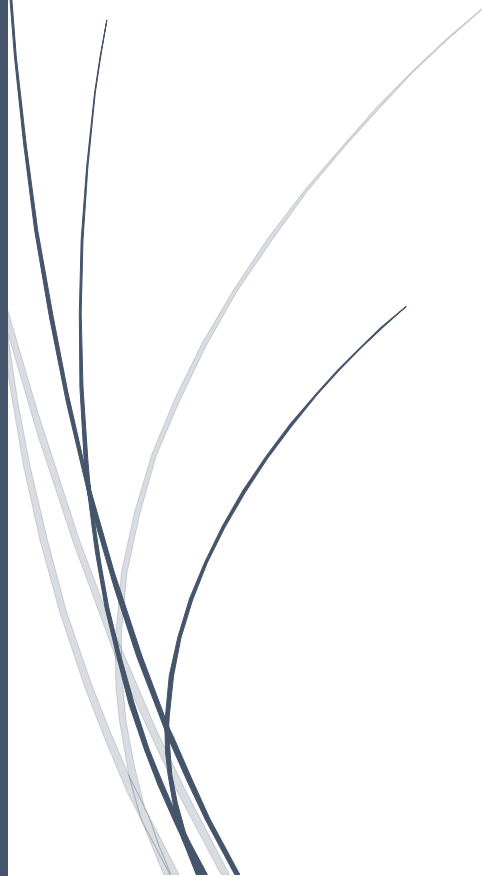




September 2023

Lower Chickahominy Resilience Assessment

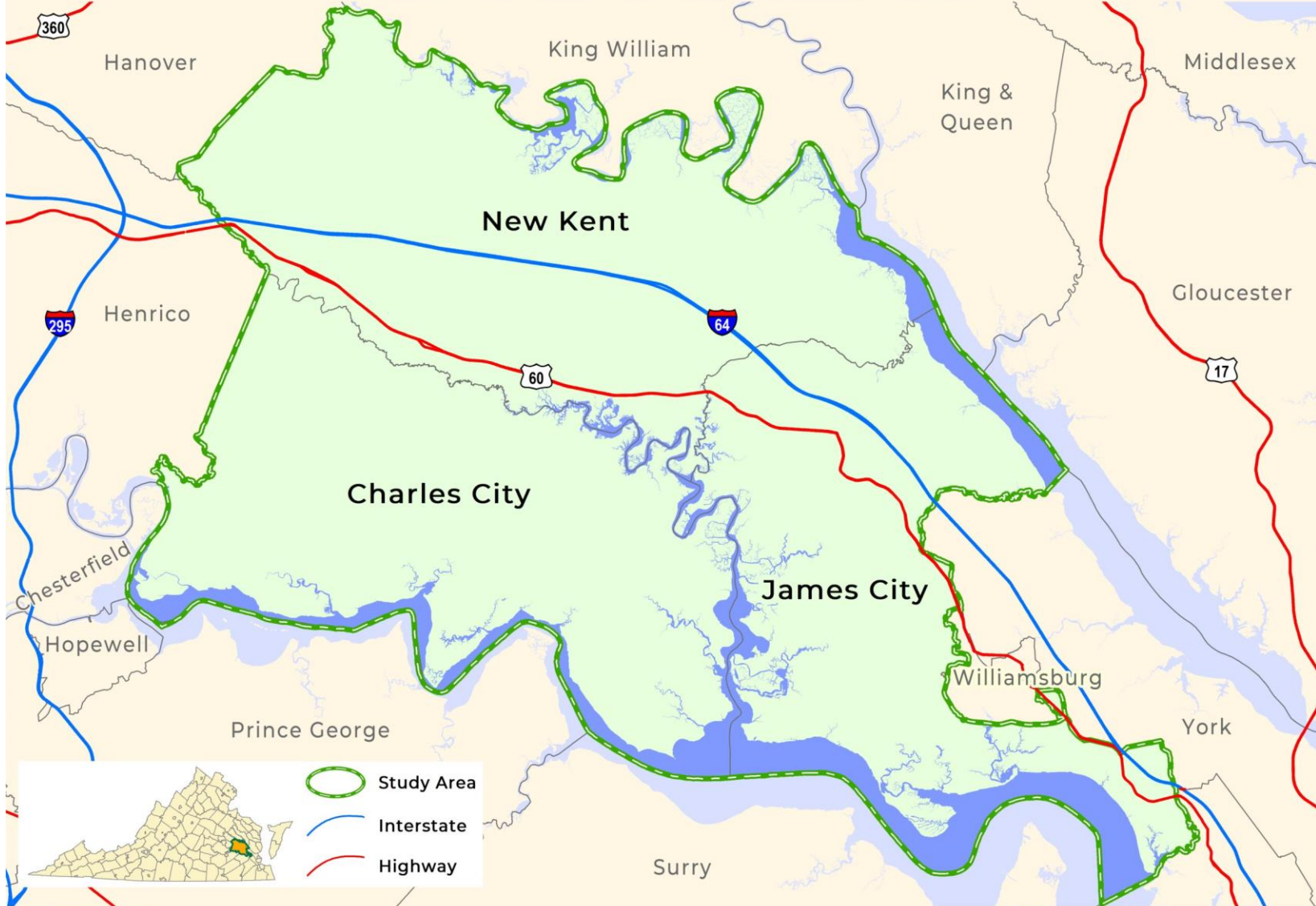
Examining Potential Future Impacts of Sea Level Rise
and Wetland Migration on Chickahominy Public Boat
Ramps and the Capital Trail



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Lower Chickahominy - Study Area



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Summary:

The following report provides a high-level analysis of potential future flooding impacts to public access recreation sites in the Lower Chickahominy area. Public access recreation sites serve an important role in supporting quality of life and the eco-tourism industry in the watershed region. With a focus on access to the Lower Chickahominy River, PlanRVA staff began by examining eight public boat ramps.

Ecotourism and recreational opportunities extend beyond boat ramps and paddling in the lower Chickahominy. The Virginia Capital Trail is an off-road, multi-use, paved trail that runs parallel to Route 5 through Charles City County, across the Chickahominy River, and into James City County. Cyclists come from across Virginia and farther afield to experience the trail. It serves as an eco-tourism draw in the watershed region and offers opportunities for paddle + peddle experiences and packages. Accordingly, flooding impacts to the Capital Trail throughout the Lower Chickahominy area were also examined.

This report is intended to provide a resource for focusing future studies and planning efforts. On-site evaluation of built infrastructure and current conditions will be necessary to draw further conclusions.

Data Reference Guide:

- **3" Sea Level Rise** – Indicated by a blue outline. This layer shows the predicted extent of waterways under a future condition of 3" sea level rise. This level was chosen to match PlanRVA's current Scenario Planning efforts using the NOAA Intermediate-High curve at year 2060.
- **Marsh Migration** – This layer, developed by NOAA, contains information on the shifting extent of different types of marshland present after sea level has risen by 3".
- **NOAA Coastal Flood Hazard Composite** – This layer shows areas prone to flooding from one or more of the following hazards:
 - High tide flooding
 - High risk (1% annual chance for A and V zones) and moderate risk (0.2% annual chance) flooding (designated by the Federal Emergency Management Agency)
 - Storm surge for category 1 through category 3 hurricanes
 - Sea level rise scenarios of 1, 2, and 3 feet
 - Tsunami run-up zones (for high risk areas)
 - Great Lakes water levels of 1, 2, and 3 feet above long term averages

The darker the color on the map, the more flood hazard zones there are for that area.

- **Basemaps** –
 - ESRI Low Resolution 15m Imagery
 - ESRI World Hillshade

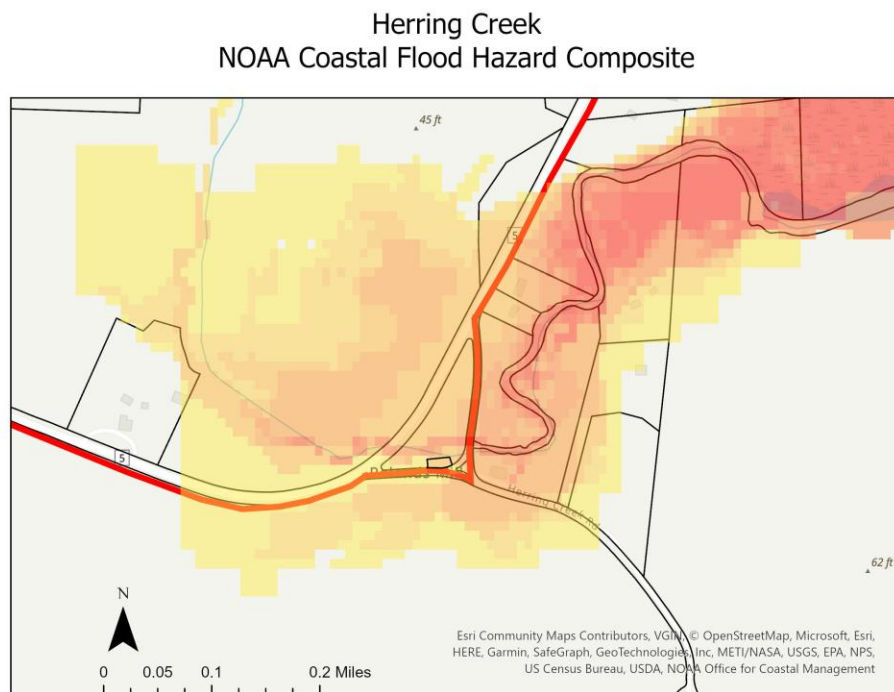
Capital Trail Potential Flood Risk Areas:

Herring Creek Trailhead

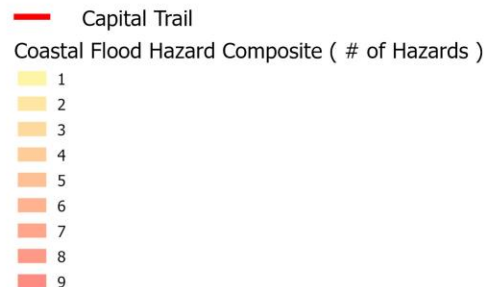
Summary: Herring Creek Trailhead provides parking and access for the Capital Trail in Charles City County. It is located on Herring Creek Road off of Route 5.

NOAA Flood Hazard Zones at this location include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- Storm Surge (by Hurricane Category): 3

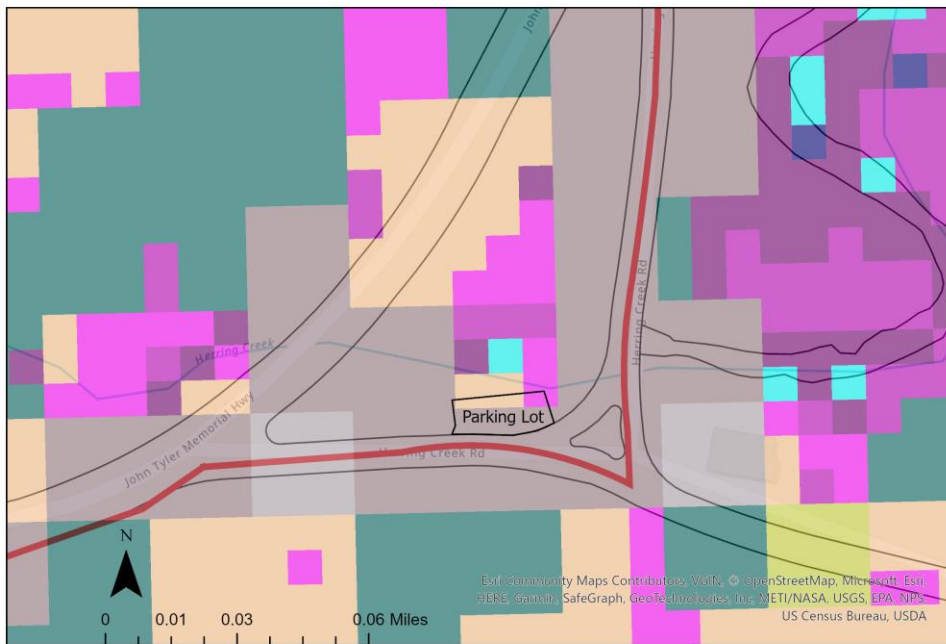


Legend



NOAA Flood Hazard Zones map of Herring Creek Trailhead. Darker areas represent higher numbers of overlaid flood hazard areas.

Herring Creek Marsh Migration Under Three Foot Sea Level Rise Conditions



Analysis: Herring Creek Trailhead, with the Capital Trail represented as a red line, shown here with an overlay of marsh migration under 3 foot sea level rise. The parking area is exposed to potential future palustrine emergent wetland conditions under this scenario. Considering the presence of Flood Hazard Zones, as well as the potential for wetland migration into or near the parking area, on-site evaluation of the parking area may be advisable. Planning to ensure continued resilience to future sea level rise and storm surges will keep this public access area open and functional.

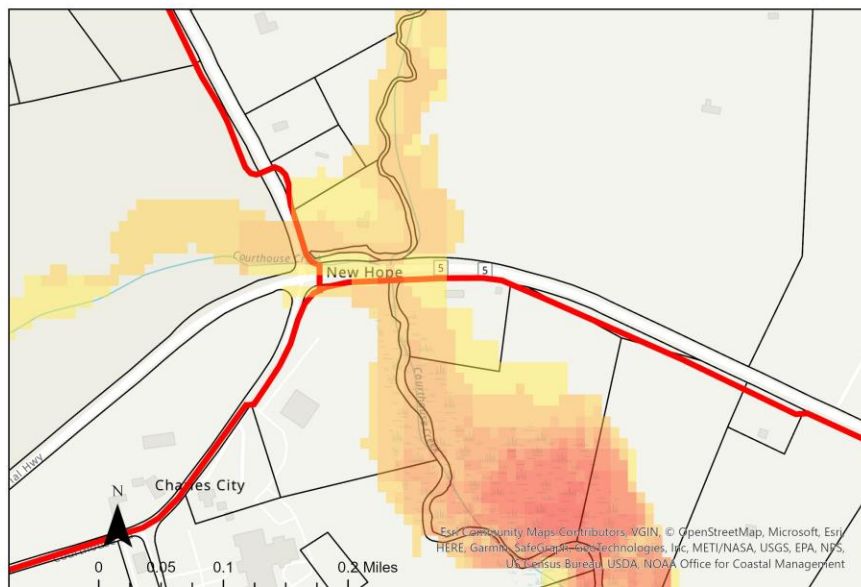
Courthouse Creek Trail Crossing

Summary: Glebe Creek feeds into Courthouse Creek immediately north of the bridge where Courthouse Creek crosses Route 5 and the Capital Trail. The examined point on the Capital Trail is directly east of the bridge.

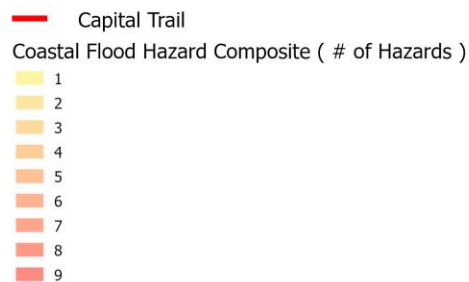
NOAA Flood Hazard Zones at this location include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- Storm Surge (by Hurricane Category): 3

Courthouse Creek Crossing
NOAA Coastal Flood Hazard Composite

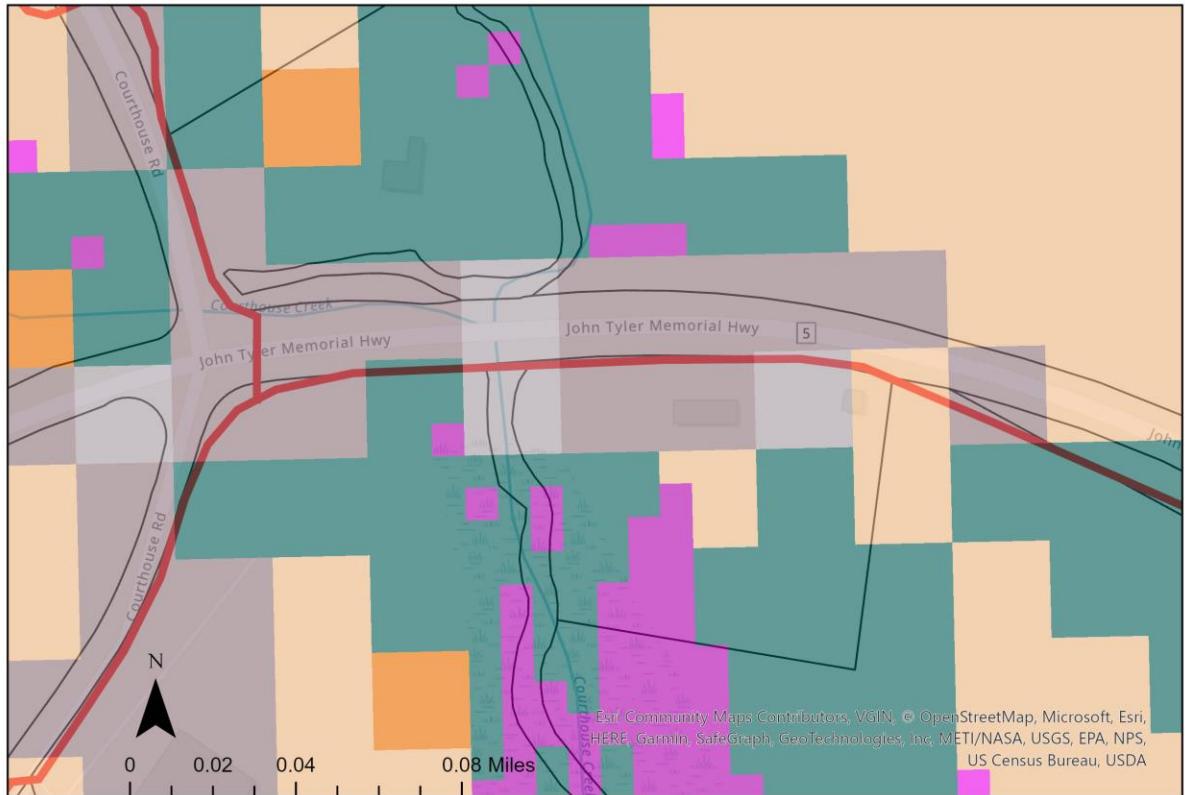


Legend



NOAA Flood Hazard Zones map of the Capital Trail crossing Courthouse Creek. Darker areas represent higher numbers of overlaid flood hazard areas.

Courthouse Creek Crossing Marsh Migration Under Three Foot Sea Level Rise Conditions



Legend

- | | |
|--|--|
| — Capital Trail | ■ Palustrine Forested Wetland |
| █ Marsh Migration at 3 ft. Sea Level Rise | ■ Palustrine Scrub/Shrub Wetland |
| ■ Developed, Medium Intensity | ■ Palustrine Emergent Wetland |
| ■ Developed, Low Intensity | ■ Brackish/Transition Wetland |
| ■ All Uplands | |

Analysis: Courthouse Creek Crossing, with the Capital Trail represented as a red line, shown with marsh migration overlaid. This area of the Capital Trail in Charles City shows potential for marsh migration to cause increased flooding under a 3 foot sea level rise scenario. Further evaluation of current infrastructure and resilience strategies for future conditions may be advisable.

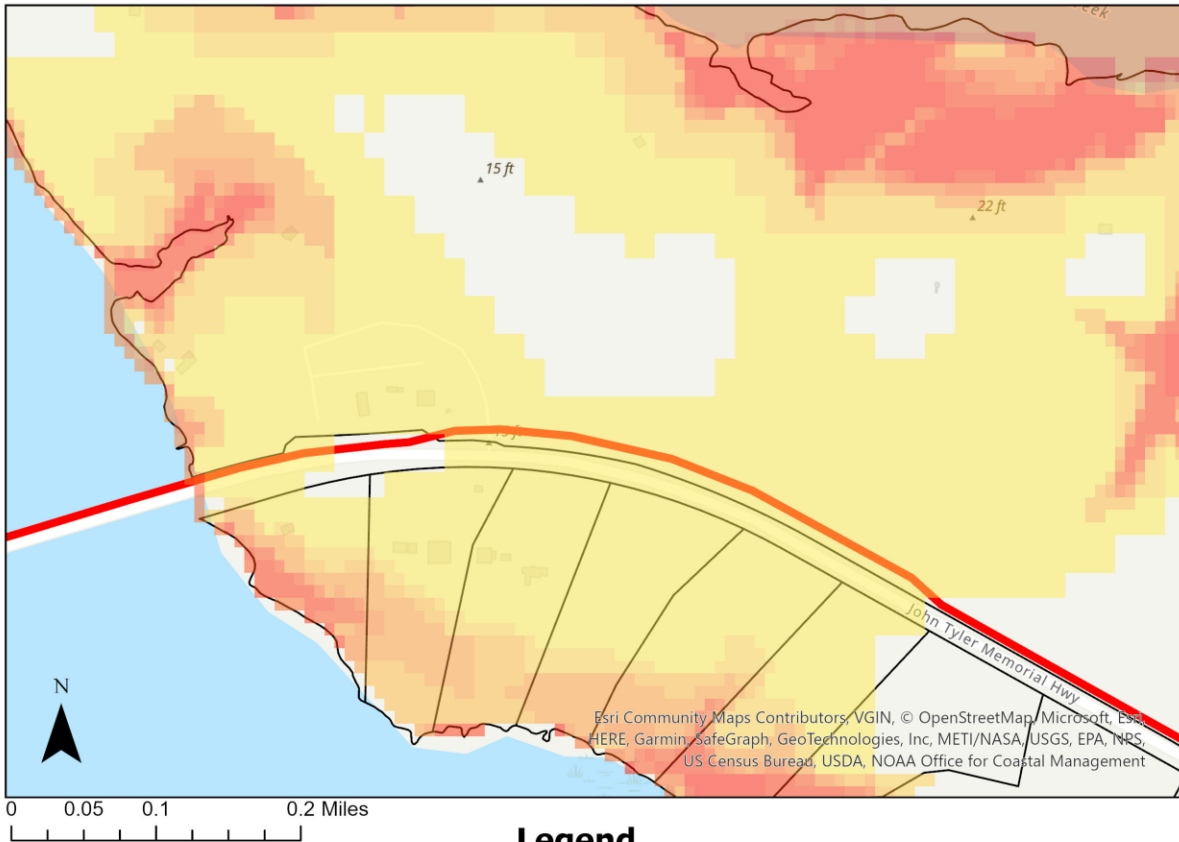
Chickahominy Riverfront Park - Capital Trail Section

Summary: Chickahominy Riverfront Park as a whole will be examined in the next section. For this analysis, only the portion which the Capital Trail runs through will be covered. The Capital Trail runs along the southern boundary of Chickahominy Riverfront Park before crossing the Route 5 Bridge over the Chickahominy River.

NOAA Flood Hazard Zones at this location include:

- Storm Surge (by Hurricane Category): 3

Chickahominy Riverfront Park - Capital Trail Section NOAA Coastal Flood Hazard Composite



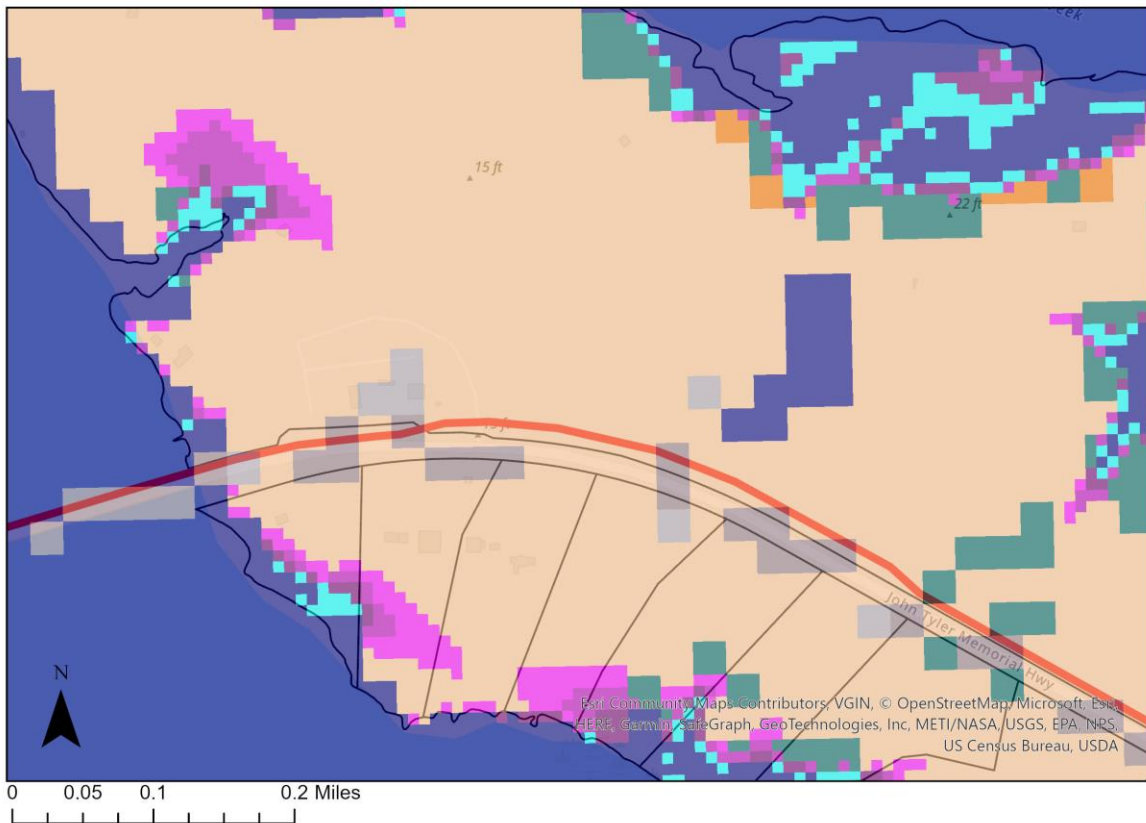
Legend

Capital Trail

Coastal Flood Hazard Composite (# of Hazards)

- 1 Hazard Zone
- 2 Hazard Zones
- 3 Hazard Zones
- 4 Hazard Zones
- 5 Hazard Zones
- 6 Hazard Zones
- 7 Hazard Zones
- 8 Hazard Zones
- 9 Hazard Zones
- 10 Hazard Zones
- 11 Hazard Zones

Chickahominy Riverfront Park - Capital Trail Section Marsh Migration Under Three Foot Sea Level Rise Conditions



Legend

<p>Capital Trail</p> <p>Marsh Migration at 3 ft. Sea Level Rise</p> <p>Developed, Medium Intensity</p> <p>Developed, Low Intensity</p> <p>All Uplands</p> <p>Palustrine Forested Wetland</p>	<p>Palustrine Scrub/Shrub Wetland</p> <p>Palustrine Emergent Wetland</p> <p>Brackish/Transition Wetland</p> <p>Estuarine Wetland</p> <p>Unconsolidated Shore</p> <p>Open Water</p>
--	--

Analysis: The only predicted threat to this portion of the Capital Trail is a Class 3 Hurricane Storm Surge. Appropriate warning systems and education will help to reduce impacts to trail users. Marsh migration does not pose a serious threat, however some areas show potential for developing into Palustrine Forested Wetlands. Site assessments of whether trail infrastructure would be effected by developing wetlands could help prevent future impacts.

Public Access Boat Ramps – Potential Flood Risk Areas

Chickahominy Wildlife Management Area (WMA)

Services:

- Hunting
- Trapping
- Primitive Camping
- Warmwater Fishing
- Hiking
- Horseback Riding
- Birding
- Boat Ramp(s)
- Range(s)

Summary: Chickahominy WMA is bordered on the south by Morris Creek, which flows through the area and then along its southern boundary. The WMA has little topography, with elevations ranging between 25-50 feet. The WMA is contiguous but has several small privately owned parcels within its boundaries. (dwr.virginia.gov)

Acreage: 5,217

Potential Acres Lost: 330.36

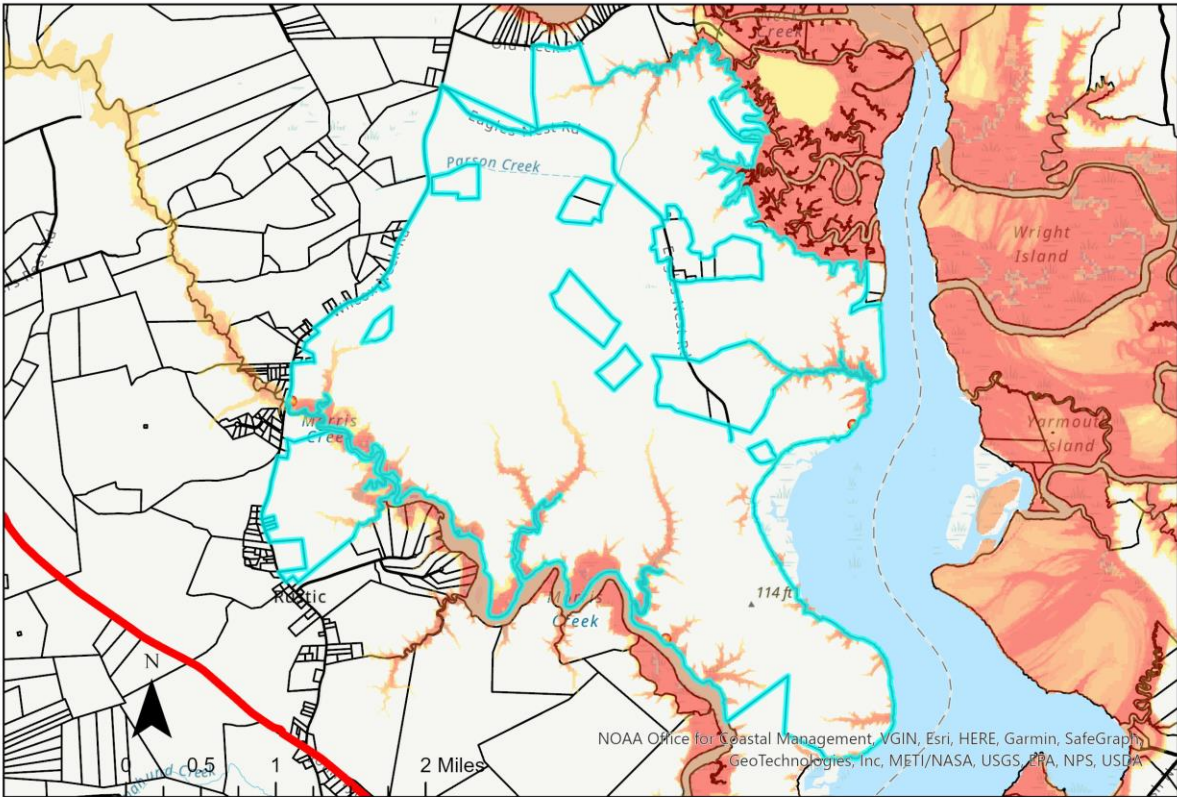
NOAA Flood Hazard Zones at the River Landing include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- High Tide Flooding
- Sea Level Rise (Above MHHW): 2 ft & 3 ft

NOAA Flood Hazard Zones at the Morris Creek Landing include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- High Tide Flooding
- Sea Level Rise (Above MHHW): 3 ft

Chickahominy Wildlife Management Area NOAA Coastal Flood Hazard Composite



Legend

Coastal Flood Hazard Composite (# of Hazards)



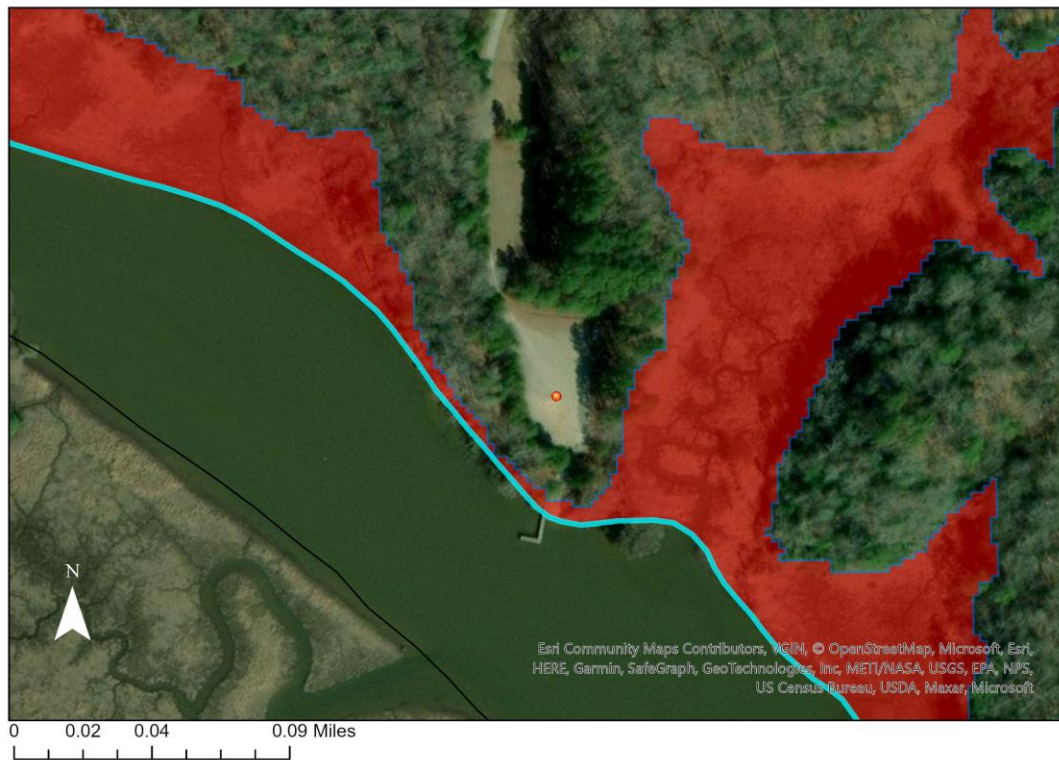
Chickahominy WMA River Landing 3 Foot Sea Level Rise Prediction



Legend

- Chickahominy WMA SLR 3ft
- Boat Ramps

Chickahominy WMA Morris Creek Landing 3 Foot Sea Level Rise Prediction



Legend

- Chickahominy WMA SLR 3ft
- Boat Ramps

Analysis: Much of the expected land loss due to sea level rise at the WMA occurs along Morris Creek and its tributaries. Both boat landings, the River Landing and Morris Creek Landing, will see shoreline retreat, estimated at roughly 15-30 feet. They are also located in FEMA flood hazard zones. Planning for future flooding as well as shoreline retreat at these boat landing sites will ensure that future hazards are appropriately addressed.

Lawrence Lewis Jr Park / Wilcox Boat Ramp

Services:

- Birding
- Boat Ramp
- Fishing
- Picnic Tables
- Restrooms
- Shelters
- Trails

Summary: Lawrence Lewis, Jr. Park is a 24-acre site located on the James River and accessible from Route 5 via Wilcox Wharf Road. It includes three shelters (one with picnic tables), restroom area, fishing and birding pier, wooded trails, and a boat ramp. (charlescitivityva.us)

Acreage: 25.87

Potential Acres Lost: 2.31

NOAA Flood Hazard Zones at the dock:

- FEMA Zones (% annual chance): V zone (1%) & A zone (1%) & 0.2%
- Sea Level Rise (Above MHHW): 3 ft

NOAA Flood Hazard Zones on the western forested portion of the park:

- FEMA Zones (% annual chance): V zone (1%) & A zone (1%) & 0.2%
- High Tide Flooding
- Sea Level Rise (Above MHHW): 1 ft & 2 ft & 3 ft
- Storm Surge (by Hurricane Category): 3

Lawrence Lewis Jr. Park / Wilcox Boat Ramp NOAA Coastal Flood Hazard Composite

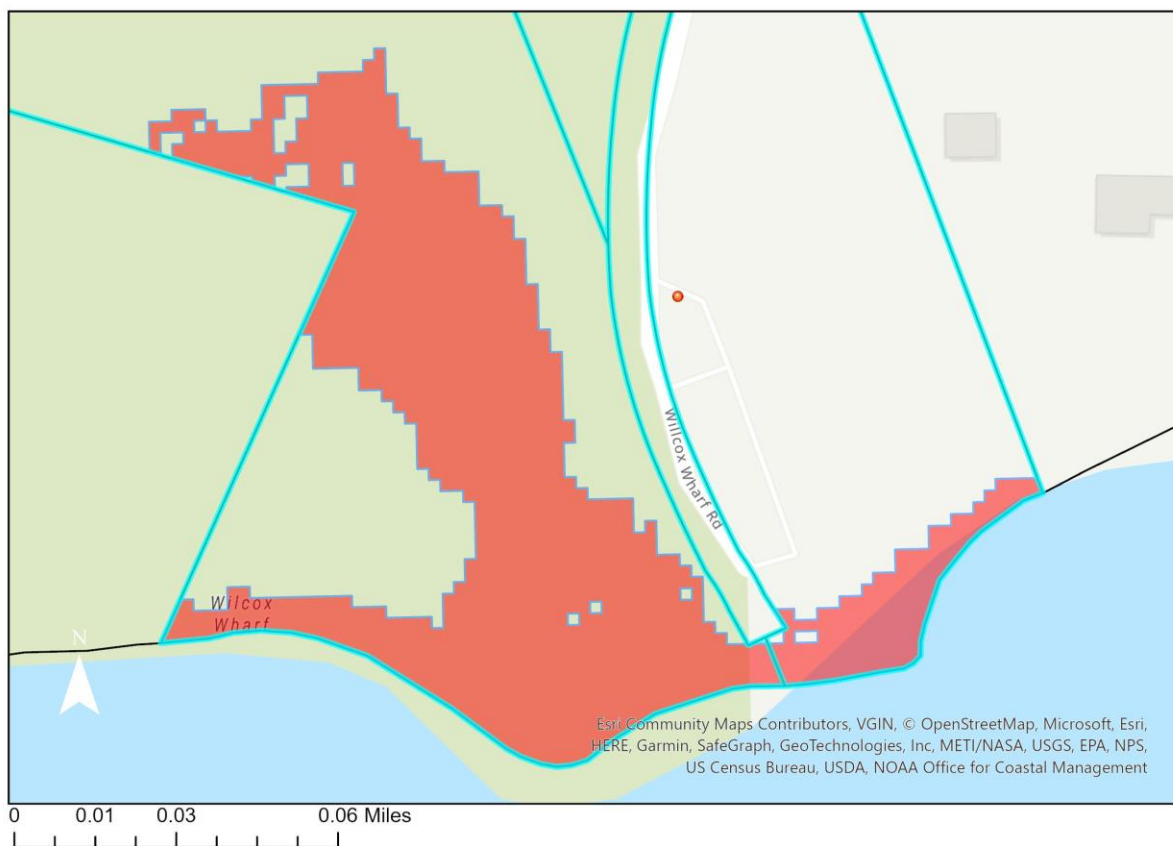


Legend

Coastal Flood Hazard Composite (# of Hazards)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Lawrence Lewis Jr. Park / Wilcox Boat Ramp 3 Foot Sea Level Rise Prediction



Legend

- Lewis Park SLR 3ft
- Boat Ramps

Analysis: 3 foot sea level rise predictions show potential impacts to the shore line of Lawrence Lewis Jr. Park. On-site evaluation and resilience planning could help prevent future impacts to the dock structures. Further, NOAA Flood Hazard Zones show the highest composite rating for hazards on the western forested portion of the park.

Jamestown Beach Event Park

Services:

- Fishing
- Interpretive Signage
- Picnic Areas
- Restrooms
- Store/Concessions
- Wildlife Viewing

Summary: Jamestown Beach Event Park is a family and dog-friendly beach that's open daily 8 a.m. - sunset. The beachfront park features picnic areas; a designated fishing area; an observation pier (for viewing only); outdoor rinse stations; paddle craft launch/loading/storage area; and a concession area. (jamescitycountyva.gov)

Acreage: 94.75

Potential Acres Lost: 2.64

NOAA Flood Hazard Zones along the beach include:

- FEMA Zones (% annual chance): V zone (1%) & A zone (1%) & 0.2%
- Sea Level Rise (Above MHHW): 1 ft & 2 ft & 3 ft
- Storm Surge (by Hurricane Category): 2 & 3

Jamestown Beach Event Park NOAA Coastal Flood Hazard Composite

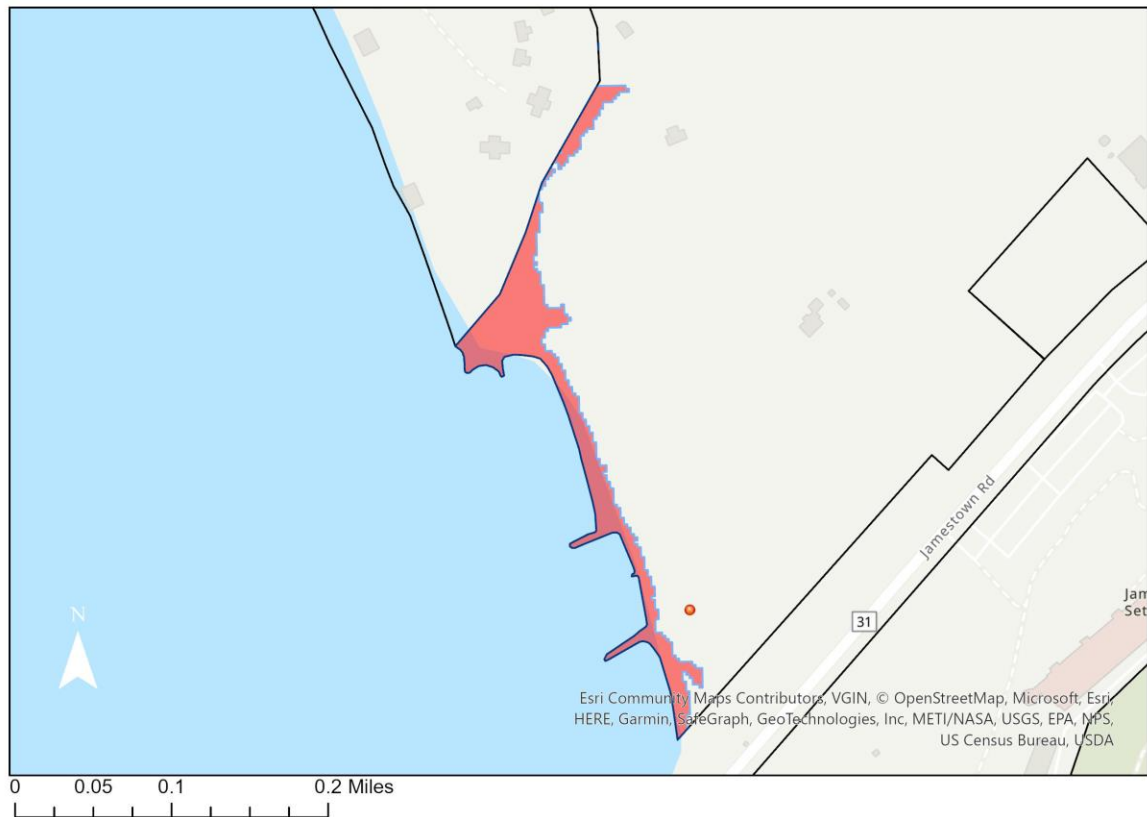


Legend

Coastal Flood Hazard Composite (# of Hazards)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Jamestown Beach Event Park 3 Foot Sea Level Rise Prediction



Legend

- Jamestown Beach Event Park SLR 3ft
- Boat Ramps

Analysis:

3 foot sea level rise is projected to shift the shoreline of Jamestown Beach Event Park to what is currently the upland boundary of the beach. Potential shoreline shifting could be taken into consideration to improve resilience when maintaining current infrastructure and implementing improvements or new additions.

Powhatan Creek Park

Services:

- Boat Access/Launch
- Fishing
- Interpretive Signage
- Natural Area
- Picnic Areas
- Restrooms
- Water Trails
- Wildlife Viewing

Summary: The park consists of a small non-motorized boat launch with gravel parking for up to 20 vehicles, as well as 5 observation/fishing piers. Fishing and boat launch access is available 24 hours a day. (jamescitycountyva.gov)

Acreage: 1.2

Potential Acres Lost: 0.24

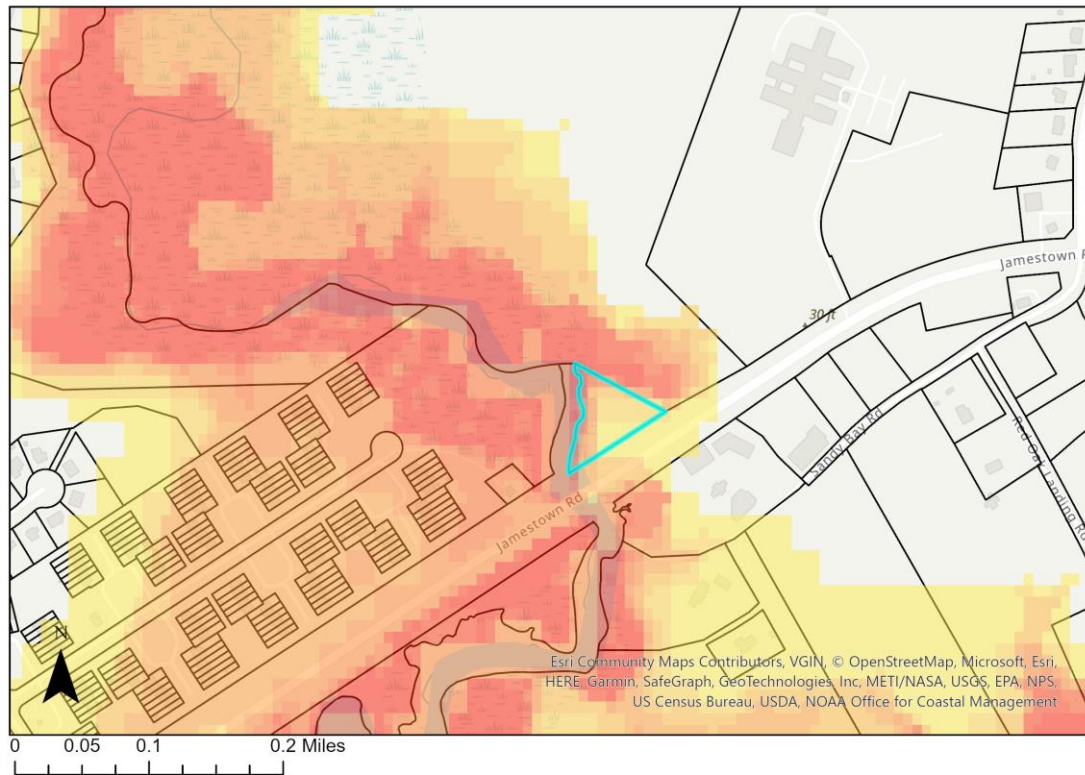
NOAA Flood Hazard Zones at the boat ramp include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%,
- High Tide Flooding
- Sea Level Rise (Above MHHW): 2 ft & 3 ft
- Storm Surge (by Hurricane Category): 2 & 3

NOAA Flood Hazard Zones at the parking lot include:

Storm Surge (by Hurricane Category): 2 & 3

Powhatan Creek Park NOAA Coastal Flood Hazard Composite



Legend

Coastal Flood Hazard Composite (# of Hazards)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Powhatan Creek Park 3 Foot Sea Level Rise Prediction



Legend

- Powhatan Creek Park
SLR 3ft
- Boat Ramps

Analysis: Sea level rise could affect the shoreline of the park as well as the boat launch at the southwestern corner of the park. The parking lot appears to be entirely outside the predicted boundaries of sea level rise but could be affected by marsh migration.

Brickyard Landing

Services:

- Boat Access/Launch
- Fishing
- Wildlife Viewing

Summary: Brickyard Landing is a public boat ramp that provides access to the Chickahominy River from the upper end of James City County. The boat ramp is operated by James City County Parks & Recreation. (jamescitycountyva.gov)

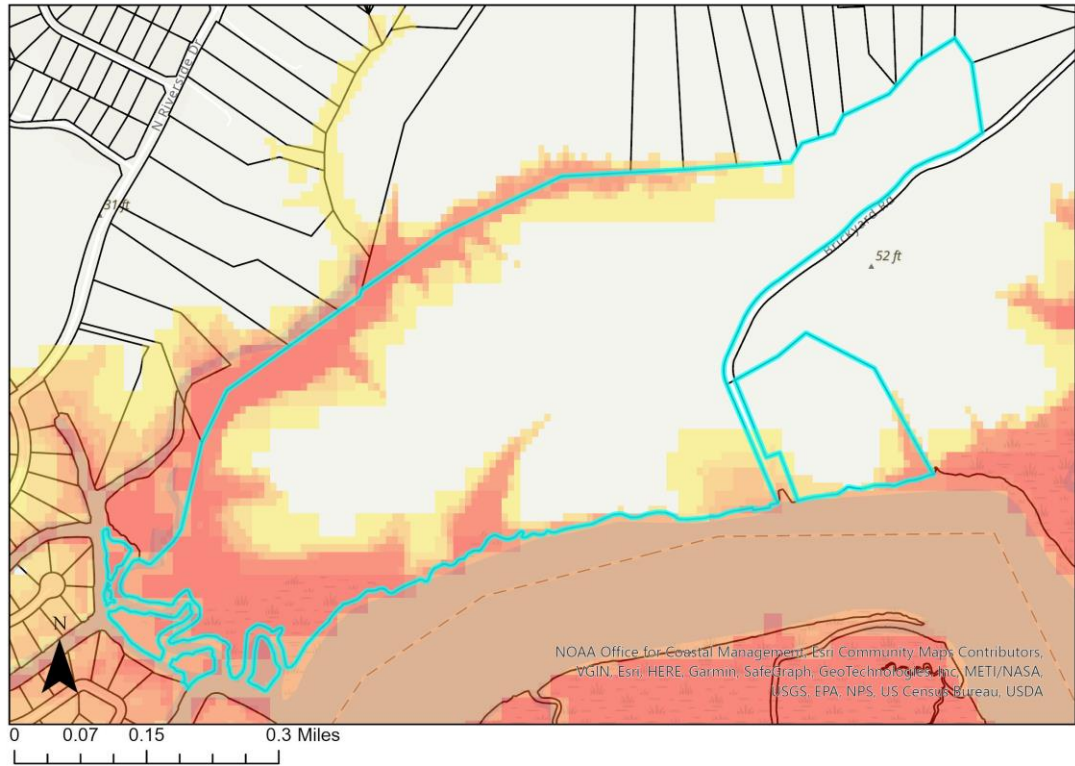
Acreage: 119

Potential Acres Lost: 26.41

NOAA Flood Hazard Zones at the Boat Ramp:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- High Tide Flooding
- Sea Level Rise (Above MHHW): 1 ft & 2 ft & 3 ft
- Storm Surge (by Hurricane Category): 2 & 3

Brickyard Landing Park NOAA Coastal Flood Hazard Composite

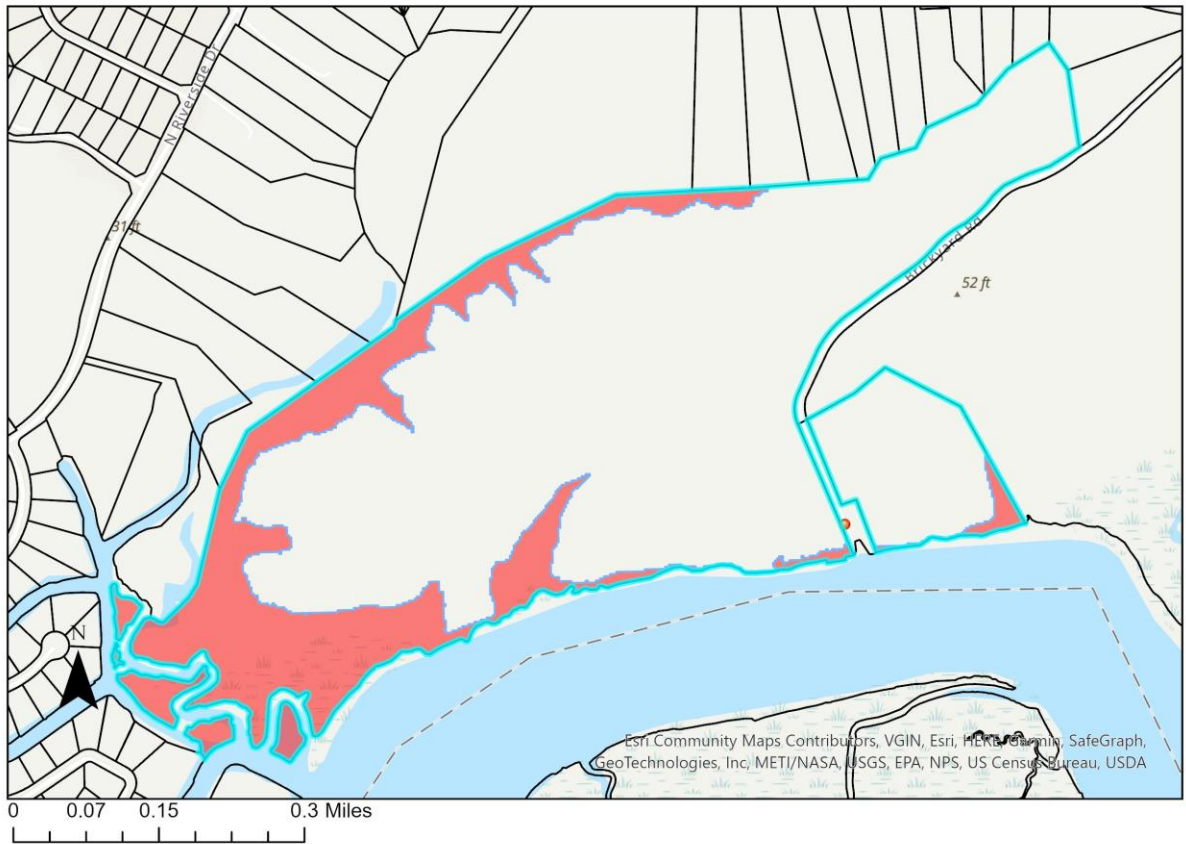


Legend

Coastal Flood Hazard Composite (# of Hazards)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Brickyard Landing Park 3 Foot Sea Level Rise Prediction



Legend

- Brickyard Landing SLR 3ft
- Boat Ramps

Analysis: Under a 3 foot sea level rise scenario, the shoreline at Brickyard Landing's boat ramp could retreat approximately 60 to 70 feet. Further resilience planning may be necessary to protect the boat ramp from impacts. The western edge of the property is most susceptible to sea level rise, however this area is currently not utilized as heavily as the boat ramp. Taking potential sea level rise into account while planning future trails and amenities could help avoid future flooding impacts in these areas.

James City County Marina

Services:

- Biking
- Boat Access/Launch
- Boat Repair Facility
- Canoe/Kayak Rental
- Fees
- Restrooms
- Store
- Wildlife Viewing

Summary: The James City County Marina is located on the historic Powhatan Creek, behind Jamestown Island and across the street from Jamestown Settlement and Jamestown Beach Event Park.
(jamescitycountyva.gov)

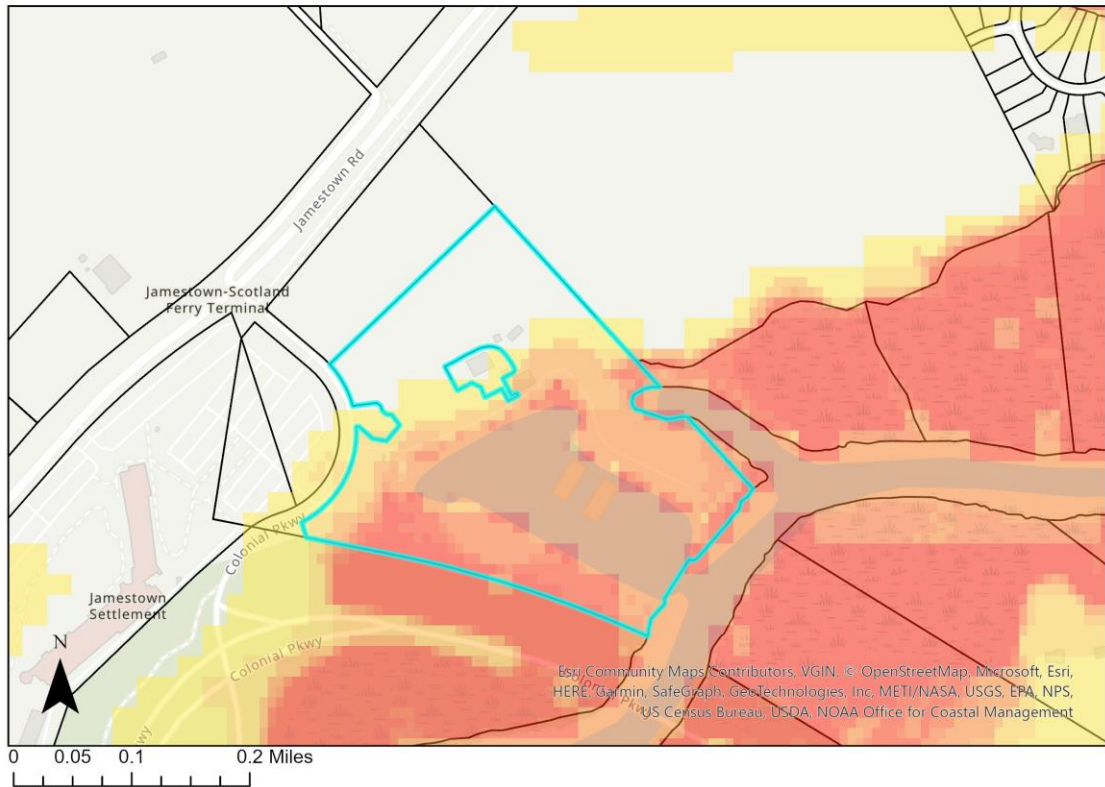
Acreage: 37.08, 7.73 of which is currently underwater. 29.32 acres are above water.

Potential Acres Lost: 7.3

NOAA Flood Hazard Zones along the dock include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- Sea Level Rise (Above MHHW): 1 ft & 2 ft & 3 ft
- Storm Surge (by Hurricane Category): 1 & 2 & 3

James City County Marina NOAA Coastal Flood Hazard Composite



Legend

Coastal Flood Hazard Composite (# of Hazards)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

James City County Marina 3 Foot Sea Level Rise Prediction



Legend

- James City County Marina SLR 3ft
- Boat Ramps

Analysis: Under 3" SLR conditions (red zone at right), an additional 7.3 acres could be lost to rising water levels. Part of one access road could possibly be impacted, along with the shoreline.

Chickahominy Riverfront Park

Services:

- Biking
- Boat Access/Launch
- Campground
- Canoe/Kayak Rental
- Fishing
- Interpretive Signage
- Picnic Areas
- Playground
- Pool
- Restrooms
- Store/Concessions
- Walking Trails
- Wildlife Viewing
- Trail access and parking for the Virginia Capital Trail

Summary: Chickahominy Riverfront Park sits near the mouth of the Chickahominy River, adjacent to the Chickahominy River Bridge. The pier is currently being updated and construction is underway as of 2023. (jamescitycountyva.gov)

Acreage: 139.42

Potential Acres Lost: 20.65

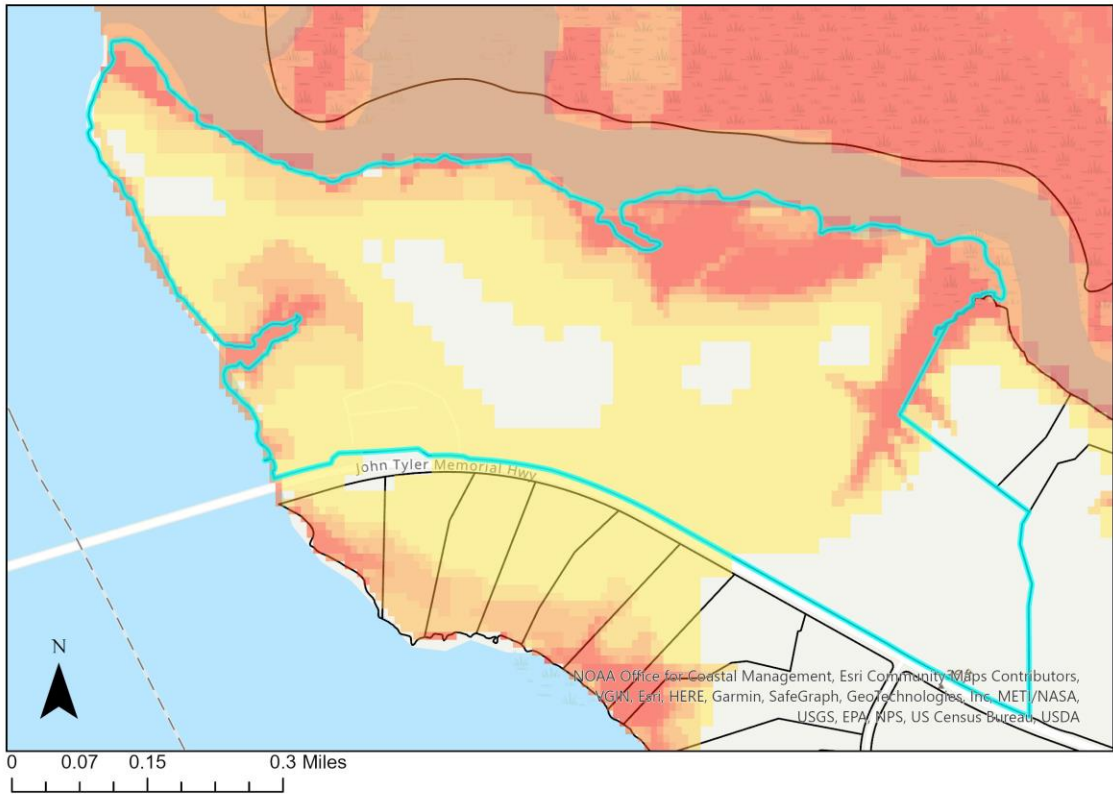
NOAA Flood Hazard Zones at the southwest dock include:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%
- Sea Level Rise (Above MHHW): 1 ft & 2 ft & 3 ft
- Storm Surge (by Hurricane Category): 3

NOAA Flood Hazard Zones at the northern boat ramp include:

- Storm Surge (by Hurricane Category): 1 & 2 & 3

Chickahominy Riverfront Park NOAA Coastal Flood Hazard Composite



Legend

Coastal Flood Hazard Composite (# of Hazards)



Chickahominy Riverfront Park 3 Foot Sea Level Rise Prediction



Legend

- Chickahominy Riverfront Park SLR 3ft

Analysis: Land loss of approximately 15% is possible due to sea level rise, with the majority of the encroachment occurring on the northeast portion of the property. However, some loss is projected to occur near the current site of the pier. On site resilience analysis of the land surrounding the pier could prevent potential future impacts to the pier that is currently being constructed as of 2023.

Diascund Landing

Services:

- Fishing
- Boating

Summary: The boat ramp at Diascund Landing is located on the 1,110-acre water supply reservoir for the City of Newport News.
(jamescitycountyva.gov)

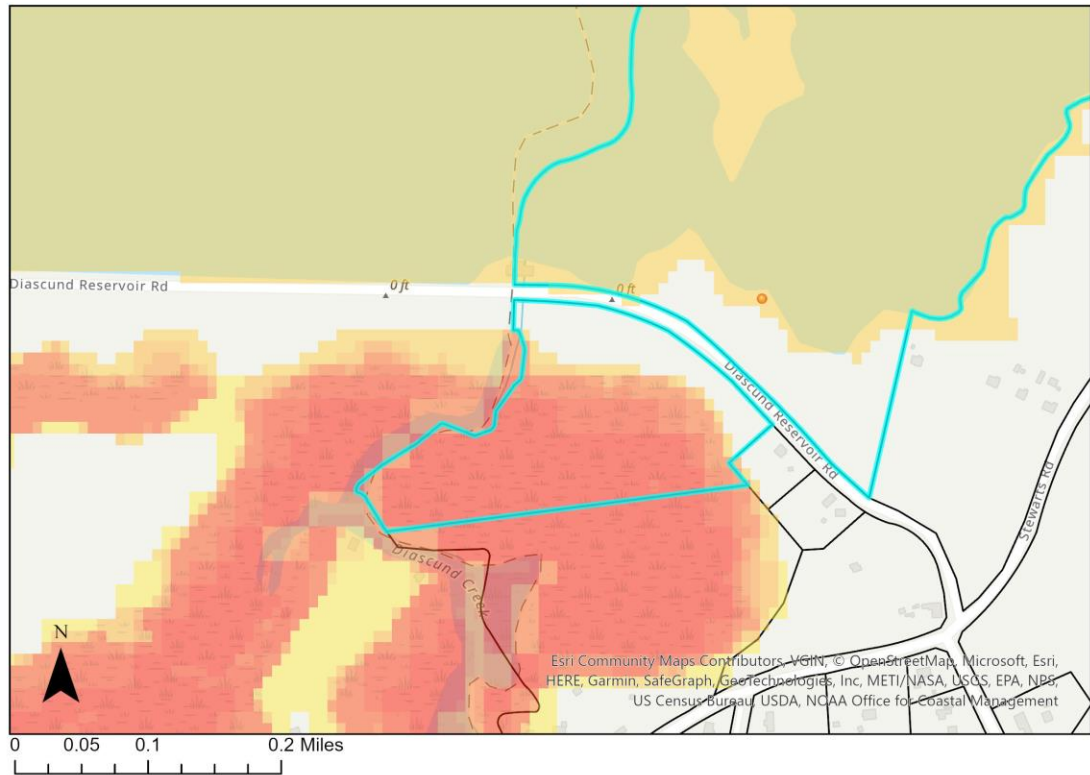
Acreage: 11.88

Potential Acres Lost: 8.93

NOAA Flood Hazard Zones at the Boat Ramp:

- FEMA Zones (% annual chance): A zone (1%) & 0.2%

Diascund Landing NOAA Coastal Flood Hazard Composite

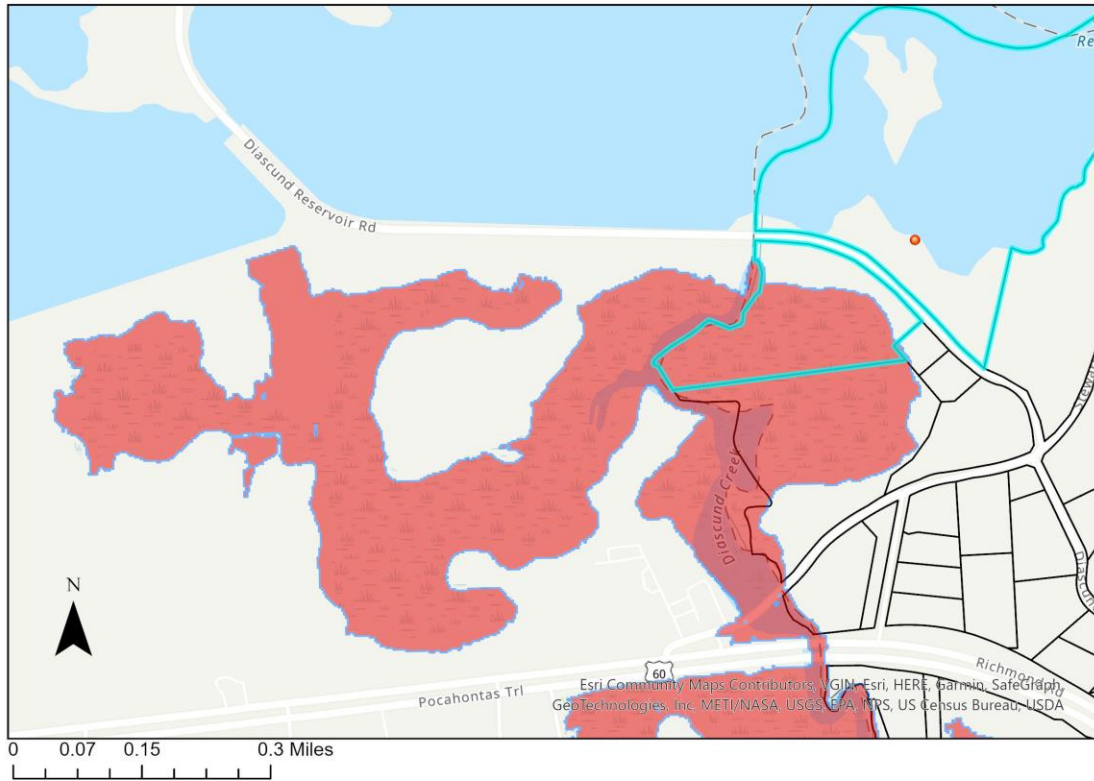


Legend

Coastal Flood Hazard Composite (# of Hazards)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

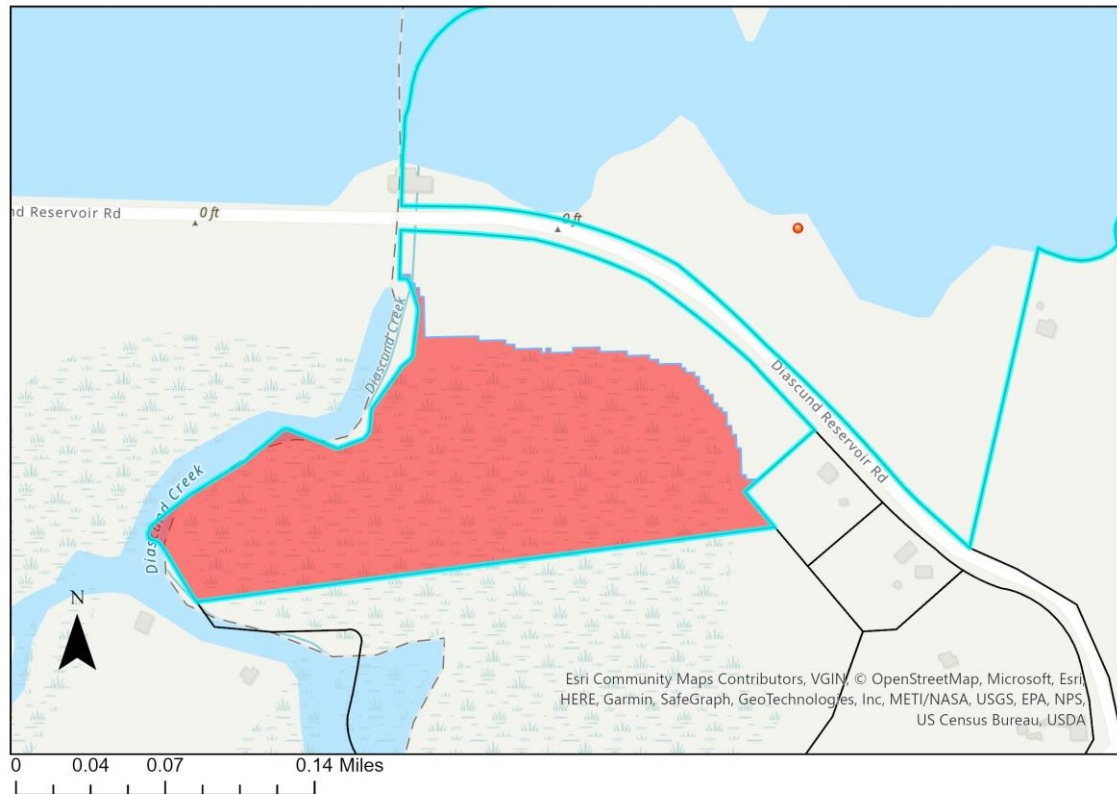
Diascund Landing - Surrounding Area 3 Foot Sea Level Rise Prediction



Legend

- SLR 3 ft
- Boat Ramps

Diascund Landing 3 Foot Sea Level Rise Prediction



Legend

- Diascund Landing SLR 3ft
- Boat Ramps

Analysis: 3 foot sea level rise is predicted to affect the majority of the parcel. This sea level rise prediction does not show inclusion of the built infrastructure of the boat ramp, however it does fall into FEMA flood zones. Resiliency planning could include ensuring access routes to the boat ramp will be preserved under 3 foot sea level rise conditions, and plans for potential flood effects are in place.

Potential Acreage Lost to Sea Level Rise on Boat Ramp Parcels

Location	Total Acreage	Acres Impacted By SLR	% Impact	County
Chickahominy Wildlife Management Area	5217	330.36	6%	Charles City County
Lewis Park / Wilcox Boat Ramp	25.87	2.31	9%	Charles City County
Jamestown Beach Event Park	94.75	2.64	3%	James City County
Powhatan Creek Park	1.2	0.24	20%	James City County
Brickyard Landing	119	26.41	22%	James City County
James City County Marina	29.34	7.3	25%	James City County
Chickahominy Riverfront Park	139.42	20.65	15%	New Kent County
Diascund Landing	11.88	8.93	75%	New Kent County