

Climate Change, Sea Level Rise, and Public Health Policy Challenges



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Projections and Uncertainty

Impacts

Case Study

Credible Communication In Uncertain Times

How do we know what we know?



ipcc

The Intergovernmental Panel on Climate Change



VIMS | WILLIAM & MARY
VIRGINIA INSTITUTE OF MARINE SCIENCE

How do we know what we know?



Florida International University



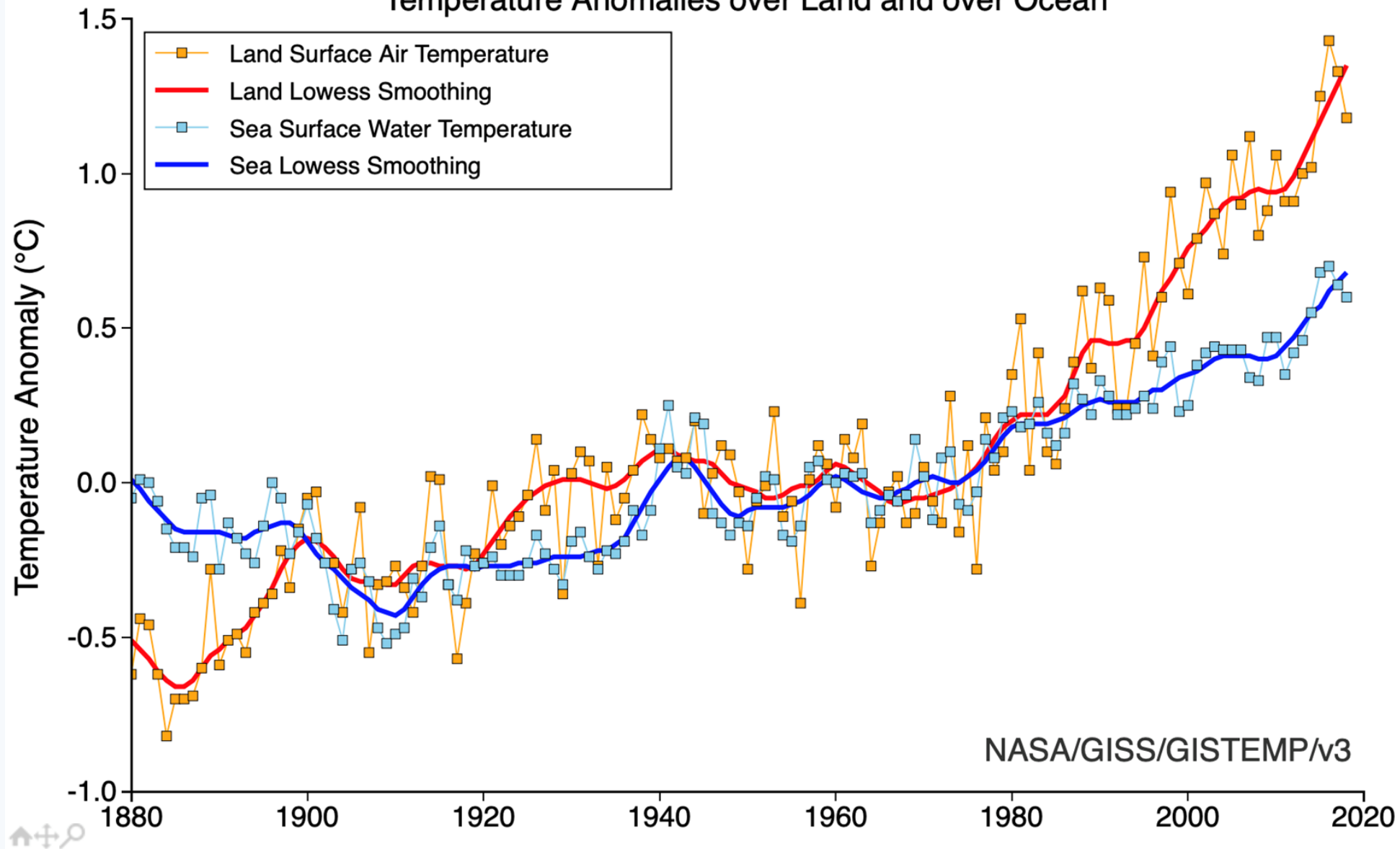
CitizenScience.gov



University of Reading



Temperature Anomalies over Land and over Ocean

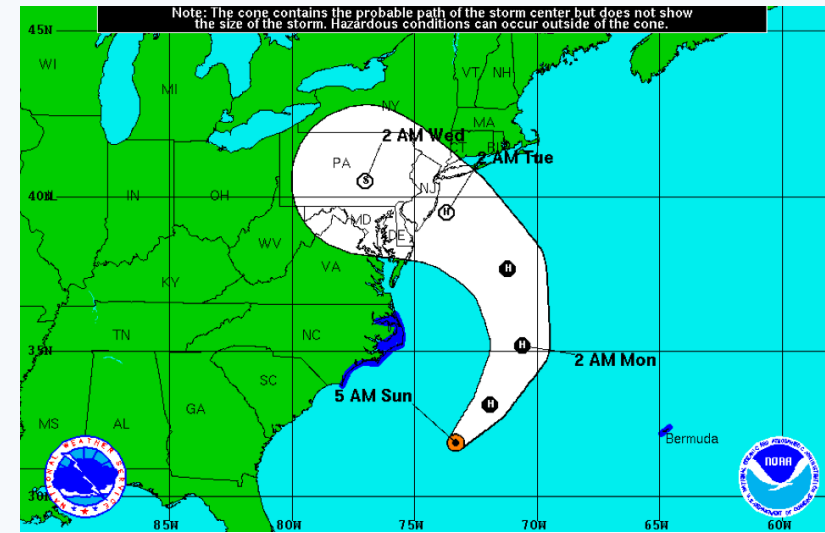


Projections and Uncertainty

The public can hear “uncertainty”
and think that something may
happen, or it may not happen.
Nobody really knows.



The scientist says “uncertainty” and thinks that within a predictable range, *the outcomes will vary depending upon the inputs.*



Uncertainty: The output depends on the input

Business as usual. No change in growth of CO2 emissions (UN World Meteorological Organization)

=9 degrees F warming

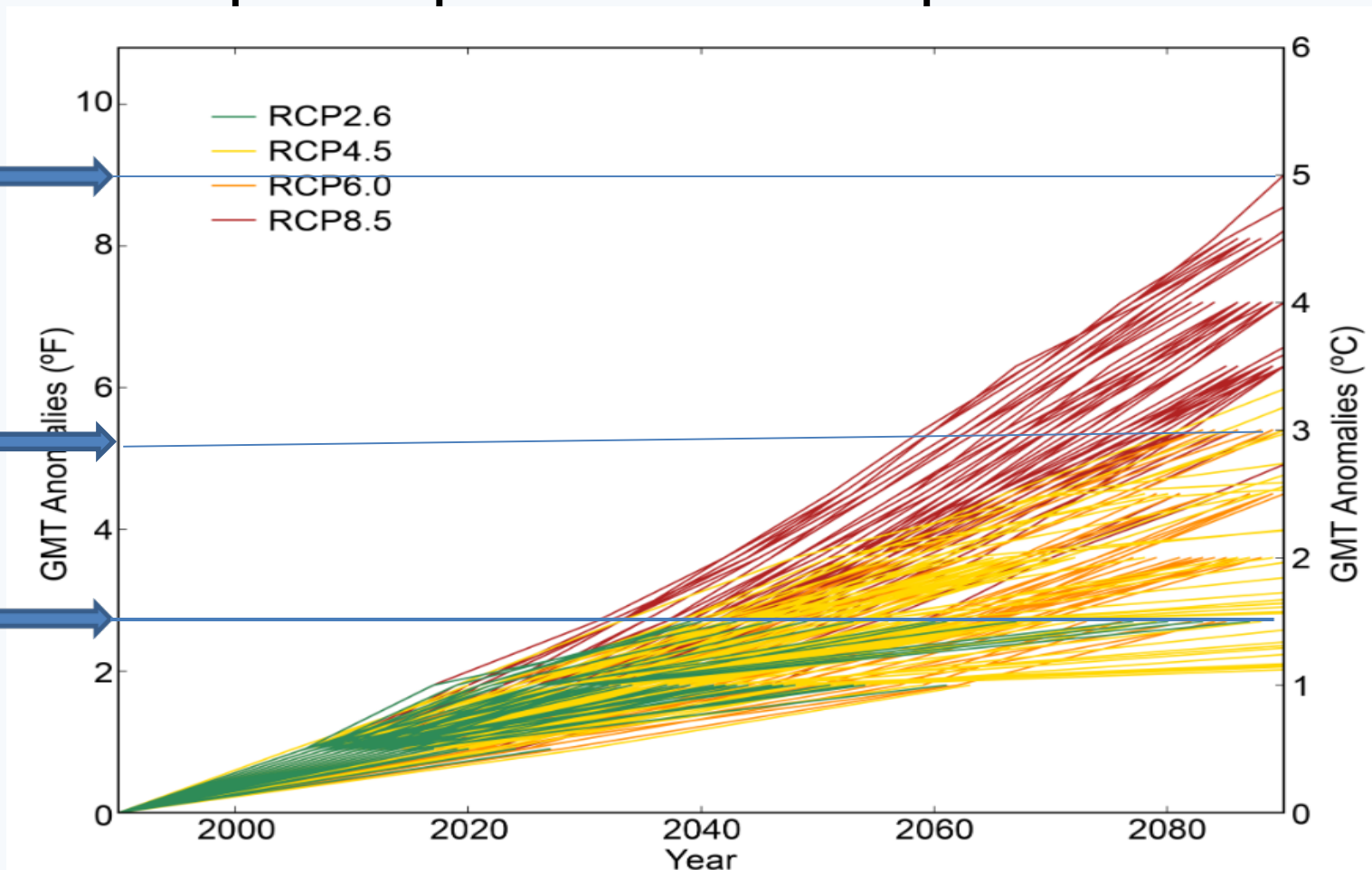
Paris Climate Change Accord Policies, fully implemented (UN WMO) = 5.4 degrees F

warming

IPCC target: Net Zero global carbon emissions by 2055

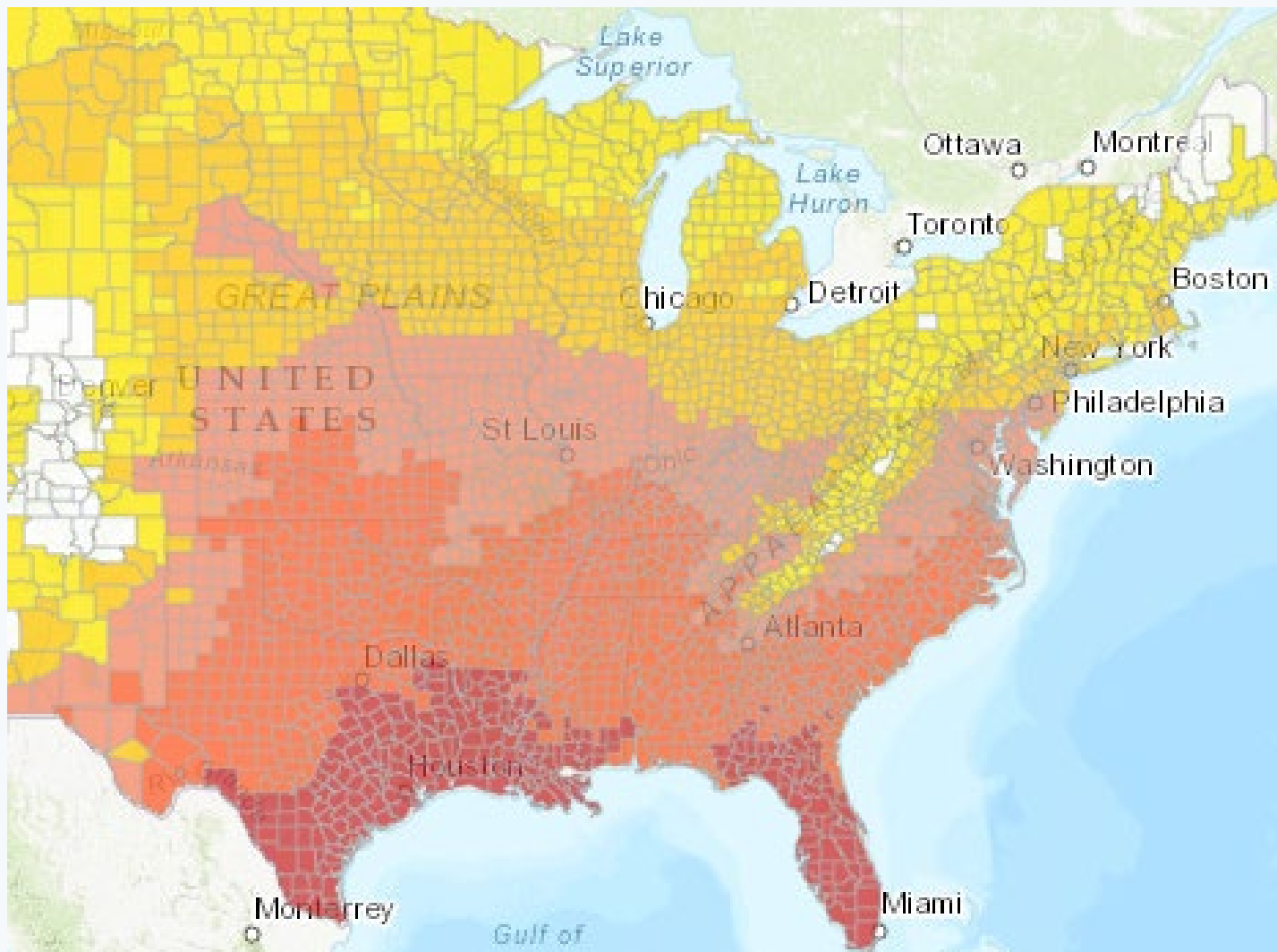
=2.7 degrees F warming

Take-away: Climate is very responsive to human activity. The trend is certain, but the destination is “uncertain” and depends on ongoing human choices.



USGCRP, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp, doi: 10.7930/J0J964J6.

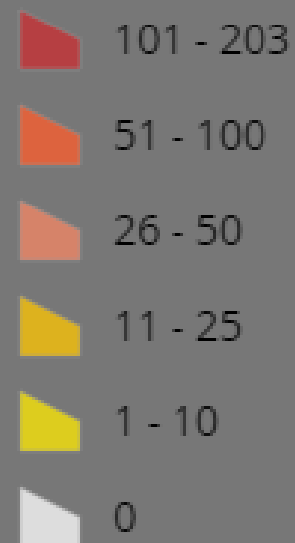




LEGEND

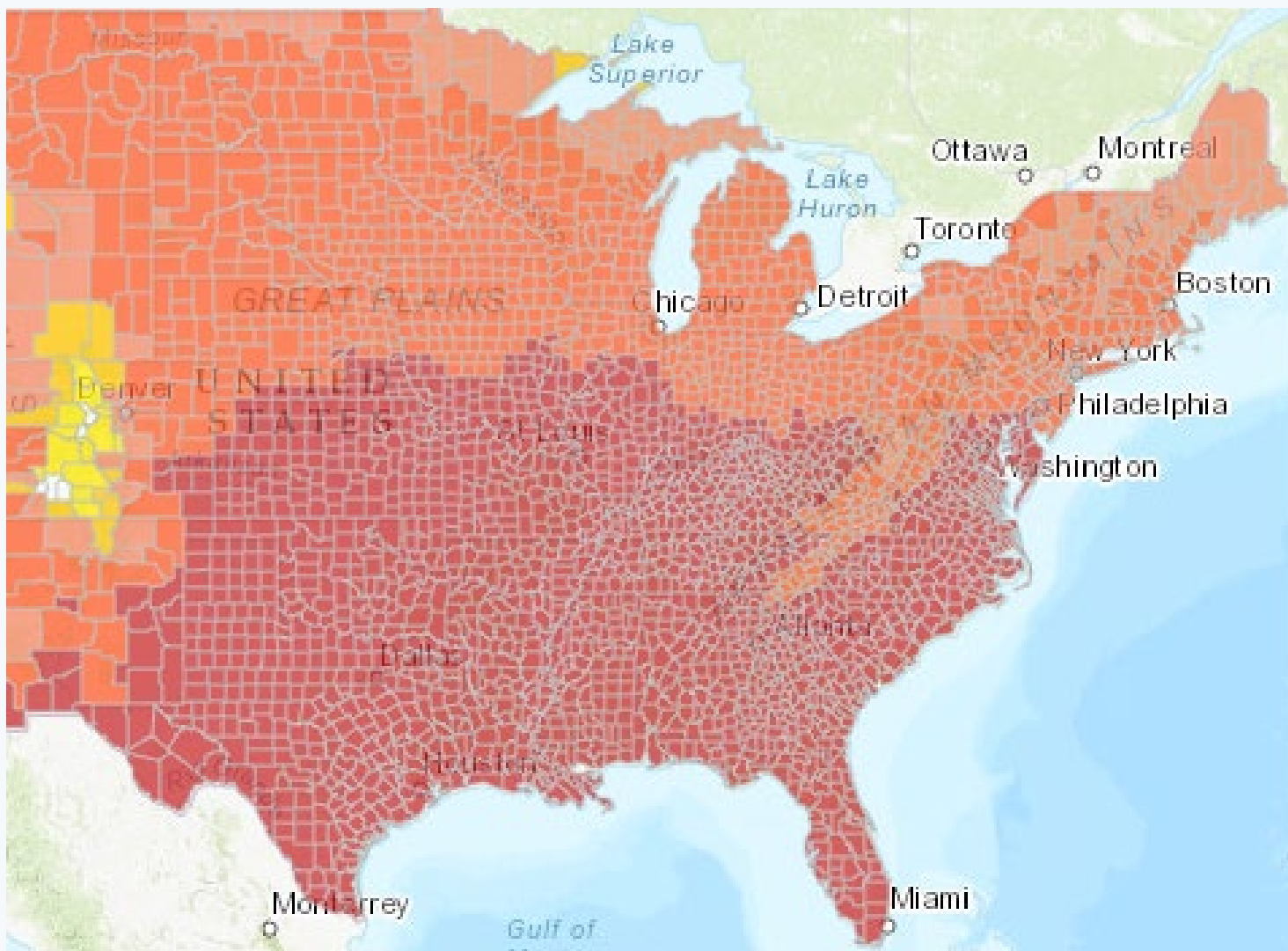
Historical (1971-2000)

Average days per year
with heat index above
90°F



Union Of Concerned Scientists

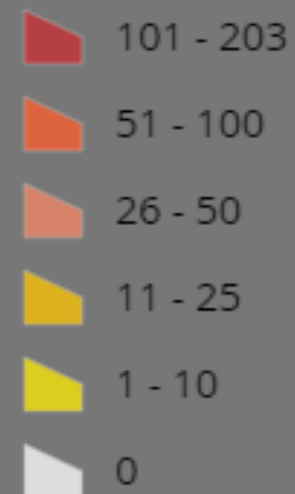
<https://ucsusa.maps.arcgis.com/apps/MapSeries/index.html?appid=e4e9082a1ec343c794d27f3e12dd006d>



▲ LEGEND

Late Century (2070–2099), no action on climate change

Average days per year with heat index above 90°F



Union Of Concerned Scientists

<https://ucsusa.maps.arcgis.com/apps/MapSeries/index.html?appid=e4e9082a1ec343c794d27f3e12dd006d>



Photo: [WFP/Daouda Guirou]



www.cbn.co.za



www.healthline.com



www.abc11.com



why.org



www.cnn.com



Captain John Smith, 1607

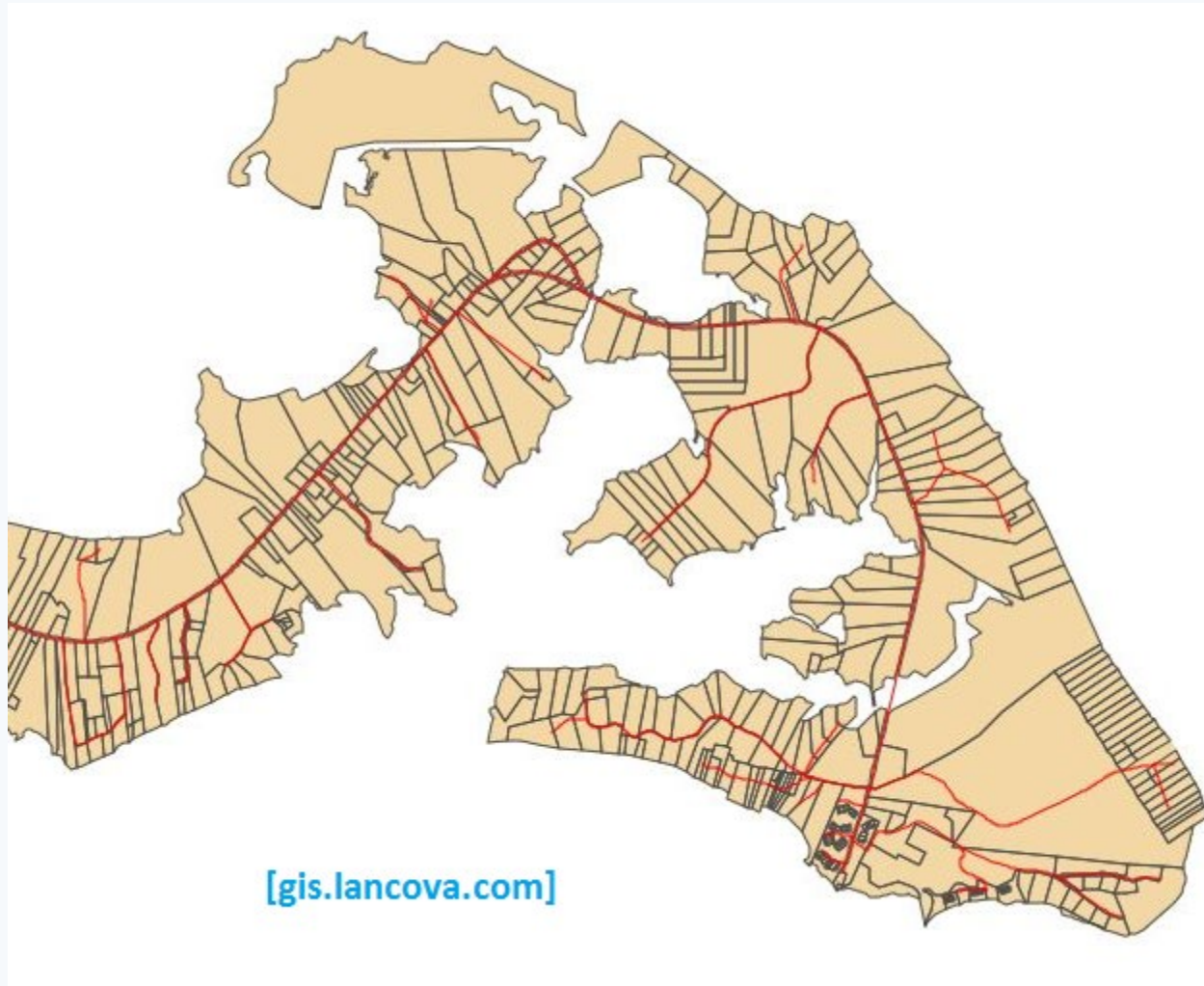


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2019





2019

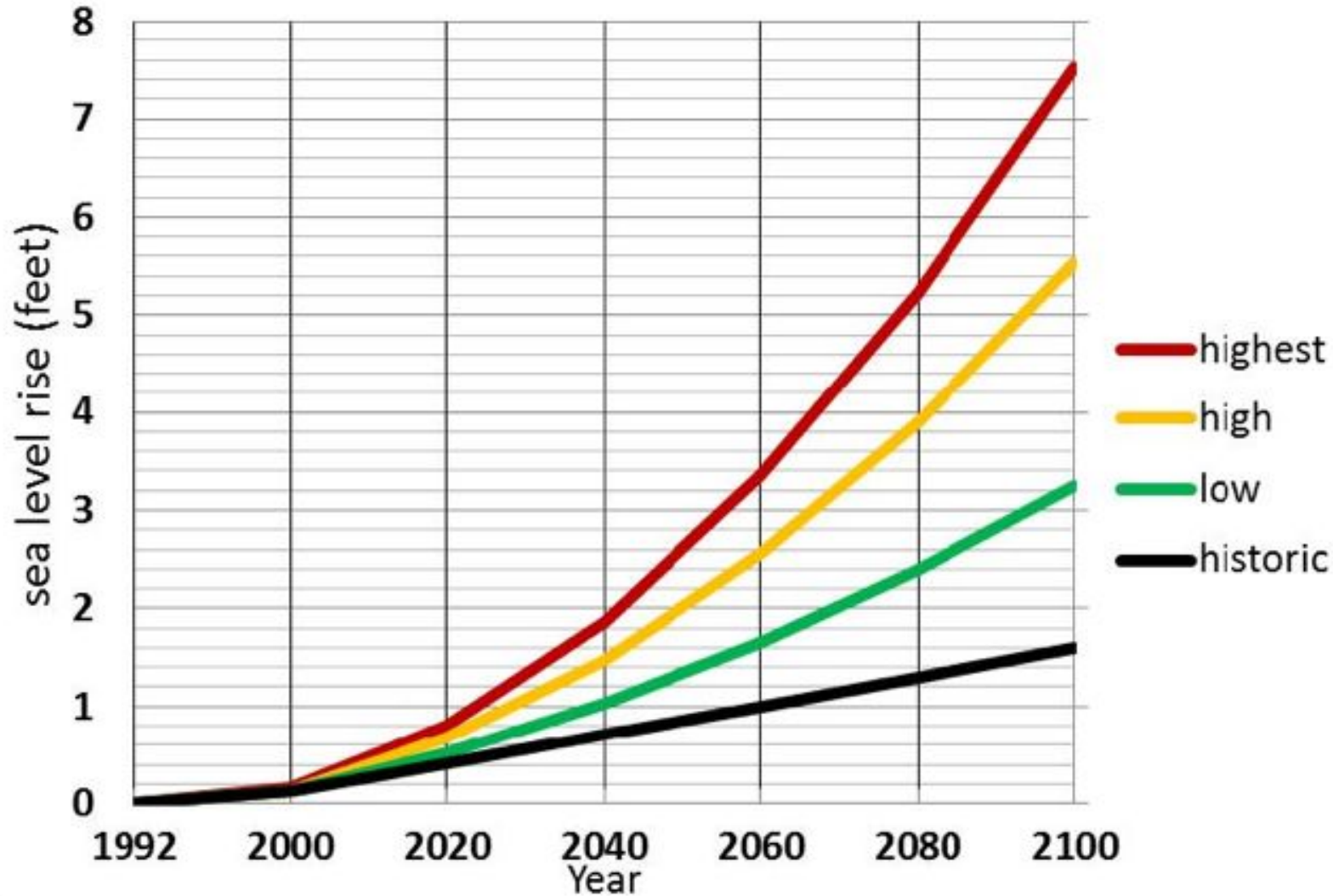


<https://coast.noaa.gov/slr/#/layer/slr>

2019



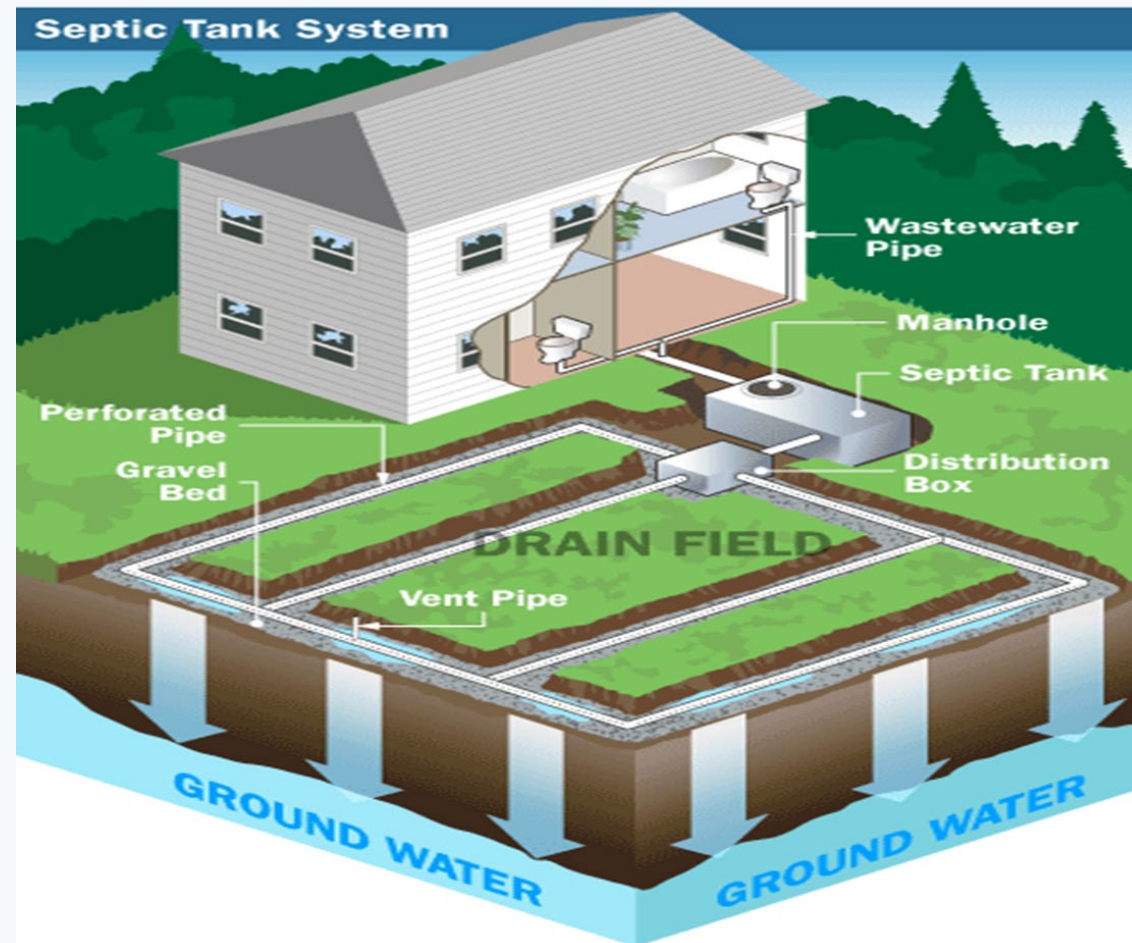
SE Virginia sea level rise scenarios



“Localities should plan for sea level rise using 1.5 feet of relative sea level rise above current mean higher high water (MHHW) for near-term planning, 3 feet of relative sea level rise above current MHHW for medium-term planning, and 4.5 feet of relative sea level rise above current MHHW for long-term planning.

--Hampton Roads Planning
District Commission
*Sea Level Rise Planning Policy
and Approach (2018)*

A very quick primer on septic systems

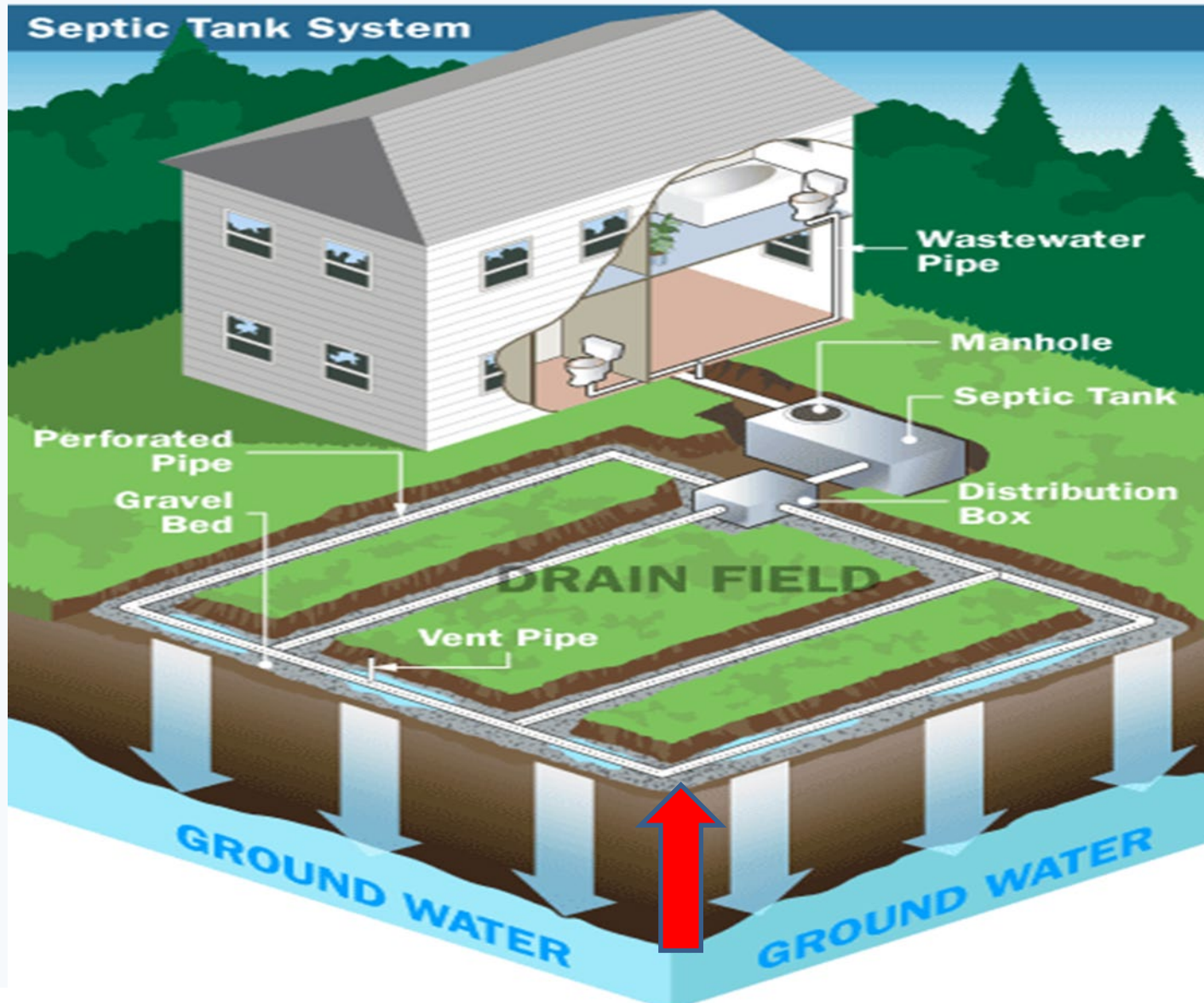


Public Health, Ground Water, Surface Waters



Epa.gov



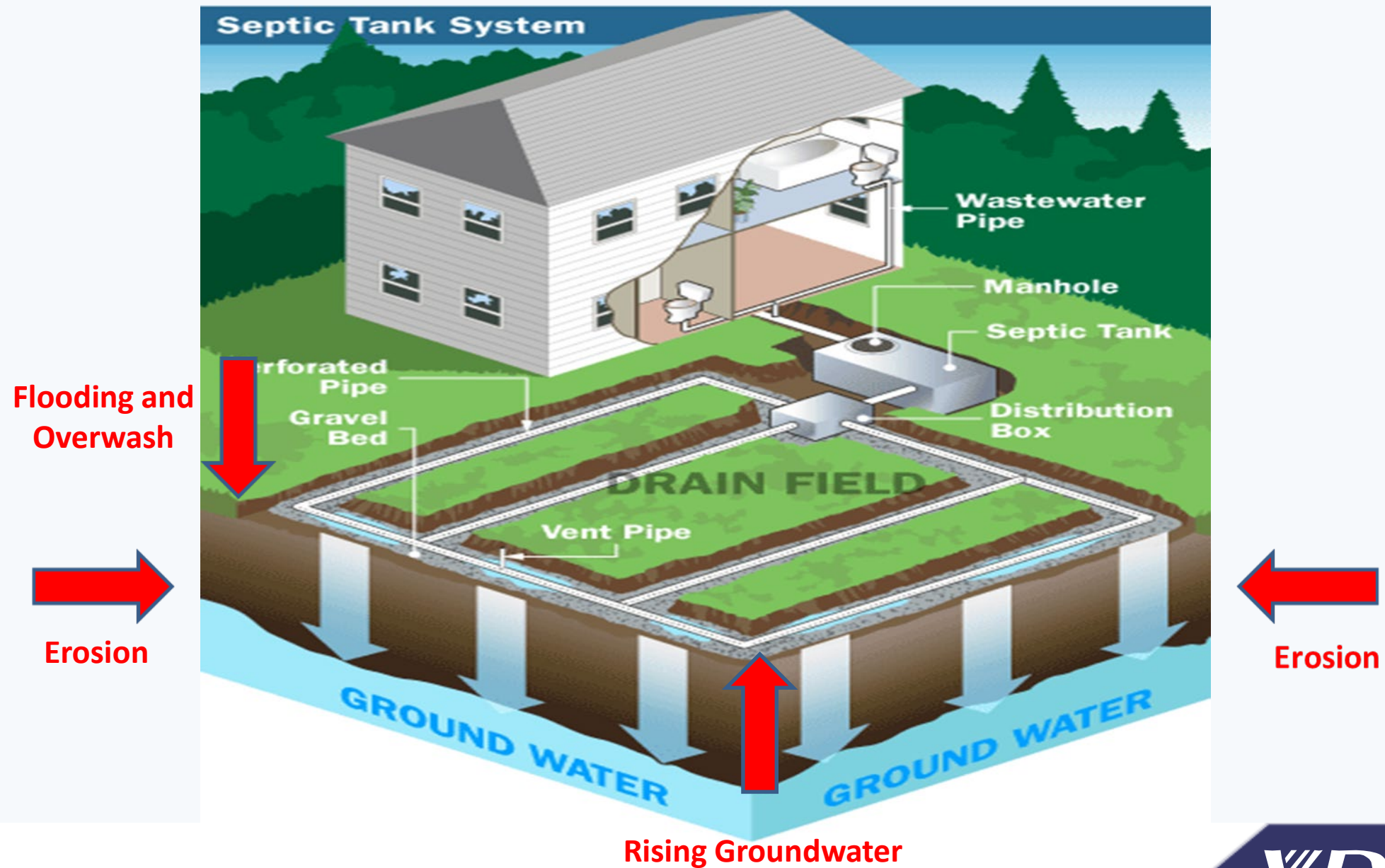


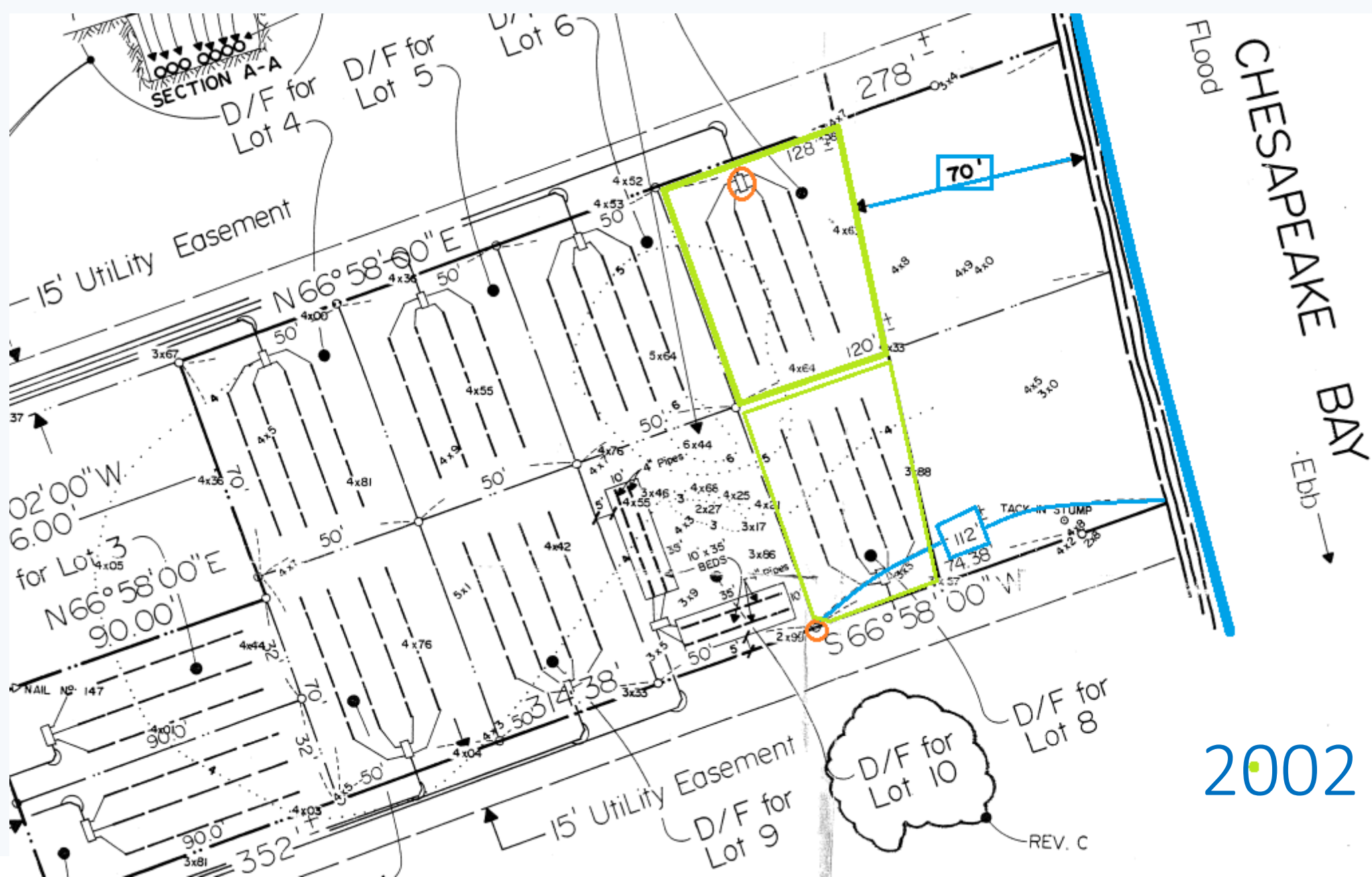
Rising Groundwater



Flooding and
Overwash

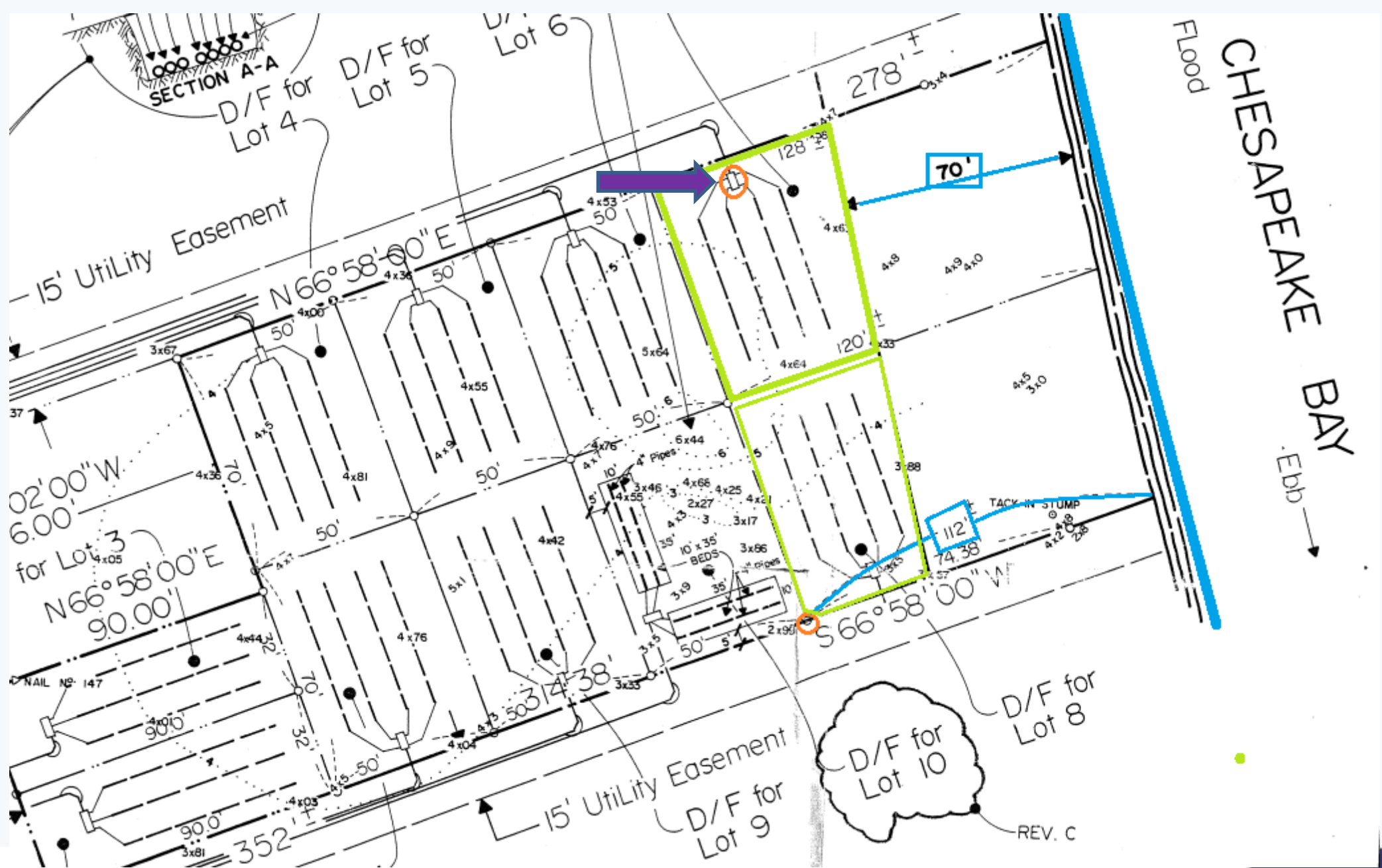
Rising Groundwater





2002





2019



2019



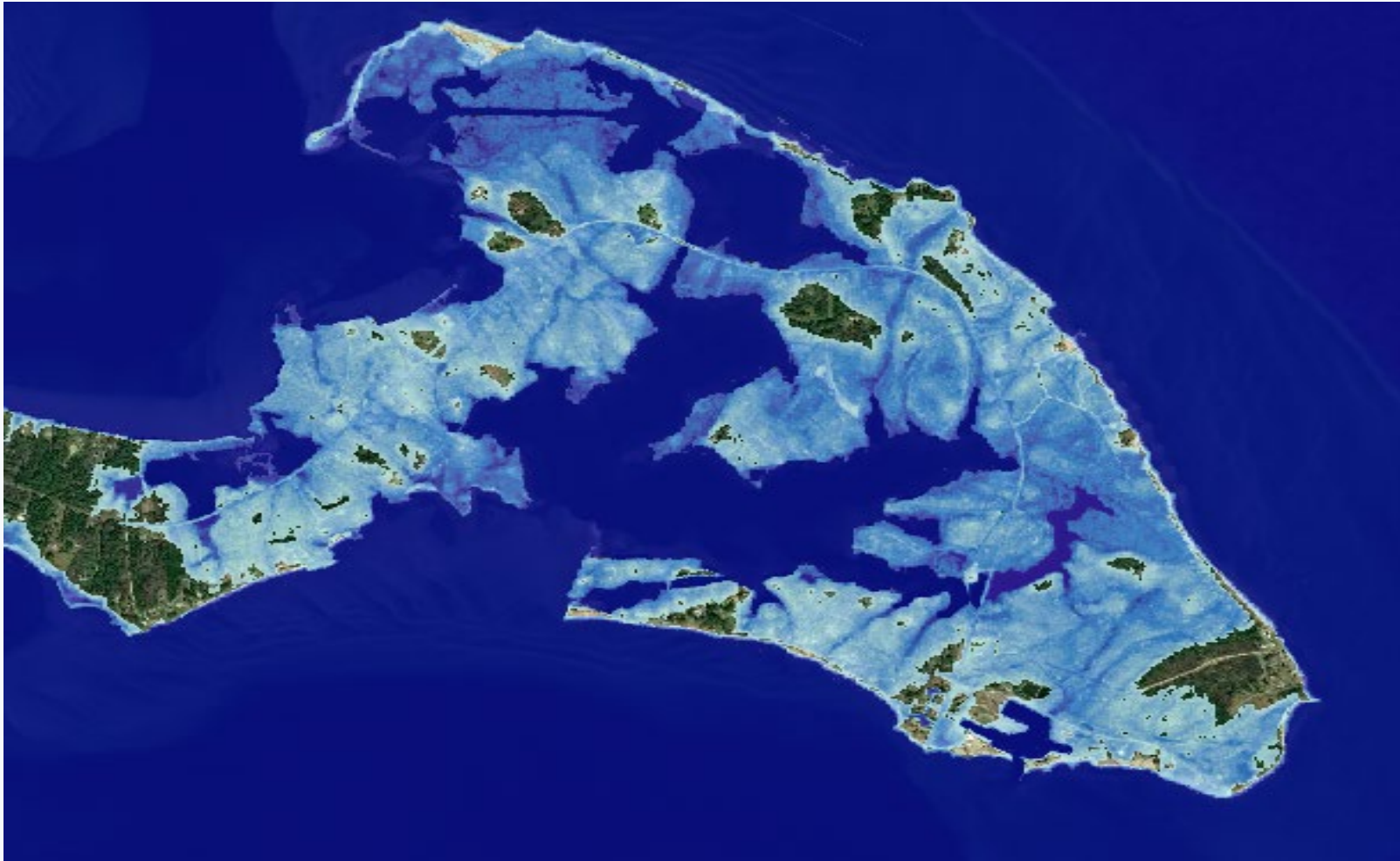
2050



2065



2080



2090



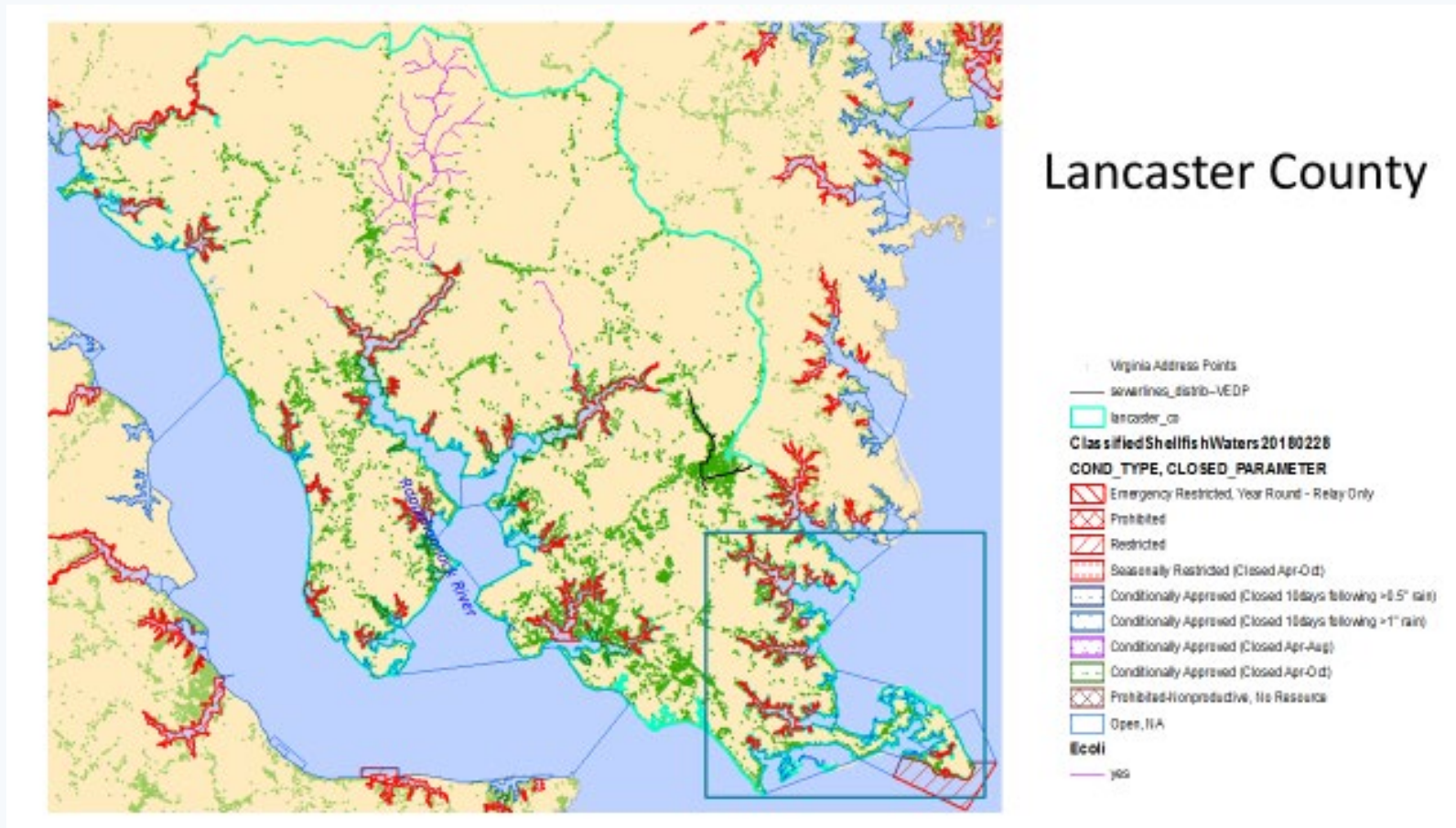
2019



Policy Challenge Basics

- Local Health needs to maintain its role as a trusted source of reliable information that localities and the public can rely on when making decisions that will live into the future.
- When assisting local government with public health impacts of their activities (including for example land development), health regulation has not historically needed to address climate change when making its decisions.
- Public policy changes will receive public support when they are founded on specific, tangible projections that stakeholders have confidence in. Keeping the best, most accurate and local knowledge in the public eye is key.

On the Local Level

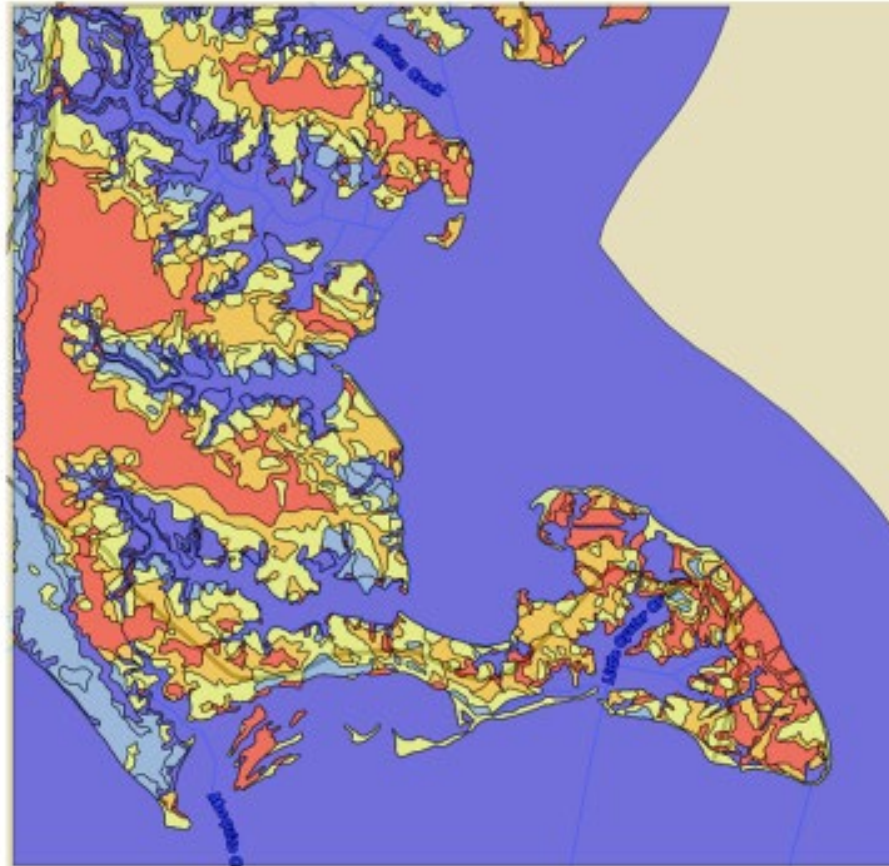


vims.edu

Lancaster County site

Depth to water table

centimeters	inches
0 - 25	= 0 - 10"
25 - 50	= 10 - 20"
50 - 100	= 20 - 39"
100 - 150	= 39 - 59"
150 - 200	= 59 - 79"
> 200	> 79"
Not rated or not available	



vims.edu

Lancaster County

1 county in analysis

Environmental variables:

Elevation

Depth to water table

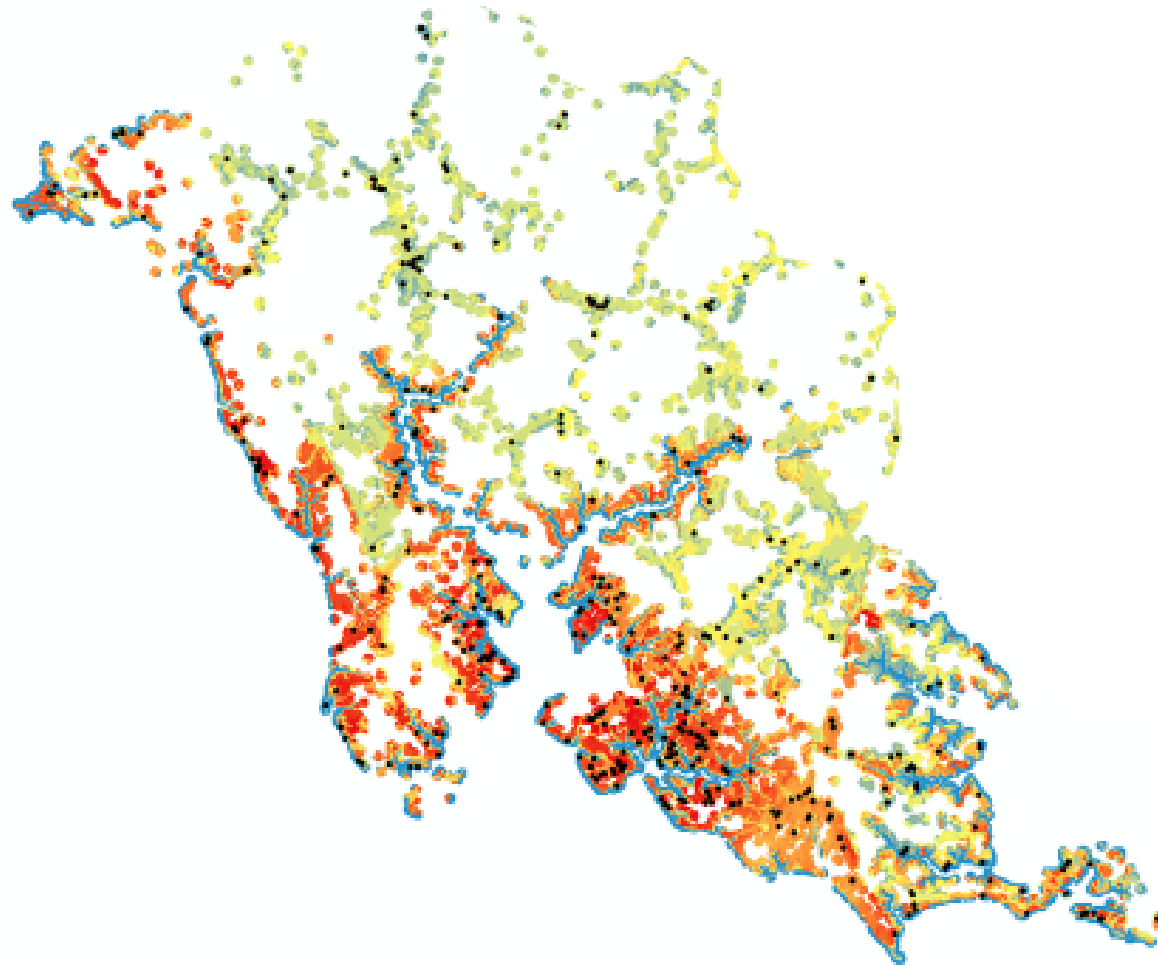
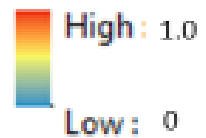
Hydric rating

Percent sand

Septic absorption

- Septic failure

Probability of failure



vims.edu

Virginia Department of Health

- 2018 Governor's Executive Order Twenty Four
To “increase statewide resilience to natural hazards and extreme weather.”
- 2018--State Health Commissioner listening tour:
“One of the things that came across in every place that I went was climate change. People were concerned about the effects of climate change on their health and their livelihoods.”
- VDH Climate Change Committee formed
- 2019 Public Health Impacts of Climate Change Summit
NASA, NOAA, VIMS, VA DEQ, Southeast Regional Climate Center, Science Museum of Virginia

How to communicate to the public and policy makers?



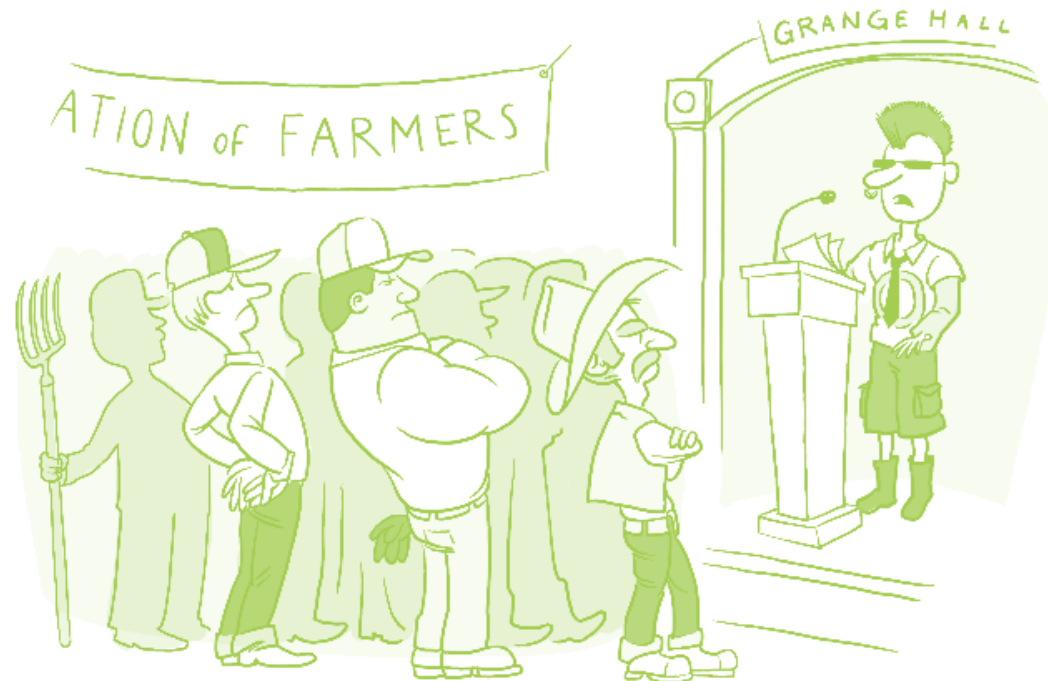
Hint: Don't be this person!

Put yourself in their shoes.

- Who is your audience?
- What are their values?
- Do you know what they already believe?
- What motivates them?
- Are you the right messenger?

People believe a message
when they trust the messenger.

- Channel the power of groups.
Group identity is important.



Emphasize Solutions and Benefits

“This is so depressing.”

- Limiting harm is a positive outcome. We can always steer within the cone of uncertainty. We are not powerless or hopeless.
- Identify solutions that match the level of action that the audience can take.
- People can be part of solutions by changing local actions **and** by engaging leaders for large-scale policy choices.

Emphasize Reality



- People who experience events relatable to climate change, tend to relate to climate change.
- The world is large and far away, but home is where you live.
- Pie Charts and Bar Graphs are the least memorable of all images.
- Acknowledge “uncertainty” but show what you know.

Thank you!

