



Changing Vertical Datums: Impacts to VA State and Local Law

Tuesday, April 21
9:30am – 1:00pm

Welcome and Intro

Cirse Gonzalez

W&M

VIRGINIA COASTAL
RESILIENCE COLLABORATIVE



VIRGINIA INSTITUTE OF MARINE SCIENCE
CENTER FOR COASTAL RESOURCES MANAGEMENT



CHESAPEAKE BAY
NATIONAL ESTUARINE
RESEARCH RESERVE
VIRGINIA

WHO We Are

Funded By



Virginia Coastal Zone
MANAGEMENT PROGRAM



Origin Story

Background

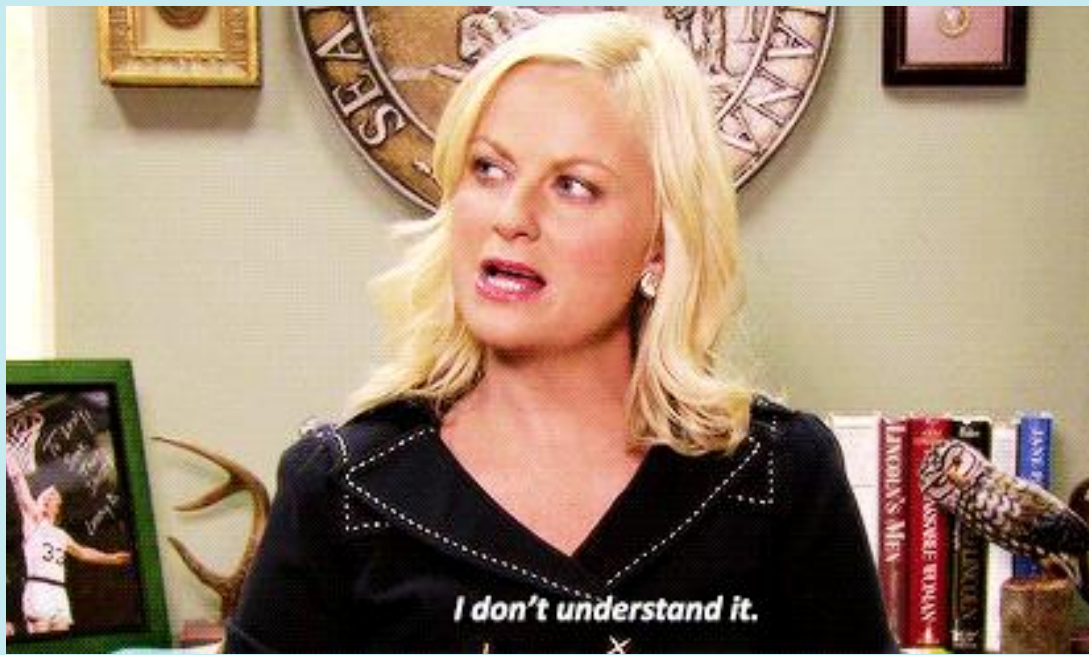
What is a datum?

Why should you care about changing datums?

What do you need to do about the changing datums?

Workshop GOALS

By the end of this workshop, you will be able to answer:



I don't understand it.



I UNDERSTAND NOTHING

Some Encouragements

You're not alone!

Listen hard.

Ask questions.

**Mobilize as
needed.**

Conditions for Success

For the Win

Logistics

WiFi

Bathroom

Extra Pens/Paper in the Back

Exits

Lunch

CEUs

Who's Who

Among you!

Datums 101

Erin Reilly

NOAA IS UPDATING GEODETTIC (2026?) AND TIDAL DATUMS (2029?)

What is a datum? Why do you care? How should you prepare?

The bottom of the slide features a decorative graphic consisting of several horizontal, wavy bands of varying shades of blue and teal, creating a water-like effect.

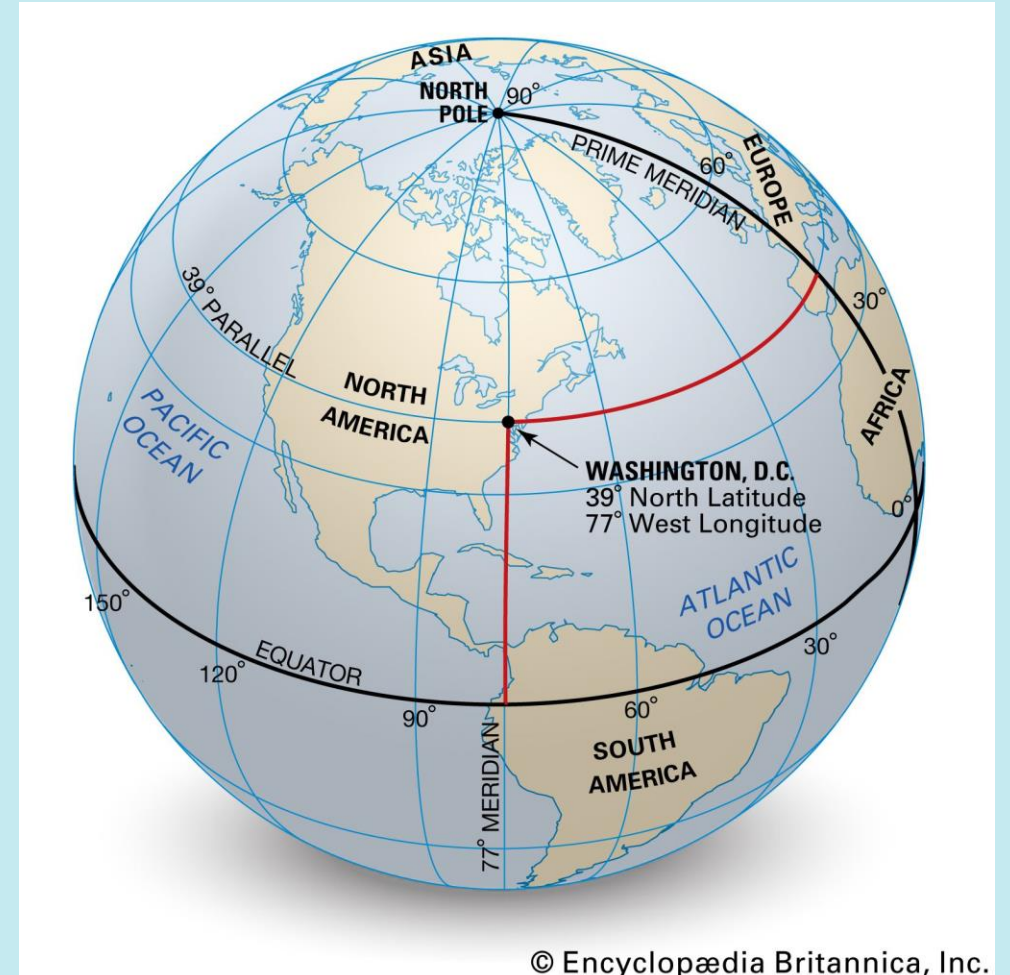


What is a Datum?

A datum is a base point used as a reference from which to determine location, height, or depth

Geodetic Datums

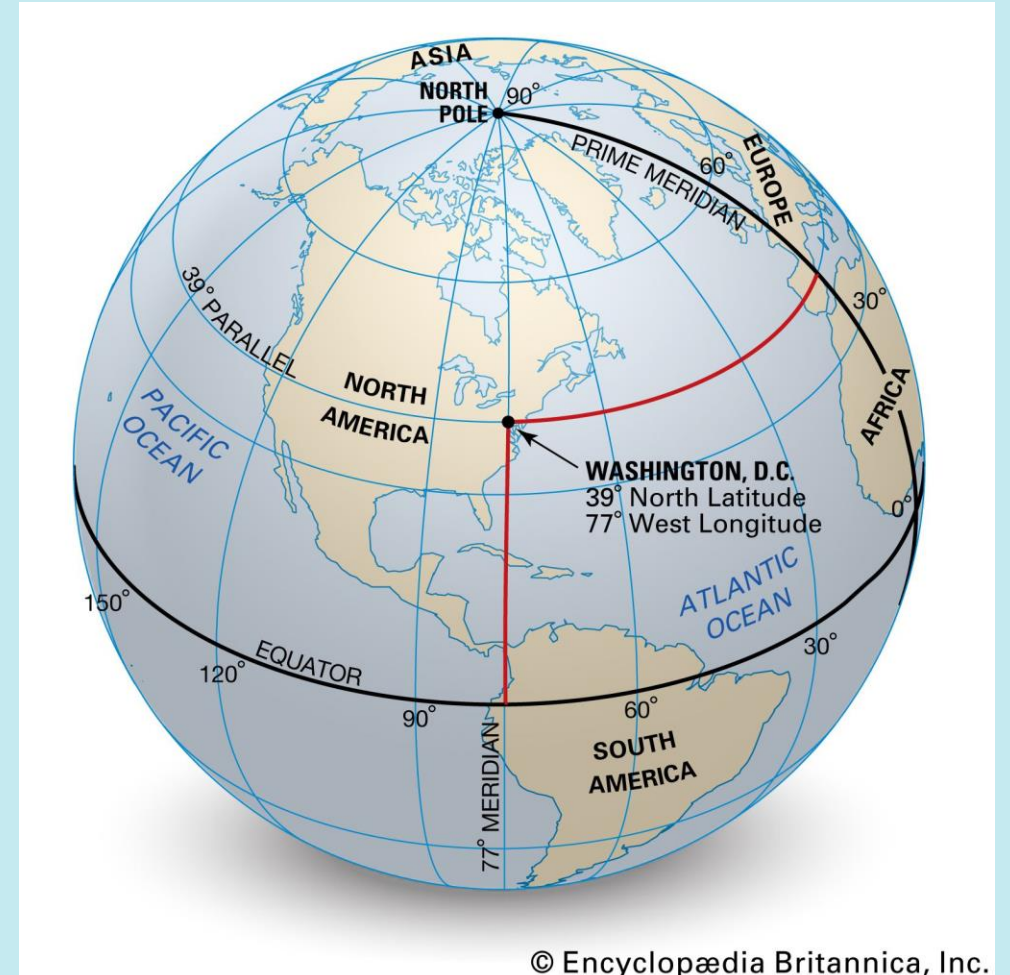
- Latitude and longitude are the most common horizontal datums.
 - Latitude measures distance relative to the equator (North or South)
 - Longitude measures distance relative to the meridian at Greenwich, England (East or West)
- Popular horizontal GIS datums used:
 - World Geodetic System (WGS 84)
 - North American Datum of 1983 (NAD83)
 - UTM 18N

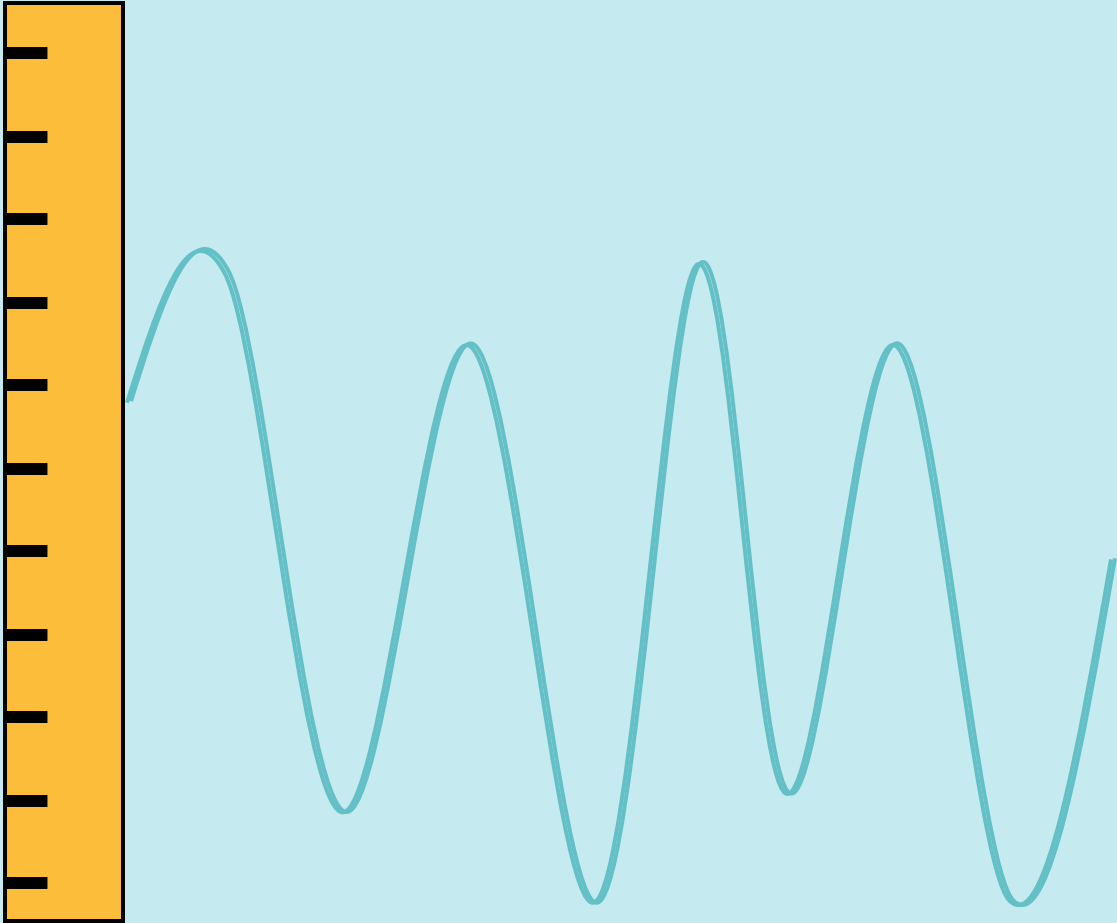


© Encyclopædia Britannica, Inc.

Geodetic Datums

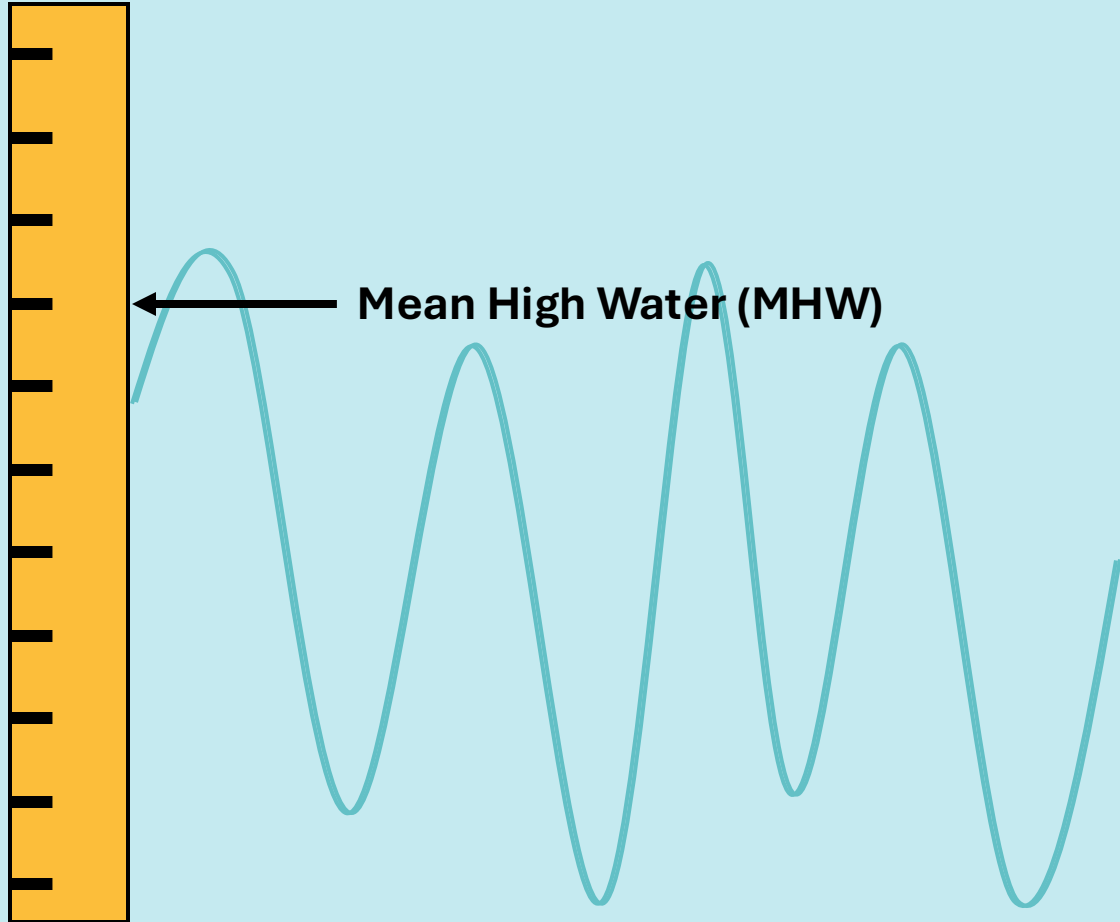
- North American Vertical Datum of 1988 (NAVD88) is the official vertical datum of the United States
- This is also updating
- Other Vertical Datums you may see:
 - National Geodetic Vertical Datum of 1929 (NGVD29)
 - Datum + Geoid Model Updates





Vertical Datums and Tidal Datums

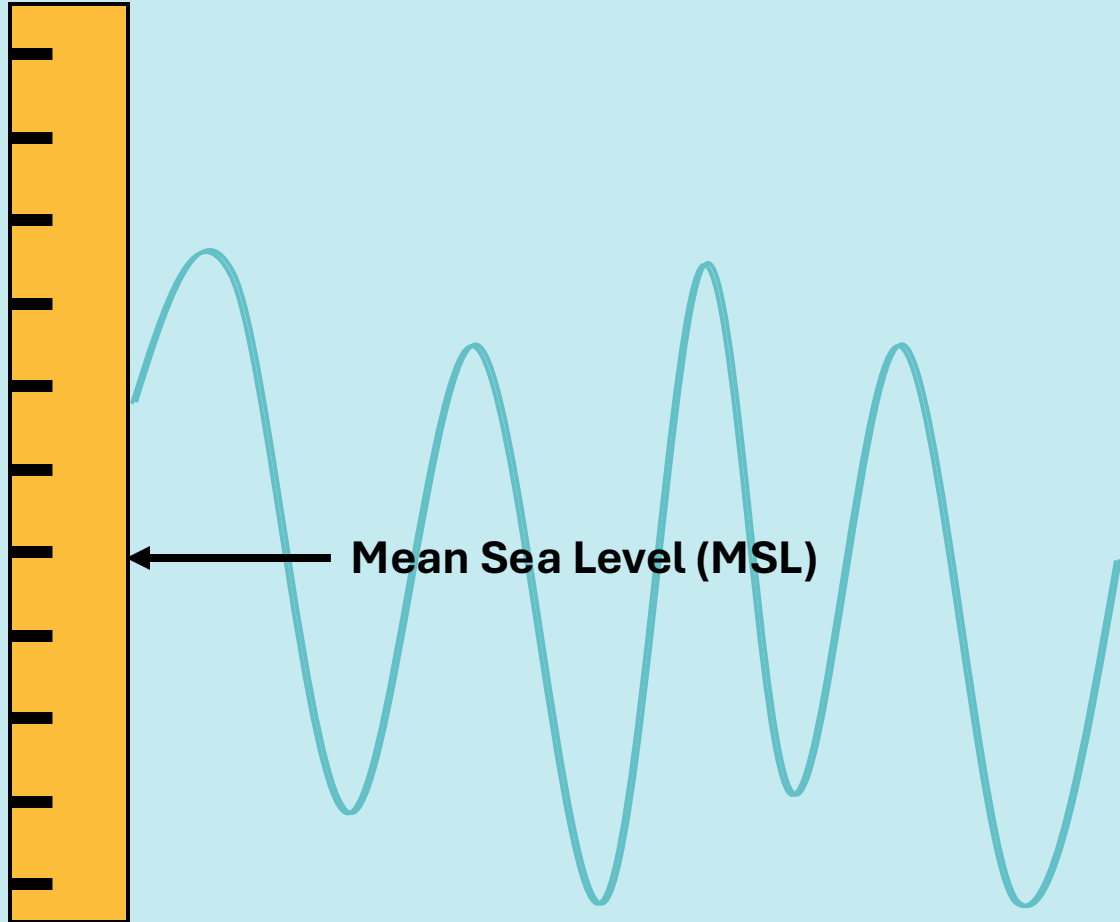
- A **vertical datum** is a reference point to measure heights
- A **tidal datum** is a type of vertical datum, using a standard elevation defined by a certain phase of the tide.



Mean High Water (MHW) is the average of all High Tides

Vertical Datums and Tidal Datums

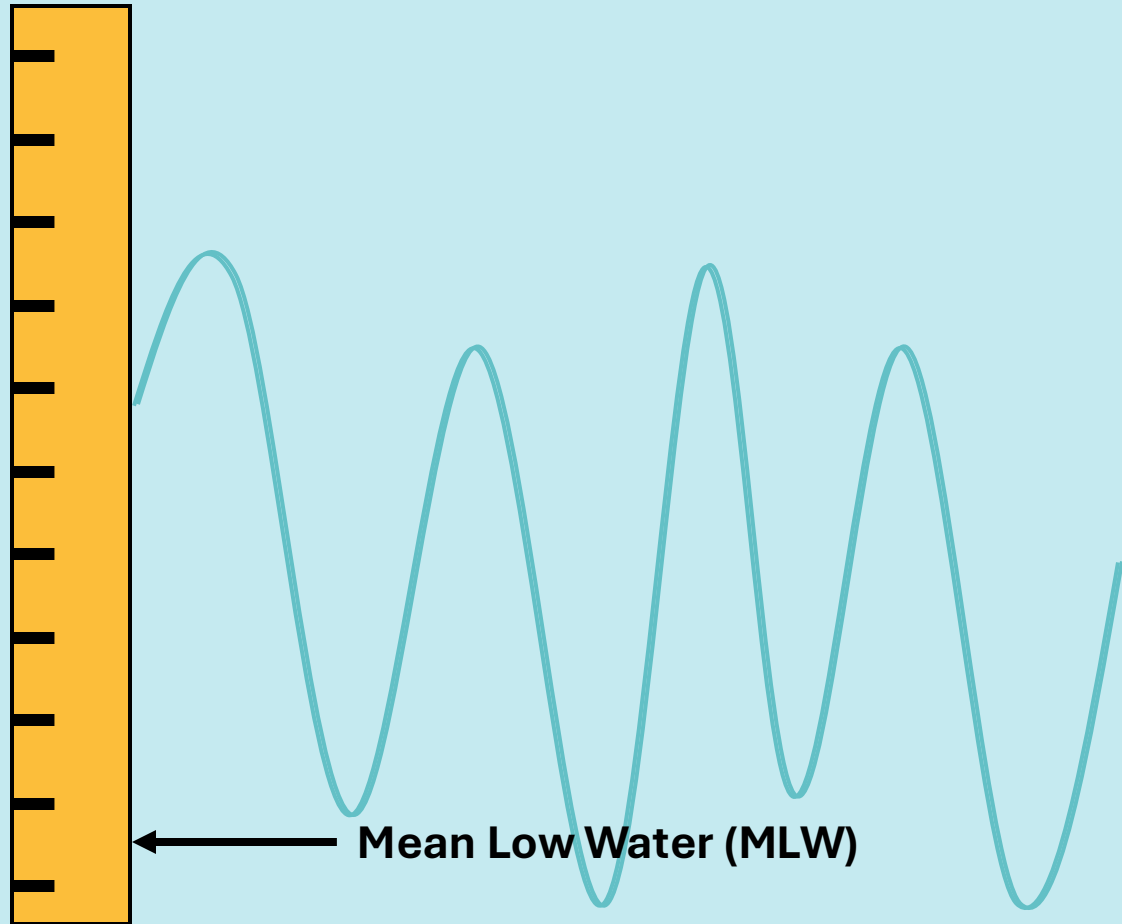
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Mean Sea Level (MSL) is the mean of hourly water level

Vertical Datums and Tidal Datums

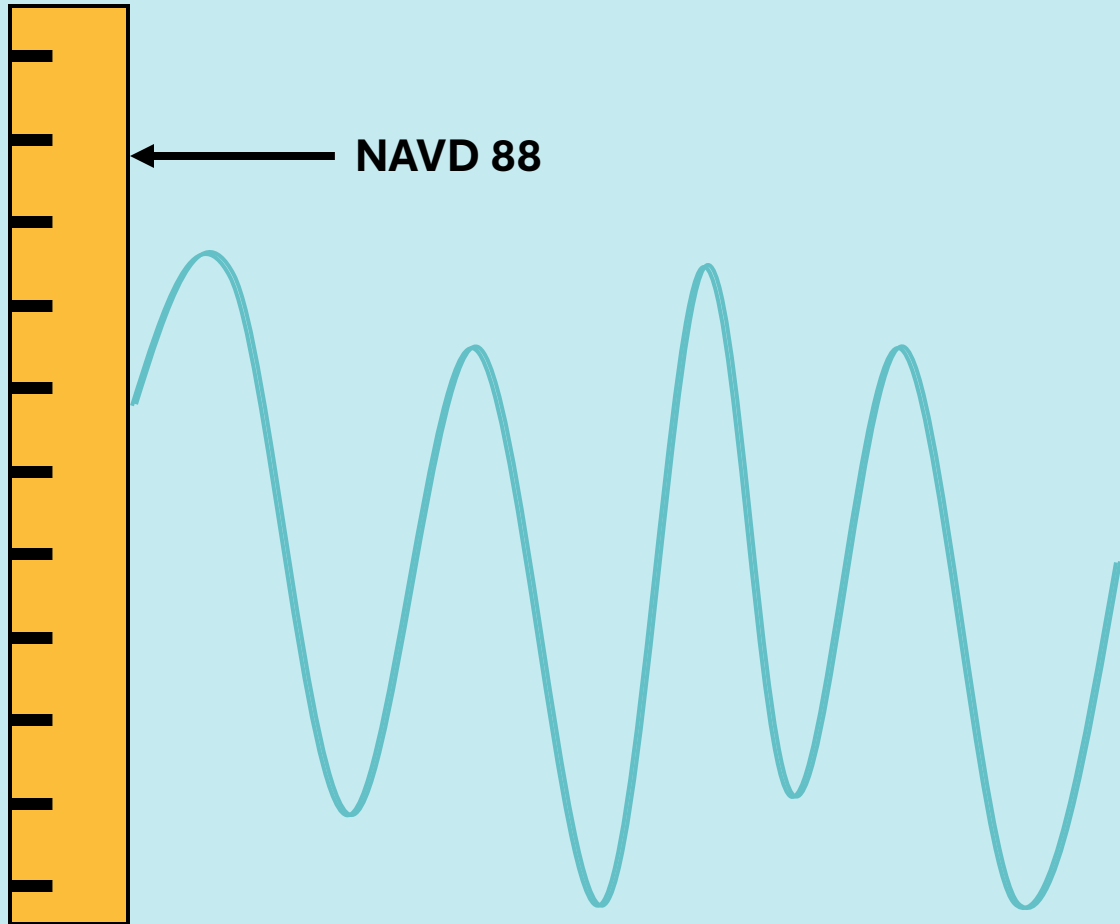
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Vertical Datums and Tidal Datums

- A **vertical datum** is a reference point to measure heights
- A **tidal datum** is a type of vertical datum, using a standard elevation defined by a certain phase of the tide.



NAVD88 helps relate local tidal datums to regional and national vertical elevations. This is not a Tidal Datum.

In Virginia it is usually close to MSL, but that is not true everywhere

Vertical Datums and Tidal Datums

- A vertical datum is a reference point to measure heights
- A tidal datum is a type of vertical datum, using a standard elevation defined by a certain phase of the tide.

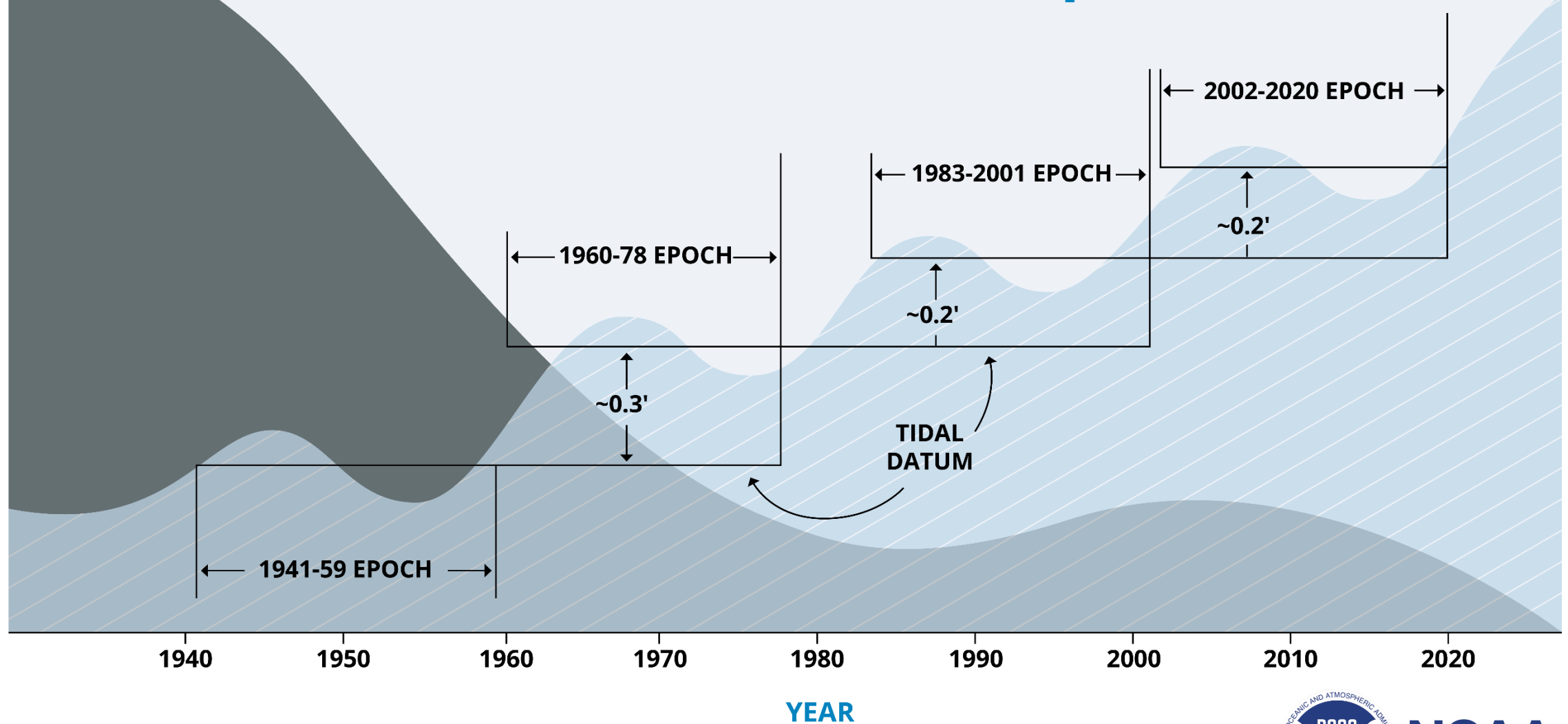
Other Terms

- Mean Lower Low Water (MLLW) – the Mean of the lower low tides
- Mean Higher High Water (MHHW) – the Mean of the higher high tides
- The intertidal zone is MLLW-MHHW. Areas Landward of MHHW are not flooded during *normal* tides

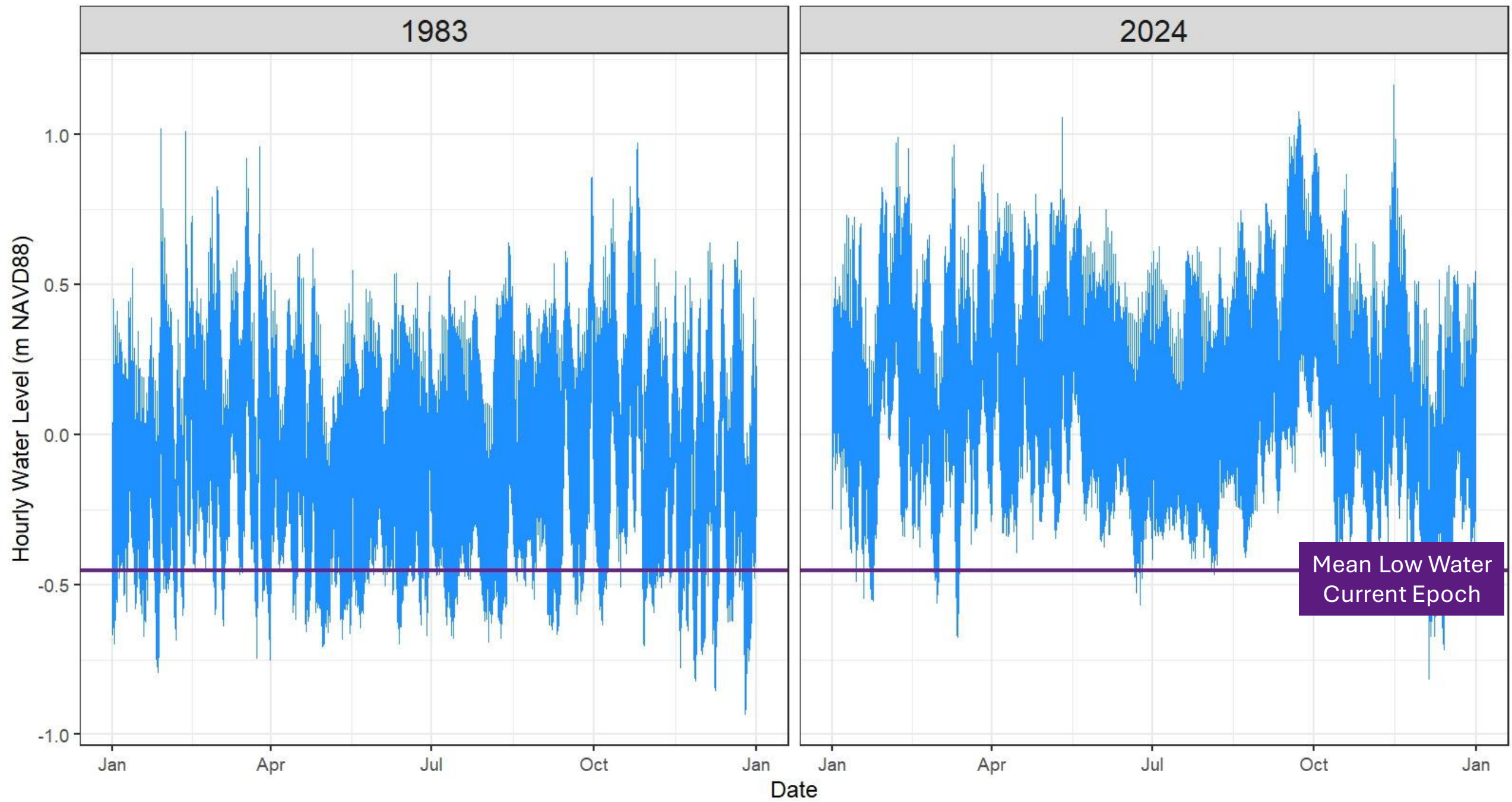
- National Tidal Datum Epoch
 - The official NOAA datums are measured over a 19 year period called the National Tidal Datum Epoch. The current NTDE used data from 1983-2001. The updated version will use data from 2002-2020.

National Tidal Datum Epoch

ELEVATION RELATIVE TO LAND
(FEET)

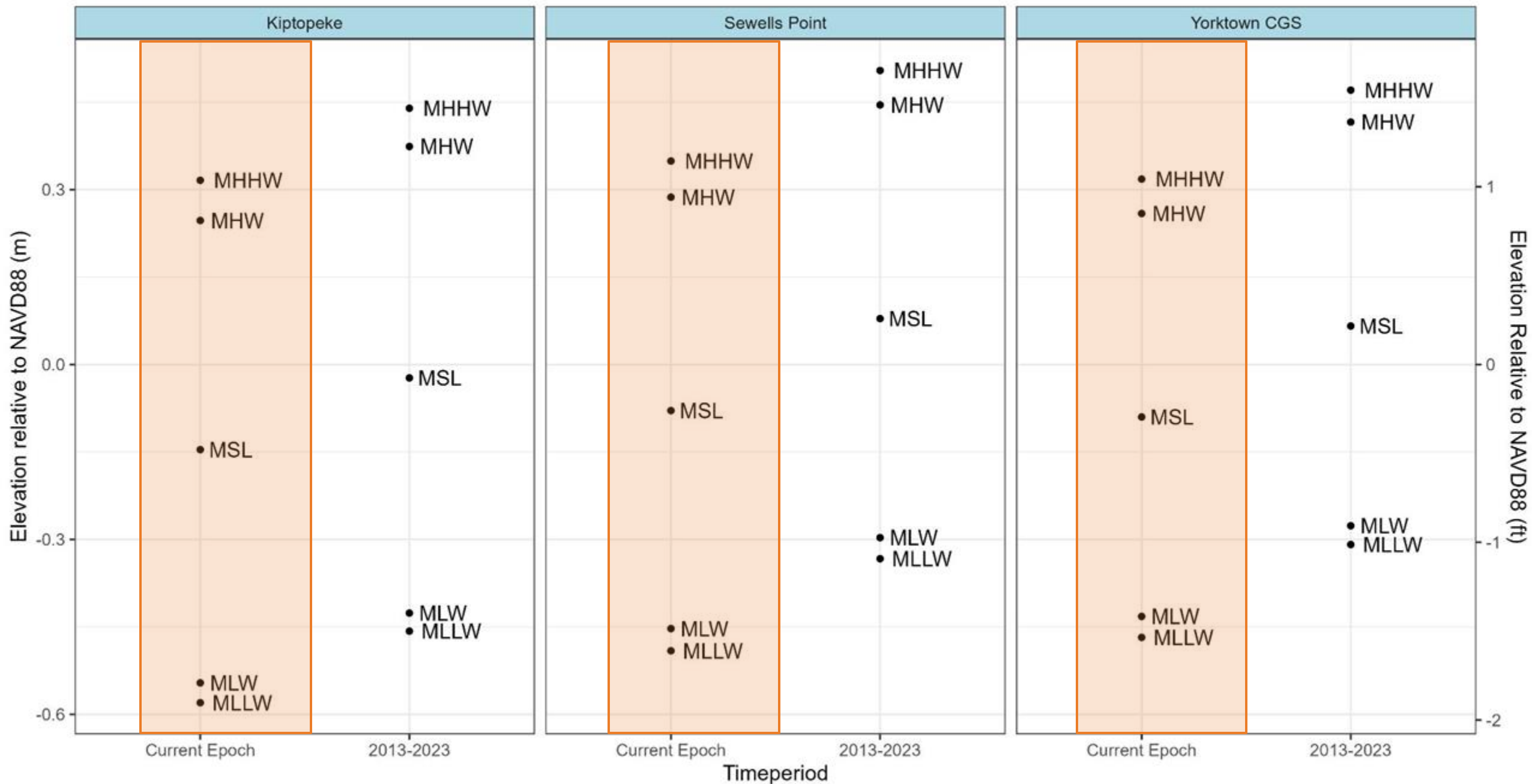


Sewells Point Water Level



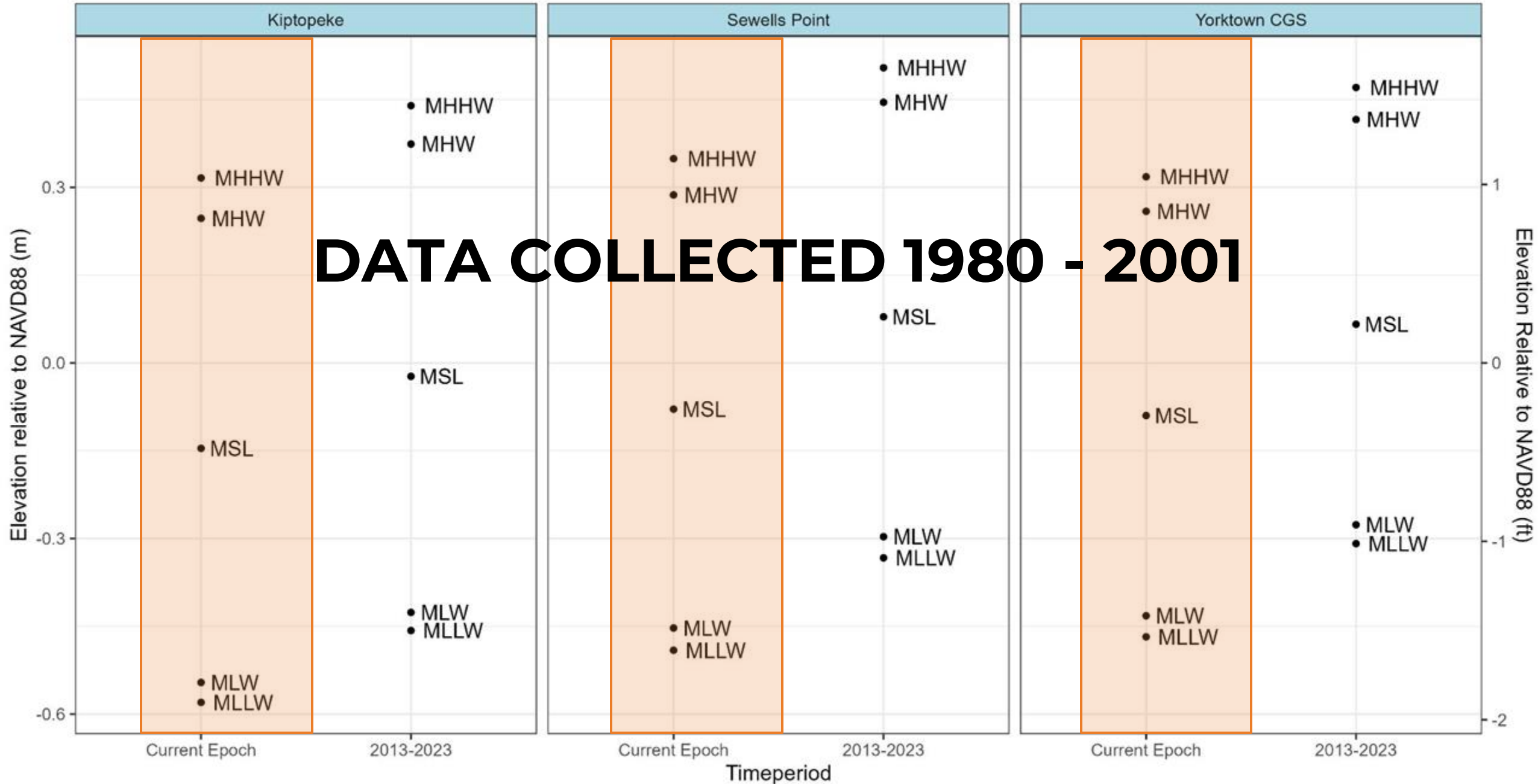
Changes in Tidal Datums at 3 VA Stations

Average increase of 12-15cm (4.5-6.5 in)



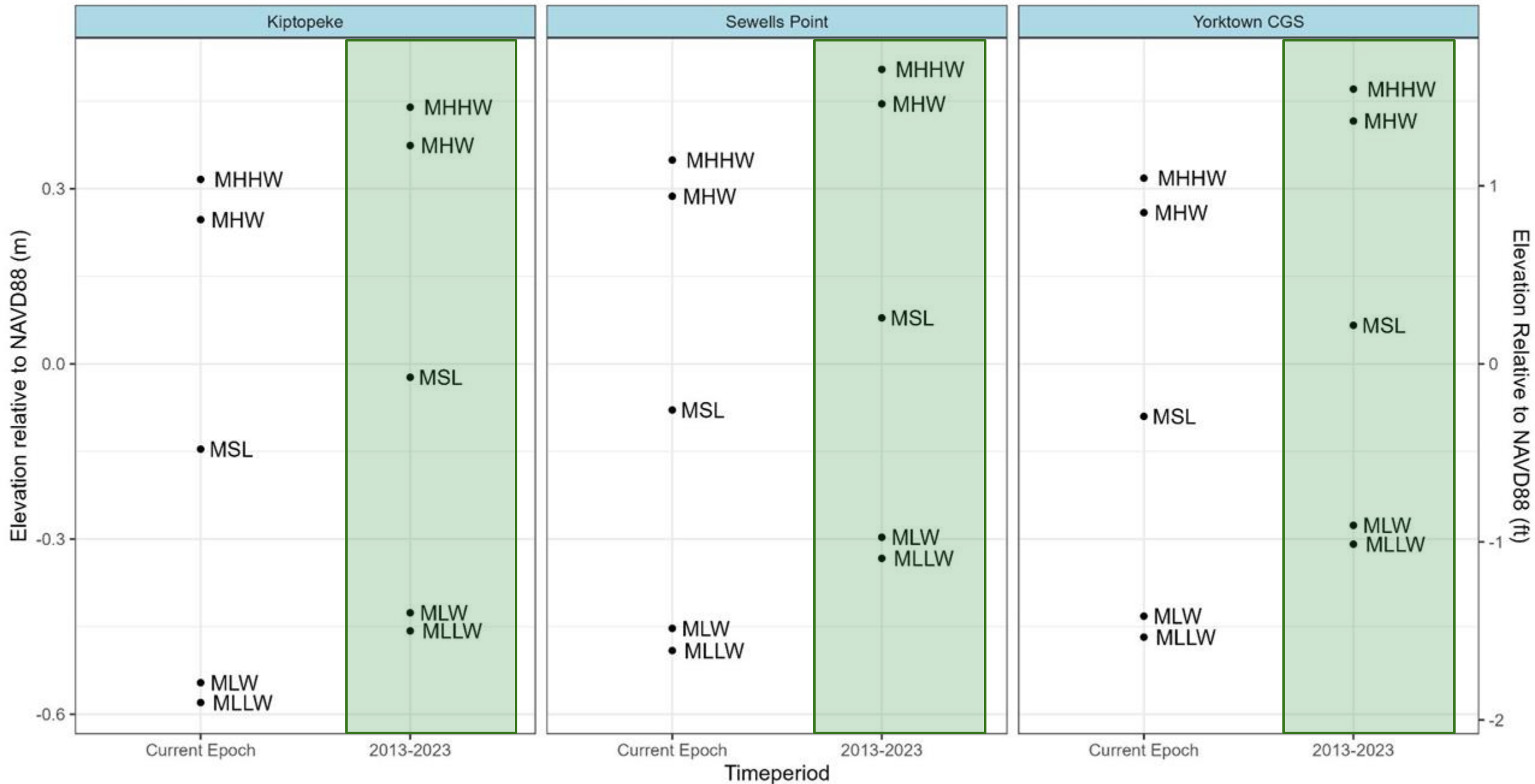
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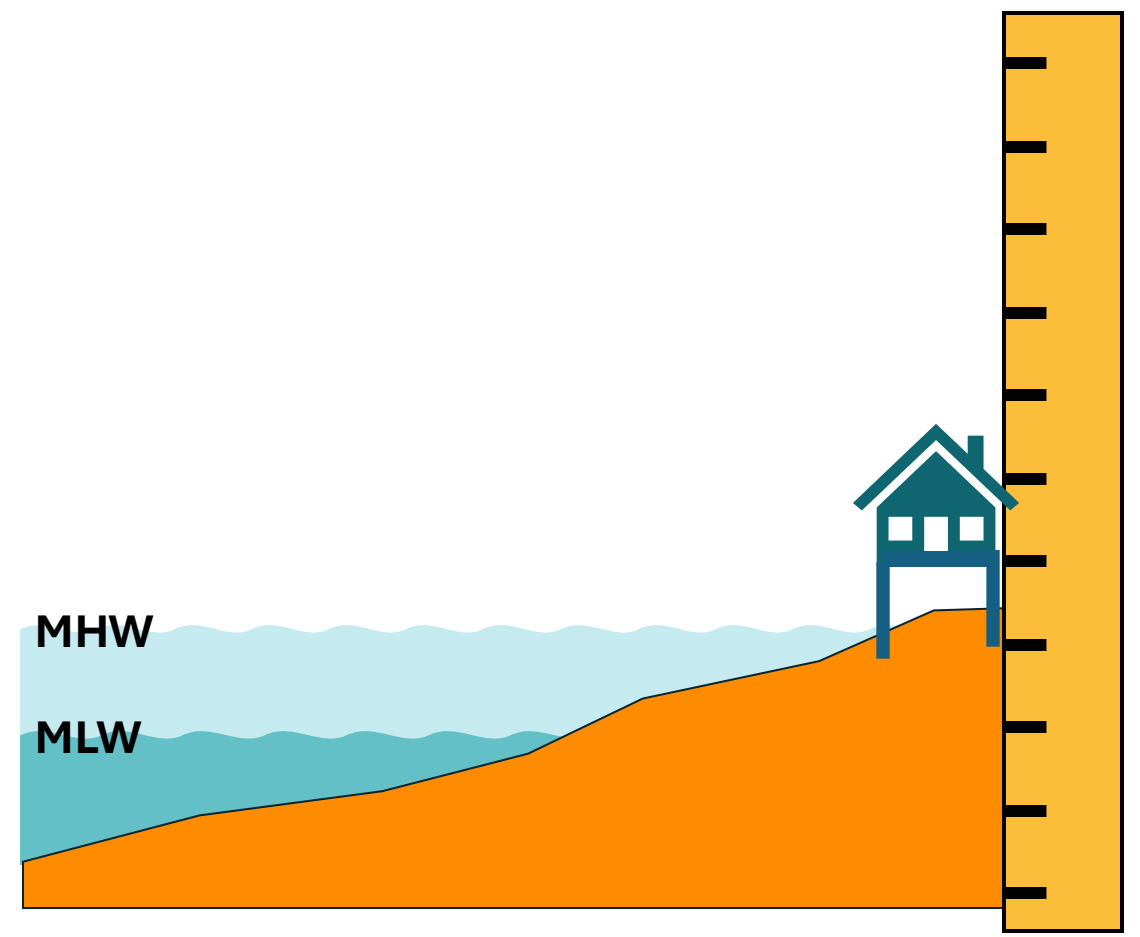


Changes in Tidal Datums at 3 VA Stations

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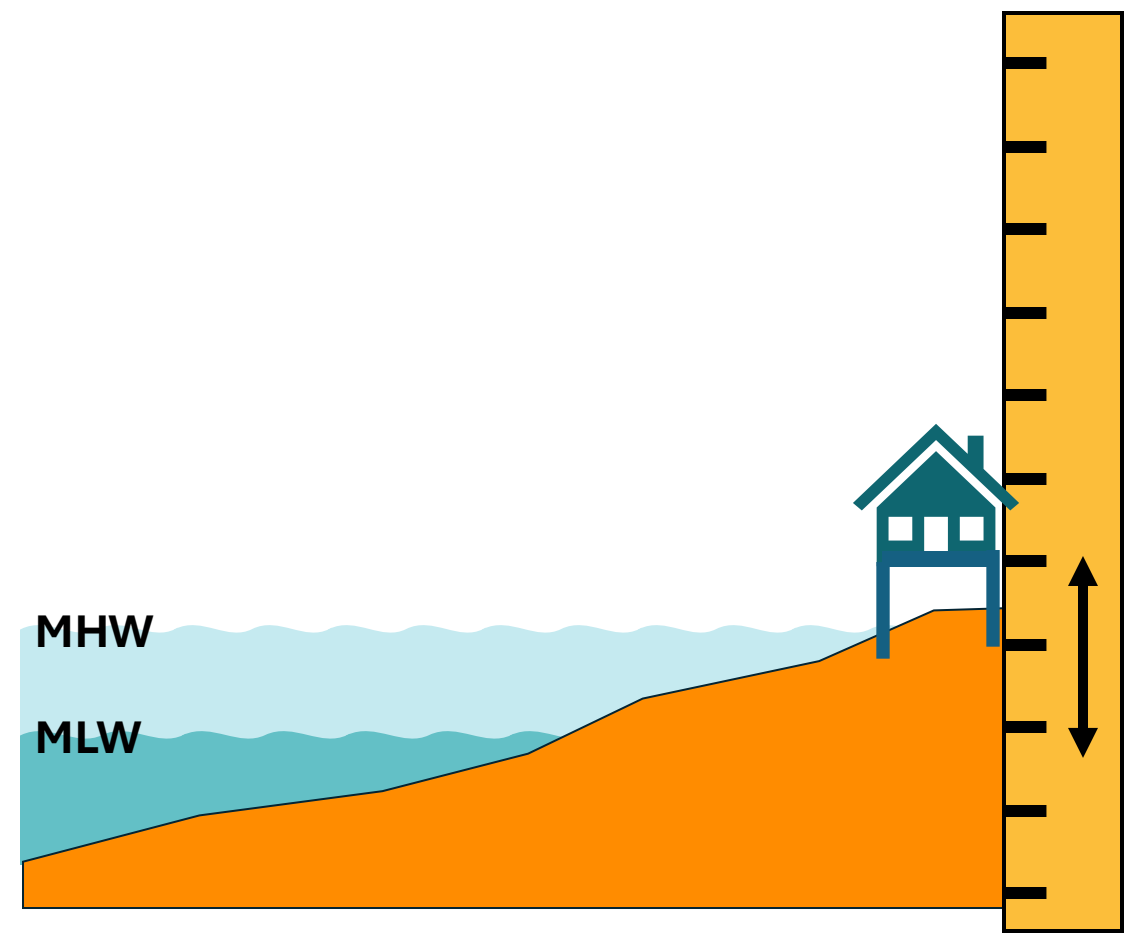


Elevation of
the same
point will
change
based on
your datum



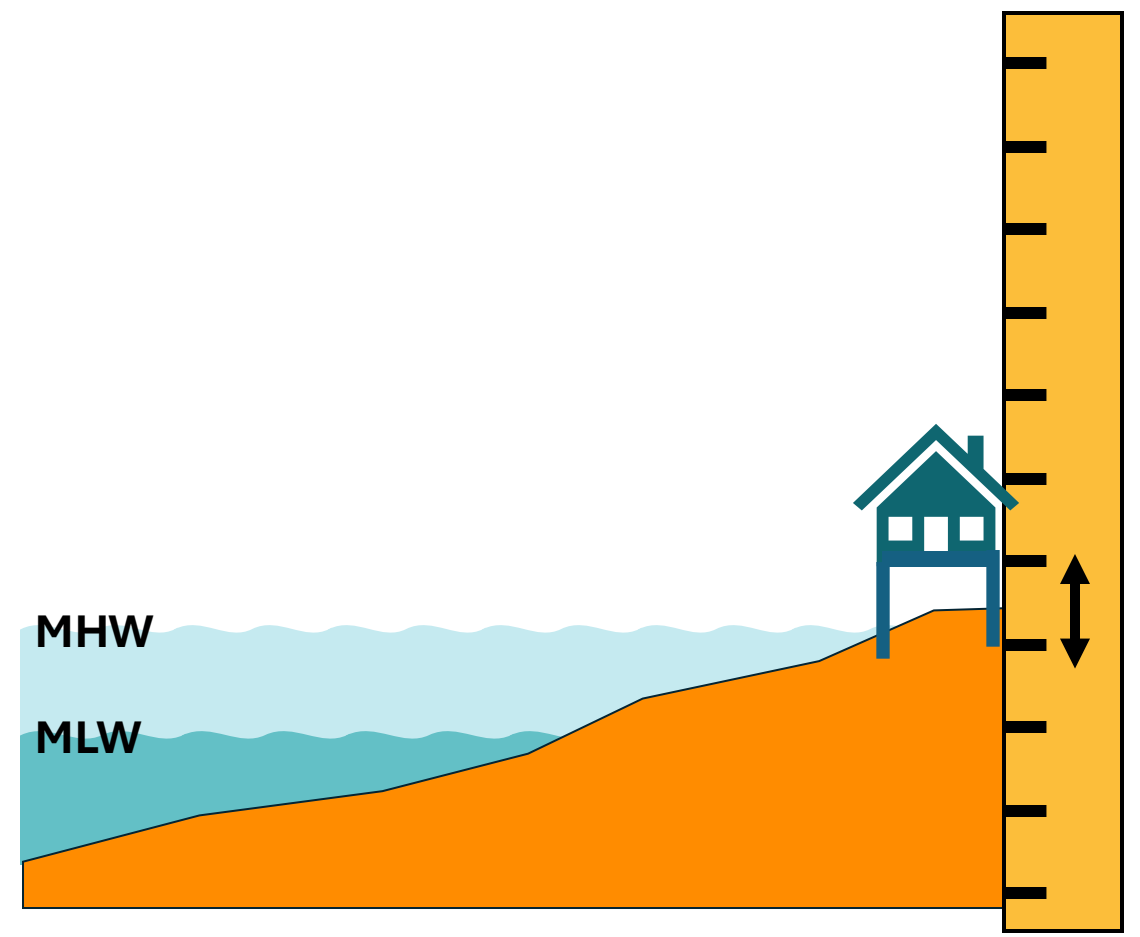
The Base of this house on stilts is at
2 ft MLW
but
1 ft MHW

**Elevation of
the same
point will
change
based on
your datum**



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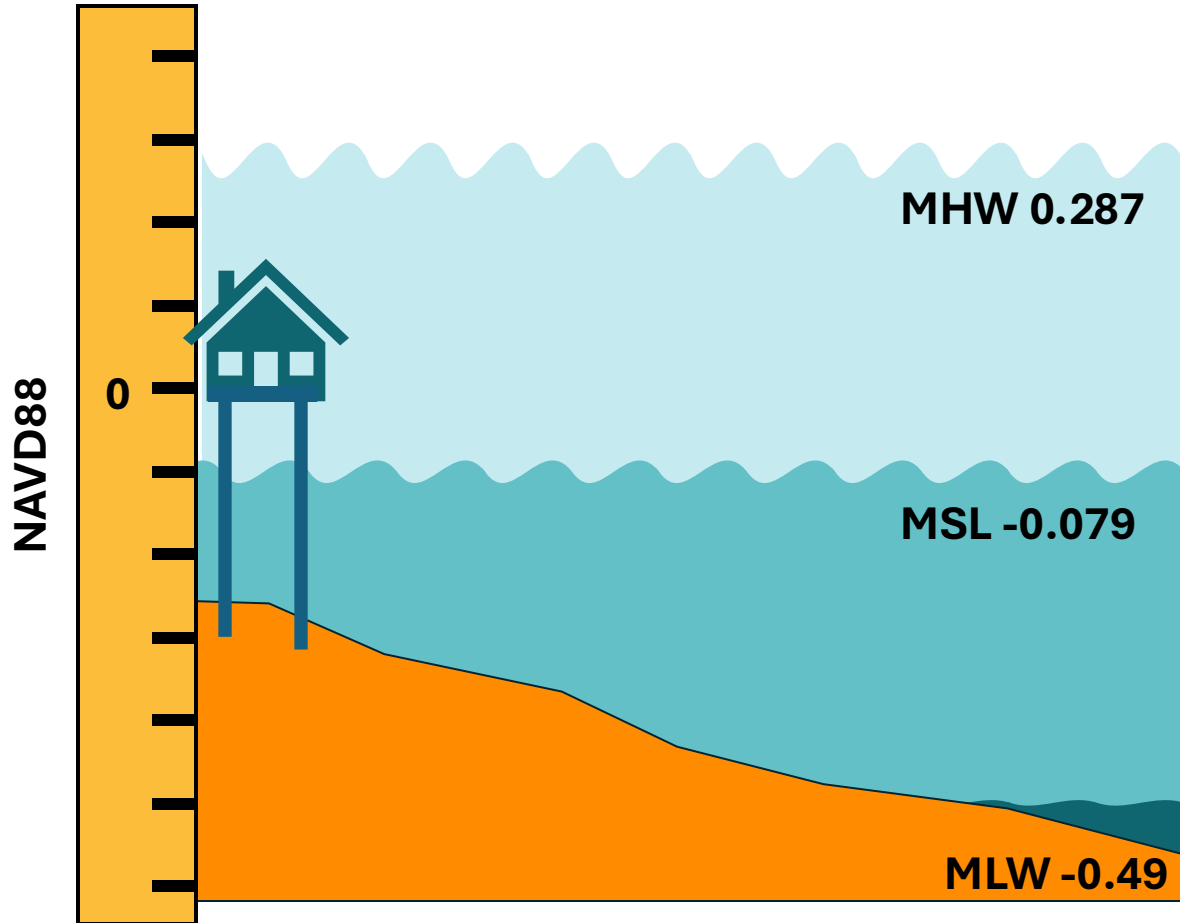
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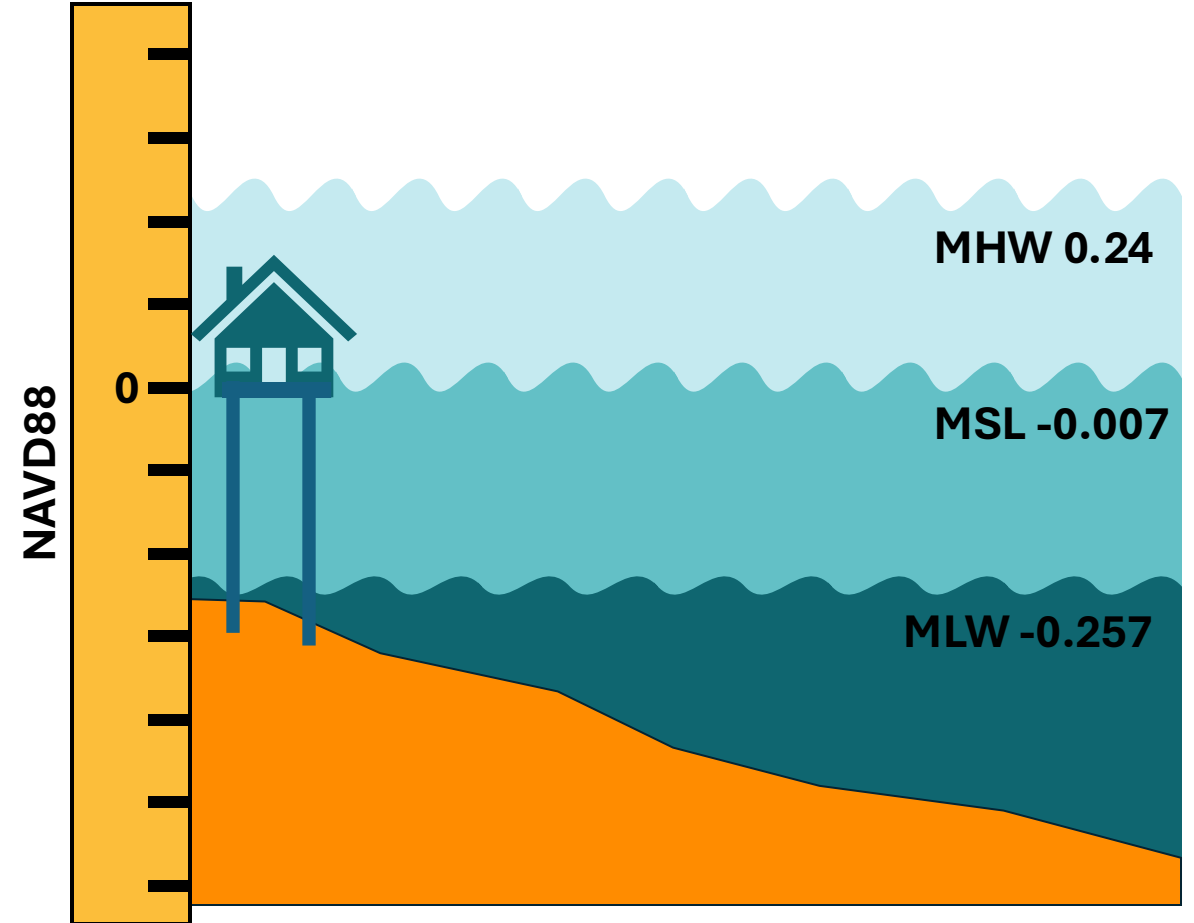
**Tidal Datums vary
based on your
location**

NAVD88 lets us compare between locations with different Tidal Conditions

Sewell's Point, VA



Colonial Beach, VA



For More on Your Local Datums:

- NOAA Tides and Currents
- <https://tidesandcurrents.noaa.gov/stations.html?type=Datums>

Showing datums for
8638610 Sewells Point, VA

Datum
NAVD88

Data Units Feet
 Meters

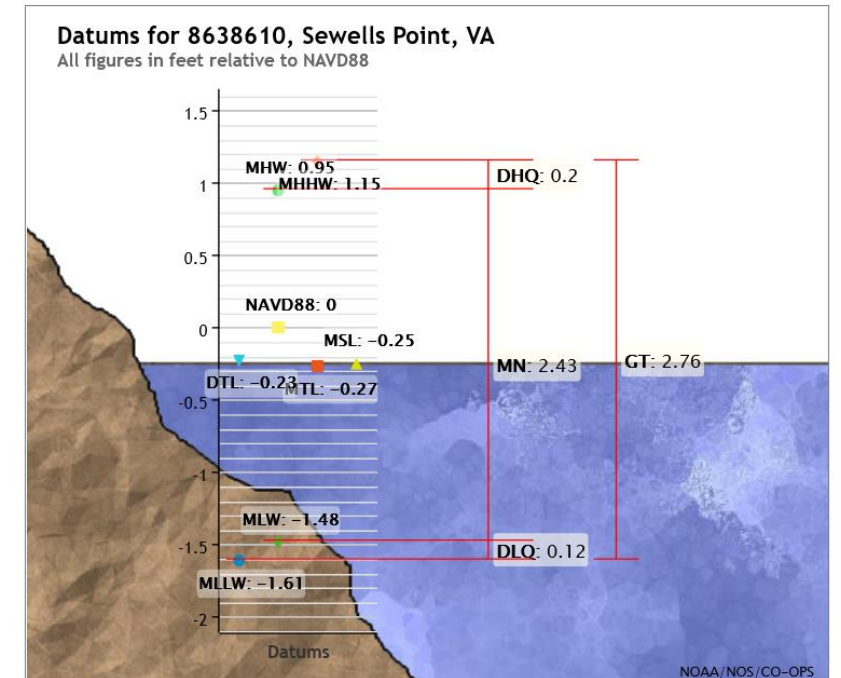
Epoch Present (1983-2001)
 Superseded (1960-1978)

Elevations on NAVD88

Station: 8638610, Sewells Point, VA
T.M.: 75
Epoch: 1983-2001
Status: Accepted (Jul 25 2013) **Datum:** NAVD88
Units: Feet

Control Station:

Datum	Value	Description
MHHW	1.15	Mean Higher-High Water
MHW	0.95	Mean High Water
MTL	-0.27	Mean Tide Level
MSL	-0.25	Mean Sea Level
DTL	-0.23	Mean Diurnal Tide Level
MLW	-1.48	Mean Low Water
MLLW	-1.61	Mean Lower-Low Water
NAVD88	0.00	North American Vertical Datum of 1988
STND	-5.99	Station Datum



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8638610 Sewells Point, VA

Datum
NAVD88

Data Units Feet
 Meters

Epoch Present (1983-2001)
 Superseded (1960-1978)

Submit

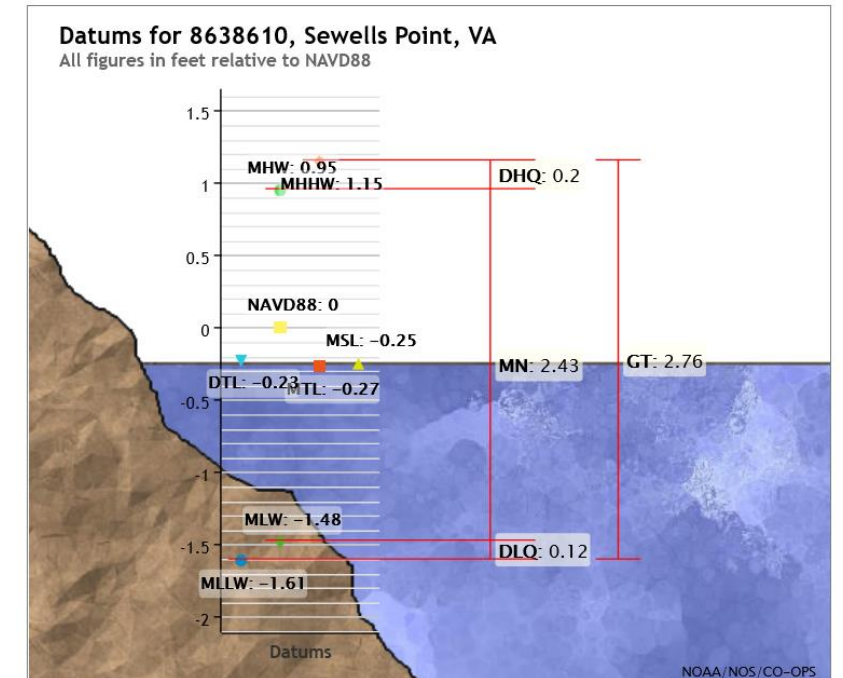


Elevations on NAVD88

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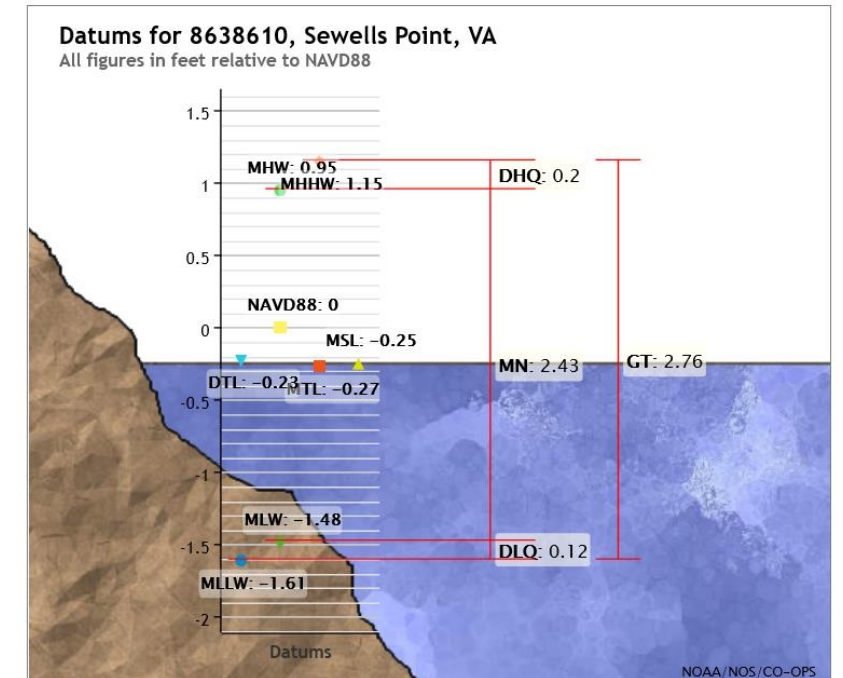


Elevations on NAVD88

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NAVD88

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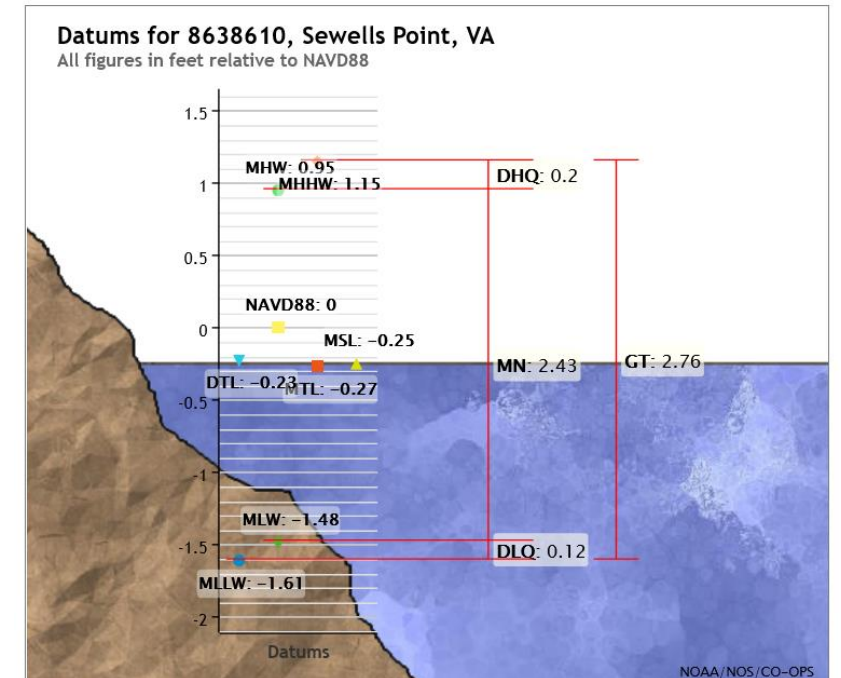


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**Why do we have
so many datums?**



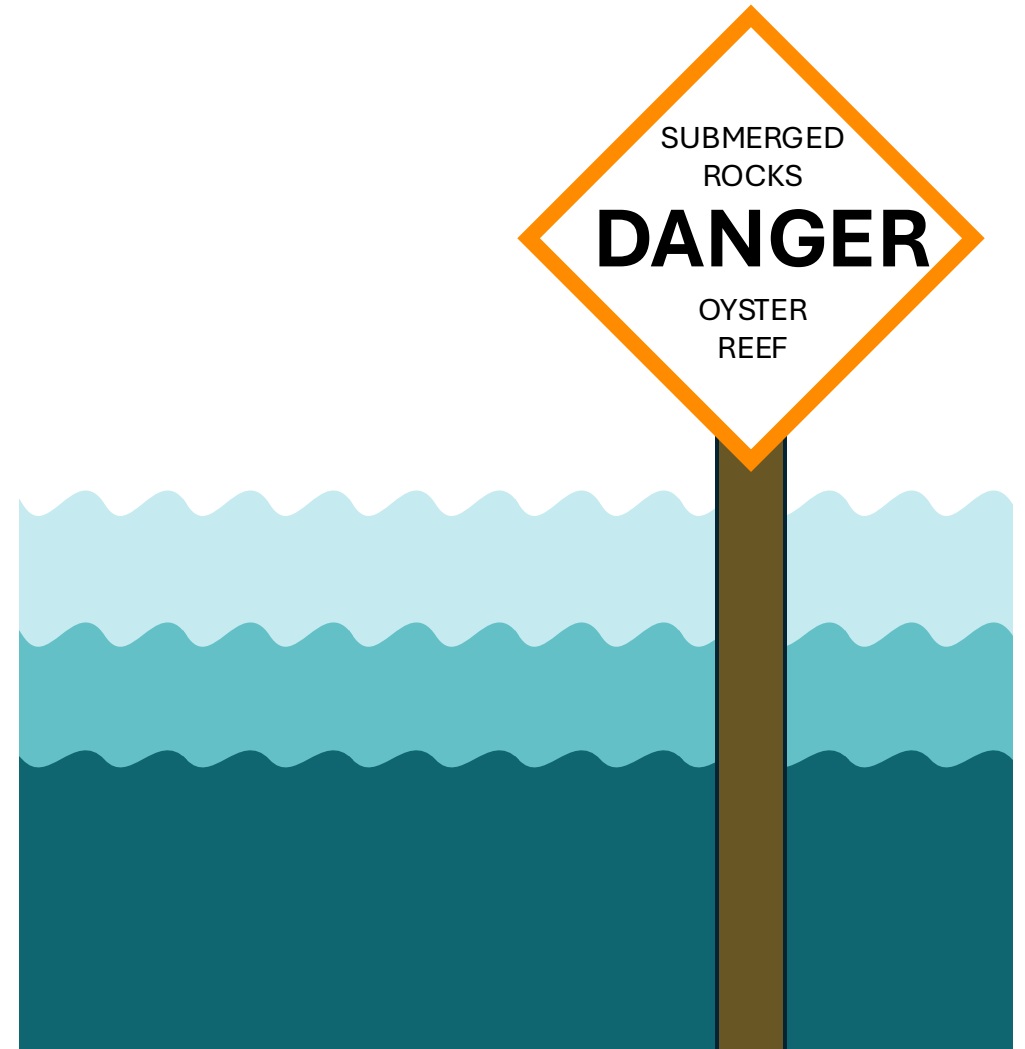
Navigation and dredging:

- Navigation tends to use MLW or MLLW because to be safe you want the lowest water level to be your 0 point so you don't run aground



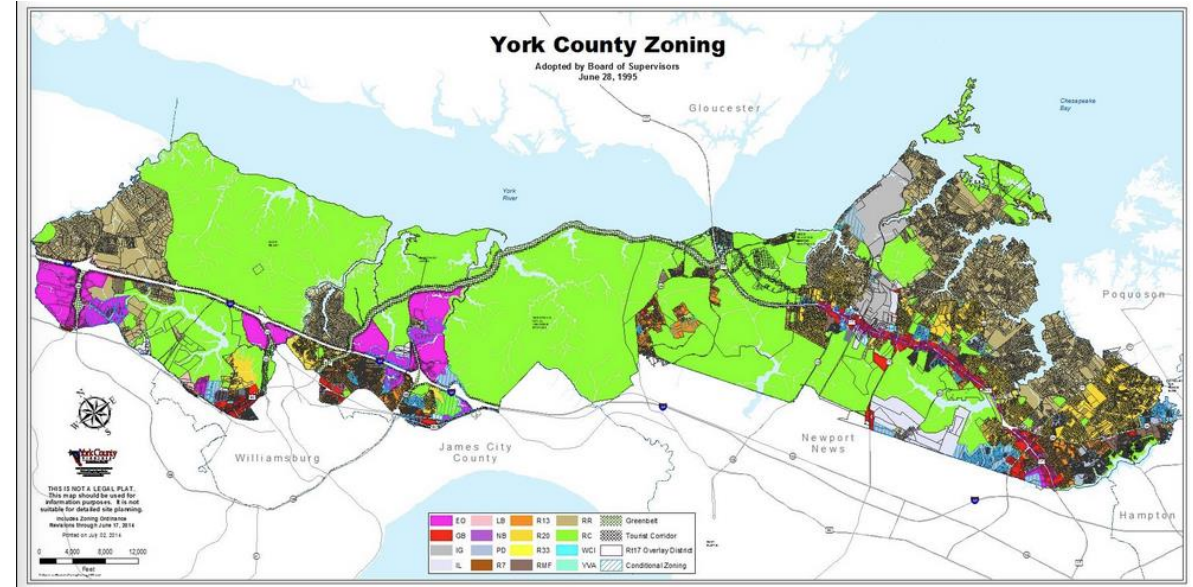
Marking, Buoys, Nets, and Infrastructure:

- Tend to use MHW because you want signage, nets, and roads to be seen/protected at the highest tides



Zoning and Risk Prediction:

- Storm Surge is predicted relative to MHHW because it us a marker for unusual flooding
- Zoning uses MHW to determine where construction may occur



**QUESTIONS
ABOUT
DATUMS???**

Datums Project Background

Molly Mitchell

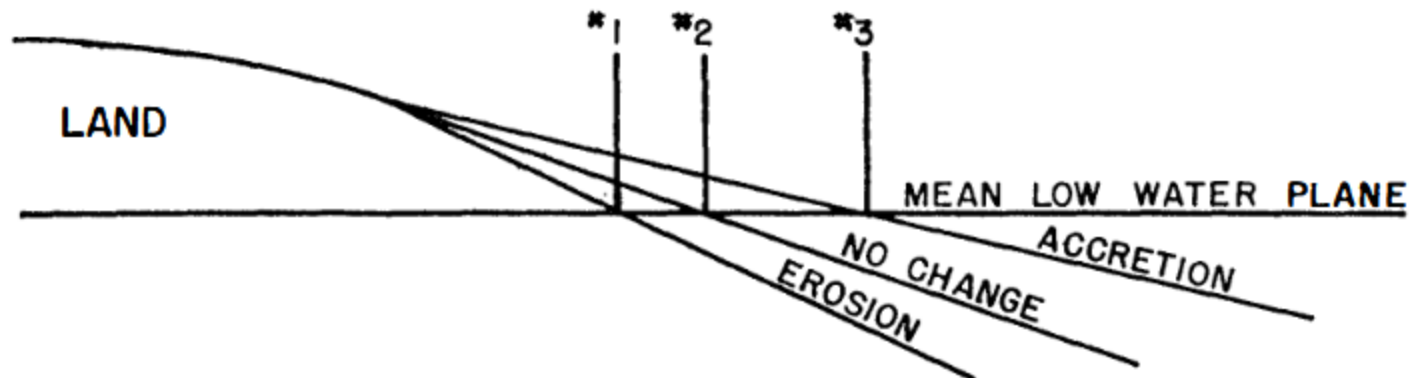
Why is this important to Virginia?

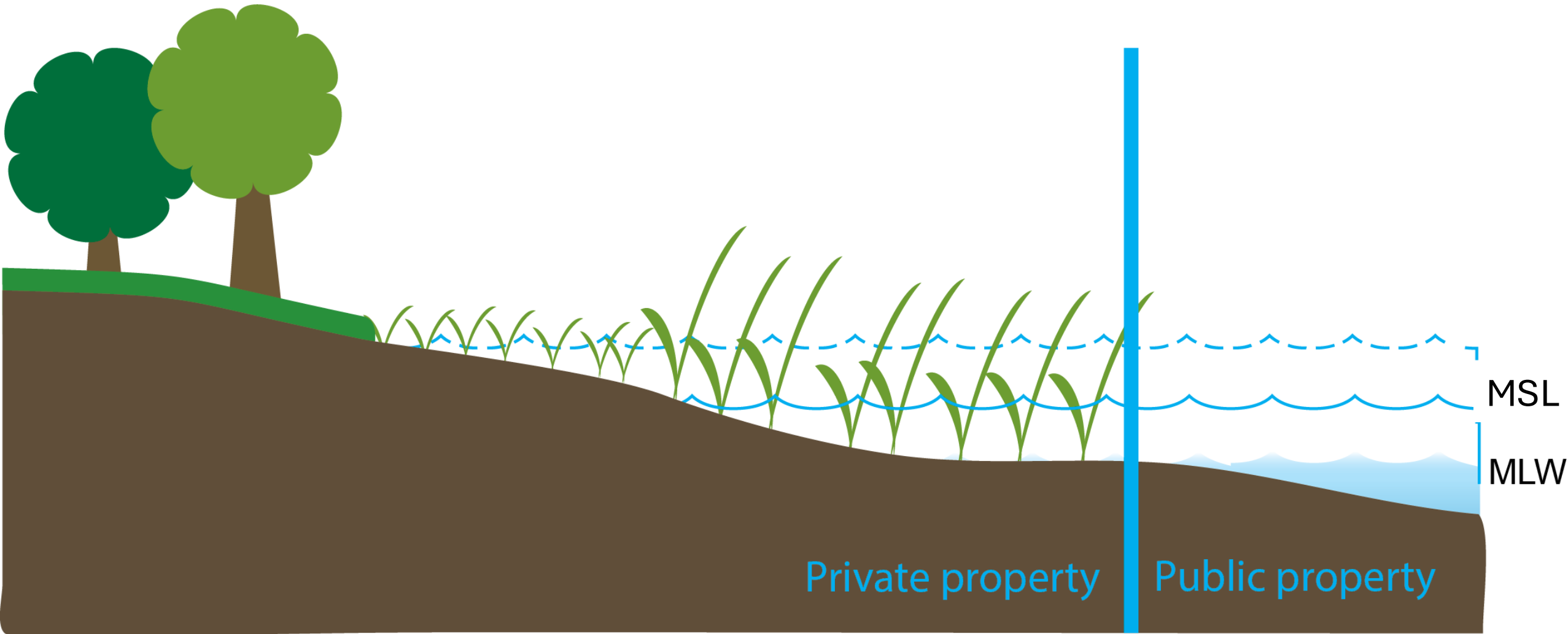
- The Code of Virginia uses tidal datums as the baseline for:
 - **legal** (e.g. waterfront property) boundaries,
 - **ecological** (e.g. tidal wetlands) boundaries,
 - to **constrain jurisdictional roles** (e.g. Potomac River Fisheries Commission)
- When the datums are re-defined, all these boundaries will be altered

Code of Virginia

§ 28.2-1202. Rights of owners to extend to mean low-water mark.

A. Subject to the provisions of § [28.2-1200](#), the limits or bounds of the tracts of land lying on the bays, rivers, creeks, and shores within the jurisdiction of the Commonwealth, and the rights and privileges of the owners of such lands, ***shall extend to the mean low-water mark but no farther, except where a creek or river, or some part thereof, is comprised within the limits of a lawful survey.***





Upland

High marsh

Low marsh

Subtidal zone

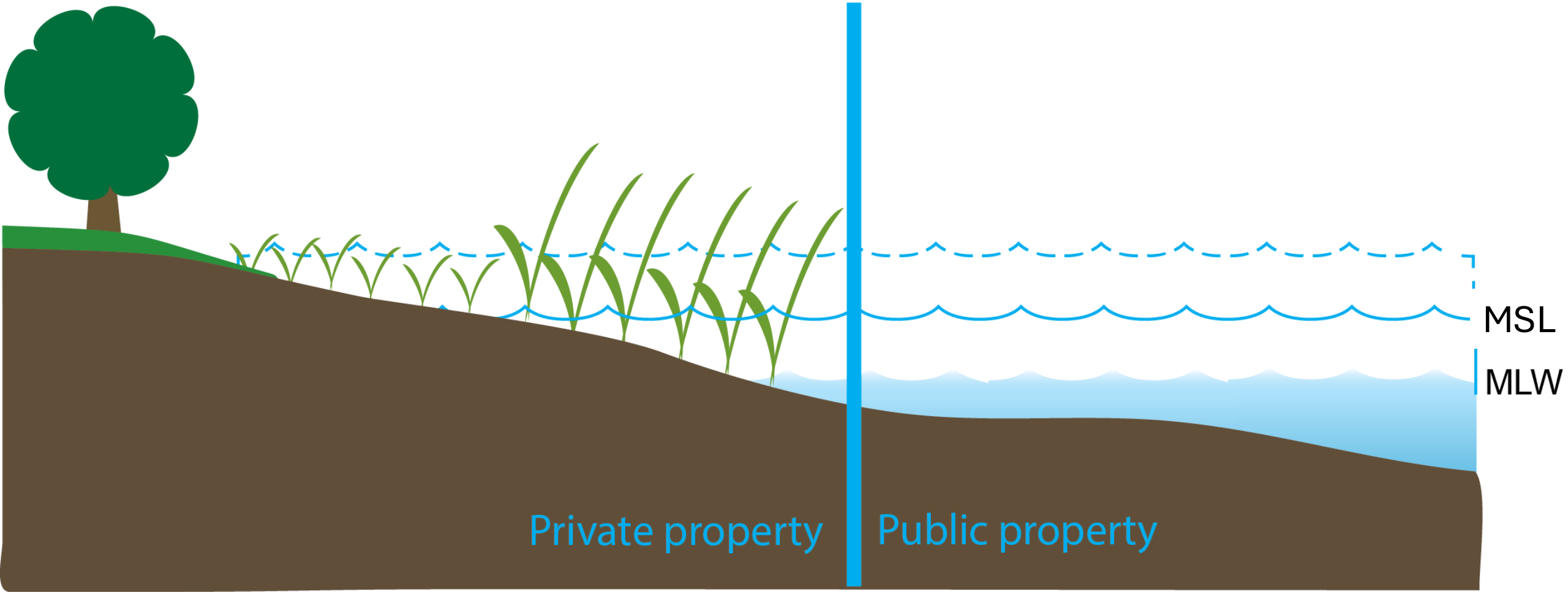
Intertidal zone

MSL

MLW

Private property

Public property



Upland

High marsh

Low marsh

Subtidal zone

Private property

Public property

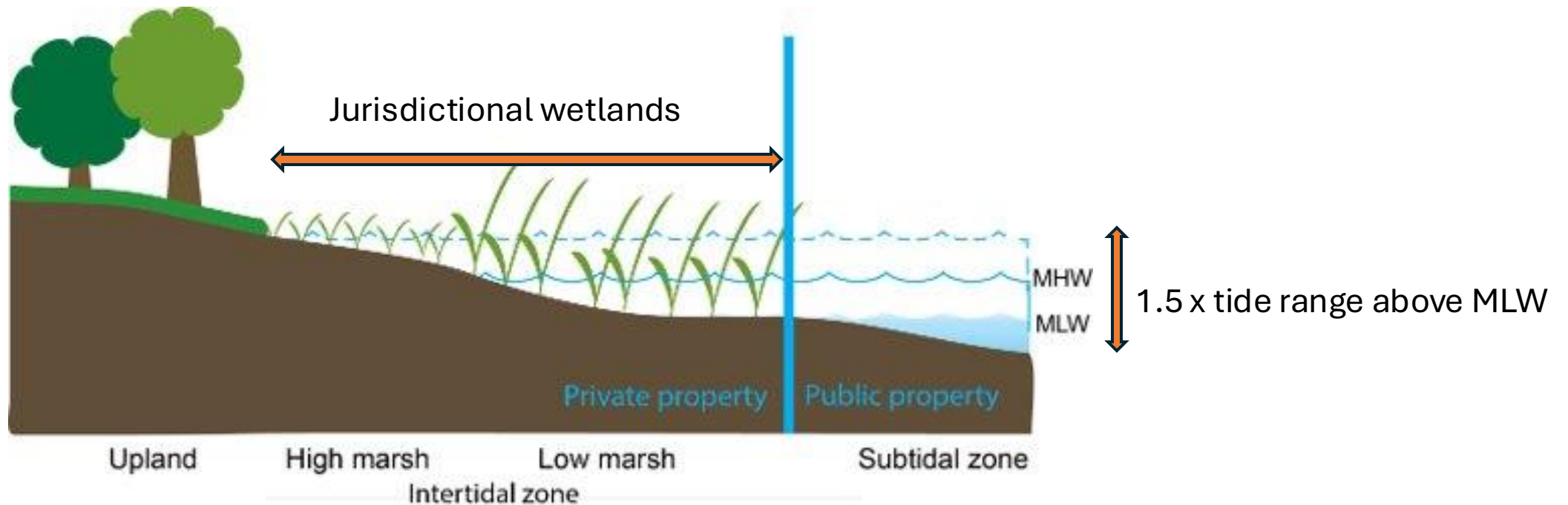
MSL

MLW

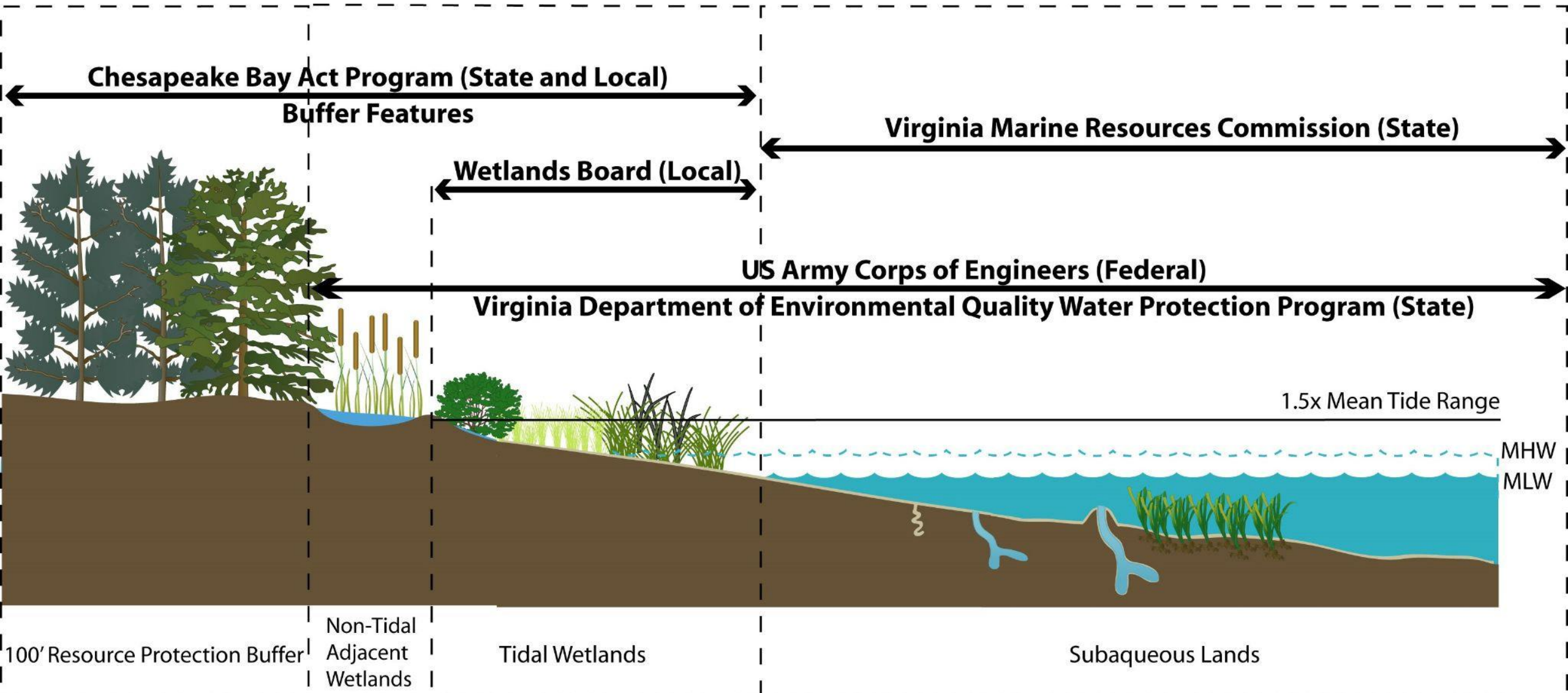
Intertidal zone

Code of Virginia § 28.2-1300. Definitions.

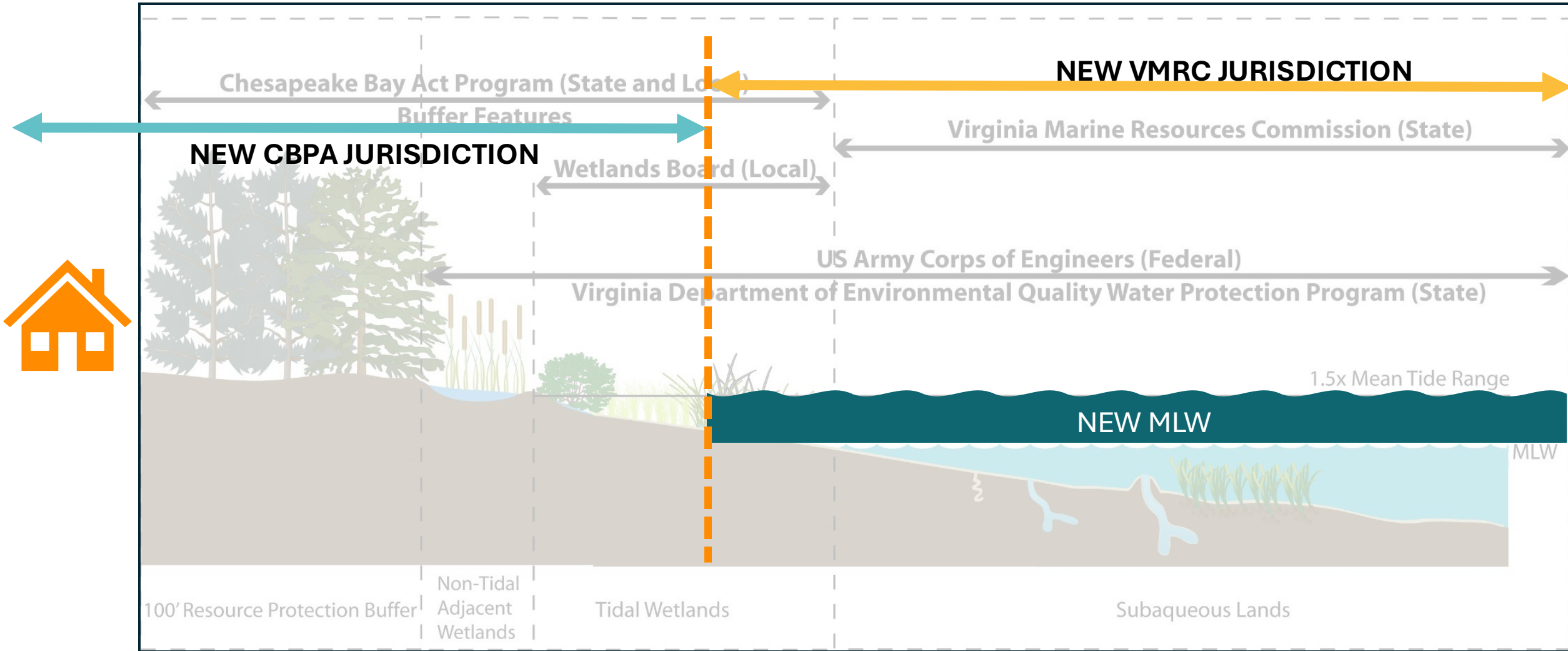
"Vegetated wetlands" means lands lying between and contiguous to **mean low water** and an elevation **above mean low water** equal to the factor one and one-half times the **mean tide range** at the site of the proposed project..."



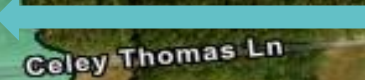
Moving jurisdictions



Moving jurisdictions



2050 Tidal marsh



Celey Thomas Ln

Celey Thomas Ln

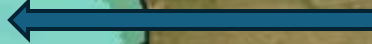
Diggs Wharf Rd

Diggs Wharf Rd

Diggs Wharf Rd

Diggs Wharf Rd

2050 MHW

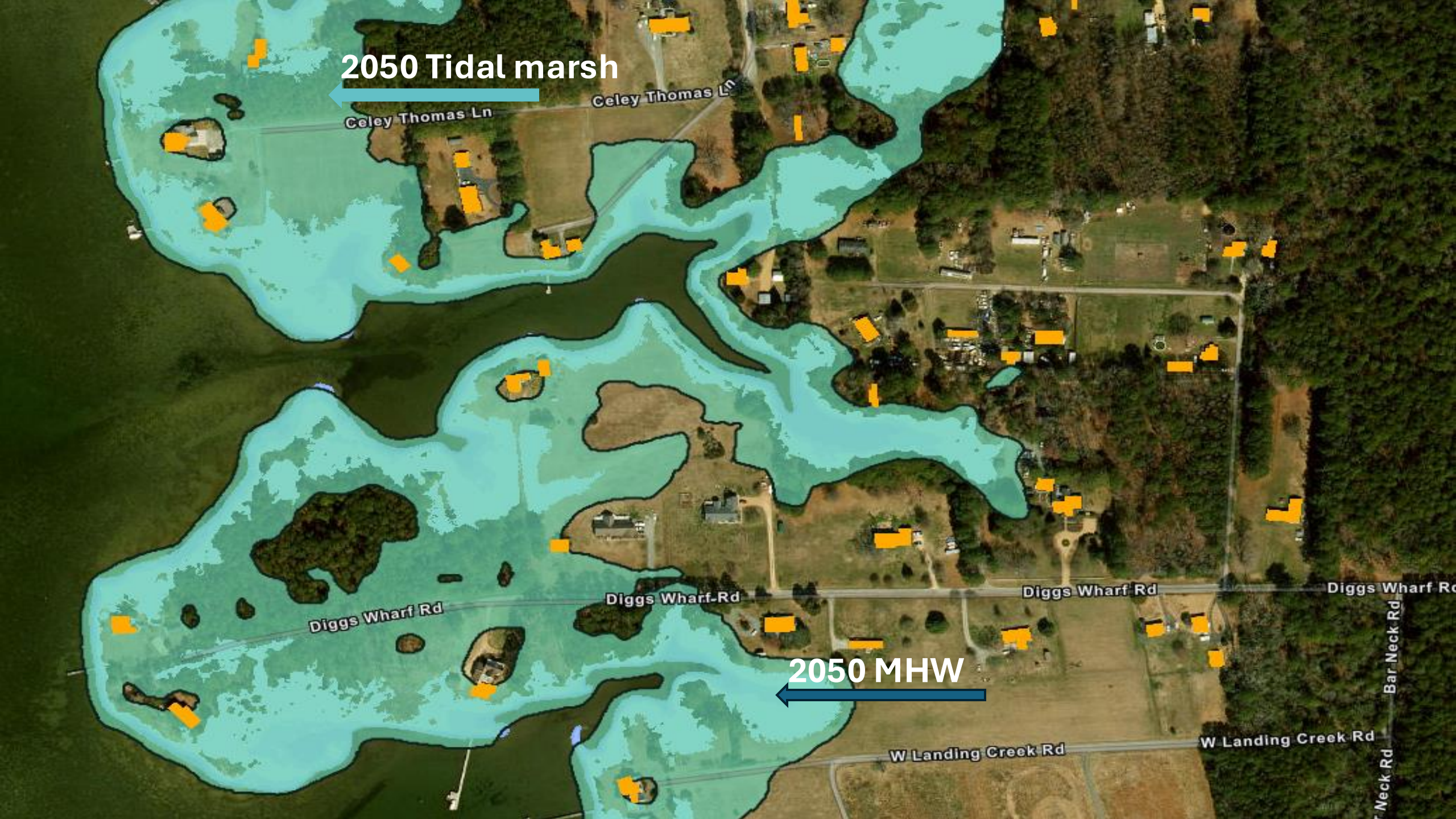


W Landing Creek Rd

W Landing Creek Rd

Bar Neck Rd

Bar Neck Rd



Project scope

- We know that updates to the NTDE will change the location of the public/private property line on Virginia shorelines and other boundaries
- We didn't know the scope of the issue or how it could be addressed
- Targeted the Code of Virginia, Administrative Code and Locality Code
- Questions:
 - What references are there to tidal datums? (MHW, MSL, MLW, etc)
 - What will the impact of the changes be? (To what extent can these be quantified?)

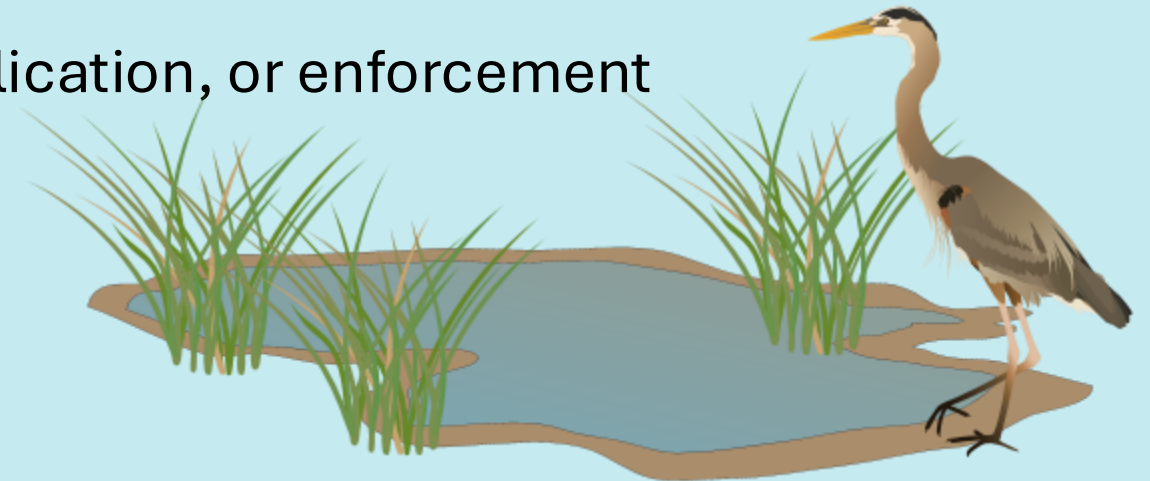
Methods and Results

Natalie Klesch

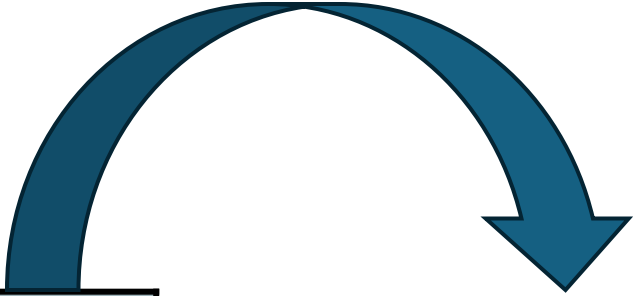
Cameron Bruce

Objectives

- 1. Identify references to vertical datums** (tidal and geodetic) in state and local codes:
 - Code of Virginia
 - Virginia Administrative Code
 - Municipal codes of selected representative localities
- 2. Evaluate the extent to which vertical datum updates could affect existing legal and regulatory provisions**
 - Assess impacts to interpretation, application, or enforcement



Search Terms



Tidal Datum Terms

- National Tidal Datum Epoch (NTDE)
- Sea Level
- Mean Sea Level (MSL)
- Mean High Water (MHW)
- Mean Higher High Water (MHHW)
- Mean High Tide
- Mean High Water Mark*
- Highest Astronomical Tide (HAT)
- Ordinary High Water
- Mean Low Water (MLW)
- Mean Lower Low Water (MLLW)
- Mean Low Water Mark*
- Tide Range
- Tide
- Tidal
- Tidal Range
- Water Level

Vertical Geodetic Datum Terms

- North American Vertical Datum (NAVD88)
- North American Vertical Datum
- NAVD88
- National Geodetic Vertical Datum (NGVD29)
- National Geodetic Vertical Datum
- NGVD29



VIRGINIA LAW



Municode Codification

Example:



VIRGINIA LAW

Code of Virginia ▾ "mean low water" 🔍

19 Results

Sort by: [Relevance](#) or [Section Order](#)

Title

- All
- Title 2.2. Administration of Government (1)
- Title 28.2. Fisheries and Habitat of the Tidal Waters (15)
- Title 29.1. Wildlife, Inland Fisheries and Boating (2)

§ 28.2-551. Surveys and reports as conclusive evidence
<https://law.lis.virginia.gov/vacode/title28.2/chapter5/section28.2-551/>
inshore of the **mean low-water** mark of such body...

§ 28.2-1202. Rights of owners to extend to **mean low-water** mark
<https://law.lis.virginia.gov/vacode/title28.2/chapter12/section28.2-1202/>
to extend to **mean low-water** mark. A. Subject...extend to the **mean low-water** mark but no...channelward of the **mean low-water** mark as part...land above the **mean low-water** mark, whether such...of the former **mean low-water** mark shall be...land above the **mean low-water** mark. This subsection

§ 28.2-1001. Potomac River Compact
<https://law.lis.virginia.gov/vacode/title28.2/chapter10/section28.2-1001/>
the intersection of **mean low-water** mark at Point...thence following the **mean low-water** line of the...thence along the **mean low-water** line to the...thence following the **mean low-water** line in a...thence following the **mean low-water** line, westerly, excluding...continuing along the **mean low-water** line of the...thence following the **mean low-water** line in general...southwesterly

← Section →

Print

PDF

email

§ 28.2-1202. Rights of owners to extend to **mean low-water** mark.

A. Subject to the provisions of § [28.2-1200](#), the limits or bounds of the tracts of land lying on the bays, rivers, creeks, and shores within the jurisdiction of the Commonwealth, and the rights and privileges of the owners of such lands, shall extend to the **mean low-water** mark but no farther, except where a creek or river, or some part thereof, is comprised within the limits of a lawful survey.

B. For purposes of this section, "lawful survey" means the boundaries of any land, including submerged lands, held under a special grant or compact as required by § [28.2-1200](#), such boundaries having been determined by generally accepted surveying methods and evidenced by a plat or map thereof recorded in the circuit court clerk's office of the county or city in which the land lies.

C. Notwithstanding any provision of law to the contrary, where sand or other material is placed upon state-owned beds of the bays, rivers, creeks, or shores of the sea channelward of the **mean low-water** mark as part of the performance of a properly permitted beach nourishment, storm protection, or dredging project undertaken by a public body, and the public has an established right of use and maintenance upon the adjacent land above the **mean low-water** mark, whether such public right is established before or after the sand or other material is placed, such placement shall not be deemed a severance or taking of, or otherwise to have impaired, an adjacent landowner's riparian or littoral rights, and the newly created land channelward of the former **mean low-water** mark shall be deemed natural accretion for purposes of ownership, but such ownership shall be subject to the public's same right of use and maintenance upon the newly created land as previously existed on the adjacent land above the **mean low-water** mark. This subsection is retroactively effective beginning January 1, 2009.

Selection of Representative Localities



Virginia Beach



Accomack County



Gloucester County



Stafford County

Wider Municipality and County Search

Approach:

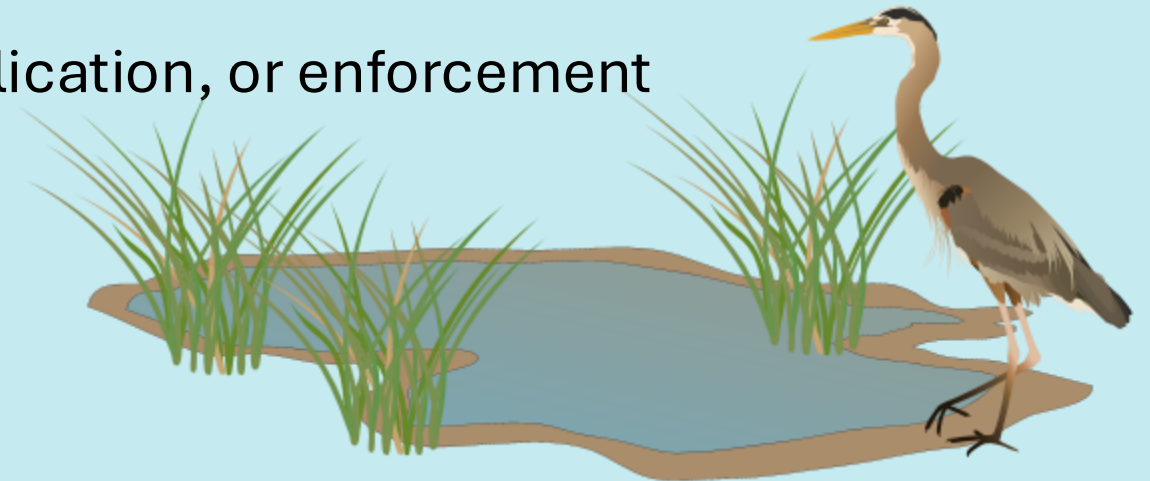
- Conducted a **streamlined screening** of municipal codes for the remaining Tidewater localities
- Used the **same search terms** as the in-depth analyses to **catalog how often relevant references appear**
- Excluded clearly unrelated references, but **did not perform detailed language review or importance ranking**

Henrico County		
Search Term	# of Code References	Type: Chapter, Appendices
<i>Tidal Datums</i>	9	
mean sea level	1	Sec. 10-3,
MSL	0	
mean high water	2	Sec. 10-28, Sec. 24-8501
MHW	0	
mean higher high water	0	
MHHW	0	
mean high tide	0	
mean lower low water	0	
MLLW	0	
mean low water	2	Sec. 10-28, Sec. 24-8501
MLW	0	
tide range	0	
tidal range	0	
highest astronomical tide	0	
HAT	0	
sea level	1	Sec. 10-3
water level	3	Sec. 24-8501, Sec. 10-28, 10-3
National Tidal Datum Epoch	0	
<i>Vertical Geodetic Datums</i>	3	
NAVD88	0	
NGVD29	1	Sec. 10-3
NAVD	0	
NGVD	1	Sec. 10-3
North American Vertical Datum	0	
National Geodetic Vertical Datum	1	Sec. 10-3

Example: spreadsheet for Henrico County

Objectives

- 1. Identify references to vertical datums** (tidal and geodetic) in state and local codes:
 - Code of Virginia
 - Virginia Administrative Code
 - Municipal codes of selected representative localities
- 2. Evaluate the extent to which vertical datum updates could affect existing legal and regulatory provisions**
 - Assess impacts to interpretation, application, or enforcement



"Importance" Classification System

Each vertical datum reference was evaluated and assigned an “**importance level**” based on two key factors:

1. Clarity of the reference — whether the provision clearly identifies a specific vertical datum and, if applicable, its epoch or year

2. Regulatory impact — whether a datum change could affect interpretation, application, or enforcement

Table 2: *Importance Classification Descriptions*

Classification	Description of Classification
No Impact	The reference is unrelated to vertical datums or clearly would not be affected by a change in the datums
Low Importance	The reference is generally clear, and any future datum update is unlikely to meaningfully alter how the provision is interpreted or applied
Moderate Importance	The reference contains some ambiguity and would likely require clarification following a datum shift. While the provision could still be applied in its current form, a new datum might cause minor inconsistencies or raise questions about how it should be implemented
High Importance	The reference is ambiguous and/or is foundational to important definitions and/or how a regulation is applied. Or, a change in the underlying datum could substantially affect the provision’s meaning, scope, or enforcement, and could require agency clarification or regulatory updates, or may impact relations with another state.

Results: State Codes

	Code of Virginia	Virginia Administrative Code	Total
Number of References	59	76	135
Most-Referenced Term	Mean Low Water / Low Water Mark	Mean Low Water	Mean Low Water
High Importance	21	14	35
Medium Importance	7	14	21
Low Importance	17	42	59
No Impact	14	6	20

Results: Local Government Codes

	Virginia Beach	Accomack	Stafford	Gloucester
Number of References	35	24	40	36
Most-Referenced Term	Mean Low Water	Mean High Water / Mean Low Water	Tidal	Tidal
High Importance	14	13	20	17
Medium Importance	5	4	4	7
Low Importance	5	7	6	6
No Impact	11	0	11	6

Example: High Importance

Locality	Section	Language
Virginia Beach	4.9(D)	All new construction shall be located landward of the reach of mean high tide .
Accomack	106-364	All new construction shall be located landward of the reach of mean high tide .
Stafford	28-57	All new construction shall be located landward of the reach of mean high tide .
Gloucester	8.5-4.1	All new construction of structures intended for occupation shall be located landward of the reach of mean high tide .

Examples: Medium & Low Importance

Medium Importance

The commission will strive to achieve maximum beneficial uses of suitable dredged material for those projects which qualify under criteria established here while protecting the interests of the Commonwealth in the land and the resources lying channelward of the **mean low water** shoreline which land and resources are owned by the Commonwealth and are to be held as a common for use by all its citizens (4VAC20-400-30).

Low Importance

"State-owned submerged lands" means lands that lie seaward of the **mean low-water mark** in tidal waters or that have an elevation below the **ordinary mean high-water** elevation in nontidal areas that are considered property of the Commonwealth pursuant to § 28.2-1200 of the Code of Virginia (9VAC15-40-10).

Examples: No Impact

Definition of storm surge in Gloucester County Comprehensive Plan

"An abnormal rise of water generated by a storm, over and above the predicted **astronomical tide**."

Examples: Wider Municipality Search

City of Newport News		
Search Term	# of Code References	Type: Chapter, Appendices
<i>Tidal Datums</i>	29	(Note: some related; "sea level" had 11 references, but only 9 were related to datums; "water level" had 3 references, but only 1 reference was related to datums)
mean sea level	9	Chapter 45 - Zoning Ordinance (Article II. - Definitions (Sec. 45-201); Article XXXI. - Overlay Zoning Districts and Regulations (Sec. 45-3102; Sec. 45-3104; Sec. 45-3107; Sec. 45-3114; Sec. 45-3115; Sec. 45-3116; Sec 45-3121)); Appendix B - Subdivision Regulations (Article IX. - Minimum Improvements Required (Sec. 9-01))
MSL	0	
mean high water	2	Chapter 37.1 - Stormwater Management (Article I. - In General (Sec. 37.1-3)); Chapter 44 - Wetlands (Sec. 44-2))
MHW	0	
mean higher high water	0	
MHHW	0	
mean high tide	2	Chapter 45 - Zoning Ordinance (Article XXXI. - Overlay Zoning Districts and Regulations (Sec. 45-3114;Sec 45-3121))
mean lower low water	0	
MLLW	0	
mean low water	5	Chapter 11 - Watercraft, Docks, Piers, and Waterways (Article I. - In General (Sec. 11-6)); Chapter 37.1 - Stormwater Management (Article I. - In General (Sec. 37.1-3)); Chapter 44 - Wetlands (Sec. 44-2)); Chapter 45 - Zoning Ordinance (Article III. - Zoning Districts and Maps (Sec. 45-303); Article XXVIII. - Modifications and Adjustments of District Regulations (Sec. 45-2802))
MLW	0	
tide range	1	Chapter 44 - Wetlands (Sec. 44-2));
tidal range	0	
highest astronomical tide	0	
HAT	0	
sea level	9	Chapter 45 - Zoning Ordinance (Article II. - Definitions (Sec. 45-201); Article XXXI. - Overlay Zoning Districts and Regulations (Sec. 45-3102; Sec. 45-3104; Sec. 45-3107; Sec. 45-3114; Sec. 45-3115; Sec. 45-3116; Sec 45-3121)); Appendix B - Subdivision Regulations (Article IX. - Minimum Improvements Required (Sec. 9-01))
water level	1	Chapter 37.1 - Stormwater Management (Article I. - In General (Sec. 37.1-3))
National Tidal Datum Epoch	0	
<i>Vertical Geodetic Datums</i>	0	
NAVD88	0	
NGVD29	0	
NAVD	0	
NGVD	0	
North American Vertical Datum	0	
National Geodetic Vertical Datum	0	

Preliminary Recommendations

Thomas Ruppert

How to Prepare for the updates?



1. DOCUMENT

If you deal with data, make sure you have metadata that clearly identifies reference datum, time, epoch etc.





2. STAY INFORMED:
Being here is a great
first step!

3. PLAN

Evaluate how datums may be used in your job and how updates may impact it



Preliminary Recommendation #1

Update code references to geodetic and vertical datums to the most current datums as soon as feasible after release of the new geodetic and tidal datum standards.

Preliminary Recommendation #2

- Create distinction between “**NTDE mean sea level**” and “**functional mean sea level**” in VA Code
- “NTDE mean sea level means the 19-year average of sea level as determined and indicated in the most recent National Tidal Datum Epoch (NTDE) of the National Oceanic and Atmospheric Administration.”

Preliminary Recommendation #2 (cont.)

“Functional mean sea level means the average mean sea level as determined by a relevant, recent time-series of tidal measurements and/or other indicators as appropriate to the design, engineering, or permitting need for which the mean sea level is required. Relevant code sections should include a specified time over which the datum will be calculated (e.g., MSL in the past year, or MSL over the past 5 years). In no case shall the functional mean sea level be used for purposes which in Code or Administrative Code indicate use of ‘NTDE mean sea level.’”

Preliminary Recommendation #3

Add NTDE and “functional” definitions for all types of water levels mentioned in Virginia Code:

- MHW, MLW, MHHW, MLLW

All NTDE definitions should specify they are determined via the data and methods used by NOAA

Preliminary Recommendation #4

All references to tidal datums in Virginia Code, Administrative Code, or local codes should be updated to clarify if they refer to the NTDE datum or “functional” tidal level.

Preliminary Recommendation #5

Indicate in VA Code that “low water mark” is not to be used in Virginia Code, Administrative Code, or in local government codes.

Define the “low water mark” in Virginia Code to clarify that means where the current NTDE MLW meets that land.

Preliminary Recommendation #6

VOR's Interagency Resilience Management Team should work with and encourage all state agencies to review their Code & Administrative Code sections and guidance documents for needed action.

Preliminary Recommendation #7

Coastal localities:

- Ensure tidal datum references reflect Virginia Code distinctions of NTDE vs. “functional” tidal elevations,
- Assess likelihood of property line changes and impacts to existing ordinances, and
- Consider adjusting codes to account for changes to datums, when needed.

Take-Home Points

1. Tidal datums appear frequently in VA Code, Admin. Code, and local codes
2. Tidal datums are always "playing catch up" with the reality of increasing sea levels
3. Tidal datums impact private vs. public property boundaries; regulatory jxs; regulatory requirements; design; safety; and many other things

BREAK!

Grab Lunch!

Outreach Materials

Kianne Benjamin

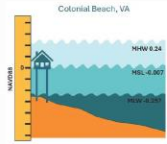
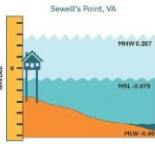
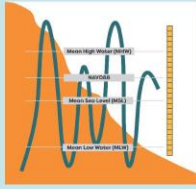
Tidal datums are changing, be prepared!

What is a datum?

Tidal Datums are standard elevations defined by a certain phase of the tide such as Mean Low Water (MLW) or Mean Sea Level (MSL). The last time the National Tidal Datum Epoch was updated was in 2002.

Why are they important?

Datums are used in navigational safety, wetland restoration, infrastructure design, storm warnings, hazard mitigation, and establishing legal, ecological and jurisdictional boundaries.



Tidal Datums vary with location. In Sewell's Point, a house at elevation 0 in NAVD88 is above Mean Sea Level, but a house at the same elevation in Colonial Beach would be at Mean Sea Level.

Datum updates

The current National Tidal Datum Epoch (NTDE) uses measurements from 1983-2001 and is being updated with data collected from 2002 to 2020. The NTDE is the 19-year period over which an average of water heights during specific phases of the tide are taken. These measurements are revised periodically to account for long term effects of land movement, sea level rise and variations in tidal conditions. Notably, tidal datums in coastal Virginia are expected to increase in elevation (in some cases by several inches) with the release of the latest epoch, anticipated in 2029.

For more information, visit NOAA's Tides & Currents site:



Potential impacts

- There were 135 references to datums in state codes, of these, 35 were determined to have a high importance, reflecting either significant ambiguity or likelihood that an update to tidal datums would impact the provision in the regulation.
- The most common references were terms similar to Mean Low Water (e.g. low water mark, low water line), followed by Mean High Water and Mean Sea Level.

How to prepare

- Amend the Code of Virginia to include definitions for "NTDE mean sea level", "functional mean sea level", "mean high water," "mean higher high water," "mean low water," and "mean lower low water."
- Communicate the need for region-specific impact evaluations on regulatory standards by local governments and state agencies.
- Introduce and pass resolution at the General Assembly noting that regulatory programs and policies that depend on datums and data should use the most recent form of information to support relevant outputs and meet the intended outcomes.



- **Datum reference:** "mean low-water mark" (§28.2-1202 Code of Virginia)
- **Reference summary:** Defines private property boundaries as extending to mean low-water mark
- **Impact:** The statute does not define mean low water or reference tidal datum or time frame leading to ambiguity with upcoming tidal datum updates. Updates to NTDE could change private property boundaries.

- **Datum reference:** "mean high tide" (§13VACS-63-210 Administrative Code)
- **Reference summary:** New buildings should be located landward of the reach of Mean High Tide
- **Impact:** This language does not account for changing water levels or erosion. Using NTDE vs a functional measurement would recognize the risk to buildings. A functional measurement would recognize the physical shifting shoreline itself and define a measurement as the point at which land and water intersect at high tide at the time of development.

Potential impacts

- **Datum reference:** "mean sea level" (locally county codes contained mostly high references to datums in state codes. Locally county codes contained mostly high references (Stafford- 40, Gloucester-30, Virginia Beach- 35, Accomack- 24).
- **Reference summary:** On land less than 5.5 ft above mean sea level (MSL) there shall be no development and no density credits allowed.
- **Impact:** Shifts in the MSL elevation could impact zoning and area available for development.

- **Datum reference:** "mean sea level" §8 6-36 (Gloucester county)
- **Reference summary:** Requires flood proofing elevations for non-residential structures to be measured and documented relative to MSL
- **Impact:** Changes to MSL without associated dates may lead to confusion in how these elevations are calculated, certified and reviewed for compliance.

- **Datum reference:** "mean sea level" Comp. Plan Ch. 2 (Stafford County)
- **Reference summary:** A maximum height restriction of 450 feet above MSL for towers, buildings near Quantico MCB
- **Impact:** A maximum height restriction of 450 feet above MSL for towers, buildings etc. is not significantly affected by a vertical shift in sea level of less than 1 foot.

How to prepare

- Determine where and how vertical datum changes will affect standards and provisions of current policies.
- Update relevant code sections to include a specified timeframe over which the datum will be calculated (e.g. NTDE, MSL in the past year, or MSL over the past 5 years).
- Revise floodplain management standards in light of expected shifts from new datums.
- Inform your constituents of the range of potential impacts that could result from shifts in boundaries and associated risks.

The Tidal Datum Project is funded by the Virginia Coastal Zone Management Act. Scan the QR code for further resources including the full report from NOAA under the Federal Coastal Zone Management Act. Scan the QR code for further resources including the full report.



One-pagers

YOUR Resource

Q&A and Discussion

Cirse Gonzalez

Cameron Bruce

What is a datum?

**Why should you
care about
changing datums?**

**What do you need
to do about the
changing datums?**

Workshop GOALS

Did we achieve?

What's left?

Wrap-up & Adjourn

Cirse Gonzalez