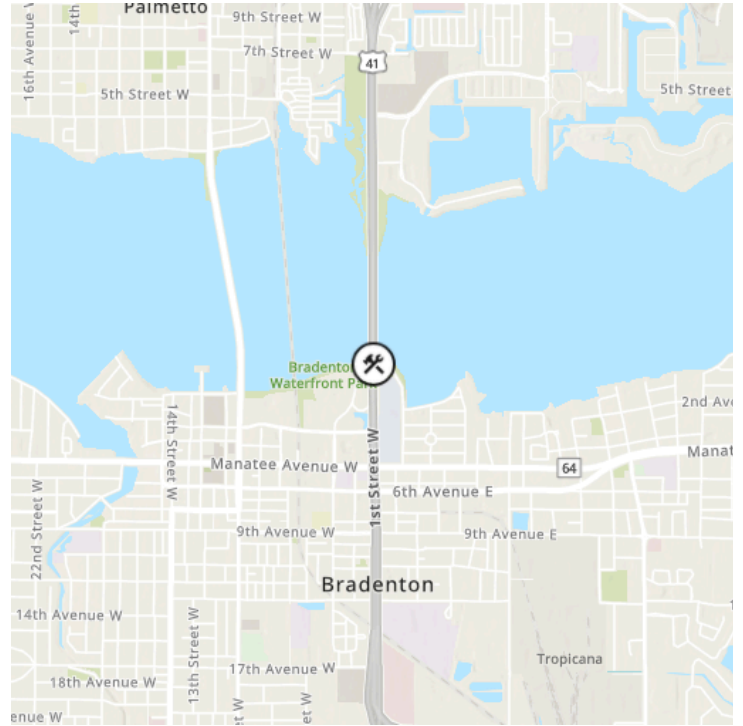




Sea Level Impact Projection (SLIP) Study Report

Project Name	Bradenton Palmetto Connector - FPID 444843-1
County	MANATEE
Coordinates	27.5007441, -82.56306052
Project Category	TransportationAndEvacuation
Risk Category	Risk Category II
Construction Start Year	2030
Expected Life	75 Years
Estimated Construction Cost	\$680,488,000
Critical Elevation	7.3 ft NAVD88
Organization	Florida Department of Transportation District 1
Report Date	Mar 10, 2026
Published Date	Pending



Results

N/A



Metric	value
FEMA Flood Hazard Zone	AE
Base Flood Elevation (ft NGVD29)	8
Terrain Elevation (ft NAVD88)	2.52
Int-High Sea Level Rise (year 2100) (ft NAVD88)	3.4776905
Wind Zone (mph)	160.0

Average Annual Chance of Substantial Flood Damage (AACSF) is calculated using NOAA sea level projections, FEMA coastal storm surge events, and associated wave heights. This flood risk probability does not include high-tide flooding, precipitation (stormwater), or riverine flooding.

Mitigation Strategies Evaluated

The following mitigation strategies were considered as part of this SLIP Study:

A living shoreline may be implemented in the northern area of the bridge.

Potential Beneficial Adaptation Strategies

Based on the results of the SLIP Study, the following adaptation strategies may be beneficial to consider in the construction design. These are not recommendations, merely standard strategies used to mitigate risk.

Build on Partially Elevated Areas

Sea level varies based on the rate of sea level rise relative to land elevation in a particular location. It amplifies near-term vulnerability to storm surge and increases long-term flood and inundation risks. Building on partially elevated areas can mitigate and reduce these risks.

Solution Timeline	Long Term
Scale	Micro
Adaptation Interface	Hybrid
Degree of Protection	Medium
Relative Cost (\$, \$\$, \$\$\$)	\$\$

Check Valve / Non-Return Valves

A check valve or non-return valve can be installed in pipes that are vulnerable to backflow during various flood conditions. The valve will work by blocking the flow of water if it is entering in the wrong direction. This will help with flooding control, standing water control, and water quality issues. Different size and shape valves can be used, as needed.

Solution Timeline	Intermediate
Scale	Macro
Adaptation Interface	Gray
Degree of Protection	Medium
Relative Cost (\$, \$\$, \$\$\$)	\$\$\$

Projects:

[R1928 - St. Augustine Stormwater Outfall Resiliency Retrofit](#)

Elevated Flood Wall / Flood Gate

A flood wall can be constructed to protect individual buildings or facilities against flooding. Flood walls can either be permanent or dismountable depending on short or long-term goals. Sometimes flood gates are built in a flood wall to create space for roads. These gates are only closed during a flood event.

Solution Timeline	Long Term
Scale	Macro
Adaptation Interface	Gray
Degree of Protection	High
Relative Cost (\$, \$\$, \$\$\$)	\$\$\$

Resources:

[FEMA - Floodwall with Passive Floodgates Signals Commitment](#)

Flood Barriers (Passive or Active)

Solution Timeline	Intermediate
-------------------	---------------------

Flood barriers are used around a building or its utility components to protect from flooding. Flood barriers can be categorized as either passive or active devices. Passive flood barriers operate automatically during a flood or storm event and do not require any human intervention or power source. An example of a passive flood barrier is a floodwall or levee. Active flood barriers require warnings in advance to deploy during a flood or storm event. This strategy is of limited value when flash floods are frequent. FEMA recommends passive flood barrier devices when planning and building.

Resources:

[FEMA - Floodwall with Passive Floodgates Signals Commitment](#)

Flood Damage-Resistant Materials

Flood damage-resistant materials such as non-paper-faced gypsum board and terrazzo tile flooring for building materials and furnishings located below the base flood elevation help to reduce structural and nonstructural damage and post-flood event cleanup. The useful life of flood damage-resistant materials ranges between 10 and 20 years with annual maintenance costs depending on the type of material.

Raising Land

Raising land is often used to increase the difference between water levels and construction levels. Usually, sand is used to raise the new roads above the existing ground level. This measure reduces the flood risk for that area and structure. Raising land also provides added time during a flood event for ground and surface waters to rise, slowing down the time it would take for exponential damage to take place.

Projects:

[R1930- Marina Boat Ramp Resiliency Improvements](#)

Reduced Paved Surfaces

Paved surfaces like roofs, roads, and parking lots reduce the infiltration capacity of the soil and increase the surface water

Scale	Micro
Adaptation Interface	Gray
Degree of Protection	Medium
Relative Cost (\$, \$\$, \$\$\$)	\$\$

Solution Timeline	Intermediate
Scale	Micro
Adaptation Interface	Gray
Degree of Protection	Medium
Relative Cost (\$, \$\$, \$\$\$)	\$\$

Solution Timeline	Long Term
Scale	Macro
Adaptation Interface	Hybrid
Degree of Protection	Medium
Relative Cost (\$, \$\$, \$\$\$)	\$\$\$

Solution Timeline	Long Term
Scale	Macro

runoff. Consequently, flood risk and the need for additional water retention capacity are increased. By decreasing the total area of paved surfaces, more water can infiltrate the soil and extra green space is created.

Utility Elevation

Installing or locating utility systems and components at or above the flood protection level can lessen the impacts/damage to units during flood events. The flood protection level is set by local flood plain management regulations or building codes. Floodproofing building utilities will work best when all utility meters are elevated as well.

Resources:

[FEMA - Protecting Building Utilities from Flood Damage](#)

Foundation Flood Vents

Flood vents can reduce the overall structural damage caused by flooding. These permanent openings allow for water to pass into or out of a building's exterior foundation walls, lessening erosion impacts to the foundation elements.

Resources:

[FEMA – Reducing Flood Risk to Residential Buildings that Cannot be Elevated](#)

Elevate Finished First Floor

A common method in mitigating flood damage to structures is elevating the first floor to the required Flood Protection Elevation (FPE). An FPE is generally above the base flood elevation plus freeboard level required by the local municipality where the structure is located. Another method is to abandon the lowest floor, given that the building is at least two stories tall. Here the lowest floor walls must be retrofitted with flood openings that allow automatic entry and exit of floodwaters and any utility systems and associated equipment on the lowest floor must be elevated to protect utilities from damage or loss of function from flooding.

Adaptation Interface **Green**
Degree of Protection **Medium**
Relative Cost (\$, \$\$, \$\$\$) **\$\$**

Solution Timeline **Long Term**
Scale **Micro**
Adaptation Interface **Gray**
Degree of Protection **High**
Relative Cost (\$, \$\$, \$\$\$) **\$**

Solution Timeline **Intermediate**
Scale **Micro**
Adaptation Interface **Gray**
Degree of Protection **Low**
Relative Cost (\$, \$\$, \$\$\$) **\$\$**

Solution Timeline **Long Term**
Scale **Macro**
Adaptation Interface **Gray**
Degree of Protection **High**
Relative Cost (\$, \$\$, \$\$\$) **\$\$\$**

Resources:

[FEMA - Elevating Your House](#)

[FEMA – Reducing Flood Risk to Residential Buildings that Cannot be Elevated](#)

Floodable Park / Water Square

This type of park or square can combine water storage with the added benefits of an urban public space. A floodable park or water square is considered a twofold strategy: (1) It makes money invested in water storage facilities visible and enjoyable, and (2) it generates opportunities to create quality environmentally friendly spaces central in neighborhoods.

Most of the time the park or square can be used as a recreational space. When heavy rains occur, rainwater that is collected from the surrounding area will flow into the floodable park or water square for a short duration. After it has been used as a buffering space for floodwaters, this water is filtered by the vegetation and soils, and the filtered water is returned to the water system.

Projects:

[R1933 - Good Neighbor Stormwater Park](#)

Increase Plantings

Using groundcover and shrubbery has many benefits compared to unplanted and paved surfaces. The velocity of floodwaters is reduced, which in turn can reduce damage from floating debris. Infiltration and uptake of floodwaters are improved and accelerated by plants, which resolves the flood event sooner and more effectively than bare ground. And, erosion occurring as flooding recedes is reduced when the soil is held in place by plant roots.

Projects:

[R1804 - Fruit Farm Creek Mangrove Restoration Project](#)

Solution Timeline	Intermediate
Scale	Macro
Adaptation Interface	Hybrid
Degree of Protection	Medium
Relative Cost (\$, \$\$, \$\$\$)	\$\$

Solution Timeline	Long Term
Scale	Macro
Adaptation Interface	Green
Degree of Protection	Low
Relative Cost (\$, \$\$, \$\$\$)	\$

Potential Public Safety and Environmental Impacts

Based on the results of the SLIP Study, consider the following potential public safety and environmental impacts:

Flood Risk

When factoring in the flood zone, base flood elevation, terrain, and sea level rise trends for the project location, a moderate flood risk is present.

Wind Risk

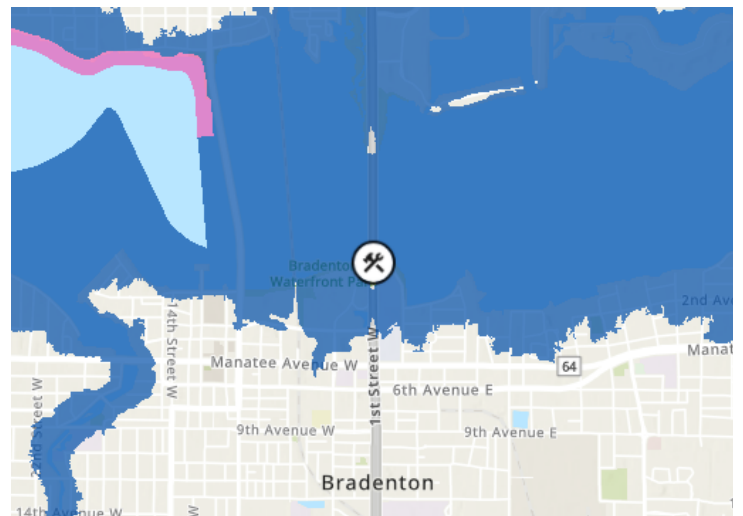
The project location was found to be located in an area of moderate wind risk with a maximum wind speed of 160.0mph. There is potential risk from flying debris.

Explosion Risk

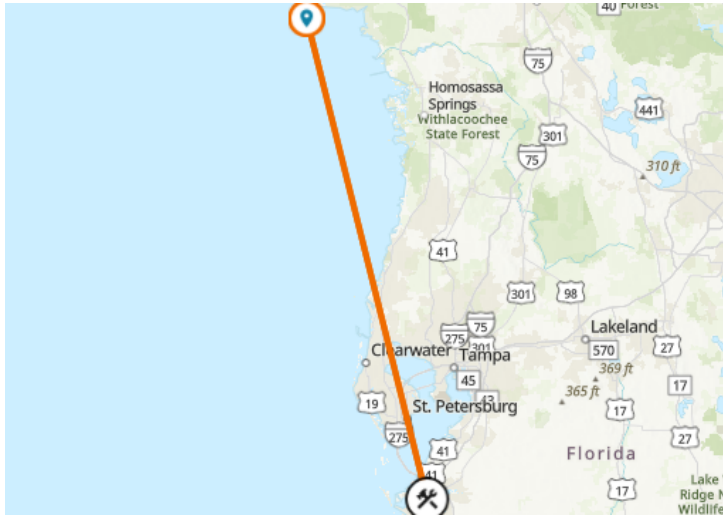
The moderate wind risk in this project location may contribute to a higher risk of explosion due to potential downed powerlines.

FEMA Flood Hazard Information

Flood Zone	AE
Zone Subtype	COASTAL FLOODPLAIN
Static BFE (ft NAVD88)	8
Vertical Datum	NAVD88

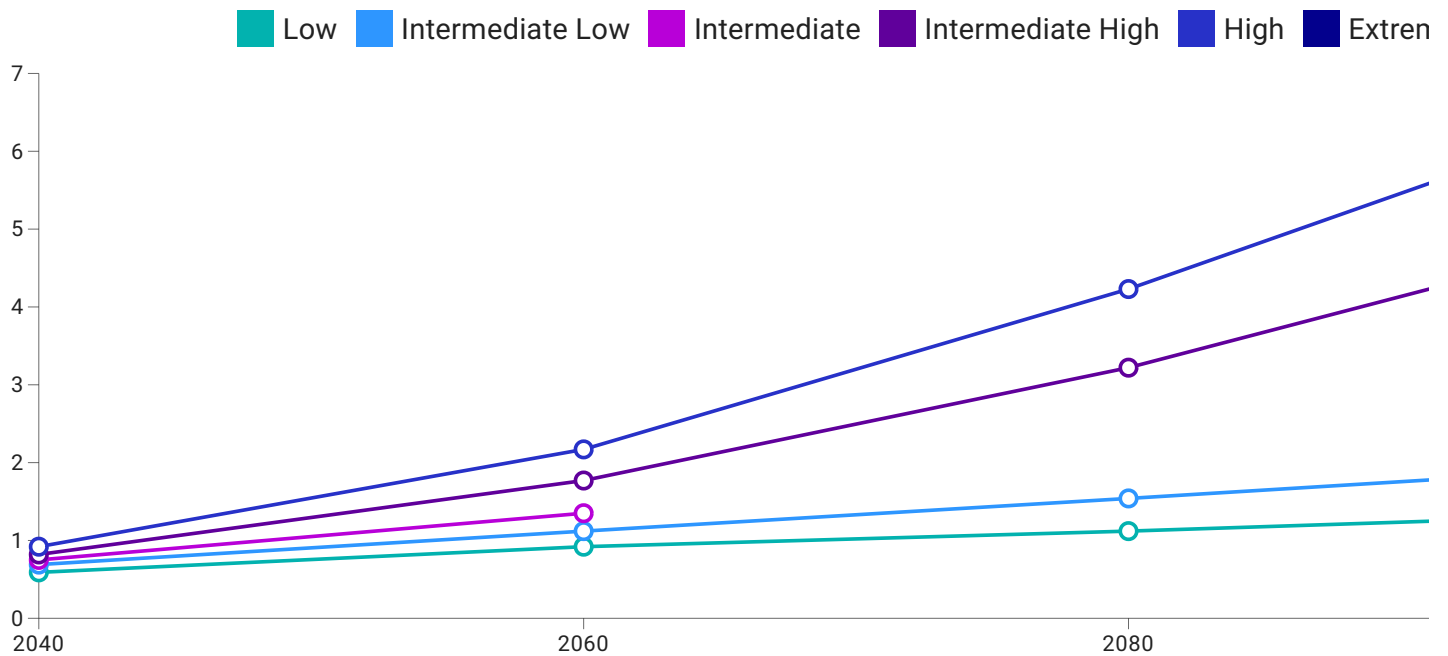


Regional Sea Level Rise Scenarios



NOAA Regional Scenarios (ft NAVD88)

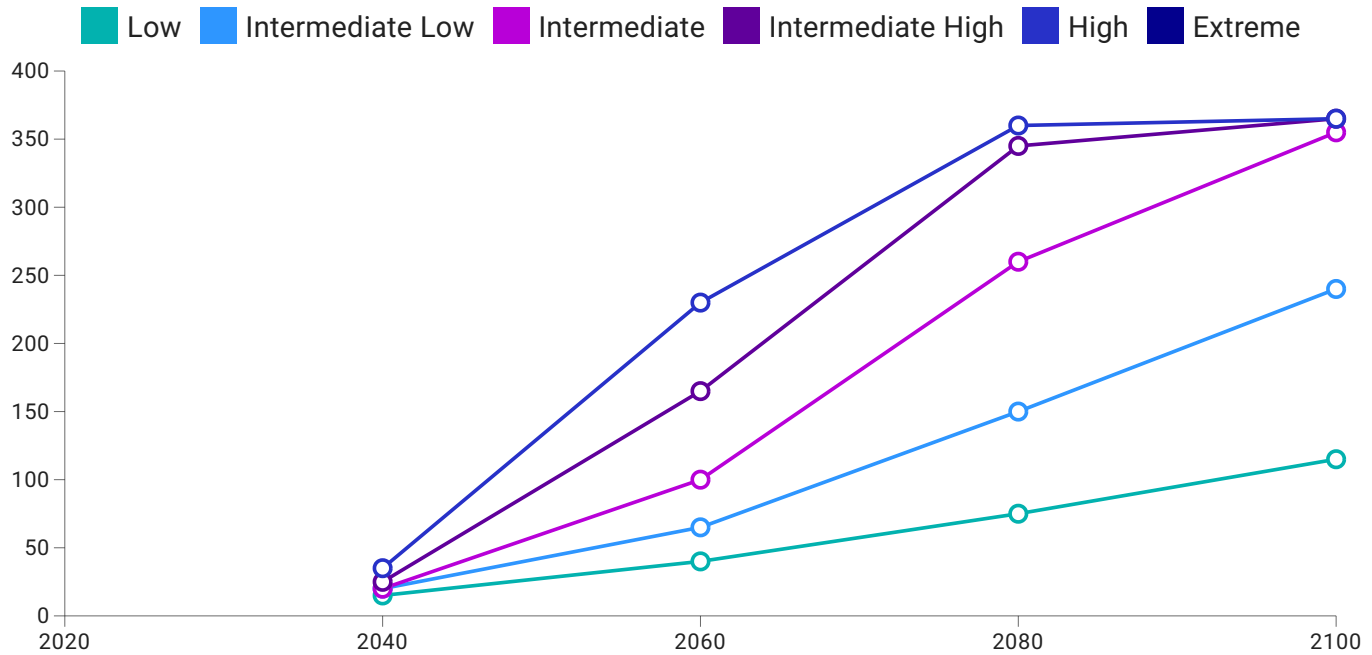
Scenario	2040	2060	2080	2100
Low	0.59	0.92	1.12	1.35
Intermediate Low	0.69	1.12	1.54	1.97
Intermediate	0.75	1.35		
Intermediate High	0.82	1.77	3.22	5.05
High	0.92	2.17	4.23	6.69
Extreme				



The five relative sea level rise (RSL) scenarios shown in this report are derived from NOAA Technical Report NOS CO-OPS 083 "Global and regional sea level rise scenarios for the United States" using the same methods as the USACE Sea Level Rise Calculator. These new scenarios were developed by the Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force, jointly convened by the U.S. Global Change Research Program (USGCRP) and the National Ocean Council as input to the USGCRP Sustained Assessment process and 4th National Climate Assessment. These RSL scenarios provide a revision to the (Parris et. al, 2012) global scenarios which were developed as input to the 3rd National Climate Assessment.

These RSL scenarios begin in year 2020 and take into account global mean sea level rise (GMSL), regional changes in ocean circulation, changes in Earth’s gravity field due to ice melt redistribution, and local vertical land motion.

NOAA High Tide Flooding Information

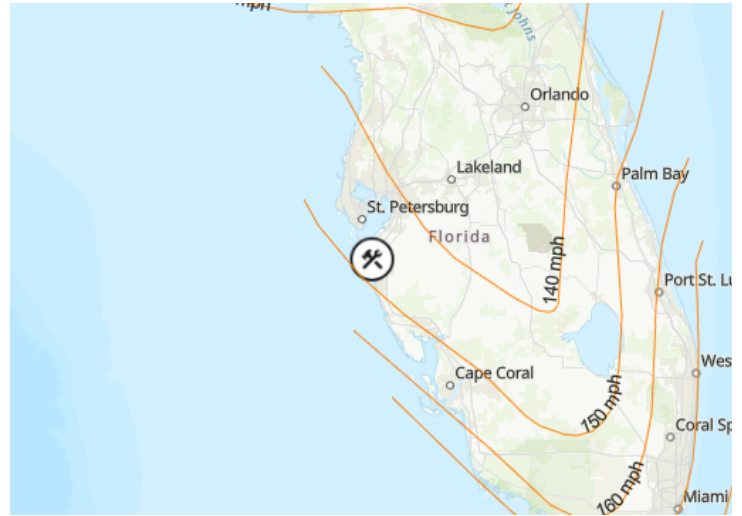


Annual occurrences of tidal flooding—exceeding local thresholds for minor impacts to infrastructure—have increased 5- to 10-fold since the 1960s in several U.S. coastal cities. The changes in high tide flooding over time are greatest where elevation is lower, local RSL rise is higher, or extreme variability is less.

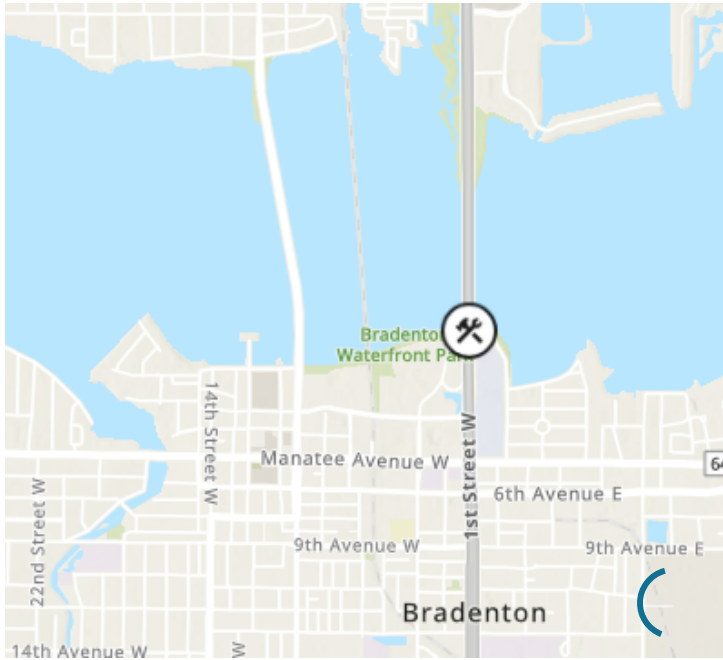
In a sense, today’s flood will become tomorrow’s high tide, as sea level rise will cause flooding to occur more frequently and last for longer durations of time.

Wind Zones

Metric	value
Maximum Wind Speed	160.0



Terrain



Metric	value
Elevation (ft)	2.52
Vertical Datum	NAVD88

This terrain elevation is derived from the latest compilation of terrain data from NOAA. This dataset contains the best publicly available terrain data in a 3m resolution.

Design Alternatives

The selection of a construction project location involves a considerable number of factors, including but not limited to regulatory issues, engineering, and logical decisions. The SLIP Study Tool may be run multiple times with different project locations and critical elevations, to achieve a desired result. Please use the SLIP Map along with the Coastal Hazard layers to assist you in selecting the optimal location. Review this report and assess the risks which may be mitigated by changing the design parameters, then run the SLIP Study Tool again