load.

**[FG]DIRECT-VENT APPLIANCES.** Appliances that are constructed and installed so that all air for *combustion* is derived from the outdoor atmosphere and all flue gases are discharged to the outdoor atmosphere.

**DISCRETE PRODUCT.** Products that are noncontinuous, individual, distinct pieces such as, but not limited to, electrical, plumbing and mechanical products and duct straps, duct fittings, duct registers and pipe hangers.



**DRAFT.** The pressure difference existing between the *appliance* or any component part and the atmosphere, that causes a continuous flow of air and products of *combustion* through the gas passages of the *appliance* to the atmosphere.

**Induced draft.** The pressure difference created by the action of a fan, blower or ejector, that is located between the *appliance* and the *chimney* or vent termination.

**Natural draft.** The pressure difference created by a vent or *chimney* because of its height, and the temperature difference between the flue gases and the atmosphere.

**DRAIN-BACK SYSTEM.** A solar thermal system in which the fluid in the solar collector loop is gravity drained from the collector into a holding tank under prescribed circumstances.

**DRIP.** The container placed at a low point in a system of piping to collect condensate and from which the condensate is removable.

**DRY CLEANING SYSTEMS.** Dry cleaning plants or systems are classified as follows:

**Type I.** Those systems using Class I flammable liquid solvents having a flash point below 100°F (38°C).

**Type II.** Those systems using Class II combustible liquid solvents having a flash point at or above 100°F (38°C) and below 140°F (60°C).

**Type III.** Those systems using Class III combustible liquid solvents having a flash point at or above 140°F (60°C).

**Types IV and V.** Those systems using Class IV nonflammable liquid solvents.

**DUCT.** A tube or conduit utilized for conveying air. The air passages of self-contained systems are not to be construed as air ducts.

**DUCT FURNACE.** A warm-air furnace normally installed in an air distribution duct to supply warm air for heating. This definition shall apply only to a warm-air heating *appliance* that, for air circulation, depends on a blower not furnished as part of the furnace.

**DUCT SYSTEM.** A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling *equipment* and appliances.

**DUCTLESS MINI-SPLIT SYSTEM.** A heating and cooling system that is comprised of one or multiple indoor evaporator/air-handling units and an outdoor condensing unit that is connected by refrigerant piping and electrical wiring. A ductless mini-split system is capable of cooling or heating one or more rooms without the use of a traditional ductwork system.

**[BG]DWELLING.** A building or portion thereof that contains not more than two *dwelling* units.

**[A]DWELLING UNIT.** A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**ELECTRIC HEATING APPLIANCE.** An *appliance* that produces heat energy to create a warm environment by the application of electric power to resistance elements, refrigerant compressors or dissimilar material junctions.

**ENERGY RECOVERY VENTILATION SYSTEM.** Systems that employ air-to-air heat exchangers to recover energy from or reject energy to *exhaust air* for the purpose of preheating, precooling, humidifying or dehumidifying outdoor *ventilation air* prior to supplying such air to a space, either directly or as part of an HVAC system.

**ENVIRONMENTAL AIR.** Air that is conveyed to or from occupied areas through ducts that are not part of the heating or air-conditioning system, such as ventilation for human usage, domestic kitchen range exhaust, bathroom exhaust, domestic clothes dryer exhaust and parking garage exhaust.

**EQUIPMENT.** Piping, ducts, vents, control devices and other components of systems other than appliances that are permanently installed and integrated to provide control of environmental conditions for buildings. This definition shall also include other systems specifically regulated in this code.

**EQUIPMENT, EXISTING.** Any *equipment* regulated by this code which was legally installed prior to the effective date of this code, or for which a permit to install has been issued.

**EVAPORATIVE COOLER.** A device used for reducing the sensible heat of air for cooling by the process of evaporation of water into an airstream.

**EVAPORATIVE COOLING SYSTEM.** The *equipment* and appliances intended or installed for the purpose of environmental cooling by an evaporative cooler from which the conditioned air is distributed through ducts or plenums to the conditioned area.

**EVAPORATOR.** That part of the system in which liquid refrigerant is vaporized to produce refrigeration.

**EXCESS AIR.** The amount of air provided in addition to *theoretical air* to achieve complete *combustion* of a fuel, thereby preventing the formation of dangerous products of *combustion*.

**EXFILTRATION.** Uncontrolled outward air leakage from conditioned spaces through unintentional openings in ceilings, floors and walls to unconditioned spaces or the outdoors caused by pressure differences across these openings resulting from wind, the stack effect created by temperature differences between indoors and outdoors, and imbalances between supply and exhaust airflow rates.

**EXHAUST SYSTEM.** An assembly of connected ducts, plenums, fittings, registers, grilles and hoods through which air is conducted from the space or spaces and exhausted to the outdoor atmosphere.

**EXTRA-HEAVY-DUTY COOKING APPLIANCE.** Extra-heavy-duty cooking appliances are those utilizing open flame combustion of solid fuel at any time.

**[BF]FIRE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to close automatically upon detection of heat and to restrict the passage of flame. Fire dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in dynamic systems that continue to operate during a fire. A dynamic fire damper is tested and rated for closure under elevated temperature airflow.

**FIREPLACE.** An assembly consisting of a hearth and fire chamber of noncombustible material and provided with a *chimney*, for use with solid fuels.

**Factory-built fireplace.** A *listed* and *labeled* fireplace and *chimney* system composed of factory-made components, and assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

**Masonry fireplace.** A field-constructed fireplace composed of solid masonry units, bricks, stones or concrete.

**FIREPLACE STOVE.** A free-standing chimney-connected solid-fuel-burning heater, designed to be operated with the fire chamber doors in either the open or closed position.

**[FG]FLAME SAFEGUARD.** A device that will automatically shut off the fuel supply to a main burner or group of burners when the means of ignition of such burners becomes inoperative, and when flame failure occurs on the burner or group of burners.

**[BF]FLAME SPREAD INDEX.** The numerical value assigned to a material tested in accordance with ASTM E 84 or UL 723.

**FLAMMABILITY CLASSIFICATION.** Refrigerants shall be assigned to one of the three classes—1, 2 or 3—in accordance with ASHRAE 34. For Classes 2 and 3, the heat of *combustion* shall be calculated assuming that *combustion* products are in the gas phase and in their most stable state.

**Class 1.** Refrigerants that do not show flame propagation when tested in air at 14.7 psia (101 kPa) and 140°F (60°C).

**Class 2.** Refrigerants having a lower flammability limit (LFL) of more than 0.00625 pound per cubic foot (0.10 kg/m<sup>3</sup>) at 140°F (60°C) and 14.7 psia (101 kPa) and a heat of combustion of less than 8169 Btu/lb (19 000 kJ/kg).

**Class 3.** Refrigerants that are highly flammable, having a LFL of less than or equal to 0.00625 pound per cubic foot (0.10 kg/m<sup>3</sup>) at 140°F (60°C) and 14.7 psia (101 kPa) or a heat of combustion greater than or equal to 8169 Btu/lb (19 000 kJ/kg).

**[F]FLAMMABLE LIQUIDS.** Any liquid that has a flash point below 100°F (38°C), and has a vapor pressure not exceeding 40 psia (276 kPa) at 100°F (38°C). Flammable liquids shall be known as Class I liquids and shall be divided into the following classifications:

**Class IA.** Liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).

**Class IB.** Liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).

**Class IC.** Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

**[F]FLAMMABLE VAPOR OR FUMES.** Mixtures of gases in air at concentrations equal to or greater than the LFL and less than or equal to the upper flammability limit (UFL).

**[F]FLASH POINT.** The minimum temperature corrected to a pressure of 14.7 psia (101 kPa) at which the application of a test flame causes the vapors of a portion of the sample to ignite under the conditions specified by the test procedures and apparatus. The flash point of a liquid shall be determined in accordance with ASTM D 56, ASTM D 93 or ASTM D3278.

**FLEXIBLE AIR CONNECTOR.** A conduit for transferring air between an air duct or plenum and an air terminal unit or between an air duct or plenum and an air inlet or air outlet. Such conduit is limited in its use, length and location.

**FLOOR AREA, NET.** The actual occupied area, not including unoccupied accessory areas or thicknesses of walls.

**[FG]FLOOR FURNACE.** A completely self-contained furnace suspended from the floor of the space being heated, taking air for *combustion* from outside such space and with means for observing flames and lighting the *appliance* from such space.

**FLUE.** A passageway within a *chimney* or vent through which gaseous *combustion* products pass.

**FLUE CONNECTION (BREECHING).** A passage for conducting the products of *combustion* from a fuel-fired *appliance* to the vent or *chimney* (see also “*Chimney connector*” and “*Vent connector*”).

**[FG]FLUE GASES.** Products of *combustion* and excess air.

**FLUE LINER (LINING).** A system or material used to form the inside surface of a flue in a *chimney* or vent, for the purpose of protecting the surrounding structure from the effects of *combustion* products and conveying *combustion* products without leakage to the atmosphere.

**FOOD-GRADE FLUID.** Potable water or a fluid containing additives listed in accordance with the Code of Federal Regulations, Title 21, Food and Drugs, Chapter 1, Food and Drug Administration, Parts 174-186.

**[FG]FUEL GAS.** A natural gas, manufactured gas, liquefied petroleum gas or a mixture of these.

**FUEL OIL.** Kerosene or any hydrocarbon oil having a flash point not less than 100°F (38°C).

**FUEL-OIL PIPING SYSTEM.** A closed piping system that connects a combustible liquid from a source of supply to a fuel-oil-burning *appliance*.

**FURNACE.** A completely self-contained heating unit that is designed to supply heated air to spaces remote from or adjacent to the *appliance* location.

**FURNACE ROOM.** A room primarily utilized for the installation of fuel-burning, space-heating and water-heating appliances other than boilers (see also “Boiler room”).

**FUSIBLE PLUG.** A device arranged to relieve pressure by operation of a fusible member at a predetermined temperature.

**GROUND SOURCE HEAT PUMP LOOP SYSTEM.** Piping buried in horizontal or vertical excavations or placed in a body of water for the purpose of transporting heat transfer liquid to and from a heat pump. Included in this definition are closed loop systems in which the liquid is recirculated and open loop systems in which the liquid is drawn from a well or other source.

**HAZARDOUS LOCATION.** Any location considered to be a fire hazard for flammable vapors, dust, combustible fibers or other highly combustible substances. The location is not necessarily categorized in the *Puerto Rico Building Code* as a high-hazard use group classification.

**HEAT EXCHANGER.** A device that transfers heat from one medium to another.

**HEAT PUMP.** A refrigeration system that extracts heat from one substance and transfers it to another portion of the same substance or to a second substance at a higher temperature for a beneficial purpose.

**HEAT TRANSFER LIQUID.** The operating or thermal storage liquid in a mechanical system, including water or other liquid base, and additives at the concentration present under operating conditions used to move heat from one location to another. Refrigerants are not included as heat transfer liquids.

**HEAVY-DUTY COOKING APPLIANCE.** Heavy-duty cooking *appliances* include electric under-fired broilers, electric chain (conveyor) broilers, gas under-fired broilers, gas chain (conveyor) broilers, gas open-burner ranges (with or without oven), electric and gas wok ranges, smokers, smoker ovens, and electric and gas over-fired (upright) broilers and salamanders.

**HIGH-PROBABILITY SYSTEMS.** A refrigeration system in which the basic design or the location of components is such that a leakage of refrigerant from a failed connection, seal or component will enter an *occupancy* classified area, other than the *machinery room*.

**HIGH-SIDE PRESSURE.** The parts of a refrigerating system subject to condenser pressure.

**HIGH-VOLUME, LARGE-DIAMETER FAN.** A low-speed ceiling fan that circulates large volumes of air and that is greater than 7 feet (2134 mm) in diameter.

**HOOD.** An air intake device used to capture by entrapment, impingement, adhesion or similar means, grease, moisture, heat and similar contaminants before they enter a duct system.

**Type I.** A kitchen hood for collecting and removing grease vapors and smoke. Such hoods are equipped with a fire suppression system.

**Type II.** A general kitchen hood for collecting and removing steam, vapor, heat, odors and products of *combustion*.

**[FG]HYDROGEN GENERATING APPLIANCE.** A self-contained package or factory-matched packages of integrated systems for generating gaseous hydrogen. Hydrogen generating appliances utilize electrolysis, reformation, chemical, or other processes to generate hydrogen.

**IGNITION SOURCE.** A flame, spark or hot surface capable of igniting flammable vapors or fumes. Such sources include *appliance* burners, burner ignitors and electrical switching devices.

**[F]IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH).** The concentration of airborne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment. This contaminant concentration level is established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It is generally expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/m<sup>3</sup>).

**INDIRECT REFRIGERATION SYSTEM.** A system in which a secondary coolant cooled or heated by the refrigerating system is circulated to the air or other substance to be cooled or heated. Indirect systems are distinguished by the following methods of application:

**Closed system.** A system in which a secondary fluid is either cooled or heated by the refrigerating system and then circulated within a closed circuit in indirect contact with the air or other substance to be cooled or heated.

**Double-indirect open-spray system.** A system in which the secondary substance for an indirect open-spray system is heated or cooled by an intermediate coolant circulated from a second enclosure.

**Open-spray system.** A system in which a secondary coolant is cooled or heated by the refrigerating system and then circulated in direct contact with the air or other substance to be cooled or heated.

**Vented closed system.** A system in which a secondary coolant is cooled or heated by the refrigerating system and then passed through a closed circuit in the air or other substance to be cooled or heated, except that the evaporator or condenser is placed in an open or appropriately vented tank.

**INDIRECT SOLAR SYSTEM.** A solar thermal system in which the gas or liquid in the solar collector loop circulates between the solar collector and a heat exchanger and such gas or liquid is not drained from the system or supplied to the load during normal operation.

**INFILTRATION.** Uncontrolled inward air leakage to conditioned spaces through unintentional openings in ceilings, floors and walls from unconditioned spaces or the outdoors caused by pressure differences across these openings resulting from wind, the stack effect created by temperature differences between indoors and outdoors, and imbalances between supply and exhaust airflow rates.

**INTERLOCK.** A device actuated by another device with which it is directly associated, to govern succeeding operations of the same or allied devices. A circuit in which a given action cannot occur until after one or more other actions have taken place.

**JOINT, FLANGED.** A joint made by bolting together a pair of flanged ends.

**JOINT, FLARED.** A metal-to-metal compression joint in which a conical spread is made on the end of a tube that is compressed by a flare nut against a mating flare.

**JOINT, PLASTIC ADHESIVE.** A joint made in thermoset plastic piping by the use of an adhesive substance that forms a continuous bond between the mating surfaces without dissolving either one of them.

**JOINT, PLASTIC HEAT FUSION.** A joint made in thermoplastic piping by heating the parts sufficiently to permit fusion of the materials when the parts are pressed together.

**JOINT, PLASTIC SOLVENT CEMENT.** A joint made in thermoplastic piping by the use of a solvent or solvent cement that forms a continuous bond between the mating surfaces.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)” as established by the Act No. 161 of December 1, 2009, “Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended”.

**JOINT, SOLDERED.** A gas-tight joint obtained by the joining of metal parts with metallic mixtures of alloys that melt at temperatures between 400°F (204°C) and 1,000°F (538°C).

**JOINT, WELDED.** A gas-tight joint obtained by the joining of metal parts in molten state.

**[A]LABELED.** *Equipment*, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the labeled items and whose labeling indicates either that the *equipment*, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LIGHT-DUTY COOKING APPLIANCE.** Light-duty cooking *appliances* include gas and electric ovens (including standard, bake, roasting, revolving, retherm, convection, combination convection/steamer, countertop conveyORIZED baking/finishing, deck and pastry), electric and gas steam-jacketed kettles, electric and gas pasta cookers, electric and gas compartment steamers (both pressure and atmospheric) and electric and gas cheesemelters.

**[FG]LIMIT CONTROL.** A device responsive to changes in pressure, temperature or level for turning on, shutting off or throttling the gas supply to an *appliance*.

**LIMITED CHARGE SYSTEM.** A system in which, with the compressor idle, the design pressure will not be exceeded when the refrigerant charge has completely evaporated.

**[A]LISTED.** *Equipment*, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of *listed equipment* or materials or periodic evaluation of services and whose listing states either that the *equipment*, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**LIVING SPACE.** Space within a *dwelling unit* utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes.

**LOW-PROBABILITY PUMP.** A pump that does not rely on a dynamic shaft seal as a singular means of containment to prevent atmospheric release of the pumped fluid.

**LOWER EXPLOSIVE LIMIT (LEL).** See “LFL.”

**LOWER FLAMMABLE LIMIT (REFRIGERANT) (LFL).** The minimum concentration of refrigerant that is capable of propagating a flame through a homogeneous mixture of refrigerant and air.

**[F]LOWER FLAMMABLE LIMIT (LFL).** The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as LEL or lower explosive limit.



**LOW-PRESSURE HOT-WATER-HEATING BOILER.** A boiler furnishing hot water at pressures not exceeding 160 psi (1103 kPa) and at temperatures not exceeding 250°F (121°C).

**LOW-PRESSURE STEAM-HEATING BOILER.** A boiler furnishing steam at pressures not exceeding 15 psi (103 kPa).

**LOW-PROBABILITY SYSTEMS.** A refrigeration system in which the basic design or the location of components is such that a leakage of refrigerant from a failed connection, seal or component will not enter an occupancy-classified area, other than the *machinery room*.

**LOW-SIDE PRESSURE.** The parts of a refrigerating system subject to evaporator pressure.

**MACHINERY ROOM.** An enclosed space that is required by Chapter 11 to contain refrigeration equipment and to comply with Sections 1105 and 1106.

**MECHANICAL DRAFT SYSTEM.** A venting system designed to remove flue or vent gases by mechanical means, that consists of an induced-draft portion under nonpositive static pressure or a forced-draft portion under positive static pressure.

**Forced-draft venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under positive static pressure.

**Induced-draft venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under nonpositive static vent pressure.

**Power venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under positive static vent pressure.

**MECHANICAL EQUIPMENT/APPLIANCE ROOM.** A room or space in which nonfuel-fired mechanical *equipment* and *appliances* are located.

**MECHANICAL EXHAUST SYSTEM.** A system for removing air from a room or space by mechanical means.

**MECHANICAL JOINT.**

1. A connection between pipes, fittings, or pipes and fittings that is not welded, brazed, caulked, soldered, solvent cemented or heat fused.
2. A general form of gas or liquid-tight connections obtained by the joining of parts through a positive holding mechanical construction such as, but not limited to, flanged, screwed, clamped or flared connections.

**MECHANICAL SYSTEM.** A system specifically addressed and regulated in this code and composed of components, devices, *appliances* and *equipment*.

**MEDIUM-DUTY COOKING APPLIANCE.** Medium-duty cooking *appliances* include electric discrete element ranges (with or without oven), electric and gas hot-top ranges, electric and gas griddles, electric and gas double-sided griddles, electric and gas fryers (including open deep fat fryers, donut fryers, kettle fryers and pressure fryers), electric and gas conveyor pizza ovens, electric and gas tilting skillets (braising pans) and electric and gas rotisseries.

**MODULAR BOILER.** A steam or hot-water-heating assembly consisting of a group of individual boilers called modules intended to be installed as a unit without intervening stop valves. Modules are under one jacket or are individually jacketed. The individual modules shall be limited to a maximum input rating of 400,000 Btu/h (117 228 W) gas, 3 gallons per hour (gph) (11.4 L/h) oil, or 115 kW (electric).

**NATURAL DRAFT SYSTEM.** A venting system designed to remove flue or vent gases under nonpositive static vent pressure entirely by natural draft.

**NATURAL VENTILATION.** The movement of air into and out of a space through intentionally provided openings, such as windows and doors, or through nonpowered ventilators.

**NET OCCUPIABLE FLOOR AREA.** The floor area of an *occupiable space* defined by the inside surfaces of its walls but excluding shafts, column enclosures and other permanently enclosed, inaccessible and unoccupiable areas. Obstructions in the space such as furnishings, display or storage racks and other obstructions, whether temporary or permanent, shall not be deducted from the space area.

**NO-FLOW CONDITION (SOLAR).** A condition where thermal energy is not transferred from a solar thermal collector by means of flow of a heat transfer fluid.

**NONFOOD-GRADE FLUID.** Any fluid that is not designated as a food-grade fluid.

**NONABRASIVE/ABRASIVE MATERIALS.** Nonabrasive particulate in high concentrations, moderately abrasive particulate in low and moderate concentrations, and highly abrasive particulate in low concentrations, such as alfalfa, asphalt, plaster, gypsum and salt.

**NONCOMBUSTIBLE MATERIALS.** Materials that, when tested in accordance with ASTM E 136, have not fewer than three of four specimens tested meeting all of the following criteria:

1. The recorded temperature of the surface and interior thermocouples shall not at any time during the test rise more than 54°F (30°C) above the furnace temperature at the beginning of the test.
2. There shall not be flaming from the specimen after the first 30 seconds.
3. If the weight loss of the specimen during testing exceeds 50 percent, the recorded temperature of the surface and interior thermocouples shall not at any time during the test rise above the furnace air temperature at the beginning of the test, and there shall not be flaming of the specimen.

**[A]OCCUPANCY.** The purpose for which a building, or portion thereof, is utilized or occupied.

**OCCUPATIONAL EXPOSURE LIMIT (OEL).** The timeweighted average (TWA) concentration for a normal 8-hour workday and a 40-hour workweek to which nearly all workers can be repeatedly exposed without adverse effect, based on the OSHA PEL, ACGIH TLV-TWA, TERA OARS WEEL, or consistent value.

**OCCUPIABLE SPACE.** An enclosed space intended for human activities, excluding those spaces intended primarily for other purposes, such as storage rooms and *equipment* rooms, that are only intended to be occupied occasionally and for short periods of time.

**OFFSET (VENT).** A combination of *approved* bends that make two changes in direction bringing one section of the vent out of line but into a line parallel with the other section.

**(OGPe-DDEC) Permits Management Office:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**OUTDOOR AIR.** Air taken from the outdoors, and therefore not previously circulated through the system.

**OUTDOOR OPENING.** A door, window, louver or skylight openable to the outdoor atmosphere.

**OUTLET.** A threaded connection or bolted flange in a piping system to which a gas-burning *appliance* is attached.

**PANEL HEATING.** A method of radiant space heating in which heat is supplied by large heated areas of room surfaces. The heating element usually consists of warm water piping, warm air ducts, or electrical resistance elements embedded in or located behind ceiling, wall or floor surfaces.

**PELLET FUEL-BURNING APPLIANCE.** A closed-combustion, vented *appliance* equipped with a fuel-feed mechanism for burning processed pellets of solid fuel of a specified size and composition.

**PIPING.** Where used in this code, “piping” refers to either pipe or tubing, or both.

**Pipe.** A rigid conduit of iron, steel, copper, copper-alloy, or plastic.

**PLASTIC, THERMOPLASTIC.** A plastic that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.

**PLASTIC, THERMOSETTING.** A plastic that is capable of being changed into a substantially infusible or insoluble product when cured under application of heat or chemical means.

**PLENUM.** An enclosed portion of the building structure, other than an *occupiable space* being conditioned, that is designed to allow air movement, and thereby serve as part of an air distribution system.

**POLLUTION-CONTROL UNIT (PCU).** Manufactured equipment that is installed in a grease exhaust duct system for the purpose of extracting smoke, grease particles and odors from the exhaust flow by means of a series of filters.

**PORTABLE FUEL CELL APPLIANCE.** A fuel cell generator of electricity that is not fixed in place. A portable fuel cell *appliance* utilizes a cord and plug connection to a grid-isolated load and has an integral fuel supply.

**POWER BOILER.** See “Boiler.”

**[A]PREMISES.** A lot, plot or parcel of land, including any structure thereon.

**PRESS-CONNECT JOINT.** A permanent mechanical joint incorporating an elastomeric seal or an elastomeric seal and corrosion-resistant grip ring. The joint is made with a pressing tool and jaw or ring approved by the fitting manufacturer.

**PRESSURE, FIELD TEST.** A test performed in the field to prove system tightness.

**PRESSURE-LIMITING DEVICE.** A pressure-responsive mechanism designed to stop automatically the operation of the pressure-imposing element at a predetermined pressure.

**PRESSURE RELIEF DEVICE.** A pressure-actuated valve or rupture member designed to relieve excessive pressure automatically.

**PRESSURE RELIEF VALVE.** A pressure-actuated valve held closed by a spring or other means and designed to relieve pressure automatically in excess of the device’s setting.

**PRESSURE VESSELS.** Closed containers, tanks or vessels that are designed to contain liquids or gases, or both, under pressure.

**PRESSURE VESSELS—REFRIGERANT.** Any refrigerant-containing receptacle in a refrigerating system. This does not include evaporators where each separate section does not exceed 0.5 cubic foot (0.014 m<sup>3</sup>) of refrigerant-containing volume, regardless of the maximum inside dimensions, evaporator coils, controls, headers, pumps and piping.

**PROTECTIVE ASSEMBLY (REDUCED CLEARANCE).** Any noncombustible assembly that is *labeled* or constructed in accordance with Table 308.4.2 and is placed between combustible materials or assemblies and mechanical appliances, devices or *equipment*, for the purpose of reducing required airspace clearances. Protective assemblies attached directly to a combustible assembly shall not be considered as part of that combustible assembly.

**PURGE.** To clear of air, water or other foreign substances.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**PUSH-FIT JOINTS.** A type of mechanical joint consisting of elastomeric seals and corrosion-resistant tube grippers. Such joints are permanent or removable depending on the design.

**QUICK-OPENING VALVE.** A valve that opens completely by fast action, either manually or automatically controlled. A valve requiring one-quarter round turn or less is considered to be quick opening.

**RADIANT HEATER.** A heater designed to transfer heat primarily by direct radiation.

**READY ACCESS (TO).** That which enables a device, *appliance* or *equipment* to be directly reached, without requiring the removal or movement of any panel or similar obstruction [see "Access (to)"].

**RECEIVER, LIQUID.** A vessel permanently connected to a refrigeration system by inlet and outlet pipes for storage of liquid refrigerant.

**RECIRCULATED AIR.** Air removed from a conditioned space and intended for reuse as supply air.

**RECLAIMED REFRIGERANTS.** Refrigerants reprocessed to the same specifications as for new refrigerants by means including distillation. Such refrigerants have been chemically analyzed to verify that the specifications have been met. Reclaiming usually implies the use of processes or procedures that are available only at a reprocessing or manufacturing facility.

**RECOVERED REFRIGERANTS.** Refrigerants removed from a system in any condition without necessarily testing or processing them.

**RECYCLED REFRIGERANTS.** Refrigerants from which contaminants have been reduced by oil separation, removal of noncondensable gases, and single or multiple passes through devices that reduce moisture, acidity and particulate matter, such as replaceable core filter driers. These procedures usually are performed at the field job site or in a local service shop.

**REFRIGERANT.** A substance utilized to produce refrigeration by its expansion or vaporization.

**REFRIGERANT SAFETY CLASSIFICATIONS.** Groupings that indicate the toxicity and flammability classes in accordance with Section 1103.1. The classification group is made up of a letter (A or B) that indicates the toxicity class, followed by a number (1, 2 or 3) that indicates the flammability class. Refrigerant blends are similarly classified, based on the compositions at their worst cases of fractionation, as separately determined for toxicity and flammability. In some cases, the worst case of fractionation is the original formulation.

**Flammability.** See “Flammability classification.”

**Toxicity.** See “Toxicity classification.”

**REFRIGERATING SYSTEM.** A combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat.

**REFRIGERATION CAPACITY RATING.** Expressed as 1 horsepower (0.75 kW), 1 ton or 12,000 Btu/h (3.5 kW), shall all mean the same quantity.

**REFRIGERATION MACHINERY ROOM.** See “*Machinery room.*”

**REFRIGERATION SYSTEM, ABSORPTION.** A heat-operated, closed-refrigeration cycle in which a secondary fluid (the absorbent) absorbs a primary fluid (the refrigerant) that has been vaporized in the evaporator.

**Direct system.** A system in which the evaporator is in direct contact with the material or space refrigerated, or is located in air-circulating passages communicating with such spaces.

**Indirect system.** A system in which a brine coil cooled by the refrigerant is circulated to the material or space refrigerated, or is utilized to cool the air so circulated. Indirect systems are distinguished by the type or method of application.

**REFRIGERATION SYSTEM CLASSIFICATION.** Refrigeration systems are classified according to the degree of probability that leaked refrigerant from a failed connection, seal or component will enter an occupied area. The distinction is based on the basic design or location of the components.

**REFRIGERATION SYSTEM, MECHANICAL.** A combination of interconnected refrigeration-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat and in which a compressor is used for compressing the refrigerant vapor.

**REFRIGERATION SYSTEM, SELF-CONTAINED.** A complete factory-assembled and tested system that is shipped in one or more sections and that does not have refrigerant-containing parts that are joined in the field by other than companion or block valves.

**REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**RETURN AIR.** Air removed from an *approved* conditioned space or location and recirculated or exhausted.

**RETURN AIR SYSTEM.** An assembly of connected ducts, plenums, fittings, registers and grilles through which air from the space or spaces to be heated or cooled is conducted back to the supply unit (see also “Supply air system”).

**[FG]ROOM HEATER VENTED.** A free-standing heating unit burning solid or liquid fuel for direct heating of the space in and adjacent to that in which the unit is located.

**SAFETY VALVE.** A valve that relieves pressure in a steam boiler by opening fully at the rated discharge pressure. The valve is of the spring-pop type.

**SELF-CONTAINED EQUIPMENT.** Complete, factory-assembled and tested, heating, air-conditioning or refrigeration *equipment* installed as a single unit, and having all working parts, complete with motive power, in an enclosed unit of said machinery.

**[BF]SHAFT.** An enclosed space extending through one or more stories of a building, connecting vertical openings in successive floors, or floors and the roof.

**[BF]SHAFT ENCLOSURE.** The walls or construction forming the boundaries of a shaft.

**[A]SLEEPING UNIT.** A room or space in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a *dwelling unit* are not sleeping units.

**[BF]SMOKE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to resist the passage of smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a fire command center.

**[BF]SMOKE-DEVELOPED INDEX.** A numerical value assigned to a material tested in accordance with ASTM E84.

**SOLAR THERMAL SYSTEM.** A system that converts solar radiation to thermal energy for use in heating or cooling.

**SOLID FUEL (COOKING APPLICATIONS).** Applicable to commercial food service operations only, solid fuel is any bulk material such as hardwood, mesquite, charcoal or briquettes that is combusted to produce heat for cooking operations.

**SOURCE CAPTURE SYSTEM.** A mechanical exhaust system designed and constructed to capture air contaminants at their source and to exhaust such contaminants to the outdoor atmosphere.

**[FG]STATIONARY FUEL CELL POWER PLANT.** A self-contained package or factory-matched packages that constitute an automatically operated assembly of integrated systems for

generating useful electrical energy and recoverable thermal energy that is permanently connected and fixed in place.

**STEAM-HEATING BOILER.** A boiler operated at pressures not exceeding 15 psi (103 kPa) for steam.

**STOP VALVE.** A shutoff valve for controlling the flow of liquid or gases.

**[BG]STORY.** That portion of a building included between the upper surface of a floor and the upper surface of the floor next above, except that the topmost story shall be that portion of a building included between the upper surface of the topmost floor and the ceiling or roof above.

**STRENGTH, ULTIMATE.** The highest stress level that the component will tolerate without rupture.

**SUPPLY AIR.** That air delivered to each or any space supplied by the air distribution system or the total air delivered to all spaces supplied by the air distribution system, which is provided for ventilating, heating, cooling, humidification, dehumidification and other similar purposes.

**SUPPLY AIR SYSTEM.** An assembly of connected ducts, plenums, fittings, registers and grilles through which air, heated or cooled, is conducted from the supply unit to the space or spaces to be heated or cooled (see also "Return air system").

**THEORETICAL AIR.** The exact amount of air required to supply oxygen for complete *combustion* of a given quantity of a specific fuel.

**THERMAL RESISTANCE (*R*).** A measure of the ability to retard the flow of heat. The *R*-value is the reciprocal of thermal conductance.

**[P]THIRD-PARTY CERTIFICATION AGENCY.** An approved agency operating a product or material certification system that incorporates initial product testing, assessment and surveillance of a manufacturer's quality control system.

**[P]THIRD-PARTY CERTIFIED.** Certification obtained by the manufacturer indicating that the function and performance characteristics of a product or material have been determined by testing and ongoing surveillance by an approved third-party certification agency. Assertion of certification is in the form of identification in accordance with the requirements of the third-party certification agency.

**[P]THIRD-PARTY TESTED.** Procedure by which an approved testing laboratory provides documentation that a product, material or system conforms to specified requirements.

**TLV-TWA (THRESHOLD LIMIT VALUE-TIMEWEIGHTED AVERAGE).** The time-weighted average concentration of a refrigerant or other chemical in air for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers are repeatedly exposed, day after



day, without adverse effects, as adopted by the American Conference of Government Industrial Hygienists (ACGIH).

**TOILET ROOM.** A room containing a water closet and, frequently, a lavatory, but not a bathtub, shower, spa or similar bathing fixture.

**TOXICITY CLASSIFICATION.** Refrigerants shall be classified for toxicity in one of two classes in accordance with ASHRAE 34:

**Class A.** Refrigerants that have an occupational exposure limit (OEL) of 400 parts per million (ppm) or greater.

**Class B.** Refrigerants that have an OEL of less than 400 ppm.

**TRANSITION FITTINGS, PLASTIC TO STEEL.** An adapter for joining plastic pipe to steel pipe. The purpose of this fitting is to provide a permanent, pressure-tight connection between two materials that cannot be joined directly one to another.

**[FG]UNIT HEATER.** A self-contained *appliance* of the fan type, designed for the delivery of warm air directly into the space in which the *appliance* is located.

**VENT.** A pipe or other conduit composed of factory-made components, containing a passageway for conveying *combustion* products and air to the atmosphere, *listed* and *labeled* for use with a specific type or class of *appliance*.

**Pellet vent.** A vent *listed* and *labeled* for use with *listed* pellet-fuel-burning appliances.

**Type L vent.** A vent *listed* and *labeled* for use with the following:

1. Oil-burning appliances that are listed for use with Type L vents.
2. Gas-fired appliances that are listed for use with Type B vents.

**VENT CONNECTOR.** The pipe that connects an *approved* fuel-fired *appliance* to a vent.

**VENT DAMPER DEVICE, AUTOMATIC.** A device intended for installation in the venting system, in the outlet of an individual automatically operated fuel-burning *appliance* that is designed to open the venting system automatically when the *appliance* is in operation and to close off the venting system automatically when the *appliance* is in a standby or shutdown condition.

**VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

**VENTILATION AIR.** That portion of supply air that comes from the outside (outdoors), plus any recirculated air that has been treated to maintain the desired quality of air within a designated space.

**[FG]VENTING SYSTEM.** A continuous open passageway from the flue collar of an *appliance* to the outdoor atmosphere for the purpose of removing flue or vent gases. A venting system is usually composed of a vent or a *chimney* and vent connector, if used, assembled to form the open passageway.

**WATER HEATER.** Any heating *appliance* or *equipment* that heats potable water and supplies such water to the potable hot water distribution system.

**ZONE.** One *occupiable space* or several occupiable spaces with similar *occupancy* classification (see Table 403.3.1.1), occupant density, zone air distribution effectiveness and zone primary airflow rate per unit area.

## **CHAPTER 3 – GENERAL REGULATIONS**

### **SECTION 301 - GENERAL**

**301.10 Electrical.** Electrical wiring, controls and connections to *equipment* and appliances regulated by this code shall be in accordance with NFPA 70 and the *Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **CHAPTER 4 – VENTILATION**

No amendments.

## **CHAPTER 5 – EXHAUST SYSTEMS**

No amendments.

## **CHAPTER 6 – DUCT SYSTEMS**

No amendments.

## **CHAPTER 7 – COMBUSTION AIR**

No amendments.

## **CHAPTER 8 – CHIMNEYS AND VENTS**

No amendments.

## **CHAPTER 9 – SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENTS**

No amendments.

## **CHAPTER 10 – BOILERS, WATER HEATERS AND PREASSURE VESSELS**

No amendments.

## **CHAPTER 11 – REFRIGERATION**

No amendments.

## **CHAPTER 12 – HYDRONIC PIPING**

No amendments.

## **CHAPTER 13 – FUEL OIL PIPING AND STORAGE**

No amendments.

## **CHAPTER 14 – SOLAR THERMAL SYSTEMS**

No amendments.

## **CHAPTER 15 – REFERENCED STANDARDS**

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PREPA

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
310

## **APPENDIX A – COMBUSTION AIR OPENINGS AND CHIMNEY CONNECTOR PASS-THROUGHS**

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

## **APPENDIX B – RECOMMENDED PERMIT FEE SCHEDULE**

Not Applicable to Puerto Rico.



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PUERTO RICO CODES

# PRPC

Puerto Rico Plumbing Code





# **PUERTO RICO PLUMBING CODE 2018**

## **As amended from INTERNATIONAL PLUMBING CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## PART 1—SCOPE AND APPLICATION

### SECTION 101 – GENERAL

[A]101.1 **Title.** These regulations shall be known as the *Puerto Rico Plumbing Code*, hereinafter referred to as “this code.”

[A]101.2 **Scope.** The provisions of this code shall apply to the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing systems within this jurisdiction. This code shall regulate nonflammable medical gas, inhalation anesthetic, vacuum piping, nonmedical oxygen systems and sanitary and condensate vacuum collection systems. The installation of fuel gas distribution piping and equipment, fuel-gas-fired water heaters and water heater venting systems shall be regulated by the *Puerto Rico Fuel Gas Code*. Provisions in the appendices shall not apply unless specifically adopted.

**Exception:** Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the *Puerto Rico Residential Code*.

[A]101.3 **Intent.** The purpose of this code is to establish minimum standards to provide a reasonable level of safety, health, property protection and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems.

[A]101.4 **Severability.** If any section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

### SECTION 102 – APPLICABILITY

[A]102.1 **General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

[A]102.2 **Existing installations.** Plumbing systems lawfully in existence at the time of the adoption of this code shall be permitted to have their use and maintenance continued if the use, maintenance or repair is in accordance with the original design and hazard to life, health or property is not created by such plumbing system.

[A]102.2.1 **Existing buildings.** Additions, alterations, renovations or repairs related to building or structural issues shall be regulated by the *Puerto Rico Existing Building Code*.

**[A]102.3 Maintenance.** Plumbing systems, materials and appurtenances, both existing and new, and parts thereof, shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. Devices or safeguards required by this code shall be maintained in compliance with the edition of the code under which they were installed.

The owner or the owner's authorized agent shall be responsible for maintenance of plumbing systems. To determine compliance with this provision, the code official shall have the authority to require any plumbing system to be reinspected.

**[A]102.4 Additions, alterations or repairs.** Additions, alterations, renovations or repairs to any plumbing system shall conform to that required for a new plumbing system without requiring the existing plumbing system to comply with all the requirements of this code. Additions, alterations or repairs shall not cause an existing system to become unsafe, insanitary or overloaded.

Minor additions, alterations, renovations and repairs to existing plumbing systems shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is *approved*.

**[A]102.5 Change in occupancy.** It shall be unlawful to make any change in the *occupancy* of any structure that will subject the structure to any special provision of this code applicable to the new *occupancy* without approval of the code official. Change in the occupancy or a new occupancy, shall comply with the *Puerto Rico Building Code* and the *Joint Regulation*.

**[A]102.6 Historic buildings.** The provisions of this code relating to the construction, alteration, repair, enlargement, restoration, relocation or moving of buildings or structures shall not be mandatory for existing buildings or structures identified and classified by the state or local jurisdiction as historic buildings where such buildings or structures are judged by the code official to be safe and in the public interest of health, safety and welfare regarding any proposed construction, alteration, repair, enlargement, restoration, relocation or moving of buildings.

**[A]102.7 Moved buildings.** Except as determined by Section 102.2, plumbing systems that are a part of buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new installations.

**[A]102.8 Referenced codes and standards.** The codes and standards referenced in this code shall be those that are listed in Chapter 15 and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.8.1 and 102.8.2.

**[A]102.8.1 Conflicts.** Where conflicts occur between provisions of this code and the referenced standards, the provisions of this code shall apply.

**[A]102.8.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

**[A]102.9 Requirements not covered by code.** Any requirements necessary for the strength, stability or proper operation of an existing or proposed plumbing system, or for the public safety, health and general welfare, not specifically covered by this code shall be determined by the code official.

**[A]102.10 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**[A]102.11 Application of references.** Reference to chapter section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation* and the *Puerto Rico Building Code*.

### **SECTION 103 - ADMINISTRATIVE PROVISIONS**

**[A]103.1 General.** The administrative provisions and compliance of this Code will be those established by the *Puerto Rico Energy Conservation Code*, the *Puerto Rico Building Code*, the OGPe, the *Puerto Rico Planning Board* and the *Puerto Rico Aqueducts and Sewers Authority*.

## **CHAPTER 2 – DEFINITIONS**

### **SECTION 201 - GENERAL**

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

**201.2 Interchangeability.** Words stated in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the *Puerto Rico Building Code*, *Puerto Rico Fire Code*, *Puerto Rico Fuel Gas Code* or the *Puerto Rico Mechanical Code*, such terms shall have the meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

## **SECTION 202 - GENERAL DEFINITIONS**

**ACCEPTED ENGINEERING PRACTICE.** That which conforms to accepted principles, tests or standards of nationally recognized technical or scientific authorities.

**[M] ACCESS (TO).** That which enables a fixture, appliance or equipment to be reached by ready *access* or by a means that first requires the removal or movement of a panel, door or similar obstruction (see “Ready *access*”).

**ACCESS COVER.** A removable plate, usually secured by bolts or screws, to permit *access* to a pipe or pipe fitting for the purposes of inspection, repair or cleaning.

**[BE] ACCESSIBLE.** A site, building, facility or portion thereof that complies with Chapter 11 of the *Puerto Rico Building Code*.

**ADAPTER FITTING.** An *approved* connecting device that suitably and properly joins or adjusts pipes and fittings that do not otherwise fit together.

**AIR ADMITTANCE VALVE.** One-way valve designed to allow air to enter the plumbing drainage system when negative pressures develop in the piping system. The device shall close by gravity and seal the vent terminal at zero differential pressure (no-flow conditions) and under positive internal pressures. The purpose of an air admittance valve is to provide a method of allowing air to enter the plumbing drainage system without the use of a vent extended to open air and to prevent *sewer* gases from escaping into a building.

**AIR BREAK (Drainage System).** A piping arrangement in which a drain from a fixture, appliance or device discharges indirectly into another fixture, receptacle or interceptor at a point below the *flood level rim* and above the trap seal.

**AIR GAP (Drainage System).** The unobstructed vertical distance through the free atmosphere between the outlet of the waste pipe and the *flood level rim* of the receptacle into which the waste pipe is discharging.

**AIR GAP (Water Distribution System).** The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the *flood level rim* of the receptacle.

**ALTERNATE ON-SITE NONPOTABLE WATER.** Nonpotable water from other than public utilities, on-site surface sources and subsurface natural freshwater sources. Examples of such water are graywater, on-site reclaimed water, collected rainwater, captured condensate and rejected water from reverse osmosis systems.

**ALTERNATIVE ENGINEERED DESIGN.** A plumbing system that performs in accordance with the intent of Chapters 3 through 14 and provides an equivalent level of performance for the protection of public health, safety and welfare. The system design is not specifically regulated by Chapters 3 through 14.

**ANCHORS.** See “Supports.”

**ANTISIPHON.** A term applied to valves or mechanical devices that eliminate siphonage.

[A] **APPROVED.** Acceptable to the code official.

[A] **APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests or furnishing inspection services, or furnishing product certification where such agency has been *approved* by the code official.

**AREA DRAIN.** A receptacle designed to collect surface or storm water from an open area.

**BACKFLOW.** Pressure created by any means in the water distribution system, which by being in excess of the pressure in the water supply mains causes a potential backflow condition.

**Backpressure, low head.** A pressure less than or equal to 4.33 psi (29.88 kPa) or the pressure exerted by a 10-foot (3048 mm) column of water.

**Backsiphonage.** The backflow of potentially contaminated water into the potable water system as a result of the pressure in the potable water system falling below atmospheric pressure of the plumbing fixtures, pools, tanks or vats connected to the potable water distribution piping.

**Water supply system.** The flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply from any source except the intended source.

**BACKFLOW CONNECTION.** Any arrangement whereby backflow is possible.

**BACKFLOW, DRAINAGE.** A reversal of flow in the drainage system.

**BACKFLOW PREVENTER.** A backflow prevention assembly, a backflow prevention device or other means or method to prevent backflow into the potable water supply.

**BACKWATER VALVE.** A device or valve installed in the *building drain* or *sewer* pipe where a *sewer* is subject to backflow, and that prevents drainage or waste from backing up into a lower level or fixtures and causing a flooding condition.

**[BS] BASE FLOOD ELEVATION.** A reference point, determined in accordance with the building code, based on the depth or peak elevation of flooding, including wave height, which has a 1 percent (100-year flood) or greater chance of occurring in any given year.

**BATHROOM GROUP.** A group of fixtures consisting of a water closet, lavatory, bathtub or shower, including or excluding a bidet, an *emergency floor drain* or both. Such fixtures are located together on the same floor level.

**BRANCH.** Any part of the piping system except a riser, main or *stack*.

**BRANCH INTERVAL.** A vertical measurement of distance, 8 feet (2438 mm) or more in *developed length*, between the connections of horizontal *branches* to a drainage *stack*. Measurements are taken down the *stack* from the highest horizontal *branch* connection.

**BRANCH VENT.** A vent connecting one or more individual vents with a vent *stack* or *stack vent*.

**[A] BUILDING.** Any structure utilized or intended for supporting or sheltering any occupancy.

**BUILDING DRAIN.** That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends 30 inches (762 mm) in *developed length* of pipe beyond the exterior walls of the building and conveys the drainage to the *building sewer*.

**Combined.** A *building drain* that conveys both sewage and storm water or other drainage.

**Sanitary.** A *building drain* that conveys sewage only.

**Storm.** A *building drain* that conveys storm water or other drainage, but not sewage.

**BUILDING SEWER.** That part of the drainage system that extends from the end of the *building drain* and conveys the discharge to a *public sewer*, *private sewer*, individual sewage disposal system or other point of disposal.

**Combined.** A *building sewer* that conveys both sewage and storm water or other drainage.

**Sanitary.** A *building sewer* that conveys sewage only.

**Storm.** A *building sewer* that conveys storm water or other drainage, but not sewage.

**BUILDING SUBDRAIN.** That portion of a drainage system that does not drain by gravity into the *building sewer*.

**BUILDING TRAP.** A device, fitting or assembly of fittings installed in the *building drain* to prevent circulation of air between the drainage system of the building and the *building sewer*.

**CIRCUIT VENT.** A vent that connects to a horizontal drainage *branch* and vents two traps to not more than eight traps or trapped fixtures connected into a battery.

**CIRCULATING HOT WATER SYSTEM.** A specifically designed water distribution system where one or more pumps are operated in the service hot water piping to circulate heated water from the water-heating equipment to fixture supply and back to the water-heating equipment.

**CISTERN.** A small covered tank for storing water for a home or farm. Generally, this tank stores rainwater to be utilized for purposes other than in the potable water supply, and such tank is placed underground in most cases.

**CLEANOUT.** An access opening in the drainage system utilized for the removal of obstructions. Types of cleanouts include a removable plug or cap, and a removable fixture or fixture trap.

**[A] CODE.** These regulations, subsequent amendments thereto or any emergency rule or regulation that the administrative authority having jurisdiction has lawfully adopted.

**[A] CODE OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

**COLLECTION PIPE.** Unpressurized pipe used within the collection system that drains on-site nonpotable water or rainwater to a storage tank by gravity.

**COMBINATION FIXTURE.** A fixture combining one sink and laundry tray or a twoor three-compartment sink or laundry tray in one unit.

**COMBINATION WASTE AND VENT SYSTEM.** A specially designed system of waste piping embodying the horizontal wet venting of one or more sinks, lavatories, drinking fountains or floor drains by means of a common waste and vent pipe adequately sized to provide free movement of air above the flow line of the drain.

**COMBINED BUILDING DRAIN.** See “*Building drain, combined.*”

**COMBINED BUILDING SEWER.** See “*Building sewer, combined.*”

**COMMON VENT.** A vent connecting at the junction of two *fixture drains* or to a *fixture branch* and serving as a vent for both fixtures.

**CONCEALED FOULING SURFACE.** Any surface of a plumbing fixture that is not readily visible and is not scoured or cleansed with each fixture operation.

**CONDUCTOR.** A pipe inside the building that conveys storm water from the roof to a storm or combined *building drain*.

**[A] CONSTRUCTION DOCUMENT.** All of the written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit. The construction drawings shall be drawn to an appropriate scale.

**CONTAMINATION.** An impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or the spread of disease by sewage, industrial fluids or waste.

**CRITICAL LEVEL (C-L).** An elevation (height) reference point that determines the minimum height at which a backflow preventer or vacuum breaker is installed above the *flood level rim* of the fixture or receptor served by the device. The critical level is the elevation level below which there is a potential for backflow to occur. If the critical level marking is not indicated on the device, the bottom of the device shall constitute the critical level.

**CROSS CONNECTION.** Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety or steam, gas or chemical, whereby there exists the possibility for flow from one system to the other, with the direction of flow depending on the pressure differential between the two systems (see “Backflow”).

**DEMAND RECIRCULATION WATER SYSTEM.** A water distribution system where one or more pumps prime the service hot water piping with heated water upon a demand for hot water.

**DEPTH OF TRAP SEAL.** The depth of liquid that would have to be removed from a full trap before air could pass through the trap.

**[BS] DESIGN FLOOD ELEVATION.** The elevation of the “design flood,” including wave height, relative to the datum specified on the community’s legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the building’s perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

**DEVELOPED LENGTH.** The length of a pipeline measured along the centerline of the pipe and fittings.

**DISCHARGE PIPE.** A pipe that conveys the discharge from plumbing fixtures or appliances.

**DRAIN.** Any pipe that carries waste water or waterborne wastes in a building drainage system.



**DRAINAGE FITTING.** The type of fitting or fittings utilized in the drainage system. Drainage fittings are similar to cast-iron fittings, except that instead of having a bell and spigot, drainage fittings are recessed and tapped to eliminate ridges on the inside of the installed pipe.

**DRAINAGE FIXTURE UNIT.**

**Drainage (dfu).** A measure of the probable discharge into the drainage system by various types of plumbing fixtures. The drainage fixture-unit value for a particular fixture depends on its volume rate of drainage discharge, on the time duration of a single drainage operation and on the average time between successive operations.

**DRAINAGE SYSTEM.** Piping within a *public* or *private* premise that conveys sewage, rainwater or other liquid waste to a point of disposal. A drainage system does not include the mains of a *public sewer* system or a private or public sewage treatment or disposal plant.

**Building gravity.** A drainage system that drains by gravity into the *building sewer*.

**Sanitary.** A drainage system that carries sewage and excludes storm, surface and ground water.

**Storm.** A drainage system that carries rainwater, surface water, subsurface water and similar liquid waste.

**DRINKING FOUNTAIN.** A plumbing fixture that is connected to the potable water distribution system and the drainage system. The fixture allows the user to obtain a drink directly from a stream of flowing water without the use of any accessories.

**EFFECTIVE OPENING.** The minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of the diameter of a circle or, if the opening is not circular, the diameter of a circle of equivalent cross-sectional area. For faucets and similar fittings, the *effective opening* shall be measured at the smallest orifice in the fitting body or in the supply piping to the fitting.

**EMERGENCY FLOOR DRAIN.** A floor drain that does not receive the discharge of any drain or indirect waste pipe, and that protects against damage from accidental spills, fixture overflows and leakage.

**ESSENTIALLY NONTOXIC TRANSFER FLUID.** Fluids having a Gosselin rating of 1, including propylene glycol; mineral oil; polydimethylsiloxane; hydrochlorofluorocarbon, chlorofluorocarbon and carbon refrigerants; and FDA-approved boiler water additives for steam boilers.

**ESSENTIALLY TOXIC TRANSFER FLUID.** Soil, waste or gray water and fluids having a Gosselin rating of 2 or more, including ethylene glycol, hydrocarbon oils, ammonia refrigerants and hydrazine.

**EXISTING INSTALLATION.** Any plumbing system regulated by this code that was legally installed prior to the effective date of this code, or for which a permit to install has been issued.

**FAUCET.** A valve end of a water pipe through which water is drawn from or held within the pipe.

**FILL VALVE.** A water supply valve, opened or closed by means of a float or similar device, utilized to supply water to a tank. An antisiphon fill valve contains an antisiphon device in the form of an *approved air gap* or vacuum breaker that is an integral part of the fill valve unit and that is positioned on the discharge side of the water supply control valve.

**FIXTURE.** See “Plumbing fixture.”

**FIXTURE BRANCH.** A drain serving two or more fixtures that discharges to another drain or to a *stack*.

**FIXTURE DRAIN.** The drain from the trap of a fixture to a junction with any other drain pipe.

**FIXTURE FITTING.**

**Supply fitting.** A fitting that controls the volume, direction of flow or both of water and is either attached to or accessed from a fixture, or is used with an open or atmospheric discharge.

**Waste fitting.** A combination of components that conveys the sanitary waste from the outlet of a fixture to the connection to the sanitary drainage system.

**FIXTURE SUPPLY.** The water supply pipe connecting a fixture to a *branch* water supply pipe or directly to a main water supply pipe.

**[BS] FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any given year.
2. The area designated as a *flood hazard area* on a community’s flood hazard map or as otherwise legally designated.

**FLOOD LEVEL RIM.** The edge of the receptacle from which water overflows.

**FLOW CONTROL (Vented).** A device installed upstream from the interceptor having an orifice that controls the rate of flow through the interceptor and an air intake (vent) downstream from the orifice that allows air to be drawn into the flow stream.

**FLOW PRESSURE.** The pressure in the water supply pipe near the faucet or water outlet while the faucet or water outlet is wide open and flowing.

**FLUSH TANK.** A tank designed with a fill valve and flush valve to flush the contents of the bowl or usable portion of the fixture.

**FLUSHOMETER TANK.** A device integrated within an air accumulator vessel that is designed to discharge a predetermined quantity of water to fixtures for flushing purposes.

**FLUSHOMETER VALVE.** A valve attached to a pressurized water supply pipe and designed so that when activated, the valve opens the line for direct flow into the fixture at a rate and quantity to operate the fixture properly, and then gradually closes to reseal fixture traps and avoid water hammer.

**FULL-OPEN VALVE.** A water control or shutoff component in the water supply system piping that, where adjusted for maximum flow, the flow path through the component's closure member is not a restriction in the component's through-flow area.

**GRAYWATER.** Waste discharged from lavatories, bathtubs, showers, clothes washers and laundry trays.

#### **GREASE INTERCEPTOR.**

**Fats, oils and greases (FOG) disposal system.** A plumbing appurtenance that reduces nonpetroleum fats, oils and greases in effluent by separation or mass and volume reduction.

**Gravity.** Plumbing appurtenances of not less than 500 gallons (1893 L) capacity that are installed in the sanitary drainage system to intercept free-floating fats, oils and grease from waste water discharge. Separation is accomplished by gravity during a retention time of not less than 30 minutes.

**Hydromechanical.** Plumbing appurtenances that are installed in the sanitary drainage system to intercept freefloating fats, oils and grease from waste water discharge. Continuous separation is accomplished by air entrainment, buoyancy and interior baffling.

**GREASE-LADEN WASTE.** Effluent discharge that is produced from food processing, food preparation or other sources where grease, fats and oils enter automatic dishwasher prerinse stations, sinks or other appurtenances.

**GREASE REMOVAL DEVICE, AUTOMATIC (GRD).** A plumbing appurtenance that is installed in the sanitary drainage system to intercept free-floating fats, oils and grease from waste water discharge. Such a device operates on a time or event-controlled basis and has the ability to remove free-floating fats, oils and grease automatically without intervention from the user except for maintenance.

**GRIDDED WATER DISTRIBUTION SYSTEM.** A water distribution system where every water distribution pipe is interconnected so as to provide two or more paths to each fixture supply pipe.

**HANGERS.** See “Supports.”

**HORIZONTAL BRANCH DRAIN.** A drainage *branch* pipe extending laterally from a soil or waste *stack* or *building drain*, with or without vertical sections or *branches*, that receives the discharge from two or more *fixture drains* or *branches* and conducts the discharge to the soil or waste *stack* or to the *building drain*.

**HORIZONTAL PIPE.** Any pipe or fitting that makes an angle of less than 45 degrees (0.79 rad) with a horizontal plane.

**HOT WATER.** Water at a temperature greater than or equal to 110°F (43°C).

**HOUSE TRAP.** See “Building trap.”

**INDIRECT WASTE PIPE.** A waste pipe that does not connect directly with the drainage system, but that discharges into the drainage system through an *air break* or *air gap* into a trap, fixture, receptor or interceptor.

**INDIVIDUAL SEWAGE DISPOSAL SYSTEM.** A system for disposal of domestic sewage by means of a septic tank, cesspool or mechanical treatment, designed for utilization apart from a public *sewer* to serve a single establishment or building.

**INDIVIDUAL VENT.** A pipe installed to vent a fixture trap and that connects with the vent system above the fixture served or terminates in the open air.

**INDIVIDUAL WATER SUPPLY.** A water supply that serves one or more families, and that is not an *approved* public water supply.

**INTERCEPTOR.** A device designed and installed to separate and retain for removal, by automatic or manual means, deleterious, hazardous or undesirable matter from normal wastes, while permitting normal sewage or wastes to discharge into the drainage system by gravity.

## **JOINT.**

**Expansion.** A loop, return bend or return offset that provides for the expansion and contraction in a piping system and is utilized in tall buildings or where there is a rapid change of temperature, as in power plants, steam rooms and similar occupancies.

**Flexible.** Any joint between two pipes that permits one pipe to be deflected or moved without movement or deflection of the other pipe.

**Mechanical.** See “Mechanical joint.”

**Slip.** A type of joint made by means of a washer or a special type of packing compound in which one pipe is slipped into the end of an adjacent pipe.

**LEAD-FREE SOLDER AND FLUX.** Containing not more than 0.2-percent lead.

**LEADER.** An exterior drainage pipe for conveying storm water from roof or gutter drains to an *approved* means of disposal.

**MACERATING TOILET SYSTEM.** An assembly consisting of a water closet and sump with a macerating pump that is designed to collect, grind and pump wastes from the water closet and up to two other fixtures connected to the sump.

**MAIN.** The principal pipe artery to which branches are connected.

**MANIFOLD.** See “Plumbing appurtenance.”

**[M] MECHANICAL JOINT.** A connection between pipes, fittings, or pipes and fittings that is not screwed, caulked, threaded, soldered, solvent cemented, brazed, welded or heat fused. A joint in which compression is applied along the centerline of the pieces being joined. In some applications, the joint is part of a coupling, fitting or adapter.

**MEDICAL GAS SYSTEM.** The complete system to convey medical gases for direct patient application from central supply systems (bulk tanks, manifolds and medical air compressors), with pressure and operating controls, alarm warning systems, related components and piping networks extending to station outlet valves at patient use points.

**MEDICAL VACUUM SYSTEM.** A system consisting of central-vacuum-producing equipment with pressure and operating controls, shutoff valves, alarm-warning systems, gauges and a network of piping extending to and terminating with suitable station inlets at locations where patient suction may be required.

**METER.** A measuring device used to collect data and indicate water usage.

**NONPOTABLE WATER.** Water not safe for drinking, personal or culinary utilization.

**NUISANCE.** Public nuisance as known in common law or in equity jurisprudence; whatever is dangerous to human life or detrimental to health; whatever structure or premises is not sufficiently ventilated, sewerred, drained, cleaned or lighted, with respect to its intended occupancy; and whatever renders the air, or human food, drink or water supply unwholesome.

**[A] OCCUPANCY.** The purpose for which a building or portion thereof is utilized or occupied.

**OFFSET.** A combination of *approved* bends that makes two changes in direction bringing one section of the pipe out of line but into a line parallel with the other section.

**ON-SITE NONPOTABLE WATER REUSE SYSTEM.** A water system for the collection, treatment, storage, distribution and reuse of nonpotable water generated on site, including but not limited to a gray water system. This definition does not include a rainwater harvesting system.

**OPEN AIR.** Outside the structure.

**PLUMBING.** The practice, materials and fixtures utilized in the installation, maintenance, extension and alteration of all piping, fixtures, plumbing appliances and plumbing appurtenances, within or adjacent to any structure, in connection with sanitary drainage or storm drainage facilities; venting systems; and public or private water supply systems.

**PLUMBING APPLIANCE.** Water or drain-connected devices intended to perform a special function. These devices have their operation or control dependent on one or more energized components, such as motors, controls or heating elements. Such devices are manually adjusted or controlled by the owner or operator, or are operated automatically through one or more of the following actions: a time cycle, a temperature range, a pressure range, a measured volume or weight.

**PLUMBING APPURTENANCE.** A manufactured device, prefabricated assembly or on-the-job assembly of component parts that is an adjunct to the basic piping system and plumbing fixtures. An appurtenance does not demand additional water supply and does not add any discharge load to a fixture or to the drainage system.

**PLUMBING FIXTURE.** A receptacle or device that is connected to a water supply system or discharges to a drainage system or both. Such receptacles or devices require a supply of water; or discharge liquid waste or liquid-borne solid waste; or require a supply of water and discharge waste to a drainage system.

**PLUMBING SYSTEM.** A system that includes the water distribution pipes; plumbing fixtures and traps; water-treating or water-using equipment; soil, waste and vent pipes; and *building drains*; in addition to their respective connections, devices and appurtenances within a structure or premises; and the water service, *building sewer* and building storm *sewer* serving such structure or premises.

**POLLUTION.** An impairment of the quality of the potable water to a degree that does not create a hazard to public health but that does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use.

**POTABLE WATER.** Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects and conforming to the bacteriological and chemical quality requirements of the Public Health Service Drinking Water Standards or the regulations of the public health authority having jurisdiction.

**[M] PRESS-CONNECT JOINT.** A permanent mechanical joint incorporating an elastomeric seal or an elastomeric seal and corrosion-resistant grip ring. The joint is made with a pressing tool and jaw or ring approved by the fitting manufacturer.

**PRIVATE.** In the classification of plumbing fixtures, “*private*” applies to fixtures in residences and apartments, and to fixtures in nonpublic toilet rooms of hotels and motels and similar installations in buildings where the plumbing fixtures are intended for utilization by a family or an individual.

**PUBLIC OR PUBLIC UTILIZATION.** In the classification of plumbing fixtures, “*public*” applies to fixtures in general toilet rooms of schools, gymnasiums, hotels, airports, bus and railroad stations, public buildings, bars, public comfort stations, office buildings, stadiums, stores, restaurants and other installations where a number of fixtures are installed so that their utilization is similarly unrestricted.

**PUBLIC SWIMMING POOL.** A pool, other than a residential pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use.

**PUBLIC WATER MAIN.** A water supply pipe for public utilization controlled by public authority.

**QUICK-CLOSING VALVE.** A valve or faucet that closes automatically when released manually or that is controlled by a mechanical means for fast-action closing.

**RAINWATER.** Water from natural precipitation.

**[M] READY ACCESS.** That which enables a fixture, appliance or equipment to be directly reached without requiring the removal or movement of any panel, door or similar obstruction and without the use of a portable ladder, step stool or similar device.

**RECLAIMED WATER.** Nonpotable water that has been derived from the treatment of waste water by a facility or system licensed or permitted to produce water meeting the jurisdiction’s water requirements for its intended uses. Also known as “recycled water.”

**REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY.** A backflow prevention device consisting of two independently acting check valves, internally force-loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to the atmosphere, internally loaded to a normally open position between two tightly closing shutoff valves and with a means for testing for tightness of the checks and opening of the relief means.

**[A] REGISTERED DESIGN PROFESSIONAL.** An individual who is registered or licensed to practice their respective design profession, as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

## **RELIEF VALVE.**

**Pressure relief valve.** A pressure-actuated valve held closed by a spring or other means and designed to relieve pressure automatically at the pressure at which such valve is set.

**Temperature and pressure relief (T&P) valve.** A combination relief valve designed to function as both a temperature relief and a pressure relief valve.

**Temperature relief valve.** A temperature-actuated valve designed to discharge automatically at the temperature at which such valve is set.

**RELIEF VENT.** A vent whose primary function is to provide circulation of air between drainage and vent systems.

**RIM.** An unobstructed open edge of a fixture.

**RISER.** See “Water pipe, riser.”

**ROOF DRAIN.** A drain installed to receive water collecting on the surface of a roof and to discharge such water into a leader or a conductor.

**ROUGH-IN.** Parts of the plumbing system that are installed prior to the installation of fixtures. This includes drainage, water supply, vent piping and the necessary fixture supports and any fixtures that are built into the structure.

**SELF-CLOSING FAUCET.** A faucet containing a valve that automatically closes upon deactivation of the opening means.

**SEPARATOR.** See “Interceptor.”

**SEWAGE.** Any liquid waste containing animal or vegetable matter in suspension or solution, including liquids containing chemicals in solution.

**SEWAGE EJECTOR.** A device for lifting sewage by entraining the sewage in a high-velocity jet of steam, air or water.

## **SEWER.**

**Building sewer.** See “Building sewer.”

**Public sewer.** That part of the drainage system of pipes, installed and maintained by a city, township, county, public utility company or other public entity, and located on public property, in the street or in an approved dedicated easement of public or community use.

**Sanitary sewer.** A *sewer* that carries sewage and excludes storm, surface and ground water.



**Storm sewer.** A *sewer* that conveys rainwater, surface water, subsurface water and similar liquid wastes.

**SLOPE.** The fall (pitch) of a line of pipe in reference to a horizontal plane. In drainage, the slope is expressed as the fall in units vertical per units horizontal (percent) for a length of pipe.

**SOIL PIPE.** A pipe that conveys sewage containing fecal matter to the *building drain* or *building sewer*.

**SPILLPROOF VACUUM BREAKER.** An assembly consisting of one check valve force-loaded closed and an air-inlet vent valve force-loaded open to atmosphere, positioned downstream of the check valve, and located between and including two tightly closing shutoff valves and a test cock.

**STACK.** A general term for any vertical line of soil, waste, vent or inside conductor piping that extends through not fewer than one story with or without offsets.

**STACK VENT.** The extension of a soil or waste *stack* above the highest horizontal drain connected to the *stack*.

**STORM WATER.** Natural precipitation, including snowmelt, that has contacted a surface at or below grade.

**STACK VENTING.** A method of venting a fixture or fixtures through the soil or waste *stack*.

**STORM DRAIN.** See “Drainage system, storm.”

[A] **STRUCTURE.** That which is built or constructed.

**SUBSOIL DRAIN.** A drain that collects subsurface water or seepage water and conveys such water to a place of disposal.

**SUMP.** A tank or pit that receives sewage or liquid waste, located below the normal grade of the gravity system and that must be emptied by mechanical means.

**SUMP PUMP.** An automatic water pump powered by an electric motor for the removal of drainage, except raw sewage, from a sump, pit or low point.

**SUMP VENT.** A vent from pneumatic sewage ejectors, or similar equipment, that terminates separately to the open air.

**SUPPORTS.** Devices for supporting and securing pipe, fixtures and equipment.

**SWIMMING POOL.** A permanent or temporary structure that is intended to be used for swimming, bathing or wading and that is designed and manufactured or built to be connected to a circulation system. A swimming pool can be open to the public regardless of whether a fee is

charged for its use or can be accessory to a residential setting where the pool is available only to the household and guests of the household.

**TEMPERED WATER.** Water having a temperature range between 85°F (29°C) and 110°F (43°C).

**THIRD-PARTY CERTIFICATION AGENCY.** An *approved* agency operating a product or material certification system that incorporates initial product testing, assessment and surveillance of a manufacturer's quality control system.

**THIRD-PARTY CERTIFIED.** Certification obtained by the manufacturer indicating that the function and performance characteristics of a product or material have been determined by testing and ongoing surveillance by an *approved third-party certification agency*. Assertion of certification is in the form of identification in accordance with the requirements of the *third-party certification agency*.

**TOILET FACILITY.** A room or space that contains not less than one water closet and one lavatory.

**TRAP.** A fitting or device that provides a liquid seal to prevent the emission of *sewer* gases without materially affecting the flow of sewage or waste water through the trap.

**TRAP SEAL.** The vertical distance between the weir and the top of the dip of the trap.

**UNSTABLE GROUND.** Earth that does not provide a uniform bearing for the barrel of the *sewer* pipe between the joints at the bottom of the pipe trench.

**VACUUM.** Any pressure less than that exerted by the atmosphere.

**VACUUM BREAKER.** A type of backflow preventer installed on openings subject to normal atmospheric pressure that prevents backflow by admitting atmospheric pressure through ports to the discharge side of the device.

**VENT PIPE.** See "Vent system."

**VENT STACK.** A vertical vent pipe installed primarily for the purpose of providing circulation of air to and from any part of the drainage system.

**VENT SYSTEM.** A pipe or pipes installed to provide a flow of air to or from a drainage system, or to provide a circulation of air within such system to protect trap seals from siphonage and backpressure.

**VERTICAL PIPE.** Any pipe or fitting that makes an angle of 45 degrees (0.79 rad) or more with the horizontal.

**WALL-HUNG WATER CLOSET.** A wall-mounted water closet installed in such a way that the fixture does not touch the floor.

**WASTE.** The discharge from any fixture, appliance, area or appurtenance that does not contain fecal matter.

**WASTE PIPE.** A pipe that conveys only waste.

**WASTE RECEPTOR.** A floor sink, standpipe, hub drain or floor drain that receives the discharge of one or more indirect waste pipes.

**WATER COOLER.** A drinking fountain that incorporates a means of reducing the temperature of the water supplied to it from the potable water distribution system.

**WATER DISPENSER.** A plumbing fixture that is manually controlled by the user for the purpose of dispensing potable drinking water into a receptacle such as a cup, glass or bottle. Such fixture is connected to the potable water distribution system of the premises. This definition includes a freestanding apparatus for the same purpose that is not connected to the potable water distribution system and that is supplied with potable water from a container, bottle or reservoir.

**WATER-HAMMER ARRESTOR.** A device utilized to absorb the pressure surge (water hammer) that occurs when water flow is suddenly stopped in a water supply system.

**[M] WATER HEATER.** Any heating appliance or equipment that heats potable water and supplies such water to the potable hot water distribution system.

**WATER MAIN.** A water supply pipe or system of pipes, installed and maintained by a city, township, county, public utility company or other public entity, on public property, in the street or in an approved dedicated easement of public or community use.

**WATER OUTLET.** A discharge opening through which water is supplied to a fixture, into the atmosphere (except into an open tank that is part of the water supply system), to a boiler or heating system, or to any devices or equipment that require water to operate but are not part of the plumbing system.

**WATER PIPE.**

**Riser.** A water supply pipe that extends one full story or more to convey water to *branches* or to a group of fixtures.

**Water distribution pipe.** A pipe within the structure or on the premises that conveys water from the water service pipe, or from the meter when the meter is at the structure, to the points of utilization.

**Water service pipe.** The pipe from the water main or other source of potable water supply, or from the meter when the meter is at the public right of way, to the water distribution system of the building served.

**WATER SUPPLY SYSTEM.** The water service pipe, water distribution pipes, and the necessary connecting pipes, fittings, control valves and all appurtenances in or adjacent to the structure or premises.

**WELL.**

**Bored.** A well constructed by boring a hole in the ground with an auger and installing a casing.

**Drilled.** A well constructed by making a hole in the ground with a drilling machine of any type and installing a casing and screen.

**Driven.** A well constructed by driving a pipe in the ground. The drive pipe is usually fitted with a well point and screen.

**Dug.** A well constructed by excavating a large-diameter shaft and installing a casing.

**WHIRLPOOL BATHTUB.** A plumbing appliance consisting of a bathtub fixture that is equipped and fitted with a circulating piping system designed to accept, circulate and discharge bathtub water upon each use.

**YOKE VENT.** A pipe connecting upward from a soil or waste *stack* to a vent *stack* for the purpose of preventing pressure changes in the *stacks*.

## **CHAPTER 3 – GENERAL REGULATIONS**

No amendments.

## **CHAPTER 4 – FIXTURES, FAUCETS AND FIXTURE FITTINGS**

No amendments.

## **CHAPTER 5 – WATER HEATERS**

No amendments.

## **CHAPTER 6 – WATER SUPPLY AND DISTRIBUTION**

No amendments.

## **CHAPTER 7 – SANITARY DRAINAGE**

No amendments.

## **CHAPTER 8 – INDIRECT/SPECIAL WASTE**

No amendments.

## **CHAPTER 9 – VENTS**

No amendments.

## **CHAPTER 10 – TRAPS, INTERCEPTORS AND SEPARATORS**

No amendments.

## **CHAPTER 11 – STORM DRAINAGE**

No amendments.

## **CHAPTER 12 – SPECIAL PIPING AND STORAGE SYSTEMS**

No amendments.

## **CHAPTER 13 – NONPOTABLE WATER SYSTEMS**

No amendments.

## **CHAPTER 14 – SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS**

No amendments.

## **CHAPTER 15 – REFERENCED STANDARDS**

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### **PRASA**

Puerto Rico Aqueduct and Sewer Authority  
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*3149-1984: Reglamento de Normas de Diseño (Complementary Code)*

### **APPENDIX A – PLUMBING PERMIT FEE SCHEDULE**

No amendments.

### **APPENDIX B – RATES OF RAINFALL FOR VARIOUS CITIES**

No amendments.

### **APPENDIX C – STRUCTURAL SAFETY**

No amendments.

### **APPENDIX D – DEGREE DAY AND DESIGN TEMPERATURES**

No amendments.

### **APPENDIX E – SIZING OF WATER PIPING SYSTEM**

No amendments.



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PUERTO RICO CODES

# PRFC

Puerto Rico Fire Code







**PUERTO RICO FIRE CODE 2018**

**As amended from**

**INTERNATIONAL FIRE CODE 2018**

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# CHAPTER 1 - SCOPE AND ADMINISTRATION

## PART 1 - GENERAL PROVISIONS

### SECTION 101 - SCOPE AND GENERAL REQUIREMENTS

[A]101.1 **Title.** These regulations shall be known as the *Puerto Rico Fire Code*, hereinafter referred to as “this code.”

[A]101.2 **Scope.** This code establishes regulations affecting or relating to structures, processes, premises and safeguards regarding all of the following:

1. The hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices.
2. Conditions hazardous to life, property or public welfare in the occupancy of structures or premises.
3. Fire hazards in the structure or on the premises from occupancy or operation.
4. Matters related to the construction, extension, repair, alteration or removal of fire suppression or alarm systems.
5. Conditions affecting the safety of fire fighters and emergency responders during emergency operations.

[A]101.2.1 **Appendices.** Provisions in the appendices shall not apply unless specifically adopted.

[A]101.3 **Intent.** The purpose of this code is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

[A]101.4 **Severability.** If a section, subsection, sentence, clause or phrase of this code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

[A]101.5 **Validity.** In the event any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions hereof, which are determined to be legal; and it shall be presumed that this code would have been adopted without such illegal or invalid parts or provisions.

### SECTION 102 - APPLICABILITY

[A]102.1 **Construction and design provisions.** The construction and design provisions of this code shall apply to:

1. Structures, facilities and conditions arising after the adoption of this code.

2. Existing structures, facilities and conditions not legally in existence at the time of adoption of this code.
3. Existing structures, facilities and conditions where required in Chapter 11.
4. Existing structures, facilities and conditions that, in the opinion of the *fire code official*, constitute a distinct hazard to life or property.

**[A]102.2 Administrative, operational and maintenance provisions.** The administrative, operational and maintenance provisions of this code shall apply to:

1. Conditions and operations arising after the adoption of this code.
2. Existing conditions and operations.

**[A]102.3 Change of use or occupancy.** A change of occupancy shall not be made unless the use or occupancy is made to comply with the requirements of this code and the *Puerto Rico Existing Building Code*.

**Exception:** Where approved by the *fire code official*, a change of occupancy shall be permitted without complying with the requirements of this code and the *Puerto Rico Existing Building Code*, provided that the new or proposed use or occupancy is less hazardous, based on life and fire risk, than the existing use or occupancy.

**[A]102.4 Application of building code.** The design and construction of new structures shall comply with the *Puerto Rico Building Code*, and any *alterations*, additions, changes in use or changes in structures required by this code, which are within the scope of the *Puerto Rico Building Code*, shall be made in accordance therewith.

**[A]102.5 Application of residential code.** Where structures are designed and constructed in accordance with the *Puerto Rico Residential Code*, the provisions of this code shall apply as follows:

1. Construction and design provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water supplies. Where interior or exterior systems or devices are installed, construction permits required by Section 105.7 and the *Joint Regulation* shall apply.
2. Administrative, operational and maintenance provisions of this code shall apply.

**[A]102.6 Historic buildings.** The provisions of this code relating to the construction, *alteration*, repair, enlargement, restoration, relocation or moving of buildings or structures shall not be mandatory for existing buildings or structures identified and classified by the federal, state or local jurisdiction as historic buildings where such buildings or structures do not constitute a distinct hazard to life or property. Fire protection in designated historic buildings shall be provided with an *approved* fire protection plan as required in Section 1103.1.1.

**[A]102.7 Referenced codes and standards.** The codes and standards referenced in this code shall be those that are listed in Chapter 80, and such codes and standards shall be considered to be part

of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.7.1 and 102.7.2.

**[A]102.7.1 Conflicts.** Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

**[A]102.7.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

**[A]102.8 Subjects not regulated by this code.** Where applicable standards or requirements are not set forth in this code, or are contained within other laws, codes, regulations, ordinances or bylaws adopted by the Puerto Rico Fire Department or OGPe-DDEC, compliance with applicable standards of the National Fire Protection Association or other nationally recognized fire safety standards, as *approved*, shall be deemed as prima facie evidence of compliance with the intent of this code. Nothing herein shall derogate from the authority of the *fire code official* to determine compliance with codes or standards for those activities or installations within the *fire code official's* jurisdiction or responsibility.

**[A]102.9 Matters not provided for.** Requirements that are essential for the public safety of an existing or proposed activity, building or structure, or for the safety of the occupants thereof, that are not specifically provided for by this code, shall be determined by the *fire code official*.

**[A]102.10 Conflicting provisions.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**[A]102.11 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**[A]102.12 Application of references.** References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

## **PART 2 - ADMINISTRATIVE PROVISIONS**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended, the *Joint Regulation* and the Act 20-2017, as amended.

## **SECTION 103 - DEPARTMENT OF FIRE PREVENTION**

**[A]103.1 General.** The fire prevention bureau is established within the jurisdiction under the direction of the *fire code official*. The function of the bureau shall be the implementation, administration and enforcement of the provisions of this code.

**[A]103.2 Appointment.** The *fire code official* shall be appointed by the chief appointing authority of Puerto Rico; and the *fire code official* shall not be removed from office except for cause and after full opportunity to be heard on specific and relevant charges by and before the appointing authority.

**[A]103.3 Deputies.** In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the *fire code official* shall have the authority to appoint a deputy *fire code official*, other related technical officers, inspectors and other employees.

**[A]103.4 Liability.** The *fire code official*, member of the ***interpretive advisory*** board of code revisions, officer or employee charged with the enforcement of this code, while acting for the jurisdiction, in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties.

**[A]103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representatives of the jurisdiction until the final termination of the proceedings. The *fire code official* or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code; and any officer of the department of fire prevention, acting in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of official duties in connection therewith.

## **SECTION 104 - GENERAL AUTHORITY AND RESPONSIBILITIES**

**[A]104.1 General.** The *fire code official* is hereby authorized to enforce the provisions of this code. The *fire code official* shall have the authority to render interpretations of this code and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of this code. Such policies, procedures, rules and regulations shall not have the effect of waiving requirements specifically provided for in this code.

**[A]104.2 Applications and permits.** The *fire code official* is authorized to receive applications, review *construction documents* and issue permits for construction regulated by this code, issue permits for operations regulated by this code, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

**[A]104.3 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *fire code official* has reasonable cause to believe that there exists in a building or on any premises any conditions or violations of this code that make the building or premises unsafe, dangerous or hazardous, the *fire code official* shall have the authority to enter

the building or premises at all reasonable times to inspect or to perform the duties imposed on the *fire code official* by this code. If such building or premises is occupied, the *fire code official* shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the *fire code official* shall first make a reasonable effort to locate the *owner*, the *owner's* authorized agent or other person having charge or control of the building or premises and request entry. If entry is refused, the *fire code official* has recourse to every remedy provided by law to secure entry.

**[A]104.4 Identification.** The *fire code official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

**[A]104.5 Notices and orders.** The *fire code official* is authorized to issue such notices or orders as are required to affect compliance with this code in accordance with Sections 110.1 and 110.2. and in accordance of the provisions established in the Act 20-2017.

**[A]104.6 Official records.** The *fire code official* shall keep official records as required by Sections 104.6.1 through 104.6.4. Such official records shall be retained for the period required for retention of public records or for as long as the structure or activity to which such records relate remains in existence, unless otherwise provided by other regulations.

**[A]104.6.1 Approvals.** A record of approvals shall be maintained by the *fire code official* and shall be available for public inspection during business hours in accordance with applicable laws.

**[A]104.6.2 Inspections.** The *fire code official* shall keep a record of each inspection made, including notices and orders issued, showing the findings and disposition of each.

**104.6.3 Fire records.** The fire department shall keep a record of fires occurring within its jurisdiction and of facts concerning the same, including statistics as to the extent of such fires and the damage caused thereby, together with other information as required by the *fire code official*.

**[A]104.6.4 Administrative.** Application for modification, alternative methods or materials and the final decision of the *fire code official* shall be in writing and shall be officially recorded in the permanent records of the *fire code official*.

**[A]104.7 Approved materials and equipment.** Materials, equipment and devices *approved* by the *fire code official* shall be constructed and installed in accordance with such approval.

**[A]104.7.1 Material and equipment reuse.** Materials, equipment and devices shall not be reused or reinstalled unless such elements have been reconditioned, tested and placed in good and proper working condition and *approved*.

**[A]104.7.2 Technical assistance.** To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to inspection by the *fire code official*, the *fire code official* is authorized to

require the *owner* or owner's authorized agent to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the *fire code official* and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The *fire code official* is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

**[A]104.8 Modifications.** Where there are practical difficulties involved in carrying out the provisions of this code, the *fire code official* shall have the authority to grant modifications for individual cases, provided that the *fire code official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements. The details of action granting modifications shall be recorded and entered in the files of the department of fire prevention.

**[A]104.9 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be approved where the *fire code official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, *fire resistance*, durability and safety. Where the alternative material, design or method of construction is not approved, the *fire code official* shall respond in writing, stating the reasons why the alternative was not approved.

**[A]104.9.1 Research reports.** Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from *approved* sources.

**[A]104.9.2 Tests.** Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the *fire code official* shall have the authority to require tests as evidence of compliance to be made without expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the *fire code official* shall approve the testing procedures. Tests shall be performed by an *approved* agency. Reports of such tests shall be retained by the *fire code official* for the period required for retention of public records.

**104.10 Fire investigations.** The *fire code official*, the fire department or other responsible authority shall have the authority to investigate the cause, origin and circumstances of any fire, explosion or other hazardous condition. Information that could be related to trade secrets or processes shall not be made part of the public record, except as directed by a court of law.



**104.10.1 Assistance from other agencies.** Police and other enforcement agencies shall have authority to render necessary assistance in the investigation of fires when requested to do so.

**104.11 Authority at fires and other emergencies.** The fire chief or officer of the fire department in charge at the scene of a fire or other emergency involving the protection of life or property, or any part thereof, shall have the authority to direct such operation as necessary to extinguish or control any fire, perform any rescue operation, investigate the existence of suspected or reported fires, gas leaks or other hazardous conditions or situations, or take any other action necessary in the reasonable performance of duty. In the exercise of such power, the fire chief is authorized to prohibit any person, vehicle, vessel or thing from approaching the scene, and is authorized to remove, or cause to be removed or kept away from the scene, any vehicle, vessel or thing that could impede or interfere with the operations of the fire department and, in the judgment of the fire chief, any person not actually and usefully employed in the extinguishing of such fire or in the preservation of property in the vicinity thereof.

**104.11.1 Barricades.** The fire chief or officer of the fire department in charge at the scene of an emergency is authorized to place ropes, guards, barricades or other obstructions across any street, alley, place or private property in the vicinity of such operation so as to prevent accidents or interference with the lawful efforts of the fire department to manage and control the situation and to handle fire apparatus.

**104.11.2 Obstructing operations.** Persons shall not obstruct the operations of the fire department in connection with extinguishment or control of any fire, or actions relative to other emergencies, or disobey any lawful command of the fire chief or officer of the fire department in charge of the emergency, or any part thereof, or any lawful order of a police officer assisting the fire department.

**104.11.3 Systems and devices.** Persons shall not render a system or device inoperative during an emergency unless by direction of the fire chief or fire department official in charge of the incident.

## **SECTION 105 - PERMITS**

**[A]105.1 General.** Permits shall be in accordance with Sections 105.1.1 through 105.7.25.

**[A]105.1.1 Permits required.** A property owner or owner's authorized agent who intends to conduct an operation or business, or install or modify systems and equipment that are regulated by this code, or to cause any such work to be performed, shall first make application to the *fire code official* and obtain the required permit.

**105.1.2 Types of permits.** There shall be two types of permits as follows:

1. Operational permit. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.6 for either:

- 1.1. A prescribed period.
- 1.2. Until renewed or revoked.

2. Construction permit. A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by Section 105.7.

**105.1.3 Multiple permits for the same location.** Where more than one permit is required for the same location, the *fire code official* is authorized to consolidate such permits into a single permit provided that each provision is listed in the permit.

**[A]105.1.4 Emergency repairs.** Where equipment replacement and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the *fire code official*.

**[A]105.1.5 Repairs.** Application or notice to the *fire code official* is not required for ordinary repairs to structures, equipment or systems. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or change of any required *means of egress*, or rearrangement of parts of a structure affecting the egress requirements; nor shall any repairs include addition to, alteration of, replacement or relocation of any standpipe, fire protection water supply, *automatic sprinkler system*, fire alarm system or other work affecting fire protection or life safety.

**[A]105.1.6 Annual permit.** Instead of an individual construction permit for each alteration to an already *approved* system or equipment installation, the *fire code official* is authorized to issue an annual permit on application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

**[A]105.1.6.1 Annual permit records.** The person to whom an annual permit is issued shall keep a detailed record of alterations made under such annual permit. The *fire code official* shall have access to such records at all times or such records shall be filed with the *fire code official* as designated.

**[A]105.2 Application.** Application for a permit required by this code shall be made to the *fire code official* in such form and detail as prescribed by the *fire code official*. Applications for permits shall be accompanied by such plans as prescribed by the *fire code official*, as established in the Joint Regulation.

**[A]105.2.1 Refusal to issue permit.** If the application for a permit describes a use that does not conform to the requirements of this code and other pertinent laws and ordinances, the *fire code official* shall not issue a permit.

**[A]105.2.2 Inspection authorized.** Before a new operational permit is *approved*, the *fire code official* is authorized to inspect the receptacles, vehicles, buildings, devices, premises, storage

spaces or areas to be used to determine compliance with this code or any operational constraints required.

**[A]105.2.3 Time limitation of application.** An application for a permit for any proposed work or operation shall be deemed to have been abandoned as established by the Joint Regulation, unless such application has been diligently prosecuted or a permit shall have been issued; except that the *fire code official* is authorized to grant one or more extensions of time. The extension shall be requested in writing and justifiable cause demonstrated.

**[A]105.2.4 Action on application.** The *fire code official* shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the *construction documents* do not conform to the requirements of pertinent laws, the *fire code official* shall reject such application. If the *fire code official* is satisfied that the proposed work or operation conforms to the requirements of this code and laws and ordinances applicable thereto, the *fire code official* shall issue a permit therefor as soon as practicable.

**[A]105.3 Conditions of a permit.** A permit shall constitute permission to maintain, store or handle materials; or to conduct processes that produce conditions hazardous to life or property; or to install equipment utilized in connection with such activities; or to install or modify any *fire protection system* or equipment or any other construction, equipment installation or modification in accordance with the provisions of this code where a permit is required by Section 105.6 or 105.7. Such permission shall not be construed as authority to violate, cancel or set aside any of the provisions of this code or other applicable regulations or laws of the jurisdiction.

**[A]105.3.1 Expiration.** An operational permit shall remain in effect until reissued, renewed or revoked, or for such a period of time as specified in the permit. Construction permits shall automatically become invalid unless the work authorized by such permit is commenced as established by the Joint Regulation, or if the work authorized by such permit is suspended or abandoned, as established by the Joint Regulation. Before such work recommences, a new permit shall be first obtained and the fee to recommence work, if any, shall be one-half the amount required for a new permit for such work, provided that changes have not been made and will not be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year. Permits are not transferable and any change in occupancy, operation, tenancy or ownership shall require that a new permit be issued.

**[A]105.3.3 Occupancy prohibited before approval.** The building or structure shall not be occupied prior to the *fire code official* issuing a permit and conducting associated inspections indicating the applicable provisions of this code have been met.

**[A]105.3.4 Conditional permits.** Where permits are required and on the request of a permit applicant, the *fire code official* is authorized to issue a conditional permit to occupy the premises or portion thereof before the entire work or operations on the premises is completed, provided that such portion or portions will be occupied safely prior to full completion or installation of equipment and operations without endangering life or public welfare. The *fire*

*code official* shall notify the permit applicant in writing of any limitations or restrictions necessary to keep the permit area safe. The holder of a conditional permit shall proceed only to the point for which approval has been given, at the permit holder's own risk and without assurance that approval for the occupancy or the utilization of the entire premises, equipment or operations will be granted.

**[A]105.3.5 Posting the permit.** Issued permits shall be kept on the premises designated therein at all times and shall be readily available for inspection by the *fire code official*.

**[A]105.3.6 Compliance with code.** The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on *construction documents* and other data shall not prevent the *fire code official* from requiring the correction of errors in the *construction documents* and other data. Any addition to or alteration of *approved construction documents* shall be *approved* in advance by the *fire code official*, as evidenced by the issuance of a new or amended permit.

**[A]105.3.7 Information on the permit.** The *fire code official* shall issue all permits required by this code on an *approved* form furnished for that purpose. The permit shall contain a general description of the operation or occupancy and its location and any other information required by the *fire code official*. Issued permits shall bear the signature of the *fire code official* or other *approved* legal authorization.

**[A]105.3.8 Validity of permit.** The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinances of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on *construction documents*, operational documents and other data shall not prevent the *fire code official* from requiring correction of errors in the documents or other data.

**[A] 105.4 Construction documents.** *Construction documents* shall be in accordance with Sections 105.4.1 through 105.4.6.

**[A]105.4.1 Submittals.** *Construction documents* and supporting data shall be submitted in digital form with each application for a permit and in such form and detail as required by the *fire code official*, as established by the Joint Regulation. The *construction documents* shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

**Exception:** The *fire code official* is authorized to waive the submission of *construction documents* and supporting data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that review of *construction documents* is not necessary to obtain compliance with this code.

**[A]105.4.1.1 Examination of documents.** The *fire code official* shall examine or cause to be examined the accompanying *construction documents* and shall ascertain by such examinations whether the work indicated and described is in accordance with the requirements of this code.

**[A]105.4.2 Information on construction documents.** *Construction documents* shall be drawn to scale on suitable material. Electronic media documents are allowed to be submitted where *approved* by the *fire code official*. *Construction documents* shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations as determined by the *fire code official*.

**[A]105.4.2.1 Fire protection system shop drawings.** Shop drawings for the fire protection system(s) shall be submitted to indicate compliance with this code and the *construction documents*, and shall be *approved* prior to the start of installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.

**[A]105.4.3 Applicant responsibility.** It shall be the responsibility of the applicant to ensure that the *construction documents* include all of the fire protection requirements and the shop drawings are complete and in compliance with the applicable codes and standards.

**[A]105.4.4 Approved documents.** *Construction documents approved* by the *fire code official* are *approved* with the intent that such *construction documents* comply in all respects with this code. Review and approval by the *fire code official* shall not relieve the applicant of the responsibility of compliance with this code.

**[A]105.4.4.1 Phased approval.** The *fire code official* is authorized to issue a permit for the construction of part of a structure, system or operation before the *construction documents* for the whole structure, system or operation have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for parts of a structure, system or operation shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure, system or operation will be granted.

**[A]105.4.5 Amended construction documents.** Work shall be installed in accordance with the *approved construction documents*, and any changes made during construction that are not in compliance with the *approved construction documents* shall be resubmitted for approval as an amended set of *construction documents*.

**[A]105.4.6 Retention of construction documents.** One digital set of *construction documents* shall be retained by the *fire code official*, as established by the Joint Regulation. One digital set of *approved construction documents* shall be returned to the applicant, and a printed set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress.

**[A]105.5 Revocation.** The *fire code official* is authorized to revoke a permit issued under the provisions of this code where it is found by inspection or otherwise that there has been a false statement or misrepresentation as to the material facts in the application or *construction documents* on which the permit or approval was based including, but not limited to, any one of the following:

1. The permit is used for a location or establishment other than that for which it was issued.
2. The permit is used for a condition or activity other than that listed in the permit.
3. Conditions and limitations set forth in the permit have been violated.
4. There have been any false statements or misrepresentations as to the material fact in the application for permit or plans submitted or a condition of the permit.
5. The permit is used by a different person or firm than the name for which it was issued.
6. The permittee failed, refused or neglected to comply with orders or notices duly served in accordance with the provisions of this code within the time provided therein.
7. The permit was issued in error or in violation of an ordinance, regulation or this code.

**105.6 Required operational permits.** The *fire code official* is authorized to issue operational permits for the operations set forth in Sections 105.6.1 through 105.6.50.

**105.6.1 Aerosol products.** An operational permit is required to manufacture, store or handle an aggregate quantity of Level 2 or Level 3 aerosol products in excess of 500 pounds (227 kg) net weight.

**105.6.2 Amusement buildings.** An operational permit is required to operate a special amusement building.

**105.6.3 Aviation facilities.** An operational permit is required to use a Group H or Group S occupancy for aircraft servicing or repair and aircraft fuel-servicing vehicles. Additional permits required by other sections of this code include, but are not limited to, hot work, hazardous materials and flammable or combustible finishes.

**105.6.4 Carnivals and fairs.** An operational permit is required to conduct a carnival or fair.

**105.6.5 Cellulose nitrate film.** An operational permit is required to store, handle or use cellulose nitrate film in a Group A occupancy.

**105.6.6 Combustible dust-producing operations.** An operational permit is required to operate a grain elevator, flour starch mill, feed mill, or a plant pulverizing aluminum, coal, cocoa, magnesium, spices or sugar, or other operations producing *combustible dusts* as defined in Chapter 2.

**105.6.7 Combustible fibers.** An operational permit is required for the storage and handling of *combustible fibers* in quantities greater than 100 cubic feet (2.8 m<sup>3</sup>).

**Exception:** A permit is not required for agricultural storage.

**105.6.8 Compressed gases.** An operational permit is required for the storage, use or handling at *normal temperature and pressure* (NTP) of *compressed gases* in excess of the amounts listed in Table 105.6.8.

**Exception:** Vehicles equipped for and using *compressed gas* as a fuel for propelling the vehicle.

TABLE 105.6.8  
PERMIT AMOUNTS FOR COMPRESSED GASES

TYPE OF GAS	AMOUNT (cubic feet at NTP)
Carbon dioxide used in carbon dioxide enrichment systems	875 (100 lbs.)
Carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications	875 (100 lbs.)
Corrosive	200
Flammable (except cryogenic fluids and liquefied petroleum gases)	200
Highly toxic	Any Amount
Inert and simple asphyxiant	6,000
Oxidizing (including oxygen)	504
Pyrophoric	Any Amount
Toxic	Any Amount

**105.6.9 Covered and open mall buildings.** An operational permit is required for:

1. The placement of retail fixtures and displays, concession equipment, displays of highly combustible goods and similar items in the mall.
2. The display of liquid or gas-fired equipment in the mall.
3. The use of open-flame or flame-producing equipment in the mall.

**105.6.10 Cryogenic fluids.** An operational permit is required to produce, store, transport on site, use, handle or dispense *cryogenic fluids* in excess of the amounts listed in Table 105.6.10.

**Exception:** Permits are not required for vehicles equipped for and using *cryogenic fluids* as a fuel for propelling the vehicle or for refrigerating the lading.

TABLE 105.6.10  
PERMIT AMOUNTS FOR CRYOGENIC FLUIDS

TYPE OF CRYOGENIC FLUID	INSIDE BUILDING (gallons)	OUTSIDE BUILDING (gallons)
Flammable	More than 1	60
Inert	60	500
Oxidizing (includes oxygen)	10	50
Physical or health hazard not indicated above	Any Amount	Any Amount

**105.6.11 Cutting and welding.** An operational permit is required to conduct cutting or welding operations within the jurisdiction.



**105.6.12 Dry cleaning.** An operational permit is required to engage in the business of dry cleaning or to change to a more hazardous cleaning solvent used in existing dry cleaning equipment.

**105.6.13 Exhibits and trade shows.** An operational permit is required to operate exhibits and trade shows.

**105.6.14 Explosives.** An operational permit is required for the manufacture, storage, handling, sale or use of any quantity of *explosives*, *explosive materials*, fireworks or pyrotechnic special effects within the scope of Chapter 56.

**Exception:** Storage in Group R-3 occupancies of smokeless propellant, black powder and small arms primers for personal use, not for resale and in accordance with Section 5606.

**105.6.15 Fire hydrants and valves.** An operational permit is required to use or operate fire hydrants or valves intended for fire suppression purposes that are installed on water systems and provided with ready access from a fire apparatus access road that is open to or generally used by the public.

**Exception:** A permit is not required for authorized employees of the water company that supplies the system or the fire department to use or operate fire hydrants or valves.

**105.6.16 Flammable and combustible liquids.** An operational permit is required:

1. To use or operate a pipeline for the transportation within facilities of flammable or *combustible liquids*. This requirement shall not apply to the offsite transportation in pipelines regulated by the Department of Transportation (DOTn) nor does it apply to piping systems.
2. To store, handle or use Class I liquids in excess of 5 gallons (19 L) in a building or in excess of 10 gallons (37.9 L) outside of a building, except that a permit is not required for the following:
  - 2.1. The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant, unless such storage, in the opinion of the *fire code official*, would cause an unsafe condition.
  - 2.2. The storage or use of paints, oils, varnishes or similar flammable mixtures where such liquids are stored for maintenance, painting or similar purposes for a period of not more than 30 days.
3. To store, handle or use Class II or Class IIIA liquids in excess of 25 gallons (95 L) in a building or in excess of 60 gallons (227 L) outside a building, except for fuel oil used in connection with oilburning equipment.
4. To store, handle or use Class IIIB liquids in tanks or portable tanks for fueling motor vehicles at motor fuel-dispensing facilities or where connected to fuel-burning equipment.

**Exception:** Fuel oil and used motor oil used for space heating or water heating.

5. To remove Class I or II liquids from an underground storage tank used for fueling motor vehicles by any means other than the *approved*, stationary on-site pumps normally used for dispensing purposes.
6. To operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries and similar facilities where flammable and *combustible liquids* are produced, processed, transported, stored, dispensed or used.
7. To place temporarily out of service (for more than 90 days) an underground, protected above-ground or above-ground flammable or *combustible liquid* tank.
8. To change the type of contents stored in a flammable or *combustible liquid* tank to a material that poses a greater hazard than that for which the tank was designed and constructed.
9. To manufacture, process, blend or refine flammable or *combustible liquids*.
10. To engage in the dispensing of liquid fuels into the fuel tanks of motor vehicles at commercial, industrial, governmental or manufacturing establishments in accordance with Section 5706.5.4 or to engage in on-demand mobile fueling operations in accordance with Section 5707.
11. To utilize a site for the dispensing of liquid fuels from tank vehicles into the fuel tanks of motor vehicles, marine craft and other special equipment at commercial, industrial, governmental or manufacturing establishments in accordance with Section 5706.5.4 or, where required by the fire code official, to utilize a site for on-demand mobile fueling operations in accordance with Section 5707.

**105.6.17 Floor finishing.** An operational permit is required for floor finishing or surfacing operations exceeding 350 square feet (33 m<sup>2</sup>) using Class I or Class II liquids.

**105.6.18 Fruit and crop ripening.** An operational permit is required to operate a fruit or crop-ripening facility or conduct a fruit-ripening process using ethylene gas.

**105.6.19 Fumigation and insecticidal fogging.** An operational permit is required to operate a business of fumigation or insecticidal fogging, and to maintain a room, vault or chamber in which a toxic or flammable fumigant is used.

**105.6.20 Hazardous materials.** An operational permit is required to store, transport on site, dispense, use or handle hazardous materials in excess of the amounts listed in Table 105.6.20.

**TABLE 105.6.20  
PERMIT AMOUNTS FOR HAZARDOUS MATERIAL**

<b>TYPE OF MATERIAL</b>	<b>AMOUNT</b>
Combustible liquids	See Section 105.6.17
Corrosive materials	
Gases	See Section 105.6.9
Liquids	55 gallons
Solids	1000 pounds
Explosive materials	See Section 105.6.15
Flammable materials	
Gases	See Section 105.6.9
Liquids	See Section 105.6.17
Solids	100 pounds
Highly toxic materials	
Gases	See Section 105.6.9
Liquids	Any Amount
Solids	Any Amount
Organic peroxides	
Liquids	
Class I	Any Amount
Class II	Any Amount
Class III	1 gallon
Class IV	2 gallons
Class V	No Permit Required
Solids	
Class I	Any Amount
Class II	Any Amount
Class III	10 pounds
Class IV	20 pounds
Class V	No Permit Required
Oxidizing materials	
Gases	See Section 105.6.9
Liquids	
Class 4	Any Amount
Class 3	1 gallons <sup>a</sup>
Class 2	10 gallons
Class 1	55 gallons
Solids	
Class 4	Any Amount
Class 3	10 pounds <sup>b</sup>
Class 2	100 pounds
Class 1	500 pounds
Pyrophoric materials	
Gases	Any Amount
Liquids	Any Amount
Solids	Any Amount

Toxic materials	
Gases	See Section 105.6.9
Liquids	10 gallons
Solids	100 pounds
Unstable (reactive) materials	
Liquids	
Class 4	Any Amount
Class 3	Any Amount
Class 2	5 gallons
Class 1	10 gallons
Solids	
Class 4	Any Amount
Class 3	Any Amount
Class 2	50 pounds
Class 1	100 pounds
Water-reactive materials	
Liquids	
Class 3	Any Amount
Class 2	5 gallons
Class 1	55 gallons
Solids	
Class 3	Any Amount
Class 2	50 pounds
Class 1	500 pounds

For SI: 1 gallon = 3.785 L, 1 pound = 0.454 kg.

a. 20 gallons where Table 5003.1.1(1) Note k applies and hazard identification signs in accordance with Section 5003.5 are provided for quantities of 20 gallons or less.

b. 200 pounds where Table 5003.1.1(1) Note k applies and hazard identification signs in accordance with Section 5003.5 are provided for quantities of 200 pounds or less.

**105.6.21 HPM facilities.** An operational permit is required to store, handle or use hazardous production materials.

**105.6.22 High-piled storage.** An operational permit is required to use a building or portion thereof with more than 500 square feet (46 m<sup>2</sup>), including aisles, of *high piled storage*.

**105.6.23 Hot work operations.** An operational permit is required for hot work including, but not limited to:

1. Public exhibitions and demonstrations where hot work is conducted.
2. Use of portable hot work equipment inside a structure.  
**Exception:** Work that is conducted under a construction permit.
3. Fixed-site hot work equipment, such as welding booths.
4. Hot work conducted within a wildfire risk area.
5. Application of roof coverings with the use of an open-flame device.
6. Where *approved*, the *fire code official* shall issue a permit to carry out a hot work program. This program allows *approved* personnel to regulate their facility's hot work operations. The *approved* personnel shall be trained in the fire safety aspects denoted in this chapter and shall be responsible for issuing permits requiring compliance with the requirements found in Chapter 35. These permits shall be issued only to their employees or hot work operations under their supervision.

**105.6.24 Industrial ovens.** An operational permit is required for operation of industrial ovens regulated by Chapter 30.

**105.6.25 Lumber yards and woodworking plants.** An operational permit is required for the storage or processing of lumber exceeding 100,000 board feet (8,333 ft<sup>3</sup>) (236 m<sup>3</sup>).

**105.6.26 Liquid or gas-fueled vehicles or equipment in assembly buildings.** An operational permit is required to display, operate or demonstrate liquid or gas-fueled vehicles or equipment in assembly buildings.

**105.6.27 LP-gas.** An operational permit is required for:

1. Storage and use of LP-gas.  
**Exception:** A permit is not required for individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1893 L), serving occupancies in Group R-3.
2. Operation of cargo tankers that transport LP-gas.

**105.6.28 Magnesium.** An operational permit is required to melt, cast, heat treat or grind more than 10 pounds (4.54 kg) of magnesium.

**105.6.29 Miscellaneous combustible storage.** An operational permit is required to store in any building or on any premises in excess of 2,500 cubic feet (71 m<sup>3</sup>) gross volume of combustible empty packing cases, boxes, barrels or similar containers, combustible pallets, rubber tires, rubber, cork or similar combustible material.

**105.6.30 Mobile food preparation vehicles.** A permit is required for mobile food preparation vehicles equipped with appliances that produce smoke or grease-laden vapors.

**105.6.31 Motor fuel-dispensing facilities.** An operational permit is required for the operation of automotive, marine and fleet motor fuel-dispensing facilities.

**105.6.32 Open burning.** An operational permit is required for the kindling or maintaining of an open fire or a fire on any public street, alley, road, or other public or private ground. Instructions and stipulations of the permit shall be adhered to.

**Exception:** Recreational fires.

**105.6.33 Open flames and torches.** An operational permit is required to remove paint with a torch; or to use a torch or open-flame device in a wildfire risk area.

**105.6.34 Open flames and candles.** An operational permit is required to use open flames or candles in connection with assembly areas, dining areas of restaurants or drinking establishments.

**105.6.35 Organic coatings.** An operational permit is required for any organic-coating manufacturing operation producing more than 1 gallon (4 L) of an organic coating in one day.

**[A]105.6.36 Outdoor assembly event.** An operational permit is required to conduct an *outdoor assembly event* where planned attendance exceeds 1,000 persons.

**105.6.37 Places of assembly.** An operational permit is required to operate a place of assembly.

**[A]105.6.38 Plant extraction systems.** An operational permit is required to use plant extraction systems.

**105.6.39 Private fire hydrants.** An operational permit is required for the removal from service, use or operation of private fire hydrants.

**Exception:** A permit is not required for private industry with trained maintenance personnel, private fire brigade or fire departments to maintain, test and use private hydrants.

**105.6.40 Pyrotechnic special effects material.** An operational permit is required for use and handling of pyrotechnic special effects material.

**105.6.41 Pyroxylin plastics.** An operational permit is required for storage or handling of more than 25 pounds (11 kg) of cellulose nitrate (pyroxylin) plastics, and for the assembly or manufacture of articles involving pyroxylin plastics.

**105.6.42 Refrigeration equipment.** An operational permit is required to operate a mechanical refrigeration unit or system regulated by Chapter 6.

**105.6.43 Repair garages and motor fuel-dispensing facilities.** An operational permit is required for operation of repair garages.

**105.6.44 Rooftop heliports.** An operational permit is required for the operation of a rooftop heliport.

**105.6.45 Spraying or dipping.** An operational permit is required to conduct a spraying or dipping operation utilizing flammable or *combustible liquids*, or the application of combustible powders regulated by Chapter 24.

**105.6.46 Storage of scrap tires and tire byproducts.** An operational permit is required to establish, conduct or maintain storage of scrap tires and tire byproducts that exceeds 2,500 cubic feet (71 m<sup>3</sup>) of total volume of scrap tires, and for indoor storage of tires and tire byproducts.

**105.6.47 Temporary membrane structures and tents.** An operational permit is required to operate an air-supported temporary membrane structure, a temporary *special event structure* or a tent having an area in excess of 400 square feet (37 m<sup>2</sup>).

**Exceptions:**

1. Tents used exclusively for recreational camping purposes.
2. Tents open on all sides, which comply with all of the following:
  - 2.1. Individual tents having a maximum size of 700 square feet (65 m<sup>2</sup>).
  - 2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 700 square feet (65 m<sup>2</sup>) total.
  - 2.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.

**105.6.48 Tire-rebuilding plants.** An operational permit is required for the operation and maintenance of a tire rebuilding plant.

**105.6.49 Waste handling.** An operational permit is required for the operation of wrecking yards, junk yards and waste material-handling facilities.

**105.6.50 Wood products.** An operational permit is required to store chips, hogged material, lumber or plywood in excess of 200 cubic feet (6 m<sup>3</sup>).

**[A]105.7 Required construction permits.** The *fire code official* is authorized to issue construction permits for work as set forth in Sections 105.7.1 through 105.7.25.

**[A]105.7.1 Automatic fire-extinguishing systems.** A construction permit is required for installation of or modification to an automatic fire-extinguishing system. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.2 Battery systems.** A construction permit is required to install stationary storage battery systems regulated by Section 1206.2.

**[A]105.7.3 Capacitor energy storage systems.** A construction permit is required to install capacitor energy storage systems regulated by Section 1206.3.

**[A]105.7.4 Compressed gases.** Where the compressed gases in use or storage exceed the amounts listed in Table 105.6.9, a construction permit is required to install, repair damage to, abandon, remove, place temporarily out of service, or close or substantially modify a *compressed gas* system.

**Exceptions:**

1. Routine maintenance.
2. For emergency repair work performed on an emergency basis, application for permit shall be made within two working days of commencement of work.

**[A]105.7.5 Cryogenic fluids.** A construction permit is required for installation of or *alteration* to outdoor stationary *cryogenic fluid* storage systems where the system capacity exceeds the amounts listed in Table 105.6.10. Maintenance performed in accordance with this code is not considered to be an *alteration* and does not require a construction permit.

**[A]105.7.6 Emergency responder radio coverage system.** A construction permit is required for installation of or modification to emergency responder radio coverage systems and related equipment. Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.

**[A]105.7.7 Fire alarm and detection systems and related equipment.** A construction permit is required for installation of or modification to fire alarm and detection systems and related equipment. Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.

**[A]105.7.8 Fire pumps and related equipment.** A construction permit is required for installation of or modification to fire pumps and related fuel tanks, jockey pumps, controllers and generators. Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.

**[A]105.7.9 Flammable and combustible liquids.** A construction permit is required:

1. To install, repair or modify a pipeline for the transportation of flammable or *combustible liquids*.

2. To install, construct or alter tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries and similar facilities where flammable and *combustible liquids* are produced, processed, transported, stored, dispensed or used.
3. To install, alter, remove, abandon or otherwise dispose of a flammable or *combustible liquid* tank.

**[A]105.7.10 Fuel cell power systems.** A construction permit is required to install *stationary fuel cell power systems*.

**[A]105.7.11 Gas detection systems.** A construction permit is required for the installation of or modification to gas detection systems. Maintenance performed in accordance with this code is not considered a modification and shall not require a permit.

**[A]105.7.12 Gates and barricades across fire apparatus access roads.** A construction permit is required for the installation of or modification to a gate or barricade across a fire apparatus access road.

**[A]105.7.13 Hazardous materials.** A construction permit is required to install, repair damage to, abandon, remove, place temporarily out of service, or close or substantially modify a storage facility or other area regulated by Chapter 50 where the hazardous materials in use or storage exceed the amounts listed in Table 105.6.20.

**Exceptions:**

1. Routine maintenance.
2. For repair work performed on an emergency basis, application for permit shall be made within two working days of commencement of work.

**[A]105.7.14 High-piled combustible storage.** A construction permit is required for the installation of or modification to a structure exceeding 500 square feet (46 m<sup>2</sup>), including aisles, for high-piled combustible storage. Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.

**[A]105.7.15 Industrial ovens.** A construction permit is required for installation of industrial ovens covered by Chapter 30.

**Exceptions:**

1. Routine maintenance.
2. For repair work performed on an emergency basis, application for permit shall be made within two working days of commencement of work.

**[A]105.7.16 LP-gas.** A construction permit is required for installation of or modification to an LP-gas system. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.



**[A]105.7.17 Motor vehicle repair rooms and booths.** A construction permit is required to install or modify a motor vehicle repair room or booth. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.18 Plant extraction systems.** A construction permit is required for installation of or modification to plant extraction systems. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.19 Private fire hydrants.** A construction permit is required for the installation or modification of private fire hydrants. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.20 Smoke control or smoke exhaust systems.** Construction permits are required for installation of or alteration to smoke control or smoke exhaust systems. Maintenance performed in accordance with this code is not considered to be an alteration and does not require a permit.

**[A]105.7.21 Solar photovoltaic power systems.** A construction permit is required to install or modify solar photovoltaic power systems. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.22 Special event structure.** A single construction permit is required to erect and take down a *temporary special event structure*.

**[A]105.7.23 Spraying or dipping.** A construction permit is required to install or modify a spray room, dip tank or booth. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.24 Standpipe systems.** A construction permit is required for the installation, modification or removal from service of a standpipe system. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**[A]105.7.25 Temporary membrane structures and tents.** A construction permit is required to erect an air-supported temporary membrane structure, a temporary stage canopy or a tent having an area in excess of 400 square feet (37 m<sup>2</sup>).

**Exceptions:**

1. Tents used exclusively for recreational camping purposes.
2. Funeral tents and curtains, or extensions attached thereto, when used for funeral services.
3. Tents and awnings open on all sides, which comply with all of the following:
  - 3.1. Individual tents shall have a maximum size of 700 square feet (65 m<sup>2</sup>).
  - 3.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 700 square feet (65 m<sup>2</sup>) total.

3.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be maintained.

## SECTION 106 - FEES

**[A]106.1 Fees.** A permit shall not be issued until the fees have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

**[A]106.2 Schedule of permit fees.** A fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

**[A]106.3 Work commencing before permit issuance.** A person who commences any work, activity or operation regulated by this code before obtaining the necessary permits shall be subject to an additional fee established by the applicable governing authority, which shall be in addition to the required permit fees.

**[A]106.4 Related fees.** The payment of the fee for the construction, *alteration*, removal or demolition of work done in connection to or concurrently with the work or activity authorized by a permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

**[A]106.5 Refunds.** The applicable governing authority is authorized to establish a refund policy.

## SECTION 107 - INSPECTIONS

**[A]107.1 Inspection authority.** The *fire code official* is authorized to enter and examine any building, structure, marine vessel, vehicle or premises in accordance with Section 104.3 for the purpose of enforcing this code.

**[A]107.2 Inspections.** The *fire code official* is authorized to conduct such inspections as are deemed necessary to determine the extent of compliance with the provisions of this code and to approve reports of inspection by *approved* agencies or individuals. Reports of such inspections shall be prepared and submitted in writing for review and approval. Inspection reports shall be certified by a responsible officer of such *approved* agency or by the responsible individual. The *fire code official* is authorized to engage such expert opinion as deemed necessary to report on unusual, detailed or complex technical issues subject to the approval of the governing body.

**[A]107.2.1 Inspection requests.** It shall be the duty of the holder of the permit or their duly authorized agent to notify the *fire code official* when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

**[A]107.2.2 Approval required.** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the *fire code official*. The *fire*

*code official*, on notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected, and such portion shall not be covered or concealed until authorized by the *fire code official*.

**[A]107.3 Concealed work.** It shall be the duty of the permit applicant to cause the work to remain visible and able to be accessed for inspection purposes. Where any installation subject to inspection prior to use is covered or concealed without having first been inspected, the *fire code official* shall have the authority to require that such work be made visible and able to be accessed for inspection. Neither the *fire code official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

**[A]107.4 Approvals.** Approval as the result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel provisions of this code or of other ordinances of the jurisdiction shall not be valid.

## **SECTION 108 - MAINTENANCE**

**[A]108.1 Maintenance of safeguards.** Where any device, equipment, system, condition, arrangement, level of protection, or any other feature is required for compliance with the provisions of this code, or otherwise installed, such device, equipment, system, condition, arrangement, level of protection, or other feature shall thereafter be continuously maintained in accordance with this code and applicable referenced standards.

**[A]108.2 Testing and operation.** Equipment requiring periodic testing or operation to ensure maintenance shall be tested or operated as specified in this code.

**[A]108.2.1 Reinspection and testing.** Where any work or installation does not pass an initial test or inspection, the necessary corrections shall be made so as to achieve compliance with this code. The work or installation shall then be resubmitted to the *fire code official* for inspection and testing.

**[A]108.3 Recordkeeping.** A record of periodic inspections, tests, servicing and other operations and maintenance shall be maintained on the premises or other *approved* location for not less than 3 years, or a different period of time where specified in this code or referenced standards. Records shall be made available for inspection by the *fire code official*, and a copy of the records shall be provided to the *fire code official* on request.

The *fire code official* is authorized to prescribe the form and format of such recordkeeping. The *fire code official* is authorized to require that certain required records be filed with the *fire code official*.

**[A]108.4 Supervision.** Maintenance and testing shall be under the supervision of a responsible person who shall ensure that such maintenance and testing are conducted at specified intervals in accordance with this code.

**108.5 Rendering equipment inoperable.** Portable or fixed fire-extinguishing systems or devices, and fire-warning systems, shall be provided with ready access and shall not be rendered inoperative, except as necessary during emergencies, maintenance, repairs, *alterations*, drills or prescribed testing.

**[A]108.6 Overcrowding.** Overcrowding or admittance of any person beyond the *approved* capacity of a building or a portion thereof shall not be allowed. The *fire code official*, on finding any overcrowding conditions or obstructions in *aisles*, passageways or other *means of egress*, or on finding any condition that constitutes a life safety hazard, shall be authorized to cause the event to be stopped until such condition or obstruction is corrected.

## SECTION 109 – INTERPRETIVE ADVISORY BOARD

**[A]109.1 General.** An interpretive advisory board is created to advise the *building official* and/or the *administrative judge*. This interpretive advisory board shall be appointed by the Auxiliary Secretary of *OGPe-DDEC* to issue and handle binding recommendations on interpretive matters relating to aspects of this code, including its application and implementation.

The *administrative judge* may also require an interpretation from the board when a revision is requested where the application of the required code is in question.

**[A]109.2 Limitations on authority.** Request for interpretative revision shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

**[A]109.3 Qualifications.** The *interpretive advisory* board of code revisions shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosions, hazardous conditions or *fire protection systems*.

## SECTION 110 - VIOLATIONS

**[A]110.1 Unlawful acts.** It shall be unlawful for a person, firm or corporation to erect, construct, alter, repair, remove, demolish or utilize a building, occupancy, premises or system regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

**[A]110.2 Owner/occupant responsibility.** Correction and abatement of violations of this code shall be the responsibility of the *owner* or the owner's authorized agent. Where an occupant creates, or allows to be created, hazardous conditions in violation of this code, the occupant shall be held responsible for the abatement of such hazardous conditions.

**[A]110.3 Notice of violation.** Where the *fire code official* finds a building, premises, vehicle, storage facility or outdoor area that is in violation of this code, the *fire code official* is authorized to prepare a written notice of violation describing the conditions deemed unsafe and, where compliance is not immediate, specifying a time for reinspection.

**[A]110.3.1 Service.** A notice of violation issued pursuant to this code shall be served on the *owner*, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation, either by personal service, mail or by delivering the same to, and leaving it with, some person of responsibility on the premises. For unattended or abandoned locations, a copy of such notice of violation shall be posted on the premises in a conspicuous place at or near the entrance to such premises and the notice of violation shall be mailed by certified mail with return receipt requested or a certificate of mailing, to the last known address of the *owner*, the owner's authorized agent, or occupant.

**[A]110.3.2 Compliance with orders and notices.** A notice of violation issued or served as provided by this code shall be complied with by the *owner*, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation to which the notice of violation pertains.

**[A]110.3.3 Prosecution of violations.** If the notice of violation is not complied with promptly, the *fire code official* is authorized to request the legal counsel of the jurisdiction to institute the appropriate legal proceedings at law or in equity to restrain, correct or abate such violation or to require removal or termination of the unlawful occupancy of the structure in violation of the provisions of this code or of the order or direction made pursuant hereto.

**[A]110.3.4 Unauthorized tampering.** Signs, tags or seals posted or affixed by the *fire code official* shall not be mutilated, destroyed or tampered with, or removed, without authorization from the *fire code official*.

**[A]110.4 Violation penalties.** Act 20-2017, Puerto Rico Department of Public Safety Act, shall be applicable for any person who violates a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the *approved construction documents* or directive of the *fire code official*, or of a permit or certificate used under provisions of this code.

**[A]110.4.1 Abatement of violation.** In addition to the imposition of the penalties described in Act 20-2017, the *fire code official* is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises.

## SECTION 111 - UNSAFE BUILDINGS

[A]111.1 **General.** If during the inspection of a premises, a building or structure, or any building system, in whole or in part, constitutes a clear and inimical threat to human life, safety or health, the *fire code official* shall issue such notice or orders to remove or remedy the conditions as shall be deemed necessary in accordance with this section, and shall refer the building to OGPe-DDEC for any repairs, *alterations*, remodeling, removing or demolition required.

[A]111.1.1 **Unsafe conditions.** Structures or existing equipment that are or hereafter become unsafe or deficient because of inadequate *means of egress*, that constitute a fire hazard, are otherwise dangerous to human life or the public welfare, or involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. A vacant structure that is not secured against unauthorized entry as required by Section 311 shall be deemed unsafe.

[A]111.1.2 **Structural hazards.** Where an apparent structural hazard is caused by the faulty installation, operation or malfunction of any of the items or devices governed by this code, the *fire code official* shall immediately notify the building code official in accordance with Section 110.1.

[A]111.2 **Evacuation.** The *fire code official* or the fire department official in charge of an incident shall be authorized to order the immediate evacuation of any occupied building deemed unsafe where such building has hazardous conditions that present imminent danger to building occupants. Persons so notified shall immediately leave the structure or premises and shall not enter or re-enter until authorized to do so by the *fire code official* or the fire department official in charge of the incident.

[A]111.3 **Summary abatement.** Where conditions exist that are deemed hazardous to life and property, the *fire code official* or fire department official in charge of the incident is authorized to abate summarily such hazardous conditions that are in violation of this code.

[A]111.4 **Abatement.** The *owner*, the owner's authorized agent, operator or occupant of a building or premises deemed unsafe by the *fire code official* shall abate or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other *approved* corrective action.

## SECTION 112 - STOP WORK ORDER

[A]112.1 **Order.** Where the *fire code official* finds any work regulated by this code being performed in a manner contrary to the provisions of this code, or in a dangerous or unsafe manner, the *fire code official* is authorized to issue a stop work order order, as stated in the Act 20-2017.

[A]112.2 **Issuance.** A stop work order shall be in writing and shall be given to the *owner* of the property, or to the *owner's* authorized agent, or to the person doing the work. Upon issuance of a

stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work is authorized to resume.

**[A]112.3 Emergencies.** Where an emergency exists, the *fire code official* shall not be required to give a written notice prior to stopping the work.

**[A]112.4 Failure to comply.** Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine , as stated in the Act 20-2017.

## **SECTION 113 - SERVICE UTILITIES**

**[A]113.1 Authority to disconnect service utilities.** The *fire code official* shall have the authority to authorize disconnection of utility service to the building, structure or system in order to safely execute emergency operations or to eliminate an immediate hazard. The *fire code official* shall notify the and the government agencies with jurisdiction and, where possible, the *owner* or the owner's authorized agent and the occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, then the *owner*, the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

## **CHAPTER 2 – DEFINITIONS**

### **SECTION 201 GENERAL**

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the *Puerto Rico Building Code*, *Puerto Rico Fuel Gas Code*, *Puerto Rico Mechanical Code* or *Puerto Rico Plumbing Code*, such terms shall have the meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. *Merriam Webster's Collegiate Dictionary, 11th Edition*, shall be considered as providing ordinarily accepted meanings.

## SECTION 202 GENERAL DEFINITIONS

**[BG] 24-HOUR BASIS.** The actual time that a person is an occupant within a facility for the purpose of receiving care. It shall not include a facility that is open for 24 hours and is capable of providing care to someone visiting the facility during any segment of the 24 hours.

**[M]ACCESS (TO).** That which enables a device, appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction [see also “Ready access (to)”].

**[BE] ACCESSIBLE MEANS OF EGRESS.** A continuous and unobstructed way of egress travel from any *accessible* point in a building or facility to a *public way*.

**[BE] ACCESSIBLE ROUTE.** A continuous, unobstructed path that complies with Chapter 11 of the *Puerto Rico Building Code*.

**[A]ADMINISTRATIVE JUDGE.** The director of the Administrative Revisions Division, as established by Act 161-2009, as amended.

**AEROSOL CONTAINER.** A metal can or plastic container up to a maximum size of 33.8 fluid ounces (1000 ml) or a glass bottle up to a maximum size of 4 fluid ounces (118 ml) designed and intended to dispense an aerosol.

**AEROSOL COOKING SPRAY PRODUCTS.** Aerosol cooking spray products are those aerosol products designed to deliver a vegetable oil or a solid or nonflammable liquid to reduce sticking on cooking and baking surfaces, or to be applied to food, or both. These products have a chemical heat of combustion that is greater than 8600 Btu/lb. (20 kJ/g) and contain no more than 18 percent by weight of flammable propellant.

**AEROSOL PRODUCT.** A combination of a container, a propellant and a material that is dispensed. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.

**Level 1 aerosol products.** Those with a total chemical heat of combustion that is less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

**Level 2 aerosol products.** Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

**Level 3 aerosol products.** Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30 kJ/g).

**AEROSOL PRODUCT WAREHOUSE.** A building used for warehousing aerosol products.

**AGENCY.** Any emergency responder department within the jurisdiction that utilizes radio frequencies for communication. This could include, but not be limited to, various public safety



agencies such as fire departments, emergency medical services and law enforcement.

**AGENT.** A person who shall have charge, care or control of any structure as *owner*, or agent of the *owner*, or as executor, executrix, administrator, administratrix, trustee or guardian of the estate of the *owner*. Any such person representing the actual *owner* shall be bound to comply with the provisions of this code to the same extent as if that person was the *owner*.

**[BG] AGRICULTURAL BUILDING.** A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products. This structure shall not be a place of human habitation or a place of employment where agricultural products are processed, treated or packaged, nor shall it be a place used by the public.

**AGRO-INDUSTRIAL.** A facility, or portion thereof, housing operations involving the transforming of raw agricultural products into intermediate or consumable products.

**[BG] AIR-INFLATED STRUCTURE.** A structure that uses air-pressurized membrane beams, arches or other elements to enclose space. Occupants of such a structure do not occupy the pressurized areas used to support the structure.

**[BG] AIR-SUPPORTED STRUCTURE.** A structure wherein the shape of the structure is attained by air pressure, and occupants of the structure are within the elevated pressure area. Air supported structures are of two basic types:

**Double skin.** Similar to a single skin, but with an attached liner that is separated from the outer skin and provides an airspace which serves for insulation, acoustic, aesthetic or similar purposes.

**Single skin.** Where there is only the single outer skin and the air pressure is directly against that skin.

**AIRCRAFT MOTOR-VEHICLE FUEL-DISPENSING FACILITY.** That portion of property where flammable or *combustible liquids* or gases used as motor fuels are stored and dispensed from fixed automotive-type equipment into the fuel tanks of aircraft.

**AIRCRAFT OPERATION AREA (AOA).** Any area used or intended for use for the parking, taxiing, takeoff, landing or other ground-based aircraft activity.

**AIRPORT.** An area of land or structural surface that is used, or intended for use, for the landing and taking off of aircraft with an overall length greater than 39 feet (11 887 mm) and an overall exterior fuselage width greater than 6.6 feet (2012 mm), and any appurtenant areas that are used or intended for use for airport buildings and other airport facilities.

**[BE] AISLE.** An unenclosed *exit access* component that defines and provides a path of egress travel.

**[BE] AISLE ACCESSWAY.** That portion of an *exit access* that leads to an *aisle*.

**ALARM, NUISANCE.** See “Nuisance alarm.”

**ALARM DEVICE, MULTIPLE STATION.** See “Multiple-station alarm device.”

**ALARM NOTIFICATION APPLIANCE.** A fire alarm system component such as a bell, horn, speaker, light or text display that provides audible, tactile or visible outputs, or any combination thereof. See also “Audible alarm notification appliance” or “Visible alarm notification appliance.”

**ALARM SIGNAL.** A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.

**ALARM VERIFICATION FEATURE.** A feature of automatic fire detection and alarm systems to reduce unwanted alarms wherein smoke detectors report alarm conditions for a minimum period of time, or confirm alarm conditions within a given time period, after being automatically reset, in order to be accepted as a valid alarm-initiation signal.

**ALCOHOL-BASED HAND RUB.** An alcohol-containing preparation designed for application to the hands for reducing the number of viable microorganisms on the hands and containing ethanol or isopropanol in an amount not exceeding 95-percent by volume.

**ALCOHOL-BLENDED FUELS.** Flammable liquids consisting of greater than 10 percent, by volume, ethanol or other alcohols blended with gasoline.

[A] **ALTERATION.** Any construction or renovation to an existing structure other than a repair or addition.

[BE] **ALTERNATING TREAD DEVICE.** A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

[BG] **AMBULATORY CARE FACILITY.** Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less-than-24-hour basis to persons who are rendered *incapable of self-preservation* by the services provided or staff has accepted responsibility for care recipients already incapable.

**AMMONIUM NITRATE.** A chemical compound represented by the formula  $\text{NH}_4\text{NO}_3$ .

**ANNUNCIATOR.** A unit containing one or more indicator lamps, alphanumeric displays or other equivalent means in which each indication provides status information about a circuit, condition or location.

[A] **APPROVED.** Acceptable to the *fire code official*.

[BG] **AREA, BUILDING.** The area included within surrounding *exterior walls* (or *exterior walls* and *fire walls*) exclusive of vent shafts and *courts*. Areas of the building not provided with

surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

**[BE] AREA OF REFUGE.** An area where persons unable to use *stairways* can remain temporarily to await instructions or assistance during emergency evacuation.

**ARRAY.** The configuration of storage. Characteristics considered in defining an array include the type of packaging, flue spaces, height of storage and compactness of storage.

**ARRAY, CLOSED.** A storage configuration having a 6-inch (152 mm) or smaller width vertical flue space that restricts air movement through the stored commodity.

**[BG] ATRIUM.** An opening connecting two or more stories other than enclosed *stairways*, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with Section 505 of the *Puerto Rico Building Code*.

**[BG] ATTIC.** The space between the ceiling framing of the top *story* and the underside of the roof.

**AUDIBLE ALARM NOTIFICATION APPLIANCE.** A notification appliance that alerts by the sense of hearing.

**AUTOMATED RACK STORAGE.** Automated rack storage is a stocking method whereby the movement of pallets, products, apparatus or systems are automatically controlled by mechanical or electronic devices.

**AUTOMATIC.** As applied to fire protection devices, a device or system providing an emergency function without the necessity for human intervention and activated as a result of a predetermined temperature rise, rate of temperature rise or combustion products.

**AUTOMATIC FIRE-EXTINGUISHING SYSTEM.** An *approved* system of devices and equipment which automatically detects a fire and discharges an *approved* fire-extinguishing agent onto or in the area of a fire.

**AUTOMATIC SMOKE DETECTION SYSTEM.** A fire alarm system that has initiation devices that utilize smoke detectors for protection of an area such as a room or space with detectors to provide early warning of fire.

**AUTOMATIC SPRINKLER SYSTEM.** An *automatic sprinkler system*, for fire protection purposes, is an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards. The system includes a suitable water supply. The portion of the system above the ground is a network of specially sized or hydraulically designed piping installed in a structure or area, generally overhead, and to which automatic sprinklers are connected in a systematic pattern. The system is usually activated by heat from a fire and discharges water over

the fire area.

**AUTOMATIC WATER MIST SYSTEM.** A system consisting of a water supply, a pressure source and a distribution piping system with attached nozzles which, at or above a minimum operating pressure, defined by its listing, discharges water in fine droplets meeting the requirements of NFPA 750 for the purpose of the control, suppression or extinguishment of a fire. Such systems include wet-pipe, drypipe and pre-action types. The systems are designed as engineered, preengineered, local-application or total flooding systems.

**AUTOMOTIVE MOTOR FUEL-DISPENSING FACILITY.** That portion of property where flammable or *combustible liquids* or gases used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles.

**AVERAGE AMBIENT SOUND LEVEL.** The root mean square, A-weighted sound pressure level measured over a 24hour period, or the time any person is present, whichever time period is less.

**[BG] AWNING.** An architectural projection that provides weather protection, identity or decoration and is partially or wholly supported by the building to which it is attached. An awning is comprised of a lightweight frame structure over which a covering is attached.

**[BE] BALANCED DOOR.** A door equipped with doublepivoted hardware so designed as to cause a semicounter balanced swing action when opening.

**BALED COTTON.** See “Cotton.”

**BALED COTTON, DENSELY PACKED.** See “Cotton.”

**BARRICADE.** A structure that consists of a combination of walls, floor and roof, which is designed to withstand the rapid release of energy in an explosion and which is fully confined, partially vented or fully vented; or other effective method of shielding from *explosive materials* by a natural or artificial barrier.

**Artificial barricade.** An artificial mound or revetment with a minimum thickness of 3 feet (914 mm).

**Natural barricade.** Natural features of the ground, such as hills, or timber of sufficient density that the surrounding exposures that require protection cannot be seen from the magazine or building containing *explosives* when the trees are bare of leaves.

**BARRICADED.** The effective screening of a building containing *explosive materials* from the magazine or other building, railway or highway by a natural or an artificial barrier. A straight line from the top of any sidewall of the building containing *explosive materials* to the eave line of any magazine or other building or to a point 12 feet (3658 mm) above the center of a railway or highway shall pass through such barrier.

**[BG] BASEMENT.** A story that is not a story above grade plane.

**BATTERY SYSTEM, STATIONARY STORAGE.** A rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

#### **BATTERY TYPES.**

**Flow battery.** A type of storage battery that includes chemical components dissolved in two different liquids. Ion exchange, which provides the flow of electrical current, occurs through the membrane while both liquids circulate in their respective spaces.

**Lead-acid battery.** A storage battery that is comprised of lead electrodes immersed in sulphuric acid electrolyte.

**Lithium-ion battery.** A storage battery with lithium ions serving as the charge carriers of the battery. The electrolyte is a polymer mixture of carbonates with an inorganic salt and can be in a liquid or a gelled polymer form. Lithiated metal oxide is typically a cathode and forms of carbon or graphite typically form the anode.

**Nickel-cadmium (Ni-Cd) battery.** An alkaline storage battery in which the positive active material is nickel oxide, the negative contains cadmium and the electrolyte is potassium hydroxide.

**Preengineered stationary storage battery system.** An energy storage system consisting of batteries, a battery management system, components and modules that are produced in a factory, designed to comprise the system when assembled on the job site.

**Prepackaged stationary storage battery system.** An energy storage system consisting of batteries, a battery management system, components and modules that is factory assembled and shipped as a complete unit for installation at the job site.

**Sodium-beta storage battery.** A storage battery, also referred to as a Na-beta battery or NBB, which uses a solid beta-alumina electrolyte membrane that selectively allows sodium ion transport between a positive electrode such as metal halide and a negative sodium electrode.

**Stationary storage battery.** A group of electrochemical cells interconnected to supply a nominal voltage of DC power to a suitably connected electrical load, designed for service in a permanent location.

**BIN BOX.** A five-sided container with the open side facing an aisle. Bin boxes are self-supporting or supported by a structure designed so that little or no horizontal or vertical space exists around the boxes.

**BIOMASS.** Plant or animal-based material of biological origin excluding material embedded in geologic formations or transformed into fossils.

**BLAST AREA.** The area including the blast site and the immediate adjacent area within the influence of flying rock, missiles and concussion.

**BLAST SITE.** The area in which *explosive materials* are being or have been loaded and which includes all holes loaded or to be loaded for the same blast and a distance of 50 feet (15 240 mm) in all directions.

**BLASTER.** A person qualified in accordance with Section 3301.4 to be in charge of and responsible for the loading and firing of a blast.

**BLASTING AGENT.** A material or mixture consisting of fuel and oxidizer, intended for blasting provided that the finished product, as mixed for use or shipment, cannot be detonated by means of a No. 8 test detonator when unconfined. Blasting agents are labeled and placarded as Class 1.5 material by US DOTn.

**[BE] BLEACHERS.** Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element (see “*Grandstand*”).

**[BG] BOARDING HOUSE.** A building arranged or used for lodging for compensation, with or without meals, and not occupied as a single-family unit.

**BOILING POINT.** The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch absolute (psia) (101 kPa) or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D86 shall be used as the boiling point of the liquid.

**BONFIRE.** An outdoor fire utilized for ceremonial purposes.

**[BE] BREAKOUT.** For revolving doors, a process whereby wings or door panels can be pushed open manually for *means of egress* travel.

**BRITISH THERMAL UNIT (BTU).** The heat necessary to raise the temperature of 1 pound (0.454 kg) of water by 1°F (0.5565°C).

**[A] BUILDING.** Any structure utilized or intended for supporting or sheltering any occupancy.

**BUILDING AREA.** See “Area, building.”

**BUILDING HEIGHT.** See “Height, building.”

**[A] BUILDING OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of the *Puerto Rico Building Code*, or a duly authorized representative.

**BULK OXYGEN SYSTEM.** An assembly of equipment, such as oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds and interconnecting piping, that has a storage capacity of more than 20,000 cubic feet (566 m<sup>3</sup>) of oxygen at *normal temperature and pressure (NTP)* including unconnected reserves on hand at the site. The bulk oxygen system terminates at the point where oxygen at service pressure first enters the supply line. The oxygen containers can be stationary or movable, and the oxygen can be stored as a gas or liquid.

**BULK PLANT OR TERMINAL.** That portion of a property where flammable or *combustible liquids* are received by tank vessel, pipelines, tank car or tank vehicle and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipeline, tank car, tank vehicle, portable tank or container.

**BULK TRANSFER.** The loading or unloading of flammable or *combustible liquids* from or between tank vehicles, tank cars or storage tanks.

**BULLET RESISTANT.** Constructed so as to resist penetration of a bullet of 150-grain M2 ball ammunition having a nominal muzzle velocity of 2,700 feet per second (fps) (824 mps) when fired from a 30-caliber rifle at a distance of 100 feet (30 480 mm), measured perpendicular to the target.

**CANOPY.** A structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration, and may be structurally independent or supported by attachment to a building on one end and by not less than one stanchion on the outer end.

**CAPACITOR ARRAY.** An arrangement of individual capacitor modules in close proximity to each other, mounted on storage racks or in cabinets or other enclosures.

**CAPACITOR ENERGY STORAGE SYSTEM.** A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

**Preengineered capacitor energy storage system.** A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that are produced in a factory, designed to comprise the system when assembled on the job site.

**Prepackaged capacitor energy storage system.** A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that is

factory assembled and then shipped as a complete unit for installation at the job site.

**CARBON DIOXIDE ENRICHMENT SYSTEM.** A system where carbon dioxide gas is intentionally introduced into an indoor environment, typically for the purpose of stimulating plant growth.

**CARBON DIOXIDE EXTINGUISHING SYSTEM.** A system supplying carbon dioxide (CO<sub>2</sub>) from a pressurized vessel through fixed pipes and nozzles. The system includes a manual or automatic-actuating mechanism.

**CARBON MONOXIDE ALARM.** A single or multiple station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

**CARBON MONOXIDE DETECTOR.** A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

**[BG] CARE SUITE.** In Group I-2 occupancies, a group of treatment rooms, care recipient sleeping rooms and the support rooms or spaces and circulation space within the suite where staff are in attendance for supervision of all care recipients within the suite, and the suite is in compliance with the requirements of Section 407.4.4 of the *Puerto Rico Building Code*.

**CARTON.** A cardboard or fiberboard box enclosing a product.

**CEILING LIMIT.** The maximum concentration of an airborne contaminant to which one may be exposed. The ceiling limits utilized are those published in DOL 29 CFR Part 1910.1000. The ceiling Recommended Exposure Limit (REL-C) concentrations published by the U.S. National Institute for Occupational Safety and Health (NIOSH), Threshold Limit Value-Ceiling (TLV-C) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), Ceiling Workplace Environmental Exposure Level (WEEL-Ceiling) Guides published by the American Industrial Hygiene Association (AIHA), and other *approved*, consistent measures are allowed as surrogates for hazardous substances not listed in DOL 29 CFR Part 1910.1000.

**[A] CHANGE OF OCCUPANCY.** A change in the use of a building or a portion of a building that results in any of the following:

1. A change of occupancy classification.
2. A change from one group to another group within an occupancy classification.
3. Any change in use within a group for which there is a change in the application of the requirements of this code.

**CHEMICAL.** An element, chemical compound or mixture of elements or compounds or both.

**CHEMICAL FUME HOOD.** A ventilated enclosure designed to contain and exhaust fumes, gases, vapors, mists and particulate matter generated within the hood.



**CHEMICAL NAME.** The scientific designation of a chemical in accordance with the nomenclature system developed by the Puerto Rico Union of Pure and Applied Chemistry, the Chemical Abstracts Service rules of nomenclature, or a name which will clearly identify a chemical for the purpose of conducting an evaluation.

**[M] CHIMNEY.** A primarily vertical structure containing one or more flues for the purpose of carrying gaseous products of combustion and air from a fuel-burning appliance to the outdoor atmosphere.

**Factory-built chimney.** A listed and labeled chimney composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

**Masonry chimney.** A field-constructed chimney composed of solid masonry units, bricks, stones, or concrete.

**Metal chimney.** A field-constructed chimney of metal.

**CLEAN AGENT.** Electrically nonconducting, volatile or gaseous fire extinguishant that does not leave a residue upon evaporation.

**[BG] CLINIC, OUTPATIENT.** Buildings or portions thereof used to provide medical care on a less-than-24-hour basis to persons who are not rendered incapable of self-preservation by the services provided.

**CLOSED CONTAINER.** A container sealed by means of a lid or other device such that liquid, vapor or dusts will not escape from it under ordinary conditions of use or handling.

**CLOSED SYSTEM.** The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of *compressed gases*. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

**COLD DECK.** A pile of unfinished cut logs.

**COMBUSTIBLE DUST.** Finely divided solid material which is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a U.S. No. 40 standard sieve.

**COMBUSTIBLE FIBERS.** Readily ignitable and free-burning materials in a fibrous or shredded form, such as cocoa fiber, cloth, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials. This definition does not include densely packed baled cotton.

**COMBUSTIBLE GAS DETECTOR.** An instrument that samples the local atmosphere and indicates the presence of ignitable vapors or gases within the flammable or explosive range expressed as a volume percent in air.

**COMBUSTIBLE LIQUID.** A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

**Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB.** Liquids having closed cup *flash points* at or above 200°F (93°C).

The category of combustible liquids does not include *compressed gases* or *cryogenic fluids*.

**[M] COMMERCIAL COOKING APPLIANCES.** Appliances used in a commercial food service establishment for heating or cooking food and which produce grease vapors, steam, fumes, smoke or odors that are required to be removed through a local exhaust ventilation system. Such appliances include deep fat fryers, upright broilers, griddles, broilers, steam-jacketed kettles, hot-top ranges, under-fired broilers (charbroilers), ovens, barbecues, rotisseries, and similar appliances. For the purpose of this definition, a food service establishment shall include any building or a portion thereof used for the preparation and serving of food.

**COMMERCIAL MOTOR VEHICLE.** A motor vehicle used to transport passengers or property where the motor vehicle:

1. Has a gross vehicle weight rating of 10,000 pounds (454 kg) or more; or
2. Is designed to transport 16 or more passengers, including the driver.

**COMMODITY.** A combination of products, packing materials and containers.

**[BE] COMMON PATH OF EGRESS TRAVEL.** That portion of *exit access* travel distance measured from the most remote point of each room, area or space to that point where the occupants have separate and distinct access to two *exits* or *exit access* doorways.

**[BE] COMMON USE.** Interior or exterior circulation paths, rooms, spaces or elements that are not for public use and are made available for the shared use of two or more people.

**COMPRESSED GAS.** A material, or mixture of materials that:

1. Is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure; and
2. Has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gases which have no other health or

physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C).

The states of a compressed gas are categorized as follows:

1. Nonliquefied compressed gases are gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C).
2. Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C).
3. Compressed gases in solution are nonliquefied gases that are dissolved in a solvent.
4. Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

**COMPRESSED GAS CONTAINER.** A pressure vessel designed to hold *compressed gases* at pressures greater than one atmosphere at 68°F (20°C) and includes cylinders, containers and tanks.

**COMPRESSED GAS SYSTEM.** An assembly of equipment designed to contain, distribute or transport *compressed gases*. It can consist of a *compressed gas* container or containers, reactors and appurtenances, including pumps, compressors and connecting piping and tubing.

**[BG] CONGREGATE LIVING FACILITIES.** A building or part thereof that contains sleeping units where residents share bathroom and/or kitchen facilities.

**CONSTANTLY ATTENDED LOCATION.** A designated location at a facility staffed by trained personnel on a continuous basis where alarm or supervisory signals are monitored and facilities are provided for notification of the fire department or other emergency services.

**[A] CONSTRUCTION DOCUMENTS.** The written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a permit.

**CONTAINER.** A vessel of 60 gallons (227 L) or less in capacity used for transporting or storing hazardous materials. Pipes, piping systems, engines and engine fuel tanks are not considered to be containers.

**CONTAINMENT SYSTEM.** A gas-tight recovery system comprised of equipment or devices which can be placed over a leak in a *compressed gas* container, thereby stopping or controlling the escape of gas from the leaking container.

**CONTAINMENT VESSEL.** A gas-tight recovery vessel designed so that a leaking *compressed gas* container can be placed within its confines thereby encapsulating the leaking container.

**CONTROL AREA.** Spaces within a building where quantities of hazardous materials not

exceeding the *maximum allowable quantities per control area* are stored, dispensed, used or handled. See also the definition of “Outdoor control area.”

**[BE] CORRIDOR.** An enclosed *exit access* component that defines and provides a path of egress travel.

**CORRIDOR, OPEN-ENDED.** See “Open-ended corridor.”

**CORROSIVE.** A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.

**COTTON.**

**Baled cotton.** A natural seed fiber wrapped in and secured with industry-accepted materials, usually consisting of burlap, woven polypropylene, polyethylene or cotton or sheet polyethylene, and secured with steel, synthetic or wire bands, or wire; also includes linters (lint removed from the cottonseed) and motes (residual materials from the ginning process).

**Baled cotton, densely packed.** Cotton, made into banded bales, with a packing density of not less than 22 pounds per cubic foot ( $360 \text{ kg/m}^3$ ), and dimensions complying with the following: a length of 55 inches (1397 mm), a width of 21 inches (533.4 mm) and a height of 27.6 to 35.4 inches (701 to 899 mm).

**Seed cotton.** Perishable raw agricultural commodity consisting of cotton fiber (lint) attached to the seed of the cotton plant, which requires ginning to become a commercial product.

**[BG] COURT.** An open, uncovered space, unobstructed to the sky, bounded on three or more sides by exterior building walls or other enclosing devices.

**[BG] COVERED MALL BUILDING.** A single building enclosing a number of tenants and occupants such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices, and other similar uses wherein two or more tenants have a main entrance into one or more malls. Anchor buildings shall not be considered as a part of the covered mall building. The term “covered mall building” shall include open mall buildings as defined below.

**Mall.** A roofed or covered common pedestrian area within a covered mall building that serves as access for two or more tenants and not to exceed three levels that are open to each other. The term “mall” shall include open malls as defined below.

**Open mall.** An unroofed common pedestrian way serving a number of tenants not

exceeding three levels. Circulation at levels above grade shall be permitted to include open exterior balconies leading to *exits* discharging at grade.

**Open mall building.** Several structures housing a number of tenants such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and other similar uses wherein two or more tenants have a main entrance into one or more open malls. Anchor buildings are not considered as a part of the open mall building.

**CRITICAL CIRCUIT.** A circuit that requires continuous operation to ensure safety of the structure and occupants.

**CRYOGENIC CONTAINER.** A cryogenic vessel of any size used for the transportation, handling or storage of *cryogenic fluids*.

**CRYOGENIC FLUID.** A fluid having a *boiling point* lower than -130°F (-89.9°C) at 14.7 pounds per square inch atmosphere (psia) (an absolute pressure of 101.3 kPa).

**CRYOGENIC VESSEL.** A pressure vessel, low-pressure tank or atmospheric tank designed to contain a *cryogenic fluid* on which venting, insulation, refrigeration or a combination of these is used in order to maintain the operating pressure within the design pressure and the contents in a liquid phase.

**[BG] CUSTODIAL CARE.** Assistance with day-to-day living tasks; such as assistance with cooking, taking medication, bathing, using toilet facilities and other tasks of daily living. Custodial care includes persons receiving care who have the ability to respond to emergency situations and evacuate at a slower rate and/or who have mental and psychiatric complications.

**CYLINDER.** A pressure vessel designed for pressures higher than 40 psia (275.6 kPa) and having a circular cross section. It does not include a portable tank, multiunit tank car tank, cargo tank or tank car.

**DAMPER.** See “Fire damper” and “Smoke damper.”

**DAY BOX.** A portable magazine designed to hold *explosive* materials and constructed in accordance with the requirements for a Type 3 magazine as defined and classified in Chapter 56.

**DECORATIVE MATERIALS.** All materials applied over the building interior finish for decorative, acoustical or other effect including, but not limited to, curtains, draperies, fabrics, streamers and all other materials utilized for decorative effect including, but not limited to, bulletin boards, artwork, posters, photographs, paintings, batting, cloth, cotton, hay, stalks, straw, vines, leaves, trees, moss and similar items, foam plastics and materials containing foam plastics. Decorative materials do not include wall coverings, ceiling coverings, floor coverings, ordinary window shades, interior finish and materials 0.025 inch (0.64 mm) or less in thickness applied directly to and adhering tightly to a substrate.

**DEFLAGRATION.** An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

**DELUGE SYSTEM.** A sprinkler system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same area as the sprinklers. When this valve opens, water flows into the piping system and discharges from all sprinklers attached thereto.

**DESIGN PRESSURE.** The maximum gauge pressure that a pressure vessel, device, component or system is designed to withstand safely under the temperature and conditions of use expected.

**DESOLVENTIZING.** The act of removing a solvent from a material.

**DETACHED BUILDING.** A separate single-story building, without a *basement* or crawl space, used for the storage or use of hazardous materials and located an *approved* distance from all structures.

**DETEARING.** A process for rapidly removing excess wet coating material from a dipped or coated object or material by passing it through an electrostatic field.

**DETECTOR, HEAT.** A fire detector that senses heat, either abnormally high temperature or rate of rise, or both.

**DETONATING CORD.** A flexible cord containing a center core of high *explosive* used to initiate other *explosives*.

**DETONATION.** An exothermic reaction characterized by the presence of a shock wave in the material which establishes and maintains the reaction. The reaction zone progresses through the material at a rate greater than the velocity of sound. The principal heating mechanism is one of shock compression. *Detonations* have an *explosive* effect.

**DETONATOR.** A device containing any initiating or primary *explosive* that is used for initiating *detonation*. A detonator shall not contain more than 154.32 grains (10 grams) of total *explosives* by weight, excluding ignition or delay charges. The term includes, but is not limited to, electric blasting caps of instantaneous and delay types, blasting caps for use with safety fuses, detonating cord delay connectors, and noninstantaneous and delay blasting caps which use detonating cord, shock tube or any other replacement for electric leg wires. All types of detonators in strengths through No. 8

**DRAFT CURTAIN.** A structure arranged to limit the spread of smoke and heat along the underside of the ceiling or roof.

**[BF] DRAFTSTOP.** A material, device or construction installed to restrict the movement of air

within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and attics.

**DRY-CHEMICAL EXTINGUISHING AGENT.** A powder composed of small particles, usually of sodium bicarbonate, potassium bicarbonate, urea-potassium-based bicarbonate, potassium chloride or monoammonium phosphate, with added particulate material supplemented by special treatment to provide resistance to packing, resistance to moisture absorption (caking) and the proper flow capabilities.

**DRY CLEANING.** The process of removing dirt, grease, paints and other stains from such items as wearing apparel, cap should be rated at 1 1/2 pounds (0.68 kg) of explosives per textiles, fabrics and rugs by use of nonaqueous liquids (sol-1,000 caps. For strengths higher than No. 8 cap, consult the manufacturer.

**[BG] DETOXIFICATION FACILITIES.** Facilities that provide treatment for substance abuse serving care recipients who are incapable of self-preservation or who are harmful to themselves or others.

**DIP TANK.** A tank, vat or container of flammable or combustible liquid in which articles or materials are immersed for the purpose of coating, finishing, treating and similar processes.

**DISCHARGE SITE.** The immediate area surrounding the fireworks mortars used for an outdoor fireworks display.

**DISPENSING.** The pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases are liberated to the atmosphere.

**DISPENSING DEVICE, OVERHEAD TYPE.** A dispensing device that consists of one or more individual units intended for installation in conjunction with each other, mounted above a dispensing area typically within the motor fuel-dispensing facility canopy structure, and characterized by the use of an overhead hose reel.

**DISPLAY SITE.** The immediate area where a fireworks display is conducted. The display area includes the discharge site, the fallout area and the required separation distance from the mortars to spectator viewing areas. The display area does not include spectator viewing areas or vehicle parking areas.

**DOOR, BALANCED.** See “Balanced door.”

**DOOR, DUTCH.** See “Dutch door.”

**DOOR, LOW ENERGY POWER-OPERATED.** See “Low energy power-operated door.”

**DOOR, POWER-ASSISTED.** See “Power-assisted door.”

**DOOR, POWER-OPERATED.** See “Power-operated door.”

**DOORWAY, EXIT ACCESS.** See “Exit access doorway.”

**[BG] DORMITORY.** A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group, under joint occupancy and single management, as in college dormitories or fraternity houses. vents).

**DRY CLEANING PLANT.** A facility in which dry cleaning and associated operations are conducted, including the office, receiving area and storage rooms.

**DRY CLEANING ROOM.** An occupiable space within a building used for performing dry cleaning operations, the installation of solvent-handling equipment or the storage of dry cleaning solvents.

**DRY CLEANING SYSTEM.** Machinery or equipment in which textiles are immersed or agitated in solvent or in which dry cleaning solvent is extracted from textiles.

**DUTCH DOOR.** A door divided horizontally so that the top can be operated independently from the bottom.

**[BG] DWELLING.** A building that contains one or two *dwelling units* used, intended or designed to be used, rented, leased, let or hired out to be occupied for living purposes.

**[BG] DWELLING UNIT.** A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER.** A sprinkler *listed* for early suppression fastresponse performance.

**[BE] EGRESS COURT.** A court or *yard* which provides access to a *public way* for one or more *exits*.

**ELECTROSTATIC FLUIDIZED BED.** A container holding powder coating material that is aerated from below so as to form an air-supported expanded cloud of such material that is electrically charged with a charge opposite to that of the object to be coated. Such object is transported through the container immediately above the charged and aerated materials in order to be coated.

**ELEVATOR GROUP.** A grouping of elevators in a building located adjacent or directly across from one another that respond to a common hall call button(s).

**EMERGENCY ALARM SYSTEM.** A system to provide indication and warning of emergency situations involving hazardous materials.



**EMERGENCY CONTROL STATION.** An *approved* location on the premises where signals from emergency equipment are received and which is staffed by trained personnel.

**[BE] EMERGENCY ESCAPE AND RESCUE OPENING.** An operable window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

**EMERGENCY EVACUATION DRILL.** An exercise performed to train staff and occupants and to evaluate their efficiency and effectiveness in carrying out emergency evacuation procedures.

**EMERGENCY POWER SYSTEM.** A source of automatic electric power of a required capacity and duration to operate required life safety, fire alarm, detection and ventilation systems in the event of a failure of the primary power. Emergency power systems are required for electrical loads where interruption of the primary power could result in loss of human life or serious injuries.

**EMERGENCY SHUTOFF VALVE.** A valve designed to shut off the flow of gases or liquids.

**EMERGENCY SHUTOFF VALVE, AUTOMATIC.** A fail-safe automatic-closing valve designed to shut off the flow of gases or liquids initiated by a control system that is activated by automatic means.

**EMERGENCY SHUTOFF VALVE, MANUAL.** A manually operated valve designed to shut off the flow of gases or liquids.

**EMERGENCY VOICE/ALARM COMMUNICATIONS.** Dedicated manual or automatic facilities for originating and distributing voice instructions, as well as alert and evacuation signals pertaining to a fire emergency, to the occupants of a building.

**[BG] EMPLOYEE WORK AREA.** All or any portion of a space used only by employees and only for work. *Corridors*, toilet rooms, kitchenettes and break rooms are not employee work areas.

**ENERGY MANAGEMENT SYSTEMS.** An electronic system that protects stationary storage batteries from operating outside their safe operating parameters, and generates an alarm and trouble signal for off normal conditions.

**[BG] EQUIPMENT PLATFORM.** An unoccupied, elevated platform used exclusively for mechanical systems or industrial process equipment, including the associated elevated walkways, *stairways*, *alternating tread devices* and ladders necessary to access the platform (see Section 505.3 of the *International Building Code*).

**EXCESS FLOW CONTROL.** A fail-safe system or other *approved* means designed to shut off flow caused by a rupture in pressurized piping systems.

**EXCESS FLOW VALVE.** A valve inserted into a *compressed gas* cylinder, portable tank or

stationary tank that is designed to positively shut off the flow of gas in the event that its predetermined flow is exceeded.

**EXHAUSTED ENCLOSURE.** An appliance or piece of equipment which consists of a top, a back and two sides providing a means of local exhaust for capturing gases, fumes, vapors and mists. Such enclosures include laboratory hoods, exhaust fume hoods and similar appliances and equipment used to retain and exhaust locally the gases, fumes, vapors and mists that could be released. Rooms or areas provided with general ventilation, in themselves, are not exhausted enclosures.

**EXISTING.** Buildings, facilities or conditions that are already in existence, constructed or officially authorized prior to the adoption of this code.

**[BE] EXIT.** That portion of a *means of egress* system between the *exit access* and the *exit discharge* or *public way*. Exit components include exterior exit doors at the *level of exit discharge*, *interior exit stairways* and *ramps*, *exit passageways*, *exterior exit stairways* and *ramps* and *horizontal exits*.

**[BE] EXIT ACCESS.** That portion of a *means of egress* system that leads from any occupied portion of a building or structure to an *exit*.

**[BE] EXIT ACCESS DOORWAY.** A door or access point along the path of egress travel from an occupied room, area or space where the path of egress enters an intervening room, *corridor*, *exit access stairway* or *ramp*.

**[BE] EXIT ACCESS RAMP.** A *ramp* within the *exit access* portion of the *means of egress* system.

**[BE] EXIT ACCESS STAIRWAY.** A *stairway* within the *exit access* portion of the *means of egress* system.

**[BE] EXIT DISCHARGE.** That portion of a *means of egress* system between the termination of an *exit* and a *public way*.

**[BE] EXIT DISCHARGE, LEVEL OF.** The *story* at the point at which an *exit* terminates and an *exit discharge* begins.

**[BE] EXIT PASSAGEWAY.** An *exit* component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a horizontal direction to the *exit discharge*.

**EXPANDED PLASTIC.** A foam or cellular plastic material having a reduced density based on the presence of numerous small cavities or cells dispersed throughout the material.

**EXPLOSION.** An effect produced by the sudden violent expansion of gases, which may be accompanied by a shock wave or disruption, or both, of enclosing materials or structures. An

explosion could result from any of the following:

1. Chemical changes such as rapid oxidation, *deflagration* or *detonation*, decomposition of molecules and runaway polymerization (usually *detonations*).
2. Physical changes such as pressure tank ruptures.
3. Atomic changes (nuclear fission or fusion).

**EXPLOSIVE.** A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord and igniters.

The term “Explosive” includes any material determined to be within the scope of USC Title 18: Chapter 40 and also includes any material classified as an explosive by the *hazardous materials* regulations of DOTn 49 CFR Parts 100-185.

**High explosive.** *Explosive material*, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap where unconfined.

**Low explosive.** *Explosive material* that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low *explosives* include, but are not limited to, black powder, safety fuse, igniters, igniter cord, fuse lighters, fireworks and propellants, 1.3C.

**Mass-detonating explosives.** Division 1.1, 1.2 and 1.5 *explosives* alone or in combination, or loaded into various types of ammunition or containers, most of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, severe concussion, impact, the impulse of an initiating agent or the effect of a considerable discharge of energy from without. Materials that react in this manner represent a mass explosion hazard. Such an *explosive* will normally cause severe structural damage to adjacent objects. Explosive propagation could occur immediately to other items of ammunition and *explosives* stored sufficiently close to and not adequately protected from the initially exploding pile with a time interval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

**UN/DOTn Class 1 explosives.** The former classification system used by DOTn included the terms “high” and “low” *explosives* as defined herein. The following terms further define *explosives* under the current system applied by DOTn for all *explosive materials* defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (for example, the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

**Division 1.1.** *Explosives* that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.

**Division 1.2.** *Explosives* that have a projection hazard but not a mass explosion hazard.

**Division 1.3.** *Explosives* that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

**Division 1.4.** *Explosives* that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

**Division 1.5.** Very insensitive *explosives*. This division is comprised of substances that have a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to *detonation* under normal conditions of transport.

**Division 1.6.** Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

**EXPLOSIVE MATERIAL.** The term “explosive” material means *explosives*, blasting agents and detonators.

**[BE] EXTERIOR EXIT RAMP.** An *exit* component that serves to meet one or more *means of egress* design requirements, such as required number of *exits* or *exit access* travel distance, and is open to yards, courts or *public ways*.

**[BE] EXTERIOR EXIT STAIRWAY.** An *exit* component that serves to meet one or more *means of egress* design requirements, such as required number of *exits* or *exit access* travel distance, and is open to yards, courts or *public ways*.

**[BF] EXTERIOR WALL.** A wall, bearing or nonbearing, that is used as an enclosing wall for a building, other than a *fire wall*, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.

**EXTRA-HIGH-RACK COMBUSTIBLE STORAGE.** Storage on racks of Class I, II, III or IV commodities that exceed 40 feet (12 192 mm) in height and storage on racks of high-hazard commodities that exceed 30 feet (9144 mm) in height.

**FABRICATION AREA.** An area within a semiconductor fabrication facility and related research and development areas in which there are processes using hazardous production materials. Such areas are allowed to include ancillary rooms or areas such as dressing rooms and offices that are directly related to the fabrication area processes.

**[A] FACILITY.** A building or use in a fixed location including exterior storage areas for flammable and combustible substances and hazardous materials, piers, wharves, tank farms and

similar uses. This term includes recreational vehicles, mobile home and manufactured housing parks, sales and storage lots.

**FAIL-SAFE.** A design condition incorporating a feature for automatically counteracting the effect of an anticipated possible source of failure; also, a design condition eliminating or mitigating a hazardous condition by compensating automatically for a failure or malfunction.

**FALLOUT AREA.** The area over which aerial shells are fired. The shells burst over the area, and unsafe debris and malfunctioning aerial shells fall into this area. The fallout area is the location where a typical aerial shell dud falls to the ground depending on the wind and the angle of mortar placement.

**FALSE ALARM.** The willful and knowing initiation or transmission of a signal, message or other notification of an event of fire when no such danger exists.

**FINES.** Small pieces or splinters of wood byproducts that will pass through a 0.25-inch (6.4 mm) screen.

**FIRE ALARM.** The giving, signaling or transmission to any public fire station, or company or to any officer or employee thereof, whether by telephone, spoken word or otherwise, of information to the effect that there is a fire at or near the place indicated by the person giving, signaling or transmitting such information.

**FIRE ALARM BOX, MANUAL.** See “Manual fire alarm box.”

**FIRE ALARM CONTROL UNIT.** A system component that receives inputs from automatic and manual fire alarm devices and may be capable of supplying power to detection devices and transponder(s) or off-premises transmitter(s). The control unit may be capable of providing a transfer of power to the notification appliances and transfer of condition to relays or devices.

**FIRE ALARM SIGNAL.** A signal initiated by a fire alarm initiating device such as a manual fire alarm box, automatic fire detector, waterflow switch or other device whose activation is indicative of the presence of a fire or fire signature.

**FIRE ALARM SYSTEM.** A system or portion of a combination system consisting of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

**FIRE APPARATUS ACCESS ROAD.** A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as *fire lane*, public street, private street, parking lot lane and access roadway.

**[BF] FIRE AREA.** The aggregate floor area enclosed and bounded by *fire walls*, *fire barriers*, *exterior walls* or *horizontal assemblies* of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal

projection of the roof or floor next above.

**[BF] FIRE BARRIER.** A fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained.

**FIRE CHIEF.** The chief officer of the fire department serving the jurisdiction, or a duly authorized representative.

**FIRE CODE OFFICIAL.** The fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative.

**FIRE COMMAND CENTER.** The principal attended or unattended location where the status of detection, alarm communications and control systems is displayed, and from which the system(s) can be manually controlled.

**[BF] FIRE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to close automatically upon detection of heat and resist the passage of flame. Fire dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in dynamic systems that continue to operate during a fire. A dynamic fire damper is tested and rated for closure under elevated temperature airflow.

**FIRE DEPARTMENT MASTER KEY.** A limited issue key of special or controlled design to be carried by fire department officials in command which will open key boxes on specified properties.

**FIRE DETECTOR, AUTOMATIC.** A device designed to detect the presence of a fire signature and to initiate action.

**[BF] FIRE DOOR.** The door component of a fire door assembly.

**[BF] FIRE DOOR ASSEMBLY.** Any combination of a fire door, frame, hardware and other accessories that together provide a specific degree of fire protection to the opening.

**[BF] FIRE EXIT HARDWARE.** Panic hardware that is *listed* for use on *fire door assemblies*.

**FIRE LANE.** A road or other passageway developed to allow the passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than fire apparatus.

**[BF] FIRE PARTITION.** A vertical assembly of materials designed to restrict the spread of fire in which openings are protected.

**FIRE POINT.** The lowest temperature at which a liquid will ignite and achieve sustained burning when exposed to a test flame in accordance with ASTM D92.

**[BF] FIRE PROTECTION RATING.** The period of time that an opening protective assembly

will maintain the ability to confine a fire as determined by tests prescribed in Section 716 of the *Puerto Rico Building Code*. Ratings are stated in hours or minutes.

**FIRE PROTECTION SYSTEM.** *Approved* devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof.

**[BF] FIRE RESISTANCE.** That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

**FIRE SAFETY FUNCTIONS.** Building and fire control functions that are intended to increase the level of life safety for occupants or to control the spread of the harmful effects of fire.

**[BF] FIRE SEPARATION DISTANCE.** The distance measured from the building face to one of the following:

1. The closest interior *lot line*.
2. To the centerline of a street, an alley or *public way*.
3. To an imaginary line between two buildings on the lot. The distance shall be measured at right angles from the face of the wall.

**[BF] FIRE WALL.** A fire-resistance-rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

**FIRE WATCH.** A temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals for the purposes of identifying and controlling fire hazards, detecting early signs of unwanted fire, raising an alarm of fire and notifying the fire department.

**[BF] FIREBLOCKING.** Building materials, or materials *approved* for use as fireblocking, installed to resist the free passage of flame to other areas of the building through concealed spaces.

**[BF] FIRE-RESISTANCE RATING.** The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703 of the *Puerto Rico Building Code*.

**[BF] FIRE-RESISTANT JOINT SYSTEM.** An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

**FIREWORKS.** Any composition or device for the purpose of producing a visible or an audible effect for entertainment purposes by combustion, *deflagration* or *detonation* that meets the definition of 1.3G fireworks or 1.4G fireworks.

**Fireworks, 1.3G.** Large fireworks devices, which are *explosive materials*, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, *deflagration* or *detonation*. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as Fireworks, UN 0335 by the DOTn.

**Fireworks, 1.4G.** Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for Fireworks, UN 0336, and the U.S. Consumer Product Safety Commission as set forth in CPSC 16 CFR Parts 1500 and 1507.

**FIREWORKS DISPLAY.** A presentation of fireworks for a public or private gathering.

**[BG] FIXED BASE OPERATOR (FBO).** A commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance and flight instruction.

**[BE] FIXED SEATING.** Furniture or fixtures designed and installed for the use of sitting and secured in place including bench-type seats and seats with or without back or arm rests.

**[BF] FLAME SPREAD.** The propagation of flame over a surface.

**[BF] FLAME SPREAD INDEX.** A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84 or UL 723.

**FLAMMABLE CRYOGENIC FLUID.** A *cryogenic fluid* that is flammable in its vapor state.

**FLAMMABLE FINISHES.** Coatings to articles or materials in which the material being applied is a flammable liquid, combustible liquid, combustible powder, fiberglass resin or flammable or combustible gel coating.

**FLAMMABLE GAS.** A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa)] which:



1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of not less than 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

**FLAMMABLE LIQUEFIED GAS.** A liquefied *compressed gas* which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

**FLAMMABLE LIQUID.** A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

**Class IA.** Liquids having a flash point below 73°F (23°C) and having a *boiling point* below 100°F (38°C).

**Class IB.** Liquids having a *flash point* below 73°F (23°C) and having a *boiling point* at or above 100°F (38°C).

**Class IC.** Liquids having a *flash point* at or above 73°F (23°C) and below 100°F (38°C). The category of flammable liquids does not include *compressed gases* or *cryogenic fluids*.

**FLAMMABLE MATERIAL.** A material capable of being readily ignited from common sources of heat or at a temperature of 600°F (316°C) or less.

**FLAMMABLE SOLID.** A solid, other than a blasting agent or *explosive*, that is capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.0866 inch (2.2 mm) per second along its major axis.

**FLAMMABLE VAPOR AREA.** An area in which the concentration of flammable constituents (vapor, gas, fume, mist or dust) in air exceeds 25 percent of their lower flammable limit (LFL) because of the flammable finish processes operation. It shall include:

1. The interior of spray booths.
2. The interior of ducts exhausting from spraying processes.
3. Any area in the direct path of spray or any area containing dangerous quantities of air-suspended powder, combustible residue, dust, deposits, vapor or mists as a result of spraying operations.
4. The area in the vicinity of dip tanks, drain boards or associated drying, conveying or

other equipment during operation or shutdown periods.

The *fire code official* is authorized to determine the extent of the flammable vapor area, taking into consideration the material characteristics of the flammable materials, the degree of sustained ventilation and the nature of the operations.

## **FLUE SPACES.**

**Longitudinal flue space.** The flue space between rows of storage perpendicular to the direction of loading.

**Transverse flue space.** The space between rows of storage parallel to the direction of loading.

**FLUIDIZED BED.** A container holding powder coating material that is aerated from below so as to form an air-supported expanded cloud of such material through which the preheated object to be coated is immersed and transported.

**FOAM-EXTINGUISHING SYSTEM.** A special system discharging a foam made from concentrates, either mechanically or chemically, over the area to be protected.

**[BE] FOLDING AND TELESCOPIC SEATING.** Tiered seating having an overall shape and size that is capable of being reduced for purposes of moving or storing and is not a building element.

**[BG] FOSTER CARE FACILITIES.** Facilities that provide care to more than five children, 2<sup>1</sup>/<sub>2</sub> years of age or less.

**FLAMMABLE VAPORS OR FUMES.** The concentration of flammable constituents in air that exceeds 25 percent of their lower flammable limit (LFL).

**FLASH POINT.** The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D56, ASTM D93 or ASTM D3278.

**FLEET VEHICLE MOTOR FUEL-DISPENSING FACILITY.** That portion of a commercial, industrial, governmental or manufacturing property where liquids used as fuels are stored and dispensed into the fuel tanks of motor vehicles that are used in connection with such businesses, by persons within the employ of such businesses.

**[BE] FLIGHT.** A continuous run of rectangular treads, *winders* or combination thereof from one landing to another.

**FLOAT.** A floating structure normally used as a point of transfer for passengers and goods, or both, for mooring purposes.

**[BE] FLOOR AREA, GROSS.** The floor area within the inside perimeter of the *exterior walls* of the building under consideration, exclusive of vent shafts and courts, without deduction for *corridors, stairways, ramps*, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding *exterior walls* shall be the usable area under the horizontal projection of the roof or floor above. The *gross floor area* shall not include shafts with no openings or interior courts.

**[BE] FLOOR AREA, NET.** The actual occupied area not including unoccupied accessory areas such as corridors, *stairways, ramps*, toilet rooms, mechanical rooms and closets.

**FUEL CELL POWER SYSTEM, STATIONARY.** A stationary energy generation system that converts the chemical energy of a fuel and oxidant to electric energy (DC or AC electricity) by an electrochemical process.

**Field-fabricated fuel cell power system.** A *stationary fuel cell power system* that is assembled at the job site and is not a preengineered or prepackaged factory-assembled fuel cell power system.

**Preengineered fuel cell power system.** A *stationary fuel cell power system* consisting of components and modules that are produced in a factory, and shipped to the job site for assembly.

**Prepackaged fuel cell power system.** A *stationary fuel cell power system* that is factory assembled as a single, complete unit and shipped as a complete unit for installation at the job site.

**FUEL LIMIT SWITCH.** A mechanism, located on a tank vehicle, that limits the quantity of product dispensed at one time.

**FUMIGANT.** A substance which by itself or in combination with any other substance emits or liberates a gas, fume or vapor utilized for the destruction or control of insects, fungi, vermin, germs, rats or other pests, and shall be distinguished from insecticides and disinfectants which are essentially effective in the solid or liquid phases. Examples are methyl bromide, ethylene dibromide, hydrogen cyanide, carbon disulfide and sulfuryl fluoride.

**FUMIGATION.** The utilization within an enclosed space of a fumigant in concentrations that are hazardous or acutely toxic to humans.

**FURNACE CLASS A.** An oven or furnace that has heat utilization equipment operating at approximately atmospheric pressure wherein there is a potential explosion or fire hazard that could be occasioned by the presence of flammable volatiles or combustible materials processed or heated in the furnace.

**Note:** Such flammable volatiles or combustible materials can, for instance, originate from the following:

1. Paints, powders, inks, and adhesives from finishing processes, such as dipped, coated,

sprayed and impregnated materials.

2. The substrate material.

3. Wood, paper and plastic pallets, spacers or packaging materials.

4. Polymerization or other molecular rearrangements. Potentially flammable materials, such as quench oil, waterborne finishes, cooling oil or cooking oils, that present a hazard are ventilated according to Class A standards.

**FURNACE CLASS B.** An oven or furnace that has heat utilization equipment operating at approximately atmospheric pressure wherein there are no flammable volatiles or combustible materials being heated.

**FURNACE CLASS C.** An oven or furnace that has a potential hazard due to a flammable or other special atmosphere being used for treatment of material in process. This type of furnace can use any type of heating system and includes a special atmosphere supply system. Also included in the Class C classification are integral quench furnaces and molten salt bath furnaces.

**FURNACE CLASS D.** An oven or furnace that operates at temperatures from above ambient to over 5,000°F (2760°C) and at pressures normally below atmospheric using any type of heating system. These furnaces can include the use of special processing atmospheres.

**GAS CABINET.** A fully enclosed, ventilated, noncombustible enclosure used to provide an isolated environment for *compressed gas* cylinders in storage or use. Doors and access ports for exchanging cylinders and accessing pressure-regulating controls are allowed to be included.

**GAS DETECTION SYSTEM.** A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

**GAS ROOM.** A separately ventilated, fully enclosed room in which only *compressed gases* and associated equipment and supplies are stored or used.

**GAS ROOM, HYDROGEN FUEL.** See “Hydrogen fuel gas room.”

**GASEOUS HYDROGEN SYSTEM.** An assembly of piping, devices and apparatus designed to generate, store, contain, distribute or transport a nontoxic, gaseous hydrogen-containing mixture having not less than 95-percent hydrogen gas by volume and not more than 1-percent oxygen by volume. Gaseous hydrogen systems consist of items such as *compressed gas* containers, reactors and appurtenances, including pressure regulators, pressure relief devices, manifolds, pumps, compressors and interconnecting piping and tubing and controls.

**GLOVE BOX.** A sealed enclosure in which items inside the box are handled exclusively using long gloves sealed to ports in the enclosure.

**[BG] GRADE FLOOR OPENING.** A window or other opening located such that the sill height

of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.

**[BG] GRADE PLANE.** A reference plane representing the average of finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the *lot line* or, where the *lot line* is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

**[BE] GRANDSTAND.** Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element (see “*Bleachers*”).

**[BG] GROUP HOME.** A facility for social rehabilitation, substance abuse or mental health problems that contains a group housing arrangement that provides custodial care but does not provide medical care.

**[BE] GUARD.** A building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level.

**[BG] GUESTROOM.** A room used or intended to be used by one or more guests for living or sleeping purposes.

**[BS] GYPSUM BOARD.** Gypsum wallboard, gypsum sheathing, gypsum base for gypsum veneer plaster, exterior gypsum soffit board, predecorated gypsum board or waterresistant gypsum backing board complying with the standards listed in Tables 2506.2 and 2507.2 and Chapter 35 of the *Puerto Rico Building Code*.

**[BG] HABITABLE SPACE.** A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

**HALOGENATED EXTINGUISHING SYSTEM.** A fireextinguishing system using one or more atoms of an element from the halogen chemical series: fluorine, chlorine, bromine and iodine.

**HANDLING.** The deliberate transport by any means to a point of storage or use.

**[BE] HANDRAIL.** A horizontal or sloping rail intended for grasping by the hand for guidance or support.

**HAZARDOUS MATERIALS.** Those chemicals or substances which are *physical hazards* or *health hazards* as defined and classified in this chapter, whether the materials are in usable or waste condition.

**HAZARDOUS PRODUCTION MATERIAL (HPM).** A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or instability of Class 3 or 4 as ranked by NFPA 704 and which is used directly in research, laboratory or production processes which have, as their end product, materials that are not hazardous.

**HEALTH HAZARD.** A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term “health hazard” includes chemicals that are toxic, highly toxic and *corrosive*.

**HEAT DETECTOR.** See “Detector, heat.”

**[BG] HEIGHT, BUILDING.** The vertical distance from grade plane to the average height of the highest roof surface.

**HELIPORT.** An area of land or water or a structural surface that is used, or intended for use, for the landing and taking off of helicopters, and any appurtenant areas which are used, or intended for use, for heliport buildings and other heliport facilities.

**HELISTOP.** The same as “Heliport,” except that fueling, defueling, maintenance, repairs or storage of helicopters is not permitted.

**HI-BOY.** A cart used to transport hot roofing materials on a roof.

**HIGHER EDUCATION LABORATORY.** Laboratories in Group B occupancies used for educational purposes above the 12th grade. Storage, use and handling of chemicals in such laboratories shall be limited to purposes related to testing, analysis, teaching, research or developmental activities on a nonproduction basis.

**HIGHLY TOXIC.** A material which produces a lethal dose or lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose (LD<sub>50</sub>) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD<sub>50</sub>) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC<sub>50</sub>) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxic. While this system is basically simple in application, any hazard evaluation that is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

**HIGHLY VOLATILE LIQUID.** A liquefied *compressed gas* with a *boiling point* of less than 68°F (20°C).

**HIGH-PILED COMBUSTIBLE STORAGE.** Storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3658 mm) in height. Where required by the *fire code official*, *high-piled combustible storage* also includes certain high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities, where the top of storage is greater than 6 feet (1829 mm) in height.

**HIGH-PILED STORAGE AREA.** An area within a building which is designated, intended, proposed or actually used for *high-piled combustible storage*, including operating aisles.

**[BG] HIGH-RISE BUILDING.** A building with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

**HIGH-VOLTAGE TRANSMISSION LINE.** An electrical power transmission line operating at or above 66 kilovolts.

**HIGHWAY.** A public street, public alley or public road.

**[A] HISTORIC BUILDINGS.** Any building or structure that is one or more of the following:

1. Listed, or certified as eligible for listing by the state historic preservation officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic under an applicable state or local law.
3. Certified as a contributing resource within a national register, state designated or locally designated historic district.

**HOGGED MATERIALS.** Wood waste materials produced from the lumber production process.

**[M] HOOD.** An air-intake device used to capture by entrapment, impingement, adhesion or similar means, grease and similar contaminants before they enter a duct system.

**Type I.** A kitchen hood for collecting and removing grease vapors and smoke.

**Type II.** A general kitchen hood for collecting and removing steam vapor, heat, odors and products of combustion.

**[BF] HORIZONTAL ASSEMBLY.** A fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained.

**[BE] HORIZONTAL EXIT.** An *exit* component consisting of fire-resistance-rated construction and opening protectives intended to compartmentalize portions of a building thereby creating refuge areas that afford safety from fire and smoke from the area of fire origin.

**[BG] HOSPITALS AND PSYCHIATRIC HOSPITALS.** Facilities that provide care or treatment for the medical, psychiatric, obstetrical, or surgical treatment of inpatient care recipients that are incapable of self-preservation.

**HOT WORK.** Operations including cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar activity.

**HOT WORK AREA.** The area exposed to sparks, hot slag, radiant heat, or convective heat as a result of the hot work.

**HOT WORK EQUIPMENT.** Electric or gas welding or cutting equipment used for hot work.

**HOT WORK PERMITS.** Permits issued by the responsible person at the facility under the hot work permit program permitting welding or other hot work to be done in locations referred to in Section 3503.3 and prepermitted by the *fire code official*.

**HOT WORK PROGRAM.** A permitted program, carried out by *approved* facilities-designated personnel, allowing them to oversee and issue permits for hot work conducted by their personnel or at their facility. The intent is to have trained, on-site, responsible personnel ensure that required hot work safety measures are taken to prevent fires and fire spread.

**HPM.** See “Hazardous Production Material.”

**HPM FACILITY.** See “Semiconductor fabrication facility.”

**HPM ROOM.** A room used in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and which is classified as a Group H-2, H-3 or H-4 occupancy.

**HYDROGEN FUEL GAS ROOM.** A room or space that is intended exclusively to house a *gaseous hydrogen system*.

**IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).** The concentration of airborne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment. This contaminant concentration level is established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/ m<sup>3</sup>). Where adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist,



industrial toxicologist, appropriate regulatory agency or other source *approved* by the *fire code official* shall make such determination.

**IMPAIRMENT COORDINATOR.** The person responsible for the maintenance of a particular *fire protection system*.

**[BG] INCAPABLE OF SELF-PRESERVATION.** Persons who, because of age, physical limitations, mental limitations, chemical dependency or medical treatment, cannot respond as an individual to an emergency situation.

**INCOMPATIBLE MATERIALS.** Materials that, when mixed, have the potential to react in a manner which generates heat, fumes, gases or byproducts which are hazardous to life or property.

**INERT GAS.** A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or *health hazard* properties as defined (other than acting as a simple asphyxiant) or hazard properties other than those of a *compressed gas*. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen and xenon.

**INHABITED BUILDING.** A building regularly occupied in whole or in part as a habitation for people, or any place of religious worship, schoolhouse, railroad station, store or other structure where people are accustomed to assemble, except any building or structure occupied in connection with the manufacture, transportation, storage or use of *explosive materials*.

**INITIATING DEVICE.** A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box, or supervisory switch.

**INSECTICIDAL FOGGING.** The utilization of insecticidal liquids passed through fog-generating units where, by means of pressure and turbulence, with or without the application of heat, such liquids are transformed and discharged in the form of fog or mist blown into an area to be treated.

**INTEGRATED TESTING (FIRE PROTECTION AND LIFE SAFETY SYSTEM).** A testing procedure to establish the operational status, interaction and coordination of two or more fire protection and safety systems.

**[BE] INTERIOR EXIT RAMP.** An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and provides for a protected path of egress travel to the exit discharge or public way.

**[BE] INTERIOR EXIT STAIRWAY.** An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and provides for a protected path of egress travel to the exit discharge or public way.

**[BG] INTERIOR FINISH.** Interior finish includes interior wall and ceiling finish and interior

floor finish.

**[BG] INTERIOR FLOOR-WALL BASE.** Interior floor finish trim used to provide a functional or decorative border at the intersection of walls and floors.

**[BG] INTERIOR WALL AND CEILING FINISH.** The exposed interior surfaces of buildings, including but not limited to: fixed or movable walls and partitions; toilet room privacy partitions; columns; ceilings; and interior wainscoting, paneling or other finish applied structurally or for decoration, acoustical correction, surface insulation, structural *fire resistance* or similar purposes, but not including trim.

**IRRITANT.** A chemical which is not *corrosive*, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of CPSC 16 CFR Part 1500.41 for an exposure of four or more hours or by other appropriate techniques, it results in an empirical score of 5 or more. A chemical is classified as an eye irritant if so determined under the procedure listed in CPSC 16 CFR Part 1500.42 or other *approved* techniques.

**[A] JURISDICTION.** The governmental unit that has adopted this code.

**KEY BOX.** A secure device with a lock operable only by a fire department master key, and containing building entry keys and other keys that may be required for access in an emergency.

**[A] LABELED.** Equipment, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, *approved* agency or other organization concerned with product evaluation that maintains periodic inspection of the production of such labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LABORATORY SUITE.** A fire-rated enclosed laboratory area that will provide one or more laboratory spaces, within a Group B educational occupancy, that are permitted to include ancillary uses such as offices, bathrooms and corridors that are contiguous with the laboratory area, and are constructed in accordance with Chapter 38.

**LEVEL OF EXIT DISCHARGE.** See “Exit discharge, level of.”

**LIMITED SPRAYING SPACE.** An area in which operations for touch-up or spot painting of a surface area of 9 square feet (0.84 m<sup>2</sup>) or less are conducted.

**LIQUEFIED NATURAL GAS (LNG).** A fluid in the liquid state composed predominantly of methane and which may contain minor quantities of ethane, propane, nitrogen or other components normally found in natural gas.

**LIQUEFIED PETROLEUM GAS (LP-gas).** A material which is composed predominantly of the following hydrocarbons or mixtures of them: propane, propylene, butane (normal butane or

isobutane) and butylenes.

**LIQUID.** A material having a melting point that is equal to or less than 68°F (20°C) and a *boiling point* which is greater than 68°F (20°C) at 14.7 pounds per square inch absolute (psia) (101 kPa). Where not otherwise identified, the term “liquid” includes both flammable and *combustible liquids*.

**LIQUID OXYGEN AMBULATORY CONTAINER.** A container used for liquid oxygen not exceeding 0.396 gallons (1.5 liters) specifically designed for use as a medical device as defined by 21 USC Chapter 9 that is intended for portable therapeutic use and to be filled from its companion base unit, a liquid oxygen home care container.

**LIQUID OXYGEN HOME CARE CONTAINER.** A container used for liquid oxygen not exceeding 15.8 gallons (60 liters) specifically designed for use as a medical device as defined by 21 USC Chapter 9 that is intended to deliver gaseous oxygen for therapeutic use in a home environment.

**LIQUID STORAGE ROOM.** A room classified as a Group H-3 occupancy used for the storage of flammable or *combustible liquids* in a closed condition.

**LIQUID STORAGE WAREHOUSE.** A building classified as a Group H-2 or H-3 occupancy used for the storage of flammable or *combustible liquids* in a closed condition.

**[A] LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the *fire code official* and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**LOCKDOWN.** An emergency situation, in other than a Group I-3 occupancy, requiring that the occupants be sheltered and secured in place within a building when normal evacuation would put occupants at risk.

**[BG] LODGING HOUSE.** A one-family dwelling where one or more occupants are primarily permanent in nature and rent is paid for guestrooms.

**LONGITUDINAL FLUE SPACE.** See “Flue space—longitudinal.”

**[A] LOT.** A portion or parcel of land considered as a unit.

**[A] LOT LINE.** A line dividing one lot from another, or from a street or any public place.

**[BE] LOW ENERGY POWER-OPERATED DOOR.** Swinging, sliding or folding door which opens automatically upon an action by a pedestrian such as pressing a push plate or waving a hand in front of a sensor. The door closes automatically, and operates with decreased forces and decreased

speeds. See also “Power-assisted door” and “Power-operated door.”

**LOWER EXPLOSIVE LIMIT (LEL).** See “Lower flammable limit.”

**LOWER FLAMMABLE LIMIT (LFL).** The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as LEL or lower explosive limit.

**LOW-PRESSURE TANK.** A storage tank designed to withstand an internal pressure greater than 0.5 pound per square inch gauge (psig) (3.4 kPa) but not greater than 15 psig (103.4 kPa).

**LP-GAS CONTAINER.** Any vessel, including cylinders, tanks, portable tanks and cargo tanks, used for transporting or storing LP-gases.

**MAGAZINE.** A building, structure or container, other than an operating building, *approved* for storage of *explosive materials*.

**Indoor.** A portable structure, such as a box, bin or other container, constructed as required for Type 2, 4 or 5 magazines in accordance with NFPA 495, NFPA 1124 or DOTy 27 CFR Part 55 so as to be fire resistant and theft resistant.

**Type 1.** A permanent structure, such as a building or igloo, that is bullet resistant, fire resistant, theft resistant, weather resistant and ventilated in accordance with the requirements of NFPA 495, NFPA 1124 or DOTy 27 CFR Part 55.

**Type 2.** A portable or mobile structure, such as a box, skid-magazine, trailer or semitrailer, constructed in accordance with the requirements of NFPA 495, NFPA 1124 or DOTy 27 CFR Part 55 that is fire resistant, theft resistant, weather resistant and ventilated. If used outdoors, a Type 2 magazine is also bullet resistant.

**Type 3.** A fire resistant, theft resistant and weather resistant “day box” or portable structure constructed in accordance with NFPA 495, NFPA 1124 or DOTy 27 CFR Part 55 used for the temporary storage of *explosive materials*.

**Type 4.** A permanent, portable or mobile structure such as a building, igloo, box, semitrailer or other mobile container that is fire resistant, theft resistant and weather resistant and constructed in accordance with NFPA 495, NFPA 1124 or DOTy 27 CFR Part 55.

**Type 5.** A permanent, portable or mobile structure such as a building, igloo, box, bin, tank, semitrailer, bulk trailer, tank trailer, bulk truck, tank truck or other mobile container that is theft resistant, which is constructed in accordance with NFPA 495, NFPA 1124 or DOTy 27 CFR Part 55.

**MAGNESIUM.** The pure metal and alloys, of which the major part is magnesium.

**MALL.** See “Covered mall building.”

**MANUAL FIRE ALARM BOX.** A manually operated device used to initiate an alarm signal.

**MANUAL STOCKING METHODS.** Stocking methods utilizing ladders or other nonmechanical equipment to move stock.

**MARINA.** Any portion of the ocean or inland water, either naturally or artificially protected, for the mooring, servicing or safety of vessels and shall include artificially protected works, the public or private lands ashore, and structures or facilities provided within the enclosed body of water and ashore for the mooring or servicing of vessels or the servicing of their crews or passengers.

**MARINE MOTOR FUEL-DISPENSING FACILITY.** That portion of property where flammable or *combustible liquids* or gases used as fuel for watercraft are stored and dispensed from fixed equipment on shore, piers, wharves, floats or barges into the fuel tanks of watercraft and shall include all other facilities used in connection therewith.

**MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA.** The maximum amount of a hazardous material allowed to be stored or used within a *control area* inside a building or an outdoor control area. The maximum allowable quantity per control area is based on the material state (solid, liquid or gas) and the material storage or use conditions.

**[BE] MEANS OF EGRESS.** A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a *public way*. A means of egress consists of three separate and distinct parts: the *exit access*, the *exit* and the *exit discharge*.

**MECHANICAL STOCKING METHODS.** Stocking methods utilizing motorized vehicles or hydraulic jacks to move stock.

**[BG] MEDICAL CARE.** Care involving medical or surgical procedures, nursing or for psychiatric purposes.

**MEMBRANE STRUCTURE.** An air-inflated, air-supported, cable or frame-covered structure as defined by the *Puerto Rico Building Code* and not otherwise defined as a tent. See Chapter 31 of the *Puerto Rico Building Code*.

**[BF] MEMBRANE-PENETRATION FIRESTOP SYSTEM.** An assemblage consisting of a fire-resistance-rated floor-ceiling, roof-ceiling or wall assembly, one or more penetrating items installed into or passing through the breach in one side of the assembly and the materials or devices, or both, installed to resist the spread of fire into the assembly for a prescribed period of time.

**[BE] MERCHANDISE PAD.** A merchandise pad is an area for display of merchandise surrounded by *aisles*, permanent fixtures or walls. Merchandise pads contain elements such as nonfixed and moveable fixtures, cases, racks, counters and partitions as indicated in Section 105.2 of the *Puerto Rico Building Code* from which customers browse or shop.

**METAL HYDRIDE.** A generic name for compounds composed of metallic element(s) and

hydrogen.

**METAL HYDRIDE STORAGE SYSTEM.** A *closed system* consisting of a group of components assembled as a package to contain metal-hydrogen compounds for which there exists an equilibrium condition where the hydrogen-absorbing metal alloy(s), hydrogen gas and the metal-hydrogen compound(s) coexist and where only hydrogen gas is released from the system in normal use.

**[BG] MEZZANINE.** An intermediate level or levels between the floor and ceiling of any story and in accordance with Section 505 of the *Puerto Rico Building Code*.

**MISCELLA.** A mixture, in any proportion, of the extracted oil or fat and the extracting solvent.

**MOBILE FOOD PREPARATION VEHICLES.** Vehicles that contain cooking equipment that produce smoke or grease-laden vapors for the purpose of preparing and serving food to the public. Vehicles intended for private recreation shall not be considered mobile food preparation vehicles.

**MOBILE FUELING.** The operation of dispensing liquid fuels from tank vehicles into the fuel tanks of motor vehicles. Mobile fueling may also be known by the terms “Mobile fleet fueling,” “Wet fueling” and “Wet hosing.”

**MORTAR.** A tube from which fireworks shells are fired into the air.

**MULTIPLE-STATION ALARM DEVICE.** Two or more single-station alarm devices that can be interconnected such that actuation of one causes all integral or separate audible alarms to operate. A multiple-station alarm device can consist of one single-station alarm device having connections to other detectors or to a manual fire alarm box.

**MULTIPLE-STATION SMOKE ALARM.** Two or more single-station alarm devices that are capable of interconnection such that actuation of one causes the appropriate alarm signal to operate in all interconnected alarms.

**NESTING.** A method of securing flat-bottomed *compressed gas* cylinders upright in a tight mass using a contiguous three-point contact system whereby all cylinders within a group have not less than three points of contact with other cylinders, walls or bracing.

**NET EXPLOSIVE WEIGHT (net weight).** The weight of *explosive material* expressed in pounds. The net explosive weight is the aggregate amount of *explosive material* contained within buildings, magazines, structures or portions thereof, used to establish quantity-distance relationships.

**NORMAL TEMPERATURE AND PRESSURE (NTP).** A temperature of 70°F (21°C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

**[BE] NOSING.** The leading edge of treads of *stairs* and of landings at the top of *stairway flights*.

**NOTIFICATION ZONE.** See “Zone, notification.”

**NUISANCE ALARM.** An alarm caused by mechanical failure, malfunction, improper installation or lack of proper maintenance, or an alarm activated by a cause that cannot be determined.

**[BG] NURSING HOMES.** Facilities that provide care, including both intermediate care facilities and skilled nursing facilities, where any of the persons are incapable of self-preservation.

**OCCUPANCY CLASSIFICATION.** For the purposes of this code, certain occupancies are defined as follows:

**[BG] Assembly Group A.** Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption; or awaiting transportation.

**[BG] Small buildings and tenant spaces.** A building or tenant space used for assembly purposes with an *occupant load* of less than 50 persons shall be classified as a Group B occupancy.

**[BG] Small assembly spaces.** The following rooms and spaces shall not be classified as assembly occupancies:

1. A room or space used for assembly purposes with an *occupant load* of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
2. A room or space used for assembly purposes that is less than 750 square feet (70 m<sup>2</sup>) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.

**[BG] Associated with Group E occupancies.** A room or space used for assembly purposes that is associated with a Group E occupancy is not considered a separate occupancy.

**[BG] Accessory with places of religious worship.** Accessory religious educational rooms and religious auditoriums with *occupant loads* of less than 100 per room or space are not considered separate occupancies

**[BG] Assembly Group A-1.** Group A occupancy includes assembly uses, usually with fixed seating, intended for the production and viewing of performing arts or motion pictures including, but not limited to:

- Motion picture theaters
- Symphony and concert hall
- Television and radio studios admitting an audience
- Theaters

**[BG] Assembly Group A-2.** Group A-2 occupancy includes assembly uses intended for food and/or drink consumption including, but not limited to:

- Banquet halls
- Casinos (gaming areas)
- Night clubs
- Restaurants, cafeterias and similar dining facilities (including associated commercial kitchens)
- Taverns and bars

**[BG] Assembly Group A-3.** Group A-3 occupancy includes assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A, including, but not limited to:

- Amusement arcades
- Art galleries
- Bowling alleys
- Community halls
- Courtrooms
- Dance halls (not including food or drink consumption)
- Exhibition halls
- Funeral parlors
- Greenhouses with public access for the conservation and exhibition of plants
- Gymnasiums (without spectator seating)
- Indoor swimming pools (without spectator seating)
- Indoor tennis courts (without spectator seating)
- Lecture halls
- Libraries
- Museums
- Places of religious worship
- Pool and billiard parlors
- Waiting areas in transportation terminals

**[BG] Assembly Group A-4.** Group A-4 occupancy includes assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

- Arenas
- Skating rinks
- Swimming pools
- Tennis courts

**[BG] Assembly Group A-5.** Group A-5 occupancy includes assembly uses intended for participation in or viewing outdoor activities including, but not limited to:  
Amusement park structures

- Bleachers*
- Grandstands
- Stadiums



**[BG] Business Group B.** Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory care facilities
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Clinic-outpatient
- Dry cleaning and laundries: pick-up and delivery stations and self-service
- Educational occupancies for students above the 12th grade
- Electronic data processing
- Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m<sup>2</sup>) in area.
- Laboratories: testing and research
- Motor vehicle showrooms
- Post offices
- Print shops
- Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
- Radio and television stations
- Telephone exchanges
- Training and skill development not in a school or academic program (This shall include, but not be limited to, tutoring centers, martial arts studios, gymnastics and similar uses regardless of the ages served, and where not classified as a Group A occupancy).

**[BG] Educational Group E.** Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade.

**[BG] Accessory to places of religious worship.** Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 303.1.4 of the *Puerto Rico Building Code* and have *occupant loads* of less than 100 per room or space shall be classified as Group A-3 occupancies.

**[BG] Group E, day care facilities.** This group includes buildings and structures or portions thereof occupied by more than five children older than 2<sup>1</sup>/<sub>2</sub> years of age who receive educational, supervision or *personal care services* for less than 24 hours per day.

**[BG] Within places of worship.** Rooms and spaces within places of worship providing such care during religious functions shall be classified as part of the primary occupancy.

**[BG] Five or fewer children.** A facility having five or fewer children receiving such care shall be classified as part of the primary occupancy.

**[BG] Five or fewer children in a dwelling unit.** A facility such as the above within a dwelling unit and having five or fewer children receiving such care shall be classified as a Group R-3 occupancy or shall comply with the *Puerto Rico Residential Code*.

**[BG] Factory Industrial Group F.** Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H high-hazard or Group S storage occupancy.

**[BG] Factory Industrial F-1 Moderate-hazard occupancy.** Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

- Aircraft (manufacturing, not to include repair) Appliances
- Athletic equipment
- Automobiles and other motor vehicles
- Bakeries
- Beverages; over 16-percent alcohol content
- Bicycles
- Boats
- Brooms or brushes
- Business machines
- Cameras and photo equipment
- Canvas or similar fabric
- Carpets and rugs (includes cleaning)
- Clothing
- Construction and agricultural machinery
- Disinfectants
- Dry cleaning and dyeing
- Electric generation plants
- Electronics
- Engines (including rebuilding)
- Food processing and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities more than 2,500 square feet (232 m<sup>2</sup>) in area.
- Furniture
- Hemp products
- Jute products
- Laundries
- Leather products
- Machinery
- Metals
- Millwork (sash and door)

Motion pictures and television filming (without spectators)  
Musical instruments  
Optical goods  
Paper mills or products  
Photographic film  
Plastic products Printing or publishing Refuse incineration Shoes  
Soaps and detergents  
Textiles  
Tobacco  
Trailers  
Upholstering  
Wood; distillation  
Woodworking (cabinet)

**[BG] Factory Industrial F-2 Low-hazard Occupancy.** Factory industrial uses involving the fabrication or manufacturing of noncombustible materials that, during finishing, packaging or processing do not involve a significant fire hazard, shall be classified as Group F-2 occupancies and shall include, but not be limited to, the following:

Beverages; up to and including 16-percent alcohol content  
Brick and masonry  
Ceramic products  
Foundries  
Glass products  
Gypsum  
Ice  
Metal products (fabrication and assembly)

**High-hazard Group H.** High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or *health hazard* in quantities in excess of those allowed in *control areas* complying with Section 5003.8.3, based on the maximum allowable quantity limits for *control areas* set forth in Tables 5003.1.1(1) and 5003.1.1(2).

Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this code and the requirements of Section 415 of the *Puerto Rico Building Code*. Hazardous materials stored or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with this code.

**Uses other than Group H.** The storage, use or handling of hazardous materials as described in one or more of the following items shall not cause the occupancy to be classified as Group H, but it shall be classified as the occupancy that it most nearly resembles:

1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Chapter 24 of this code

and Section 416 of the *Puerto Rico Building Code*.

2. Wholesale and retail sales and storage of flammable and *combustible liquids* in mercantile occupancies conforming to Chapter 57.
3. Closed piping system containing flammable or *combustible liquids* or gases utilized for the operation of machinery or equipment.
4. Cleaning establishments that utilize *combustible liquid* solvents having a *flash point* of 140°F (60°C) or higher in *closed systems* employing equipment *listed* by an *approved* testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour *fire barriers* in accordance with Section 707 of the *Puerto Rico Building Code* or 1-hour *horizontal assemblies* in accordance with Section 711 of the *Puerto Rico Building Code*, or both.
5. Cleaning establishments that utilize a liquid solvent having a *flash point* at or above 200°F (93°C).
6. Liquor stores and distributors without bulk storage.
7. Refrigeration systems.
8. The storage or utilization of materials for agricultural purposes on the premises.
9. Stationary storage battery systems installed in accordance with Section 1206.2.
10. *Corrosive* personal or household products in their original packaging used in retail display.
11. Commonly used *corrosive* building materials.
12. Buildings and structures occupied for aerosol product storage shall be classified as Group S-1, provided that such buildings conform to the requirements of Chapter 51.
13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the *maximum allowable quantity per control area* in Group M or S occupancies complying with Section 5003.8.3.5.1.
14. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements of this code.
15. Stationary fuel cell power systems installed in accordance with this code.
16. *Capacitor energy storage systems* in accordance with this code.
17. Group B higher education laboratory occupancies complying with Section 428 of the *Puerto Rico Building Code* and Chapter 38 of this code.

**High-hazard Group H-1.** Buildings and structures containing materials that pose a *detonation* hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:

- Detonable pyrophoric materials
- Explosives: Division 1.1
- Division 1.2
- Division 1.3
- Division 1.4
- Division 1.5
- Division 1.6
- Organic peroxides, unclassified detonable

Oxidizers, Class 4  
Unstable (reactive) materials, Class 3 detonable, and  
Class

4

**Occupancies containing explosives not classified as H-1.**

The following occupancies containing explosive materials shall be classified as follows:

1. Division 1.3 explosive materials that are used and maintained in a form where either confinement or configuration will not elevate the hazard from a mass fire hazard to mass explosion hazard shall be allowed in Group H-2 occupancies.

2. Articles, including articles packaged for shipment, that are not regulated as a Division 1.4 explosive under Bureau of Alcohol, Tobacco, Firearms and Explosives regulations, or unpackaged articles used in process operations that do not propagate a *detonation* or deflagration between articles shall be allowed in H-3 occupancies.

**High-hazard Group H-2.** Buildings and structures containing materials that pose a *deflagration* hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or *combustible liquids* that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa)

*Combustible dusts* where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3 of the *Puerto Rico Building Code*

*Cryogenic fluids*, flammable

Flammable gases

Organic peroxides, Class I

Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa)

Pyrophoric liquids, solids and gases, nondetonable Unstable (reactive) materials, Class 3, nondetonable Water-reactive materials, Class 3

**High-hazard Group H-3.** Buildings and structures containing materials that readily support combustion or that pose a *physical hazard* shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or *combustible liquids* that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103.4 kPa) or less.

Combustible fibers, other than densely packed baled cotton, where manufactured,

generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3 of the *Puerto Rico Building Code* Consumer fireworks, 1.4G (Class C, Common)

*Cryogenic fluids*, oxidizing

Flammable solids

Organic peroxides, Class II and III Oxidizers, Class 2

Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103 kPa) or less

Oxidizing gases

Unstable (reactive) materials, Class 2

Water-reactive materials, Class 2

**High-hazard Group H-4.** Buildings and structures containing materials that are *health hazards* shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

*Corrosives*

Highly toxic materials

Toxic materials

**High-hazard Group H-5.** Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 5003.1.1(1) and 5003.1.1(2) shall be classified as Group H-5. Such facilities and areas shall be designed and constructed in accordance with Section 415.11 of the *Puerto Rico Building Code*.

**[BG] Institutional Group I.** Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which care or supervision is provided to persons who are or are not capable of selfpreservation without physical assistance or in which persons are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

**[BG] Institutional Group I-1.** Institutional Group I-1 occupancy shall include buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care. Buildings of Group I-1 shall be classified as one of the occupancy conditions indicated below. This group shall include, but not be limited to, the following:

Alcohol and drug centers

Assisted living facilities

Congregate care facilities

Group homes

Halfway houses

Residential board and care facilities

Residential board and custodial care facilities

Social rehabilitation facilities

**[BG] Condition 1.** This occupancy condition shall include buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation.

**[BG] Condition 2.** This occupancy condition shall include buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation.

**[BG] Six to 16 persons receiving custodial care.** A facility housing not fewer than six and not more than 16 persons receiving custodial care shall be classified as Group R-4.

**[BG] Five or fewer persons receiving custodial care.** A facility with five or fewer persons receiving custodial care shall be classified as Group R-3 or shall comply with the *Puerto Rico Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or with Section P2904 of the *Puerto Rico Residential Code*.

**[BG] Institutional Group I-2.** Institutional Group I-2 occupancy shall include buildings and structures used for medical care on a 24-hour basis for more than five persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

- Foster care facilities
- Detoxification facilities
- Hospitals
- Nursing homes
- Psychiatric hospitals

**[BG] Occupancy Conditions.** Buildings of Group I-2 shall be classified as one of the following occupancy conditions:

**[BG] Condition 1.** This occupancy condition shall include facilities that provide nursing and medical care but do not provide emergency care, surgery, obstetrics, or in-patient stabilization units for psychiatric or detoxification, including, but not limited to, nursing homes and foster care facilities.

**[BG] Condition 2.** This occupancy condition shall include facilities that provide nursing and medical care and could provide emergency care, surgery, obstetrics, or inpatient stabilization units for psychiatric or detoxification, including, but not limited to, hospitals.

**[BG] Five or fewer persons receiving medical care.** A facility with five or fewer persons receiving medical care shall be classified as Group R-3 or shall comply with the *Puerto Rico Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or with Section P2904 of the *Puerto Rico Residential Code*.

**[BG] Institutional Group I-3.** Institutional Group I-3 occupancy shall include buildings and structures which are due to security measures not under the occupants' control. This group shall include, but not be limited to, the following:

- Correctional centers
- Detention centers Jails
- Prerelease centers
- Prisons
- Reformatories

Buildings of Group I-3 shall be classified as one of the following occupancy conditions:

**[BG] Condition 1.** This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and other spaces where access or occupancy is permitted to the exterior via *means of egress* without restraint. A Condition 1 facility is permitted to be constructed as Group R.

**[BG] Condition 2.** This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked *exits*.

**[BG] Condition 3.** This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual *sleeping units* and group activity spaces, where egress is impeded by remote-controlled release of *means of egress* from such smoke compartment to another smoke compartment.

**[BG] Condition 4.** This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from *sleeping units*, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

**[BG] Condition 5.** This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Staff-controlled manual release is provided to permit movement from *sleeping units*, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

**[BG] Institutional Group I-4, day care facilities.** Institutional Group I-4 shall include buildings and structures occupied by more than five persons of any age who receive custodial care for less than 24 hours by persons other than parents or guardians, relatives by blood, marriage, or adoption, and in a place other than the home of the person cared for. This group shall include, but not be limited to, the following:

- Adult day care
- Child day care



**[BG] Classification as Group E.** A child day care facility that provides care for more than five but not inhabited by more than five persons who are under more than  $2\frac{1}{2}$  years or less of age, where restraint or security. A Group I-3 facility is occupied by persons who are generally incapable of self-preservation the rooms in which the children are cared for are located on a *level of exit discharge* serving such rooms and each of these child care rooms has an *exit* door directly to the exterior, shall be classified as Group E.

**[BG] Within a place of religious worship.** Rooms and spaces within places of religious worship providing such care during religious functions shall be classified as part of the primary occupancy.

**[BG] Five or fewer occupants receiving care.** A facility having five or fewer persons receiving custodial care shall be classified as part of the primary occupancy.

**[BG] Five or fewer occupants receiving care in a dwelling unit.**

A facility such as the above within a *dwelling unit* and having five or fewer persons receiving custodial care shall be classified as a Group R-3 occupancy or shall comply with the *Puerto Rico Residential Code*.

**[BG] Mercantile Group M.** Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

- Department stores
- Drug stores
- Greenhouses with public access that maintain plants for display and sale
- Markets
- Motor fuel-dispensing facilities
- Retail or wholesale stores
- Sales rooms

**[BG] Residential Group R.** Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *Puerto Rico Residential Code* in accordance with Section 101.2 of the *Puerto Rico Building Code*.

**[BG] Residential Group R-1.** Residential Group R-1 occupancies containing *sleeping units* where the occupants are primarily transient in nature, including:

- Boarding houses* (transient) with more than 10 occupants
- Congregate living facilities (transient) with more than 10 occupants
- Hotels (transient)
- Motels (transient)

**[BG] Residential Group R-2.** Residential Group R-2 occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily permanent in nature, including:

Apartment houses  
*Congregate living facilities* (nontransient) with more than 16 occupants  
Boarding houses (nontransient) Convents  
*Dormitories*  
Fraternities and sororities  
Monasteries  
Hotels (nontransient)  
*Live/work units*  
Motels (nontransient)  
Vacation timeshare properties

**[BG] Residential Group R-3.** Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

Buildings that do not contain more than two *dwelling units*  
Care facilities that provide accommodations for five or fewer persons receiving care  
*Congregate living facilities* (nontransient) with 16 or fewer occupants  
Boarding houses (nontransient) Convents  
*Dormitories*  
Fraternities and sororities  
Monasteries  
*Congregate living facilities* (*transient*) with 10 or fewer occupants  
*Boarding houses* (*transient*)  
*Lodging houses* (*transient*) with five or fewer *guestrooms* and 10 or fewer occupants

**[BG] Care facilities within a dwelling.** Care facilities for five or fewer persons receiving care that are within a single-family dwelling are permitted to comply with the *Puerto Rico Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or Section P2904 of the *Puerto Rico Residential Code*.

**[BG] Lodging houses.** Owner-occupied *lodging houses* with five or fewer *guestrooms* and 10 or fewer total occupants shall be permitted to be constructed in accordance with the *Puerto Rico Residential Code*.

**[BG] Residential Group R-4.** Residential Group R-4 shall include buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive custodial care. Buildings of Group R-4 shall be classified as one of the occupancy conditions indicated below. This group shall include, but not be limited to, the following:

Alcohol and drug centers Assisted living facilities  
Congregate care facilities

Group homes  
Halfway houses  
Residential board and care facilities  
Social rehabilitation facilities

Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in the *Puerto Rico Building Code*.

**[BG] Condition 1.** This occupancy condition shall include buildings in which all persons receiving custodial care, without any assistance, are capable of responding to an emergency situation to complete building evacuation.

**[BG] Condition 2.** This occupancy condition shall include buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation.

**[BG] Storage Group S.** Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.

**[BG] Accessory storage spaces.** A room or space used for storage purposes that is less than 100 square feet (9.3 m<sup>2</sup>) in area and accessory to another occupancy shall be classified as part of that occupancy. The aggregate area of such rooms or spaces shall not exceed the allowable area limits of Section 508.2 of the *Puerto Rico Building Code*.

**[BG] Moderate-hazard storage, Group S-1.** Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosols, Levels 2 and 3  
Aircraft hangar (storage and repair)  
Bags: cloth, burlap and paper  
Bamboos and rattan  
Baskets  
Belting: canvas and leather  
Books and paper in rolls or packs  
Boots and shoes  
Buttons, including cloth covered, pearl or bone  
Cardboard and cardboard boxes  
Clothing, woolen wearing apparel  
Cordage  
Dry boat storage (indoor) Furniture  
Furs  
Glues, mucilage, pastes and size  
Grains

Horns and combs, other than celluloid  
Leather  
Linoleum  
Lumber  
Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials listed in Table 5003.1.1(1) (see Section 406.8 of the *Puerto Rico Building Code*)  
Photo engravings  
Resilient flooring  
Self-service storage facility (mini-storage)  
Silks  
Soaps  
Sugar  
Tires, bulk storage of  
Tobacco, cigars, cigarettes and snuff  
Upholstery and mattresses  
Wax candles

**[BG] Low-hazard storage, Group S-2.** Storage Group S-2 occupancies include, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. Storage uses shall include, but not be limited to, storage of the following:

Asbestos  
Beverages up to and including 16-percent alcohol in metal, glass or ceramic containers  
Cement in bags  
Chalk and crayons  
Dairy products in nonwaxed coated paper containers  
Dry cell batteries  
Electrical coils  
Electrical motors  
Empty cans  
Food products  
Foods in noncombustible containers  
Fresh fruits and vegetables in nonplastic trays or containers  
Frozen foods  
Glass  
Glass bottles, empty or filled with noncombustible liquids  
Gypsum board  
Inert pigments  
Ivory  
Meats  
Metal cabinets  
Metal desks with plastic tops and trim  
Metal parts

Metals  
Mirrors  
Oil-filled and other types of distribution transformers  
Parking garages, open or enclosed  
Porcelain and pottery  
Stoves  
Talc and soapstones  
Washers and dryers

**[BG] Miscellaneous Group U.** Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Agricultural buildings  
Aircraft hangar, accessory to a one- or two-family residence (see Section 412.4 of the *Puerto Rico Building Code*)  
Barns  
Carports  
Communication equipment structures with a gross floor area of less than 1,500 square feet (139 m<sup>3</sup>)  
Fences more than 6 feet (1829 mm) high  
Grain silos, accessory to a residential occupancy  
Livestock shelters  
Private garages  
Retaining walls  
Sheds  
Stables  
Tanks  
Towers

**[BG] OCCUPANT LOAD.** The number of persons for which the *means of egress* of a building or portion thereof is designed.

**OPEN BURNING.** The burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from an enclosed chamber. Open burning does not include road flares, smudgepots and similar devices associated with safety or occupational uses typically considered open flames, *recreational fires* or use of portable outdoor fireplaces. For the purpose of this definition, a chamber shall be regarded as enclosed when, during the time combustion occurs, only apertures, ducts, stacks, flues or chimneys necessary to provide combustion air and permit the escape of exhaust gas are open.

**OPEN MALL.** See “Covered mall building.”

**OPEN MALL BUILDING.** See “Covered mall building.”

**[BG] OPEN PARKING GARAGE.** A structure or portion of a structure with the openings as described in Section 406.5.2 of the *Puerto Rico Building Code* on two or more sides that is used for the parking or storage of private motor vehicles as described in Section 406.5 of the *Puerto Rico Building Code*.

**OPEN SYSTEM.** The use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

**OPEN-AIR ASSEMBLY SEATING.** Seating served by *means of egress* that is not subject to smoke accumulation within or under a structure and is open to the atmosphere.

**[BE] OPEN-ENDED CORRIDOR.** An interior *corridor* that is open on each end and connects to an exterior *stairway* or *ramp* at each end with no intervening doors or separation from the *corridor*.

**[BF] OPENING PROTECTIVE.** A *fire door assembly*, fire shutter assembly, fire window assembly or glass-block assembly in a *fire-resistance-rated* wall or partition.

**OPERATING BUILDING.** A building occupied in conjunction with the manufacture, transportation or use of *explosive materials*. Operating buildings are separated from one another with the use of intraplant or intraline distances.

**OPERATING LINE.** A group of buildings, facilities or workstations so arranged as to permit performance of the steps in the manufacture of an *explosive* or in the loading, assembly, modification and maintenance of ammunition or devices containing *explosive materials*.

**OPERATING PRESSURE.** The pressure at which a system operates.

**ORGANIC COATING.** A liquid mixture of binders such as alkyd, nitrocellulose, acrylic or oil, and flammable and combustible solvents such as hydrocarbon, ester, ketone or alcohol, which, when spread in a thin film, convert to a durable protective and decorative finish.

**ORGANIC PEROXIDE.** An organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (*detonation* or *deflagration*) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

**Class I.** Describes those formulations that are capable of *deflagration* but not *detonation*.

**Class II.** Describes those formulations that burn very rapidly and that pose a moderate

reactivity hazard.

**Class III.** Describes those formulations that burn rapidly and that pose a moderate reactivity hazard.

**Class IV.** Describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

**Class V.** Describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

**Unclassified detonable.** Organic peroxides that are capable of *detonation*. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.

**OUTDOOR ASSEMBLY EVENT.** An outdoor gathering of persons for any purpose.

**OUTDOOR CONTROL AREA.** An outdoor area that contains hazardous materials in amounts not exceeding the maximum allowable quantities of Table 5003.1.1(3) or Table 5003.1.1(4).

**OUTPATIENT CLINIC.** See “Clinic, outpatient.”

**OVERCROWDING.** A condition that exists when either there are more people in a building, structure or portion thereof than have been authorized or posted by the *fire code official*, or when the *fire code official* determines that a threat exists to the safety of the occupants due to persons sitting and/or standing in locations that may obstruct or impede the use of *aisles*, passages, *corridors*, *stairways*, *exits* or other components of the *means of egress*.

**[A] OWNER.** Any person, agent, operator, entity, firm or corporation having any legal or equitable interest in the property; or recorded in the official records of the state, county or municipality as holding an interest or title to the property; or otherwise having possession or control of the property, including the guardian of the estate of any such person, and the executor or administrator of the estate of such person if ordered to take possession of real property by a court.

**OXIDIZER.** A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.

**Class 4.** An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.

**Class 3.** An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.

**Class 2.** An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.

**Class 1.** An oxidizer that does not moderately increase the burning rate of combustible materials.

**OXIDIZING CRYOGENIC FLUID.** An oxidizing gas in the cryogenic state.

**OXIDIZING GAS.** A gas that can support and accelerate combustion of other materials more than air does.

**OZONE-GAS GENERATOR.** Equipment which causes the production of ozone.

**[BE] PANIC HARDWARE.** A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel. See also “Fire exit hardware.”

**PASS-THROUGH.** An enclosure installed in a wall with a door on each side that allows chemicals, HPM, equipment, and parts to be transferred from one side of the wall to the other.

**[BG] PENTHOUSE.** An enclosed, unoccupied rooftop structure used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, and vertical shaft openings.

**PERMISSIBLE EXPOSURE LIMIT (PEL).** The maximum permitted 8-hour time-weighted-average concentration of an airborne contaminant. The exposure limits to be utilized are those published in DOL 29 CFR Part 1910.1000. The Recommended Exposure Limit (REL) concentrations published by the U.S. National Institute for Occupational Safety and Health (NIOSH), Threshold Limit Value-Time Weighted Average (TLV-TWA) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), Workplace Environmental Exposure Level (WEEL) Guides published by the American Industrial Hygiene Association (AIHA), and other *approved*, consistent measures are allowed as surrogates for hazardous substances not *listed* in DOL 29 CFR Part 1910.1000.

**[A] PERMIT.** An official document or certificate issued by the *fire code official* that authorizes performance of a specified activity.

**[A] PERSON.** An individual, heirs, executors, administrators or assigns, and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

**[BG] PERSONAL CARE SERVICE.** The care of persons who do not require medical care. Personal care involves responsibility for the safety of the persons while inside the building.

**PESTICIDE.** A substance or mixture of substances, including fungicides, intended for



preventing, destroying, repelling or mitigating pests and substances or a mixture of substances intended for use as a plant regulator, defoliant or desiccant. Products defined as drugs in the Federal Food, Drug and Cosmetic Act are not pesticides.

**[BE] PHOTOLUMINESCENT.** Having the property of emitting light that continues for a length of time after excitation by visible or invisible light has been removed.

**PHYSICAL HAZARD.** A chemical for which there is evidence that it is a *combustible liquid*, *cryogenic fluid*, *explosive*, flammable (solid, liquid or gas), organic peroxide (solid or liquid), oxidizer (solid or liquid), oxidizing gas, pyrophoric (solid, liquid or gas), unstable (reactive) material (solid, liquid or gas) or water-reactive material (solid or liquid).

**PHYSIOLOGICAL WARNING THRESHOLD.** A concentration of airborne contaminants, normally expressed in parts per million (ppm) or milligrams per cubic meter (mg/ m<sup>3</sup>), that represents the concentration at which persons can sense the presence of the contaminant due to odor, irritation or other quick-acting physiological responses. When used in conjunction with the permissible exposure limit (PEL), the physiological warning threshold levels are those consistent with the classification system used to establish the PEL. See the definition of “Permissible exposure limit (PEL).”

**PIER.** A structure built over the water, supported by pillars or piles, and used as a landing place, pleasure pavilion or similar purpose.

**PLACE OF RELIGIOUS WORSHIP.** See “Religious worship, place of.”

**[M] PLENUM.** An enclosed portion of the building structure, other than an occupiable space being conditioned, that is designed to allow air movement and thereby serve as part of an air distribution system.

**PLOSOPHORIC MATERIAL.** Two or more unmixed, commercially manufactured, prepackaged chemical substances including oxidizers, flammable liquids or solids, or similar substances that are not independently classified as *explosives* but which, when mixed or combined, form an *explosive* that is intended for blasting.

**PLYWOOD AND VENEER MILLS.** Facilities where raw wood products are processed into finished wood products, including waferboard, oriented strandboard, fiberboard, composite wood panels and plywood.

**PORTABLE OUTDOOR FIREPLACE.** A portable, outdoor, solid-fuel-burning fireplace that may be constructed of steel, concrete, clay or other noncombustible material. A portable outdoor fireplace may be open in design, or may be equipped with a small hearth opening and a short chimney or chimney opening in the top.

**[BE] POWER-ASSISTED DOOR.** Swinging door that opens by reduced pushing or pulling force on the door-operating hardware. The door closes automatically after the pushing or pulling force is released, and functions with decreased forces. See also “Low energy power-

operated door” and “Power-operated door.”

**POWERED INDUSTRIAL TRUCK.** A forklift, tractor, platform lift truck or motorized hand truck powered by an electrical motor or internal combustion engine. Powered industrial trucks do not include farm vehicles or automotive vehicles for highway use.

**[BE] POWER-OPERATED DOOR.** Swinging, sliding, or folding door that opens automatically when approached by a pedestrian or opens automatically upon an action by a pedestrian. The door closes automatically and includes provisions such as presence sensors to prevent entrapment. See also “Low energy power-operated door” and “Power-assisted door.”

**PRESSURE VESSEL.** A closed vessel designed to operate at pressures above 15 psig (103 kPa).

**PRIMARY CONTAINMENT.** The first level of containment, consisting of the inside portion of that container which comes into immediate contact on its inner surface with the material being contained.

**[BG] PRIVATE GARAGE.** A building or portion of a building in which motor vehicles used by the owner or tenants of the building or buildings on the premises are stored or kept, without provisions for repairing or servicing such vehicles for profit.

**PROCESS TRANSFER.** The transfer of flammable or *combustible liquids* between tank vehicles or tank cars and process operations. Process operations may include containers, tanks, piping and equipment.

**PROPELLANT.** The liquefied or *compressed gas* in an aerosol container that expels the contents from an aerosol container when the valve is actuated. A propellant is considered flammable if it forms a flammable mixture with air, or if a flame is self-propagating in a mixture with air.

**PROXIMATE AUDIENCE.** An audience closer to pyrotechnic devices than allowed by NFPA 1123.

**[B] PSYCHIATRIC HOSPITALS.** See “Hospitals.”

**PUBLIC TRAFFIC ROUTE (PTR).** Any public street, road, highway, navigable stream or passenger railroad that is used for through traffic by the general public.

**[A] PUBLIC WAY.** A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

**[BE] PUBLIC-USE AREAS.** Interior or exterior rooms or spaces that are made available to the general public.

**PYROPHORIC.** A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54°C).

**PYROTECHNIC ARTICLE.** A pyrotechnic device for use in the entertainment industry, which is not classified as fireworks.

**PYROTECHNIC COMPOSITION.** A chemical mixture that produces visible light displays or sounds through a selfpropagating, heat-releasing chemical reaction which is initiated by ignition.

**PYROTECHNIC SPECIAL EFFECT.** A visible or audible effect for entertainment created through the use of pyrotechnic materials and devices.

**PYROTECHNIC SPECIAL-EFFECT MATERIAL.** A chemical mixture used in the entertainment industry to produce visible or audible effects by combustion, *deflagration* or *detonation*. Such a chemical mixture predominantly consists of solids capable of producing a controlled, self-sustaining and self-contained exothermic chemical reaction that results in heat, gas sound, light or a combination of these effects. The chemical reaction functions without external oxygen.

**PYROTECHNICS.** Controlled exothermic chemical reactions timed to create the effects of heat, hot gas, sound, dispersion of aerosols, emission of visible light or a combination of such effects to achieve the maximum effect from the least volume of pyrotechnic composition.

**QUANTITY-DISTANCE (Q-D).** The quantity of *explosive material* and separation distance relationships providing protection. These relationships are based on levels of risk considered acceptable for the stipulated exposures and are tabulated in the appropriate Q-D tables. The separation distances specified afford less than absolute safety:

**Inhabited building distance (IBD).** The minimum separation distance between an operating building or magazine containing *explosive materials* and an inhabited building or site boundary.

**Intermagazine distance (IMD).** The minimum separation distance between magazines.

**Intraline distance (ILD) or Intraplant distance (IPD).** The distance to be maintained between any two operating buildings on an *explosives* manufacturing site when at least one contains or is designed to contain *explosives*, or the distance between a magazine and an operating building.

**RAILWAY.** A steam, electric or other railroad or railway that carries passengers for hire.

**[BE] RAMP.** A walking surface that has a running slope steeper than one unit vertical in 20 units horizontal (5-percent slope).

**RAMP, EXIT ACCESS.** See “Exit access ramp.”

**RAMP, EXTERIOR EXIT.** See “Exterior exit ramp.”

**RAMP, INTERIOR EXIT.** See “Interior exit ramp.”

**RAW PRODUCT.** A mixture of natural materials such as tree, brush trimmings, or waste logs and stumps.

**[M] READY ACCESS (TO).** That which enables a device, appliance or equipment to be directly reached, without requiring the removal or movement of any panel, door or similar obstruction [see “Access (to)”].

**READY BOX.** A weather-resistant container with a selfclosing or automatic-closing cover that protects fireworks shells from burning debris. Tarpaulins shall not be considered as ready boxes.

**[A] RECORD DRAWINGS.** Drawings (“as built”) that document the location of all devices, appliances, wiring, sequences, wiring methods and connections of the components of a fire alarm system as installed.

**RECREATIONAL FIRE.** An outdoor fire burning materials other than rubbish where the fuel being burned is not contained in an incinerator, outdoor fireplace, portable outdoor fireplace, barbeque grill or barbeque pit and has a total fuel area of 3 feet (914 mm) or less in diameter and 2 feet (610 mm) or less in height for pleasure, religious, ceremonial, cooking, warmth or similar purposes.

**REDUCED FLOW VALVE.** A valve equipped with a restricted flow orifice and inserted into a *compressed gas* cylinder, portable tank or stationary tank that is designed to reduce the maximum flow from the valve under full-flow conditions. The maximum flow rate from the valve is determined with the valve allowed to flow to atmosphere with no other piping or fittings attached.

**REFINERY.** A plant in which flammable or *combustible liquids* are produced on a commercial scale from crude petroleum, natural gasoline or other hydrocarbon sources.

**REFRIGERANT.** The fluid used for heat transfer in a refrigeration system; the refrigerant absorbs heat and transfers it at a higher temperature and a higher pressure, usually with a change of state.

**[M] REFRIGERATING (REFRIGERATION) SYSTEM.** A combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat.

**[A] REGISTERED DESIGN PROFESSIONAL.** An architect or engineer, registered or licensed to practice professional architecture or engineering, as defined by the statutory requirements of the professional registration laws of the state in which the project is to be constructed.

**[BG] RELIGIOUS WORSHIP, PLACE OF.** A building or portion thereof intended for the performance of religious services.

**REMOTE EMERGENCY SHUTOFF DEVICE.** The combination of an operator-carried signaling device and a mechanism on the tank vehicle. Activation of the remote emergency shutoff device sends a signal to the tank-mounted mechanism and causes fuel flow to cease.

**REMOTE SOLVENT RESERVOIR.** A liquid solvent container enclosed against evaporative losses to the atmosphere during periods when the container is not being utilized, except for a solvent return opening not larger than 16 square inches (10 322 mm<sup>2</sup>). Such return allows pump-cycled used solvent to drain back into the reservoir from a separate solvent sink or work area.

**REMOTELY LOCATED, MANUALLY ACTIVATED SHUTDOWN CONTROL.** A control system that is designed to initiate shutdown of the flow of gases or liquids that is manually activated from a point located some distance from the delivery system.

**REPAIR GARAGE.** A building, structure or portion thereof used for servicing or repairing motor vehicles.

**RESIN APPLICATION AREA.** An area where reinforced plastics are used to manufacture products by hand lay-up or spray-fabrication methods.

**RESPONSIBLE PERSON.** A person trained in the safety and fire safety considerations concerned with hot work. Responsible for reviewing the sites prior to issuing permits as part of the hot work permit program and following up as the job progresses.

**RETAIL DISPLAY AREA.** The area of a Group M occupancy open for the purpose of viewing or purchasing merchandise offered for sale. Individuals in such establishments are free to circulate among the items offered for sale which are typically displayed on shelves, racks or the floor.

**ROLL COATING.** The process of coating, spreading and impregnating fabrics, paper or other materials as they are passed directly through a tank or trough containing flammable or *combustible liquids*, or over the surface of a roller revolving partially submerged in a flammable or *combustible liquid*.

**RUBBISH (TRASH).** Combustible and noncombustible waste materials, including residue from the burning of coal, wood, coke or other combustible material, paper, rags, cartons, tin cans, metals, mineral matter, glass crockery, dust and discarded refrigerators, and heating, cooking or incinerator-type appliances.

**SAFETY CAN.** An *approved* container of not more than 5 gallon (19 L) capacity having a spring-closing lid and spout cover so designed that it will relieve internal pressure when subjected to fire exposure.

**SAFETY DATA SHEET (SDS).** Information concerning a hazardous material which is prepared in accordance with the provisions of DOL 29 CFR Part 1910.1200 or in accordance with the

provisions of a federally approved state OSHA plan. A document titled as a Material Safety Data Sheet (MSDS) is equivalent to an SDS for the purposes of this code.

**[BE] SCISSOR STAIRWAY.** Two interlocking *stairways* providing two separate paths of egress located within one *exit* enclosure.

**SECONDARY CONTAINMENT.** That level of containment that is external to and separate from primary containment.

**SEED COTTON.** See “Cotton.”

**SEGREGATED.** Storage in the same room or inside area, but physically separated by distance from *incompatible materials*.

**[BF] SELF-CLOSING.** As applied to a fire door or other opening, means equipped with an *approved* device that will ensure closing after having been opened.

**[BE] SELF-LUMINOUS.** Illuminated by a self-contained power source, other than batteries, and operated independently of external power sources.

**SELF-PRESERVATION, INCAPABLE OF.** See “Incapable of self-preservation.”

**SELF-SERVICE MOTOR FUEL-DISPENSING FACILITY.** That portion of motor fuel-dispensing facility where liquid motor fuels are dispensed from fixed *approved* dispensing equipment into the fuel tanks of motor vehicles by persons other than a motor fuel-dispensing facility attendant.

**SEMICONDUCTOR FABRICATION FACILITY.** A building or a portion of a building in which electrical circuits or devices are created on solid crystalline substances having electrical conductivity greater than insulators but less than conductors. These circuits or devices are commonly known as semiconductors.

**SERVICE CORRIDOR.** A fully enclosed passage used for transporting HPM and purposes other than required *means of egress*.

**SHELF STORAGE.** Storage on shelves less than 30 inches (762 mm) deep with the distance between shelves not exceeding 3 feet (914 mm) vertically. For other shelving arrangements, see the requirements for rack storage.

**SINGLE-STATION SMOKE ALARM.** An assembly incorporating the detector, the control equipment and the alarm-sounding device in one unit, operated from a power supply either in the unit or obtained at the point of installation.

**[BG] SITE.** A parcel of land bounded by a *lot line* or a designated portion of a public right-of-way.

**[BG] SITE-FABRICATED STRETCH SYSTEM.** A system, fabricated on site and intended for acoustical, tackable or aesthetic purposes, that is composed of three elements:

1. A frame constructed of plastic, wood, metal or other material used to hold fabric in place.
2. A core material (infill, with the correct properties for the application).
3. An outside layer, comprised of a textile, fabric or vinyl, that is stretched taut and held in place by tension or mechanical fasteners via the frame.

**SKY LANTERN.** An unmanned device with a fuel source that incorporates an open flame in order to make the device airborne.

**[BG] SLEEPING UNIT.** A single unit providing rooms or spaces for one or more persons that includes permanent provisions for sleeping and can include provisions for living, eating and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

**SMALL ARMS AMMUNITION.** A shotgun, rifle or pistol cartridge and any cartridge for propellant-actuated devices. This definition does not include military ammunition containing bursting charges or incendiary, trace, spotting or pyrotechnic projectiles.

**SMALL ARMS PRIMERS.** Small percussion-sensitive *explosive* charges, encased in a cap, used to ignite propellant powder.

**SMOKE ALARM.** A single or multiple-station alarm responsive to smoke. See also “Single-station smoke alarm” and “Multiple-station smoke alarm.”

**[BF] SMOKE BARRIER.** A continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed to restrict the movement of smoke.

**[BG] SMOKE COMPARTMENT.** A space within a building enclosed by *smoke barriers* on all sides, including the top and bottom.

**[BF] SMOKE DAMPER.** A *listed* device installed in ducts and air transfer openings designed to resist the passage of smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a *fire command center*.

**SMOKE DETECTOR.** A *listed* device that senses visible or invisible particles of combustion.

**SMOKE PARTITION.** A wall assembly that extends from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

**[BG] SMOKE-DEVELOPED INDEX.** A comparative measure, expressed as a dimensionless number, derived from measurements of smoke obscuration versus time for a material tested in

accordance with ASTM E84.

**SMOKELESS PROPELLANTS.** Solid propellants, commonly referred to as smokeless powders, used in small arms ammunition, cannons, rockets, propellant-actuated devices and similar articles.

**[BF] SMOKEPROOF ENCLOSURE.** An *interior exit stairway* designed and constructed so that the movement of the products of combustion produced by a fire occurring in any part of the building into the enclosure is limited.

**[BE] SMOKE-PROTECTED ASSEMBLY SEATING.** Seating served by means of egress that is not subject to smoke accumulation within or under a structure for a specified design time by means of passive design or by mechanical ventilation.

**SOLID.** A material that has a melting point and decomposes or sublimates at a temperature greater than 68°F (20°C).

**SOLID BIOFUEL.** Densified biomass made in the form of cubiform, polyhedral, polyhydric or cylindrical units, produced by compressing milled biomass.

**SOLID BIOMASS FEEDSTOCK.** The basic materials of which solid biofuel is composed, manufactured or made.

**SOLID SHELVING.** Shelving that is solid, slatted or of other construction located in racks and which obstructs sprinkler discharge down into the racks.

**SOLVENT DISTILLATION UNIT.** An appliance that receives contaminated flammable or *combustible liquids* and which distills the contents to remove contaminants and recover the solvents.

**SOLVENT OR LIQUID CLASSIFICATIONS.** A method for classifying solvents or liquids according to the following classes:

**Class I solvents.** Liquids having a *flash point* below 100°F (38°C).

**Class II solvents.** Liquids having a *flash point* at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA solvents.** Liquids having a *flash point* at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB solvents.** Liquids having a *flash point* at or above 200°F (93°C).

**Class IV solvents.** Liquids classified as nonflammable.



**SPECIAL AMUSEMENT BUILDING.** A building that is temporary, permanent or mobile that contains a device or system that conveys passengers or provides a walkway along, around or over a course in any direction as a form of amusement arranged so that the egress path is not readily apparent due to visual or audio distractions or an intentionally confounded egress path, or is not readily available because of the mode of conveyance through the building or structure.

**[A] SPECIAL EXPERT.** An individual who has demonstrated qualifications in a specific area, outside the practice of architecture or engineering, through education, training and experience.

**SPECIAL INDUSTRIAL EXPLOSIVE DEVICE.** An explosive power pack containing an *explosive* charge in the form of a cartridge or construction device. The term includes but is not limited to explosive rivets, explosive bolts, *explosive* charges for driving pins or studs, cartridges for *explosive*-actuated power tools and charges of *explosives* used in automotive air bag inflators, jet tapping of open hearth furnaces and jet perforation of oil well casings.

**SPRAY BOOTH.** A mechanically ventilated appliance of varying dimensions and construction provided to enclose or accommodate a spraying operation and to confine and limit the escape of spray vapor and residue and to exhaust it safely.

**SPRAY ROOM.** A room designed to accommodate spraying operations, constructed in accordance with the *Puerto Rico Building Code*.

**SPRAYING SPACE.** An area in which dangerous quantities of flammable vapors or combustible residues, dusts or deposits are present due to the operation of spraying processes. The *fire code official* is authorized to define the limits of the spraying space in any specific case.

**[BE] STAIR.** A change in elevation, consisting of one or more risers.

**[BE] STAIRWAY.** One or more *flights of stairs*, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another.

**STAIRWAY, EXIT ACCESS.** See “Exit access stairway.”

**STAIRWAY, EXTERIOR EXIT.** See “Exterior exit stairway.”

**STAIRWAY, INTERIOR EXIT.** See “Interior Exit Stairway.”

**STAIRWAY, SCISSOR.** See “Scissor stairway.”

**[BE] STAIRWAY, SPIRAL.** A *stairway* having a closed circular form in its plan view with uniform section-shaped treads attached to and radiating from a minimum-diameter supporting column.

**STANDBY POWER SYSTEM.** A source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of a

failure of the primary power. Standby power systems are required for electrical loads where interruption of the primary power could create hazards or hamper rescue or fire-fighting operations.

**STANDPIPE, TYPES OF.** Standpipe types are as follows:

**Automatic dry.** A dry standpipe system, normally filled with pressurized air, that is arranged through the use of a device, such as a dry pipe valve, to admit water into the system piping automatically upon the opening of a hose valve. The water supply for an automatic dry standpipe system shall be capable of supplying the system demand.

**Automatic wet.** A wet standpipe system that has a water supply that is capable of supplying the system demand automatically.

**Manual dry.** A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a fire department pumper to be pumped into the system through the fire department connection in order to supply the system demand.

**Manual wet.** A wet standpipe system connected to a water supply for the purpose of maintaining water within the system but which does not have a water supply capable of delivering the system demand attached to the system. Manual wet standpipe systems require water from a fire department pumper (or the like) to be pumped into the system in order to supply the system demand.

**Semiautomatic dry.** A dry standpipe system that is arranged through the use of a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection. The water supply for a semiautomatic dry standpipe system shall be capable of supplying the system demand.

**STANDPIPE SYSTEM, CLASSES OF.** Standpipe system classes are as follows:

**Class I system.** A system providing 2<sup>1</sup>/<sub>2</sub> -inch (64 mm) hose connections to supply water for use by fire departments and those trained in handling heavy fire streams.

**Class II system.** A system providing 1<sup>1</sup>/<sub>2</sub> -inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the fire department during initial response.

**Class III system.** A system providing 1<sup>1</sup>/<sub>2</sub> -inch (38 mm) hose stations to supply water for use by building occupants and 2<sup>1</sup>/<sub>2</sub> -inch (64 mm) hose connections to supply a larger volume of water for use by fire departments and those trained in handling heavy fire streams.

**STATIC PILES.** Piles in which processed wood product or solid biomass feedstock is mounded and is not being turned or moved.

**STATIONARY BATTERY ARRAY.** An arrangement of individual stationary storage batteries in close proximity to each other, mounted on storage racks or in modules, battery cabinets or other enclosures.

**STEEL.** Hot or cold-rolled as defined by the *Puerto Rico Building Code*.

**STORAGE, HAZARDOUS MATERIALS.** The keeping, retention or leaving of hazardous materials in closed containers, tanks, cylinders, or similar vessels; or vessels supplying operations through closed connections to the vessel.

**[BG] STORY.** That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above (see “Basement,” “Building height,” “Grade plane” and “Mezzanine”). A story is measured as the vertical distance from top to top of two successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

**[BG] STORY ABOVE GRADE PLANE.** Any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:

1. More than 6 feet (1829 mm) above grade plane; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

**SUBORDINATE (FIRE PROTECTION AND LIFE SAFETY SYSTEM).** A system that is activated by another fire protection or life safety system. For example, where a fire alarm system activates a smoke removal or elevator recall system, the smoke removal or elevator recall system is considered to be “subordinate” to the fire alarm system.

**SUPERVISING STATION.** A facility that receives signals and at which personnel are in attendance at all times to respond to these signals.

**SUPERVISORY SERVICE.** The service required to monitor performance of guard tours and the operative condition of fixed suppression systems or other systems for the protection of life and property.

**SUPERVISORY SIGNAL.** A signal indicating the need of action in connection with the supervision of guard tours, the fire suppression systems or equipment, or the maintenance features of related systems.

**SUPERVISORY SIGNAL-INITIATING DEVICE.** An initiating device such as a valve supervisory switch, water level indicator, or low-air pressure switch on a dry-pipe sprinkler system whose change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system; or a need for action in connection with guard tours, fire suppression systems or equipment, or maintenance features of related systems.

**SYSTEM.** An assembly of equipment consisting of a tank, container or containers, appurtenances, pumps, compressors and connecting piping.

**TANK.** A vessel containing more than 60 gallons (227 L).

**TANK, ATMOSPHERIC.** A storage tank designed to operate at pressures from atmospheric through 1.0 pound per square inch gauge (760 mm Hg through 812 mm Hg) measured at the top of the tank.

**TANK, PORTABLE.** A packaging of more than 60-gallon (227 L) capacity and designed primarily to be loaded into or on or temporarily attached to a transport vehicle or ship and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. It does not include any cylinder having less than a 1,000-pound (454 kg) water capacity, cargo tank, tank car tank or trailers carrying cylinders of more than 1,000-pound (454 kg) water capacity.

**TANK, PRIMARY.** A *listed* atmospheric tank used to store liquid. See “Primary containment.”

**TANK, PROTECTED ABOVE GROUND.** A tank *listed* in accordance with UL 2085 consisting of a primary tank provided with protection from physical damage and fire-resistive protection from a high-intensity liquid pool fire exposure. The tank may provide protection elements as a unit or may be an assembly of components, or a combination thereof.

**TANK, STATIONARY.** Packaging designed primarily for stationary installations not intended for loading, unloading or attachment to a transport vehicle as part of its normal operation in the process of use. It does not include cylinders having less than a 1,000-pound (454 kg) water capacity.

**TANK VEHICLE.** A vehicle other than a railroad tank car or boat, with a cargo tank mounted thereon or built as an integral part thereof, used for the transportation of flammable or *combustible liquids*, LP-gas or hazardous chemicals. Tank vehicles include self-propelled vehicles and full trailers and semitrailers, with or without motive power, and carrying part or all of the load.

**TEMPORARY SPECIAL EVENT STRUCTURE.** Any temporary ground-supported structure, platform, stage, stage scaffolding or rigging, canopy, tower supporting audio or visual effects equipment or similar structures not regulated within the scope of the *Puerto Rico Building Code*.

**TENT.** A structure, enclosure, umbrella structure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported in any manner except by air or the contents it protects (see “Umbrella structure”).

**THEFT RESISTANT.** Construction designed to deter illegal entry into facilities for the storage of *explosive materials*.

**[BF] THROUGH-PENETRATION FIRESTOP SYSTEM.** An assemblage consisting of a

*fire-resistance-rated* floor, floor-ceiling or wall assembly, one or more penetrating items passing through the breaches in both sides of the assembly and the materials or devices, or both, installed to resist the spread of fire through the assembly for a prescribed period of time.

**TIMBER AND LUMBER PRODUCTION FACILITIES.** Facilities where raw wood products are processed into finished wood products.

**TIRES, BULK STORAGE OF.** Storage of tires where the area available for storage exceeds 20,000 cubic feet (566 m<sup>3</sup>).

**TOOL.** A device, storage container, workstation or process machine used in a fabrication area.

**TORCH-APPLIED ROOF SYSTEM.** Bituminous roofing systems using membranes that are adhered by heating with a torch and melting asphalt back coating instead of mopping hot asphalt for adhesion.

**[A] TOWNHOUSE.** A single-family *dwelling unit* constructed in a group of three or more attached units in which each unit extends from the foundation to roof and with open space on not less than two sides.

**TOXIC.** A chemical falling within any of the following categories:

1. A chemical that has a median lethal dose (LD<sub>50</sub>) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD<sub>50</sub>) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC<sub>50</sub>) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

**TRAFFIC CALMING DEVICES.** Traffic calming devices are design elements of fire apparatus access roads such as street alignment, installation of barriers, and other physical measures intended to reduce traffic and cut-through volumes, and slow vehicle speeds.

**[BG] TRANSIENT.** Occupancy of a dwelling unit or sleeping unit for not more than 30 days.

**[BG] TRANSIENT AIRCRAFT.** Aircraft based at another location and that is at the transient location for not more than 90 days.

**TRANSVERSE FLUE SPACE.** See “Flue space—Transverse.”

**TRASH.** See “Rubbish.”

**TROUBLE SIGNAL.** A signal initiated by the fire alarm system or device indicative of a fault in a monitored circuit or component.

**TUBE TRAILER.** A semitrailer on which a number of tubular gas cylinders have been mounted. A manifold is typically provided that connects the cylinder valves enabling gas to be discharged from one or more tubes or cylinders through a piping and control system.

**TWENTY-FOUR HOUR BASIS.** See “24-hour basis” before the “A” entries.

**UMBRELLA STRUCTURE.** A structure, enclosure or shelter with or without sidewalls or drops, constructed of fabric or pliable material supported by a central pole or poles (see “Tent”).

**UNAUTHORIZED DISCHARGE.** A release or emission of materials in a manner which does not conform to the provisions of this code or applicable public health and safety regulations.

**UNSTABLE (REACTIVE) MATERIAL.** A material, other than an *explosive*, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with *incompatible materials*. Unstable (reactive) materials are subdivided as follows:

**Class 4.** Materials that in themselves are readily capable of *detonation* or explosive decomposition or explosive reaction at *normal temperatures and pressures*. This class includes materials that are sensitive to mechanical or localized thermal shock at *normal temperatures and pressures*.

**Class 3.** Materials that in themselves are capable of *detonation* or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

**Class 2.** Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at *normal temperatures and pressures*, and that can undergo violent chemical change at elevated temperatures and pressures.

**Class 1.** Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

**UNWANTED FIRE.** A fire not used for cooking, heating or recreational purposes or one not incidental to the normal operations of the property.

**USE (MATERIAL).** Placing a material into action, including solids, liquids and gases.

**VAPOR PRESSURE.** The pressure exerted by a volatile fluid as determined in accordance with ASTM D323.

[M] **VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

**VESSEL.** A motorized watercraft, other than a seaplane on the water, used or capable of being used as a means of transportation. Nontransportation vessels, such as houseboats and boathouses, are included in this definition.

**VISIBLE ALARM NOTIFICATION APPLIANCE.** A notification appliance that alerts by the sense of sight.

**WATER MIST SYSTEM, AUTOMATIC.** See “Automatic water mist system.”

**WATER-REACTIVE MATERIAL.** A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

**Class 3.** Materials that react explosively with water without requiring heat or confinement.

**Class 2.** Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture.

**Class 1.** Materials that react with water with some release of energy, but not violently.

**WET FUELING.** See “Mobile fueling.”

**WET HOSING.** See “Mobile fueling.”

**WET-CHEMICAL EXTINGUISHING AGENT.** A solution of water and potassium-carbonate-based chemical, potassium-acetate-based chemical or a combination thereof, forming an extinguishing agent.

**WHARF.** A structure or bulkhead constructed of wood, stone, concrete or similar material built at the shore of a harbor, lake or river for vessels to lie alongside of, and to anchor piers or floats.

**WILDFIRE RISK AREA.** Land that is covered with grass, grain, brush or forest, whether privately or publicly owned, which is so situated or is of such inaccessible location that a fire originating upon it would present an abnormally difficult job of suppression or would result in great or unusual damage through fire or such areas designated by the *fire code official*.

[BE] **WINDER.** A tread with nonparallel edges.

**WIRELESS PROTECTION SYSTEM.** A system or a part of a system that can transmit and receive signals without the aid of wire.

**WORKSTATION.** A defined space or an independent principal piece of equipment using HPM within a fabrication area where a specific function, laboratory procedure or research activity occurs. *Approved* or *listed* hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets serving a workstation are included as part of the workstation. A workstation is allowed to contain ventilation equipment, fire protection devices, detection devices, electrical devices and other processing and scientific equipment.

**[BG] YARD.** An open space, other than a *court*, unobstructed from the ground to the sky, except where specifically provided by the *Puerto Rico Building Code*, on the lot on which a building is situated.

**ZONE.** A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.

**ZONE, NOTIFICATION.** An area within a building or facility covered by notification appliances which are activated simultaneously.

## **CHAPTER 3 – GENERAL REQUIREMENTS**

### ***SECTION 304 - COMBUSTIBLE WASTE MATERIALS***

**304.1.2 Vegetation.** Weeds, grass, vines or other growth that is capable of being ignited and endangering property, shall be cut down and removed by the *owner* or occupant of the premises.

### ***SECTION 310 - SMOKING***

**310.3 “No Smoking” signs.** The *fire code official* is authorized to order the posting of “No Fume, No Smoking” signs in a conspicuous location in each structure or location in which smoking is prohibited. The content, lettering, size, color and location of required “No Fume, No Smoking” signs shall be approved.

**310.4 Removal of signs prohibited.** A posted “No Fume, No Smoking” sign shall not be obscured, removed, defaced, mutilated or destroyed.

### ***SECTION 311 - VACANT PREMISES***

**311.5.5 Informational use.** The use of these symbols shall be informational only and shall not in any way limit the discretion of the on-scene incident commander. When text message is used in Placards, it shall be in both, English and Spanish, language.



## **CHAPTER 4 – EMERGENCY PLANNING AND PREPAREDNESS**

No amendments.

## **CHAPTER 5 – FIRE SERVICE FEATURES**

No amendments.

## **CHAPTER 6 – BUILDING SERVICES AND SYSTEMS**

No amendments.

## **CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES**

No amendments.

## **CHAPTER 8 – INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS**

No amendments.

## **CHAPTER 9 – FIRE PROTECTION SYSTEMS AND LIFE SAFETY SYSTEMS**

### **SECTION 903 - AUTOMATIC SPRINKLER SYSTEMS**

**903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

#### **Exceptions:**

1. Residential occupancy Group R-2, construction type I, when the floor level having an *occupant load* of 30 or less that is located 45 feet (16.76 m) or less above the lowest level of fire department vehicle access.
2. Residential occupancy Group R-3.

**903.2.8.1 Group R-3.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

**903.2.8.2 Group R-4, Condition 1.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4, Condition 1 occupancies.

**903.2.8.3 Group R-4, Condition 2.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4, Condition 2 occupancies.

**903.2.8.4 Care facilities.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling.

**903.3.5 Water supplies.** Water supplies for *automatic sprinkler systems* shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with the requirements of this section and the *Puerto Rico Plumbing Code*. For connections to public waterworks systems, connections to water main must be made in compliance with the *Reglamento de Normas de Diseño* of the Puerto Rico Aqueducts and Sewer Authority or the delegated utility entity.

**903.3.5.1 Domestic services.** Where the domestic service provides the water supply for the *automatic sprinkler system*, the supply shall be in accordance with this section.

**903.3.5.2 Residential combination services.** A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand, where required, shall be as required by NFPA.

## CHAPTER 10 – MEANS OF EGRESS

### SECTION 1004 - OCCUPANT LOAD

**[BE]1004.7 Outdoor areas.** *Yards*, patios, occupied roofs, *courts* and similar outdoor areas accessible to and usable by the building occupants shall be provided with *means of egress* as required by this chapter. The *occupant load* of such outdoor areas shall be assigned by the *registered design professional* and the *fire code official* in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, *means of egress* requirements for the building shall be based on the sum of the *occupant loads* of the building plus the outdoor areas.

#### Exceptions:

1. Outdoor areas used exclusively for service of the building need only have one means of egress.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

# SECTION 1006 - NUMBER OF EXITS AND EXIT ACCESS DOORWAYS

[BE] TABLE 1006.2.1  
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE(feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A <sup>c</sup> , E, M	49	75	75	75 <sup>a</sup>
B	49	100	75	100 <sup>a</sup>
F	49	75	75	100 <sup>a</sup>
H-1, H-2, H-3	3	NP	NP	25 <sup>b</sup>
H-4, H-5	10	NP	NP	75 <sup>b</sup>
I-1, I-2 <sup>d</sup> , I-4	10	NP	NP	75 <sup>a</sup>
I-3	10	NP	NP	100 <sup>a</sup>
R-1	10	NP	NP	75 <sup>a</sup>
R-2	30	75	NP	125 <sup>a</sup>
R-3 <sup>e</sup>	20	75	NP	125 <sup>a, g</sup>
R-4 <sup>e</sup>	20	NP	NP	125 <sup>a, g</sup>
S <sup>f</sup>	29	100	75	100 <sup>a</sup>
U	49	100	75	75 <sup>a</sup>

For SI: 1 foot = 304.8 mm.  
NP = Not Permitted.

- b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.
- c. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.
- d. For a room or space used for assembly purposes having fixed seating, see Section 1029.8.
- e. For the travel distance limitations in Group I-2, see Section 407.4.
- f. The common path of egress travel distance shall only apply in a Group R-3 occupancy located in a mixed occupancy building.
- g. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.
- h. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6

[BE]TABLE 1006.3.3(1)  
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS PER STORY	MAXIMUM COMMON PATH OF TRAVEL DISTANCE
Basement, first, second, third, or fourth story above grade plane	R-2 <sup>a, b</sup>	4 dwelling units	125 feet
Fifth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 3048 mm.

NP = Not Permitted.

NA = Not Applicable.

- b. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
- c. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).

## SECTION 1020 - CORRIDORS

[BE]TABLE 1020.1  
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R-1, R-4	Greater than 10	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Less than 30	1	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Greater than 30	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R3	Less than 16	1	0.5 <sup>c</sup> /1 <sup>d</sup>
I-2 <sup>a</sup>	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>
I-4	All	1	0

b. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.

c. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.

d. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

e. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.

## **CHAPTER 11 – CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS**

No amendments.

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No amendments.

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No amendments.

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No amendments

## **CHAPTER 21 – DRY CLEANING**

No amendments

## **CHAPTER 22 – COMBUSTIBLE DUSTPRODUCING OPERATIONS**

No amendments

## **CHAPTER 23 – MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES**

No amendments

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No amendments

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No amendments

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No amendments

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## **CHAPTER 54 – CORROSIVE MATERIALS**

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## **CHAPTER 55 – CRYOGENIC FLUIDS**

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## **CHAPTER 56 – EXPLOSIVES AND FIREWORKS**

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## **CHAPTER 57 – FLAMMABLE AND COMBUSTIBLE LIQUIDS**

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## **CHAPTER 58 – FLAMMABLE GASES AND FLAMMABLE CRYOGENIC FLUIDS**

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## **CHAPTER 59 – FLAMMABLE SOLIDS**

No amendments

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No amendments



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PUERTO RICO CODES

# PRFGC

Puerto Rico Fuel Gas Code





# **PUERTO RICO FUEL AND GAS CODE 2018**

## **As amended from INTERNATIONAL FUEL AND GAS CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## SECTION 101(IFGC) - GENERAL

[A]101.1 **Title.** These regulations shall be known as the *Puerto Rico Fuel and Gas Code*, hereinafter referred to as “this code.”

[A]101.2 **Scope.** This code shall apply to the installation of fuel-gas *pipng* systems, fuel gas appliances, gaseous hydrogen systems and related accessories in accordance with Sections 101.2.1 through 101.2.5.

**Exception:** Detached one and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the *Puerto Rico Residential Code*.

[A]101.2.1 **Gaseous hydrogen systems.** Gaseous hydrogen systems shall be regulated by Chapter 7.

[A]101.2.2 **Piping systems.** These regulations cover *pipng* systems for natural gas with an operating pressure of 125 pounds per square inch gauge (psig) (862 kPa gauge) or less, and for LP-gas with an operating pressure of 20 psig (140 kPa gauge) or less, except as provided in Section 402.7. Coverage shall extend from the *point of delivery* to the outlet of the *appliance* shutoff valves. *Pipng* system requirements shall include design, materials, components, fabrication, assembly, installation, testing, inspection, operation and maintenance.

[A]101.2.3 **Gas appliances.** Requirements for gas appliances and related accessories shall include installation, combustion and ventilation air and venting and connections to *pipng* systems.

[A]101.2.4 **Systems, appliances and equipment outside the scope.** This code shall not apply to the following:

1. Portable LP-gas appliances and *equipment* of all types that is not connected to a fixed fuel *pipng* system.
2. Installation of farm appliances and *equipment* such as brooders, dehydrators, dryers and irrigation *equipment*.
3. Raw material (feedstock) applications except for *pipng* to special atmosphere generators.
4. Oxygen-fuel gas cutting and welding systems.
5. Industrial gas applications using gases such as acetylene and acetylenic compounds, hydrogen, ammonia, carbon monoxide, oxygen and nitrogen.
6. Petroleum refineries, pipeline compressor or pumping stations, loading terminals, compounding plants, refinery tank farms and natural gas processing plants.
7. Integrated chemical plants or portions of such plants where flammable or combustible liquids or gases are produced by, or used in, chemical reactions.
8. LP-gas installations at utility gas plants.

9. Liquefied natural gas (LNG) installations.
10. Fuel gas *pipng* in power and atomic energy plants.
11. Proprietary items of *equipment*, apparatus or instruments such as gas-generating sets, compressors and calorimeters.
12. LP-gas *equipment* for vaporization, gas mixing and gas manufacturing.
13. Temporary LP-gas *pipng* for buildings under construction or renovation that is not to become part of the permanent *pipng* system.
14. Installation of LP-gas systems for railroad switch heating.
15. Installation of hydrogen gas, LP-gas and compressed natural gas (CNG) systems on vehicles.
16. Except as provided in Section 401.1.1, gas *pipng*, meters, gas pressure regulators and other appurtenances used by the serving gas supplier in the distribution of gas, other than undiluted LP-gas.
17. Building design and construction, except as specified herein.
18. *Pipng* systems for mixtures of gas and air within the flammable range with an operating pressure greater than 10 psig (69 kPa gauge).
19. Portable fuel cell appliances that are neither connected to a fixed *pipng* system nor interconnected to a power grid.

**[A]101.2.5 Other fuels.** The requirements for the design, installation, maintenance, *alteration* and inspection of mechanical systems operating with fuels other than fuel gas shall be regulated by the *Puerto Rico Mechanical Code*.

**[A]101.3 Appendices.** Provisions in the appendices shall not apply unless specifically adopted.

[A]101.4 Intent. The purpose of this code is to establish minimum standards to provide a reasonable level of safety, health, property protection and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of fuel gas systems.

[A]101.5 Severability. If a section, subsection, sentence, clause or phrase of this code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation* and the *Puerto Rico Building Code*.

### **SECTION 103 (IFGC) - ADMINISTRATIVE PROVISIONS**

[A]102.1 General. The administrative provisions and compliance of this Code will be those established by the *Puerto Rico Energy Conservation Code*, the *Puerto Rico Building Code*, the OGP<sub>e</sub>, the *Puerto Rico Planning Board* and the *Puerto Rico Public Service Commission*.



## CHAPTER 2 – DEFINITIONS

### SECTION 201 (IFGC) GENERAL

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code and standard, have the meanings indicated in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the *Puerto Rico Building Code*, *Puerto Rico Fire Code*, *Puerto Rico Mechanical Code* or *Puerto Rico Plumbing Code*, such terms shall have meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### SECTION 202 (IFGC) GENERAL DEFINITIONS

**[M]ACCESS (TO).** That which enables a device, *appliance* or *equipment* to be reached by ready *access* or by a means that first requires the removal or movement of a panel, door or similar obstruction (see also “Ready *access*”).

**AIR CONDITIONER, GAS-FIRED.** A gas-burning, automatically operated *appliance* for supplying cooled air, dehumidified air, or both, or chilled liquid.

**[M]AIR CONDITIONING.** The treatment of air so as to control simultaneously the temperature, humidity, cleanness and distribution of the air to meet the requirements of a conditioned space.

**[M]AIR, EXHAUST.** Air being removed from any space or piece of *equipment* or *appliance* and conveyed directly to the atmosphere by means of openings or ducts.

**[M]AIR-HANDLING UNIT.** A blower or fan used for the purpose of distributing supply air to a room, space or area.

**[M]AIR, MAKEUP.** Any combination of outdoor and transfer air intended to replace exhaust air and exfiltration.

**[A]ALTERATION.** A change in a system that involves an extension, addition or change to the arrangement, type or purpose of the original installation.

**ANODELESS RISER.** A transition assembly in which plastic *pipng* is installed and terminated above ground outside of a building.

**[M]APPLIANCE.** Any apparatus or device that utilizes a fuel or a raw material as a fuel to produce light, heat, power, refrigeration or air conditioning. Also, an apparatus that compresses fuel gases.

**APPLIANCE, AUTOMATICALLY CONTROLLED.** Appliances equipped with an automatic burner ignition and safety shutoff device and other automatic devices that accomplish complete turn-on and shutoff of the gas to the main burner or burners, and graduate the gas supply to the burner or burners, but do not affect complete shutoff of the gas.

**APPLIANCE, FAN-ASSISTED COMBUSTION.** An *appliance* equipped with an integral mechanical means to either draw or force products of combustion through the combustion chamber or heat exchanger.

**APPLIANCE TYPE.**

**Low-heat appliance (residential appliance).** Any *appliance* in which the products of combustion at the point of entrance to the flue under normal operating conditions have a temperature of 1,000°F (538°C) or less.

**Medium-heat appliance.** Any *appliance* in which the products of combustion at the point of entrance to the flue under normal operating conditions have a temperature of more than 1,000°F (538°C), but not greater than 2,000°F (1093°C).

**APPLIANCE, UNVENTED.** An *appliance* designed or installed in such a manner that the products of combustion are not conveyed by a vent or chimney directly to the outside atmosphere.

**[M]APPLIANCE, VENTED.** An *appliance* designed and installed in such a manner that all of the products of combustion are conveyed directly from the *appliance* to the outdoor atmosphere through an *approved* chimney or vent system.

**[A]APPROVED.** Acceptable to the code official.

**[A]APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing certification, where such agency has been approved by the *code official*.

**ATMOSPHERIC PRESSURE.** The pressure of the weight of air and water vapor on the surface of the earth, approximately 14.7 pounds per square inch (psi) (101 kPa absolute) at sea level.

**AUTOMATIC IGNITION.** Ignition of gas at the burner(s) when the gas controlling device is turned on, including reignition if the flames on the burner(s) have been extinguished by means other than by the closing of the gas controlling device.

**BAFFLE.** An object placed in an *appliance* to change the direction of or retard the flow of air, air-gas mixtures or flue gases.

**BAROMETRIC DRAFT REGULATOR.** A balanced damper device attached to a chimney, vent connector, breeching or flue gas manifold to protect combustion appliances by controlling chimney draft. A double-acting barometric draft regulator is one whose balancing damper is free to move in either direction to protect combustion appliances from both excessive draft and backdraft.

**BOILER, LOW-PRESSURE.** A self-contained *appliance* for supplying steam or hot water.

**Hot water heating boiler.** A boiler in which no steam is generated, from which hot water is circulated for heating purposes and then returned to the boiler, and that operates at water pressures not exceeding 160 pounds per square inch gauge (psig) (1100 kPa gauge) and at water temperatures not exceeding 250°F (121°C) at or near the boiler *outlet*.

**Hot water supply boiler.** A boiler, completely filled with water, which furnishes hot water to be used externally to itself, and that operates at water pressures not exceeding 160 psig (1100 kPa gauge) and at water temperatures not exceeding 250°F (121°C) at or near the boiler *outlet*.

**Steam heating boiler.** A boiler in which steam is generated and that operates at a steam pressure not exceeding 15 psig (100 kPa gauge).

**BONDING JUMPER.** A conductor installed to electrically connect metallic gas *pipng* to the grounding electrode system.

**[M]BRAZING.** A metal-joining process wherein coalescence is produced by the use of a nonferrous filler metal having a melting point above 1,000°F (538°C), but lower than that of the base metal being joined. The filler material is distributed between the closely fitted surfaces of the joint by capillary action.

**BROILER.** A general term including salamanders, barbecues and other appliances cooking primarily by radiated heat, excepting toasters.

**BTU.** Abbreviation for British thermal unit, which is the quantity of heat required to raise the temperature of 1 pound (454 g) of water 1°F (0.56°C) (1 Btu = 1055 J).

**BURNER.** A device for the final conveyance of the gas, or a mixture of gas and air, to the combustion zone.

**Induced-draft.** A burner that depends on draft induced by a fan that is an integral part of the *appliance* and is located downstream from the burner.

**Power.** A burner in which gas, air or both are supplied at pressures exceeding, for gas, the line pressure, and for air, atmospheric pressure, with this added pressure being applied at the burner.

**[A]BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**[M]CHIMNEY.** A primarily vertical structure containing one or more flues, for the purpose of carrying gaseous products of combustion and air from an *appliance* to the outside atmosphere.

**Factory-built chimney.** A *listed* and *labeled* chimney composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

**Masonry chimney.** A field-constructed chimney composed of solid masonry units, bricks, stones or concrete.

**Metal chimney.** A field-constructed chimney of metal.

**[M]CLEARANCE.** The minimum distance through air measured between the heat-producing surface of the mechanical *appliance*, device or *equipment* and the surface of the *combustible material* or *assembly*.

**CLOTHES DRYER.** An *appliance* used to dry wet laundry by means of heated air. Dryer classifications are as follows:

**Type 1.** Factory-built package, multiple production. Primarily used in family living environment. Usually the smallest unit physically and in function output.

**Type 2.** Factory-built package, multiple production. Used in business with direct intercourse of the function with the public. Not designed for use in individual family living environment.

**[A]CODE.** These regulations, subsequent amendments thereto or any emergency rule or regulation that the administrative authority having jurisdiction has lawfully adopted.

**CODE OFFICIAL.** The officer or other designated authority of the government agency having jurisdiction responsible for the enforcement of the pertaining code, or a duly authorized representative.

**[M]COMBUSTIBLE ASSEMBLY.** Wall, floor, ceiling or other assembly constructed of one or more component materials that are not defined as noncombustible.

**[M]COMBUSTIBLE MATERIAL.** Any material not defined as noncombustible.

**[M]COMBUSTION.** In the context of this code, refers to the rapid oxidation of fuel accompanied by the production of heat or heat and light.

**[M]COMBUSTION AIR.** Air necessary for complete combustion of a fuel, including theoretical air and excess air.

**[M]COMBUSTION CHAMBER.** The portion of an *appliance* within which combustion occurs.

**[M]COMBUSTION PRODUCTS.** Constituents resulting from the combustion of a fuel with the oxygen of the air, including inert gases, but excluding excess air.

**[M]CONCEALED LOCATION.** A location that cannot be accessed without damaging permanent parts of the building structure or finish surface. Spaces above, below or behind readily removable panels or doors shall not be considered as concealed.

**CONCEALED PIPING.** *Piping* that is located in a *concealed location* (see “*Concealed location*”).

**CONDENSATE.** The liquid that condenses from a gas (including flue gas) caused by a reduction in temperature or increase in pressure.

**CONNECTOR, APPLIANCE (Fuel).** Rigid metallic pipe and fittings, semirigid metallic tubing and fittings or a *listed and labeled* device that connects an *appliance* to the gas *pipng* system.

**CONNECTOR, CHIMNEY OR VENT.** The pipe that connects an *appliance* to a chimney or vent.

**[A]CONSTRUCTION DOCUMENTS.** All of the written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a mechanical permit.

**[M]CONTROL.** A manual or automatic device designed to regulate the gas, air, water or electrical supply to, or operation of, a mechanical system.

**CONVERSION BURNER.** A unit consisting of a burner and its controls for installation in an *appliance* originally utilizing another fuel.

**COUNTER APPLIANCES.** Appliances such as coffee brewers and coffee urns and any appurtenant water-heating *appliance*, food and dish warmers, hot plates, griddles, waffle bakers and other appliances designed for installation on or in a counter.

**CUBIC FOOT.** The amount of gas that occupies 1 cubic foot (0.02832 m<sup>3</sup>) when at a temperature of 60°F (16°C), saturated with water vapor and under a pressure equivalent to that of 30 inches of mercury (101 kPa).

**[M]DAMPER.** A manually or automatically controlled device to regulate draft or the rate of flow of air or combustion gases.

**DECORATIVE APPLIANCE, VENTED.** A vented *appliance* wherein the primary function lies in the aesthetic effect of the flames.

**DECORATIVE APPLIANCES FOR INSTALLATION IN VENTED FIREPLACES.** A vented appliance designed for installation within the fire chamber of a vented fireplace, wherein the primary function lies in the aesthetic effect of the flames.

**DEMAND.** The maximum amount of gas input required per unit of time, usually expressed in cubic feet per hour, or Btu/h (1 Btu/h = 0.2931 W).

**[BS]DESIGN FLOOD ELEVATION.** The elevation of the “design flood,” including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the *building’s* perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

**DILUTION AIR.** Air that is introduced into a draft hood and is mixed with the flue gases.

**DIRECT-VENT APPLIANCES.** Appliances that are constructed and installed so that all air for combustion is derived directly from the outdoor atmosphere and all flue gases are discharged directly to the outdoor atmosphere.

**[M]DRAFT.** The pressure difference existing between the *appliance* or any component part and the atmosphere, that causes a continuous flow of air and products of combustion through the gas passages of the *appliance* to the atmosphere.

**Mechanical or induced draft.** The pressure difference created by the action of a fan, blower or ejector that is located between the *appliance* and the chimney or vent termination.

**Natural draft.** The pressure difference created by a vent or chimney because of its height, and the temperature difference between the flue gases and the atmosphere.

**DRAFT HOOD.** A nonadjustable device built into an *appliance*, or made as part of the vent connector from an *appliance*, that is designed to: provide for ready escape of the flue gases from the *appliance* in the event of no draft, backdraft or stoppage beyond the draft hood; prevent a backdraft from entering the *appliance*; and neutralize the effect of stack action of the chimney or gas vent upon operation of the *appliance*.

**DRAFT REGULATOR.** A device that functions to maintain a desired draft in the *appliance* by automatically reducing the draft to the desired value.

**[M]DRIP.** The container placed at a low point in a system of *piping* to collect condensate and from which the condensate is removable.

**DRY GAS.** A gas having a moisture and hydrocarbon dew point below any normal temperature to which the gas *piping* is exposed.

**DUCT FURNACE.** A warm-air furnace normally installed in an air distribution duct to supply warm air for heating. This definition shall apply only to a warm-air heating *appliance* that depends for air circulation on a blower not furnished as part of the furnace.

**[M]DUCT SYSTEM.** A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling *equipment*.

**[A]DWELLING UNIT.** A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**EQUIPMENT.** Apparatus and devices other than appliances.

**EXCESS FLOW VALVE (EFV).** A valve designed to activate when the fuel gas passing through it exceeds a prescribed flow rate.

**EXTERIOR MASONRY CHIMNEYS.** Masonry chimneys exposed to the outdoors on one or more sides below the roof line.

**[M]FIREPLACE.** A fire chamber and hearth constructed of *noncombustible material* for use with solid fuels and provided with a chimney.

**Factory-built fireplace.** A *fireplace* composed of *listed* factory-built components assembled in accordance with the terms of listing to form the completed *fireplace*.

Masonry fireplace. A hearth and fire chamber of solid masonry units such as bricks, stones, *listed* masonry units or reinforced concrete, provided with a suitable chimney.

**FIRING VALVE.** A valve of the plug and barrel type designed for use with gas, and equipped with a lever handle for manual operation and a dial to indicate the percentage of opening.

**FLAME SAFEGUARD.** A device that will automatically shut off the fuel supply to a main burner or group of burners when the means of ignition of such burners becomes inoperative, and when flame failure occurs on the burner or group of burners.

**FLASHBACK ARRESTOR CHECK VALVE.** A device that will prevent the backflow of one gas into the supply system of another gas and prevent the passage of flame into the gas supply system.

**[BS]FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a floodplain subject to a 1 percent or greater chance of flooding in any given year.
2. This area designated as a *flood hazard area* on a community's flood hazard map, or otherwise legally designated.

**FLOOR FURNACE.** A completely self-contained furnace suspended from the floor of the space being heated, taking air for combustion from outside such space and with means for observing flames and lighting the *appliance* from such space.

**Fan type.** A floor furnace equipped with a fan that provides the primary means for circulating air.

**Gravity type.** A floor furnace depending primarily on circulation of air by gravity. This classification shall also include floor furnaces equipped with booster-type fans that do not materially restrict free circulation of air by gravity flow when such fans are not in operation.

**FLUE, APPLIANCE.** The passage(s) within an *appliance* through which combustion products pass from the combustion chamber of the *appliance* to the draft hood inlet opening on an *appliance* equipped with a draft hood or to the *outlet* of the *appliance* on an *appliance* not equipped with a draft hood.

**FLUE COLLAR.** That portion of an *appliance* designed for the attachment of a draft hood, vent connector or venting system.

**FLUE GASES.** Products of combustion plus excess air in *appliance* flues or heat exchangers.

**[M]FLUE LINER (LINING).** A system or material used to form the inside surface of a flue in a chimney or vent, for the purpose of protecting the surrounding structure from the effects of combustion products and for conveying combustion products without leakage to the atmosphere.

**FUEL GAS.** A natural gas, manufactured gas, liquefied petroleum gas or mixtures of these gases.

**[M]FURNACE.** A completely self-contained heating unit that is designed to supply heated air to spaces remote from or adjacent to the *appliance* location.

**FURNACE, CENTRAL.** A self-contained *appliance* for heating air by transfer of heat of combustion through metal to the air, and designed to supply heated air through ducts to spaces remote from or adjacent to the *appliance* location.

**FURNACE, ENCLOSED.** A specific heating, or heating and ventilating, furnace incorporating an integral total enclosure and using only outside air for combustion.

**FURNACE PLENUM.** An air compartment or chamber to which one or more ducts are connected and that forms part of an air distribution system.

**GAS CONVENIENCE OUTLET.** A permanently mounted, manually operated device that provides the means for connecting an *appliance* to, and disconnecting an *appliance* from, the supply *pipng*. The device includes an integral, manually operated valve with a non-displaceable valve member and is designed so that disconnection of an *appliance* only occurs when the manually operated valve is in the closed position.

**GAS PIPING.** An installation of pipe, valves or fittings installed on a premises or in a building and utilized to convey fuel gas.



**[F]GASEOUS HYDROGEN SYSTEM.** See Section 702.1.

**[M]HAZARDOUS LOCATION.** Any location considered to be a fire hazard for flammable vapors, dust, combustible fibers or other highly combustible substances. The location is not necessarily categorized in the building code as a high hazard group classification.

**HOUSE PIPING.** See “*Piping system.*”

**[F]HYDROGEN FUEL-GAS ROOM.** See Section 702.1.

**HYDROGEN-GENERATING APPLIANCE.** See Section 702.1.

**IGNITION PILOT.** A pilot that operates during the lighting cycle and discontinues during main burner operation.

**[M]IGNITION SOURCE.** A flame, spark or hot surface capable of igniting flammable vapors or fumes. Such sources include *appliance* burners, burner ignitors and electrical switching devices.

**INCINERATOR.** An *appliance* used to reduce combustible refuse material to ashes and that is manufactured, sold and installed as a complete unit.

**INDUSTRIAL AIR HEATERS, DIRECT-FIRED NON-RECIRCULATING.** A heater in which all the products of combustion generated by the burners are released into the air stream being heated. The purpose of the heater is to offset building heat loss by heating only outdoor air.

**INDUSTRIAL AIR HEATERS, DIRECT-FIRED RECIRCULATING.** A heater in which all the products of combustion generated by the burners are released into the air stream being heated. The purpose of the heater is to offset building heat loss by heating outdoor air, and, if applicable, indoor air.

**INFRARED RADIANT HEATER.** A heater that directs a substantial amount of its energy output in the form of infrared radiant energy into the area to be heated. Such heaters are of either the vented or unvented type.

**[M]JOINT, FLANGED.** A joint made by bolting together a pair of flanged ends.

**[M]JOINT, FLARED.** A metal-to-metal compression joint in which a conical spread is made on the end of a tube that is compressed by a flare nut against a mating flare.

**JOINT, MECHANICAL.** A general form of gas-tight joints obtained by the joining of metal parts through a positive-holding mechanical construction, such as a press joint, flanged joint, threaded joint, flared joint or compression joint.

**[M]JOINT, PLASTIC ADHESIVE.** A joint made in thermoset plastic *pipng* by the use of an adhesive substance that forms a continuous bond between the mating surfaces without dissolving either one of them.

**[M]JOINT, PLASTIC HEAT FUSION.** A joint made in thermoplastic *pipng* by heating the parts sufficiently to permit fusion of the materials when the parts are pressed together.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “*Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)*” as established by the Act No. 161 of December 1, 2009, “*Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended*”.

**[M]JOINT, WELDED.** A gas-tight joint obtained by the joining of metal parts in molten state.

**[A]LABELED.** Equipment, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the *equipment*, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LEAK CHECK.** An operation performed on a gas *pipng* system to verify that the system does not leak.

**LIMIT CONTROL.** A device responsive to changes in pressure, temperature or level for turning on, shutting off or throttling the gas supply to an *appliance*.

**LIQUEFIED PETROLEUM GAS or LPG (LP-GAS).** Liquefied petroleum gas composed predominately of propane, propylene, butanes or butylenes, or mixtures thereof that is gaseous under normal atmospheric conditions, but is capable of being liquefied under moderate pressure at normal temperatures.

**[A]LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of *listed equipment* or materials or periodic evaluation of services and whose listing states either that the *equipment*, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**[M]LIVING SPACE.** Space within a *dwelling unit* utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes.

**LOG LIGHTER.** A manually operated solid fuel ignition *appliance* for installation in a vented solid fuel-burning *fireplace*.

**LUBRICATED PLUG-TYPE VALVE.** A valve of the plug and barrel type provided with means for maintaining a lubricant between the bearing surfaces.

**MAIN BURNER.** A device or group of devices essentially forming an integral unit for the final conveyance of gas or a mixture of gas and air to the combustion zone, and on which combustion takes place to accomplish the function for which the *appliance* is designed.

**METER.** The instrument installed to measure the volume of gas delivered through it.

**MODULATING.** Modulating or throttling is the action of a control from its maximum to minimum position in either predetermined steps or increments of movement as caused by its actuating medium.

**[M]NONCOMBUSTIBLE MATERIALS.** Materials that, where tested in accordance with ASTM E136, have not fewer than three of four specimens tested meeting all of the following criteria:

1. The recorded temperature of the surface and interior thermocouples shall not at any time during the test rise more than 54°F (30°C) above the furnace temperature at the beginning of the test.
2. There shall not be flaming from the specimen after the first 30 seconds.
3. If the weight loss of the specimen during testing exceeds 50 percent, the recorded temperature of the surface and interior thermocouples shall not at any time during the test rise above the furnace air temperature at the beginning of the test, and there shall not be flaming of the specimen.

**[A]OCCUPANCY.** The purpose for which a building, or portion thereof, is utilized or occupied.

**[M]OFFSET (VENT).** A combination of *approved* bends that makes two changes in direction bringing one section of the vent out of line but into a line parallel with the other section.

**(OGPe-DDEC) Permits Management Office:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**ORIFICE.** The opening in a cap, spud or other device whereby the flow of gas is limited and through which the gas is discharged to the burner.

**OUTLET.** The point at which a gas-fired *appliance* connects to the gas *piping* system.

**OXYGEN DEPLETION SAFETY SHUTOFF SYSTEM(ODS).** A system designed to act to shut off the gas supply to the main and pilot burners if the oxygen in the surrounding atmosphere is reduced below a predetermined level.

**PILOT.** A small flame that is utilized to ignite the gas at the main burner or burners.

**[M]PIPING.** Where used in this code, “*pipng*” refers to either pipe or tubing, or both.

**Pipe.** A rigid conduit of iron, steel, copper, copper-alloy or plastic.

**Tubing.** Semirigid conduit of copper, copper-alloy aluminum, plastic or steel.

**PIPING SYSTEM.** The fuel *pipng*, valves and fittings from the outlet of the *point of delivery* to the outlets of the *appliance* shutoff valves.

**[M]PLASTIC, THERMOPLASTIC.** A plastic that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.

**POINT OF DELIVERY.** For natural gas systems, the *point of delivery* is the outlet of the service meter assembly or the outlet of the service regulator or service shutoff valve where a meter is not provided. Where a valve is provided at the outlet of the service meter assembly, such valve shall be considered to be downstream of the *point of delivery*. For undiluted liquefied petroleum gas systems, the point of delivery shall be considered to be the outlet of the service pressure regulator, exclusive of line gas regulators, in the system.

**PORTABLE FUEL CELL APPLIANCE.** A fuel cell generator of electricity, which is not fixed in place. A portable fuel cell *appliance* utilizes a cord and plug connection to a grid-isolated load and has an integral fuel supply.

**PRESSURE DROP.** The loss in pressure due to friction or obstruction in pipes, valves, fittings, regulators and burners.

**PRESSURE TEST.** An operation performed to verify the gas-tight integrity of gas *pipng* following its installation or modification.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**PURGE.** To free a gas conduit of air or gas, or a mixture of gas and air.

**QUICK-DISCONNECT DEVICE.** A hand-operated device that provides a means for connecting and disconnecting an *appliance* or an *appliance* connector to a gas supply and that is equipped with an automatic means to shut off the gas supply when the device is disconnected.

**[M]READY ACCESS (TO).** That which enables a device, *appliance* or *equipment* to be directly reached, without requiring the removal or movement of any panel, door or similar obstruction (see “*Access*”).

**REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as

amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**REGULATOR.** A device for controlling and maintaining a uniform supply pressure, either pounds-to-inches water column (MP regulator) or inches-to-inches water column (*appliance* regulator).

**REGULATOR, GAS APPLIANCE.** A pressure regulator for controlling pressure to the manifold of the *appliance*.

**REGULATOR, LINE GAS PRESSURE.** A device placed in a gas line between the service pressure regulator and the *appliance* for controlling, maintaining or reducing the pressure in that portion of the *pipng* system downstream of the device.

**REGULATOR, MEDIUM-PRESSURE (MP Regulator).** A line pressure regulator that reduces gas pressure from the range of greater than 0.5 psig (3.4 kPa) and less than or equal to 5 psig (34.5 kPa) to a lower pressure.

**REGULATOR, MONITORING.** A pressure regulator set in series with another pressure regulator for the purpose of automatically taking control of the pressure downstream of the monitored regulator when that pressure exceeds a set minimum.

**REGULATOR, PRESSURE.** A device placed in a gas line for reducing, controlling and maintaining the pressure in that portion of the *pipng* system downstream of the device.

**REGULATOR, SERIES.** A pressure regulator in series with one or more other pressure regulators.

**REGULATOR, SERVICE PRESSURE.** For natural gas systems, a device installed by the serving gas supplier to reduce and limit the service line pressure to delivery pressure. For undiluted liquefied petroleum gas systems, the regulator located upstream from all line gas pressure regulators, where installed, and downstream from any first stage or a high pressure regulator in the system.

**RELIEF OPENING.** The opening provided in a draft hood to permit the ready escape to the atmosphere of the flue products from the draft hood in the event of no draft, back draft or stoppage beyond the draft hood, and to permit air into the draft hood in the event of a strong chimney updraft.

**RELIEF VALVE (DEVICE).** A safety valve designed to forestall the development of a dangerous condition by relieving either pressure, temperature or vacuum in the hot water supply system.

**RELIEF VALVE, PRESSURE.** An automatic valve that opens and closes a relief vent, depending on whether the pressure is above or below a predetermined value.

**RELIEF VALVE, TEMPERATURE.**

**Manual reset type.** A valve that automatically opens a relief vent at a predetermined temperature and that must be manually returned to the closed position.

**Reseating or self-closing type.** An automatic valve that opens and closes a relief vent, depending on whether the temperature is above or below a predetermined value.

**RELIEF VALVE, VACUUM.** A valve that automatically opens and closes a vent for relieving a vacuum within the hot water supply system, depending on whether the vacuum is above or below a predetermined value.

**RISER, GAS.** A vertical pipe supplying fuel gas.

**ROOM HEATER, UNVENTED.** See “Unvented room heater.”

**ROOM HEATER, VENTED.** A free-standing heating unit used for direct heating of the space in and adjacent to that in which the unit is located (see “Vented room heater”).

**SAFETY SHUTOFF DEVICE.** See “Flame safeguard.”

**[BF]SHAFT.** An enclosed space extending through one or more stories of a building, connecting vertical openings in successive floors, or floors and the roof.

**[A]SLEEPING UNIT.** A room or space in which people sleep, which can also include permanent provisions for living, eating and either sanitation or kitchen facilities, but not both. Such rooms and spaces that are also part of a *dwelling unit* are not sleeping units.

**SPECIFIC GRAVITY.** As applied to gas, specific gravity is the ratio of the weight of a given volume to that of the same volume of air, both measured under the same condition.

**STATIONARY FUEL CELL POWER PLANT.** A self-contained package or factory-matched packages that constitute an automatically operated assembly of integrated systems for generating electrical energy and recoverable thermal energy that is permanently connected and fixed in place.

**THERMOSTAT.**

**Electric switch type.** A device that senses changes in temperature and controls electrically, by means of separate components, the flow of gas to the burner(s) to maintain selected temperatures.

**[P]THIRD-PARTY CERTIFICATION AGENCY.** An approved agency operating a product or material certification system that incorporates initial product testing, assessment and surveillance of a manufacturer’s quality control system.

**[P]THIRD-PARTY CERTIFIED.** Certification obtained by the manufacturer indicating that the function and performance characteristics of a product or material have been determined by testing

and ongoing surveillance by an approved third-party certification agency. Assertion of certification is in the form of identification in accordance with the requirements of the third-party certification agency.

**[P]THIRD-PARTY TESTED.** Procedure by which an approved testing laboratory provides documentation that a product, material or system conforms to specified requirements.

**TOILET, GAS-FIRED.** A packaged and completely assembled appliance containing a toilet that incinerates refuse instead of flushing it away with water.

**[M]TRANSITION FITTINGS, PLASTIC TO STEEL.** An adapter for joining plastic pipe to steel pipe. The purpose of this fitting is to provide a permanent, pressure-tight connection between two materials that cannot be joined directly one to another.

**UNIT HEATER.** A self-contained, automatically controlled, vented, fuel-gas-burning, space-heating appliance, intended for installation in the space to be heated without the use of ducts, and having integral means for circulation of air.

**UNLISTED BOILER.** A boiler not *listed* by a nationally recognized testing agency.

**UNVENTED ROOM HEATER.** An unvented heating *appliance* designed for stationary installation and utilized to provide comfort heating. Such appliances provide radiant heat or convection heat by gravity or fan circulation directly from the heater and do not utilize ducts.

**VALVE.** A device used in *pipng* to control the gas supply to any section of a system of *pipng* or to an *appliance*.

**Appliance shutoff.** A valve located in the *pipng* system, used to isolate individual appliances for purposes such as service or replacement.

**Automatic.** An automatic or semiautomatic device consisting essentially of a valve and operator that control the gas supply to the burner(s) during operation of an *appliance*. The operator shall be actuated by application of gas pressure on a flexible diaphragm, by electrical means, by mechanical means, or by other *approved* means.

**Automatic gas shutoff.** A valve used in conjunction with an automatic gas shutoff device to shut off the gas supply to a water-heating system. It shall be constructed integrally with the gas shutoff device or shall be a separate assembly.

**Individual main burner.** A valve that controls the gas supply to an individual main burner.

**Main burner control.** A valve that controls the gas supply to the main burner manifold.

**Manual main gas-control.** A manually operated valve in the gas line for the purpose of completely turning on or shutting off the gas supply to the *appliance*, except to pilot or pilots that are provided with independent shutoff.

**Manual reset.** An automatic shutoff valve installed in the gas supply *pipng* and set to shut off when unsafe conditions occur. The device remains closed until manually reopened.

**Service shutoff.** A valve, installed by the serving gas supplier between the service meter or source of supply and the customer *pipng* system, to shut off the entire *pipng* system.

**VENT.** A pipe or other conduit composed of factory-made components, containing a passageway for conveying combustion products and air to the atmosphere, *listed* and *labeled* for use with a specific type or class of *appliance*.

**Special gas vent.** A vent *listed* and *labeled* for use with *listed* Category II, III and IV appliances.

**Type B vent.** A vent *listed* and *labeled* for use with appliances with draft hoods and other Category I appliances that are *listed* for use with Type B vents.

**Type BW vent.** A vent *listed* and *labeled* for use with wall furnaces.

**Type L vent.** A vent *listed* and *labeled* for use with appliances that are *listed* for use with Type L or Type B vents.

**VENT CONNECTOR.** See “Connector.”

**VENT GASES.** Products of combustion from appliances plus excess air plus dilution air in the vent connector, gas vent or chimney above the draft hood or draft regulator.

**VENT PIPING.**

**Breather.** *Pipng* run from a pressure-regulating device to the outdoors, designed to provide a reference to atmospheric pressure. If the device incorporates an integral pressure relief mechanism, a breather vent can also serve as a relief vent.

**Relief.** *Pipng* run from a pressure-regulating or pressure-limiting device to the outdoors, designed to provide for the safe venting of gas in the event of excessive pressure in the gas *pipng* system.

**VENTED APPLIANCE CATEGORIES.** Appliances that are categorized for the purpose of vent selection are classified into the following four categories:

**Category I.** An *appliance* that operates with a nonpositive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent.

**Category II.** An *appliance* that operates with a nonpositive vent static pressure and with a vent gas temperature that is capable of causing excessive condensate production in the vent.



**Category III.** An *appliance* that operates with a positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent.

**Category IV.** An *appliance* that operates with a positive vent static pressure and with a vent gas temperature that is capable of causing excessive condensate production in the vent.

**VENTED ROOM HEATER.** A vented self-contained, freestanding, non-recessed *appliance* for furnishing warm air to the space in which it is installed, directly from the heater without duct connections.

**VENTED WALL FURNACE.** A self-contained vented *appliance* complete with grilles or equivalent, designed for incorporation in or permanent attachment to the structure of a building, mobile home or travel trailer, and furnishing heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing. This definition shall exclude floor furnaces, unit heaters and central furnaces as herein defined.

**VENTING SYSTEM.** A continuous open passageway from the flue collar or draft hood of an *appliance* to the outdoor atmosphere for the purpose of removing flue or vent gases. A venting system is usually composed of a vent or a chimney and vent connector, if used, assembled to form the open passageway.

**Forced-draft venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under positive static vent pressure.

**Induced draft venting system.** A portion of a venting system using a fan or other mechanical means to cause the removal of flue or vent gases under nonpositive static vent pressure.

**Mechanical draft venting system.** A venting system designed to remove flue or vent gases by mechanical means, that consists of an induced draft portion under nonpositive static pressure or a forced draft portion under positive static pressure.

**Natural draft venting system.** A venting system designed to remove flue or vent gases under nonpositive static vent pressure entirely by natural draft.

**WALL HEATER, UNVENTED-TYPE.** A room heater of the type designed for insertion in or attachment to a wall or partition. Such heater does not incorporate concealed venting arrangements in its construction and discharges all products of combustion through the front into the room being heated.

**[M]WATER HEATER.** Any heating *appliance* or *equipment* that heats potable water and supplies such water to the potable hot water distribution system

## **CHAPTER 3 – GENERAL REGULATIONS**

No amendments

## **CHAPTER 4 – GAS PIPING INSTALLATIONS.**

No amendments

## **CHAPTER 5 – CHIMNEYS AND VENTS**

No amendments

## **CHAPTER 6 – SPECIFIC APPLIANCES**

No amendments

## **CHAPTER 7 – GASEOUS HYDROGEN SYSTEMS**

No amendments

## **CHAPTER 8 – REFERENCED STANDARDS**

No amendments

## **APPENDIX A – SIZING AND CAPACITIES OF GAS PIPING (IFGS)**

No amendments

## **APPENDIX B – SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS (IFGS)**

No amendments

## **APPENDIX C – EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS (IFGS)**

No amendments

## **APPENDIX D – RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION (IFGS)**

No amendments



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PUERTO RICO CODES

# PRECC

Puerto Rico Energy Conservation Code



# **PUERTO RICO ENERGY CONSERVATION CODE 2018**

## **As amended from INTERNATIONAL ENERGY CONSERVATION CODE 2018**

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# CHAPTER 1 [CE] – SCOPE AND ADMINISTRATION

## PART 1 – SCOPE AND APPLICATION

### SECTION C101 - SCOPE AND GENERAL REQUIREMENTS

**C101.1 Title.** This code shall be known as the *Puerto Rico Energy Conservation Code* and shall be cited as such. It is referred to herein as “this code.”

**C101.2 Scope.** This code applies to *commercial buildings* and the buildings’ sites and associated systems and equipment.

**C101.3 Intent.** This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

**C101.4 Applicability.** Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

**C101.4.1 Mixed residential and commercial buildings.** Where a building includes both *residential building* and *commercial building* portions, each portion shall be separately considered and meet the applicable provisions of the *Puerto Rico Energy Conservation Code 2018* (PRECC) Commercial Provisions or PRECC Residential Provisions.

**C101.5 Compliance.** *Residential buildings* shall meet the provisions of PRECC Residential Provisions. *Commercial buildings* shall meet the provisions of PRECC Commercial Provisions.

**C101.5.1 Compliance materials.** The *code official* shall be permitted to approve specific computer software, work- sheets, compliance manuals and other similar materials that meet the intent of this code.

### SECTION C102- ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT

**C102.1 General.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the code official finds that the proposed design

is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, *fire resistance*, durability and safety. Where the alternative material, design or method of construction is not *approved*, the code official shall respond in writing, stating the reasons why the alternative was not *approved*.

**C102.1.1 Above code programs.** The *code official* or other authority having jurisdiction shall be permitted to deem a national, state or local energy efficiency program to exceed the energy efficiency required by this code. Buildings *approved* in writing by such an energy efficiency program shall be considered to be in compliance with this code. The requirements identified as “mandatory” in Chapter 4 shall be met.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the Joint Regulation.

### **SECTION C103 – ADMINISTRATIVE PROVISIONS**

**C103.1 General.** The administrative provisions and compliance of this Code will be those established by the *Puerto Rico Energy Conservation Code*, the *Puerto Rico Building Code*, the OGPe, the *Puerto Rico Planning Board* and the *Puerto Rico Energy Bureau*.

## **CHAPTER 2 [CE] – DEFINITIONS**

### **SECTION C201 - GENERAL**

**C201.1 Scope.** Unless stated otherwise, the following words and terms in this code shall have the meanings indicated in this chapter.

**C201.2 Interchangeability.** Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural includes the singular.

**C201.3 Terms defined in other codes.** Terms that are not defined in this code but are defined in the Puerto Rico Building Code, Puerto Rico Fire Code, Puerto Rico Fuel Gas Code, Puerto Rico Mechanical Code, Puerto Rico Plumbing Code or the Puerto Rico Residential Code shall have the meanings ascribed to them in those codes.

**C201.4 Terms not defined.** Terms not defined by this chapter shall have ordinarily accepted meanings such as the context implies.



## SECTION C202 - GENERAL DEFINITIONS

**ABOVE-GRADE WALL.** See “Wall, above-grade.”

**ACCESS (TO).** That which enables a device, appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, or similar obstruction.

**ADDITION.** An extension or increase in the *conditioned space* floor area, number of stories or height of a building or structure.

**AIR BARRIER.** One or more materials joined together in a continuous manner to restrict or prevent the passage of air through the building thermal envelope and its assemblies.

**AIR CURTAIN.** A device, installed at the building entrance, that generates and discharges a laminar air stream intended to prevent the infiltration of external, unconditioned air into the conditioned spaces, or the loss of interior, conditioned air to the outside.

**ALTERATION.** Any construction, retrofit or renovation to an existing structure other than repair or addition. Also, a change in a building, electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation.

**APPROVED.** Acceptable to the code official.

**APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests or furnishing inspection services, or furnishing product certification research reports, where such agency has been approved by the *code official*.

**AUTOMATIC.** Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current strength, pressure, temperature or mechanical configuration (see “Manual”).

**BELOW-GRADE WALL.** See “Wall, below-grade.”

**BOILER, MODULATING.** A boiler that is capable of more than a single firing rate in response to a varying temperature or heating load.

**BOILER SYSTEM.** One or more boilers, their piping and controls that work together to supply steam or hot water to heat output devices remote from the boiler.

**BUBBLE POINT.** The refrigerant liquid saturation temperature at a specified pressure.

**BUILDING.** Any structure used or intended for supporting or sheltering any use or occupancy, including any mechanical systems, service water heating systems and electric power and lighting systems located on the building site and supporting the building.

**BUILDING COMMISSIONING.** A process that verifies and documents that the selected building systems have been designed, installed, and function according to the owner's project requirements and construction documents, and to minimum code requirements.

**BUILDING ENTRANCE.** Any door, set of doors, doorway, or other form of portal that is used to gain access to the building from the outside by the public.

**BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), the *Puerto Rico Planning Board* (PRPB), and the Autonomous Municipalities with I to V Hierarchy, or a duly authorized representative.

**BUILDING SITE.** A contiguous area of land that is under the ownership or control of one entity.

**BUILDING THERMAL ENVELOPE.** The basement walls, exterior walls, floors, ceilings, roofs and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space.

**C-FACTOR (THERMAL CONDUCTANCE).** The coefficient of heat transmission (surface to surface) through a building component or assembly, equal to the time rate of heat flow per unit area and the unit temperature difference between the warm side and cold side surfaces (Btu/h • ft<sup>2</sup> • °F) [W/(m<sup>2</sup> • K)].

**CAPTIVE KEY OVERRIDE.** A lighting control that will not release the key that activates the override when the lighting is on.

**CAVITY INSULATION.** Insulating material located between framing members.

**CHANGE OF OCCUPANCY.** A change in the use of a building or a portion of a building that results in any of the following:

1. A *change of occupancy* classification.
2. A change from one group to another group within an occupancy classification.
3. Any change in use within a group for which there is a change in the application of the requirements of this code.

**CIRCULATING HOT WATER SYSTEM.** A specifically designed water distribution system where one or more pumps are operated in the service hot water piping to circulate heated water from the water-heating equipment to the fixture supply and back to the water-heating equipment.

**CLIMATE ZONE.** A geographical region based on climatic criteria as specified in this code.

**CODE OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

**COEFFICIENT OF PERFORMANCE (COP) – COOLING.** The ratio of the rate of heat removal to the rate of energy input, in consistent units, for a complete refrigerating system or some specific portion of that system under designated operating conditions.

**COEFFICIENT OF PERFORMANCE (COP) – HEATING.** The ratio of the rate of heat delivered to the rate of energy input, in consistent units, for a complete heat pump system, including the compressor and, if applicable, auxiliary heat, under designated operating conditions.

**COMMERCIAL BUILDING.** For this code, all buildings that are not included in the definition of “Residential building.”

**COMPUTER ROOM.** A room whose primary function is to house equipment for the processing and storage of electronic data and that has a design electronic data equipment power density of less than 20 watts per square foot (20 watts per 0.092 m<sup>2</sup>) of conditioned floor area or a connected design electronic data equipment load of less than 10 kW.

**CONDENSING UNIT.** A factory-made assembly of refrigeration components designed to compress and liquefy a specific refrigerant. The unit consists of one or more refrigerant compressors, refrigerant condensers (air-cooled, evaporatively cooled, or water-cooled), condenser fans and motors (where used) and factory-supplied accessories.

**CONDITIONED FLOOR AREA.** The horizontal projection of the floors associated with the *conditioned space*.

**CONDITIONED SPACE.** An area, room or space that is enclosed within the building thermal envelope and is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

**CONTINUOUS INSULATION (ci).** Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior or is integral to any opaque surface of the building envelope.

**CRAWL SPACE WALL.** The opaque portion of a wall that encloses a crawl space and is partially or totally below grade.

**CURTAIN WALL.** Fenestration products used to create an external nonloadbearing wall that is designed to separate the exterior and interior environments.

**DAYLIGHT RESPONSIVE CONTROL.** A device or system that provides automatic control of electric light levels based on the amount of daylight in a space.

**DAYLIGHT ZONE.** That portion of a building’s interior floor area that is illuminated by natural light.

**DEMAND CONTROL VENTILATION (DCV).** A ventilation system capability that provides for the automatic reduction of outdoor air intake below design rates when the actual occupancy of spaces served by the system is less than design occupancy.

**DEMAND RECIRCULATION WATER SYSTEM.** A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe.

**DUCT.** A tube or conduit utilized for conveying air. The air passages of self-contained systems are not to be construed as air ducts.

**DUCT SYSTEM.** A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling equipment and appliances.

**DWELLING UNIT.** A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**DYNAMIC GLAZING.** Any fenestration product that has the fully reversible ability to change its performance properties, including *U*-factor, solar heat gain coefficient (SHGC), or visible transmittance (VT).

**ECONOMIZER, AIR.** A duct and damper arrangement and automatic control system that allows a cooling system to supply outside air to reduce or eliminate the need for mechanical cooling during mild or cold weather.

**ECONOMIZER, WATER.** A system where the supply air of a cooling system is cooled indirectly with water that is itself cooled by heat or mass transfer to the environment without the use of mechanical cooling.

**ENCLOSED SPACE.** A volume surrounded by solid surfaces such as walls, floors, roofs, and openable devices such as doors and operable windows.

**ENERGY ANALYSIS.** A method for estimating the annual energy use of the *proposed design* and *standard reference design* based on estimates of energy use.

**ENERGY COST.** The total estimated annual cost for purchased energy for the building functions regulated by this code, including applicable demand charges.

**ENERGY RECOVERY VENTILATION SYSTEM.** Systems that employ air-to-air heat exchangers to recover energy from exhaust air for the purpose of preheating, precooling, humidifying or dehumidifying outdoor ventilation air prior to supplying the air to a space, either directly or as part of an HVAC system.

**ENERGY SIMULATION TOOL.** An *approved* software program or calculation-based methodology that projects the annual energy use of a building.

**ENTRANCE DOOR.** A vertical fenestration product used for occupant ingress, egress and access in nonresidential buildings, including, but not limited to, exterior entrances utilizing latching hardware and automatic closers and containing over 50 percent glazing specifically designed to withstand heavy-duty usage.

**EQUIPMENT ROOM.** A space that contains either electrical equipment, mechanical equipment, machinery, water pumps or hydraulic pumps that are a function of the building's services.

**EXTERIOR WALL.** Walls including both above-grade walls and basement walls.

**FAN BRAKE HORSEPOWER (BHP).** The horsepower delivered to the fan's shaft. Brake horsepower does not include the mechanical drive losses such as that from belts and gears.

**FAN EFFICIENCY GRADE (FEG).** A numerical rating identifying the fan's aerodynamic ability to convert shaft power, or impeller power in the case of a direct-driven fan, to air power.

**FAN SYSTEM BHP.** The sum of the fan brake horsepower of all fans that are required to operate at fan system design conditions to supply air from the heating or cooling source to the *conditioned spaces* and return it to the source or exhaust it to the outdoors.

**FAN SYSTEM DESIGN CONDITIONS.** Operating conditions that can be expected to occur during normal system operation that result in the highest supply fan airflow rate to conditioned spaces served by the system, other than during air economizer operation.

**FAN SYSTEM MOTOR NAMEPLATE HP.** The sum of the motor nameplate horsepower of all fans that are required to operate at design conditions to supply air from the heating or cooling source to the *conditioned spaces* and return it to the source or exhaust it to the outdoors.

**FENESTRATION.** Products classified as either skylights or vertical fenestration.

**Skylights.** Glass or other transparent or translucent glazing material installed at a slope of less than 60 degrees (1.05 rad) from horizontal, including unit skylights, tubular daylighting devices and glazing materials in solariums, sunrooms, roofs and sloped walls.

**Vertical fenestration.** Windows that are fixed or operable, opaque doors, glazed doors, glazed block and combination opaque and glazed doors composed of glass or other transparent or translucent glazing materials and installed at a slope of not less than 60 degrees (1.05 rad) from horizontal.

**FENESTRATION PRODUCT, FIELD-FABRICATED.** A fenestration product whose frame is made at the construction site of standard dimensional lumber or other materials that were not previously cut, or otherwise formed with the specific intention of being used to fabricate a fenestration product or exterior door. Field fabricated does not include site-built fenestration.

**FENESTRATION PRODUCT, SITE-BUILT.** A fenestration designed to be made up of field-glazed or field-assembled units using specific factory cut or otherwise factory-formed framing and glazing units. Examples of site-built fenestration include storefront systems, curtain walls, and atrium roof systems.

**F-FACTOR.** The perimeter heat loss factor for slab-on-grade floors (Btu/h • ft • °F) [W/(m • K)].

**FLOOR AREA, NET.** The actual occupied area not including unoccupied accessory areas such as corridors, stairways, toilet rooms, mechanical rooms and closets.

**FULL CUTOFF:** A luminaire light distribution where zero candela intensity occurs at or above an angle of 90° above nadir. Additionally, the candela per 1000 lamp lumens does not numerically exceed 100 (10%) at or above a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.

**GENERAL LIGHTING.** Lighting that provides a substantially uniform level of illumination throughout an area. General lighting shall not include decorative lighting or lighting that provides a dissimilar level of illumination to serve a specialized application or feature within such area.

**GREENHOUSE.** A structure or a thermally isolated area of a building that maintains a specialized sunlit environment exclusively used for, and essential to, the cultivation, protection or maintenance of plants.

**GROUP R.** Buildings or portions of buildings that contain any of the following occupancies as established in the *Puerto Rico Building Code*:

1. *Group R-1.*
2. *Group R-2* where located more than three stories in height above grade plane.
3. *Group R-4* where located more than three stories in height above grade plane.

**HEAT TRAP.** An arrangement of piping and fittings, such as elbows, or a commercially available heat trap that prevents thermosiphoning of hot water during standby periods.

**HEATED SLAB.** Slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under, the slab.

**HIGH SPEED DOOR.** A nonswinging door used primarily to facilitate vehicular access or material transportation, with a minimum opening rate of 32 inches (813 mm) per second, a minimum closing rate of 24 inches (610 mm) per second and that includes an automatic-closing device.

**HISTORIC BUILDINGS OR PROPERTY.** Any building or structure site, object, place, location, district or zone, or collection of structures and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal governmental jurisdiction and as defined by the *Joint Regulation*. This includes historical buildings or properties:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic or having historic significance under an applicable state or local law, ordinance or resolution.
3. Designated as historic or having historic significance by the *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly.
4. Certified as a contributing or eligible resource within a National Register, state designated or locally designated historic district or zone.

**HUMIDISTAT.** A regulatory device, actuated by changes in humidity, used for automatic control of relative humidity.

**IEC DESIGN H MOTOR.** An electric motor that meets all of the following:

1. It is an induction motor designed for use with three- phase power.
2. It contains a cage rotor.
3. It is capable of direct-on-line starting.
4. It has four, six or eight poles.
5. It is rated from 0.4 kW to 1600 kW at a frequency of 60 hertz.

**IEC DESIGN N MOTOR.** An electric motor that meets all of the following:

1. It is an induction motor designed for use with three- phase power.
2. It contains a cage rotor.
3. It is capable of direct-on-line starting.
4. It has two, four, six or eight poles.
5. It is rated from 0.4 kW to 1600 kW at a frequency of 60 hertz.

**INFILTRATION.** The uncontrolled inward air leakage into a building caused by the pressure effects of wind or the effect of differences in the indoor and outdoor air density or both.

**INTEGRATED PART LOAD VALUE (IPLV).** A single number figure of merit based on part-load EER, COP or kW/ton expressing part-load efficiency for air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities for equipment.

**ISOLATION DEVICES.** Devices that isolate HVAC zones so that they can be operated independently of one another. *Isolation devices* include separate systems, isolation dampers, and controls providing shutoff at terminal boxes.

**JOINT REGULATION. JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “Reglamento Conjunto de Permisos para Obras de Construcción

y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)” as established by the Act No. 161 of December 1, 2009, “Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended”.

**LABELED.** Equipment, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LINER SYSTEM (Ls).** A system that includes the following:

1. A continuous vapor barrier liner membrane that is installed below the purlins and that is uninterrupted by framing members.
2. An uncompressed, unfaced insulation resting on top of the liner membrane and located between the purlins.

For multilayer installations, the last rated *R*-value of insulation is for unfaced insulation draped over purlins and then compressed when the metal roof panels are attached.

**LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the *code official* and concerned with evaluation of products or services that maintains periodic inspection of production of *listed* equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**LOW-SLOPED ROOF.** A roof having a slope less than 2 units vertical in 12 units horizontal.

**LOW-VOLTAGE DRY-TYPE DISTRIBUTION TRANSFORMER.** A transformer that is air-cooled, does not use oil as a coolant, has an input voltage less than or equal to 600 volts and is rated for operation at a frequency of 60 hertz.

**LUMINAIRE-LEVEL LIGHTING CONTROLS.** A lighting system consisting of one or more luminaires with embedded lighting control logic, occupancy and ambient light sensors, wireless networking capabilities and local override switching capability, where required.

**MANUAL.** Capable of being operated by personal intervention (see “Automatic”).

**NAMEPLATE HORSEPOWER.** The nominal motor output power rating stamped on the motor nameplate.

**NEMA DESIGN A MOTOR.** A squirrel-cage motor that meets all of the following:

1. It is designed to withstand full-voltage starting and develop locked-rotor torque as shown in paragraph 12.38.1 of NEMA MG 1.
2. It has pull-up torque not less than the values shown in paragraph 12.40.1 of NEMA MG 1.
3. It has breakdown torque not less than the values shown in paragraph 12.39.1 of NEMA MG 1.



4. It has a locked-rotor current higher than the values shown in paragraph 12.35.1 of NEMA MG 1 for 60 hertz and paragraph 12.35.2 of NEMA MG 1 for 50 hertz.
5. It has a slip at rated load of less than 5 percent for motors with fewer than 10 poles.

**NEMA DESIGN B MOTOR.** A squirrel-cage motor that meets all of the following:

1. It is designed to withstand full-voltage starting.
2. It develops locked-rotor, breakdown, and pull-up torques adequate for general application as specified in Sections 12.38, 12.39 and 12.40 of NEMA MG1.
3. It draws locked-rotor current not to exceed the values shown in Section 12.35.1 for 60 hertz and Section 12.35.2 for 50 hertz of NEMA MG1.
4. It has a slip at rated load of less than 5 percent for motors with fewer than 10 poles.

**NEMA DESIGN C MOTOR.** A squirrel-cage motor that meets all of the following:

1. Designed to withstand full-voltage starting and develop locked-rotor torque for high-torque applications up to the values shown in paragraph 12.38.2 of NEMA MG1 (incorporated by reference, see A§431.15).
2. It has pull-up torque not less than the values shown in paragraph 12.40.2 of NEMA MG1.
3. It has breakdown torque not less than the values shown in paragraph 12.39.2 of NEMA MG1.
4. It has a locked-rotor current not to exceed the values shown in paragraph 12.35.1 of NEMA MG1 for 60 hertz and paragraph 12.35.2 for 50 hertz.
5. It has a slip at rated load of less than 5 percent.

**NETWORKED GUESTROOM CONTROL SYSTEM.** A control system, accessible from the front desk or other central location associated with a *Group R-1* building, that is capable of identifying the occupancy status of each guestroom according to a timed schedule, and is capable of controlling HVAC in each hotel and motel guestroom separately.

**NONSTANDARD PART LOAD VALUE (NPLV).** A single-number part-load efficiency figure of merit calculated and referenced to conditions other than IPLV conditions, for units that are not designed to operate at AHRI standard rating conditions.

**OCCUPANT SENSOR CONTROL.** An automatic control device or system that detects the presence or absence of people within an area and causes lighting, equipment or appliances to be regulated accordingly.

**(OGPe-DDEC) PERMITS MANAGEMENT OFFICE.** As defined in the Act 141, of July 10, 2018, “Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio”.

**ON-SITE RENEWABLE ENERGY.** Energy derived from solar radiation, wind, waves, tides, landfill gas, biogas, biomass or the internal heat of the earth. The energy system providing on-site renewable energy shall be located on the project site.

**OPAQUE DOOR.** A door that is not less than 50-percent opaque in surface area.

**POWERED ROOF/WALL VENTILATORS.** A fan consisting of a centrifugal or axial impeller with an integral driver in a weather-resistant housing and with a base designed to fit, usually by means of a curb, over a wall or roof opening.

**PROPOSED DESIGN.** A description of the proposed building used to estimate annual energy use for determining compliance based on total building performance.

**PROJECTION FACTOR (PF).** The ratio of the horizontal depth of the external shading projection divided by the sum of the height of the fenestration and the distance from the top of the fenestration to the bottom of the farthest point of the external shading projection, in consistent units.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**RADIANT HEATING SYSTEM.** A heating system that transfers heat to objects and surfaces within a conditioned space, primarily by infrared radiation.

**READY ACCESS (TO).** That which enables a device, appliance or equipment to be directly reached, without requiring the removal or movement of any panel or similar obstruction.

**REFRIGERANT DEW POINT.** The refrigerant vapor saturation temperature at a specified pressure.

**REFRIGERATED WAREHOUSE COOLER.** An enclosed storage space capable of being refrigerated to temperatures above 32°F (0°C), that can be walked into and has a total chilled storage area of not less than 3,000 square feet (279 m<sup>2</sup>).

**REFRIGERATED WAREHOUSE FREEZER.** An enclosed storage space capable of being refrigerated to temperatures at or below 32°F (0°C), that can be walked into and has a total chilled storage area of not less than 3,000 square feet (279 m<sup>2</sup>).

**REFRIGERATION SYSTEM, LOW TEMPERATURE.** Systems for maintaining food product in a frozen state in refrigeration applications.

**REFRIGERATION SYSTEM, MEDIUM TEMPERATURE.** Systems for maintaining food product above freezing in refrigeration applications.

**REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**REPAIR.** The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

**REROOFING.** The process of recovering or replacing an existing roof covering. See “Roof recover” and “Roof replacement.”

**RESIDENTIAL BUILDING.** For this code, includes detached one- and two-family dwellings and multiple single- family dwellings (townhouses) and *Group R-2, R-3 and R-4* buildings three stories or less in height above grade plane.

**ROOF ASSEMBLY.** A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering, underlayment, roof deck, insulation, vapor retarder and interior finish.

**ROOF RECOVER.** The process of installing an additional roof covering over an existing roof covering without removing the existing roof covering.

**ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purpose of its maintenance.

**ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

**ROOFTOP MONITOR.** A raised section of a roof containing vertical fenestration along one or more sides.

**R-VALUE (THERMAL RESISTANCE).** The inverse of the time rate of heat flow through a body from one of its bounding surfaces to the other surface for a unit temperature difference between the two surfaces, under steady state conditions, per unit area ( $h \cdot \text{ft}^2 \cdot ^\circ\text{F}/\text{Btu}$ ) [ $(\text{m}^2 \cdot \text{K})/\text{W}$ ].

**SATURATED CONDENSING TEMPERATURE.** The saturation temperature corresponding to the measured refrigerant pressure at the condenser inlet for single component and azeotropic refrigerants, and the arithmetic average of the dew point and *bubble point* temperatures corresponding to the refrigerant pressure at the condenser entrance for zeotropic refrigerants.

**SERVICE WATER HEATING.** Supply of hot water for purposes other than comfort heating.

**SLEEPING UNIT.** A room or space in which people sleep, that can include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are part of a dwelling unit are not *sleeping units*.

**SMALL ELECTRIC MOTOR.** A general purpose, alternating current, single speed induction motor.

**SOLAR HEAT GAIN COEFFICIENT (SHGC).** The ratio of the solar heat gain entering the space through the fenestration assembly to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation, that is then reradiated, conducted or convected into the space.

**STANDARD REFERENCE DESIGN.** A version of the *proposed design* that meets the minimum requirements of this code and is used to determine the maximum annual energy use requirement for compliance based on total building performance.

**STOREFRONT.** A system of doors and windows mullied as a composite fenestration structure that has been designed to resist heavy use. *Storefront* systems include, but are not limited to, exterior fenestration systems that span from the floor level or above to the ceiling of the same story on commercial buildings, with or without mullied windows and doors.

**THERMOSTAT.** An automatic control device used to maintain temperature at a fixed or adjustable setpoint.

**TIME SWITCH CONTROL.** An automatic control device or system that controls lighting or other loads, including switching off, based on time schedules.

**U-FACTOR (THERMAL TRANSMITTANCE).** The coefficient of heat transmission (air to air) through a building component or assembly, equal to the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films (Btu/h • ft<sup>2</sup> • °F) [W/(m<sup>2</sup> • K)].

**VARIABLE REFRIGERANT FLOW SYSTEM.** An engineered direct-expansion (DX) refrigerant system that incorporates a common condensing unit, at least one variable- capacity compressor, a distributed refrigerant piping network to multiple indoor fan heating and cooling units each capable of individual zone temperature control, through integral zone temperature control devices and a common communications network. Variable refrigerant flow utilizes three or more steps of control on common interconnecting piping.

**VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

**VENTILATION AIR.** That portion of supply air that comes from outside (outdoors) plus any recirculated air that has been treated to maintain the desired quality of air within a designated space.

**VISIBLE TRANSMITTANCE [VT].** The ratio of visible light entering the space through the fenestration product assembly to the incident visible light. Visible transmittance includes the effects of glazing material and frame and is expressed as a number between 0 and 1.

**VOLTAGE DROP.** A decrease in voltage caused by losses in the wiring systems that connect the power source to the load.

**WALK-IN COOLER.** An enclosed storage space capable of being refrigerated to temperatures above 32°F (0°C) and less than 55°F (12.8°C) that can be walked into, has a ceiling height of not less than 7 feet (2134 mm) and has a total chilled storage area of less than 3,000 square feet (279 m<sup>2</sup>).

**WALK-IN FREEZER.** An enclosed storage space capable of being refrigerated to temperatures at or below 32°F (0°C) that can be walked into, has a ceiling height of not less than 7 feet (2134 mm) and has a total chilled storage area of less than 3,000 square feet (279 m<sup>2</sup>).

**WALL, ABOVE-GRADE.** A wall associated with the *building thermal envelope* that is more than 15 percent above grade and is on the exterior of the building or any wall that is associated with the building thermal envelope that is not of the exterior of the building.

**WALL, BELOW-GRADE.** A wall associated with the basement or first story of the building that is part of the building thermal envelope, is not less than 85 percent below grade and is on the exterior of the building.

**WATER HEATER.** Any heating appliance or equipment that heats potable water and supplies such water to the potable hot water distribution system.

**ZONE.** A space or group of spaces within a building with heating or cooling requirements that are sufficiently similar so that desired conditions can be maintained throughout using a single controlling device.

## **CHAPTER 3 [CE] – GENERAL REQUIREMENTS**

No amendments

## **CHAPTER 4 [CE] – COMMERCIAL ENERGY EFFICIENCY**

### **SECTION C402 - BUILDING ENVELOPE REQUIREMENTS**

**C402.1.2 Equipment buildings.** Buildings that comply with the following shall be exempt from the building thermal envelope provisions of this code:

1. Are separate buildings with floor area not more than 500 square feet (50 m<sup>2</sup>).
2. Are intended to house electronic equipment with installed equipment power totaling not less than 7 watts per square foot (75 W/m<sup>2</sup>) and not intended for human occupancy.
3. Have an average wall and roof U-factor less than 0.200 in Climate Zone 1 5. Comply with the roof solar reflectance and thermal emittance provisions for Climate Zone 1.

**C402.1.3 Insulation component R- value-based method.** Building thermal envelope opaque assemblies shall comply with the requirements of Sections C402.2 and C402.4 based on the climate zone specified in Chapter 3. For opaque portions of the building thermal envelope intended to comply on an insulation component R-value basis, the R-values for insulation shall be not less than that specified in Table C402.1.3. Commercial buildings or portions of commercial buildings enclosing Group R occupancies shall use the R-values from the “Group

R” column of Table C402.1.3. Commercial buildings or portions of commercial buildings enclosing occupancies other than Group R shall use the R-values from the “All other” column of Table C402.1.3.

**TABLE C402.1.3**  
**OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM**  
**REQUIREMENTS, R-VALUE METHOD<sup>a, i</sup>**

CLIMATE ZONE	All
<b>Roofs</b>	
Insulation entirely above roof deck	R-20ci
Metal Buildings <sup>b</sup>	R-20
Attic and other	R-38
<b>Walls, above grade</b>	
Mass <sup>g</sup>	NR
Metal Building	R-13
Metal framed	R-13
Wood framed and other	R-13
<b>Walls, below grade</b>	
Below-grade wall <sup>d</sup>	NR
<b>Floors</b>	
Mass <sup>e</sup>	NR
Joist/framing	NR
<b>Slab-on-grade floors</b>	
Unheated slabs	NR
<b>Opaque doors</b>	
Nonswinging	U-1.54

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 4.88 kg/m<sup>2</sup>, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

ci = Continuous insulation, NR = No Requirement, LS = Liner System.

a. Assembly descriptions can be found in ANSI/ASHRAE/IESNA Appendix A.

b. Where using R-value compliance method, a thermal spacer block shall be provided, otherwise use the U-factor compliance method in Table C402.1.4.

c. R-5.7ci is allowed to be substituted with concrete block walls complying with ASTM C90, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches or less on center horizontally, with ungrouted cores filled with materials having a maximum thermal conductivity of 0.44 Btu-in/h-ft<sup>2</sup> °F.

d. Where heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.

e. "Mass floors" shall be in accordance with Section C402.2.3.

f. Steel floor joist systems shall be insulated to R-38.

g. "Mass walls" shall be in accordance with Section C402.2.2.

h. The first value is for perimeter insulation and the second value is for slab insulation. Perimeter insulation is not required to extend below the bottom of the slab.

i. Not applicable to garage doors. See Table C402.1.4

Table C402.1.4  
**OPAQUE THERMAL ENVELOPE ASSEMBLY MAXIMUM REQUIREMENTS, U-  
 FACTOR METHOD** <sup>a,b</sup>

CLIMATE ZONE	All other
<b>Roofs</b>	
Insulation entirely above roof deck	U-0.048
Metal Buildings	U-0.048
<b>Walls, Above Grade</b>	
Mass <sup>g</sup>	NR
Metal Building	U-0.078
Metal framed	U-0.078
Wood framed and other	U-0.078
<b>Walls, below grade</b>	
Below-grade wall <sup>c</sup>	NR
<b>Floors</b>	
Mass <sup>e</sup>	NR
Joist/framing	NR
<b>Slab-on-grade floors</b>	
Unheated slabs	NR
<b>Opaque doors</b>	
Swinging door	U-1.45
Garage door <14%	U-1.45

For SI: 1 pound per square foot = 4.88 kg/m<sup>2</sup>, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

ci = Continuous insulation, NR = No Requirement, LS = Liner System.

a. Where assembly U-factors, C-factors, and F-factors are established in ANSI/ASHRAE/IESNA 90.1 Appendix A, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table, and provided that the construction, excluding the cladding system on walls, complies with the appropriate construction details from ANSI/ASHRAE/ISNEA 90.1 Appendix A.

b. Where U-factors have been established by testing in accordance with ASTM C1363, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table. The R-value of continuous insulation shall be permitted to be added to or subtracted from the original tested design.

c. Where heated slabs are below grade, below-grade walls shall comply with the U-factor requirements for above-grade mass walls.

d. "Mass floors" shall be in accordance with Section C402.2.3.

e. These C-, F- and U-factors are based on assemblies that are not required to contain insulation.

f. The first value is for perimeter insulation and the second value is for full slab insulation.

g. "Mass walls" shall be in accordance with Section C402.2.2.



**C402.1.4 Assembly U- factor, C -factor or F -factor based-method.** Building thermal envelope opaque assemblies shall meet the requirements of Sections C402.2 and C402.4 based on the climate zone specified in Chapter 3. Building thermal envelope opaque assemblies intended to comply on an assembly U-, C- or F-factor basis shall have a U-, C- or F-factor not greater than that specified in Table C402.1.4. Commercial buildings or portions of commercial buildings enclosing Group R occupancies shall use the U-, C- or F-factor from the “Group R” column of Table C402.1.4. Commercial buildings or portions of commercial buildings enclosing occupancies other than Group R shall use the U-, C- or F-factor from the “All other” column of Table C402.1.4

**C402.4 Fenestration (Prescriptive).** Fenestration shall comply with Sections C402.4.1 through C402.4.5 and Table C402.4. Daylight responsive controls shall comply with this section and Section C405.2.3.1.

**C402.4.1 Maximum area.** The vertical fenestration area, not including opaque doors and opaque spandrel panels, shall be not greater than 80 percent of the gross above-grade wall area. The skylight area shall be not greater than 10 percent of the gross roof area.

**C402.4.1.1 Increased vertical fenestration area with daylight responsive controls.** In Climate Zones 1 , not more than 90 percent of the gross above-grade wall area shall be vertical fenestration, provided that all of the following requirements are met.

TABLE C402.4  
BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC  
REQUIREMENTS

CLIMATE ZONE	1	
Vertical fenestration		
<b>U-factor</b>		
Fixed fenestration	1.2	
Operable fenestration	1.2	
Entrance doors	1.2	
<b>SHGC</b>		
Orientation <sup>a</sup>	SEW	N
PF < 0.2	0.25	0.33
0.2 ≤ PF < 0.5	0.30	0.37
PF ≥ 0.5	0.40	0.40
<b>Skylights</b>		
U-factor	0.75	
SHGC	0.35	

#### **C402.4.2 Minimum skylight fenestration area.**

**Exception:** Skylights above daylight zones of enclosed spaces are not required in:

1. Spaces where the designed general lighting power densities are less than 0.5 W/ft<sup>2</sup> (5.4 W/m<sup>2</sup>).
2. Areas where it is documented that existing structures or natural objects block direct beam sunlight on not less than half of the roof over the enclosed area for more than 1,500 daytime hours per year between 8 a.m. and 4 p.m.
3. Spaces where the daylight zone under rooftop monitor is greater than 50 percent of the enclosed space floor area.
4. Spaces where the total area minus the area of sidelight daylight zone is less than 2,500 square feet (232 m<sup>2</sup>), and where the lighting is controlled in accordance with Section C405.2.3.

#### **C402.4.3 Maximum U- factor and SHGC.**

**C402.4.3.1 Increased skylight SHGC.** In Climate Zones 1 skylights shall be permitted a maximum SHGC of 0.60 where located above daylight zones provided with daylight responsive controls.

**C402.4.3.2 Increased skylight U- factor.** Where skylights are installed above daylight zones provided with daylight responsive controls, a maximum U-factor of 0.9 shall be permitted in Climate Zones 1

#### **C402.5 Air leakage – thermal envelope(Mandatory) - Deleted**

##### **C402.5.1- C402.5.5 - Deleted**

**C402.5.6 Loading dock weather-seals** at air conditioner spaces. Cargo door openings and loading door openings shall be equipped with weather-seals that restrict infiltration and provide direct contact along the top and sides of vehicles that are parked in the doorway.

**C402.5.7 Vestibules.** Building entrances shall be protected with self-closing devices.

## SECTION C403 - BUILDING MECHANICAL SYSTEMS

### C403.5 Economizers (Prescriptive) - Deleted

TABLE C403.4.4  
VARIABLE SPEED DRIVE (VSD) REQUIREMENTS FOR  
DEMAND-CONTROLLED PUMPS

CHILLED WATER AND HEAT REJECTION LOOP PUMPS IN THESE CLIMATE ZONES	VSD REQUIRED FOR MOTORS WITH RATED OUTPUT OF:
1A, 1B, 2B	≥2 hp

### C403.7 Ventilation and exhaust systems.

**C403.7.1 Demand control ventilation (Mandatory).** Demand control ventilation (DCV) shall be provided for spaces larger than 500 square feet (46.5 m<sup>2</sup>) and with an average occupant load of 25 people or greater per 1,000 square feet (93 m<sup>2</sup>) of floor area, as established in Table 403.3.1.1 of the Puerto Rico Mechanical Code, and served by systems with one or more of the followings:

#### C403.7.2 Enclosed parking garage ventilation controls (Mandatory).

**Exceptions:**

1. Garages with a total exhaust capacity less than 22,500 cfm (10 620 L / s) with ventilation systems that do not utilize heating or mechanical cooling.
2. Garages that have a garage area to ventilation system motor nameplate power ratio that exceeds 1125 cfm/hp (710 L / s/kW) and do not utilize heating or mechanical cooling.

**C403.7.3 Ventilation air heating control (Mandatory).** Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems shall not use heating or heat recovery to warm supply air to a temperature greater than 60°F (16°C) when representative building loads or outdoor air temperatures indicate that the majority of zones require cooling.

**C403.7.4 Energy recovery ventilation systems (Mandatory).** Where the supply airflow rate of a fan system exceeds the values specified in Tables C403.7.4(1) and C403.7.4(2), the system shall include an energy recovery system. The energy recovery system shall be configured to provide a change in the enthalpy of the outdoor air supply of not less than 50 percent of the difference between the outdoor air and return air enthalpies, at design conditions.

**Exception:** An energy recovery ventilation system shall not be required in any of the following conditions:

1. Where energy recovery systems are prohibited by the Puerto Rico Mechanical Code.
2. Laboratory fume hood systems that include not fewer than one of the following features:

- 2.1. Variable-air-volume hood exhaust and room supply systems configured to reduce exhaust and makeup air volume to 50 percent or less of design values.
- 2.2. Direct makeup (auxiliary) air supply equal to or greater than 75 percent of the exhaust rate, heated not warmer than 2°F (1.1°C) above room setpoint, cooled to not cooler than 3°F (1.7°C) below room setpoint, with no humidification added, and no simultaneous heating and cooling used for dehumidification control.
3. Systems serving spaces that are heated to less than 60°F (15.5°C) and that are not cooled.
4. Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site-solar energy.

TABLE C403.7.4(1)  
ENERGY RECOVERY REQUIREMENT  
(Ventilation systems operating less than 8,000 hours per year)

CLIMATE ZONE	PERCENT (%) OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE							
	≥ 10% and < 20%	≥ 20% and < 30%	≥ 30% and < 40%	≥ 40% and < 50%	≥ 50% and < 60%	≥ 60% and < 70%	≥ 70% and < 80%	> 80%
	DESIGN SUPPLY FAN AIRFLOW RATE (cfm)							
1A,	≥ 26,000	≥ 16,000	≥ 5,500	≥ 4,500	≥ 3,500	≥ 2,000	≥ 1,000	> 120

TABLE C403.7.4(2)  
ENERGY RECOVERY REQUIREMENT  
(Ventilation systems operating not less than 8,000 hours per year)

CLIMATE ZONE	PERCENT (%) OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE							
	≥ 10% and < 20%	≥ 20% and < 30%	≥ 30% and < 40%	≥ 40% and < 50%	≥ 50% and < 60%	≥ 60% and < 70%	≥ 70% and < 80%	> 80%
	DESIGN SUPPLY FAN AIRFLOW RATE (cfm)							
1A,	≥ 2,500	≥ 2,000	≥ 1,000	≥ 500	≥ 140	≥ 120	≥ 100	> 80

**C403.7.5 Kitchen exhaust systems (Mandatory).** Replacement air introduced directly into the exhaust hood cavity shall not be greater than 80 percent of the hood exhaust airflow rate. Conditioned supply air delivered to any space shall not exceed the greater of the following:

1. The ventilation rate required to meet the space heating or cooling load.

**C403.7.6.1 Temperature setpoint controls.** Controls shall be provided on each HVAC system that are capable of and configured to automatically raise the cooling setpoint and lower the heating setpoint by not less than 4°F (2°C) from the occupant setpoint within 30 minutes after the occupants have left the guestroom. The controls shall be capable of and configured to automatically raise the cooling setpoint to not lower than 80°F (27°C) and lower the heating setpoint to not higher than 60°F (16°C) when the guestroom is unrented

or has not been continuously occupied for more than 16 hours or a networked guestroom control system indicates that the guestroom is unrented, and the guestroom is unoccupied for more than 30 minutes. A networked guestroom control system that is capable of returning the thermostat set-points to default occupied set-points 60 minutes prior to the time a guestroom is scheduled to be occupied is not precluded by this section. Cooling that is capable of limiting relative humidity with a setpoint not lower than 65-percent relative humidity during unoccupied periods is not precluded by this section.

**C403.11.1 Duct and plenum insulation and sealing (Mandatory).** Supply and return air ducts and plenums shall be insulated with not less than R-6 insulation where located in unconditioned spaces and where located outside the building with not less than R-8 insulation in Climate Zone 1. Where located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by not less than R-8 insulation in Climate Zone 1.

**C403.12 Mechanical systems located outside of the building thermal envelope (Mandatory).**

**C403.12.2 Snow- and ice-melt system controls. - Deleted**

**C403.12.3 Freeze protection system controls. – Deleted**

## **SECTION C406 - ADDITIONAL EFFICIENCY PACKAGE OPTIONS**

**C406.10 Environmental Luminaries.** Any luminary or sign on building with illumination shall be replaced with full-cutoff lamps and shall comply with the Reglamento para el Control y la Prevención de la Contaminación Lumínica issued by the Puerto Rico Environmental Quality Board.

## **CHAPTER 5 [CE] – EXISTING BUILDINGS**

### **SECTION C501- GENERAL**

**C501.4 Compliance.** *Alterations, repairs, additions* and changes of occupancy to, or relocation of, existing *buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and changes of occupancy or relocation, respectively, in this code and the *Puerto Rico Building Code, Puerto Rico Existing Building Code, Puerto Rico Fire Code, Puerto Rico Fuel Gas Code, Puerto Rico Mechanical Code, Puerto Rico Plumbing Code, Puerto Rico Private Sewage Disposal Code*, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail. They shall also comply with either the Reglamento para Interconectar Generadores con el Sistema de

Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta (Regulation 8915) or the Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta (Regulation 8916), as applicable.

## **CHAPTER 6 [CE] – REFERENCE STANDARDS**

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### **PREPA**

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
C501.4

8915-2017: Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
C501.4

8916-2017: Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
C501.4.

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### **JCA**

Puerto Rico Environmental Quality Board  
Apartado 11488  
Santurce, PR 00910

8786-2016: Reglamento para el Control y la Prevención de la Contaminación Lumínica  
C406.10

## **APPENDIX CA – SOLAR-READY ZONE – COMMERCIAL**

No amendments

# CHAPTER 1 [RE] – SCOPE AND ADMINISTRATION

## PART 1—SCOPE AND APPLICATION

### SECTION R101 SCOPE AND GENERAL REQUIREMENTS

**R101.1 Title.** This code shall be known as the *Puerto Rico Energy Conservation Code*, and shall be cited as such. It is referred to herein as “this code.”

**R101.2 Scope.** This code applies to *residential buildings* and the *building* sites and associated systems and equipment.

**R101.3 Intent.** This code shall regulate the design and construction of *buildings* for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

**R101.4 Applicability.** Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

**R101.4.1 Mixed residential and commercial buildings.** Where a *building* includes both *residential* building and *commercial building* portions, each portion shall be separately considered and meet the applicable provisions of the PRECC—Commercial Provisions or PRECC—Residential Provisions.

**R101.5 Compliance.** *Residential buildings* shall meet the provisions of PRECC -Residential Provisions. *Commercial buildings* shall meet the provisions of PRECC - Commercial Provisions.

**R101.5.1 Compliance materials.** The *code official* shall be permitted to approve specific computer software, worksheets, compliance manuals and other similar materials that meet the intent of this code.

### SECTION R102 ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT

**R102.1 General.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. The *code official* shall have the authority to approve an alternative material, design or method of construction upon application of the owner or the owner’s authorized agent. The code official shall first find that the proposed design is satisfactory and complies with the intent of the

provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code for strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not *approved*, the *code official* shall respond to the applicant, in writing, stating the reasons why the alternative was not *approved*.

**R102.1.1 Above code programs.** The *code official* or other authority having jurisdiction shall be permitted to deem a national, state or local energy-efficiency program to exceed the energy efficiency required by this code. *Buildings approved* in writing by such an energy-efficiency program shall be considered to be in compliance with this code. The requirements identified as “mandatory” in Chapter 4 shall be met.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the Joint Regulation.

### **SECTION R103 - ADMINISTRATIVE PROVISIONS**

**R103.1 General.** The administrative provisions and compliance of this Code will be those established by the *Puerto Rico Energy Conservation Code*, the *Puerto Rico Building Code*, the OGPe, the *Puerto Rico Planning Board* and the *Puerto Rico Energy Bureau*.

## **CHAPTER 2 [RE] – DEFINITIONS**

**ABOVE-GRADE WALL.** A wall more than 50 percent above grade and enclosing conditioned space. This includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, walls enclosing a mansard roof and skylight shafts.

**ACCESSIBLE.** Admitting close approach as a result of not being guarded by locked doors, elevation or other effective means (see “Readily accessible”).

**ADDITION.** An extension or increase in the conditioned space floor area, number of stories or height of a building or structure.

**AIR BARRIER.** One or more materials joined together in a continuous manner to restrict or prevent the passage of air through the building thermal envelope and its assemblies.

**AIR-IMPERMEABLE INSULATION.** An insulation that functions as an air barrier material.

**ALTERATION.** Any construction, retrofit or renovation to an existing structure other than repair or addition. Also, a change in a building, electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation.



**APPROVED.** Acceptable to the code official.

**APPROVED AGENCY.** An established and recognized agency that is regularly engaged in conducting tests furnishing inspection services, or furnishing product certification, where such agency has been approved by the code official.

**AUTOMATIC.** Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current strength, pressure, temperature or mechanical configuration (see “Manual”).

**BASEMENT WALL.** A wall 50 percent or more below grade and enclosing conditioned space.

**BUILDING.** Any structure used or intended for supporting or sheltering any use or occupancy, including any mechanical systems, service water heating systems and electric power and lighting systems located on the building site and supporting the building.

**[A]BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**BUILDING SITE.** A contiguous area of land that is under the ownership or control of one entity.

**BUILDING THERMAL ENVELOPE.** The basement walls, exterior walls, floors, ceiling, roofs and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space.

**CIRCULATING HOT WATER SYSTEM.** A specifically designed water distribution system where one or more pumps are operated in the service hot water piping to circulate heated water from the water-heating equipment to fixtures and back to the water-heating equipment.

**CLIMATE ZONE.** A geographical region based on climatic criteria as specified in this code.

**CODE OFFICIAL.** The officer or other designated authority of the government agency having jurisdiction responsible for the enforcement of the pertaining code, or a duly authorized representative.

**COMMERCIAL BUILDING.** For this code, all buildings that are not included in the definition of “Residential building.”

**CONDITIONED FLOOR AREA.** The horizontal projection of the floors associated with the conditioned space.

**CONDITIONED SPACE.** An area, room or space that is enclosed within the building thermal envelope and that is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from

conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

**CONTINUOUS AIR BARRIER.** A combination of materials and assemblies that restrict or prevent the passage of air through the building thermal envelope.

**CONTINUOUS INSULATION (ci).** Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior, or is integral to any opaque surface, of the building envelope.

**CRAWL SPACE WALL.** The opaque portion of a wall that encloses a crawl space and is partially or totally below grade.

**CURTAIN WALL.** Fenestration products used to create an external no-load-bearing wall that is designed to separate the exterior and interior environments.

**DEMAND RECIRCULATION WATER SYSTEM.** A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe.

**DUCT.** A tube or conduit utilized for conveying air. The air passages of self-contained systems are not to be construed as air ducts.

**DUCT SYSTEM.** A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling equipment and appliances.

**DWELLING UNIT.** A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**ENERGY ANALYSIS.** A method for estimating the annual energy use of the proposed design and standard reference design based on estimates of energy use.

**ENERGY COST.** The total estimated annual cost for purchased energy for the building functions regulated by this code, including applicable demand charges.

**ENERGY SIMULATION TOOL.** An approved software program or calculation-based methodology that projects the annual energy use of a building.

**ERI REFERENCE DESIGN.** A version of the rated design that meets the minimum requirements of the 2006 Puerto Rico Energy Conservation Code.

**EXTERIOR WALL.** Walls including both above-grade walls and basement walls.

**FENESTRATION.** Products classified as either vertical fenestration or skylights.

**Skylights.** Glass or other transparent or translucent glazing material installed at a slope of less than 60 degrees (1.05 rad) from horizontal.

**Vertical fenestration.** Windows that are fixed or operable, opaque doors, glazed doors, glazed block and combination opaque/glazed doors composed of glass or other transparent or translucent glazing materials and installed at a slope of not less than 60 degrees (1.05 rad) from horizontal.

**FENESTRATION PRODUCT, SITE-BUILT.** A fenestration designed to be made up of field-glazed or field-assembled units using specific factory cut or otherwise factory-formed framing and glazing units. Examples of site-built fenestration include storefront systems, curtain walls and atrium roof systems.

**HEATED SLAB.** Slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under, the slab.

**HIGH-EFFICACY LAMPS.** Compact fluorescent lamps, light-emitting diode (LED) lamps, T-8 or smaller diameter linear fluorescent lamps, or other lamps with an efficacy of not less than the following:

1. 60 lumens per watt for lamps over 40 watts.
2. 50 lumens per watt for lamps over 15 watts to 40 watts.
3. 40 lumens per watt for lamps 15 watts or less.

**HISTORIC BUILDING OR PROPERTY.** Any building or site, object, place, location, district or zone, or collection of structures and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal governmental jurisdiction and as defined by the *Joint Regulation*. This includes historical buildings or properties:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic or having historic significance under an applicable state or local law, ordinance or resolution.
3. Designated as historic or having historic significance by the *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly.
4. Certified as a contributing or eligible resource within a National Register, state designated or locally designated historic district or zone.

**INFILTRATION.** The uncontrolled inward air leakage into a building caused by the pressure effects of wind or the effect of differences in the indoor and outdoor air density or both.

**INSULATED SIDING.** A type of continuous insulation with manufacturer-installed insulating material as an integral part of the cladding product having an R -value of not less than R-2.

**INSULATING SHEATHING.** An insulating board with a core material having an R -value of not less than R-2.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)” as established by the Act No. 161 of December 1, 2009, “Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended”.

**LABELED.** Equipment, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of such labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**LOW-VOLTAGE LIGHTING.** Lighting equipment powered through a transformer such as a cable conductor, a rail conductor and track lighting.

**MANUAL.** Capable of being operated by personal intervention (see “Automatic”).

**(OGPe-DDEC) Permits Management Office:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**OPAQUE DOOR.** A door that is not less than 50-percent opaque in surface area.

**PROPOSED DESIGN.** A description of the proposed building used to estimate annual energy use for determining compliance based on total building performance.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**RATED DESIGN.** A description of the proposed building used to determine the energy rating index.

**READILY ACCESSIBLE.** Capable of being reached quickly for operation, renewal or inspection without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders or access equipment (see “Accessible”).

**REPAIR.** The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

**REROOFING.** The process of recovering or replacing an existing roof covering. See “Roof recover” and “Roof replacement.”

**RESIDENTIAL BUILDING.** For this code, includes detached one- and two-family dwellings and townhouses as well as Group R-2, R-3 and R-4 buildings three stories or less in height above grade plane.

**ROOF ASSEMBLY.** A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering, underlayment and roof deck, and can also include a thermal barrier, an ignition barrier, insulation or a vapor retarder.

**ROOF RE-COVER.** The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

**ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

**ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

**R -VALUE (THERMAL RESISTANCE).** The inverse of the time rate of heat flow through a body from one of its bounding surfaces to the other surface for a unit temperature difference between the two surfaces, under steady state conditions, per unit area ( $h \cdot ft^2 \cdot ^\circ F/Btu$ ) [ $m^2 \cdot K/W$ ].

**SERVICE WATER HEATING.** Supply of hot water for purposes other than comfort heating.

**SOLAR HEAT GAIN COEFFICIENT (SHGC).** The ratio of the solar heat gain entering the space through the fenestration assembly to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation that is then reradiated, conducted or convected into the space.

**STANDARD REFERENCE DESIGN.** A version of the proposed design that meets the minimum requirements of this code and is used to determine the maximum annual energy use requirement for compliance based on total building performance.

**SUNROOM.** A one-story structure attached to a dwelling with a glazing area in excess of 40 percent of the gross area of the structure's exterior walls and roof.

**THERMAL ISOLATION.** Physical and space conditioning separation from conditioned spaces. The conditioned spaces shall be controlled as separate zones for heating and cooling or conditioned by separate equipment.

**THERMOSTAT.** An automatic control device used to maintain temperature at a fixed or adjustable setpoint.

**U- FACTOR (THERMAL TRANSMITTANCE).** The coefficient of heat transmission (air to air) through a building component or assembly, equal to the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films (Btu/h • ft<sup>2</sup> • °F) [W/(m<sup>2</sup> • K)].

**VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

**VENTILATION AIR.** That portion of supply air that comes from outside (outdoors) plus any recirculated air that has been treated to maintain the desired quality of air within a designated space.

**VISIBLE TRANSMITTANCE [VT].** The ratio of visible light entering the space through the fenestration product assembly to the incident visible light, Visible Transmittance, includes the effects of glazing material and frame and is expressed as a number between 0 and 1.

**WHOLE HOUSE MECHANICAL VENTILATION SYSTEM.** An exhaust system, supply system, or combination thereof that is designed to mechanically exchange indoor air with outdoor air when operating continuously or through a programmed intermittent schedule to satisfy the whole house ventilation rates.

**ZONE.** A space or group of spaces within a building with heating or cooling requirements that are sufficiently similar so that desired conditions can be maintained throughout using a single controlling device.

## **CHAPTER 3 [RE] – GENERAL REQUIREMENTS**

No amendments

## **CHAPTER 4 [RE] – RESIDENTIAL ENERGY EFFICIENCY**

### **SECTION R401 - GENERAL**

**R401.1 Scope.** This chapter applies to *residential buildings*.

**R401.1.1** For the RESIDENTIAL PROVISIONS of this code, Residential Buildings includes detached one- and two-family dwellings and townhouses as well as Group R-2, R-3 and R-4 buildings including over three stories in height

**R401.2.1 Tropical Zone.** Residential Buildings in the tropical zone at elevations less than 2,400 feet (731.5 m) above sea level shall be deemed to be in compliance with this chapter provided that the following conditions are met:

1. Not more than one-half of the occupied space is air conditioned.
2. The occupied space is not heated,
3. Solar, wind or other renewable energy source supplies not less than 80 percent of the energy for service water heating.
4. Glazing in conditioned spaces has a solar heat gain coefficient of less than or equal to 0.40 or has an overhang with a projection factor equal to or greater than 0.30, (refer to Table 5.5.4.4.1 from ASHREA 90.1, 2016.),
5. Permanently installed lighting, where is in accordance with Section R404.
6. The exterior roof surface complies with one of the options in Table C402.3 or the roof or ceiling has insulation with an R-value of R-15 or greater. Where attics are present, attics above the insulation are vented and attics below the insulation are unvented.
7. Roof surface have a slope of not less than one fourth unit vertical in 12 unit horizontal (21 percent slope). The finished roof does not have water accumulation areas.
8. Operable fenestration provides a ventilation area of not less than 14 percent of the floor area in each room. Alternatively, equivalent ventilation is provided by a ventilation fan,
9. Bedrooms with exterior walls facing two different directions have operable fenestration walls facing two directions.
10. Interior doors to bedrooms are capable of being secured in the open position.
11. A ceiling fan or ceiling fan rough-in is provided for bedrooms and the largest space that is not used as a bedroom.

**R401.3 Certificate (Mandatory).** A permanent certificate shall be completed by the builder or other approved party and posted on a wall in a utility room or an approved location inside the building. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall indicate the predominant R-values of insulation installed in or on ceilings, roofs, walls, ; U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration, and the results from any required duct system and building envelope air leakage testing performed on

the building. Where there is more than one value for each component, the certificate shall indicate the value covering the largest area. The certificate shall indicate the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace or baseboard electric heater is installed in the residence, the certificate shall indicate “gas-fired unvented room heater,” “electric furnace” or “baseboard electric heater,” as appropriate. An efficiency shall not be indicated for gas-fired unvented room heaters, electric furnaces and electric baseboard heaters.

## **SECTION R402 - BUILDING THERMAL ENVELOPE**

**R402.3 Fenestration (Prescriptive).** In addition to the requirements of Section R402, fenestration shall comply with Sections R402.3.1 through R402.3.5.

**R402.3.1 U-factor.** An area-weighted average of fenestration products shall be permitted to satisfy the U-factor requirements.

**R402.3.2 Glazed fenestration SHGC.** An area-weighted average of fenestration products more than 50-percent glazed shall be permitted to satisfy the SHGC requirements.

Dynamic glazing shall be permitted to satisfy the SHGC requirements of Table R402.1.2 provided that the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4, and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Dynamic glazing shall be considered separately from other fenestration, and area-weighted averaging with other fenestration that is not dynamic glazing shall be prohibited.

**Exception:** Dynamic glazing shall not be required to comply with this section where both the lower and higher labeled SHGC comply with the requirements of Table R402.1.2.

For demonstrating compliance in vertical fenestrations shaded by opaque permanent projections that will last as long as the building itself, the equivalent SHGC of the fenestration product shall be reduced by using the multipliers in Table 402.3.2. The following formula should be used to calculate the required estimated overhang projection factor, the projection factor will be the range applicable to the respective calculated SHGC Multiplier:



$$SGHC_{Multiplier} = \frac{SGHC_{required \text{ in Table 402.3.2}}}{SGHC_{Equipment}}$$

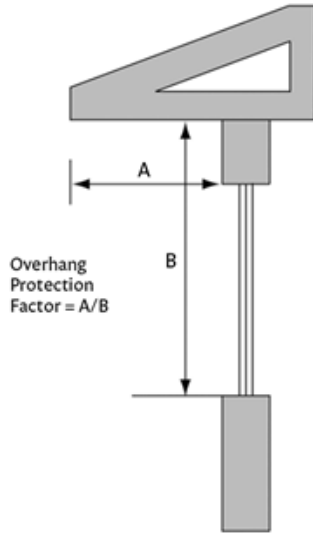


Table 402.3.2 (NEW)  
SHGC Multipliers for Permanent Projections

Projection Factor	SHGC Multiplier (All other orientations)	SHGC Multiplier (North-Oriented)
>0-0.10	1.00	1.00
>0.10-0.20	0.91	0.95
>0.20-0.30	0.82	0.91
>0.30-0.40	0.74	0.87
>0.40-0.50	0.67	0.84
>0.50-0.60	0.61	0.81
>0.60-0.70	0.56	0.78
>0.70-0.80	0.51	0.76
>0.80-0.90	0.47	0.75
>0.90-1.00	0.44	0.73

**R402.3.3 Glazed fenestration exemption.** Not greater than 15square feet (1.4 m<sup>2</sup>) of glazed fenestration per dwelling unit shall be exempt from the U- factor and SHGC requirements in Section R402.1.2. This exemption shall not apply to the U- factor alternative in Section R402.1.4 and the Total UA alternative in Section R402.1.5.

**R402.3.5 Sunroom fenestration.** *Sunrooms* enclosing *conditioned space* shall comply with the fenestration requirements of this code.

\*(1)New fenestration separating the *sunroom* with *thermal isolation* from *conditioned space* shall comply with the *building thermal envelope* requirements of this code.

**R402.5 Maximum fenestration U-factor and SHGC (Mandatory).** The area-weighted average maximum fenestration SHGC permitted using tradeoffs from Section R405 in Climate Zone 1 shall be 0.50.

## SECTION R403 - SYSTEMS

**R403.3 Ducts.** Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through R403.3.7.

**R403.3.6 Ducts buried within ceiling insulation.** Where supply and return air ducts are partially or completely buried in ceiling insulation, such ducts shall comply with all of the following:

1. The supply and return ducts shall have an insulation R-value not less than R-8.
2. At all points along each duct, the sum of the ceiling insulation R-value against and above the top of the duct, and against and below the bottom of the duct, shall be not less than R-19, excluding the R-value of the duct insulation.
3. In Climate Zones 1A, the supply ducts shall be completely buried within ceiling insulation, insulated to an R-value of not less than R-13 and in compliance with the vapor retarder requirements of Section 604.11 of the Puerto Rico Mechanical Code or Section M1601.4.6 of the Puerto Rico Residential Code, as applicable.

**R403.10 Pools and permanent spa energy consumption (Mandatory).** The energy consumption of pools and permanent spas shall be in accordance with Sections R403.10.1 through R403.10.3.

**R403.10.1 Heaters.** All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters are allowed only with renewable or alternate energy source.

## **SECTION R404 - ELECTRICAL POWER AND LIGHTING SYSTEMS**

**R404.1 Lighting equipment (Mandatory).** Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.

**R404.1.1 Lighting equipment (Mandatory).** Fuel gas lighting systems shall not have continuously burning pilot lights.

**R404.2 Solar-Ready Provisions for Distributed Generation Systems Installation (Mandatory).** Solar-ready provisions included as Appendix RA of this code shall be applicable to new construction of one- and two-family dwelling and townhouses. Although solar systems are not required to be installed, it is required the space(s) for installing such systems, providing pathways for connections and requiring adequate structural capacity of roof systems to support them.

**R404.3 Environmental Luminaries.** Any luminary or sign on building with illumination shall be replaced with full-cutoff lamps and shall comply with the Reglamento para el Control y la Prevención de la Contaminación Lumínica issued by the Puerto Rico Environmental Quality Board.

## SECTION R406 - ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

**R406.4 ERI-based compliance.** Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to the appropriate value indicated in Table R406.4 when compared to the ERI reference design.

TABLE R406.4  
MAXIMUM ENERGY RATING INDEX

CLIMATE ZONE	ENERGY RATING INDEX <sup>a</sup>
1	57

## CHAPTER 5 [RE] – EXISTING BUILDINGS

### SECTION R501 - GENERAL

**R501.4 Compliance.** *Alterations, repairs, additions* and changes of occupancy to, or relocation of, existing *buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and changes of occupancy or relocation, respectively, in this code and the *Puerto Rico Building Code, Puerto Rico Existing Building Code, Puerto Rico Fire Code, Puerto Rico Fuel Gas Code, Puerto Rico Mechanical Code, Puerto Rico Plumbing Code, Puerto Rico Private Sewage Disposal Code, NFPA 70* and the Puerto Rico Electric Power Authority’s Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## CHAPTER 6 [RE] – REFERENCE STANDARDS

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### PREPA

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
R501.4

8915-2017: Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
R501,4

8916-2017: Reglamcnto para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica\_y Participar en los Programas de Medición Neta  
R501.4

8786-2016: Reglamento para el Control y la Prevención de la Contaminación Lumínica  
R404.3

## **APPENDIX RA – Solar Ready Provisions - Detached One and Two-Family Dwelling and Townhouses**

### **SECTION RA103 - SOLAR-READY ZONE**

**RA103.1 General.** New detached one- and two-family dwellings, and townhouses with not less than 600 square feet (55.74 m<sup>2</sup>) of roof area oriented between 110 degrees and 270 degrees of true north shall comply with Sections RA103.2 through RA103.8.

**Exceptions:**

1. New residential buildings with a permanently Installed on-site renewable energy System.
2. A building with a solar-ready zone that is shaded for more than 70 percent of daylight hours annually.
3. Low income housing units.

**RA103.2 Construction document requirements for solar-ready zone.** Construction documents shall indicate the solar-ready zone.

**RA103.3 Solar-ready zone area.** The total solar-ready zone area shall be not less than 300 square feet (27.87 m<sup>2</sup>) exclusive of mandatory access or set back areas as required by the Puerto Rico Fire Code. New townhouses three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 square feet (185.8 m<sup>2</sup>) per dwelling shall have a solar-ready zone area of not less than 150 square feet (13.94 m<sup>2</sup>). The solar-ready zone shall be composed of areas not less than 5 feet (1524 mm) in width and not less than 80 square feet (7.44 m<sup>2</sup>) exclusive of access or set back areas as required by the Puerto Rico Fire Code.

**RA103.4 Obstructions.** Solar-ready zones shall be free from obstructions, including but not limited to vents, chimneys, and roof-mounted equipment.

**RA103.5 Roof load documentation.** The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

**RA103.6 Interconnection pathway.** Construction documents shall indicate pathways for routing of conduit or plumbing from the solar-ready zone to the electrical service panel or service hot water system.

**RA103.6.1** Installation of a 5"x 5"x2 1/2" junction box connected to the Main meter box by a 1" PVC empty conduit. The junction box shall have a waterproof cover for a future disconnect switch. Location must be accessible to Puerto Rico Electric Power Authority (PREPA) personnel.

**RA103.6.2** Installation of a 1" PVC empty conduit from the 1/2" junction box to roof level at location where Solar systems will be located. Empty PVC pipe will be installed with pull wire for future installation of cables, properly capped and sealed 6" above roof deck.

**RA103.6.3** (optional) Installation of a 1/2" PVC empty conduit from roof to ground level, properly capped and sealed for future installation of ground.

**RA103.7 Electrical service reserved space.** The main electrical service panel shall have a reserved space to allow installation of a dual pole circuit breaker for future solar electric installation and shall be labeled "For Future Solar Electric." The reserved space shall be positioned at the opposite (load) end from the input feeder location or main circuit location.

**RA103.8 Construction documentation certificate.** A permanent certificate, indicating the solar-ready zone and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.



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PUERTO RICO CODES

# PREBC

Puerto Rico Existing Building Code







# **PUERTO RICO EXISTING BUILDING CODE 2018**

## **As amended from INTERNATIONAL EXISTING BUILDING CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## PART 1 SCOPE AND APPLICATION

### SECTION 101 - GENERAL

[A]101.1 **Title.** These regulations shall be known as the *Puerto Rico Existing Building Code*, hereinafter referred to as “this code.”

[A]101.2 **Scope.** The provisions of this code shall apply to the *repair, alteration, change of occupancy, addition* to and relocation of *existing buildings*.

**Exception:** Detached one and two-family *dwellings* and multiple single-family *dwellings* (*townhouses*) not more than three *stories above grade plane* in height with a separate *means of egress*, and their accessory structures not more than three *stories above grade plane* in height, shall comply with this code or the *Puerto Rico Residential Code*.

[A]101.3 **Intent.** The intent of this code is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety and welfare insofar as they are affected by the *repair, alteration, change of occupancy, addition* and relocation of *existing buildings*.

[A]101.4 **Applicability.** This code shall apply to the *repair, alteration, change of occupancy, addition* and relocation of *existing buildings*, regardless of occupancy, subject to the criteria of Sections 101.4.1 and 101.4.2.

[A]101.4.1 **Buildings not previously occupied.** A building or portion of a building that has not been previously occupied or used for its intended purpose, in accordance with the laws in existence at the time of its completion, shall be permitted to comply with the provisions of the laws in existence at the time of its original permit unless such permit has expired. Subsequent permits shall comply with the *Puerto Rico Building Code* or *Puerto Rico Residential Code*, as applicable, for new construction.

[A]101.4.2 **Buildings previously occupied.** The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the *Puerto Rico Fire Code*, or as is deemed necessary by the *code official* for the general safety and welfare of the occupants and the public.

[A]101.5 **Safeguards during construction.** Construction work covered in this code, including any related demolition, shall comply with the requirements of Chapter 15.

[A]101.6 **Appendices.** The *code official* is authorized to require retrofit of buildings, structures or individual structural members in accordance with the appendices of this code if such appendices have been individually adopted.

**[A]101.7 Correction of violations of other codes.** *Repairs* or *alterations* mandated by any property, housing, or fire safety maintenance code or mandated by any licensing rule or ordinance adopted pursuant to law shall conform only to the requirements of that code, rule, or ordinance and shall not be required to conform to this code unless the code requiring such *repair* or *alteration* so provides.

## **SECTION 102 - APPLICABILITY**

**[A]102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where in any specific case different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**[A]102.2 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state, or federal law.

**[A]102.3 Application of references.** References to chapter or section numbers or to provisions not specifically identified by number shall be construed to refer to such chapter, section, or provision of this code.

**[A]102.4 Referenced codes and standards.** The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.

**Exception:** Where enforcement of a code provision would violate the conditions of the listing of the equipment or appliance, the conditions of the listing shall govern.

**[A]102.4.1 Conflicts.** Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

**[A]102.4.2 Conflicting provisions.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

**[A]102.5 Partial invalidity.** In the event that any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation* and the *Puerto Rico Building Code*.

## SECTION 103 – BUILDING ENFORCEMENT AGENCIES

[A]103.1 **Creation of enforcement agency.** Act 161 – 2009, as amended, designated the *Permit Management Office, Puerto Rico Planning Board*, and Autonomous Municipalities with I to V granted Hierarchy, as building enforcement authorities.

[A]103.1.1 The appointed Auxiliary Secretary of the Permits Management Office shall be known as the *building official*.

[A]103.2 **Appointment.** The *code official* shall be appointed by the chief appointing authority of Puerto Rico.

[A]103.3 **Deputies.** In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the *code official* shall have the authority to appoint a deputy *code official*, the related technical officers, inspectors, plan examiners, and other employees. Such employees shall have powers as delegated by the *code official*.

## SECTION 104 - DUTIES AND POWERS OF CODE OFFICIAL

[A]104.1 **General.** The *code official* is hereby authorized and directed to enforce the provisions of this code. The *code official* shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies, and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

[A]104.2 **Applications and permits.** The *code official* shall receive applications, review construction documents, and issue permits for the *repair, alteration, addition, demolition, change of occupancy*, and relocation of buildings; inspect the premises for which such permits have been issued; and enforce compliance with the provisions of this code.

[A]104.2.1 **Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas.** For applications for reconstruction, rehabilitation, repair, *alteration, addition* or other improvement of *existing buildings* or structures located in *flood hazard areas*, the building official shall determine where the proposed work constitutes *substantial improvement* or repair of *substantial damage*. Where the building official determines that the proposed work constitutes substantial improvement or repair of *substantial damage*, and where required by this code, the building official shall require the building to meet the requirements of Section 1612 of the *Puerto Rico Building Code*.

[A]104.2.2 **Preliminary meeting.** When requested by the permit applicant or the *code official*, the *code official* shall meet with the permit applicant prior to the application for a construction permit to discuss plans for the proposed work or *change of occupancy* in order to establish the specific applicability of the provisions of this code.

**Exception:** *Repairs and Level 1 alterations.*

**[A]104.2.2.1 Building evaluation.** The *code official* is authorized to require an *existing building* to be investigated and evaluated by a registered design professional based on the circumstances agreed on at the preliminary meeting. The design professional shall notify the *code official* if any potential noncompliance with the provisions of this code is identified.

**[A]104.3 Notices and orders.** The *code official* shall issue necessary notices or orders to ensure compliance with this code.

**[A]104.4 Inspections.** The *code official* shall make the required inspections or receive certified reports of inspections made by the *designated inspector*, and the *code official* shall have the authority to accept reports of inspection by *approved* agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The *code official* is authorized to engage such expert opinion as deemed necessary to report on unusual technical issues that arise, subject to the approval of the appointing authority.

**[A]104.5 Identification.** The *code official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

**[A]104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *code official* has reasonable cause to believe that there exists in a structure or on a premises a condition that is contrary to or in violation of this code that makes the structure or premises *unsafe, dangerous, or hazardous*, the *code official* is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises be unoccupied, the *code official* shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the structure or premises and request entry. If entry is refused, the *code official* shall have recourse to the remedies provided by law to secure entry.

**[A]104.7 Department records.** The *code official* shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

**[A]104.8 Liability.** The *code official*, member of the *interpretive advisory* Board of Code Revisions, or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**[A]104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representatives of the jurisdiction until the final termination of the proceedings. The *code official* or any subordinate shall not be liable for cost in any action, suit, or proceeding that is instituted in pursuance of the provisions of this code.

**[A]104.9 Approved materials and equipment.** Materials, equipment, and devices *approved* by the *code official* as established in the construction documents shall be constructed and installed in accordance with such approval.

**[A]104.9.1 Used materials and equipment.** The use of used materials that meet the requirements of this code for new materials is permitted. Used equipment and devices shall be permitted to be reused subject to the approval of the *code official*, as established in the construction documents.

**[A]104.10 Modifications.** Wherever there are practical difficulties involved in carrying out the provisions of this code, the *code official* shall have the authority to grant modifications for individual cases on application of the owner with the approval of the *registered design professional*, provided that the *code official* shall first find that special individual reason makes the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code and such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the *OGPe-DDEC*.

**[A]104.10.1 Flood hazard areas.** For *existing buildings* located in *flood hazard areas* for which *repairs, alterations* and *additions* constitute *substantial improvement*, the *code official* shall not grant modifications to provisions related to flood resistance unless a determination is made that:

1. The applicant has presented good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render compliance with the flood-resistant construction provisions inappropriate.
2. Failure to grant the modification would result in exceptional hardship.
3. The granting of the modification will not result in increased flood heights, additional threats to public safety, extraordinary public expense nor create nuisances, cause fraud on or victimization of the public or conflict with existing laws or ordinances.
4. The modification is the minimum necessary to afford relief, considering the flood hazard.
5. A written notice will be provided to the applicant specifying, if applicable, the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation and that construction below the design flood elevation increases risks to life and property.

**[A]104.11 Alternative materials, design and methods of construction, and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design, or method of construction shall be *approved* where the *code official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method, or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not *approved*, the *code official* shall respond in writing, stating the reasons why the alternative was not *approved*.

**[A]104.11.1 Research reports.** Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from *approved* sources.

**[A]104.11.2 Tests.** Where there is insufficient evidence of compliance with the provisions of this code or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the *code official* shall have the authority to require tests as evidence of compliance to be made without expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the *code official* shall approve the testing procedures. Tests shall be performed by an *approved* agency. Reports of such tests shall be retained by the *code official* for the period required for retention.

## SECTION 105 PERMITS

**[A]105.1 Required.** Any owner or owner's authorized agent who intends to repair, add to, alter, relocate, demolish, or change the occupancy of a building or to repair, install, add, alter, remove, convert, or replace any electrical, gas, mechanical, or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the *code official* and obtain the required permit.

**[A]105.1.1 Annual permit.** Instead of an individual permit for each *alteration* to an already *approved* electrical, gas, mechanical, or plumbing installation, the *code official* is authorized to issue an annual permit on application therefor to any person, firm, or corporation regularly employing one or more qualified trade persons in the building, structure, or on the premises owned or operated by the applicant for the permit.

**[A]105.1.2 Annual permit records.** The person to whom an annual permit is issued shall keep a detailed record of *alterations* made under such annual permit. The *code official* shall have access to such records at all times, or such records shall be filed with the *code official* as designated.

**[A]105.2 Work exempt from permit.** Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the



provisions of this code or any other laws or ordinances of this jurisdiction. Permits shall not be required for the works detailed in Rule 3.2.4 of *Joint Regulation*.

**[A]105.2.1 Emergency repairs.** Where equipment replacements and *repairs* must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the *code official*.

**[A]105.2.2 Repairs.** Application or notice to the *code official* is not required for *repairs* to structures and items listed in Section 105.2 provided that such *repairs* do not include any of the following:

1. The cutting away of any wall, partition, or portion thereof.
2. The removal or cutting of any structural beam or load-bearing support.
3. The removal or change of any required means of egress or rearrangement of parts of a structure affecting the egress requirements.
4. Any *addition* to, *alteration* of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent, or similar piping, or electric wiring.
5. Mechanical or other work affecting public health or general safety.

**[A]105.2.3 Public service agencies.** A permit shall not be required for the installation, *alteration*, or *repair* of generation, transmission, distribution, or metering or other related equipment that is under the ownership and control of public service agencies by established right.

**[A]105.3 Application for permit.** To obtain a permit, the applicant shall first file an application, as established by the *Joint Regulation*. Such application shall:

1. Identify and describe the work in accordance with Chapter 3 to be covered by the permit for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address, or similar description that will readily identify and definitely locate the proposed building or work.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by construction documents and other information as required in Section 106.3.
5. State the valuation of the proposed work.
6. Be signed by the applicant or the applicant's authorized agent.
7. Give such other data and information as required by the *code official*.

**[A]105.3.1 Action on application.** The *code official* shall examine or cause to be examined applications for permits and amendments thereto within the time established by the *Joint Regulation*. If the application or the construction documents do not conform to the requirements of pertinent laws, the *code official* shall reject such application in writing, stating the reasons therefor. If the *code official* is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the *code official* shall issue a permit therefor as soon as practicable.

**[A]105.3.2 Time limitation of application.** An application for a permit for any proposed work shall be deemed to have been abandoned as established by the *Joint Regulation* unless such application has been pursued in good faith or a permit has been issued; except that the *code official* is authorized to grant one or more extensions of time. The extension shall be requested in writing and justifiable cause demonstrated.

**[A]105.4 Validity of permit.** The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the *code official* from requiring the correction of errors in the construction documents and other data. The *code official* is authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of Puerto Rico.

**[A]105.5 Expiration.** Every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 180 days after its issuance, or if the work authorized on the site by such permit is suspended or abandoned as established by the *Joint Regulation*. The *code official* is authorized to grant, in writing, one or more extensions of time. The extension shall be requested in writing through the digital system and justifiable cause demonstrated.

**[A]105.6 Suspension or revocation.** The *code official* is authorized to suspend or revoke a permit issued under the provisions of the Act 161-2009, as amended and as established by the *Joint Regulation*.

**[A]105.7 Placement of permit.** The building permit or copy shall be kept on the site of the work until the completion of the project, as established by the *Joint Regulation*.

## **SECTION 106 - CONSTRUCTION DOCUMENTS**

**[A]106.1 General.** Submittal documents consisting of construction documents, special inspection and structural observation programs, investigation and evaluation reports, and other data shall be submitted in digital form with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of Puerto Rico. Where special conditions exist, the *code official* is authorized to require additional construction documents to be prepared by a registered design professional.

**Exception:** The *code official* is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this code, as established by the *Joint Regulation*.

**[A]106.2 Construction documents.** Construction documents shall be in accordance with Sections 106.2.1 through 106.2.6.

**[A]106.2.1 Construction documents.** Construction documents shall be dimensioned and drawn on suitable material. Electronic media documents are permitted to be submitted where *approved* by the *code official*. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the *code official*, and as established by the *Joint Regulation*. The *work areas* shall be shown.

**[A]106.2.2 Fire protection system(s) shop drawings.** Shop drawings for the fire protection system(s) shall be submitted to indicate compliance with this code and the construction documents and shall be *approved* prior to the start of system installation. Shop drawings shall contain information as required by the referenced installation standards in Chapter 9 of the *Puerto Rico Building Code*.

**[A]106.2.3 Means of egress.** The construction documents for *Alterations—Level 2, Alterations—Level 3, additions and changes of occupancy* shall show in sufficient detail the location, construction, size and character of all portions of the means of egress in compliance with the provisions of this code. The construction documents shall designate the number of occupants to be accommodated in every *work area* of every floor and in all affected rooms and spaces.

**[A]106.2.4 Exterior wall envelope.** Construction documents for work affecting the exterior wall envelope shall describe the exterior wall envelope in sufficient detail to determine compliance with this code. The construction documents shall provide details of the exterior wall envelope as required, including windows, doors, flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane, and details around openings.

The construction documents shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the wind and weather resistance of the exterior wall envelope. The supporting documentation shall fully describe the exterior wall system that was tested, where applicable, as well as the test procedure used.

**[A]106.2.5 Exterior balconies and elevated walking surfaces.** Where the scope of work involves balconies or other elevated walking surfaces exposed to water from direct or blowing rain, snow or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer's installation instructions.

**[A]106.2.6 Site plan.** The construction documents submitted with the application for permit shall be accompanied by a site plan showing to scale the size and location of new construction and *existing structures* on the site, distances from lot lines, the established street grades, and the proposed finished grades; and it shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished

and the location and size of *existing structures* and construction that are to remain on the site or plot, as established by the *Joint Regulation*.

**[A]106.3 Examination of documents.** The *code official* shall examine or cause to be examined the submittal documents and shall ascertain by such examinations whether the construction or occupancy indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

**[A]106.3.1 Approval of construction documents.** Where the *code official* issues a permit, the construction documents shall be *approved* in writing or by digital stamp as “Reviewed for Code Compliance.” One set of construction documents in digital format, so reviewed, shall be retained by the *code official* and a copy shall be returned to the applicant. A printed copy shall be kept at the site of work, and shall be open to inspection by the *code official* or a duly authorized representative.

**[A]106.3.2 Previous approval.** This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been issued and the construction of which has been pursued in good faith with this Code, and the *Joint Regulation*

**[A]106.3.3 Phased approval.** The *code official* is authorized to issue a permit for the construction of foundations or any other part of a building before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

**[A]106.3.4 Deferred submittals.** Deferral of any submittal items shall have the prior approval of the *code official*. The *registered design professional in responsible charge* shall list the *deferred submittals* on the construction documents for review by the *code official*

Submittal documents for *deferred submittal* items shall be submitted to the *registered design professional in responsible charge* who shall review them and forward them to the *code official* with a notation indicating that the *deferred submittal* documents have been reviewed and that they have been found to be in general conformance to the design of the building. The *deferred submittal* items shall not be installed until their *deferred submittal* documents have been *approved* by the *code official*.

**[A]106.4 Amended construction documents.** Work shall be installed in accordance with the reviewed construction documents, and any changes made during construction that are not in compliance with the *approved* construction documents shall be resubmitted for approval as an amended set of construction documents.

**[A]106.5 Retention of construction documents.** A digital set of *approved* construction documents shall be retained by the *code official*, as established by the *Joint Regulation*.

**[A]106.6 Design professional in responsible charge and *Designated Inspector*.** Registered Design Professionals and *Designated Inspectors* shall comply with all applicable laws in Puerto Rico, including Act 135 of June 15, 1967 with amendments and Act 7 of July 19, 1985 with amendments in the certification process and the *Joint Regulation*. Where it is required that documents be prepared by a registered design professional, the *code official* shall be authorized to require the owner or the owner's authorized agent to engage and designate on the building permit application a registered design professional who shall act as the *registered design professional in responsible charge*. If the circumstances require, the owner or the owner's authorized agent shall designate a substitute *registered design professional in responsible charge* who shall perform the duties required of the original *registered design professional in responsible charge*. The *code official* shall be notified in writing by the owner or the owner's authorized agent if the *registered design professional in responsible charge* is changed or is unable to continue to perform the duties and the owner and the new registered design professionals shall comply with the requirements established in the *Joint Regulation*. The *registered design professional in responsible charge* shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and *deferred submittal* items, for compatibility with the design of the building. Where structural observation is required, the inspection program shall name the individual or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur.

## **SECTION 107 - TEMPORARY STRUCTURES AND USES**

**[A]107.1 General.** The *code official* is authorized to issue a permit for temporary uses. Such permits shall be limited as to time of service, as established by the *Joint Regulation*

**[A]107.2 Conformance.** Temporary uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of this code and the *Joint Regulation*, as necessary to ensure the public health, safety and general welfare.

**[A]107.3 Temporary power.** The *code official* is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70 and the *Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**[A]107.4 Termination of approval.** The *code official* is authorized to terminate such permit for a temporary use and to order the temporary use to be discontinued.

## SECTION 108 - FEES

[A]108.1 **Payment of fees.** A permit shall not be valid until the fees prescribed by law have been paid. Nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

[A]108.2 **Schedule of permit fees.** On buildings, electrical, gas, mechanical, and plumbing systems or *alterations* requiring a permit, a fee for each permit shall be paid as required in accordance with the schedule as established by the applicable governing authority.

[A]108.3 **Building permit valuations.** The applicant for a permit shall provide an estimated permit value at time of application, as established by the *Joint Regulation*. Permit valuations shall include total value of work including materials and labor for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment, and permanent systems. If, in the opinion of the *code official*, the valuation is underestimated on the application, the permit shall be denied unless the applicant can show detailed estimates to meet the approval of the *code official*. Final building permit valuation shall be set by the *code official*.

[A]108.4 **Work commencing before permit issuance.** Any person who commences any work before obtaining the necessary permits shall be subject to an additional fee established by the *code official* that shall be in addition to the required permit fees.

[A]108.5 **Related fees.** The payment of the fee for the construction, *alteration*, removal, or demolition of work done in connection to or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

[A]108.6 **Refunds.** The *code official* is authorized to establish a refund policy.

## SECTION 109 - INSPECTIONS

[A]109.1 **General.** Construction or work for which a permit is required shall be subject to inspection by the *designated inspector* and the *code official*, and such construction or work shall remain visible and able to be accessed for inspection purposes until *approved*. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the permit applicant to cause the work to remain visible and able to be accessed for inspection purposes. Neither the *code official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

[A]109.2 **Preliminary inspection.** Before issuing a permit, the *code official* is authorized to examine or cause to be examined buildings and sites for which an application has been filed.

[A]109.3 **Required inspections.** The *designated inspector* and the *code official*, on notification, shall make the inspections set forth in Sections

109.3.1 through 109.3.10.

**[A]109.3.1 Footing or foundation inspection.** Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready-mixed in accordance with ASTM C94, the concrete need not be on the job.

**[A]109.3.2 Concrete slab or under-floor inspection.** Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories, and other ancillary equipment items are in place but before any concrete is placed or floor sheathing installed, including the subfloor.

**[A]109.3.3 Lowest floor elevation.** For *additions* and *substantial improvements* to *existing buildings* in *flood hazard areas*, on placement of the lowest floor, including basement, and prior to further vertical construction, the elevation documentation required in the *Puerto Rico Building Code* shall be submitted to the *code official*.

**[A]109.3.4 Frame inspection.** Framing inspections shall be made after the roof deck or sheathing, framing, fire blocking, and bracing are in place and pipes, chimneys, and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes, and ducts are *approved*.

**[A]109.3.5 Lath or gypsum board inspection.** Lath and gypsum board inspections shall be made after lathing and gypsum board, interior and exterior, is in place but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.

**Exception:** Gypsum board that is not part of a fire-resistance-rated assembly or a shear assembly.

**[A]109.3.6 Weather-exposed balcony and walking surface waterproofing.** Where the scope of work involves balconies or other elevated walking surfaces exposed to water from direct or blowing rain, snow or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and *approved*.

**Exception:** Where special inspections are provided in accordance with Section 1705.1.1, Item 3, of the *Puerto Rico Building Code*.

**[A]109.3.7 Fire and smoke-resistant penetrations.** Protection of joints and penetrations in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and *approved*.

**[A]109.3.8 Other inspections.** In addition to the inspections specified in Sections 109.2 through 109.3.7, the *code official* is authorized to make or require other inspections of any

construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the building enforcement agencies.

**[A]109.3.9 Special inspections.** Special inspections shall be required in accordance with the *Puerto Rico Building Code*.

**[A]109.3.10 Final inspection.** The final inspection shall be made after work required by the building permit is completed.

**[A]109.4 Inspection agencies.** The *code official* is authorized to accept reports of *approved* inspection agencies, provided that such agencies satisfy the requirements as to qualifications and reliability, as established by the *Joint Regulation*.

**[A]109.5 Inspection requests.** It shall be the duty of the holder of the building permit or their duly authorized agent to notify the *code official and the designated inspector* when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for any inspections of such work that are required by this code.

**[A]109.6 Approval required.** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the *code official*. The *code official* and/or the *designated inspector*, on notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the *code official*.

## SECTION 110 - CERTIFICATE OF OCCUPANCY

**[A]110.1 Change of occupancy.** Altered areas of a building and relocated buildings shall not be used or occupied, and *change of occupancy* of a building or portion thereof shall not be made until the *code official* has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of Puerto Rico

**[A]110.2 Certificate issued.** After the *code official* inspects the building and does not find violations of the provisions of this code or other laws that are enforced by the *Permits Management Office and the Puerto Rico Planning Board*, the *code official* shall issue a certificate of occupancy that contains the following:

1. The permit number.
2. The address of the structure.
3. The name and address of the owner or the owner's authorized agent.
4. A description of that portion of the structure for which the certificate is issued.



5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
6. The name of the *building official*.
7. The edition of the code under which the permit was issued.
8. The use and occupancy in accordance with the provisions of the *Puerto Rico Building Code*.
9. The type of construction as defined in the *Puerto Rico Building Code*.
10. The design occupant load and any impact the *alteration* has on the design occupant load of the area not within the scope of the work.
11. If fire protection systems are provided, whether the fire protection systems are required.
12. Any special stipulations and conditions of the building permit.

**[A]110.3 Temporary occupancy.** The *code official* is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. The *code official* shall set a time period during which the temporary certificate of occupancy is valid.

**[A]110.4 Revocation.** The *code official* is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code wherever the certificate is issued in error or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code and the *Joint Regulation*.

## SECTION 111 - SERVICE UTILITIES

**[A]111.1 Connection of service utilities.** A person shall not make connections from a utility, source of energy, fuel, or power to any building or system that is regulated by this code for which a permit is required, until *approved* by the *code official*.

**[A]111.2 Temporary connection.** The *code official* shall have the authority to authorize the temporary connection of the building or system to the utility source of energy, fuel, or power.

**[A]111.3 Authority to disconnect service utilities.** The *code official* and the *government agencies with jurisdiction* shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 111.1 or 111.2. The *code official* shall notify the the *government agencies with jurisdiction* and, wherever possible, the owner or the owner's authorized agent and the occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.

## SECTION 112 - INTERPRETIVE ADVISORY BOARD

[A]113.1 **General.** An interpretive advisory board is created to advise the *building official* and/or the *administrative judge*. This interpretive advisory board shall be appointed by the Auxiliary Secretary of *OGPe-DDEC* to issue and handle binding recommendations on interpretive matters relating to aspects of this code, including its application and implementation.

The *administrative judge* may also require an interpretation from the board when a revision is requested where the application of the required code is in question.

[A]113.2 **Limitations on authority.** Request for interpretative revision shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

[A]112.3 **Qualifications.** The *interpretive advisory* board of code revisions shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction.

## SECTION 113 - VIOLATIONS

[A]113.1 **Unlawful acts.** It shall be unlawful for any person, firm, or corporation to *repair*, alter, extend, add, move, remove, demolish, or change the occupancy of any building or equipment regulated by this code or cause same to be done in conflict with or in violation of any of the provisions of this code.

[A]113.2 **Notice of violation.** The *code official* is authorized to serve a notice of violation or order on the person responsible for the *repair*, *alteration*, extension, *addition*, moving, removal, demolition, or change in the occupancy of a building in violation of the provisions of this code or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

[A]113.3 **Prosecution of violation.** If the notice of violation is not complied with promptly, the *code official* is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct, or abate such violation or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

[A]113.4 **Violation penalties.** Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who *repairs* or alters or changes the occupancy of a building or structure in violation of the approved construction documents or directive of the *code official* or of a permit or certificate issued under the provisions of this code shall be subject to penalties as prescribed by law.

## SECTION 114 - STOP WORK ORDER

[A]114.1 **Authority.** Where the *code official* finds any work regulated by this code being performed in a manner contrary to the provisions of this code or in a *dangerous* or *unsafe* manner, the *code official* is authorized to issue a stop work order, as stated in the Act 161-2009, as amended.

[A]114.2 **Issuance.** The stop work order shall be in writing and shall be given to the owner of the property involved, the owner's authorized agent or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work will be permitted to resume.

[A]114.3 **Unlawful continuance.** Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or *unsafe* condition, shall be subject to penalties as prescribed by law.

## SECTION 115 - UNSAFE BUILDINGS AND EQUIPMENT

[A]115.1 **Conditions.** Buildings, structures or equipment that are or hereafter become *unsafe*, shall be taken down, removed or made safe as the *code official* deems necessary and as provided for in this code.

[A]115.2 **Record.** The *code official* shall cause a report to be filed on an *unsafe* condition. The report shall state the occupancy of the structure and the nature of the *unsafe* condition.

[A]115.3 **Notice.** If an *unsafe* condition is found, the *code official* shall serve on the owner, the owner's authorized agent or person in control of the structure a written notice that describes the condition deemed *unsafe* and specifies the required *repairs* or improvements to be made to abate the *unsafe* condition, or that requires the *unsafe* building to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the *code official* acceptance or rejection of the terms of the order.

[A]115.4 **Method of service.** Such notice shall be deemed properly served if a copy thereof is delivered to the owner or the owner's authorized agent personally; sent by certified or registered mail addressed to the owner or the owner's authorized agent at the last known address with the return receipt requested; or delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner on the owner's authorized agent or on the person responsible for the structure shall constitute service of notice on the owner.

[A]115.5 **Restoration.** The building or equipment determined to be *unsafe* by the *code official* is permitted to be restored to a safe condition. To the extent that *repairs*, *alterations*, or *additions* are made or a *change of occupancy* occurs during the restoration of the building, such *repairs*, *alterations*, *additions*, or *change of occupancy* shall comply with the requirements of this code.

## SECTION 116 - EMERGENCY MEASURES

**[A]116.1 Imminent danger.** Where, in the opinion of the *code official*, there is imminent danger of failure or collapse of a building that endangers life, or where any building or part of a building has fallen and life is endangered by the occupation of the building, or where there is actual or potential danger to the building occupants or those in the proximity of any structure because of explosives, explosive fumes or vapors, or the presence of toxic fumes, gases, or materials, or operation of defective or dangerous equipment, the *code official* is hereby authorized and empowered to order and require the occupants to vacate the premises forthwith. The *code official* shall cause to be posted at each entrance to such structure a notice reading as follows: "This Structure Is Unsafe and Its Occupancy Has Been Prohibited by the Code Official." It shall be unlawful for any person to enter such structure except for the purpose of securing the structure, making the required *repairs*, removing the hazardous condition, or of demolishing the same.

**[A]116.2 Temporary safeguards.** Notwithstanding other provisions of this code, whenever, in the opinion of the *code official*, there is imminent danger due to an unsafe condition, the *code official* shall order the necessary work to be done, including the boarding up of openings, to render such structure temporarily safe whether or not the legal procedure herein described has been instituted; and shall cause such other action to be taken as the *code official* deems necessary to meet such emergency.

**[A]116.3 Closing streets.** Where necessary for public safety, the *code official* shall temporarily close structures and close or order the authority having jurisdiction to close sidewalks, streets, public ways, and places adjacent to *unsafe* structures, and prohibit the same from being utilized.

**[A]116.4 Emergency repairs.** For the purposes of this section, the *code official* shall employ the necessary labor and materials to perform the required work as expeditiously as possible.

**[A]116.5 Costs of emergency repairs.** Costs incurred in the performance of emergency work shall be paid by the owner.

**[A]116.6 Hearing.** Any person ordered to take emergency measures shall comply with such order forthwith. Any affected person shall thereafter, on petition directed to *OGPe-DDEC* as established to the Joint Regulation.

## SECTION 117 - DEMOLITION

**[A]117.1 General.** The *code official* shall order the owner or owner's authorized agent of any premises on which is located any structure that in the *code official's* judgment is so old or dilapidated, or has become so out of *repair* as to be *dangerous*, *unsafe*, insanitary or otherwise unfit for human habitation or occupancy, and such that it is unreasonable to *repair* the structure, to demolish and remove such structure; or if such structure is capable of being made safe by *repairs*, to *repair* and make safe and sanitary or to demolish and remove to the owner's or the

owner's authorized agent's option; or where there has been a cessation of normal construction of any structure for a period of more than two years, to demolish and remove such structure.

**[A]117.2 Notices and orders.** Notices and orders shall comply with Section 113.

**[A]117.3 Failure to comply.** If the owner or the owner's authorized agent of a premises fails to comply with a demolition order within the time prescribed, the *code official* shall cause the structure to be demolished and removed, either through an available public agency or by contract or arrangement with private persons, and the cost of such demolition and removal shall be charged against the real estate on which the structure is located and shall be a lien on such real estate.

**[A]117.4 Salvage materials.** Where any structure has been ordered demolished and removed, the governing body or other designated officer under said contract or arrangement aforesaid shall have the right to sell the salvage and valuable materials at the highest price obtainable. The net proceeds of such sale, after deducting the expenses of such demolition and removal, shall be promptly remitted with a report of such sale or transaction, including the items of expense and the amounts deducted, for the person who is entitled thereto, subject to any order of a court. If such a surplus does not remain to be turned over, the report shall so state.

## **CHAPTER 2 – DEFINITIONS**

### **SECTION 201 - GENERAL**

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the other *Puerto Rico Codes*, such terms shall have the meanings ascribed to them in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this chapter, such terms shall have ordinarily accepted meanings such as the context implies.

### **SECTION 202 – GENERAL DEFINITIONS**

**[A]ADDITION.** An extension or increase in floor area, number of stories, or height of a building or structure.

**[A]ADMINISTRATIVE JUDGE.** The director of the Administrative Revisions Division, as established by Act 161-2009, as amended.

[A]**ALTERATION.** Any construction or renovation to an *existing structure* other than a *repair* or *addition*.

[A]**APPROVED.** Acceptable to the *code official*.

[A]**BUILDING.** Any structure utilized or intended for supporting or sheltering any occupancy.

[A]**BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

[A]**CHANGE OF OCCUPANCY.** A change in the use of a building or a portion of a building that results in any of the following:

1. A change of occupancy classification.
2. A change from one group to another group within an occupancy classification.
3. Any change in use within a group for which there is a change in application of the requirements of this code.

[A]**CODE OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of this code.

[BS]**DANGEROUS.** Any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:

1. The building or structure has collapsed, has partially collapsed, has moved off its foundation, or lacks the necessary support of the ground.
2. There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under service loads.

[A]**DEFERRED SUBMITTAL.** Those portions of the design that are not submitted at the time of the application and that are to be submitted to the *code official* within a specified period.

**DESIGNATED INSPECTOR.** An individual who is licensed to practice the profession of Architecture or Engineering as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); appointed by the owner to make periodic inspections of the construction work for which a permit was issued by the building official to ascertain compliance with the approved construction documents and permit issued. The professional shall certify the required inspections before the building official issue the certificate of occupancy.

[BS]**DISPROPORTIONATE EARTHQUAKE DAMAGE.** A condition of earthquake-related damage where both of the following occur:

1. The 0.3-second spectral acceleration at the building site as estimated by the United States

Geological Survey for the earthquake in question is less than 40 percent of the mapped acceleration parameter SS.

2. The vertical elements of the lateral force-resisting system have suffered damage such that the lateral load carrying capacity of any story in any horizontal direction has been reduced by more than 10 percent from its pre-damage condition.

**EQUIPMENT OR FIXTURE.** Any plumbing, heating, electrical, ventilating, air conditioning, refrigerating, and fire protection equipment, and elevators, dumbwaiters, escalators, boilers, pressure vessels and other mechanical facilities or installations that are related to building services. Equipment or fixture shall not include manufacturing, production, or process equipment, but shall include connections from building service to process equipment.

**[A]EXISTING BUILDING.** A building erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

**[A]EXISTING STRUCTURE.** A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

**[A]FACILITY.** All or any portion of buildings, structures, site improvements, elements and pedestrian or vehicular routes located on a site.

**[BS]FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any year.
2. The area designated as a *flood hazard area* on a community's flood hazard map, or otherwise legally designated.

**GOVERNMENT AGENCIES WITH JURISDICTION.** Defined as "Entidad Gubernamental Concernida" in the *Joint Regulation*.

**[A]HISTORIC BUILDINGS OR PROPERTY.** Any building or structure site, object, place, location, district or zone, or collection of structures and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal governmental jurisdiction and as defined by the "Reglamento Conjunto para la Evaluación y Expedición de Permisos Relacionados al Desarrollo, Uso de Terrenos y Operación de Negocios (Reglamento Conjunto), según la Ley Número 161 De 2009, según enmendada". This includes historical buildings or properties:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic or having historic significance under an applicable state or local law, ordinance or resolution.

3. Designated as historic or having historic significance by the *Puerto Rico Planning Board* in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly.
4. Certified as a contributing or eligible resource within a National Register, state designated or locally designated historic district or zone.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)” as established by the Act No. 161 of December 1, 2009, “Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended”.

**[B]NONCOMBUSTIBLE MATERIAL.** A material that, under the conditions anticipated, will not ignite or burn when subjected to fire or heat. Materials that pass ASTM E136 are considered noncombustible materials.

**(OGPe-DDEC) Permits Management Office:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**PRIMARY FUNCTION.** A *primary function* is a major activity for which the facility is intended. Areas that contain a *primary function* include, but are not limited to, the customer services lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and other *work areas* in which the activities of the public accommodation or other private entity using the facility are carried out. Mechanical rooms, boiler rooms, supply storage rooms, employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a *primary function*.

**(PRPB) PUERTO RICO PLANNING BOARD -** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**[A]REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**[A]REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.** A registered design professional engaged by the owner or the owner’s authorized agent to review and coordinate certain aspects of the project, as determined by the *code official*, for compatibility with the design of the building or structure, including submittal documents prepared by others, *deferred submittal* documents and phased submittal documents.

**REHABILITATION.** Any work, as described by the categories of work defined herein,



undertaken in an *existing building*.

**RELOCATABLE BUILDING.** A partially or completely assembled building constructed and designed to be reused multiple times and transported to different building sites.

**[A]REPAIR.** The reconstruction, replacement or renewal of any part of an *existing building* for the purpose of its maintenance or to correct damage.

**[BS]REROOFING.** The process of recovering or replacing an existing roof covering. See “Roof recover” and “Roof replacement.”

**[BS]RISK CATEGORY.** A categorization of buildings and other structures for determination of flood, wind, snow, ice and earthquake loads based on the risk associated with unacceptable performance, as provided in Section 1604.5 of the *Puerto Rico Building Code*.

**[BS]ROOF COATING.** A fluid-applied adhered coating used for roof maintenance, *roof repair*, or as a component of a roof covering system or roof assembly.

**[BS]ROOF RECOVER.** The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

**[BS]ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purpose of correcting damage or restoring the predamage condition.

**[BS]ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

**[BS]SEISMIC FORCES.** The loads, forces and requirements prescribed herein, related to the response of the building to earthquake motions, to be used in the analysis and design of the structure and its components. Seismic forces are considered either full or reduced, as provided in Chapter 3.

**[BS]SUBSTANTIAL DAMAGE.** For the purpose of determining compliance with the flood provisions of this code, damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

**[BS]SUBSTANTIAL IMPROVEMENT.** For the purpose of determining compliance with the flood provisions of this code, any *repair, alteration, addition*, or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure, before the improvement or *repair* is started. If the structure has sustained *substantial damage*, any *repairs* are considered *substantial improvement* regardless of the actual *repair* work performed. The term does not, however, include either of the following:

1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the *code official* and that is the minimum

necessary to ensure safe living conditions.

2. Any *alteration* of a historic structure, provided that the *alteration* will not preclude the structure's continued designation as a historic structure.

**[BS]SUBSTANTIAL STRUCTURAL ALTERATION.**

An alteration in which the gravity load-carrying structural elements altered within a 5-year period support more than 30 percent of the total floor and roof area of the building or structure. The areas to be counted toward the 30 percent shall include mezzanines, penthouses, and in-filled courts and shafts tributary to the altered structural elements.

**[BS]SUBSTANTIAL STRUCTURAL DAMAGE.** A condition where any of the following apply:

1. The vertical elements of the lateral force-resisting system have suffered damage such that the lateral load carrying capacity of any story in any horizontal direction has been reduced by more than 33 percent from its predamage condition.
2. The capacity of any vertical component carrying gravity load, or any group of such components, that has a tributary area more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than 20 percent from its predamage condition, and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by the *Puerto Rico Building Code* for new buildings of similar structure, purpose and location.
3. The capacity of any structural component carrying snow load, or any group of such components, that supports more than 30 percent of the roof area of similar construction has been reduced more than 20 percent from its predamage condition, and the remaining capacity with respect to dead, live and snow loads is less than 75 percent of that required by the *Puerto Rico Building Code* for new buildings of similar structure, purpose and location.

**TECHNICALLY INFEASIBLE.** An *alteration* of a facility that has little likelihood of being accomplished because the existing structural conditions require the removal or *alteration* of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

**TEMPORARY POWER.** The code official is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**UNSAFE.** Buildings, structures or equipment that are unsanitary, or that are deficient due to inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or in which the structure or individual structural members meet the definition of “*Dangerous*,” or that are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed unsafe. A vacant structure that is not secured against entry shall be deemed unsafe.

**WORK AREA.** That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

## **CHAPTER 3 – PROVISIONS FOR ALL COMPLIANCE METHODS.**

No amendments

## **CHAPTER 4 – REPAIRS**

### **SECTION 406 - ELECTRICAL**

**406.1 Material.** Existing electrical wiring and equipment undergoing repair shall be allowed to be repaired or replaced with like equal or similar material, except for replacement of luminaries that shall comply with section 406.1.6.

**406.1.1 Receptacles.** Replacement of electrical receptacles shall comply with the applicable requirements of Section 406.4(D) of NFPA 70.

**406.1.2 Plug fuses.** Plug fuses of the Edison-base type shall be used for replacements only where there is no evidence of over fusing or tampering per applicable requirements of Section 240.51(B) of NFPA 70.

**406.1.3 Nongrounding-type receptacles.** For replacement of nongrounding-type receptacles with grounding type receptacles and for branch circuits that do not have an equipment grounding conductor in the branch circuitry, the grounding conductor of a grounding-type receptacle outlet shall be permitted to be grounded to any accessible point on the grounding electrode system or to any accessible point on the grounding electrode conductor in accordance with Section 250.130(C) of NFPA 70.

**406.1.4 Group I-2 receptacles.** Receptacles in patient bed locations of Group I-2 that are not “hospital grade” shall be replaced with “hospital grade” receptacles, as required by NFPA 99 and Article 517 of NFPA 70.

**406.1.5 Grounding of appliances.** Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers and outlet or junction boxes that are part of the existing

branch circuit for these appliances shall be permitted to be grounded to the grounded circuit conductor in accordance with Section 250.140 of NFPA 70.

**406.1.6 Luminaries.** Any luminary or sign on building with illumination shall be replaced with full-cutoff lamps and shall comply with the *Reglamento para el Control y la Prevención de la Contaminación Lumínica* issued by the Puerto Rico Environmental Quality Board.

## **CHAPTER 5 – PRESCRIPTIVE COMPLIANCE METHOD**

No amendments

## **CHAPTER 6 – CLASSIFICATION OF WORK**

### **SECTION 601 - GENERAL**

**601.1 Scope.** The provisions of this chapter shall be used in conjunction with Chapters 7 through 12 and shall apply to the *alteration, repair, addition and change of occupancy of existing structures*, including historic buildings, structures and properties, and moved structures, as referenced in Section 301.3.2. The work performed on an *existing building* shall be classified in accordance with this chapter.

## **CHAPTER 7 – ALTERATIONS—LEVEL 1 .**

No amendments

## **CHAPTER 8 – ALTERATIONS—LEVEL 2**

### **SECTION 807 - ELECTRICAL**

**807.1 New installations.** Newly installed electrical equipment and wiring relating to work done in any *work area* shall comply with all applicable requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code), except as provided for in Section 807.3. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**807.1.1 Conductors.** Electrical equipment and wiring in newly installed partitions and ceilings shall comply with all applicable requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail. Copper conductors shall be used in circuit conductors between the meter and the service panelboard and in branch circuits at residential occupancies.

## CHAPTER 9 – ALTERATIONS LEVEL 3.

No amendments

## CHAPTER 10 – CHANGE OF OCCUPANCY

### SECTION 1007 - ELECTRICAL

**1007.1 Special occupancies.** Where the occupancy of an *existing building* or part of an *existing building* is changed to one of the following special occupancies as described in NFPA 70, the electrical wiring and equipment of the building or portion thereof that contains the proposed occupancy shall comply with the applicable requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code), whether or not a *change of occupancy* group is involved:

1. Hazardous locations
2. Commercial garages, *repair* and storage
3. Aircraft hangars
4. Gasoline dispensing and service stations
5. Bulk storage plants
6. Spray application, dipping and coating processes
7. Health care facilities
8. Places of assembly
9. Theaters, audience areas of motion picture and television studios, and similar locations
10. Motion picture and television studios and similar locations
11. Motion picture projectors
12. Agricultural buildings

**1007.2 Unsafe conditions.** Where the occupancy of an *existing building* or part of an *existing building* is changed, all unsafe conditions shall be corrected without requiring that all parts of the electrical system comply with NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**1007.3 Service upgrade.** Where the occupancy of an *existing building* or part of an *existing building* is changed, electrical service shall be upgraded to meet the requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code) for the new occupancy. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## CHAPTER 11 – ADDITIONS

No amendments

## CHAPTER 12 – HISTORIC BUILDINGS

No amendments

## **CHAPTER 13 – PERFORMANCE COMPLIANCE METHODS**

No amendments

## **CHAPTER 14 – RELOCATED OR MOVED BUILDINGS**

No amendments

## **CHAPTER 15 – CONSTRUCTION SAFEGUARDS**

No amendments

## **CHAPTER 16 – REFERENCED STANDARDS**

### **PREPA**

**Puerto Rico Power Authority**

PO Box 364267

San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
[A]107.3, 807.1, 807.1.1, 1007.1, 1007.2, 1007.3

## **APPENDIX A – GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS**

No amendments

## **APPENDIX B – SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS FOR EXISTING BUILDINGS AND FACILITIES**

### **SECTION B101 - QUALIFIED HISTORICAL BUILDINGS AND FACILITIES**

**B101.1 General.** Qualified *historic buildings or properties* and facilities shall comply with Sections B101.2 through B101.5.

**B101.2 Qualified historic buildings or properties and facilities.** These procedures shall apply to buildings and facilities designated as historic structures that undergo *alterations* or a *change of occupancy*.

**B101.3 Qualified historic buildings or properties and facilities subject to Section 106 of the National Historic Preservation Act. ...**

**B101.4 Qualified historic buildings and facilities not subject to Section 106 of the National Historic Preservation Act.** Where an *alteration* or *change of occupancy* is undertaken to a qualified *historic building* or facility that is not subject to Section 106 of the National Historic Preservation Act, and the entity undertaking the *alterations* believes that compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, the entity shall consult with the state government preservation program, Instituto de Cultura Puertorriqueña. .Where the state government preservation program, Instituto de Cultura Puertorriqueña determines that compliance with the accessibility requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historical significance of the building or facility, the alternative requirements of Section 305.9 for that element are permitted.

## **APPENDIX C – GUIDELINES FOR THE WIND RETROFIT OF EXISTING BUILDINGS**

No amendments

## **RESOURCE A – GUIDELINES ON FIRE RATINGS OF ARCHAIC MATERIALS AND ASSEMBLIES**

No amendments





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PUERTO RICO CODES

# PRPSDC

Puerto Rico Private Sewage Disposal Code





# **PUERTO RICO PRIVATE SEWAGE DISPOSAL CODE 2018**

## **As amended from INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## PART 1 - SCOPE AND APPLICATION

### SECTION 101 - GENERAL

**[A]101.1 Title.** These regulations shall be known as the *Puerto Rico Private Sewage Disposal Code*, hereinafter referred to as “this code.”

**[A]101.2 Scope.** Septic tank and effluent absorption systems or other treatment tank and effluent disposal systems shall be permitted where a public sewer is not available to the property served. Unless specifically approved, the *private sewage disposal system* of each building shall be entirely separate from and independent of any other building. The use of a common system or a system on a parcel other than the parcel where the structure is located shall be subject to the full requirements of this code as for systems serving public buildings and any other applicable state or federal regulation.

**[A]101.2.1 Appendices.** Provisions in the appendices shall not apply unless specifically adopted.

**[A]101.3 Public sewer connection.** Where public sewers become available to the premises served, the use of the *private sewage disposal system* shall be discontinued within that period of time required by law, but such period shall not exceed one year. The building sewer shall be disconnected from the *private sewage disposal system* and connected to the public sewer.

**[A]101.4 Abandoned systems.** Abandoned *private sewage disposal systems* shall be plugged or capped in an approved manner. Abandoned treatment tanks and *seepage pits* shall have the contents pumped and discarded in an approved manner. The top or entire tank shall be removed and the remaining portion of the tank or excavation shall be filled immediately.

**[A]101.5 Failing system.** When a *private sewage disposal system* fails or malfunctions, the system shall be corrected or use of the system shall be discontinued within that period of time required by the code official, but such period shall not exceed one year.

**[A]101.5.1 Failure.** A failing *private sewage disposal system* shall be one causing or resulting in any of the following conditions:

1. The failure to accept sewage discharge and backup of sewage into the structure served by the *private sewage disposal system*.
2. The discharge of sewage to the surface of the ground or to a drain tile.
3. The discharge of sewage to any surface or ground water.
4. The introduction of sewage into saturation zones adversely affecting the operation of a *private sewage disposal system*.

**[A]101.6 Intent.** The purpose of this code is to establish minimum standards to provide a reasonable level of safety health, property protection and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of *private sewage disposal systems*.

**[A]101.7 Severability.** If any section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

## **SECTION 102 – APPLICABILITY**

**[A]102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**[A]102.2 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**[A]102.3 Application of references.** Reference to chapter section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

**[A]102.4 Existing installations.** *Private sewage disposal systems* lawfully in existence at the time of the adoption of this code shall be permitted to have their use and maintenance continued if the use, maintenance or repair is in accordance with the original design and no hazard to life, health or property is created by the system.

**[A]102.5 Maintenance.** *Private sewage disposal systems*, materials and appurtenances, both existing and new, and all parts thereof shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. Devices or safeguards that are required by this code shall be maintained in compliance with the edition of the code under which they were installed. The owner or the owner's authorized agent shall be responsible for maintenance of *private sewage disposal systems*. To determine compliance with this provision, the code official shall have the authority to require reinspection of any *private sewage disposal system*.

**[A]102.6 Additions, alterations or repairs.** Additions, alterations, renovations or repairs to any *private sewage disposal system* shall conform to that required for a new system without requiring the existing system to comply with all the requirements of this code. Additions, alterations or repairs shall not cause an existing system to become unsafe, insanitary or overloaded.

Minor additions, alterations, renovations and repairs to existing systems shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

**[A]102.7 Change in occupancy.** It shall be unlawful to make any change in the occupancy of any structure that will subject the structure to any special provision of this code applicable to the new occupancy without approval of the code official. Change in the occupancy or a new occupancy, shall comply with the *Puerto Rico Building Code* and the Joint Regulation.

**[A]102.8 Historic buildings.** The provisions of this code relating to the construction, alteration, repair, enlargement, restoration, relocation or moving of buildings or structures shall not be mandatory for existing buildings or structures identified and classified by the state or local jurisdiction as historic buildings when such buildings or structures are judged by the code official to be safe and in the public interest of health, safety and welfare regarding any proposed construction, alteration, repair, enlargement, restoration, relocation or moving of buildings.

**[A]102.9 Moved buildings.** Except as determined by Section 102.4, *private sewage disposal systems* that are a part of buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new installations.

**[A]102.10 Referenced codes and standards.** The codes and standards referenced in this code shall be those that are listed in Chapter 14 and such codes and standards shall be considered to be part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.10.1 and 102.10.2.

**Exception:** Where enforcement of a code provision would violate the conditions of the listing of the equipment or appliance, the conditions of the listing and the manufacturer's installation instructions shall apply.

**[A]102.10.1 Conflicts.** Where conflicts occur between provisions of this code and the referenced standards, the provisions of this code shall apply.

**[A]102.10.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

**[A]102.11 Requirements not covered by code.** Any requirements necessary for the proper operation of an existing or proposed *private sewage disposal system*, or for the public safety, health and general welfare, not specifically covered by this code, shall be determined by the code official.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended, Act 416-2004, as amended, the *Joint Regulation* and the *Puerto Rico Building Code*.

## SECTION 103 - ADMINISTRATIVE PROVISIONS

[A]103.1 **General.** The administrative provisions and compliance of this Code will be those established by the *Puerto Rico Energy Conservation Code*, the *Puerto Rico Building Code*, the *OGPe-DDEC*, the *Puerto Rico Planning Board* and the *Puerto Rico Department of Natural and Environmental Resources*.

## CHAPTER 2 – DEFINITIONS

### SECTION 201 GENERAL

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the Puerto Rico Building Code or the Puerto Rico Plumbing Code, such terms shall have meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### SECTION 202 GENERAL DEFINITIONS

**AGGREGATE.** Graded hard rock that has been washed with water under pressure over a screen during or after grading to remove fine material and with a hardness value of 3 or greater on Mohs' Scale of Hardness. Aggregate that will scratch a copper penny without leaving any residual rock material on the coin has a hardness value of 3 or greater on Mohs' Scale of Hardness.

[P]**AIR BREAK (Drainage System).** A piping arrangement in which a drain from a fixture, appliance or device discharges indirectly into another fixture, receptacle or interceptor at a point below the flood level rim and above the trap seal.

**ALLUVIUM.** Soil deposited by floodwaters.

**BEDROCK.** The rock that underlies soil material or is located at the earth's surface. Bedrock is encountered when the weathered in-place consolidated material, larger than 0.08 inch (2 mm) in size, is more than 50 percent by volume.



**[A]BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**CESSPOOL.** A covered excavation in the ground receiving sewage or other organic wastes from a drainage system that is designed to retain the organic matter and solids, permitting the liquids to seep into the soil cavities.

**CLEAR-WATER WASTES.** Cooling water and condensate drainage from refrigeration compressors and air-conditioning equipment, water used for equipment chilling purposes, liquid having no impurities or where impurities have been reduced below a minimum concentration considered harmful, and cooled condensate from steam-heating systems or other equipment.

**[A] CODE OFFICIAL.** The officer or other designated authority charged with administration and enforcement of this code or a duly authorized representative.

**COLLUVIUM.** Soil transported under the influence of gravity.

**COLOR.** The moist color of the soil based on Munsell soil color charts.

**[A]CONSTRUCTION DOCUMENTS.** All the written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit. The construction drawings shall be drawn to an appropriate scale.

**CONVENTIONAL SOIL ABSORPTION SYSTEM.** A system employing gravity flow from the septic or other treatment tank and applying effluent to the soil through the use of a seepage trench, bed or pit.

**[BS]DESIGN FLOOD ELEVATION.** The elevation of the “design flood,” including wave height, relative to the datum specified on the community’s legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the *building’s* perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

**DETAILED SOIL MAP.** A map prepared by or for a state or federal agency participating in the National Cooperative Soil Survey showing soil series, type and phases at a scale of not more than 2,000 feet to the inch (24 m/mm) and which includes related explanatory information.

**DOSING SOIL ABSORPTION SYSTEM.** A system employing a pump or automatic siphon to elevate or distribute effluent to the soil through the use of a *seepage trench* or bed.

**EFFLUENT.** Liquid discharged from a septic or other treatment tank.

**[BS] FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any given year.
2. The area designated as a flood hazard area on a community's flood hazard map or as otherwise legally designated.

**HIGH GROUND WATER.** Soil saturation zones, including perched water tables, shallow regional ground water tables or aquifers, or zones seasonally, periodically or permanently saturated.

**HOLDING TANK.** An approved water-tight receptacle for collecting and holding sewage.

**HORIZONTAL REFERENCE POINT.** A stationary, easily identifiable point to which horizontal dimensions are related.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the “Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)” as established by the Act No. 161 of December 1, 2009, “Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended”.

**LEGAL DESCRIPTION.** An accurate metes and bounds description, a lot and block number in a recorded subdivision, a recorded assessor's plat or a public land survey description to the nearest 40 acres (16 ha).

**MANHOLE.** An opening of sufficient size to permit a person to gain access to a sewer or any portion of a *private sewage disposal system*.

**MOBILE UNIT.** A structure of vehicular, portable design, built on a chassis and designed to be moved from one site to another and to be used with or without a permanent foundation.

**MOBILE UNIT PARK.** Any plot or plots of ground owned by a person, state or local government upon which two or more units, occupied for dwelling or sleeping purposes regardless of mobile unit ownership, are located and whether or not a charge is made for such accommodation.

**[P]NUISANCE.** Public nuisance as known in common law or equity jurisprudence; whatever is dangerous to human life or detrimental to health; whatever building, structure or premises is not sufficiently ventilated, sewerred, drained, cleaned or lighted, in reference to its intended use; and whatever renders the air, human food, drink or water supply unwholesome.

**(OGPE-DDEC) PERMITS MANAGEMENT OFFICE.** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**PAN.** A soil horizon cemented with any one of a number of cementing agents such as iron, organic matter, silica, calcium, carbonate, gypsum or a combination of chemicals. Pans will resist penetration from a knife blade and are slowly permeable horizons or are impermeable.

**PERCOLATION TEST.** The method of testing absorption qualities of the soil (see Section 404).

**PERMEABILITY.** The ease with which liquids move through the soil. One of the soil qualities listed in soil survey reports.

**PRESSURE DISTRIBUTION SYSTEM.** A soil absorption system using a pump or automatic siphon and smaller diameter distribution piping with small-diameter perforations to introduce effluent into the soil.

**PRIVATE SEWAGE DISPOSAL SYSTEM.** A sewage treatment and disposal system serving a single structure with a septic tank and soil absorption field located on the same parcel as the structure. This term also means an alternative sewage disposal system, including a substitute for the septic tank or soil absorption field, a holding tank, a system serving more than one structure or a system located on a different parcel than the structure. A private sewage disposal system is permitted to be owned by the property owner or a special-purpose district.

**PRIVY.** A structure, not connected to a plumbing system, that is used by persons for the deposition of human body waste.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**[A]REGISTERED DESIGN PROFESSIONAL.** An individual who is registered or licensed to practice their respective design profession, as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

**SEEPAGE BED.** An excavated area more than 5 feet (1524 mm) wide that contains a bedding of aggregate and has more than one distribution line.

**SEEPAGE PIT.** An underground receptacle constructed to permit disposal of effluent or clear wastes by soil absorption through its floor and walls.

**SEEPAGE TRENCH.** An area excavated 1 foot to 5 feet (305 mm to 1524 mm) wide containing a bedding of aggregate and a single distribution line.

**SEPTAGE.** All sludge, scum, liquid and any other material removed from a private sewage treatment and disposal system.

**SEPTIC TANK.** A tank that receives and partially treats sewage through processes of sedimentation, flotation and bacterial action to separate solids from the liquid in the sewage, and which discharges the liquid to a soil absorption system.

**SOIL.** The unconsolidated material over bedrock, 0.08 inch (2 mm) and smaller.

**SOIL BORING.** An observation pit dug by hand or backhoe, a hole dug by augering or a soil core taken intact and undisturbed with a probe.

**SOIL MOTTLES.** Spots, streaks or contrasting soil colors usually caused by soil saturation for one period of a normal year, with a color value of 4 or more and a chroma of 2 or less. Gray-colored mottles are called low chroma; reddish-brown, red- and yellow-colored mottles are called high chroma.

**SOIL SATURATION.** The state in which all pores in a soil are filled with water. Water will flow from saturated soil into a bore hole.

**VENT CAP.** An approved appurtenance used for covering the vent terminal of an effluent disposal system to avoid closure by mischief or debris and still permit circulation of air within the system.

**VERTICAL ELEVATION REFERENCE POINT.** An easily identifiable stationary point or object of constant elevation for establishing the relative elevation of percolation tests, *soil borings* and other locations.

**WATERCOURSE.** A stream usually flowing in a particular direction, though it need not flow continually and is sometimes dry. A *watercourse* flows in a definite channel, with a bed, sides or banks, and usually discharges itself into some other stream or body of water. It must be something more than mere surface drainage over the entire face of a tract of land, occasioned by unusual freshets or other extraordinary cause. It does not include the water flowing in the hollows or ravines in land, which is the mere surface water from rains or melting snows, and is discharged through them from a higher to a lower level, but which at other times are destitute of water. Such hollows or ravines are not, in legal contemplation, *watercourses*.

**WORKMANSHIP.** Work of such character that will fully secure the results sought in all the sections of this code as intended for the health, safety and welfare protection of all individuals.

## **CHAPTER 3 – GENERAL REGULATIONS**

### **SECTION 301 - GENERAL**

**301.1 Scope.** The provisions of this charter shall govern the general regulations of private sewage disposal systems, including specific limitations and flood hazard areas. This Code shall apply to the disposal of domestic wastes (sewage) only.

## **CHAPTER 4 – SITE EVALUATION AND REQUIREMENTS**

### **SECTION 401 - GENERAL**

**401.1 Scope.** The provisions of this chapter shall govern the evaluation of and requirements for private sewage disposal system sites. Site evaluation and requirements shall comply with the design standards and specifications of the Puerto Rico Environmental Quality Board's Underground Injection Control Regulation.

## **CHAPTER 5 – MATERIALS**

No Amendments

## **CHAPTER 6 – SOIL ABSORPTION SYSTEMS**

No Amendments

## **CHAPTER 7 – PRESSURE DISTRIBUTION SYSTEMS**

No Amendments

## **CHAPTER 8 – TANKS**

No Amendments

## **CHAPTER 9 – MOUND SYSTEMS**

No Amendments

## **CHAPTER 10 – CESSPOOLS**

No Amendments

## **CHAPTER 11 – RESIDENTIAL WASTEWATER SYSTEMS**

No Amendments

## **CHAPTER 12 – INSPECTIONS**

### **SECTION 1202 - GENERAL**

**1202.1 Initial inspection procedures.** *Private sewage disposal systems* shall be inspected once during excavation, once before backfilling, and after construction. The code official shall be notified when the private sewage disposal system is ready for inspection.

## **CHAPTER 13 – NONLIQUID SATURATED TREATMENT SYSTEMS**

No Amendments

## **CHAPTER 14 – REFERENCED STANDARDS**

No Amendments

## **APPENDIX A – SYSTEM LAYOUT ILLUSTRATIONS**

No Amendments

## **APPENDIX B – TABLES FOR PRESSURE DISTRIBUTION SYSTEMS**

No Amendments

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PUERTO RICO CODES

# PRSPSC

Puerto Rico Swimming Pool and Spa Code







# **PUERTO RICO SWIMMING POOL AND SPA CODE 2018**

## **As amended from INTERNATIONAL SWIMMING POOL AND SPA CODE 2018**

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# CHAPTER 1 – SCOPE AND ADMINISTRATION

## PART 1—SCOPE AND APPLICATION

### SECTION 101 - GENERAL

[A]101.1 **Title.** These regulations shall be known as the *Puerto Rico Swimming Pool and Spa Code*, hereinafter referred to as “this code.”

[A]101.2 **Scope.** The provisions of this code shall apply to the construction, alteration, movement, renovation, replacement, repair and maintenance of aquatic recreation facilities, pools and spas. The pools and spas covered by this code are either permanent or temporary, and shall be only those that are designed and manufactured to be connected to a circulation system and that are intended for swimming, bathing or wading.

**101.2.1 Flotation tanks.** Flotation tank systems intended for sensory deprivation therapy shall not be considered to be included in the scope of this code.

[A]101.3 **Intent.** The purpose of this code is to establish minimum standards to provide a reasonable level of safety and protection of health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location and maintenance or use of pools and spas.

[A]101.4 **Severability.** If any section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

### SECTION 102 - APPLICABILITY

[A]102.1 **General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

[A]102.2 **Existing installations.** Any pool or spa and related mechanical, electrical and plumbing systems lawfully in existence at the time of the adoption of this code shall be permitted to have their use and maintenance continued if the use, maintenance or repair is in accordance with the original design and no hazard to life, health or property is created.

[A]102.3 **Maintenance.** Pools and spas and related mechanical, electrical and plumbing systems, both existing and new, and parts thereof, shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. Devices or safeguards that are

required by this code shall be maintained in compliance with the edition of the code under which they were installed.

The owner or the owner's authorized agent shall be responsible for maintenance of systems. To determine compliance with this provision, the code official shall have the authority to require any system to be reinspected.

**[A]102.4 Additions, alterations or repairs.** Additions, *alterations*, renovations or *repairs* to any pool, spa or related system shall conform to that required for a new system without requiring the existing systems to comply with the requirements of this code. Additions, alterations or repairs shall not cause existing systems to become unsafe, insanitary or overloaded.

Minor additions, alterations, renovations and repairs to existing systems shall be permitted in the same manner and arrangement as in the existing system, provided that such repairs or replacement are not hazardous and are *approved*.

**[A]102.5 Historic buildings.** The provisions of this code relating to the construction, alteration, repair, enlargement, restoration, relocation or moving of pools, spas or systems shall not be mandatory for existing pools, spas or systems identified and classified by the state or local jurisdiction as part of a historic structure where such pools, spas or systems are judged by the code official to be safe and in the public interest of health, safety and welfare regarding any proposed construction, alteration, repair, enlargement, restoration, relocation or moving of such pool or spa.

**[A]102.6 Moved pools and spas.** Except as determined by Section 102.2, systems that are a part of a pool, spa or system moved into or within the jurisdiction shall comply with the provisions of this code for new installations.

**[A]102.7 Referenced codes and standards.** The codes and standards referenced in this code shall be those that are listed in Chapter 11 and such codes and standards shall be considered to be part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements.

**[A]102.7.1 Application of the Puerto Rico Codes.** Where the *Puerto Rico Residential Code* is referenced in this code, the provisions of the *Puerto Rico Residential Code* shall apply to related systems in detached one and two-family dwellings and townhouses not more than three stories in height. Other related systems shall comply with the applicable Puerto Rico Code or referenced standard.

**[A]102.8 Requirements not covered by code.** Any requirements necessary for the strength, stability or proper operation of an existing or proposed system, or for the public safety, health and general welfare, not specifically covered by this code shall be determined by the code official and the *Puerto Rico Health Department (Departamento de Salud de Puerto Rico)*.

**[A]102.9 Other laws.** The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

**[A]102.10 Application of references.** References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

## **PART 2—ADMINISTRATION AND ENFORCEMENT**

The administrative provisions of Part 2 of this Code are derived from provisions established by the Act 161-2009, as amended and the *Joint Regulation* and the *Puerto Rico Building Code*.

### **SECTION 103 - ADMINISTRATIVE PROVISIONS**

**[A]103.1 General.** The administrative provisions and compliance of this Code will be those established by the *Puerto Rico Energy Conservation Code*, the *Puerto Rico Building Code*, the *OGPe-DDEC*, the *Puerto Rico Planning Board* and the Puerto Rico Health Department.

## **CHAPTER 2 – DEFINITIONS**

### **SECTION 201 GENERAL**

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the *Puerto Rico Building Code*, *Puerto Rico Energy Conservation Code*, *Puerto Rico Fire Code*, *Puerto Rico Fuel Gas Code*, *Puerto Rico Mechanical Code*, *Puerto Rico Plumbing Code* or *Puerto Rico Residential Code*, such terms shall have the meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### **SECTION 202 DEFINITIONS**

**ACCESSIBLE.** Signifies access that requires the removal of an access panel or similar removable obstruction.

**ACTIVITY POOL.** A pool designed primarily for play activity that uses constructed features and devices including lily pad walks, flotation devices, small slide features, and similar attractions.

**AIR INDUCTION SYSTEM.** A system whereby a volume of air is introduced into hollow ducting built into a spa floor, bench, or hydrotherapy jets.

[A]**ALTERATION.** Any construction or renovation to an existing pool or spa other than repair.

[A]**APPROVED.** Acceptable to the code official or authority having jurisdiction.

[A]**APPROVED AGENCY.** An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, or furnishing product certification where such agency has been *approved* by the code official.

**AQUATIC RECREATION FACILITY.** A facility that is designed for free-form aquatic play and recreation. The facilities may include, but are not limited to, wave or surf action pools, leisure rivers, sand bottom pools, vortex pools, activity pools, inner tube rides, body slides and interactive play attractions.

**BACKWASH.** The process of cleansing the filter medium or elements by the reverse flow of water through the filter.

**BACKWASH CYCLE.** The time required to backwash the filter medium or elements and to remove debris in the pool or spa filter.

**BARRIER.** A permanent fence, wall, building wall, or combination thereof that completely surrounds the pool or spa and obstructs the access to the pool or spa. The term “permanent” shall mean not being able to be removed, lifted, or relocated without the use of a tool.

**BATHER.** A person using a pool, spa or hot tub and adjoining deck area for the purpose of water sports, recreation, therapy or related activities.

**BATHER LOAD.** The number of persons in the pool or spa water at any given moment or during any stated period of time.

**BEACH ENTRY.** Sloping entry starting above the waterline at deck level and ending below the waterline. The presence of sand is not required. Also called “zero entry.”

[A]**BUILDING OFFICIAL.** The Auxiliary Secretary of the Permits Management Office of the Department of Economic Development and Commerce (OGPe-DDEC), or a duly authorized representative.

**CHEMICAL FEEDER.** A floating or mechanical device for adding a chemical to pool or spa water.

**CIRCULATION EQUIPMENT.** The components of a circulation system.

**CIRCULATION SYSTEM.** The mechanical components that are a part of a recirculation system on a pool or spa. Circulation equipment may be, but is not limited to, categories of pumps, hair and lint strainers, filters, valves, gauges, meters, heaters, surface skimmers, inlet fittings, outlet fittings and chemical feeding devices. The components have separate functions, but when connected to each other by piping, perform as a coordinated system for purposes of maintaining pool or spa water in a clear and sanitary condition.

**CODE OFFICIAL.** The officer or other designated authority of the government agency having jurisdiction responsible for the enforcement of the pertaining code, or a duly authorized representative.

**[A]CONSTRUCTION DOCUMENTS.** Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit.

**DECK.** An area immediately adjacent to or attached to a pool or spa that is specifically constructed or installed for sitting, standing, or walking.

**DEEP AREA.** Water depth areas exceeding 5 feet (1524 mm).

**DESIGNATED INSPECTOR.** An individual who is licensed to practice the profession of Architecture or Engineering as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); appointed by the owner to make periodic inspections of the construction work for which a permit was issued by the building official to ascertain compliance with the approved construction documents and permit issued. The professional shall certify the required inspections before the building official issue the certificate of occupancy.

**DESIGN PROFESSIONAL.** An individual who is registered or licensed to practice his or her respective design profession as defined by the statutory requirements of the professional registration or licensing laws of the state or jurisdiction in which the project is to be constructed.

**DESIGN RATE OF FLOW.** The rate of flow used for design calculations in a system.

**DESIGN WATERLINE.** The centerline of the *skimmer* or other point as defined by the designer of the pool or spa.

**DIVING AREA.** The area of a swimming pool that is designed for diving.

**DIVING BOARD.** A flexible board secured at one end that is used for diving such as a spring board or a jump board.

**DIVING PLATFORM.** A stationary platform designed for diving.

**DIVING STAND.** Any supporting device for a springboard, jump board or diving board.

**EXERCISE SPA (Also known as a swim spa).** Variants of a spa in which the design and construction includes specific features and equipment to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place. Exercise spas can include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or can be a separate distinct portion of a combination spa/exercise spa and can have separate controls. These spas are of a design and size such that they have an unobstructed volume of water large enough to allow the 99th Percentile Man as specified in APSP 16 to swim or exercise in place.

**EXISTING POOL OR SPA.** A pool or spa constructed prior to the date of adoption of this code, or one for which a legal building permit has been issued.

**FILTER.** A device that removes undissolved particles from water by recirculating the water through a porous substance such as filter medium or elements.

**FILTRATION.** The process of removing undissolved particles from water by recirculating the water through a porous substance such as filter medium or elements.

**[BS]FLOOD HAZARD AREA.** The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any year.
2. The area designated as a *flood hazard area* on a community's flood hazard map, or otherwise legally designated.

**FLUME.** A trough-like or tubular structure, generally recognized as a water slide, that directs the path of travel and the rate of descent by the rider.

**GUTTER.** Overflow trough in the perimeter wall of a pool that is a component of the circulation system or flows to waste.

**HAIR AND LINT STRAINER.** A device attached on or in front of a pump to which the influent line (suction line) is connected for the purpose of entrapping lint, hair, or other debris that could damage the pump.

**HANDHOLD.** That portion of a pool or spa structure or a specific element that is at or above the *design waterline* that users in the pool grasp onto for support.

**HANDRAIL.** A support device that is intended to be gripped by a user for the purpose of resting or steadying, typically located within or at exits to the pool or spa or as part of a set of steps.

**[A]HISTORIC BUILDINGS OR PROPERTY.** Any building or structure site, object, place, location, district or zone, or collection of structures and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal governmental jurisdiction and as defined by the "*Joint Regulation para la Evaluación y*



*Expedición de Permisos Relacionados al Desarrollo, Uso de Terrenos y Operación de Negocios (Joint Regulation), según la Ley Número 161 De 2009, según enmendada*". This includes historical buildings or properties:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic or having historic significance under an applicable state or local law, ordinance or resolution.
3. Designated as historic or having historic significance by the Puerto Rico Planning Board in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly.
4. Certified as a contributing or eligible resource within a National Register, state designated or locally designated historic district or zone.

**HYDROTHERAPY JET.** A fitting that blends air and water, creating a high-velocity turbulent stream of air-enriched water.

**(JOINT REGULATION) JOINT PERMITS REGULATIONS FOR THE EVALUATION AND ISSUANCE OF PERMITS RELATED TO DEVELOPMENT, LAND USE AND BUSINESS OPERATION.** As defined in the "Reglamento Conjunto de Permisos para Obras de Construcción y Uso de Terrenos de Puerto Rico, (Reglamento Conjunto)" as established by the Act No. 161 of December 1, 2009, "Ley para la Reforma del Proceso de Permisos de Puerto Rico, as amended".

**JUMP BOARD.** A manufactured diving board that has a coil spring, leaf spring, or comparable device located beneath the board that is activated by the force exerted by jumping on the board's end.

**[A]JURISDICTION.** The governmental unit that has adopted this code.  
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**[A]LABEL.** An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an *approved* agency and that indicates that the representative sample of the product or material has been tested and evaluated by an *approved* agency.

**[A]LABELED.** Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, *approved* agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose *labeling* indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

**LADDER.** A structure for ingress and egress that usually consists of two long parallel side pieces joined at intervals by crosspieces such as treads.

**Type A double access ladder.** An “A-Frame” ladder that straddles the pool wall of an above-ground pool and provides ingress and egress and is intended to be removed when not in use.

**Type B limited access ladder.** An “A-Frame” ladder that straddles the pool wall of an above-ground/on-ground pool. Type B ladders are removable and have a built-in feature that prevents entry to the pool when the pool is not in use.

**Type C ladder.** A “ground to deck” staircase ladder that allows access to an above-ground pool deck and has a built-in entry-limiting feature.

**Type D in-pool ladder.** Located in the pool to provide a means of ingress and egress from the pool to the deck.

**Type E or F in-pool staircase ladder.** Located in the pool to provide a means of ingress and egress from the pool to the deck.

**LIFELINE.** An anchored line thrown to aid in rescue.

**[A]LISTED.** Equipment, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of *listed* equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

**MAINTAINED ILLUMINATION.** The value, in foot-candles or equivalent units, below which the average illuminance on a specified surface is not allowed to fall. *Maintained illumination* equals the initial average illuminance on the specified surface with new lamps, multiplied by the light loss factor (LLF), to account for reduction in lamp intensity over time.

**NEGATIVE EDGE.** See “Vanishing edge.”

**NONENTRY AREA.** An area of the deck from which entry into the pool or spa is prohibited.

**(OGPE-DDEC) PERMITS MANAGEMENT OFFICE:** As defined in the Act 141, of July 10, 2018, “*Ley de Ejecución del Plan de Reorganización del Departamento de Desarrollo Económico y Comercio*”.

**ONGROUND STORABLE POOL.** A pool that can be disassembled for storage or transport. This includes portable pools with flexible or non-rigid walls that achieve their structural integrity by means of uniform shape, a support frame or a combination thereof, and that can be disassembled for storage or relocation.

**OVERFLOW GUTTER.** The *gutter* around the top perimeter of the pool or spa, which is used to skim the surface.

**[A]OWNER.** Any person, agent, operator, entity, firm or corporation having any legal or equitable interest in the property; or recorded in the official records of the state, county or municipality as holding an interest or title to the property; or otherwise having possession or control of the property, including the guardian of the estate of any such person, and the executor or administrator of the estate of such person if ordered to take possession of real property by a court.

**[A]PERMIT.** An official document or certificate issued by the authority having jurisdiction that authorizes performance of a specified activity.

**POOL.** See “Public swimming pool” and “Residential swimming pool.”

**POWER SAFETY COVER.** A pool cover that is placed over the water area, and is opened and closed with a motorized mechanism activated by a control switch.

**PUBLIC SWIMMING POOL (Public Pool).** A pool, other than a *residential* pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use. Public pools shall be further classified and defined as follows:

**Class A competition pool.** A pool intended for use for accredited competitive aquatic events such as Federation Internationale De Natation (FINA), USA Swimming, USA Diving, USA Synchronized Swimming, USA Water Polo, National Collegiate Athletic Association (NCAA), or the National Federation of State High School Associations (NFHS).

**Class B public pool.** A pool intended for public recreational use that is not identified in the other classifications of public pools.

**Class C semi-public pool.** A pool operated solely for and in conjunction with lodgings such as hotels, motels, apartments or condominiums.

**Class D-1 wave action pool.** A pool designed to simulate breaking or cyclic waves for purposes of general play or surfing.

**Class D-2 activity pool.** A pool designed for casual water play ranging from simple splashing activity to the use of attractions placed in the pool for recreation.

**Class D-3 catch pool.** A body of water located at the termination of a manufactured waterslide attraction. The body of water is provided for the purpose of terminating the slide action and providing a means for exit to a deck or walkway area.

**Class D-4 leisure river.** A manufactured stream of water of near-constant depth in which the water is moved by pumps or other means of propulsion to provide a river-like flow that transports bathers over a defined path that may include water features and play devices.

**Class D-5 vortex pool.** A circular pool equipped with a method of transporting water in the pool for the purpose of propelling riders at speeds dictated by the velocity of the moving stream of water.

**Class D-6 interactive play attraction.** A manufactured water play device or a combination of water-based play devices in which water flow volumes, pressures or patterns can be varied by the bather without negatively influencing the hydraulic conditions for other connected devices. These attractions incorporate devices or activities such as slides, climbing and crawling structures, visual effects, user-actuated mechanical devices and other elements of bather-driven and bather-controlled play.

**Class E.** Pools used for instruction, play or therapy and with temperatures above 86°F (30°C).

**Class F.** Class F pools are wading pools and are covered within the scope of this code as set forth in Section 405.

Public pools are either a diving or non-diving type. Diving types of public pools are classified into types as an indication of the suitability of a pool for use with diving equipment.

**Types VI–IX.** Public pools suitable for the installation of diving equipment by type.

**Type O.** A non-diving public pool.

**(PRPB) PUERTO RICO PLANNING BOARD.** Government Agency created by ACT No. 75 of June 1975 as amended, hereinafter PRPB. In addition, it is the State Agency Coordinator of the National Flood Insurance Program.

**RECESSED TREADS.** A series of vertically spaced cavities in a pool or spa wall creating tread-areas for step holes.

**RECIRCULATION SYSTEM.** See “Circulation system.”

**REGISTERED DESIGN PROFESSIONAL.** An individual who is licensed to practice the profession of architect or engineer as defined by the provisions of the Act No. 173 of August 12, 1988, as amended, and according to with the provisions of Act No. 135 of June 15, 1967, as amended, (Certification Law); engaged by the owner to prepare the construction documents, make application to the building official and obtain the required permit.

**[A]REPAIR.** The reconstruction or renewal of any part of a pool or spa for the purpose of its maintenance or to correct damage.

**RESIDENTIAL.** For purposes of this code, *residential* applies to detached one and two-family dwellings and townhouses not more than three stories in height.

**RESIDENTIAL SWIMMING POOL (Residential Pool).** A pool intended for use that is accessory to a *residential* setting and available only to the household and its guests. Other pools shall be considered to be public pools for purposes of this code.

**Types I–V.** *Residential* pools suitable for the installation of diving equipment by type.

**Type O.** A non-diving *residential* pool.

**RETURN INLET.** The aperture or fitting through which the water under positive pressure returns into a pool.

**RING BUOY.** A ring-shaped floating buoy capable of supporting a user, usually attached to a throwing line.

**ROPE AND FLOAT LINE.** A continuous line not less than ¼ inch (6 mm) in diameter that is supported by buoys and attached to opposite sides of a pool to separate the deep and shallow ends.

**RUNOUT.** A continuation of water slide flume surface where riders are intended to decelerate and come to a stop.

**SAFETY COVER.** A structure, fabric or assembly, along with attendant appurtenances and anchoring mechanisms, that is temporarily placed or installed over an entire pool, spa or hot tub and secured in place after all bathers are absent from the water.

**SHALL.** The term, where used in the code, is construed as mandatory.

**SHALLOW AREAS.** Portions of a pool or spa with water depths less than 5 feet (1524 mm).

**SKIMMER.** A device installed in the pool or spa that permits the removal of floating debris and surface water to the filter.

**SLIP RESISTANT.** A surface that has been treated or constructed to significantly reduce the chance of a user slipping. The surface shall not be an abrasion hazard.

**SLOPE BREAK.** Occurs at the point where the slope of the pool floor changes to a greater slope.

**SPA.** A product intended for the immersion of persons in temperature-controlled water circulated in a closed system, and not intended to be drained and filled with each use. A spa usually includes a filter, an electric, solar or gas heater, a pump or pumps, and a control, and can include other equipment, such as lights, blowers, and water-sanitizing equipment.

**Permanent residential spa.** A spa, intended for use that is accessory to a *residential* setting and available to the household and its guests and where the water heating and water-

circulating equipment is not an integral part of the product. The spa is intended as a permanent plumbing fixture and not intended to be moved.

**Portable residential spa.** A spa intended for use that is accessory to a *residential* setting and available to the household and its guests and where it is either self-contained or non-self-contained.

**Public spa.** A spa other than a permanent *residential* spa or portable *residential* spa that is intended to be used for bathing and is operated by an owner, licensee or concessionaire, regardless of whether a fee is charged for use.

**Self-contained spa.** A factory-built spa in which all control, water heating and water-circulating equipment is an integral part of the product. Self-contained spas may be permanently wired or cord connected.

**Non-self-contained spa.** A factory-built *spa* in which the water heating and circulating equipment is not an integral part of the product. Non-self-contained spas may employ separate components such as an individual filter, pump, heater and controls, or they can employ assembled combinations of various components.

**SPRAY POOL.** A pool or basin occupied by construction features that spray water in various arrays for the purpose of wetting the persons playing in the spray streams.

**SUBMERGED VACUUM FITTING.** A fitting intended to provide a point of connection for suction side automatic swimming pool, *spa*, and hot tub cleaners.

**SUCTION OUTLET.** A submerged fitting, fitting assembly, cover/grate and related components that provide a localized low-pressure area for the transfer of water from a swimming pool, spa or hot tub. Submerged suction outlets have been referred to as main drains.

**SURFACE SKIMMING SYSTEM.** A device or system installed in the pool or spa that permits the removal of floating debris and surface water to the filter.

**SURGE CAPACITY.** The storage volume in a surge tank, *gutter*, and plumbing lines.

**SURGE TANK.** A storage vessel within the pool recirculating system used to contain the water displaced by bathers.

**SWIMOUT.** An underwater seat area that is placed completely outside of the perimeter shape of the pool. Where located at the deep end, swim-outs are permitted to be used as the deep-end means of entry or exit to the pool.

**TUBE RIDE.** A gravity flow attraction found at a waterpark designed to convey riders on an inner-tube-like device through a series of chutes, channels, flumes or pools.

**TURNOVER RATE.** The period of time, usually in hours, required to circulate a volume of water equal to the pool or spa capacity.

**UNDERWATER LEDGE.** A narrow shelf projecting from the side of a vertical structure whose dimensions are defined in the appropriate standard.

**UNDERWATER SEAT.** An underwater ledge that is placed completely inside the perimeter shape of the pool, generally located in the shallow end of the pool.

**VANISHING EDGE.** Water-feature detail in which water flows over the edge of not fewer than one of the pool walls and is collected in a catch basin. Also called “Negative edge.”

**WATERLINE.** See “Design waterline.”

**WAVE POOL CAISSON.** A large chamber used in wave generation. This chamber houses pulsing water and air surges in the wave generation process and is not meant for human occupancy.

**ZERO ENTRY.** See “Beach entry.”

## **CHAPTER 3 – GENERAL COMPLIANCE**

### **SECTION 302 - ELECTRICAL, PLUMBING, MECHANICAL AND FUEL GAS REQUIREMENTS**

**302.1 Electrical.** Electrical requirements for aquatic facilities shall be in accordance with NFPA 70 and the Puerto Rico Electric Power Authority’s *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code) or the Puerto Rico Residential Code, as applicable in accordance with Section 102.7.1. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**Exception:** Internal wiring for portable residential spas and portable residential exercise spas.

## **CHAPTER 4 – PUBLIC SWIMMING POOLS**

No Amendments.

## **CHAPTER 5 – PUBLIC SPAS AND PUBLIC EXERCISE SPAS**

No Amendments.

## **CHAPTER 6 – AQUATIC RECREATION FACILITIES**

No Amendments.

## **CHAPTER 7 – ONGROUND STORABLE RESIDENTIAL SWIMMING POOLS**

No Amendments.

## **CHAPTER 8 – PERMANENT INGROUND RESIDENTIAL SWIMMING POOLS**

No Amendments.

## **CHAPTER 9 – PERMANENT RESIDENTIAL SPAS AND PERMANENT RESIDENTIAL EXERCISE SPAS.**

No Amendments.

## **CHAPTER 10 – PORTABLE RESIDENTIAL SPAS AND PORTABLE RESIDENTIAL EXERCISE SPAS**

No Amendments.

## **CHAPTER 11 – REFERENCED STANDARDS**

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### **PRASA**

Puerto Rico Aqueduct and Sewer Authority  
PO BOX 7066  
SAN JUAN, PR 00916 - 7066

*3149-1984: Reglamento de Normas de Diseño (Complementary Code)*

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### **PREPA**

Puerto Rico Power Authority  
P.O Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
302.1



### PARTE III. APROBACIÓN Y ADOPCIÓN

[“PART III. APPROVAL AND ADOPTION “]

Adoptado en San Juan, Puerto Rico, hoy 15 de noviembre de 2018.

[“Adopted in San Juan, Puerto Rico, on November 15 th, 2018.”]

Rosana M. Aguilar Zapata, PE  
Secretaria Auxiliar Interina  
[“Acting Auxiliary Secretary”]

CERTIFICO ADOPTADO, en San Juan, Puerto Rico, hoy 15 de noviembre de 2018

[“CERTIFY ADOPTED in San Juan, Puerto Rico, on November 15 th, 2018.”]

Idta Rios Rodriguez  
Directora Division de Secretaría  
[“Director Secretariat Division”]

APROBADO, en San Juan, Puerto Rico, hoy 15 de noviembre de 2018

[“APPROVED in San Juan, Puerto Rico, on November 15 th, 2018.”]

Ricardo Rosselló Nevares  
Gobernador de Puerto Rico  
[“Governor of Puerto Rico”]

## VOLANTE SUPLETORIO

Título del Reglamento: Puerto Rico Codes 2018

Fecha de aprobación: 15 de noviembre de 2018

Persona o personas que lo aprobaron: Ing. Rosana M. Aguilar Zapata  
Secretaria Auxiliar Interina

Fecha de Publicación del Aviso Público: N/A Reglamento radicado bajo  
la Sección 2.13 LPAU

Fecha de Efectividad: Vigencia inmediata a partir de su  
radicación en el Departamento  
de Estado

Fecha de Radicación: \_\_\_\_\_

Reglamento Número: \_\_\_\_\_

Entidad Gubernamental: Oficina de Gerencia de Permisos  
del Departamento de Desarrollo  
Económico y Comercio

Referencia sobre la autoridad  
estatutaria para promulgar  
reglamentos: Ley Núm. 161-2009, según  
enmendada

Referencia a todo reglamento que se  
enmiende o derogue mediante adopción  
del presente Reglamento: Reglamento 8222 del 20 junio  
2012, conocido como Puerto  
Rico Building Code 2011

### **CERTIFICACIÓN**

Certifico que el procedimiento de reglamentación seguido en este caso se llevó a tenor con las disposiciones de Ley Núm. 38 - 2017, según enmendada; y que el reglamento a que se hace referencia este Volante Supletorio fue debidamente revisado y no contiene errores sustantivos o tipográficos.

  
\_\_\_\_\_  
**Ing. Rosana M. Aguilar Zapata**  
**Secretaria Auxiliar Interina**

*Recibido: Rosana M. Aguilar Zapata*  
*15-11-18*

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