RISK FOOTPRINT™
844-732-7473
www.riskfootprint.com

June 2025

The RiskFootprint™ Approach to Achieving Property Resilience

- **A Practical and Effective Process for Implementing the New ASTM Property Resilience Assessment Standard (E 3429-24).**

A. Background:

The new ASTM Property Resilience Assessment standard (E-3429-24), titled "Standard Guide for Property Resilience Assessments," provides a systematic approach for conducting Property Resilience Assessments (PRAs).

The guide is intended to be used voluntarily and can be applied to existing buildings, new construction, substantial renovations, and various structures and infrastructure. and improve property resilience.

The PRA is a property-level assessment process to inform decision-makers such as real estate investors, owners, operators, lenders, and insurers, of current-day risks from floods, other natural hazards, and extreme weather impacts, including those exacerbated by future climate change, which may affect a property or portfolios of properties. It aims to help decision-makers understand physical climate risks ***with a goal of enhanced property-level resilience leading to preservation of property value, improved occupant safety, reduced disruption, or other user goals.***

Three separate stages have been identified in ASTM's Standard Guide for PRAs:

Stage 1: Identifying the property's exposure to floods, other natural hazards, extreme weather and climate change impacts likely to affect a property.

Stage 2: Evaluating the risks posed by those hazards and the property's capacity to prepare for, adapt to, withstand, and recover from those hazards. This includes vulnerability to the identified hazards and values-at-risk. ***Stage 2 of the PRA includes, at minimum, a baseline assessment of safety, damage, and functional recovery time,*** and a limited consideration of community resilience or other material dependencies, such as the ability of utilities to deliver service to a property following a hazard event. And,

Stage 3: Identifying feasible resilience measures to enhance property-level performance and recovery and rough order of magnitude costs (ROM). ***Based on the identified resilience goals for the target property and available information, the PRA professional will identify basic measures that can be employed to improve resilience.*** These resilience measures should be appropriate and actionable considering various parameters such as the identified planning time horizon, the useful life of the target property, the criticality of the property, performance and recovery expectations, and the needs of the user and occupants.

Consideration of these parameters will guide the user to evaluate and prioritize specific resilience measures to be implemented.

Each stage of the PRA is separate, and the client can choose to do one stage, two or all three stages.

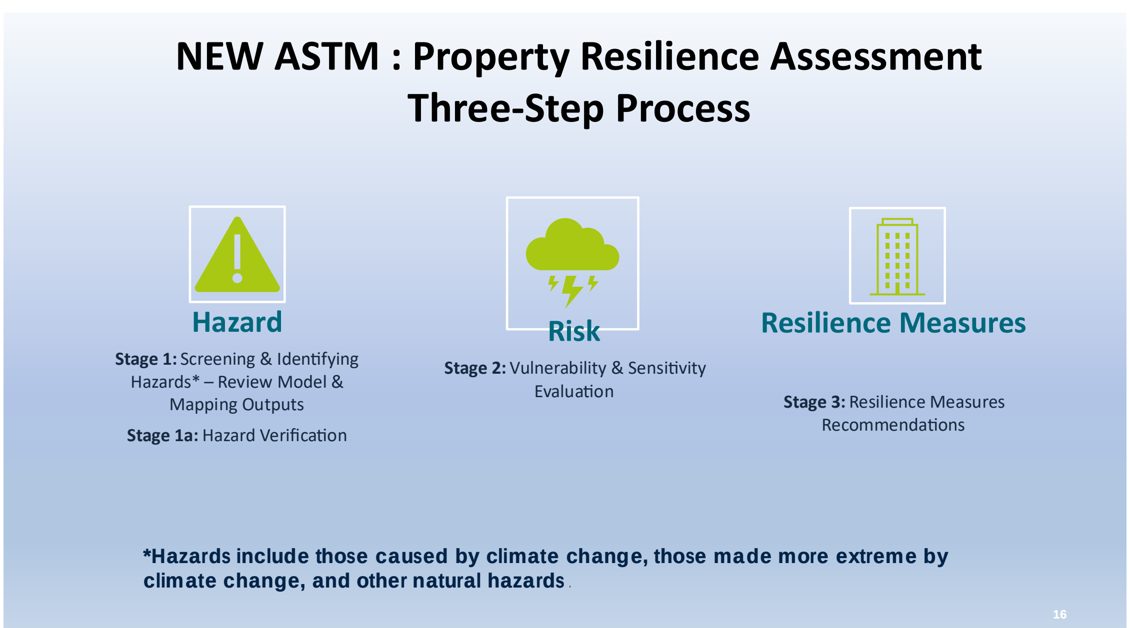
Resilience, as defined by ASTM Guide E3341, is "the ability to prepare for anticipated hazards, adapt to changing conditions, to withstand and limit negative impacts due to events, and to return to intended functions/services within a specified time after a disruptive event."

NOTE: In some cases, basic resilience measures may not exist and advanced engineering and design solutions beyond the scope of a PRA may be needed. It is important to note that the PRA is an initial assessment approach that typically may not get to the level of detailed engineering, architectural, or scientific recommendations and designs. However, such recommendations and designs may arise at a high-level during Stage 3.

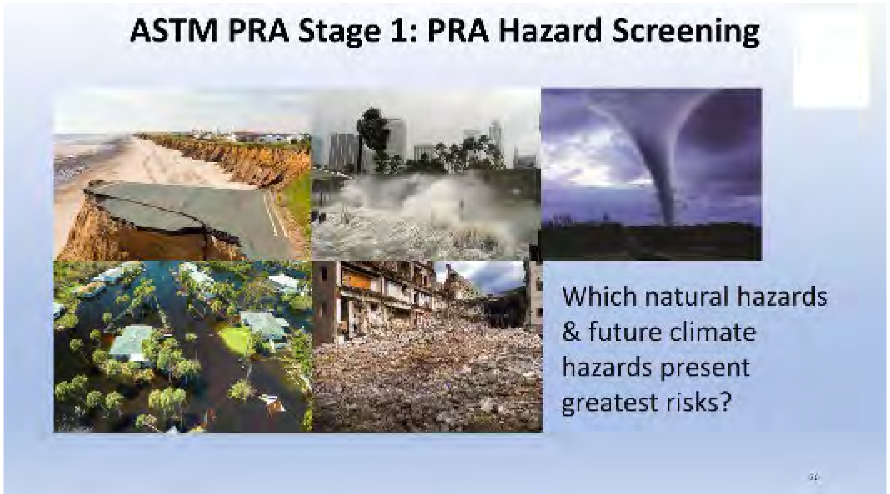
The PRA is not intended to be a certificate of resilience or compliance, rather its purpose is to facilitate more informed decisions at the property level.

B. The RiskFootprint™ Approach:

1. Overview of the PRA



2. Stage 1 = Hazard Screening (RiskFootprint™)



Steps in Stage One - Evaluation will be made of the subject property to identify hazard exposures
to specific and vital building components and infrastructure. **It is important to note that the hazard exposures at this stage will be assessed by using desktop methods, models, and mapping, without the time and expense of field studies and sampling. This will include**:

• Providing a RiskFootprint™ Hazard/Climate assessment report for the building and property. The RiskFootprint™ report satisfies the exposure assessment requirements of ASTM PRA Stage One. An optional Stage 1a task involves further desktop research to determine if any applicable state, regional, or local hazard assessment models exist, which may shed more light on the property's risks from exposures to the hazards.

• Requesting and reviewing pertinent, client-provided documentation, including prior damage information, site-specific studies, insurance claims, and "as-built" drawings, etc.

• Interview building managers, stakeholders, and others to obtain relevant background information.

• Meet with client to determine if client wants to involve its insurance agent and insurance providers in the PRA process to potentially stabilize and/or lower annual insurance costs. If so, meet with client and insurance providers to discuss the PRA approach and potential for loss exposure and insurance premium reductions. **This process can extend through the full property resilience assessment and implementation of resilience measures.**

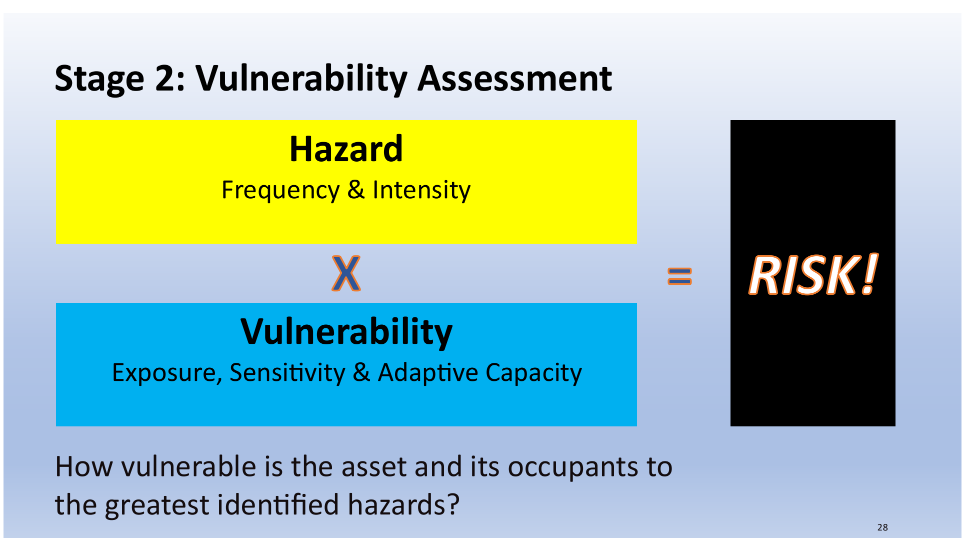
- Meet with client to discuss the resilience of surrounding governments (local, county, state, federal) and the community, including their infrastructure and utilities, and how the resilience of the community, or lack thereof, may help or hinder client's efforts to make its building(s) safer and more resilient – now, and in the future. If requested, we will provide a separate proposal for a more in-depth Community Resilience Study.

• Meet with client to determine its risk tolerance, building performance goals, and the level of resiliency being sought relative to a specified hazard's severity, and likelihood. Client will identify goals in terms of damage/loss to structure, contents, and business interruptions, and risk tolerance.

DELIVERABLE: Utilizing scientific method and models, we will create a report including maps, highlighting areas of concern relative to exposure to floods, natural hazards, extreme weather, and future climate change impacts. After submission of the Stage 1 report, we will meet with client to determine next steps and, if client wants to proceed to Stage 2.

Stage 1 Deliverable – The RiskFootprint™ Report
" THE WHAT"

3. Stage 2 = Vulnerability and Value-at-Risk



Steps in Stage 2 - Utilizing the RiskFootprint™ exposure data and the information and documents reviewed in Step One, Coastal Risk Consulting will initially identify vulnerabilities relating to specific building systems, equipment, and infrastructure.

- Vulnerabilities may be for any hazard identified in the RiskFootprint™ or for those specifically selected by Client. These vulnerabilities will be assessed for both severity and likelihood.
- We will also estimate the potential damage/loss and restoration periods/times that would likely be associated with the identified hazards, event levels of severity, and likelihood. The vulnerability and loss estimates in Stage 2 are based on the current conditions of the site, without any planned or future protections that may be identified in Stage 3.

- Stage 2 quantification of vulnerability and value-at-risk modeling (a percentage of replacement costs for structure and contents) can be provided for floods, hurricane winds, earthquakes, and tsunamis. Qualitative estimation of vulnerability and values-at-risk can be provided for many other hazards, as needed.

- In Stage 2, we will employ the Hazus model, which is a GIS-based natural hazard loss estimation model developed by FEMA. It is used to estimate potential damage and economic losses from extreme events such as earthquakes, floods, hurricanes, and tsunamis. Hazus integrates geographic information system (GIS) technology to analyze risk and support decision-making. Hazus employs probabilistic and scenario-based modeling to assess impacts on buildings, infrastructure, and populations. The model includes different modules tailored to specific hazards, such as the Hazus Earthquake Model, Hazus Flood Model, and Hazus Hurricane Model, each designed to simulate damage and loss estimates based on hazard intensity and exposure. Hazus is a widely respected tool for disaster risk assessment.

- When using Hazus in ASTM Property Resilience Assessment Stage 2, it is important to ensure high-quality input data and expert interpretation, which will be key to maximizing its effectiveness.

When the report on Stage 2 is completed, another meeting with client will take place to discuss damage/loss estimates for structure and contents, recovery times by event scenario, and potential business interruptions. Another meeting can also take place at this point with the client's insurance providers. Client will determine at this point if it wants to continue to Stage 3.

Stage 2 Deliverable – The Vulnerability and Value-at-Risk Report

THE "SO WHAT"

COASTAL RISK CONSULTING

www.riskfootprint.com

844-SEA-RISE (732-7473)

February 10, 2025

The _______ condominium located at _________________________, Florida was analyzed using the FEMA 100-year floodplain; NOAA's maximum possible hurricane storm surge for Category 1, 3, and 5 hurricanes, the building's elevation certification, and building floorplans.

The parking garage level will be inundated by all four scenarios and the lobby level will be inundated by the Category 5 hurricane scenarios. The mechanical systems located in the garage level (at an elevation of 11.0 feet (NGVD 1929) will be impacted by the Category 3 and 5 hurricane scenarios.
For the FEMA 100-year and NOAA Category 1 storm surge, the garage level is modeled to be impacted which will restrict people using the garage and elevators. The mechanical systems are elevated high enough to be above the flood waters but accessing the systems may be challenging. Cleanup is projected to take up to a month.

For the NOAA Category 3 and 5 storm surge scenarios, the parking garage will be inundated along with all the mechanical equipment in the garage. Additionally, the lobby level is modeled to be impacted in the Category 5 scenario. Electrical and HVAC systems may not work. The lobby level areas including elevators, bathrooms, locker rooms, social rooms, guest suites, mechanical rooms, exercise room, social room, library, and kitchen could be impacted by a Category 5 storm event. This would be major events which would require major cleanup and building inspections to determine structural damage and repairs.

Flood Type	Level	Depth (Feet)	Damage (%)	Restoration (Days)
FEMA 100-year	Garage	5.2	8.4	30
Category 1 Hurricane Surge	Garage	7.2	13.8	30
Category 3 Hurricane Surge	Garage	14.2	48.0	30
Category 5 Hurricane Surge	Garage	17.2	66.2	30
	Lobby	0.2	12.6	450

4. Stage 3 = Identify Feasible Resilience Measures and ROM Costs

Steps in Stage 3 - Stage 3 of the ASTM PRA is a systematic approach to identify conceptual measures that can be employed to improve resilience, assess hazard and climate adaptation options, and develop a list of priority actions and next steps for protecting the target property. Based upon the hazard screening and vulnerability and damage/loss assessments created in Stages 1 and 2 of the PRA, hazard-specific experts from our strategic partners will travel to the project site to assess the property. As part of the assessment, these experts will:

- Interview staff to become familiar with what happened during previous hazard events (the timeline, the sequence of events, the locations affected and how they were impacted).

- Review any photographs or documentation from previous hazard events.

Take photographs of the general building layouts, existing exterior conditions, present site protections, traffic ingress/egress to property, and any impact or problematic areas indicated or observed.

- Assess the existing condition and design of the building exterior and surrounds with regard to present site protections, property drainage and other issues, and developing resilience measures.
- Obtain construction documents in electronic format including "as built" site plans, with focus on those areas determined as vulnerable, and the floor plans with locations of exterior openings and critical assets, etc.

<u>Our hazard-specific experts will provide:</u>

- A rough order of magnitude cost estimate for the implementation of the resilience measures;
- An estimate of the level of protection or level of improvement to Stage 2 concerns that the resilience measure may provide;
- An estimate of the complexity of implementing the measure and the potential disruption or downtime to the facility during implementation;
- Consideration of relationships between the measures or recommended sequence of implementation of the measures over time.
- A limited assessment of any existing or planned community resilience improvements that would directly impact the property either positively or negatively.

Depending on the size of the project and number of buildings and types of hazards (e.g., flood, wind, seismic, etc.), we anticipate having a three-person team of hazard-specific experts on site for one or two eight-hour days to complete these tasks. Based on the site vulnerability assessment, and consultation with the Client regarding risk tolerances, performance requirements, and budgetary constraints, we will identify feasible resilience measures and ROM costs for the hazards identified by the client as relevant and for the event severity levels chosen by the client. We will:

- Identify and evaluate feasible resilience measure options and research sourcing of these materials.
- Determine/identify the feasibility and locations for resilience measures to be applied to building components and sourcing of materials for the options.
- Determine/identify the feasibility for the relocation or raising of equipment, the use of external floodwalls, and landscaping for better stormwater management.
- Determine whether property personnel or outside resources will be implementing resilience measures, whether ongoing training or other resources, such as O&M plans, are required, and whether there are institutional or other barriers that may limit the ability to implement the measures. Provide a range of "rough order of magnitude" (ROM) costs for resilience measures identified in the report.
- Describe the expected benefits of the resilience measures to the Stage 2 findings in order to demonstrate the expected difference between the current Stage 2 findings and expected improvement after the resilience measures have been implemented.
- Provide a written summary report

NOTE: Identification of resilience measures in Stage 3 does not involve engineering, architectural, or scientific recommendations, which will require much more detailed investigation and on-site work by hazard-specific experts.

In Stage 3, information from Stages 1 and 2 is utilized to **identify and prioritize feasible resilience measures for the property**. While measures implemented to address hazards may be physical in nature in many cases (capital expenditures), there will also be instances where resilience measures are related to operations and maintenance (O&M) or emergency response planning. O&M for buildings and building systems includes regular preventative measures, as well as more frequent repair and replacement tasks. O&M measures will also have associated planning and costs related to implementation. Emergency response planning programs may involve annual on-site training and drills, as well as coordination with local resources to arrange for support post-event.

Also, as part of Stage 3, we will perform a **limited review** of local (city, county, state) plans and resilience actions, where applicable to the target property, and identify any actions that are planned or already underway to provide better protection to the community from the natural hazards identified. This information will help guide decisions within Stage 3 regarding the types of resilience measures needed at the target property. If requested, Coastal Risk Consulting will perform a more in-depth Community Resilience Study to determine the preparedness of public and community resources, services, utilities, and infrastructure to support the subject property during and after a potential hazard event, now and in the future. See below.

Stage 3 = Feasible Resilience Measures and Rough Order of Magnitude Costs
THE "WHAT'S NEXT"

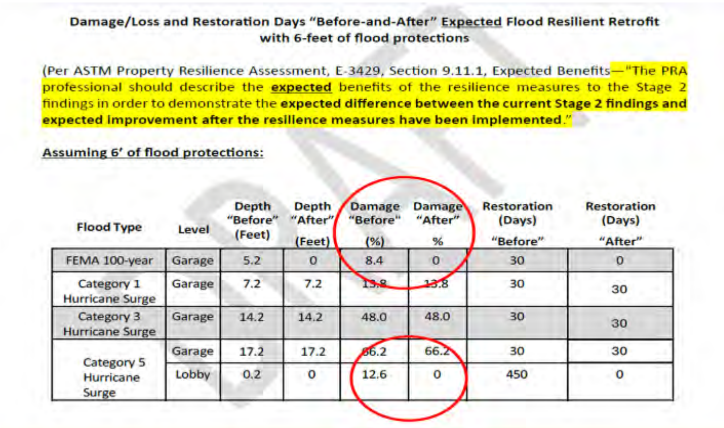
Below is an example of feasible resilience measures and rough order of magnitude costs:

Costs Can Escalate With the Levels of Protection Chosen

	ROM Capital Costs				
	Cat. 1	Cat. 2	Cat. 3	Cat. 4	Cat. 5
Deployable Barrier - Tiger Dam	$35,000.00	$100,000.00	$350,000.00	$225,000.00	$300,000.00
Permanent Sea Wall - 900 LF	$0.00	$0.00	$0.00	$6,000,000.00	$6,000,000.00
Relocate/Elevate Utilities	$0.00	$0.00	$0.00	$250,000.00	$250,000.00
Elevator Pit Flood Proofing	$200,000.00	$200,000.00	$300,000.00	$100,000.00	$100,000.00
Replace Elevator w/ Pitless Model	$0.00	$0.00	$1,000,000.00	$1,000,000.00	$1,000,000.00
Interior Flood Barrier Renovations	$0.00	$0.00	$0.00	$500,000.00	$500,000.00
Flood Doors/Gates	$0.00	$0.00	$100,000.00	$200,000.00	$200,000.00
Wet Floodproof Lobby - 8000 SF	$0.00	$100,000.00	$0.00	$0.00	$0.00
Wet Floodproof 1st Floor - 75000 SF	$0.00	$0.00	$300,000.00	$0.00	$0.00
Dry Floodproof Lobby - 8000 SF	$0.00	$0.00	$200,000.00	$200,000.00	$200,000.00
Dry Floodproof 1st Floor - 75000 SF	$0.00	$0.00	$0.00	$1,800,000.00	$1,800,000.00
Total	**$235,000.00**	**$400,000.00**	**$2,250,000.00**	**$10,275,000.00**	**$10,350,000.00**
Design - 12%	$28,200.00	$48,000.00	$270,000.00	$1,233,000.00	$1,242,000.00

In Stage 3, assuming that the "before resilience measures" vulnerability and values-at-risk have been estimated in Stage 2, then, at the client's option, as stated in ASTM PRA Section 9.11.1, an estimate can be made of the potential "benefits" or mitigation of vulnerabilities and damage/loss to the building of implementing the resilience measures. An example is shown below assuming the implementation of a 6-foot flood barrier at a multi-family high-rise building.

This approach is valuable in helping clients determine the return on investment (ROI) for the resilient retrofits and how and when to include them in company Capex and Opex plans.

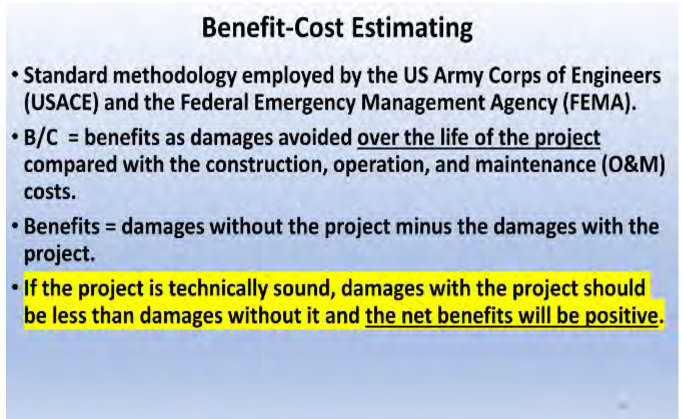


Damage/Loss and Restoration Days "Before-and-After" Expected Flood Resilient Retrofit with 6-feet of flood protections

(Per ASTM Property Resilience Assessment, E-3429, Section 9.11.1, Expected Benefits—"The PRA professional should describe the **expected** benefits of the resilience measures to the Stage 2 findings in order to demonstrate the **expected difference between the current Stage 2 findings and expected improvement after the resilience measures have been implemented**."

Assuming 6' of flood protections:

Flood Type	Level	Depth "Before" (Feet)	Depth "After" (Feet)	Damage "Before" (%)	Damage "After" %	Restoration (Days) "Before"	Restoration (Days) "After"
FEMA 100-year	Garage	5.2	0	8.4	0	30	0
Category 1 Hurricane Surge	Garage	7.2	7.2	13.8	13.8	30	30
Category 3 Hurricane Surge	Garage	14.2	14.2	48.0	48.0	30	30
Category 5 Hurricane Surge	Garage	17.2	17.2	66.2	66.2	30	30
	Lobby	0.2	0	12.6	0	450	0

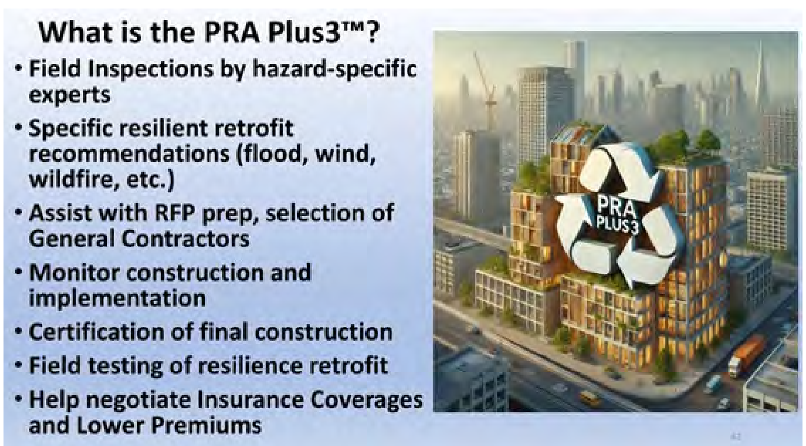


C. <u>Additional Services</u>

Additional services described below are available for an additional fee should the client wish to engage us further to assist with the implementation of identified resiliency measures.

1. Implementation of Resilience Measures – the PRA Plus3™

In the PRA Plus3™ process, we act as owners' reps guiding and overseeing the implementation process. We are not the architects or engineers of record or general contractors, nor do we supply any products. We help with site-specific recommendations, RFP preparation, selection of independent contractors, monitoring and certification of construction, and even field testing of the implemented risk mitigation measures, as appropriate.



*****During the PRA Plus3™ process, discussions between the client and the insurance providers can continue to determine what premium reductions may be made available upon completion of the risk mitigating investments.**

Typical support can include all or parts of the following activities:
Preparation of a remediation scope of work, design, and technical data RFP package that will include:

Request for Proposals (RFP) Package:

- General and specific conditions including business continuity and operation during work.
- Bid form.
- Scope of work to be performed.
- Products, materials, and methods to be used.
- Unit pricing and repair quantity allowances.
- Select construction drawings and details as required including structural design.
- Warranties to be provided.

We will assist with the RFP Bidding and Evaluations as follows:

- Assisting with identifying qualified contractors to bid on project.
- Distributing the RFP and construction documents to the pre-qualified contractors.
- (Optional) Conducting the Pre-Bid Meeting and site walk with bidding contractors.
- Answering questions from contractors concerning the RFP following the Pre-Bid Meeting.
- Providing supplemental Addenda to RFP as needed.
- Reviewing received bid estimates from bidding contractors. This includes phone calls with bidders for clarifications and/or supplemental information or pricing.
- Assisting in the contractor selection process.

In addition to the above, we will work with the architect of record and engineer of record, if any, to develop specific resilient retrofit recommendations, monitor construction and implementation, certify final construction and products used, and field test various retrofits actually installed, as appropriate.

2. QR Codes

In order for identified flood protection and other equipment to operate properly, the equipment must be in a usable condition without damage or excessive wear and tear. Annual inspections of the barriers and other equipment and drills to practice setting up and removal are recommended. It is further recommended that with all the different sections of dry floodproofing and related equipment that may need to be acquired by Management, QR codes be used and affixed to each separate piece of equipment to identify it. QR codes are a versatile tool that can greatly assist property maintenance and management staff in installing barriers and other protective equipment efficiently. Here are some methods and applications:

1. **Instant Access to Instructions**: QR codes can be placed directly on flood barriers or other protective equipment. Scanning the code provides immediate access to installation manuals, video tutorials, and troubleshooting guides.
2. **Maintenance Tracking**: QR codes can store maintenance history and schedules. Staff can scan the code to check when the equipment was last inspected or serviced, ensuring readiness during emergencies.
3. **Interactive Training**: QR codes can link to interactive training modules or simulations, helping staff learn proper installation techniques in a hands-on manner.

4. **Inventory Management**: QR codes can be used to track the location and availability of flood barriers and other protective equipment within a building, streamlining deployment during critical situations.
5. **Emergency Protocols**: QR codes can direct staff to emergency response plans, ensuring they follow the correct procedures during a flood event.
6.

These methods not only enhance efficiency but also ensure that protective measures are implemented correctly and promptly.

3. Emergency Management Plans

Given the large number of flood barriers and other equipment that may be needed to protect a building, it is important that new and detailed emergency management plans be developed and details for annual testing of equipment and training and retraining of property and asset managers.

Our Process:

1. Risk Assessment: Understand and document your company's risks with our RiskFootprint™ assessment.
2. Plan Review: Evaluate your Life Safety, Evacuation, Disaster Response, Recovery, and Training Plans.
3. Update and Training: Provide onsite and virtual training, along with updates to your existing plans.
4. Best Practices Comparison: Benchmark your plans against ISO 22301:2019 and NFPA 1660 standards.
5. Report and Presentation: We will deliver a comprehensive report and presentation based on our findings and various recommended improvements to the emergency management plans and procedures.

4. Community Resilience Study

"**Community Resilience is the ability of a community to anticipate, prepare for, and adapt to changing conditions, and withstand, respond to, and recover rapidly from disruptions."**

*****Property-level resilience is affected by broader community resilience and dependencies associate with supporting infrastructure such as availability of water, fuel, power, transportation, communication, and other services. The PRA process includes a limited review of community resilience considerations and material dependencies and highlights the importance of community and infrastructure considerations as optional additional areas of inquiry.**

If requested, Coastal Risk Consulting will perform a more in-depth Community Resilience Study to determine the preparedness of public and community resources, services, utilities, and infrastructure to support the subject property during and after a potential hazard event, now and in the future. The study will inform the Client and assist in prioritizing and selecting physical and operational resilience measures to implement on site. The report will include the following:

• Item 1 - understand the current and proposed resilience actions and plans of City, County, State, and federal agencies to address risks in the region and their impact on the Client property.

• Item 2 – understand interdependencies with public assets or infrastructure; electric, water, sewer, stormwater, etc.
• Item 3 – assist Client in developing approaches to government officials that may help ensure that any resilience actions undertaken at the property level are in sync with other resilience projects in the area (e.g., stormwater management plans) and to avoid any duplication and waste of valuable resources.

5. **Insurance Issues**

Given the rapid rise in insurance premiums over the past few years, we can provide the resources of an independent insurance consulting company of national reputation to identify the extent to which current coverage and pricing are in line with proper insurance underwriting practices and, also, if the client does implement some or all of the identified resilience measures, whether current insurance providers or others are willing to provide premium discounts or credits for the loss prevention established by independent, third-party certifications. The insurance review and analysis would begin with an analysis of risk reports, mitigation design and the pre/post mitigation hazard models to determine accuracy and applicability of any third-party hazard models used by the insurance provider(s). The Insurance Evaluation would include review of the following:

• Risk reports (i.e., Property Resilience Assessment)
• Property Condition Assessment
• Appraisal
• Hazard mitigation design, including design intent and any performance standards
• Pre-mitigation and post-mitigation hazard models
• Condominium Declaration and Bylaws
• Confirmation of ownership percentage
• Loan Agreement (if applicable)

Engage with the owner's or association's insurance broker or risk manager to vet existing and proposed coverages and determine the acceptability of coverage and/or identify deficiencies that need to be addressed. This will allow the insurance experts to potentially identify alternative insurance coverages, providers, and/or products that may be available based on their extensive knowledge of the insurance market and relationships with other brokers. Deliverable: A report detailing the findings of their analysis of potential for stabilizing and/or lowering insurance premiums.

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To request a property-specific, **Property Resilience Assessment Proposal** from us, please contact, customerservice@riskfootprint.com, or call us at 844-732-7473.

RISK FOOTPRINT™ REPORT

Accelerate Your Resilience

PROPERTY DETAILS:

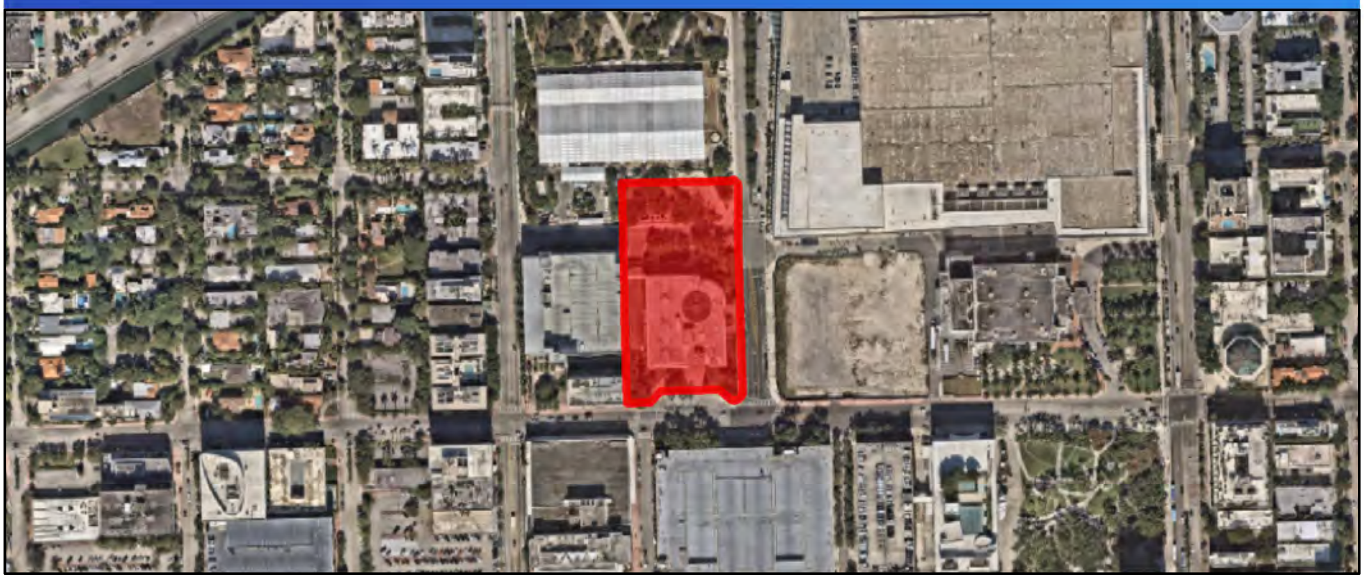
1700 Convention Center Drive
Miami Beach, Florida 33139
lat: 25.79302 long: -80.13541

REPORT DATE & DETAILS:

Date: March 24, 2025
Status: Complete

REAL-TIME WEATHER & COASTAL FLOODING weather.gov noaa.gov

1700 Convention Center Drive, Miami Beach, Florida



Risk Summary Snapshot

	Current Risks												Future Risks			
	Aggregate	FEMA NRI Risk	Pluvial	Fluvial	Tidal Flooding	Storm Surge	FEMA Flood	Tsunami	Wind Zone	Tornado	Wildfire	Earthquake	2060 SLR	2050 Heat	2050 Rainfall	2050 Drought
Property:	5	High	Medium	Low	Medium	High	High	Low	Medium	Medium	Low	Low	High	Low	Low	High
Neighborhood:	7	High	High	Low	High	High	High	Low	Medium	Medium	Medium	Low	High	Low	Low	High

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RISK FOOTPRINT™ nearmap FATHOM TRUE Flood Risk

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION'S (NOAA) PARTNER

WEATHER-READY NATION

COASTAL RISK

www.coastalriskconsulting.com
844-SEA-RISE (732-7473)

RISK FOOTPRINT™

3/24/2025

Dear Adam,

Thank you for purchasing the new RiskFootprint™ Report, the state-of-the-art assessment for floods, natural hazards, extreme weather, and climate change impacts. You have taken an important first step to better understand the risks facing your residential, commercial, industrial, or governmental property. The information found in this Report will empower you to make your property safer, more sustainable, and resilient – and to protect its market value in a changing environment.

The RiskFootprint™ Report is generated from our automated, proprietary model that screens properties for a variety of potential hazards and provides actionable intelligence for portfolio risk management, property transfer due diligence, loan and insurance underwriting and decisions relating to investments in risk/claims reducing, resilience measures.

If your RiskFootprint™ Report indicates that your property faces risks, our Advisory Services team of professionals can assist you with our six-step, B-Resilient™ Solutions process to help you take appropriate cost-effective risk mitigation and adaptation actions.

If you would like to find out more about our innovative products and services,
contact customerservice@riskfootprint.com.

Sincerely,

Albert J. Slap

Albert J. Slap, President
844-SEA-RISE (732-7473)
albertslap@riskfootprint.com
www.riskfootprint.com

HEAVY RAINFALL (PLUVIAL) FLOOD RISK and POOR DRAINAGE AREAS

PLUVIAL MAX INUNDATION DEPTH (METERS)

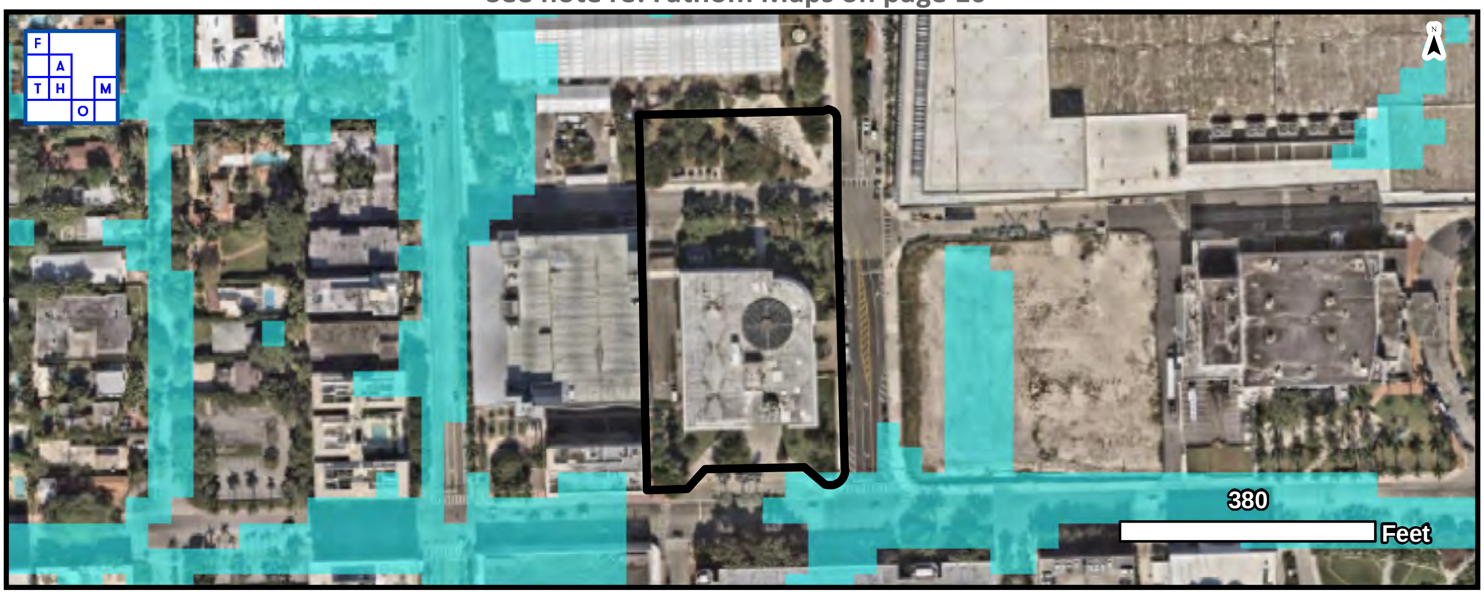
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4+

POOR DRAINAGE HOTSPOTS

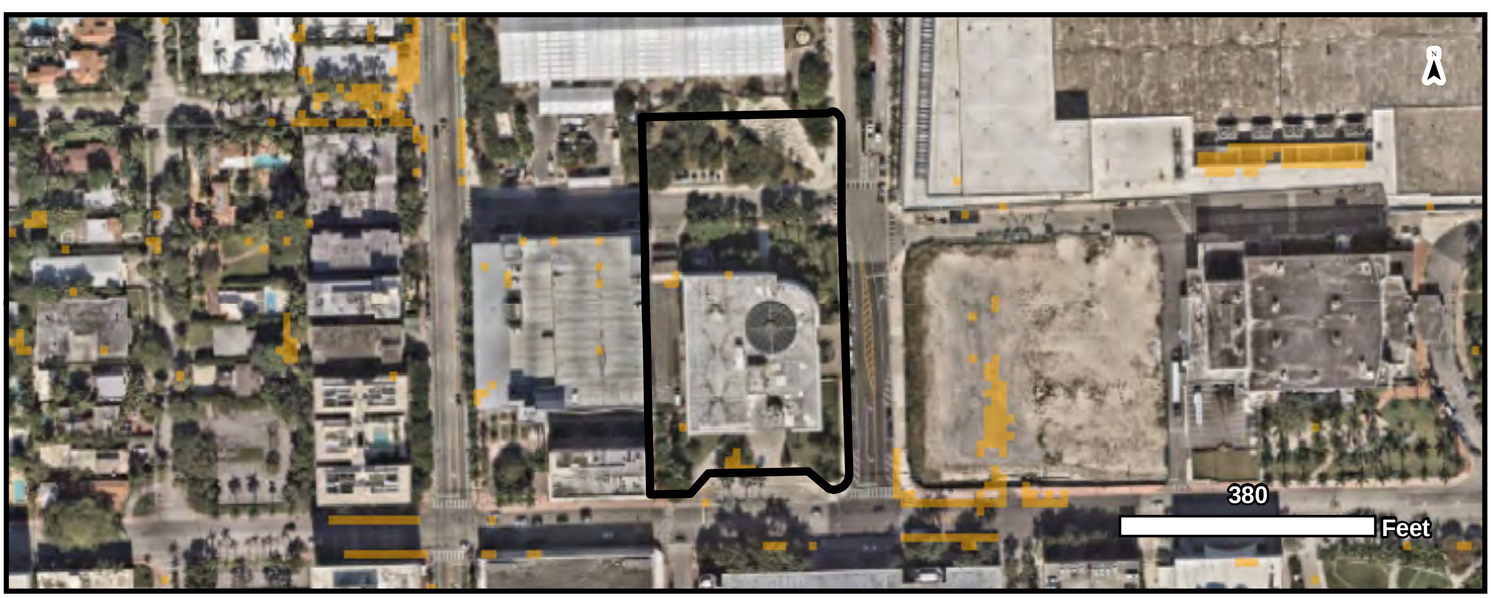
- VERY POOR
- POOR
- MODERATE
- MILD

500-Year Interval Pluvial Flood Risk*

See note re: Fathom Maps on page 10



Poor Drainage Hotspots



RIVERINE (FLUVIAL) FLOOD RISK, COASTAL FLOOD RISK and FEMA FLOOD HAZARD ZONES

FLUVIAL & COASTAL MAX INUNDATION DEPTH (METERS)

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4+

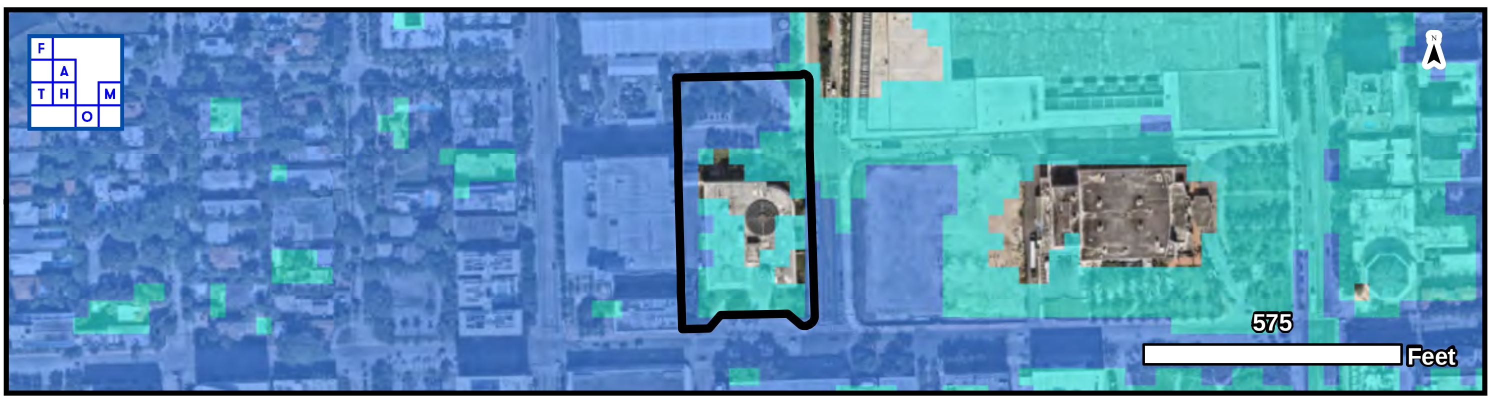
FEMA FLOOD HAZARD ZONES

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- < 0.2 Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area of Undetermined Flood Hazard
- Special Floodway
- Regulatory Floodway

500-Year Interval Fluvial Flood Risk*

See note re: Fathom Maps on page 8

500-Year Interval Coastal Flood Risk



FEMA Flood Hazard Zones

Tidally-Influenced Flooding Potential*

**Illustrations of flooding below include the effect of levees and other flood control measures to the extent they are displayed in the NOAA SLR Viewer (see page 10 for Glossary & References)*

Current Year High Tide Flooding

NOAA flooding threshold for this location is 53 cm (21 in) above Mean Higher High Water (MHHW).
High Tide flooding occurs when high tides exceed the flooding threshold.

MHHW at Miami Beach, FL is 0.3 ft above NAVD88 (North American Vertical Datum of 1988)

High Tide Flooding

(MHHW + Flooding Threshold)

Future Projected Flooding Due to Sea Level Rise (SLR)

Areas representing inundation as a result of projected SLR in 2040 & 2060.

Flood Days = Number of days tidal flooding is expected with SLR.

Projected SLR = Estimated NOAA SLR projection for the nearest tide gauge.

SLR Flooding Potential = Relative to NAVD88

SLR Flooding Potential

(MHHW + Flooding Threshold + SLR)

Storm Surge

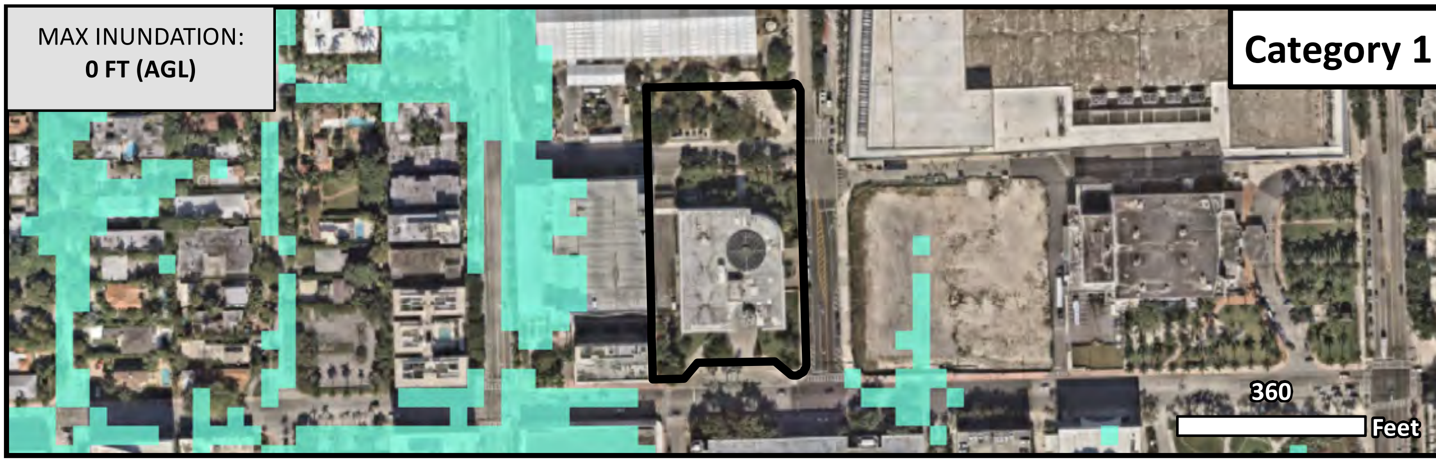
Maximum Possible Hurricane Storm Surge (2025)

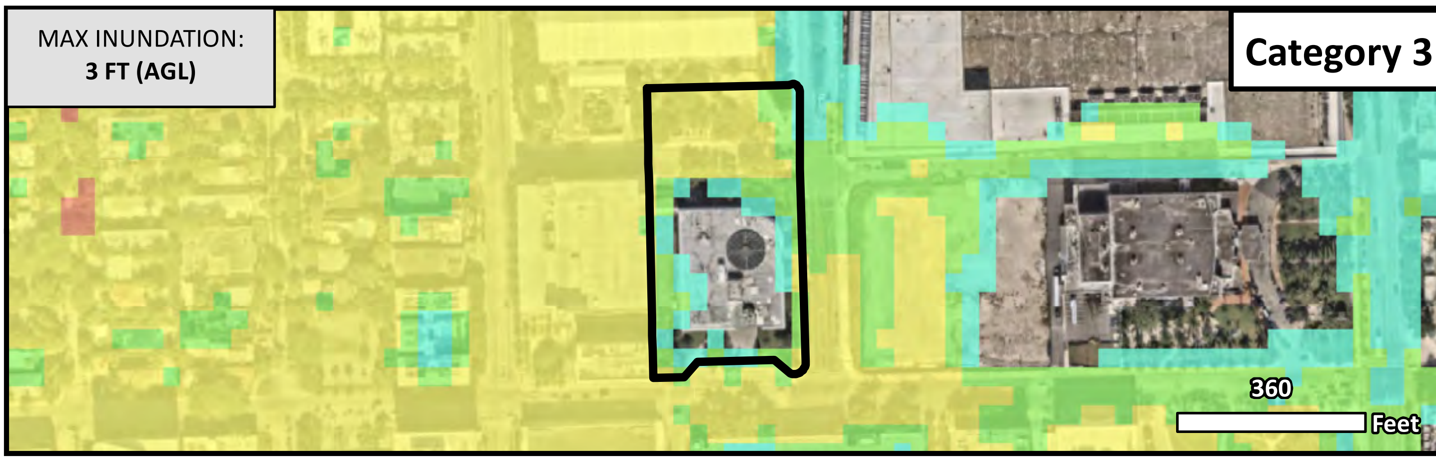
Per data from the US National Hurricane Center:
Annual probability of Category 1 winds and higher: **23.0%**
Annual probability of Category 3 winds and higher: **13.0%**

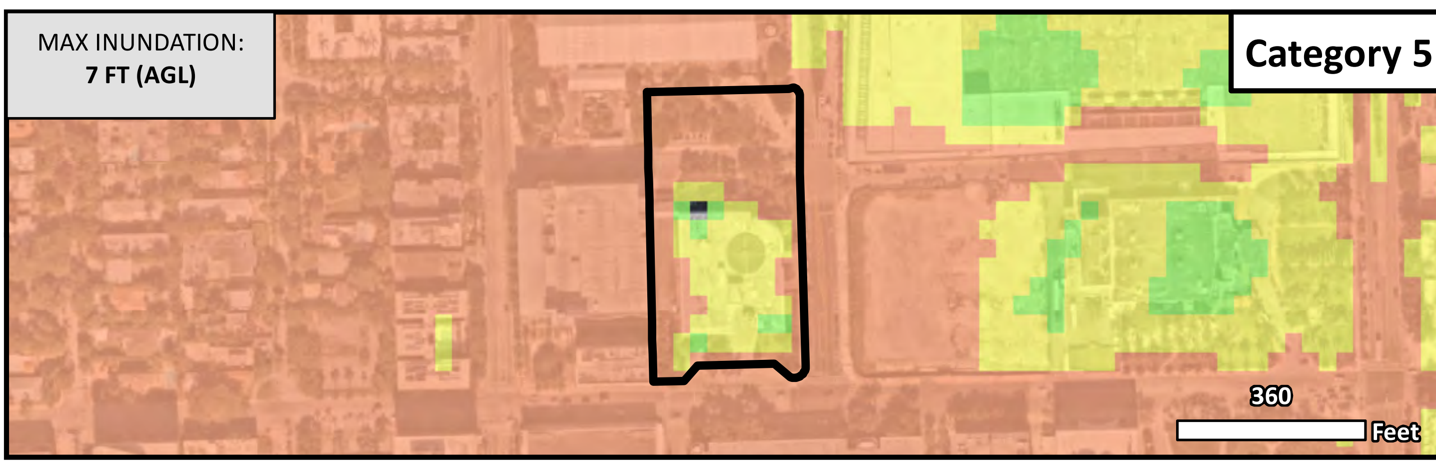
NAVD88 - North American Vertical Datum of 1988   *AGL - Above Ground Level*

INUNDATION (AGL)

- 0 - 1 ft
- 1 - 2 ft
- 2 - 4 ft
- 4 - 8 ft
- 8 - 12 ft
- > 12 ft
- Levee Area



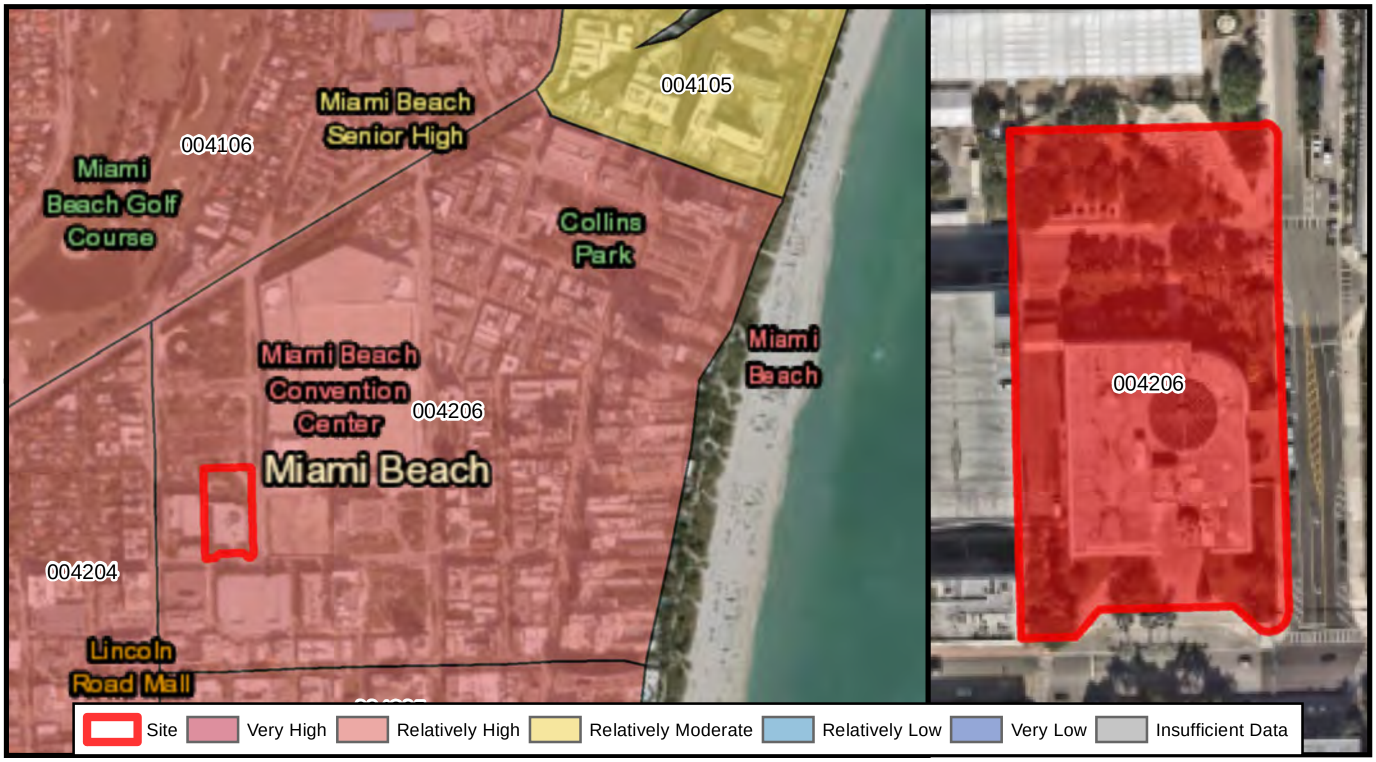




FEMA National Risk Index (NRI)

Census Tract View

1700 Convention Center Drive is in Census Tract T12086004206



Risk Index is Relatively High

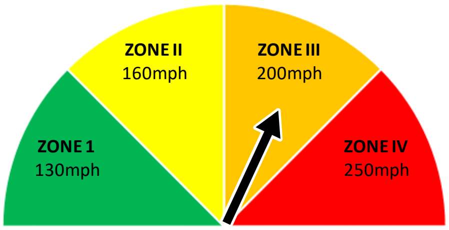
NRI Hazard Ratings

Avalanche: Not Applicable	Heat Wave: No Rating	Strong Wind: Very Low
Coastal Flooding: Relatively Low	Hurricane: Relatively High	Tornado: Relatively Low
Cold Wave Relatively Low	Ice Storm: Not Applicable	Tsunami: Insufficient Data
Drought: No Rating	Landslide: Relatively Moderate	Volcanic Activity: Not Applicable
Earthquake: Very Low	Lightning: Relatively Low	Wildfire: No Rating
Hail: Very Low	Riverine Flooding: Relatively High	Winter Weather: No Rating

Click the link below for the comprehensive NRI report for this area:
https://hazards.fema.gov/nri/report/viewer?dataLOD=Census%20tracts&dataIDs=T12086004206

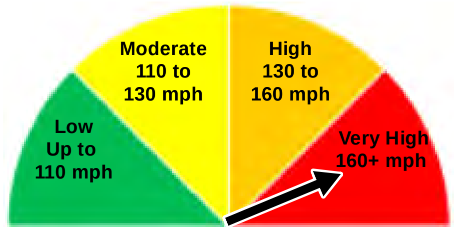
Natural Hazards and Community Resilience

FEMA Wind Zone: III



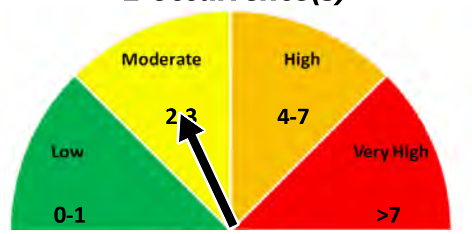
FEMA Wind Zones reflect historical number and strength of extreme windstorm events. Design building code requirements for this location are typically lower.

ASCE Design Wind Speed: 170 mph



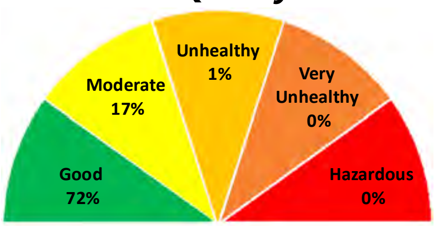
(3-second ultimate design wind speed for Risk Category II buildings) Wind speed corresponds to 7% probability of occurrence in 50 years. (ASCE 7-16)
This site is NOT in a special wind region.
This site is in a hurricane-prone region.

Tornado Risk: 2 occurrence(s)



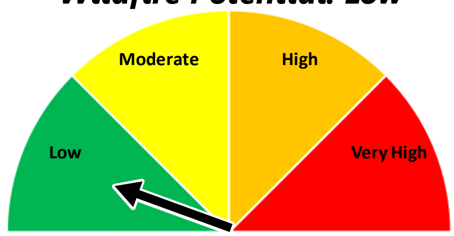
The 1,000-square-mile area surrounding the property has recorded 2 EF2 or higher tornadoes in the past 30 years

EPA Air Quality Index



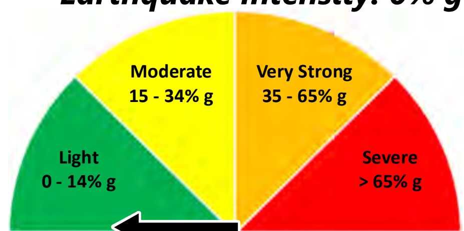
The latest Air Quality Index annual summary for this location.

Wildfire Potential: Low



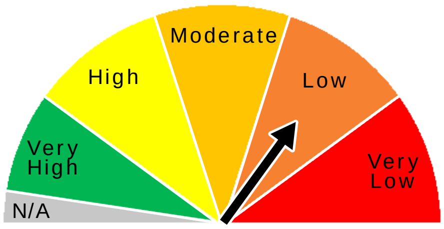
Wildfire Potential is a measure of wildfire likelihood and intensity

Earthquake Intensity: 0% g



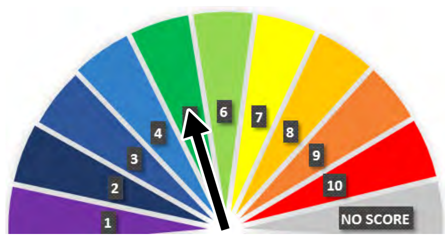
Peak ground acceleration (PGA) with 10% probability of exceedance in 50 years. Scale uses a unit of g.
(g - The earth's gravity acceleration from the ground movement)

NRI Community Resilience



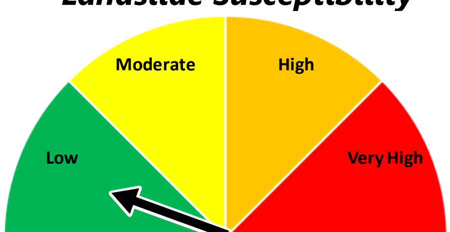
Miami-Dade County Community Resilience is Relatively Low

Community Rating Score: 5



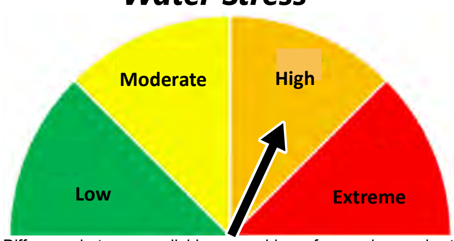
This property is potentially eligible for a 25.0% reduction in flood insurance premium.

Landslide Susceptibility



Density of Landslide Susceptible areas in the 90-meter grid where the property is located in the USGS Landslide terrain map.

Water Stress



Difference between available renewable surface and groundwater supplies and total water demand – from World Resources Institute (WRI)'s Aqueduct Water Risk Atlas.

Property Elevation:

Land elevation within the property boundary ranges from 2.8 ft to 9.6 ft. The average elevation of this property is 4.8 ft. Elevations use North American Vertical Datum of 1988 (NAVD 88). The first floor height (FFH) of this property is 0.07 ft above ground level.

See page 12 for Glossary & References

Future Climate Change Impacts

Projections By Emission Scenarios (RCPs)*

Extreme Heat	2030	2040	2050
RCP 4.5	Low	Low	Low
RCP 8.5	Low	Low	Moderate

Extreme Rainfall	2030	2040	2050
RCP 4.5	Low	Low	Low
RCP 8.5	Moderate	Moderate	Moderate

Drought	2030	2040	2050
RCP 4.5	Low	High	High
RCP 8.5	Low	Low	Low

Metric Ranking Guidelines

* See Page 10 for Glossary & References

Extreme Heat	Less than 25%	25% - 50%	Greater than 50%
% of Global Climate Models predicting 20% or greater increase in days of maximum air temperature above 85° F (compared with 2021)	Low	Moderate	High
Extreme Rainfall	Less than 25%	25% - 50%	Greater than 50%
% of Global Climate Models predicting 20% or greater increase in days of annual maximum daily rainfall (compared with 2021)	Low	Moderate	High
Drought	0.0 or Greater	Between 0.0 and -0.2	-0.2 or Less
Mean annual 12-month Standard Precipitation Index (SPI) compared with 2021	Low	Moderate	High

RiskFootprint™ Glossary and References

Descriptions below include links to latest available data sources for respective hazards.

Cover Page – Risk Summary Snapshot – AGGREGATE RISK SCORE – The Aggregate Risk Score is presented separately for both the property and the neighborhood (within a ½ mile radius of the property boundary). It is a summation of the Risk Zones scored for the 15 hazards in the table as follows:

0 "Red" Zones	Low Aggregate Risk
1 to 3 "Red" Zones	Moderate Aggregate Risk
4 or more "Red" Zones	High Aggregate Risk

Note that even if the Aggregate Risk Score is "yellow", with only 1 red zone risk, e.g., for storm surge risk, this could be significant to the property owner. Also, sometimes the property in question is at low Aggregate Risk, but the neighborhood is at high risk, possibly causing ingress/egress or supply chain problems.

FATHOM PLUVIAL (HEAVY RAINFALL), FLUVIAL (RIVERINE) & COASTAL FLOOD RISK - (https://www.fathom.global).
Fathom Global, a UK-based division of Swiss Re, is a leading provider of flood risk intelligence for resilience against water perils. **Fathom's updated US Flood Map 3.0** operates at an impressive **~10-meter resolution** (approximately 1/3 arcsecond data), allowing for improved accuracy in assessments of both inland and coastal flooding. Fathom has compiled the most accurate digital terrain model of the US called **FABDEM+** which blends **up-to-date LiDAR imagery** with cutting-edge terrain data in areas where local terrain data are unavailable. Fathom's models are grounded in extensive scientific research and utilize peer-reviewed data sources.

RiskFootprint™ reports for US locations with **Fathom maps** show the areal extent and depth of flooding under current climate conditions for the 500-year flood i.e. at an annual return frequency of 0.2%, to provide a screening-level worst-case scenario. These maps also include the impact of known levees and dams for fluvial and coastal flooding based on data from the US Army Corps of Engineers National Levee Database.

Page 3 – PLUVIAL (HEAVY RAINFALL) FLOOD RISK – Potential for heavy rainfall flooding above ground level (AGL) of the property with 0.2% probability, derived from Fathom flood models (www.fathom.global). The term "500-year flood" means that, statistically speaking, a flood of that magnitude (or greater) has a 1 in 500 chance, or 0.2% probability, of occurring in any given year. https://www.usgs.gov/special-topics/water-science-school/science/floods-and-recurrence-intervals

Page 3 - POOR DRAINAGE HOTSPOTS – "Poor Drainage Hotspots" identifies hyper-local areas of a property where water from heavy rainfall will tend to pond and fail to drain properly, sometime resulting in standing water for days. The RiskFootprint™ report uses a high-resolution elevation model along with soil and groundwater data from the Natural Resources Conservation Service to assign risk within our proprietary, flood hotspot methodology (NRCS drainage classes).

Page 3 – TSUNAMI RISK – (website) This report includes a frame showing Tsunami Risk potential only for properties with High Tsunami risk. For the risk summary snapshot, areas within a Tsunami Design Zone (the Zone) are scored as "High Risk", and areas outside the Zone are scored as "Low Risk". There is no "Medium" category. Inland locations situated more than 25 miles from the nearest coastline, for which the ASCE/SEI 7-22 Standard shows no Tsunami potential, will return N/A (not applicable).

Tsunami risk is modeled on the ASCE Tsunami Design Geodatabase Version 2022-1.0 of geocoded reference points of Offshore Tsunami Amplitude and Period, and Runup Elevation and associated Inundation Limit of the Tsunami Design Zone, that comprises an integral part of the tsunami design provisions of the ASCE/SEI 7-22 Standard.

Page 4 – **FLUVIAL (RIVERINE) FLOOD RISK –** Potential for river flooding above ground level (AGL) of the property with 0.2% probability because of an overflowing river, derived from Fathom Version 3 flood models (www.fathom.global).

Page 4 – COASTAL FLOOD RISK – Potential for inundation from the ocean above ground level (AGL) with 0.2% probability primarily driven by astronomical tides, storm surges, wind setup and wave setup, runup and overtopping, derived from Fathom Version 3 flood models (www.fathom.global).

FUTURE YEARS & CLIMATE SCENARIOS - Fathom 3.0 also introduces a **Climate Dynamics framework**, enabling users to **customize** data based on varying regulatory requirements. RiskFootprint™ flood perils for US locations can be customized for specific combinations of future years, climate scenarios, and temperature changes, tailoring the analysis to customers' specific needs. Contact customerservice@riskfootprint.com for customized flood assessments for future years.

Page 4 - FEMA FLOOD HAZARD BOUNDARIES – (overview) (definitions) These zones are derived from the National Flood Hazard Layer (NFHL) depicted on a community's Flood Insurance Rate Map (FIRM).
Note: Flood defenses in the FEMA maps may indicate a lower risk of flooding at a particular location. Flood defenses, however, may or may not be operational or competent at any given time and, flood waters may overtop defenses, thereby flooding areas with lower modeled risks.
Note: The RiskFootprint™ Report helps you dimension risk of loss from flood hazards and better understand insurance needs. It is not appropriate, however, for insurance placement using the National Flood Insurance Program (NFIP), which exclusively utilizes effective FEMA flood maps for underwriting. Most commercial and industrial buildings do not rely on NFIP insurance. FEMA flood maps, therefore, are only one view of flood risks among others presented herein.

Page 5 – CURRENT AND FUTURE TIDALLY-INFLUENCED FLOODING POTENTIAL – Modeled potential for current year "High Tide Flooding" and tidal flooding due to future Sea Level Rise (SLR) in 2040 and 2060. The methods, models and mapping are derived from the latest data and tools provided by NOAA and NASA (2022) and the ***NOAA Sea Level Rise Viewer*** https://bit.ly/3N2jD5U

NOAA and NASA data sources used for calculation of Flooding Potential are:
Height of Mean Higher High Water relative to NAVD88 at the nearest tide gauge -
https://tidesandcurrents.noaa.gov/datums.html?

NOAA Flooding Threshold - https://sealevel.nasa.gov/flooding-days-projection/

NOAA Sea Level Rise (SLR) Projections -
https://api.tidesandcurrents.noaa.gov/dpapi/prod/webapi/product/slr_projections.json?units=english&report_year=2022&scenario=intermediate-high

Flood Days = Number of days tidal flooding with SLR is expected at the nearest tide gauge – https://sealevel.nasa.gov/flooding-days-projection/

Notes:

1. Projections of flooding potential in the RiskFootprint™ report are based on the NOAA "minor flooding" threshold. Flooding thresholds are national flood thresholds derived from NOAA Technical Report NOS CO-OPS 086: Patterns and Projections of High Tide Flooding Along the U.S. Coastline Using a Common Impact Threshold. (February 2018).
2. Illustrations of flooding in areas with levees should be reviewed together with NOAA's "Leveed Areas Disclaimer".
3. Inland locations situated more than 25 miles from the nearest coastline, for which the NOAA SLR Viewer shows no flooding potential within one mile of the property boundary will return N/A (not applicable) for data on this page.

Page 6 - HURRICANE STORM SURGE – Potential for flooding on the property in the current year because of hurricane storm surges carrying ocean water inland. The RiskFootprint™ Report utilizes data from the National Storm Surge Maps (Version 3) that has been developed by the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's (NWS) National Hurricane Center. The data is derived from the Sea, Lake and Overland Surges from Hurricanes (SLOSH) model version 3 *(latest version).*

The SLOSH model is a numeric model that combines atmospheric pressure, size, forward speed, and hurricane track data to model potential wind fields that then drive storm surge. The SLOSH model can be run on historic, hypothetical, or predicted hurricanes and at different locations to understand the influence of shoreline features, like bridges, roads, and inlets. SLOSH outputs are determined based on Category 1, 3, and 5 hurricanes. Hurricane categories are based on the Saffir-Simpson Wind Scale, a 1 to 5 rating based on a hurricane's maximum sustained wind speed. For areas located outside of the extent of each respective SLOSH output, the maximum inundation value will be returned as "N/A" (not applicable).

HISTORIC HURRICANE STRIKE PROBABILITY – The Risk Footprint™ Hurricane Strike statistics are derived from 110 years of climatological data from the National Hurricane Center. https://www.nhc.noaa.gov/aboutnhcprobs5.shtml.

Page 7 – FEMA NATIONAL RISK INDEX - The National Risk Index is a dataset and online tool designed and built by FEMA to help illustrate the U.S. communities most at risk for 18 natural hazards. The Risk Index leverages available source data for natural hazard and community risk factors to develop a baseline relative risk measurement for each U.S. County and Census tract, to help users better understand the natural hazard risk of their communities.
https://hazards.fema.gov/nri/

Calculation of FEMA NRI Risk Index:

$$Risk = Expected\ Annual\ Loss \times Social\ Vulnerability \times \frac{1}{Community\ Resilience}$$

Source*: FEMA National Risk Index Technical Documentation Mar 2023*

Page 8 – NATURAL HAZARD RISK METERS

FEMA WIND ZONES – (website**)** The United States is divided into four Wind Zones created by FEMA for construction purposes throughout the country. Buildings in their respective wind zones must be able to withstand the maximum wind speed as indicated by FEMA. Note that older buildings may not have been designed to these standards.

COMMUNITY RATING SYSTEM – (website) The Community Rating System (CRS) awards points for steps taken by municipalities to manage the flood plain to reduce the community's risk. Flood insurance rates are discounted for participating municipalities that have accumulated points, thereby saving homeowners on NFIP flood insurance premiums. You should make sure your insurance agent is providing you with the appropriate discount.

NRI COMMUNITY RESILIENCE – (website) is a relative measure of the community that is associated with the parcel compared to all other communities at the nationwide level for its resilience to natural hazards. It is used in FEMA's National Risk Index (website), which identifies communities most at risk to natural hazards. Commonly, the community is a county, but depending on the location, may be a parish, borough, or an independent city. Community Resilience is defined by FEMA as the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. The score is based on 6 factors: 1. Human Well-Being/Cultural/Social; 2. Economic/Financial; 3. Infrastructure/Built Environment/Housing; 4. Institutional/Governance; 5. Community Capacity; and 6. Environmental/Natural.

EPA AIR QUALITY INDEX – (website) Based on the Environmental Protection Agency's Air Quality Index Summary Report, this report provides an annual summary of Air Quality Index (AQI) values for counties or core based statistical areas (CBSA, metropolitan areas in the US). AQI is an indicator of overall air quality. Major air pollutants measured and included in the AQI are ground-level ozone, particle pollution (PM2.5 and PM10), carbon monoxide & nitrogen dioxide. Each day is categorized in 1 of 5 Air Quality categories based on the value of the AQI on that day, as follows:

Good ***AQI***: 0 - 50	Moderate 51 - 100	Unhealthy for Sensitive Groups 101 - 150	Unhealthy for All 151 - 200	Very Unhealthy 201-300	Hazardous 301-500

The RiskFootprint™ meter for the EPA Air Quality Index is based on available data for the previous 10 calendar years. The meter shows the percentage of days at each level of air quality from available data recorded by the EPA over the previous 10 years. For example: 60% "Good" days means that the percentage of days with an AQI between 0 and 50, based on available daily AQI calculations over the previous 10 years, is 60%. The two "Unhealthy" EPA categories have been combined as one "Unhealthy" category in the RFR EPA Air Quality Index Risk Meter.

Further information on the current air quality in your area of interest is available here: https://www.airnow.gov

WILDFIRE POTENTIAL – (website) Data for Wildfire Potential and Annual Burn Probability is based on the US Forest Service's 2024 Wildfire Risk to Communities Product, Risk to Potential Structures dataset.

TORNADO FREQUENCY – (website) Tornado historical data is based on the NOAA National Weather Service (NWS) Storm Prediction Center's (SPC) severe report database, which compiles tornado occurrences.

EARTHQUAKE INTENSITY – (website) Based on the USGS Earthquake Hazard Program - National Seismic Hazard Mapping Project (NSHMP) and depicts areas using peak ground acceleration (PGA) as its parameter and standard gravity (g) as its measure. US Government Sponsored Enterprises such as Fannie Mae require a Seismic Risk Analysis (SRA) report if the Peak Ground Acceleration (PGA) using the 10% in 50-year exceedance probability (the 475-year return period) is greater than or equal to 15% g.

Data sources were obtained from United States Geological Service (USGS) National Seismic Hazard Model Project:
• Continental United States: 2018 https://www.usgs.gov/data/data-release-2018-update-us-national-seismic-hazard-model
• Alaska: 2007 https://www.sciencebase.gov/catalog/item/5da9f42ee4b09fd3b0c9cbd4
• Hawaii: 2021 https://www.usgs.gov/programs/earthquake-hazards/science/us-seismic-hazard-maps-hawaii
• Puerto Rico: 2003 https://www.usgs.gov/programs/earthquake-hazards/science/us-seismic-hazard-maps-puerto-rico-and-us-virgin-islands-samoa

All data are from the 10% exceedance in 50-year occurrence datasets, with Vs30 = 760 m/s (NEHRP B/C boundary). Local soil conditions may significantly amplify or attenuate the ground shaking at the parcel location. The earthquake hazard is limited to ground shaking and does not incorporate any information on potential for earthquake-induced landsliding or liquefaction.

ASCE DESIGN WIND SPEED – (website) The American Society of Civil Engineers (ASCE) creates building codes for residential and commercial structures in the United States. The ASCE Wind Meter is based on ASCE/SEI 7-16, and is the 3- second gust wind speed at 33 ft above ground for Exposure C, Risk Category II buildings. Wind speed corresponds to approximately a 7% probability of exceedance in 50 years.

Special Wind Region
There are special regions in which wind-speed anomalies are known to exist. When selecting basic wind speeds in these special regions, use of regional climatic data and consultation with a wind engineer or meteorologist is advised. (ASCE 7-16).

Hurricane-prone region
Defined in the 2015 and later International Building Code (IBC) as:

- 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 (51.4m/s); and;
- Hawaii, Puerto Rico, Guam, Virgin Islands, and American Samoa.

https://www.fema.gov/glossary/hurricane-prone-region

LANDSLIDE SUSCEPTIBILITY – Based on U.S. Geological Survey models that include information on the proportion of susceptible terrain as well as the density (landslides per square kilometer) of documented landslides within susceptible terrain for each U.S. County in the conterminous United States, Alaska, Hawaii and Puerto Rico. The RiskFootprint™ risk categories for landslide susceptibility from Low to Very High represent the number of susceptible 10-meter cells within each 90-meter grid on the USGS terrain maps: **https://www.sciencebase.gov/catalog/item/65ccea5bd34ef4b119cb3bac**

WATER STRESS – Based on **Aqueduct 4.0**, the latest iteration of WRI's water risk framework designed to translate complex hydrological data into intuitive indicators of water-related risk. Baseline water stress measures the ratio of total water demand to available renewable surface and groundwater supplies. Water demand includes domestic, industrial, irrigation, and livestock uses. Available renewable water supplies include the impact of upstream consumptive water users and large dams on downstream water availability.

Property Elevation
First Floor Height (FFH) is an estimate of the height of the first floor above ground level based on data derived from True Flood Risk, Inc.'s Artificial Intelligence (AI) technology. Large buildings may have multiple FFHs because of various access points. For a more detailed study of vulnerabilities, potential in-structure flooding depth and value-at-risk, please contact customerservice@riskfootprint.com

Page 9 – **FUTURE CLIMATE CHANGE IMPACTS IN 2030, 2040 & 2050 –** Projections for Future Extreme Heat, Extreme Rainfall & Drought impacts were derived from data downscaled from 32 General Circulation Models (GCMs) using LOCA (Localized Constructed Analogs), a statistical downscaling technique that improves the detail of data from GCMs. LOCA was developed and implemented by a team including representatives from NASA, US Army Corps of Engineers, University of Colorado and Scripps Institution of Oceanography. Using LOCA, the 32 GCMs were downscaled from the CMIP5 archive at a 1/16th degree spatial resolution. http://loca.ucsd.edu/.

a. Extreme Heat

Extreme heat risks related to the projected increase in maximum daily air temperature. Datasets from Representative Concentration Pathways 4.5 and 8.5* are used to determine the percentage change in number of days per year for annual maximum daily air temperature greater than 85°F (~29.44° Celsius) averaged over 2026-2030, 2036-2040 and 2046-2050 compared with no. of days per year averaged over 2021-2025.

b. Extreme Rainfall

Extreme rainfall risks related to the projected increase in maximum daily rainfall (precipitation). Datasets from Representative Concentration Pathway 4.5 and 8.5* are used to determine the percentage change in annual maximum daily precipitation averaged over 2026-2030, 2036-2040 and 2046-2050 compared with the annual maximum daily precipitation averaged over 2021-2025.

c. Drought

Drought risk as measured by the 12-month Standard Precipitation Index (SPI), to characterize meteorological drought on a range of timescales. The SPI calculation for any location is based on the long-term precipitation record for the specific period. A 12- month SPI is a comparison of the precipitation for 12 consecutive months with the same 12 consecutive months during all the previous years of available data. https://www.in.gov/dnr/water/water-availability-use-rights/water-resource-updates/monthly-water-resource-summary/explanation-of-standard-precipitation-index-spi/

***Representative Concentration Pathways (RCPs)**

Values of Representative Concentration Pathway (RCP) represent the range of greenhouse gas emissions. RCP 4.5 refers to an intermediate emission scenario while RCP 8.5 refers to a high emission scenario. In this report, we do not include RCP 2.6 because it's a stringent emission scenario which is very unlikely based on current trends.

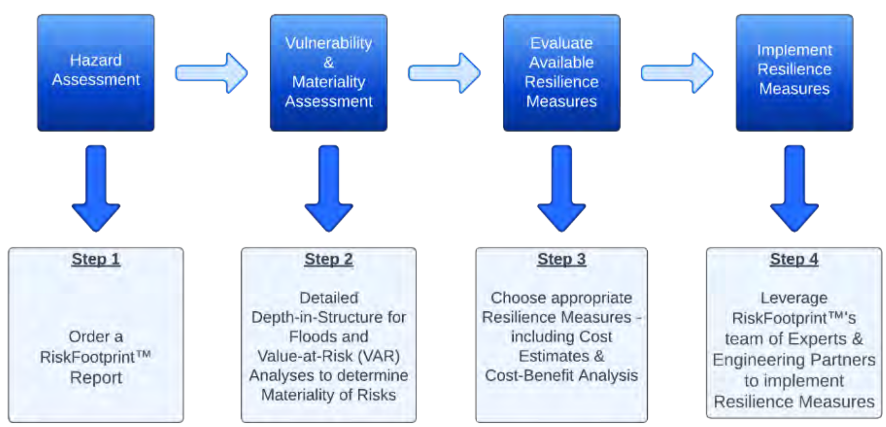
Note: Possible non-linear trend in severity of climate impacts for certain locations: *The Ranking Guidelines for Low, Medium, and High are based on the % of models that show results within a certain range. Also, although projections of future temperature trends are generally linear, increasing heat creates changes in atmospheric conditions that may impact projected trends of extreme rainfall and drought over certain time periods. As a result of a combination of these factors, projections of extreme rainfall and drought may not always show a linear trend in severity for the next few decades.*

Note: Apparent contradictions in different datasets: *The RiskFootprint™ Report is comprised of both proprietary and open- source datasets. The various hazard scores and risk assessments included in the Report may be shown at different levels of granularity or specificity and measured over varying time frames. The different bases and methodologies used may lead to apparent contradictions. For example, a FEMA 100-year flood Base Flood Elevation (BFE) may not be the same as a NOAA storm surge height for the same return period. The National Risk Index (NRI) Strong Wind rating at the Census Tract level may not be the same as the ASCE Design Wind Speed at a specific building address. Accordingly, RiskFootprint™ Users are advised to consider the hazard assessments and risk scores in the Report only as starting points in the Property Resilience Assessment (PRA) Process.*

For further information on Property Resilience Assessments, RiskFootprint™ Scoring Methods or annual Dashboard subscriptions, please contact Customer Service at 844-732-7473 or email at customerservice@riskfootprint.com.

RISK FOOTPRINT™

Property Resilience Assessment Process



National Risk Index

February 27, 2025

Census tract 12086004106, Miami-Dade County, Florida

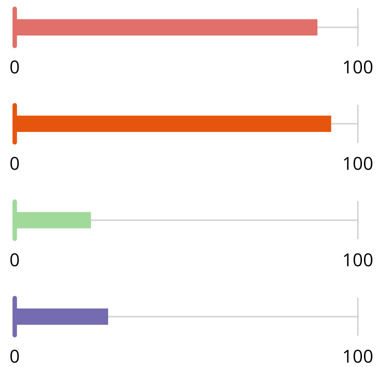
Summary

Risk Index is **Relatively High** Score **88.7**

Expected Annual Loss is **Relatively High** Score **92.3**

Social Vulnerability is **Relatively Low** Score **22.4**

Community Resilience is **Relatively Low** Score **27.1**

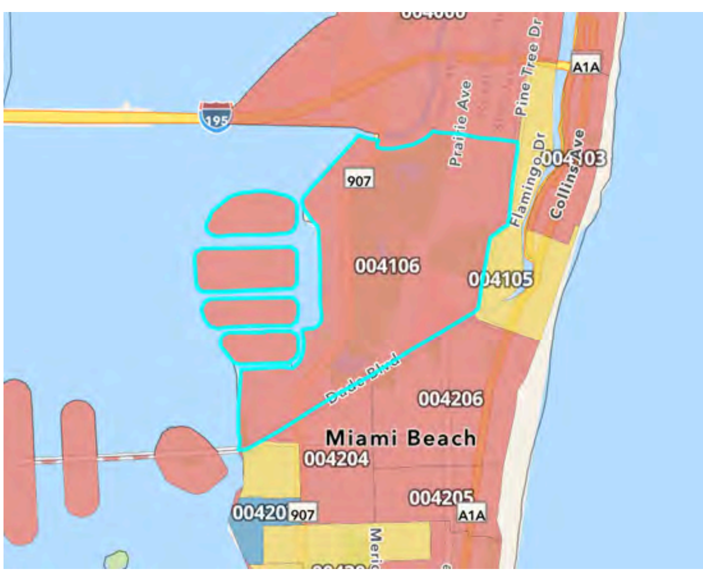


While reviewing this report, keep in mind that low risk is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.

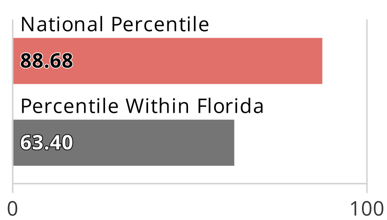
For more information about the National Risk Index, its data, and how to interpret the information it provides, please review the **About the National Risk Index** and **How to Take Action** sections at the end of this report. Or, visit the National Risk Index website at hazards.fema.gov/nri/learn-more to access supporting documentation and links.

Risk Index

The Risk Index rating is **Relatively High** for **Census tract 12086004106** when compared to the rest of the U.S.



Score	88.68



89% of U.S. Census tracts have a lower Risk Index

63% of Census tracts in Florida have a lower Risk Index

Risk Index Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Rating | Not Applicable | Insufficient Data

Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.

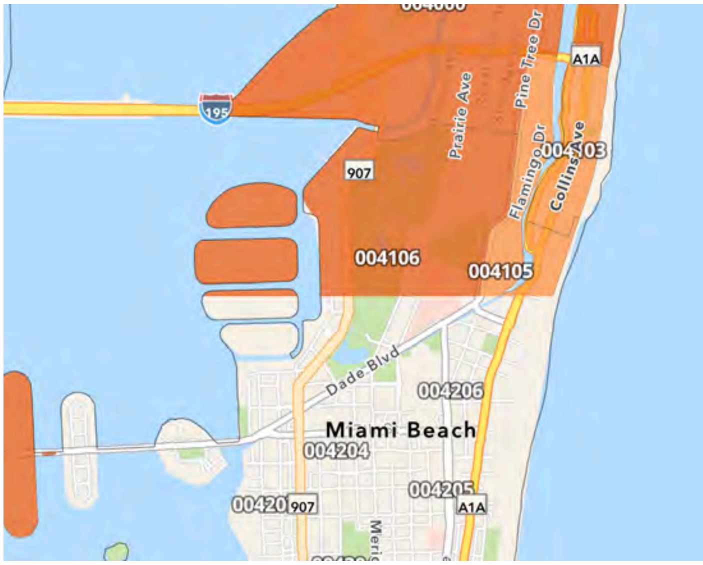
Hazard Type	Risk Index Rating	Risk Index Score	National Percentile
Avalanche	Not Applicable	--	
Coastal Flooding	Relatively Moderate	93.4	0 100
Cold Wave	Relatively Low	45.1	0 100
Drought	No Rating	0	0 100
Earthquake	Very Low	0.9	0 100
Hail	Very Low	3.2	0 100
Heat Wave	No Rating	0	0 100
Hurricane	Relatively High	94.1	0 100
Ice Storm	Not Applicable	--	
Landslide	Relatively Low	62.8	0 100
Lightning	Relatively Moderate	55.1	0 100
Riverine Flooding	Relatively High	93	0 100
Strong Wind	Very Low	10.5	0 100
Tornado	Relatively Low	37.7	0 100
Tsunami	Insufficient Data	--	
Volcanic Activity	Not Applicable	--	
Wildfire	No Rating	0	0 100
Winter Weather	No Rating	0	0 100

Risk Factor Breakdown

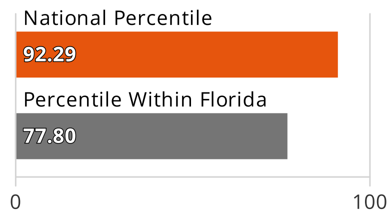
Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
Hurricane	$2,024,420	Relatively Low	Relatively Low	0.92	$1,858,504	94.1
Riverine Flooding	$274,706	Relatively Low	Relatively Low	0.92	$252,192	93
Coastal Flooding	$33,513	Relatively Low	Relatively Low	0.92	$30,766	93.4
Tornado	$32,142	Relatively Low	Relatively Low	0.92	$29,508	37.7
Lightning	$7,871	Relatively Low	Relatively Low	0.92	$7,226	55.1
Landslide	$967	Relatively Low	Relatively Low	0.92	$887	62.8
Cold Wave	$401	Relatively Low	Relatively Low	0.92	$368	45.1
Strong Wind	$344	Relatively Low	Relatively Low	0.92	$316	10.5
Earthquake	$113	Relatively Low	Relatively Low	0.92	$103	0.9
Hail	$22	Relatively Low	Relatively Low	0.92	$20	3.2
Drought	$0	Relatively Low	Relatively Low	0.92	$0	0
Heat Wave	$0	Relatively Low	Relatively Low	0.92	$0	0
Wildfire	$0	Relatively Low	Relatively Low	0.92	$0	0
Winter Weather	$0	Relatively Low	Relatively Low	0.92	$0	0
Avalanche	--	Relatively Low	Relatively Low	0.92	--	--
Ice Storm	--	Relatively Low	Relatively Low	0.92	--	--
Tsunami	--	Relatively Low	Relatively Low	0.92	--	--
Volcanic Activity	--	Relatively Low	Relatively Low	0.92	--	--

Expected Annual Loss

In **Census tract 12086004106**, expected loss each year due to natural hazards is **Relatively High** when compared to the rest of the U.S.



Score	**92.29**



92% of U.S. Census tracts have a lower Expected Annual Loss

78% of Census tracts in Florida have a lower Expected Annual Loss

Expected Annual Loss Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Expected Annual Losses | Not Applicable | Insufficient Data

Composite Expected Annual Loss	**$2,374,498.37**
Composite Expected Annual Loss Rate National Percentile	**90.3**

Building EAL	**$2,192,172.65**	Population EAL	**0.02** fatalities
Building EAL Rate	**$1 per $389.86 of building value**	Population EAL Rate	**1 per 204.86K people**
Agriculture EAL	**$0.00**	Population Equivalence EAL	**$182,325.72**
Agriculture EAL Rate	**--**		

Expected Annual Loss for Hazard Types

Expected Annual Loss scores for hazard types are calculated using data for only a single hazard type, and reflect a community's relative expected annual loss for only that hazard type.

14 of 18 hazard types contribute to the expected annual loss for **Census tract 12086004106**.

Hazard Type	Expected Annual Loss Rating	EAL Value	Score
Hurricane	Very High	$2,024,420	95.6
Riverine Flooding	Relatively High	$274,706	94.4

Hazard Type	Expected Annual Loss Rating	EAL Value	Score
Coastal Flooding	Relatively Moderate	$33,513	93.5
Tornado	Relatively Low	$32,142	41.3
Lightning	Relatively Moderate	$7,871	60.0
Landslide	Relatively Low	$967	64.7
Cold Wave	Relatively Low	$401	46.2
Strong Wind	Very Low	$344	14.1
Earthquake	Very Low	$113	1.1
Hail	Very Low	$22	4.5
Drought	No Expected Annual Losses	$0	0.0
Heat Wave	No Expected Annual Losses	$0	0.0
Wildfire	No Expected Annual Losses	$0	0.0
Winter Weather	No Expected Annual Losses	$0	0.0
Avalanche	Not Applicable	--	--
Ice Storm	Not Applicable	--	--
Tsunami	Insufficient Data	--	--
Volcanic Activity	Not Applicable	--	--

Expected Annual Loss Values

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
Avalanche	--	--	--	--	--
Coastal Flooding	$33,513	$8,757	$24,756	0.00	n/a
Cold Wave	$401	$7	$393	0.00	$0
Drought	$0	n/a	n/a	n/a	$0
Earthquake	$113	$86	$26	0.00	n/a
Hail	$22	$3	$19	0.00	$0
Heat Wave	$0	$0	$0	0.00	$0
Hurricane	$2,024,420	$1,923,019	$101,401	0.01	$0
Ice Storm	--	--	--	--	--
Landslide	$967	$911	$56	0.00	n/a
Lightning	$7,871	$92	$7,780	0.00	n/a

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
Riverine Flooding	$274,706	$242,988	$31,719	0.00	$0
Strong Wind	$344	$20	$324	0.00	$0
Tornado	$32,142	$16,290	$15,852	0.00	$0
Tsunami	n/a	n/a	n/a	n/a	n/a
Volcanic Activity	--	--	--	--	--
Wildfire	$0	$0	$0	0.00	$0
Winter Weather	$0	$0	$0	0.00	$0

Exposure Values

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
Avalanche	--	--	--	--	--
Coastal Flooding	$58,429,588,911	$1,314,187,052	$57,115,401,860	4,923.74	n/a
Cold Wave	$30,666,098,852	$622,098,852	$30,044,000,000	2,590.00	$0
Drought	$0	n/a	n/a	n/a	$0
Earthquake	$38,206,628,000	$854,628,000	$37,352,000,000	3,220.00	n/a
Hail	$38,206,638,871	$854,638,871	$37,352,000,000	3,220.00	$0
Heat Wave	$0	$0	$0	0.00	$0
Hurricane	$38,206,638,871	$854,638,871	$37,352,000,000	3,220.00	$0
Ice Storm	--	--	--	--	--
Landslide	$3,688,892,915	$121,744,039	$3,567,148,876	307.51	n/a
Lightning	$38,206,638,871	$854,638,871	$37,352,000,000	3,220.00	n/a
Riverine Flooding	$38,206,617,038	$854,638,871	$37,351,978,167	3,220.00	$0
Strong Wind	$38,206,638,871	$854,638,871	$37,352,000,000	3,220.00	$0
Tornado	$38,206,638,871	$854,638,871	$37,352,000,000	3,220.00	$0
Tsunami	n/a	n/a	n/a	n/a	n/a
Volcanic Activity	--	--	--	--	--
Wildfire	$0	$0	$0	0.00	$0
Winter Weather	$0	$0	$0	0.00	$0

Annualized Frequency Values

Hazard Type	Annualized Frequency	Events on Record	Period of Record
Avalanche	--	--	--
Coastal Flooding	3.1 events per year	n/a	Various (see documentation)
Cold Wave	0.1 events per year	1	2005-2021 (16 years)
Drought	7 events per year	154	2000-2021 (22 years)
Earthquake	0.013% chance per year	n/a	2021 dataset
Hail	1.2 events per year	21	1986-2021 (34 years)
Heat Wave	0 events per year	0	2005-2021 (16 years)
Hurricane	0.6 events per year	27	East 1851-2021 (171 years) / West 1949-2021 (73 years)
Ice Storm	--	--	--
Landslide	0 events per year	0	2010-2021 (12 years)
Lightning	215.2 events per year	2,296	1991-2012 (22 years)
Riverine Flooding	2.3 events per year	55	1996-2019 (24 years)
Strong Wind	1.7 events per year	28	1986-2021 (34 years)
Tornado	0 events per year	0	1950-2021 (72 years)
Tsunami	n/a	n/a	1800-2021 (222 years)
Volcanic Activity	--	--	--
Wildfire	0% chance per year	n/a	2021 dataset
Winter Weather	0 events per year	0	2005-2021 (16 years)

Historic Loss Ratios

Hazard Type	Overall Rating
Avalanche	--
Coastal Flooding	Very Low
Cold Wave	Very Low
Drought	No Rating
Earthquake	Very Low
Hail	Very Low
Heat Wave	No Rating
Hurricane	Relatively Moderate
Ice Storm	--
Landslide	Relatively Low

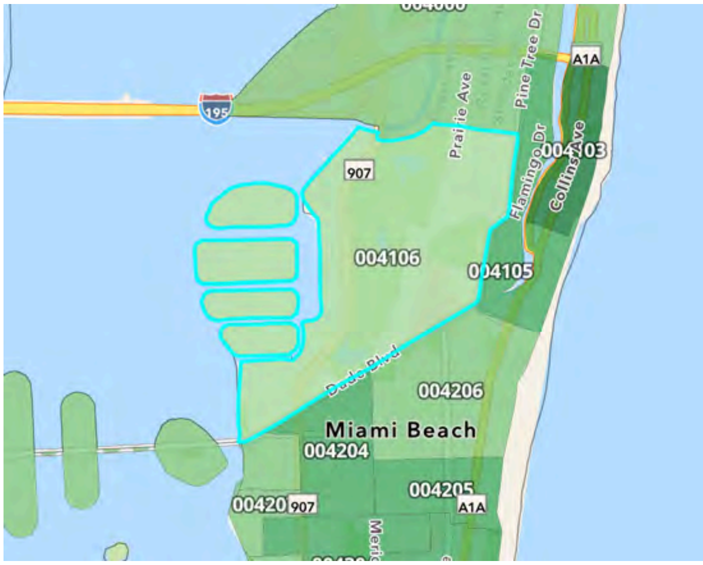
Hazard Type	Overall Rating
Lightning	Very Low
Riverine Flooding	Very Low
Strong Wind	Very Low
Tornado	Relatively Moderate
Tsunami	Insufficient Data
Volcanic Activity	--
Wildfire	No Rating
Winter Weather	No Rating

Expected Annual Loss Rate

Hazard Type	Building EAL Rate (per building value)	Population EAL Rate (per population)	Agriculture EAL Rate (per agriculture value)
Avalanche	--	--	--
Coastal Flooding	$1 per $97.60K	1 per 1.51M	--
Cold Wave	$1 per $118.31M	1 per 94.96M	--
Drought	--	--	--
Earthquake	$1 per $9.90M	1 per 1.41B	--
Hail	$1 per $313.58M	1 per 1.94B	--
Heat Wave	--	--	--
Hurricane	$1 per $444.43	1 per 368.36K	--
Ice Storm	--	--	--
Landslide	$1 per $937.95K	1 per 672.45M	--
Lightning	$1 per $9.33M	1 per 4.80M	--
Riverine Flooding	$1 per $3.52K	1 per 1.18M	--
Strong Wind	$1 per $42.86M	1 per 115.26M	--
Tornado	$1 per $52.46K	1 per 2.36M	--
Tsunami	--	--	--
Volcanic Activity	--	--	--
Wildfire	--	--	--
Winter Weather	--	--	--

Social Vulnerability

Social groups in **Census tract 12086004106** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.



Score	**22.44**

National Percentile
22.44

Percentile Within Florida
16.10

0 100

22% of U.S. Census tracts have a lower Social Vulnerability

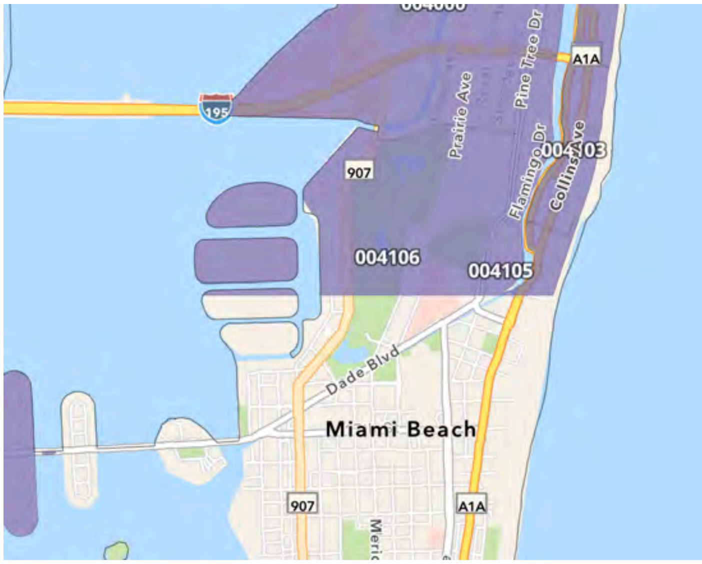
16% of Census tracts in Florida have a lower Social Vulnerability

Social Vulnerability Legend

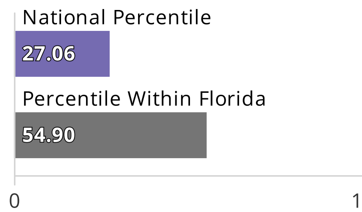
Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

Community Resilience

Communities in **Census tract 12086004106** have a **Relatively Low** ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.



Score	27.06



73% of U.S. Census tracts have a higher Community Resilience

45% of Census tracts in Florida have a higher Community Resilience

Community Resilience Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

About the National Risk Index

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Explore the National Risk Index Map at **hazards.fema.gov/nri/map**.

Visit the National Risk Index website at **hazards.fema.gov/nri/learn-more** to access supporting documentation and links.

Calculating the Risk Index

Risk Index values are calculated using an equation* that combines values for Expected Annual Loss (EAL) due to natural hazards, with the Community Risk Factor (CRF), which is a function of Social Vulnerability and Community Resilience:

$$\text{Risk Index} = \text{Expected Annual Loss} \times \text{Community Risk Factor}$$

$$\text{where Community Risk Factor} = f\left(\frac{\text{Social Vulnerability}}{\text{Community Resilience}}\right)$$

*County-level risk values are derived by summing the risk values of all census tracts within that county.

Risk is presented as a composite value and score for all 18 hazard types, as well as individual values and scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/determining-risk**.

Calculating Expected Annual Loss

Expected Annual Loss values are calculated using an equation* that combines values for exposure, annualized frequency, and historic loss ratios for 18 hazard types:

$$\text{Expected Annual Loss} = \text{Exposure} \times \text{Annualized Frequency} \times \text{Historic Loss Ratio}$$

*Excluding Avalanche, Drought, Earthquake, and Tornado, EAL values for each hazard are calculated at the Census block level and summed together to determine Census tract and county-level hazard type EAL values.

Expected Annual Loss is presented as a composite value and score for all 18 hazard types, as well as individual values and scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/expected-annual-loss**.

Calculating Social Vulnerability

Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).

For more information, visit **hazards.fema.gov/nri/social-vulnerability**.

Calculating Community Resilience

Community Resilience is measured at the County level using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

For more information, visit **hazards.fema.gov/nri/community-resilience**.

Values, Scores, and Ratings

The National Risk Index provides three different types of results for Risk and each component used to derive Risk: EAL, Social Vulnerability, and Community Resilience:

Values. Values for Risk and EAL are in units of dollars, representing the community's average economic loss from natural hazards each year. For Social Vulnerability and Community Resilience, values are the index values for the community provided by the source data sets.

Scores. Scores represent the national percentile ranking of the community's component value compared to all other communities at the same level (county or Census tract).

Ratings. Ratings refer to the qualitative terms that describe the relative risk of an area within the same geographic level. These rating categories range from "Very Low" to "Very High". Ratings for Social Vulnerability and Community Resilience are based on quintiles of those components' scores, while Risk and EAL ratings are based on more advanced statistical calculations on values . As a result, there is no fixed range of scores or values that correspond to the rating categories.

How to Take Action

There are many ways to reduce natural hazard risk through mitigation. Communities with high National Risk Index scores can take action to reduce risk by decreasing Expected Annual Loss due to natural hazards, decreasing Social Vulnerability, and increasing Community Resilience.

For information about how to take action and reduce your risk, visit **hazards.fema.gov/nri/take-action**.

Disclaimer

The National Risk Index (the Risk Index or the Index) and its associated data are meant for planning purposes only. This tool was created for broad nationwide comparisons and is not a substitute for localized risk assessment analysis. Nationwide datasets used as inputs for the National Risk Index are, in many cases, not as accurate as available local data. Users with access to local data for each National Risk Index risk factor should consider substituting the Risk Index data with local data to recalculate a more accurate risk index. If you decide to download the National Risk Index data and substitute it with local data, you assume responsibility for the accuracy of the data and any resulting data index. Please visit the **Contact Us** page if you would like to discuss this process further.

The methodology used by the National Risk Index has been reviewed by subject matter experts in the fields of natural hazard risk research, risk analysis, mitigation planning, and emergency management. The processing methods used to create the National Risk Index have produced results similar to those from other natural hazard risk analyses conducted on a smaller scale. The breadth and combination of geographic information systems (GIS) and data processing techniques leveraged by the National Risk Index enable it to incorporate multiple hazard types and risk factors, manage its nationwide scope, and capture what might have been missed using other methods.

The National Risk Index does not consider the intricate economic and physical interdependencies that exist across geographic regions. Keep in mind that hazard impacts in surrounding counties or Census tracts can cause indirect losses in your community regardless of your community's risk profile.

Nationwide data available for some risk factors are rudimentary at this time. The risk profiles for the vast majority of hazard types are based on historical frequency and loss data. They represent risk and expected annual loss based on average past conditions, not future predictions; therefore, they may not fully consider the potential impacts of recent changes to the environment, including anthropomorphic landscape changes, or climate change. The National Risk Index will be continuously updated as new data become available and improved methodologies are identified.

For comprehensive details about how the Risk Index can help you and its limitations, see the **National Risk Index Technical Documentation**

Assumption of Risk

In view of the identified limitations of the National Risk Index associated data, by using the data, you acknowledge and agree that FEMA makes no representations or warranties about the accuracy, completeness, or fitness for any particular purpose of the data; that the data is provided “as is” without warranty of any kind; that you assume full responsibility for any consequences that may arise, including financial losses, legal disputes, or other adverse outcomes; and that you release FEMA and the federal government from any liability that may arise to the extent allowable by law.

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The National Risk Index Contact Us page is available at **hazards.fema.gov/nri/contact-us**.