

Updating Vertical Datums:

Evaluating Potential Legal & Policy
Impacts in the Commonwealth

WILLIAM & MARY

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Legal and policy analysis
hub at W&M



Housed within the Provost's
Office



Born out of W&M's Strategic
Vision 2026 – "Water" Pillar

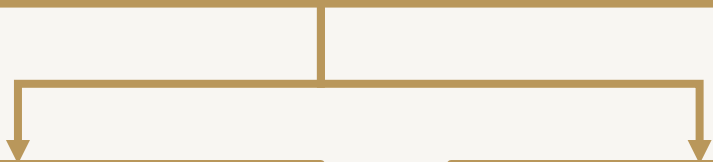


Mission: foster internal and external
collaboration to provide third-party,
neutral policy analysis and advice to
the Commonwealth and other
partners to further resilience in VA,
specifically the coastal region

What are Vertical Datums? Relative Measures

- Knowing the distance to, elevation, or depth of something requires a baseline → Datum
- Datum → a reference point on earth's surface against which distance, spatial extent, elevation, depth, etc. measurements are made

Geodetic Datums



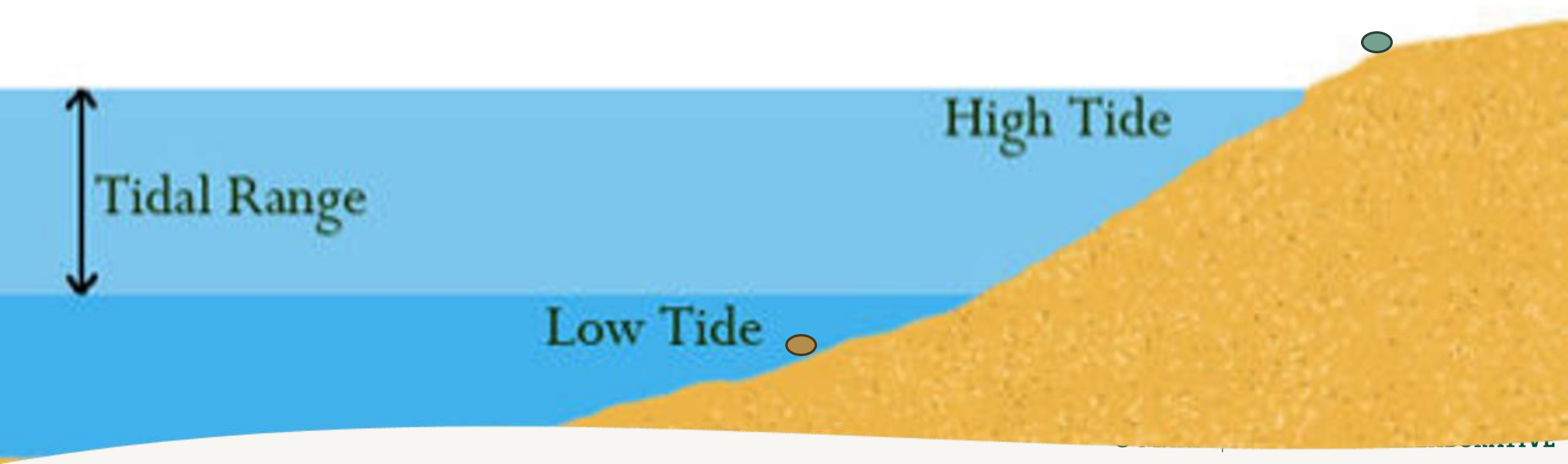
Horizontal

Vertical

Tidal Datums

Tidal Datums

- Standard elevation defined by certain phase of the tide
- The elevation of the green and red dots varies upon whether it is measured against high tide or low tide



Why Do We Care?

- Mean low water (MLW) elevation determines boundary between public property under tidal waters and private property.
- MLW or other tidal datums establish various regulatory jurisdictions. E.g.:
 - Multiple bases of VMRC jx; Ches. Bay Act boundaries for RPAs; wetlands boundaries; Potomac Fisheries Com'n jx; zoning areas in local gov't codes
- In 2024, MLW averaged 1-foot above the current MLW datum (1983-2001), so the average across all 19 years of a NTDE could be 6 inches higher
- 6 inches vertically could be many horizontal feet on some coastlines

Findings

- Impacts to property boundaries via new MLW elevation
 - Shrinking of some private parcels with varied potential impacts
 - E.g.: *Virginia Beach Code § 405(a)(6)* limits land of certain soil composition and less than 5.5 feet above mean sea level from being developed or used for credit towards developable area
- References to vertical datums often lack clear definitions, exacerbating uncertainty related to updating of datums
 - “...the setback for any such dwelling from a permanent body of water shall be no less than five (5) feet, as measured from the **mean high water mark** of tidal bodies of water...” Sometimes unclear for tidal datums whether datum references are to NTDE or a shorter/more recent time series of data

Recommendations

- Update codes so vertical datum references are to the most current datums as soon as feasible after release of new datums (limited by next)
- All tidal datum references distinguish between NTDE or use-specific references
- Define conversion methodologies from older to newer datums
- IRMT to encourage agencies to review their rules for datums issues to address
- Localities should review their references to vertical datums, address existing ambiguities, update ambiguous references, assess impacts to existing ordinances/policies, & update them when needed

NTDE versus Use-Specific Datums

- *Virginia Administrative Code section 4VAC20-390-50.E.2.:*
 - “[o]nce the grading is completed at the planting site, it should be inspected by a competent authority to ensure that the elevations are appropriate for the vegetation to be planted and that the surface drainage is effective.”
- Use of NTDE—based on data that can be as much as 20-40 years old—has sometimes caused higher rates of planting failure.



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