



## About Us

Coastal Risk is a unique, geospatial modeling, data analytics, and risk mitigation solutions company located in Boca Raton, FL, and servicing clients in the US and internationally. Coastal Risk's offerings include RiskFootprint™, an online, hazard assessment technology (SaaS) and our B-Resilient™ Advisory Services capabilities. The RiskFootprint™ technology is an industry leader for commercial real estate portfolio risk management, new acquisition due diligence, and reporting of physical climate risks to governmental and non-governmental authorities, such as ESG/TCFD and SEC. The RiskFootprint™ Report assesses over 30 current hazards and 4 future climate change impacts, the most of any hazard assessment technology provider.

Some of the largest real estate investment trusts, owners/operators of commercial/industrial and multi-family properties, major commercial lenders, hotels/resorts, and major consulting firms use RiskFootprint™ and our B-Resilient™ Advisory Services. We help them make crucial decisions such as: (1) should we buy/sell a property; (2) is our insurance coverage adequate, given the risks to a property; (3) should we budget adequate funds to protect the property against identified hazards and in what time frame; and (4) how should we report the materiality of the risks to certain higher risk properties?

## Accolades

### American Realty Advisors' 2020 ESG + R Report

"We have utilized the RiskFootprintDashboard on the majority of potential acquisitions since 2015. **The RiskFootprint report is incorporated into the due diligence reports submitted to our Investment Committee and provides a strong foundation for the committee's investment decisions.**

Recently, we have begun generating RiskFootprint reports for all our assets; these reports may form the basis of mitigation plans for those assets facing a high likelihood of a climate-related risk, thus improving the overall resiliency of our portfolio.

Through our partnership with Coastal Risk Consulting, we have been able to grow our physical risk due diligence process into a model for climate-related risk analysis. This robust, innovative analysis is an important element of our strategy to provide long-term value to our clients, stakeholders, and communities."

<http://www.aracapital.com/source/files/ARA%202020%20ESG%20BR%20Annual%20Report.pdf>



## Physical Climate Risk Solutions

Advanced Risk Assessments for Increased Resilience



Corporations and governments are recognizing that their real properties and investments need to become safer, more sustainable and resilient in our changing environment. Doing so is critical to their long-term business interests and being responsive to stakeholders, investors, customers and regulators. The carbon footprint is a measure of what your facilities may be doing to the planet. RiskFootprint™ is a way of determining what the planet may be doing to your facilities.

### Portfolio Risk Management



At the board and c-suite levels, concerns are growing over the value at risk in the portfolio and new acquisitions from physical climate risks. RiskFootprint™ quantitative risk assessments help with both long-range planning and risk mitigation investments.

### Regulatory Drivers



In the US, many companies are already complying with the EU's Task Force on Climate-related Financial Disclosures (TCFD), UN Principles for Responsible Investment (PRI), SASB and, soon the SEC.

### Investor/Lender Concerns



The ESG investment community is increasingly taking physical climate risks into consideration when providing debt or equity. Once risks are identified, ESG investors want to see progress to mitigate them.

### Insurance Coverages



Companies and Governments may not have fully accounted for physical risks of climate, extreme weather and natural hazards. RiskFootprint™ and B-Resilient™ Solutions provide an independent and unbiased evaluation of coverage adequacy.

## How can RiskFootprint™ help?

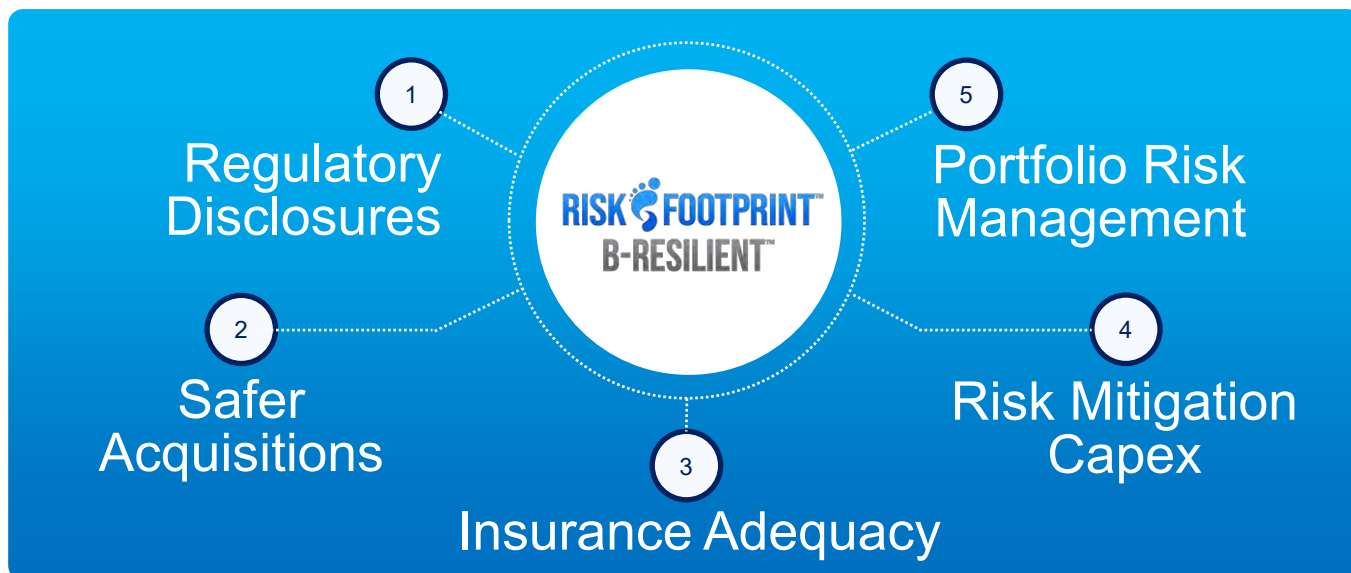
By translating our scientific knowledge into commercial assessments, we deliver fast, accurate and affordable physical climate risk insights.

# RiskFootprint™ and B-Resilient™ Solutions

The RiskFootprint™ advanced risk assessment technology provides qualitative portfolio risk scoring for over 14-types of physical climate risks, extreme weather and natural hazards. In addition to the risk at the property boundary, RiskFootprint™ risk scores the surrounding market area at no additional cost. Then, the RiskFootprint™ Dashboard also provides professional grade, quantitative risk assessment reports, which enable owners/operators/investors to make better decisions to improve the safety, sustainability, and resilience of their properties, now and in the future.

After the RiskFootprint™ portfolio analysis and property specific assessments are complete, then asset and risk managers can focus attention on those properties at highest risk for planned risk mitigation investments or dis-acquisition.

Our B-Resilient™ Solutions advisory services are available to assist with determining the value at risk and cost-benefit ratio of capex for mitigation, adaptation and resilience.



## RiskFootprint™ Dashboard


The more informed you are, the more proactive you can be in taking steps to protect your property or investment's market value. No other risk assessment tech company provides all this actionable data and analytics plus resilience accelerating advisory services ready at your service.



# 14 Current & Future Risk Factors Quantified


	Risk Factor	Description
Current Risks	 Heavy Rainfall	Potential for rainfall flooding above ground level (AGL) of the property.
	 Wildfires	Using data from the US Forest Service, integrates wildfire likelihood and intensity.
	 River Flooding	Potential for river flooding above ground level (AGL) of the property as a result of an overflowing river.
	 Wind	Historical number and strength of extreme wind events.
	 Tsunamis	Identification of areas vulnerable to tsunamis based on maps and datasets maintained by state governments in the US.
	 Tornadoes	Number of tornadoes based on the NOAA National Weather Service (NWS) Storm Prediction Center's (SPC) severe report database.
	 Hurricane Storm Surge	Potential for flooding on the property because of the wind field that drives hurricane storm surge.
	 Poor Drainage Hot Spots	Proprietary model of the likelihood that heavy rain events will cause hyper-local flooding.
	 Tidal Floods & Sea Level Rise	Models the extent of tidal flooding and climate-change induced sea level rise now and in the future.
	 Earthquakes	The intensity of ground shaking likely experienced based on the USGS Earthquake Hazard Program & National Seismic Hazard Mapping Project (NSHMP).
Future Risks	 Extreme Heat Hazard	Indicates 2050 extreme heat risks related to the increase in energy requirements to cool buildings.
	 Extreme Rainfall	Extreme 2050 rainfall risk related to heavy rainfall and localized flooding from extreme precipitation.
	 Extreme Drought	2050 extreme drought risk related to reductions in precipitation that produce drought months.

## What Differentiates Us

 <p><b>Quality Assessments</b></p> <p>Qualitative and quantitative risk assessments for properties and surrounding markets.</p>	 <p><b>Cost-Benefit / Value</b></p> <p>B-Resilient™ Solutions Advisory Services including cost-benefit/value at risk studies.</p>	 <p><b>Fast &amp; Affordable</b></p> <p>Fast, Accurate and Affordable - annual subscriptions or ala carte.</p>	 <p><b>Independent Advice</b></p> <p>Independent risk scoring and advice - we don't sell insurance or any other products.</p>
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# Three Tiers of Service Offerings

**Level 1**  
**High Level Portfolio Overview**




**Product:**  
Customer receives climate risk scores in spreadsheet format and RiskFootprint™ report form. Annual subscription to the RiskFootprint™ Dashboard available.

**Level 2**  
**Climate 'Hot Spot' Deep Dives**



**Product:**  
Value at Risk studies of hazard impacts, so that clients may determine if risk mitigation, solutions are cost-effective. These studies require "COPE" and other data on the property.

**Level 3**  
**Risk Mitigation and Risk Transfer Options**



**Product:**  
Customer receives specific, risk mitigation recommendations at location level, supported by our B-Resilient™ team. Risk transfer solutions may also be recommended.

## Client Testimonial



"ARA has been increasingly interested in more fully understanding physical risks to our assets from floods, natural hazards and climate impacts as part of our overall Corporate Responsibility and Sustainability Program," said Don Pecano, Vice President of Due Diligence at ARA. "We have used RiskFootprint™ both to view our portfolio risks and for due diligence on new acquisitions. The RiskFootprint™ team is always available with its B-Resilient™ Advisory Services to "go the extra mile" and help us make better and more informed decisions."



## Quality Data, Quality Partnerships

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[riskfootprint.com](http://riskfootprint.com)



[customerservice@riskfootprint.com](mailto:customerservice@riskfootprint.com)



# RISK FOOTPRINT™ REPORT

Accelerate Your Resilience

## PROPERTY DETAILS:

10850 Southwest 57th  
Miami, Florida 33156  
lat: 25.67044 long: -80.28483

## REPORT DATE & DETAILS:

Date: November 16, 2022  
Status: Complete



[weather.gov](https://www.weather.gov)



[noaa.gov](https://www.noaa.gov)

## 10850 Southwest 57th Avenue, Miami, Florida 33156



	Current Risks											Future Risks				
	Aggregate	FEMA NRI Risk	Pluvial	Fluvial	Tidal Flooding	Storm Surge	FEMA Flood	Tsunami	Wind Zone	Tornado	Wildfire	Earthquake	2050 SLR	2050 Heat	2050 Rainfall	2050 Drought
Property:	6	Low	High	Low	High	High	High	Low	Medium	Medium	Medium	Low	High	Low	Low	High
Neighborhood:	6	Low	High	Low	High	High	High	Low	Medium	Medium	Medium	Low	High	Low	Low	High

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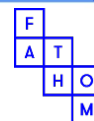
## QUESTIONS?

WE'RE HERE TO HELP

CALL:

**1-844-732-7473**

**RISK FOOTPRINT™**



NATIONAL OCEANIC & ATMOSPHERIC  
ADMINISTRATION'S (NOAA) PARTNER



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11/16/2022

Dear Client,

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.

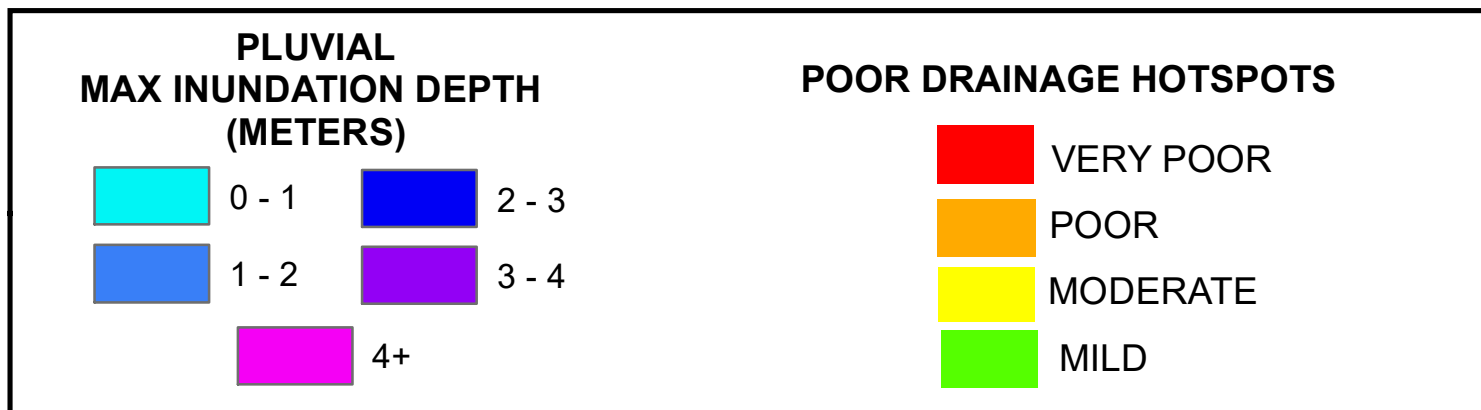
If your RiskFootprint™ Report indicates that your property faces risks, our Advisory Services team of professionals can assist you with our six-step, B-Resilient™ Solutions process to help you take appropriate cost-effective risk mitigation and adaptation actions.

If you would like to find out more about our innovative products and services, contact [customerservice@riskfootprint.com](mailto:customerservice@riskfootprint.com).

Sincerely,

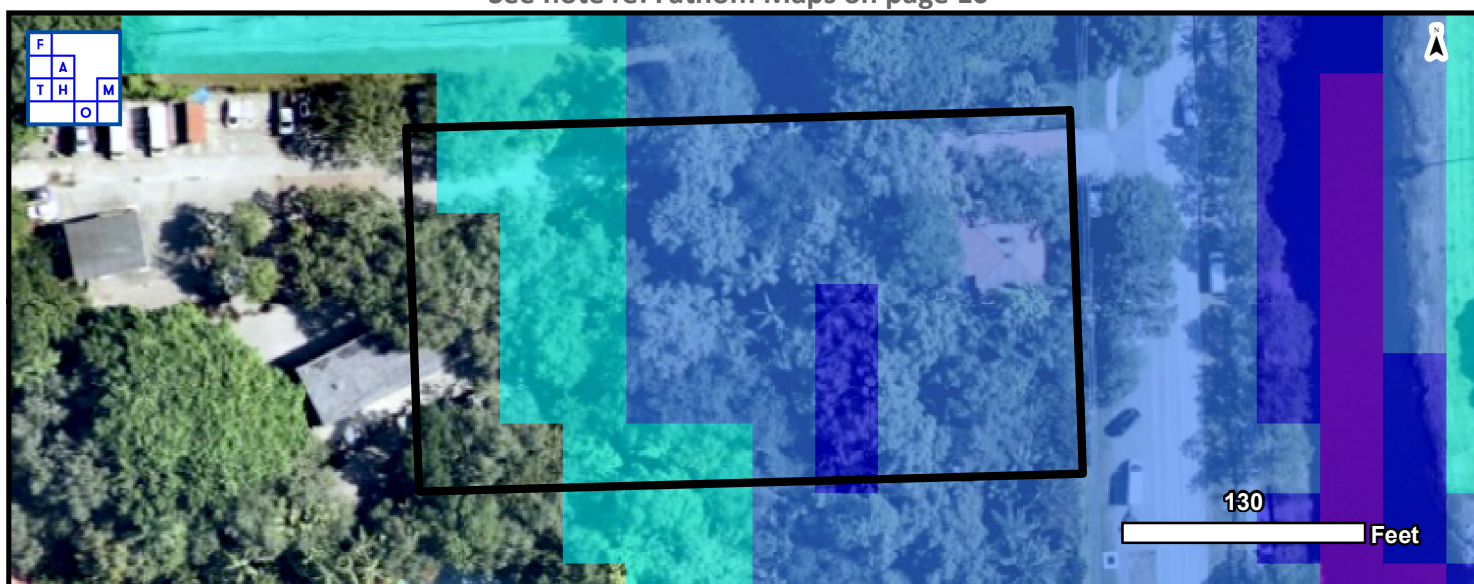
  
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[www.riskfootprint.com](http://www.riskfootprint.com)

# HEAVY RAINFALL (PLUVIAL) FLOOD RISK and POOR DRAINAGE AREAS

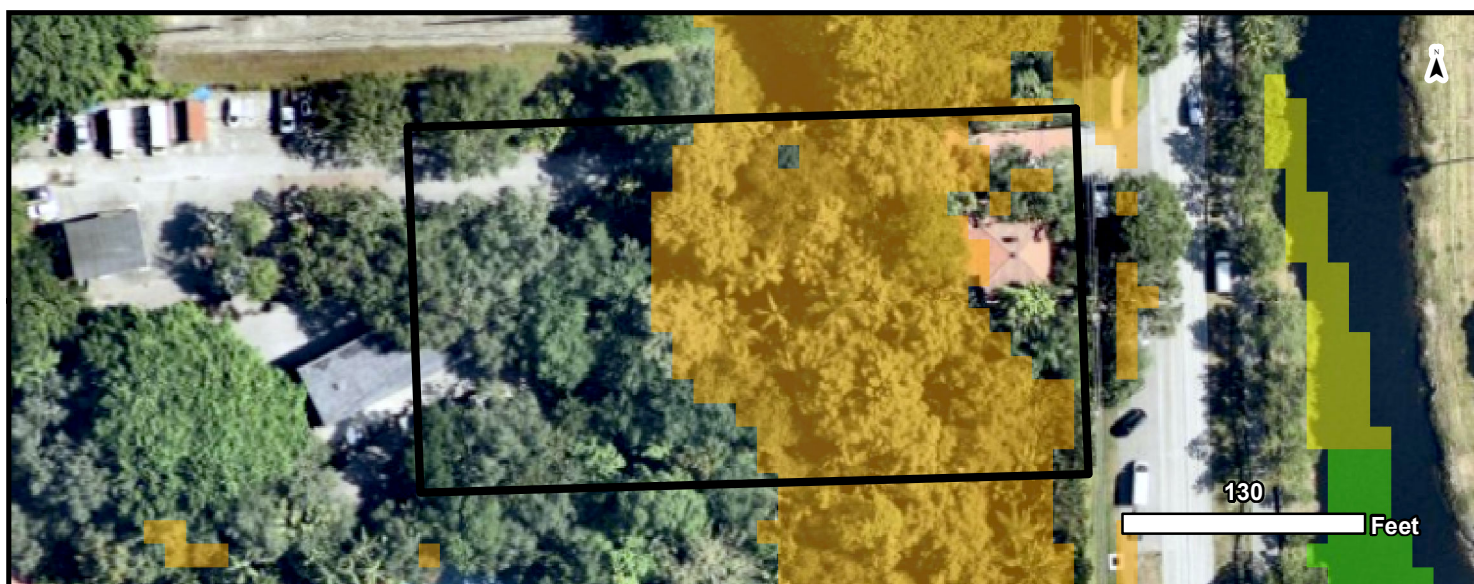


## 1000-Year Interval Pluvial Flood Risk\*

See note re: Fathom Maps on page 10

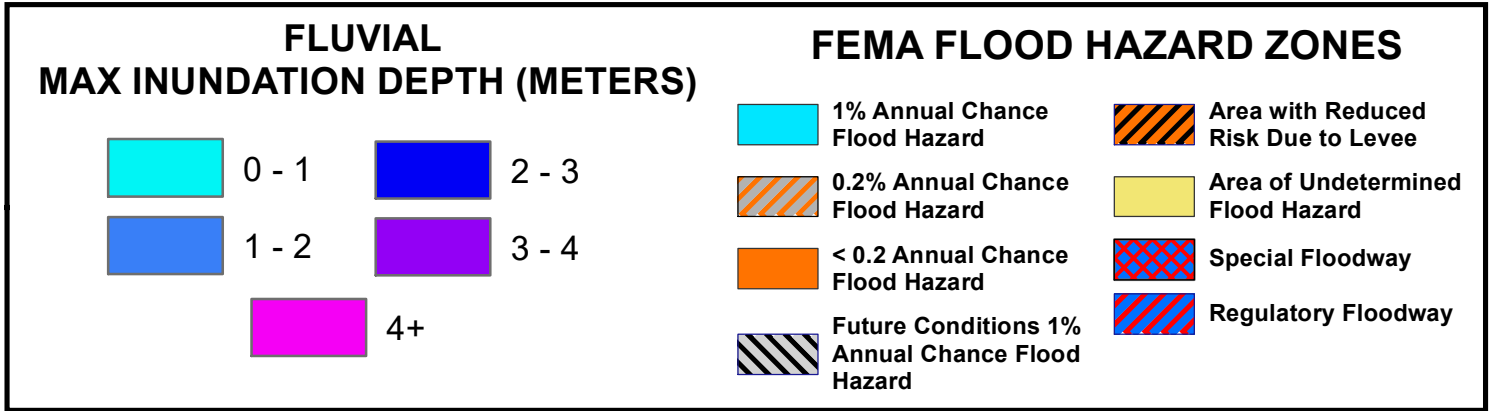


Poor Drainage Hotspots





# RIVERINE (FLUVIAL) FLOOD RISK and FEMA FLOOD HAZARD ZONES



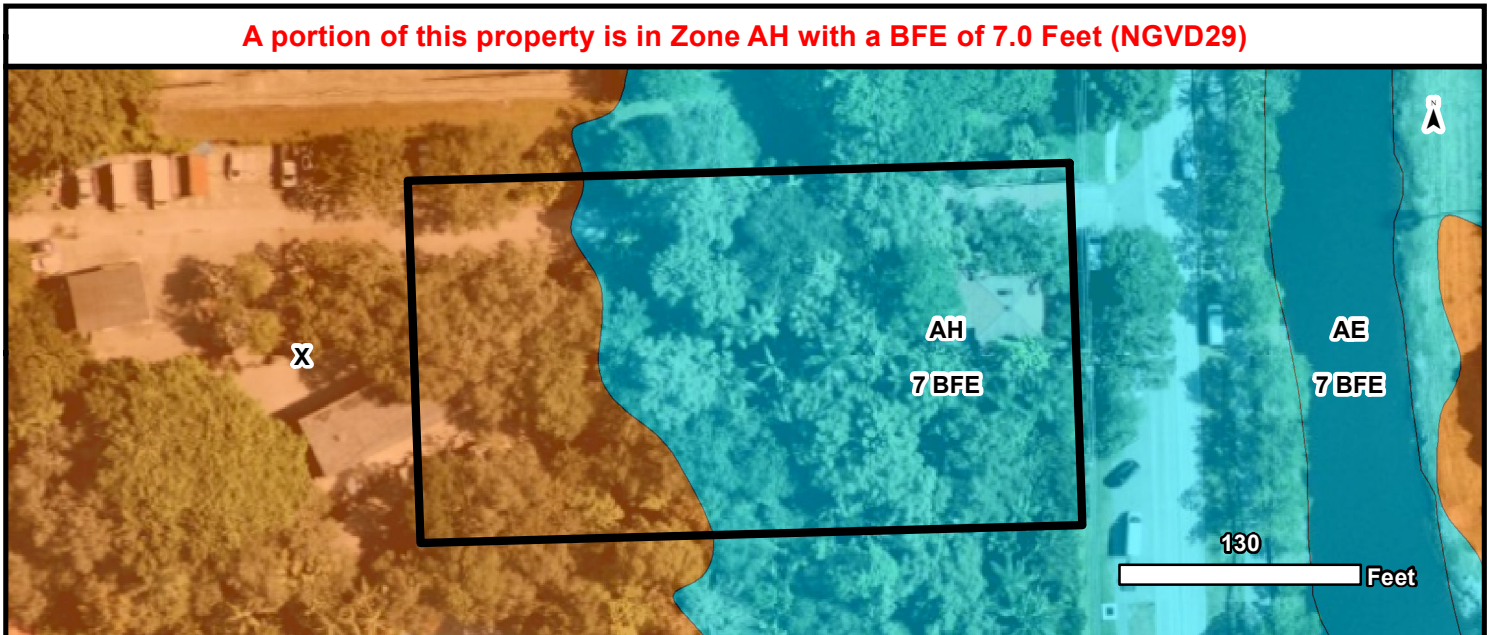
## 1000-Year Interval Fluvial Flood Risk\*

See note re: Fathom Maps on page 10



## FEMA Flood Hazard Zones

**A portion of this property is in Zone AH with a BFE of 7.0 Feet (NGVD29)**



# 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)

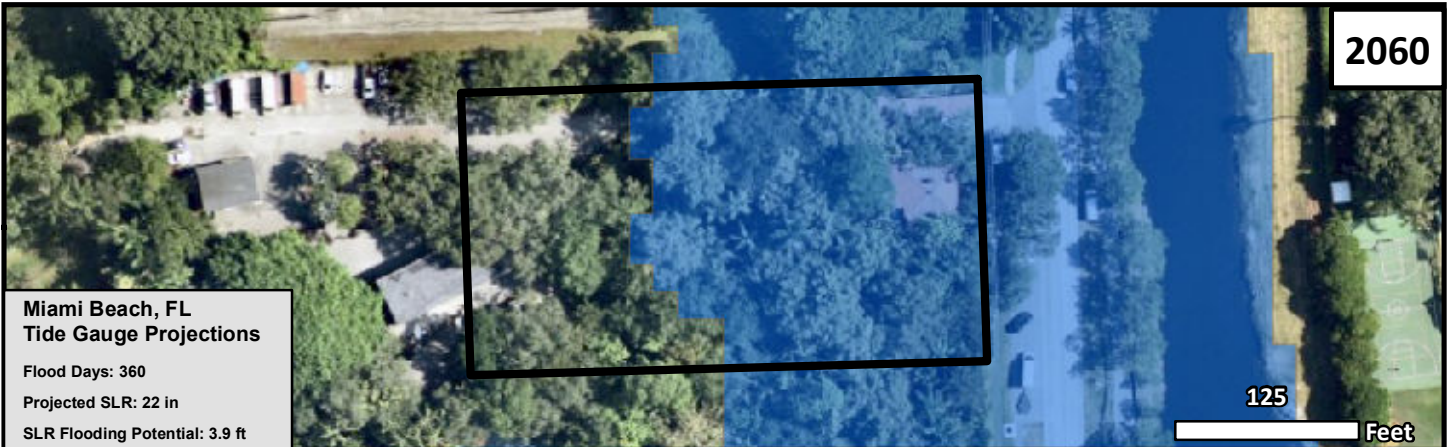
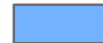


## Future Projected Flooding Due to Sea Level Rise (SLR)

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

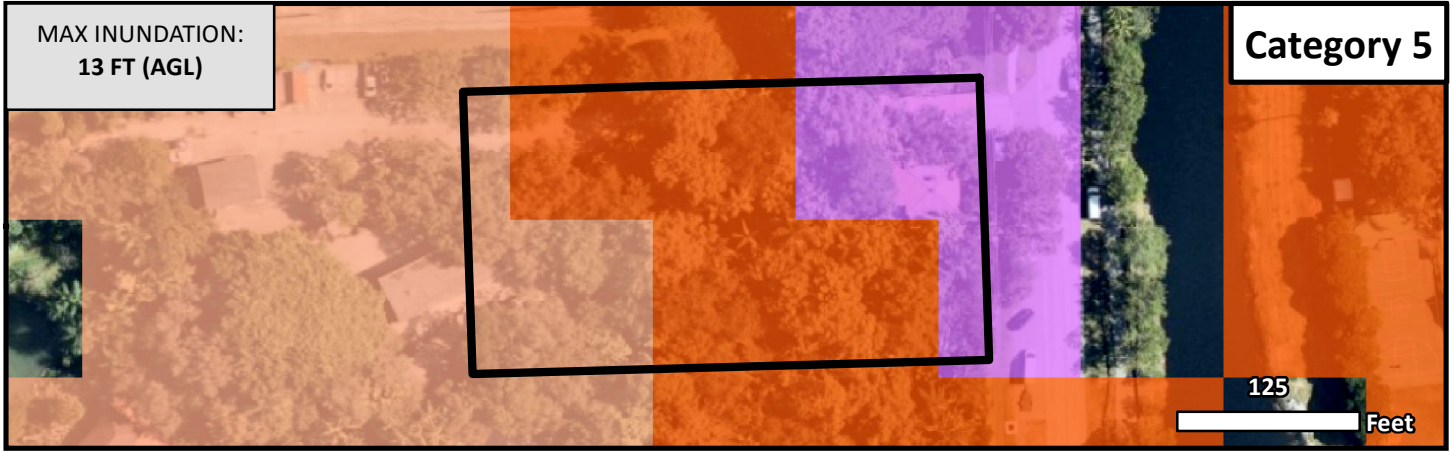
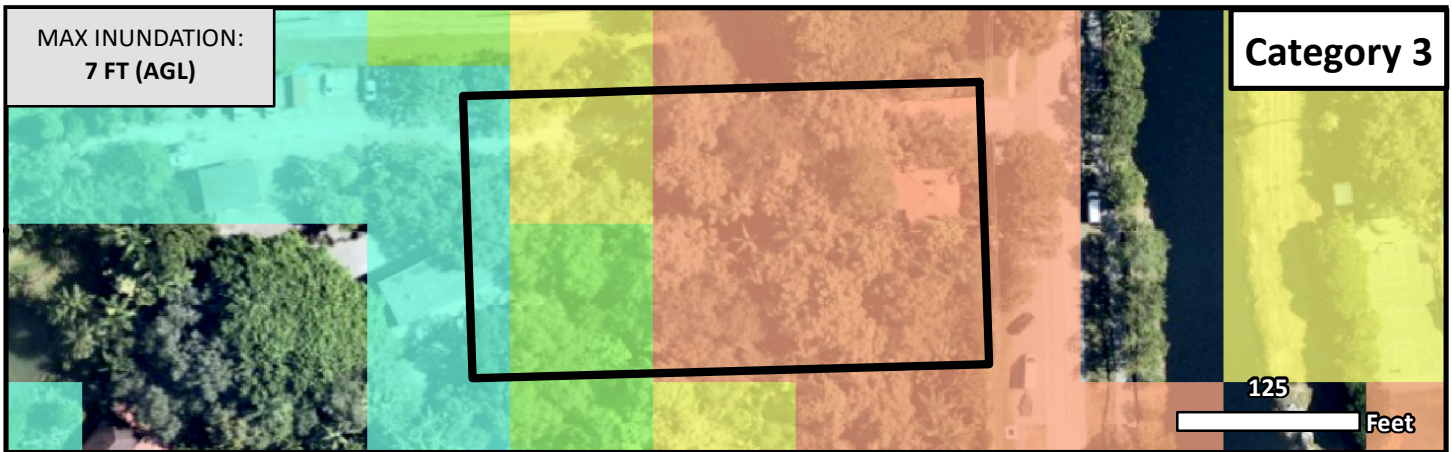
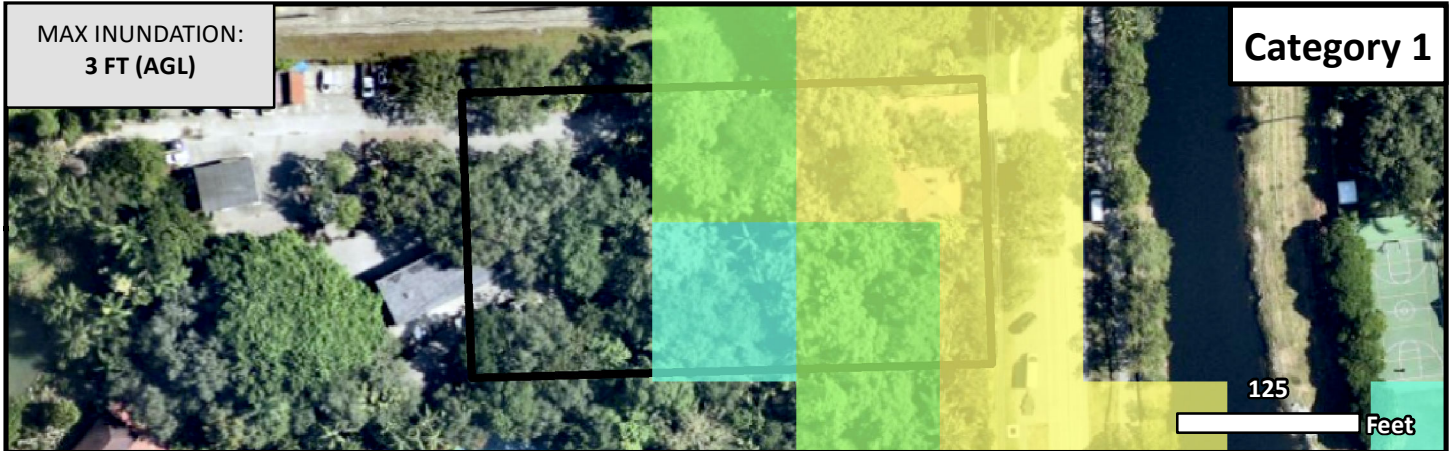
## Maximum Possible Hurricane Storm Surge (2022)

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%**

### INUNDATION (AGL)



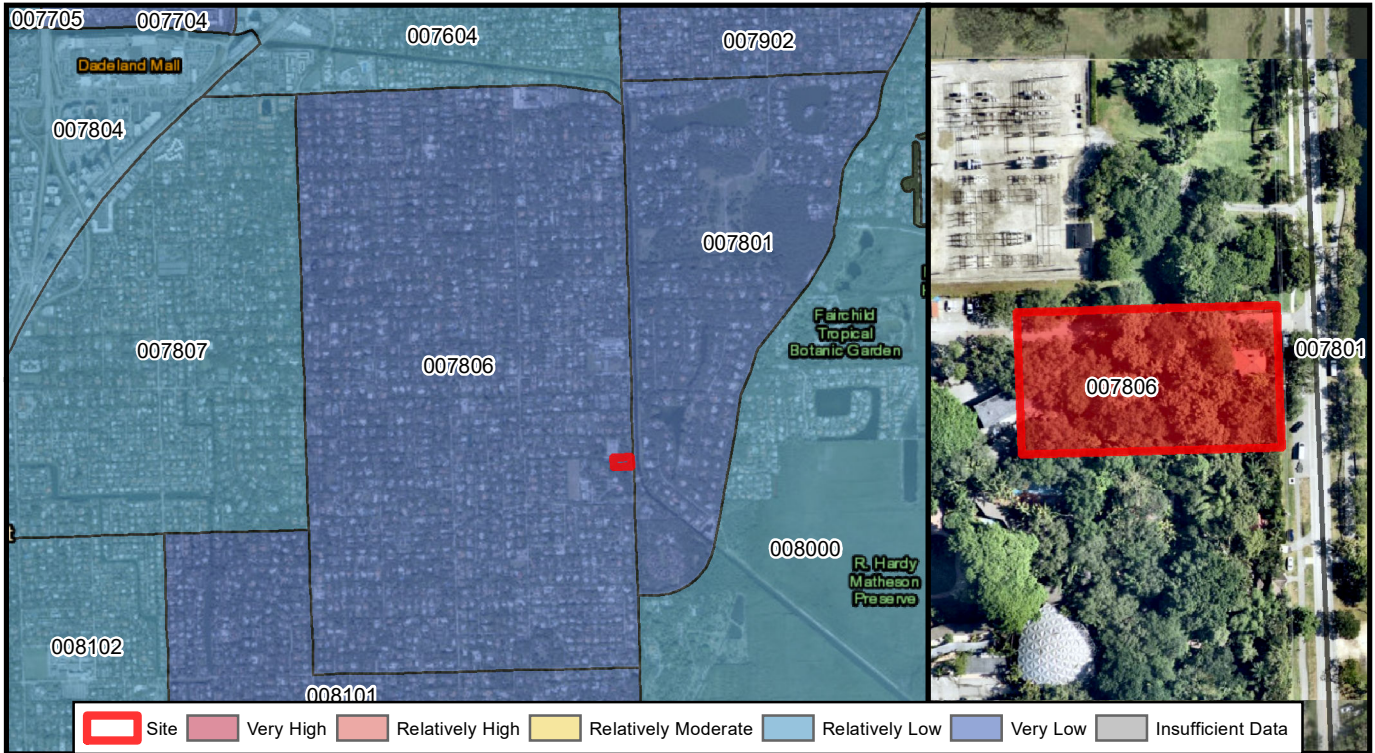
NAVD88 - North American Vertical Datum of 1988 AGL - Above Ground Level



# FEMA National Risk Index (NRI)

## Census Tract View

10850 Southwest 57th Avenue is in Census Tract 007806



**Risk Index is Very Low**

### NRI Hazard Ratings

Avalanche:  
Not Applicable

Coastal Flooding:  
Relatively Low

Cold Wave  
Very Low

Drought:  
No Rating

Earthquake:  
Very Low

Hail:  
Very Low

Heat Wave:  
No Rating

Hurricane:  
Relatively Low

Ice Storm:  
Not Applicable

Landslide:  
No Rating

Lightning:  
Relatively Low

Riverine Flooding:  
Relatively Low

Strong Wind:  
Very Low

Tornado:  
Relatively Low

Tsunami:  
Not Applicable

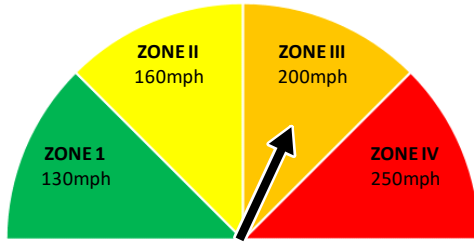
Volcanic Activity:  
Not Applicable

Wildfire:  
Relatively Low

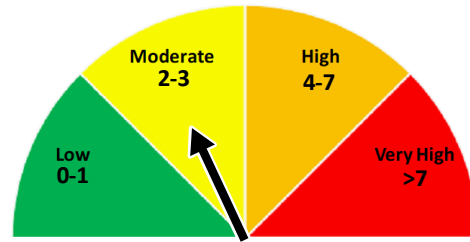
Winter Weather:  
No Rating

# Natural Hazards and Community Resilience

## FEMA Wind Zone: III

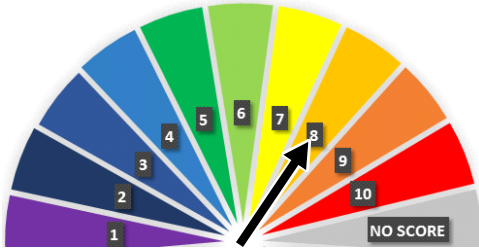


## Tornado Risk: 2 occurrence(s)



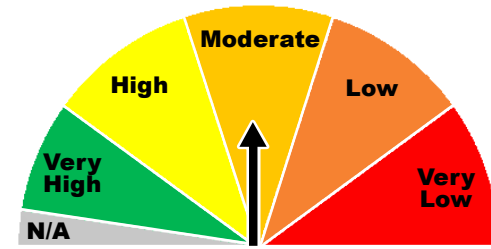
The 1,000-square-mile area surrounding the property has recorded 2 EF2 or higher tornadoes in the past 30 years

## Community Rating Score: 8



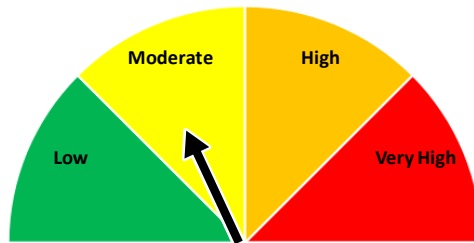
This property is potentially eligible for a 10.0% reduction in flood insurance

## NRI Community Resilience



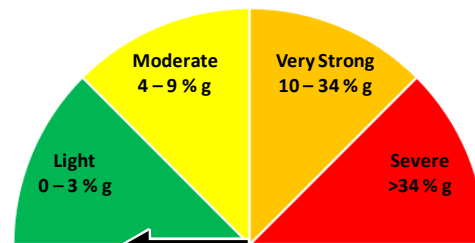
Miami-Dade County Community Resilience is Relatively Moderate

## Wildfire Potential: Moderate



Wildfire Potential is a measure of wildfire likelihood and intensity

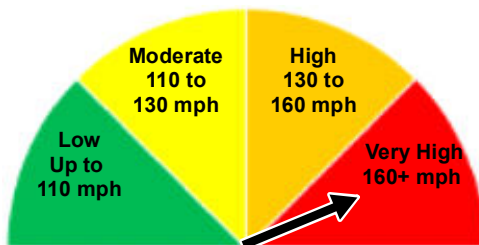
## Earthquake Intensity: 0% g



This area is likely to experience No ground shaking in the next 50 years

## ASCE Design Wind Speed: 169 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)

### Note:

This site is NOT in a special wind region.

This site is in a hurricane-prone region.

(See page 10 for Glossary & References)

### Property Elevation: See page 12 for Glossary & References

Land elevation within the property boundary ranges from 1.1 ft to 9.3 ft. The average elevation of this property is 3.9 ft. Elevations use North American Vertical Datum of 1988 (NAVD 88). The first floor height (FFH) of this property is 2.33 ft above ground level.

# 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	Moderate	Moderate	Low
RCP 8.5	Low	Low	Low

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

**Cover Page – 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.

**Page 3 – PLUVIAL (HEAVY RAINFALL) FLOOD RISK** – Potential for heavy rainfall flooding above ground level (AGL) of the property with 0.1% probability. The term “1,000-year flood” means that, statistically speaking, a flood of that magnitude(or greater) has a 1 in 1,000 chance of occurring in any given year. In terms of probability, the 1,000-year flood has a 0.1% chance of happening in any given year. These statistical values are based on observed data. [https://www.usgs.gov/faqs/what-a-1000-year-flood?qt-news\\_science\\_products=0#qt-news\\_science\\_products](https://www.usgs.gov/faqs/what-a-1000-year-flood?qt-news_science_products=0#qt-news_science_products).

**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](#)).

**FATHOM PLUVIAL (HEAVY RAINFALL) & FLUVIAL (RIVERINE) FLOOD PROBABILITY** (<https://www.fathom.global>). Fathom has pioneered methods using leading research and the latest datasets to model flood risks for both fluvial and pluvial perils. The dataset we use from Fathom-US incorporates the latest available inputs and the methodology has been validated via the peer-review process and published in world-leading journals. Fathom-US was validated against the entire FEMA flood hazard catalogue, identifying that current FEMA data misses around two thirds of total flood exposure nationwide. Fathom’s pluvial models also represent flash-flooding nationwide.

**Page 4 – FLUVIAL (RIVERINE) FLOOD RISK** – Potential for river flooding above ground level (AGL) of the property with 0.1% probability as a result of an overflowing river.

**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](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 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 current flooding on the property in the current year because of the wind field that drives hurricane storm surge ([overview](#)). The RiskFootprint™ Report utilizes NOAA National Storm Surge Maps (Ver. 2) to identify maximum inundation levels for each property above the ground level. The data is derived from The Sea, Lake and Overland Surges from Hurricanes (SLOSH) model that estimates storm surge heights resulting from hurricanes by considering the atmospheric pressure, size, forward speed, and track data. <https://www.nhc.noaa.gov/nationalsurge/>. Hurricane categories are based on the Saffir-Simpson Wind Scale, a 1 to 5 rating based only on a hurricane’s maximum sustained wind speed. <https://www.nhc.noaa.gov/aboutsshws.php>

**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:**

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

**Source:** [FEMA National Risk Index Technical Documentation Nov 2021](#)

**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.

**WILDFIRE POTENTIAL** – ([website](#)) Based on the US Forest Service's 2020 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.

**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>

### **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](mailto: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)**

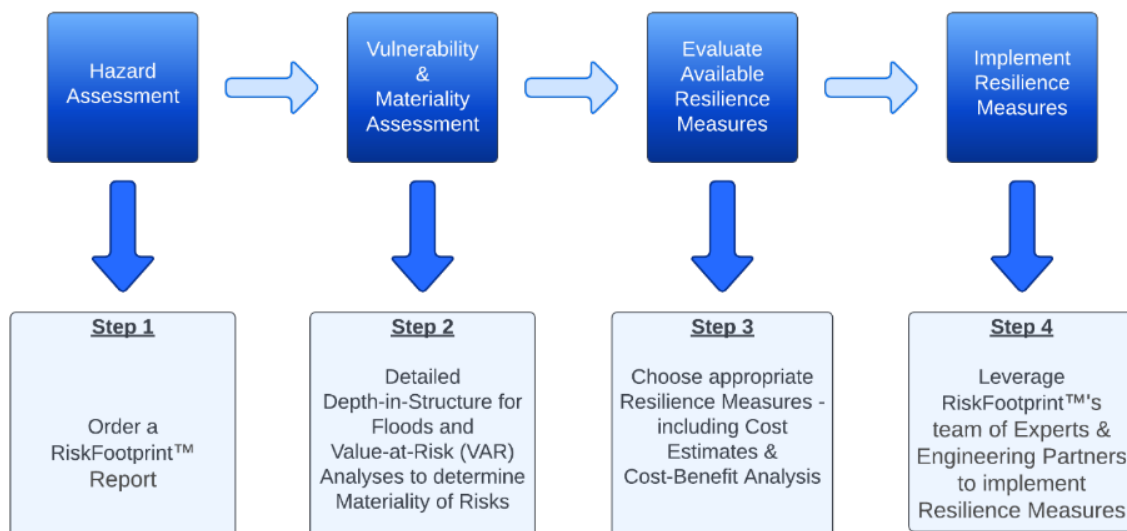
Values of Representative Concentration Pathway (RCP) represent the range of greenhouse gas emissions. RCP 4.5 refers to an intermediate emission scenario while RCP 8.5 refers to a high emission scenario. In this report, we do not include RCP 2.6 because it's a stringent emission scenario which is very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



**Property Resilience Assessment 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](mailto:customerservice@riskfootprint.com).**



## RiskFootprint™ Max Flood Damage/Loss %\*



Google Street View

#1	#2	#3	#4	#5	#6	#7
Building Type	Square Footage	No. Stories	Finished Floor Height (AGL in Feet)	Max Flood Depth (AGL in Feet)	Max Flood Source	Max Flood % Loss
Commercial Office Space	170,390	3	0.5	16.5	Storm Surge Cat 3	23%

Flood damage to buildings includes the percentage damage/loss to the structures (i.e., building replacement costs). The RiskFootprint™ Max Flood Damage/Loss is the percentage of building replacement costs. It is meant to be a first-cut, screening tool for portfolio risk management, new acquisition due diligence, loan and insurance underwriting, and ESG/TCFD type reporting. Flood impacts to buildings also include damage/loss to contents and estimated restoration days. Restoration days can relate to estimates of lost revenues, although this will likely depend on the type of building (office, multi-family, warehouse, hotel/resort, professional offices, industrial, government buildings, etc.) and issues of sensitivity and criticality of the asset. If the percentage loss is significant to the client, then further and more in-depth studies can be performed to validate these screening level estimates. If RiskFootprint™ automated databases do not have the information required to complete the calculation, then, client will be asked to supply information to fill in Columns 1, 2, 3, or 4, above. For complex buildings with numerous first floor levels, underground garages, or with more than one building on the site, an in-depth study will be recommended.

\*Subject to RiskFootprint(tm) Terms and Conditions, [www.riskfootprint.com](http://www.riskfootprint.com).  
Pricing: \$500/building. For further information, please contact [customerservice@riskfootprint.com](mailto:customerservice@riskfootprint.com);  
844-732-7473



## RiskFootprint™ Max Flood Damage/Loss %\*



Google Street View

#1	#2	#3	#4	#5	#6	#7
Building Type	Square Footage	No. Stories	Finished Floor Height (AGL in Feet)	Max Flood Depth (AGL in Feet)	Max Flood Source	Max Flood % Loss
Average wholesale (COM2)	323,135	1	2.33 ft	16.4+	1000-Year Interval Fluvial Flood	49%

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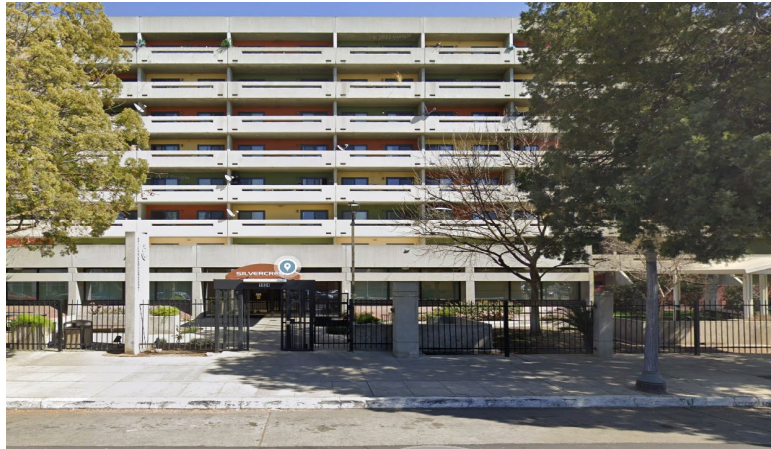
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2385 NW Executive Center Drive, Suite 100, Boca Raton, FL 33431



## RiskFootprint™ Max Flood Damage/Loss %\*



Google Street View

#1	#2	#3	#4	#5	#6	#7
Building Type	Square Footage	No. Stories	Finished Floor Height (AGL in Feet)	Max Flood Depth (AGL in Feet)	Max Flood Source	Max Flood % Loss
Apartment Unit	115,920	8	0.58	2.70	Fluvial 1000-year event	3.4%

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