MEAN LOW TIDE (MLT) –to– MEAN LOWER LOW WATER (MLLW)

WEDA – GULF COAST CHAPTER ANNUAL CONFERENCE

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Galveston District
Southwestern Division
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US Army Corps of Engineers
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AGENDA

- **Why the Transition to Mean Lower Low Water (MLLW) ?**
- What is Mean Low Tide (MLT) ?
- What is Mean Lower Low Water (MLLW) ?
- Partnership with Texas A&M University at Corpus Christi & TCOON.
- How does the conversion impact our navigation stakeholders?
- Implementation of conversion ?

WHY CONVERT TO MEAN LOWER LOW WATER (MLLW)?

- Water Resources Development Act 1992
- Water Resource & Reform Development Act 2014
- Consistency Across Federal agencies:
  - NOAA
  - USCG
  - USACE
- Internationally recognized vertical datum

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MEAN LOW TIDE (MLT)

- Galveston District using Mean Low Tide (MLT) as vertical datum control for navigation projects
- MLT, in the context of District projects, is a legacy datum dating from the 1960's and is ***geodetically*** tied to terrestrial benchmarks (NGVD 29, NAVD 88)
- At inception, MLT was ***empirically*** and ***subjectively*** derived and represented the lowest expected water level including ***both*** astronomical and meteorological forcing.

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MEAN LOWER LOW WATER (MLLW)

- The arithmetic mean of the lower low water (MLLW) heights of the tide observed over a specific 19-year Metonic cycle (the NTDE). Only the lower low water of each pair of low waters of a tidal day is included in the mean.
- It is the depth (sounding) datum used on NOAA nautical charts; and internationally recognized.
- It is the ***average*** minimum ***tidal*** depth likely to be encountered by maritime operators.

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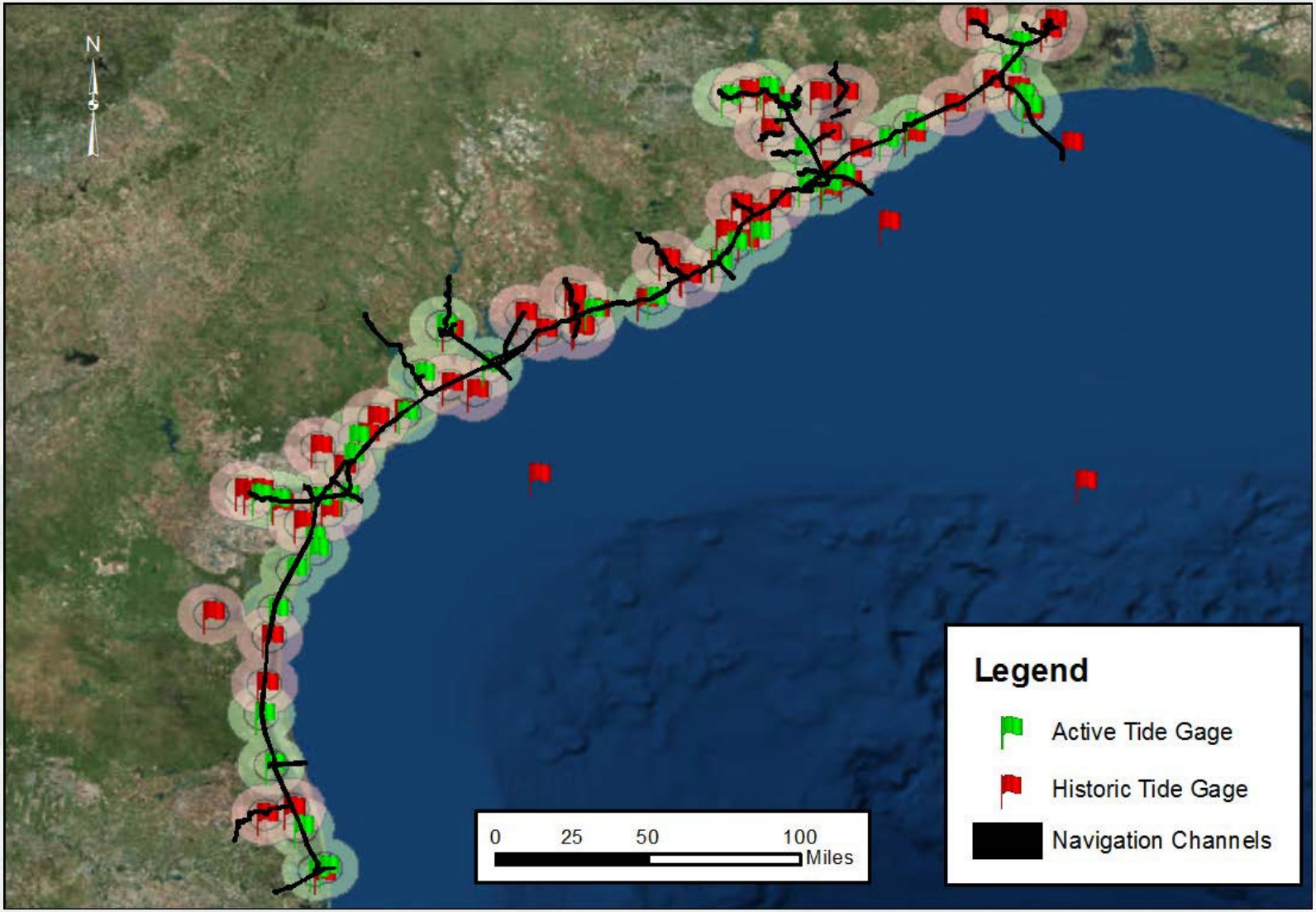

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DATA COLLECTION PLATFORMS

TCOON Sentinel Platform (Galveston, TX)

TCOON 4-Pile Platform (Packery Channel, TX)

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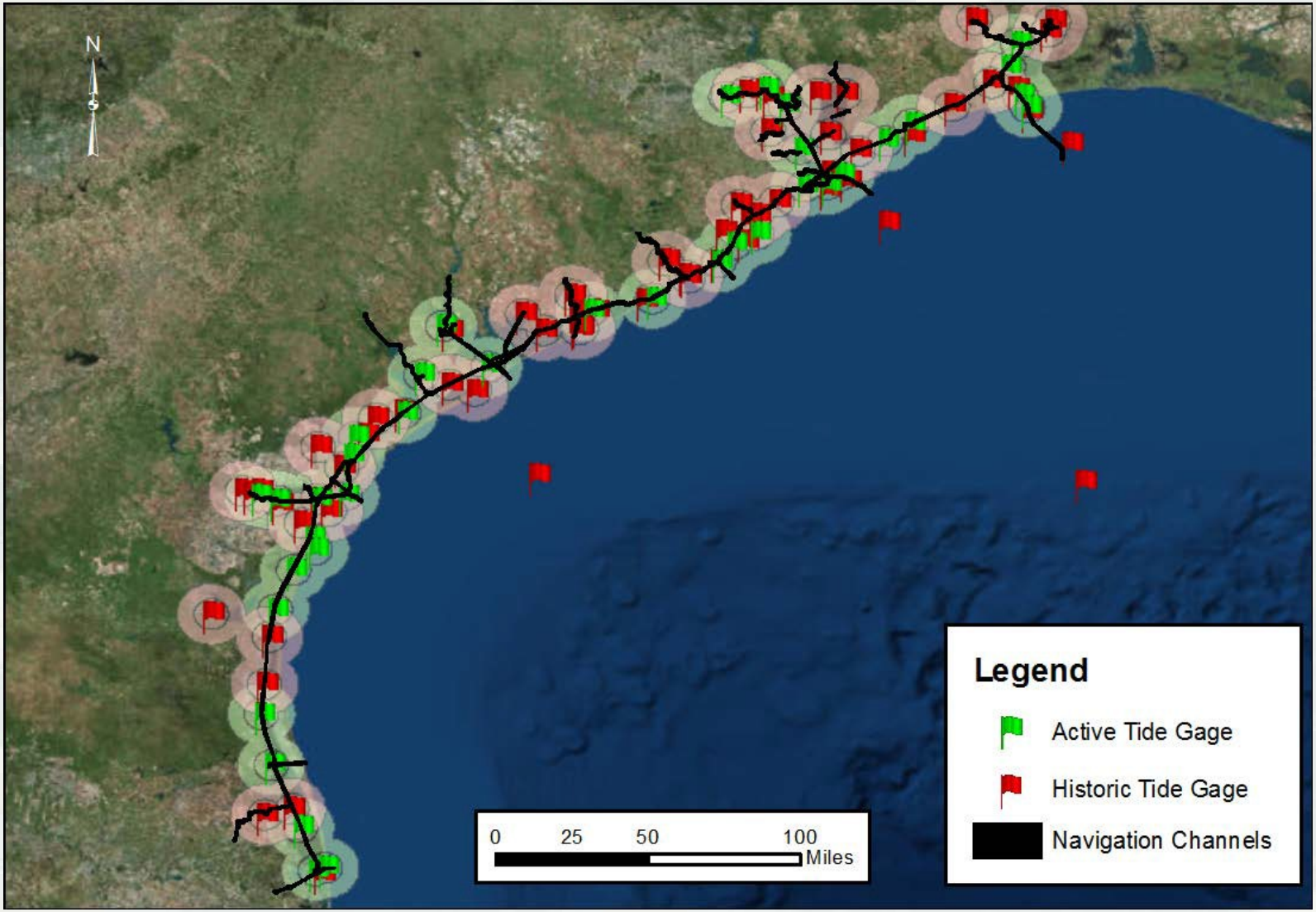

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Policy on Vertical Datum Conversion

Cost Share trigger at 50-ft in Channel Depth

"If a conversion to MLLW results in depths greater than 50 feet, the cost sharing will remain as documented in the executed Project Partnership Agreement which shall be included as an attachment to the EDR. This cost sharing shall remain in effect until such time as future authority is received to further alter the depth of the federal navigation channel…."

Round to nearest foot when there are non-Integer variances between MLT & MLLW

"For project authorization purposes, the depth of conversion can be rounded to the nearest foot using standard rounding conventions (50.1-50.4 goes to 50 and 50.5-50.9 goes to 51)."

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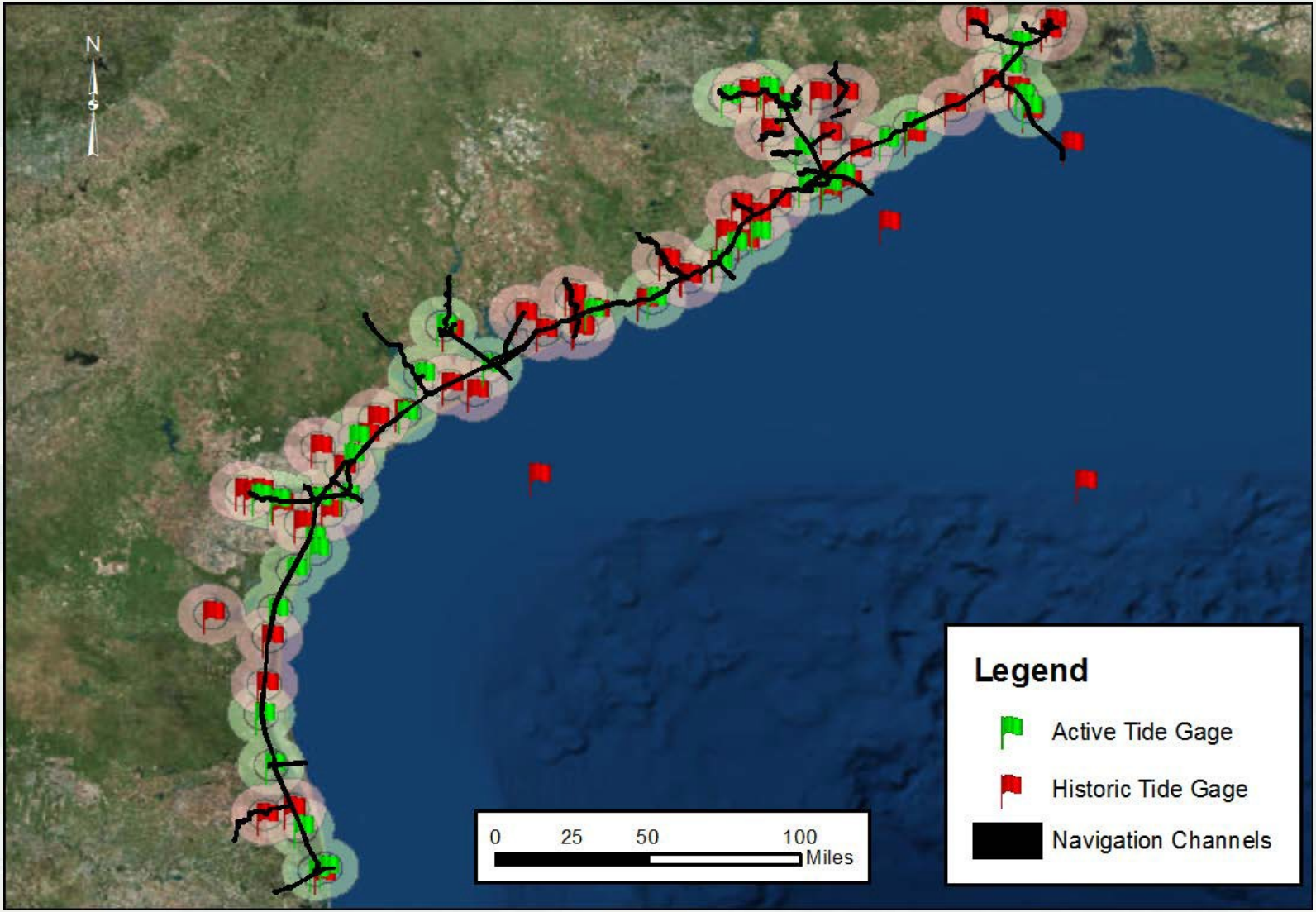

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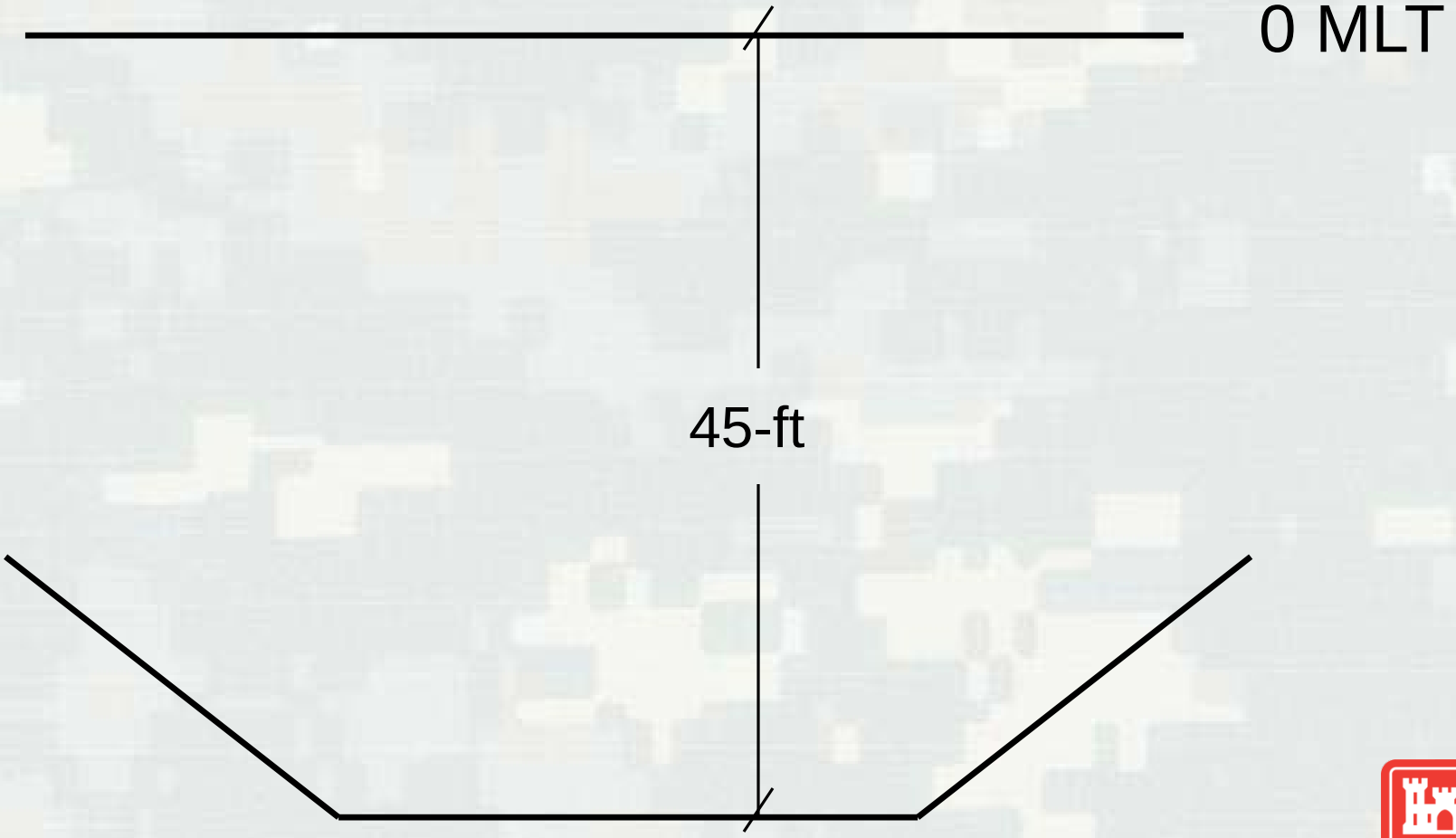

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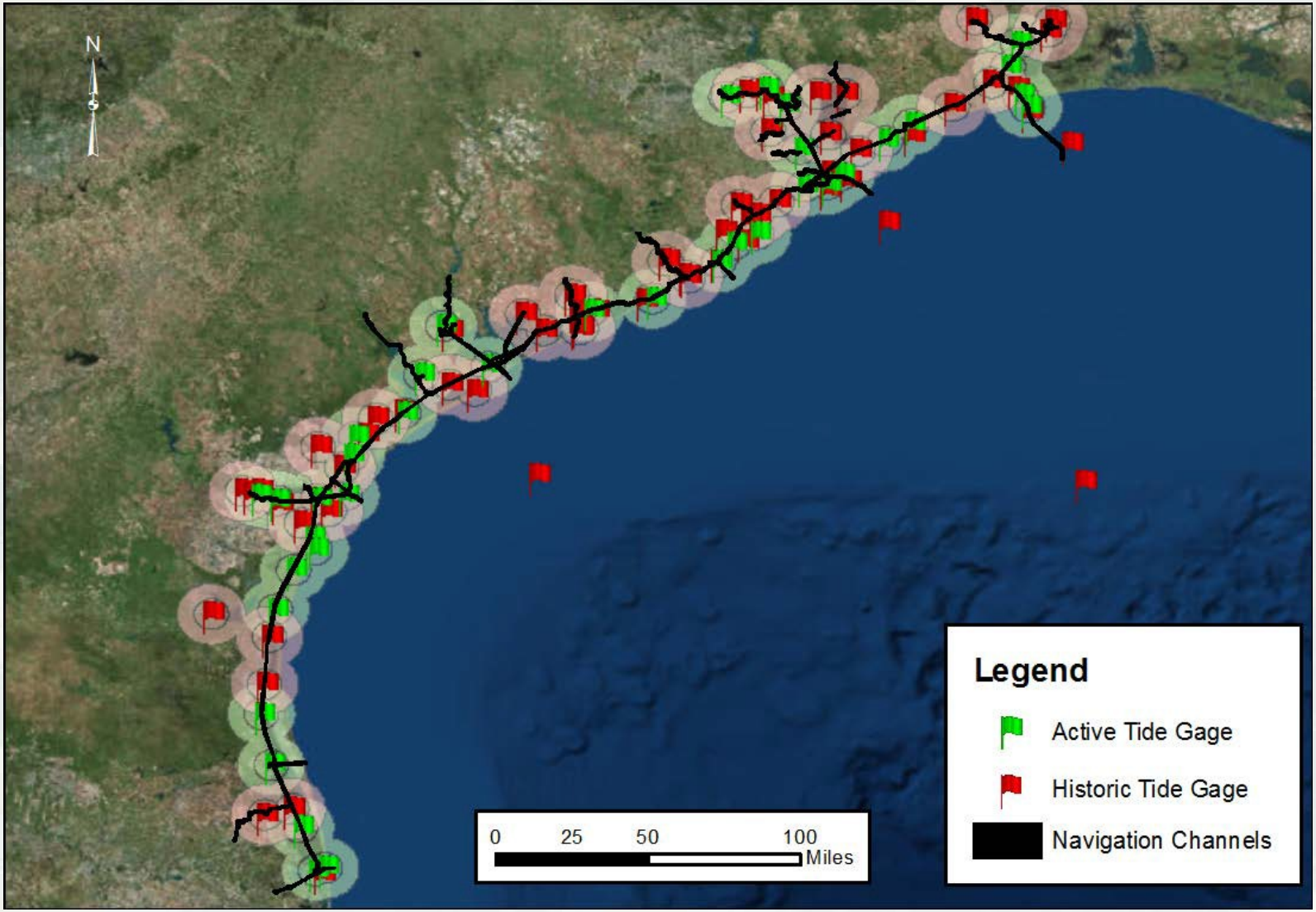

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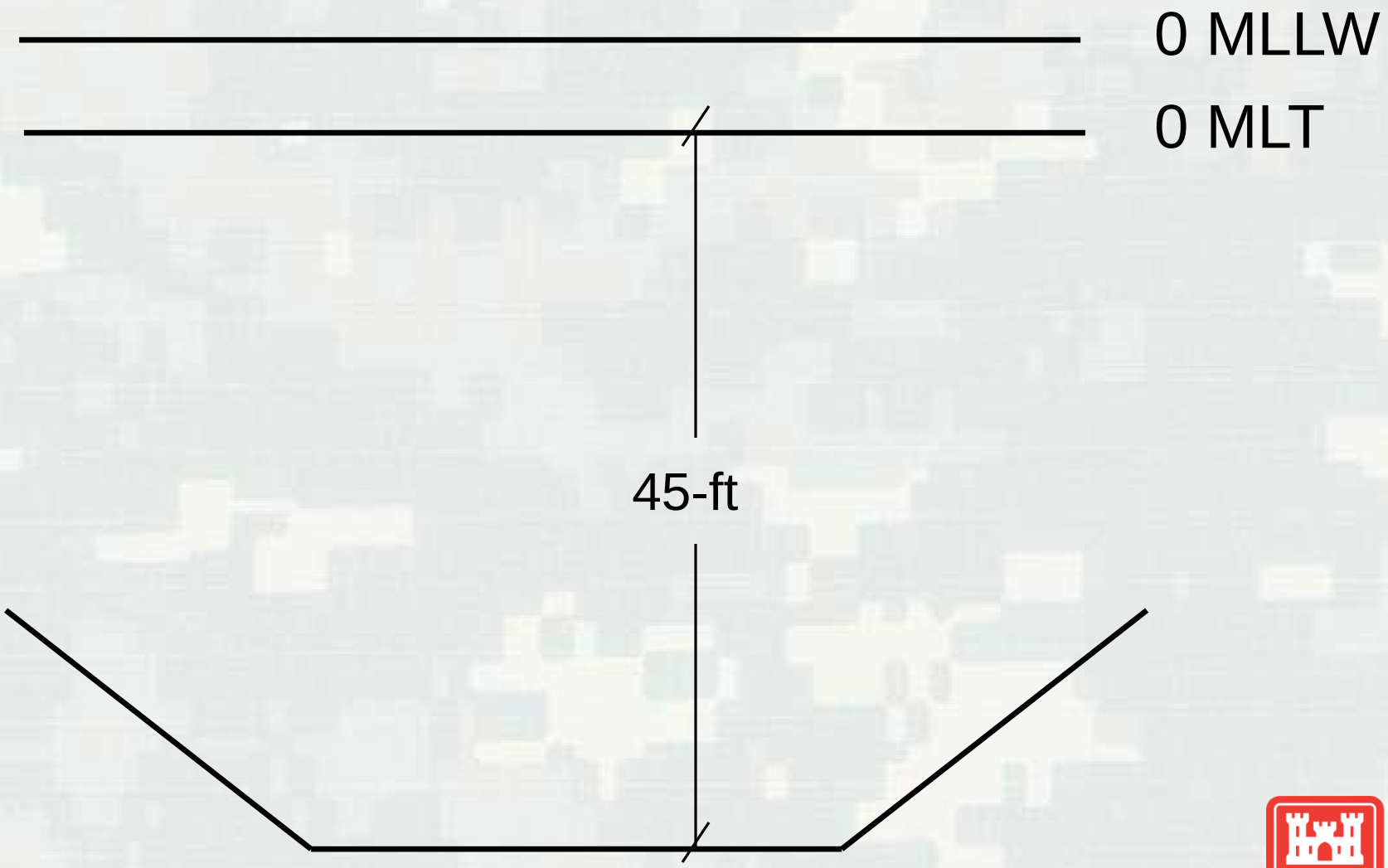

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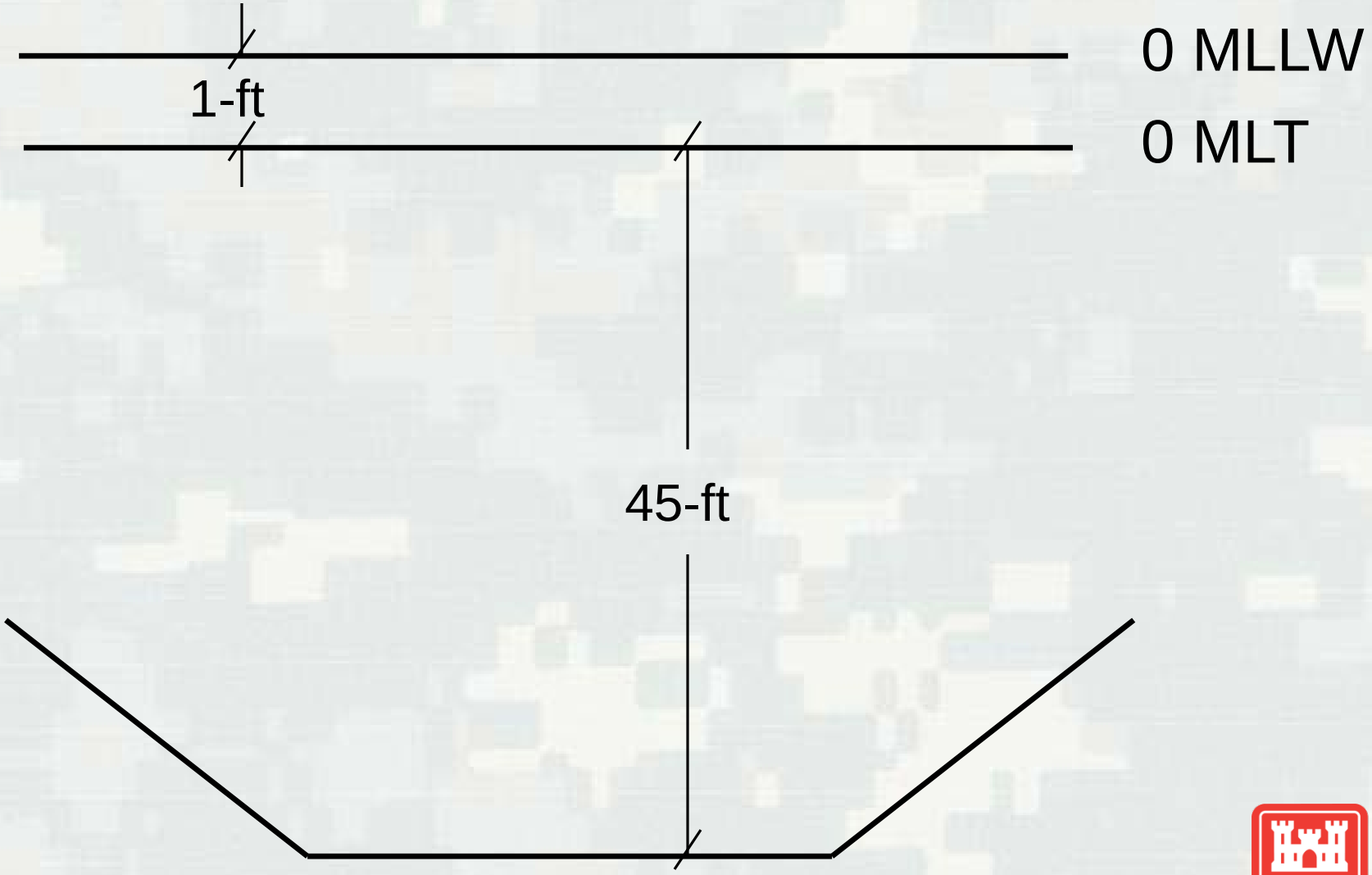

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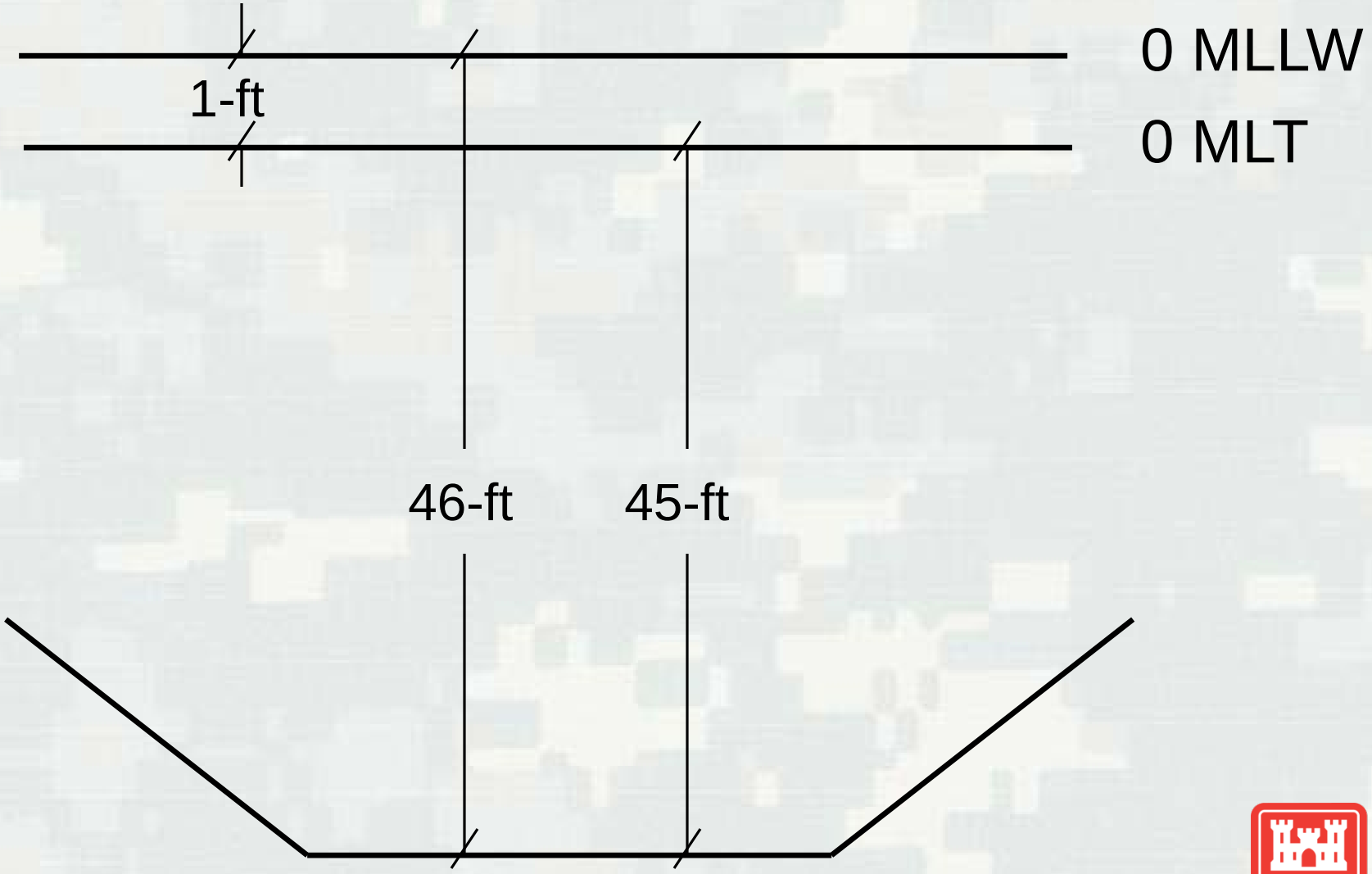
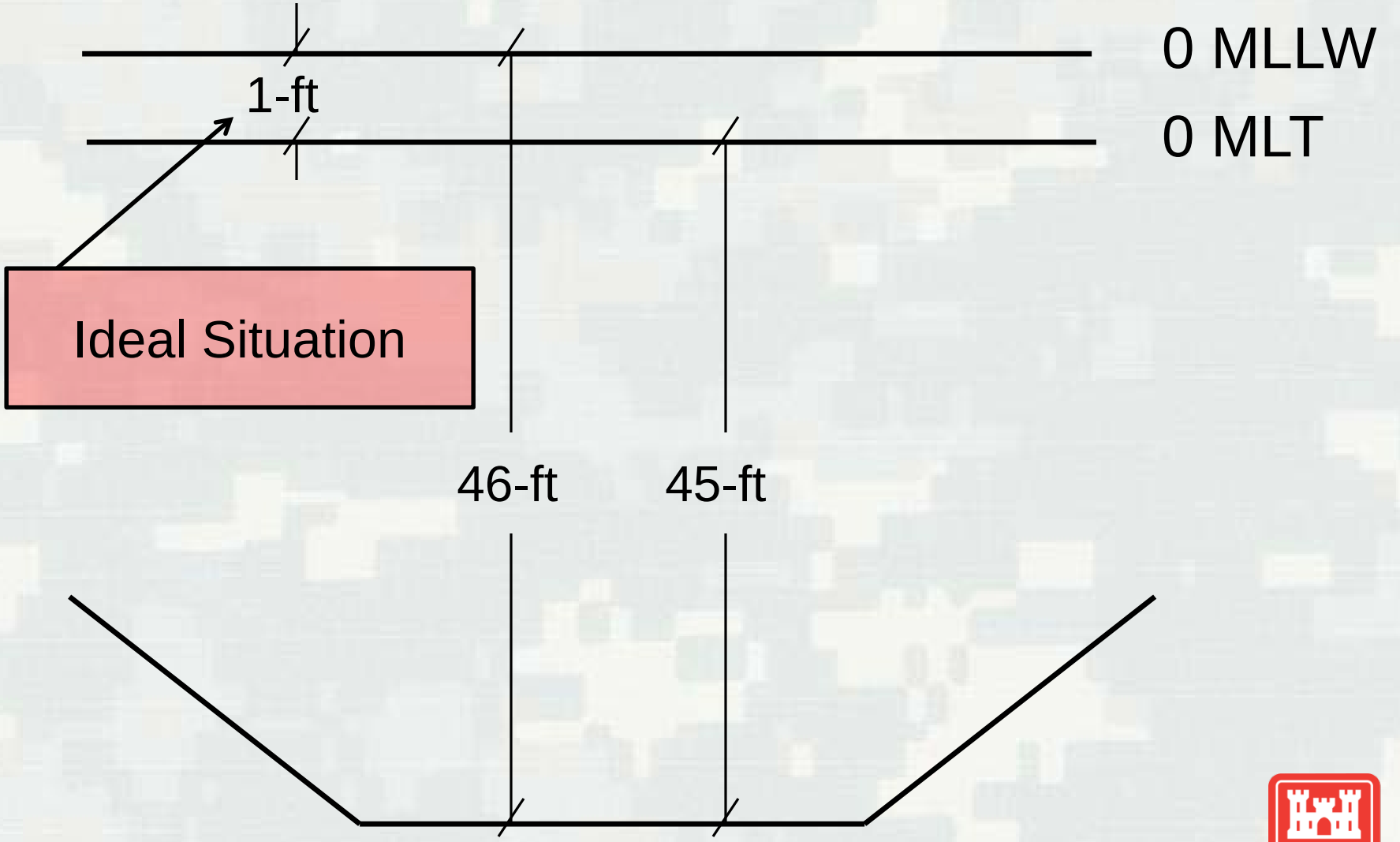


EXAMPLE #1



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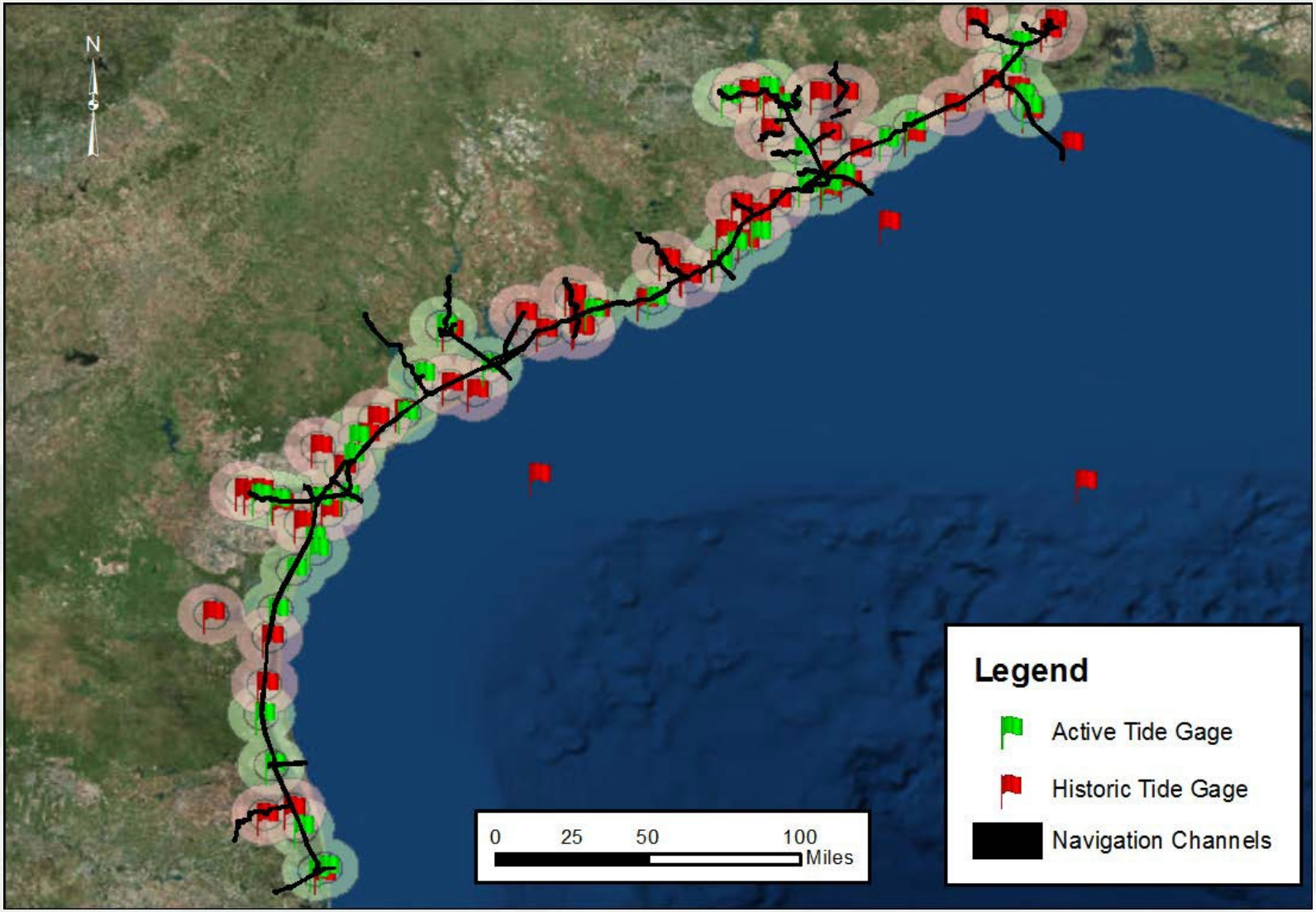

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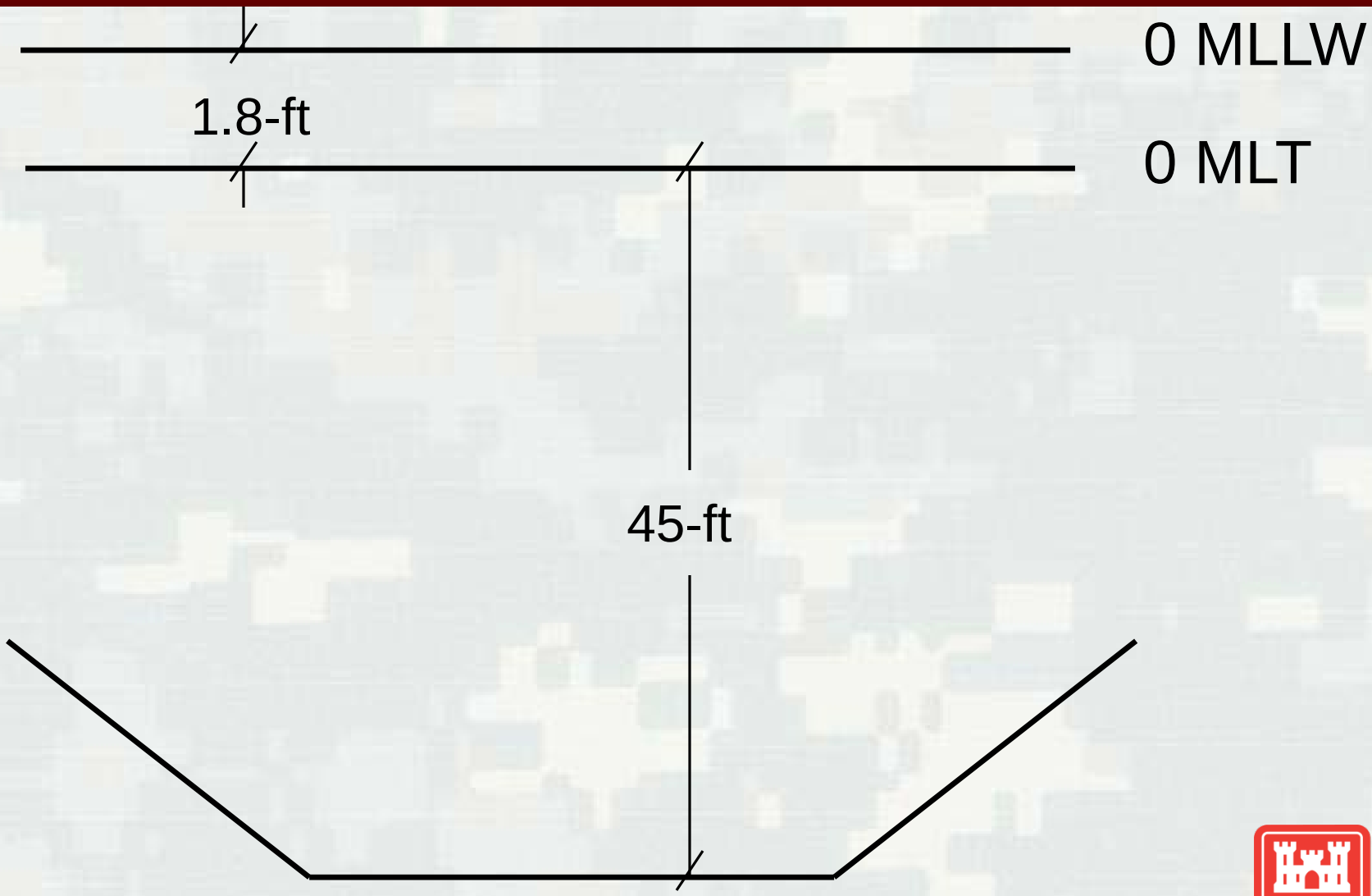
EXAMPLE #2



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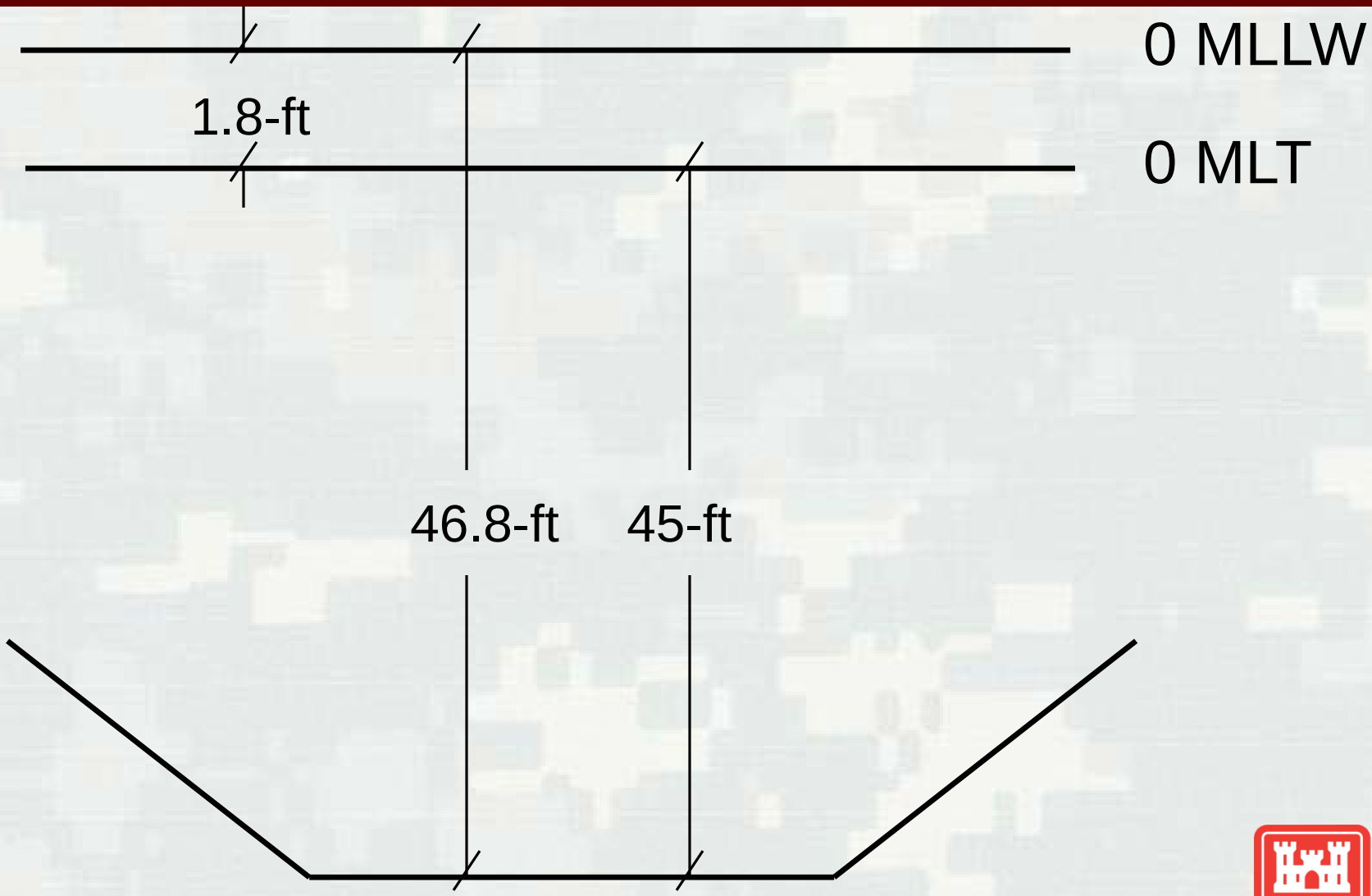

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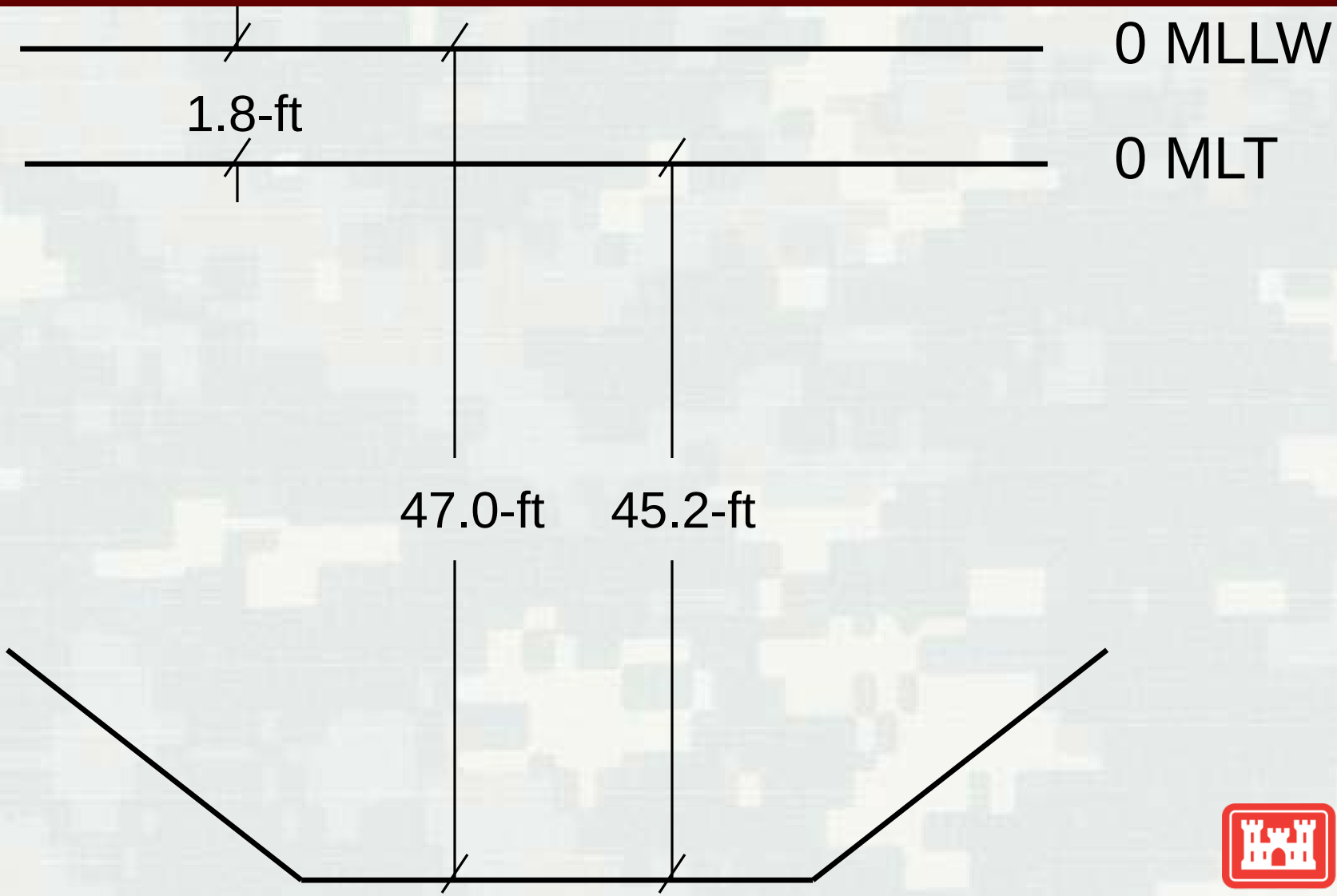

Tide Staff Installation

IMPLEMENTATION OF CONVERSION

- **Phase 1:** Reoccupy monuments associated with active/inactive gages & staffs
  COMPLETE

- **Phase 2:** Determine MLLW in selected coastal reaches
  COMPLETE

- **Phase 3:** Internal Data Analysis
  COMPLETE

- **Phase 4:** Internal / External communications
  Initiated on Feb 6, 2014; Channel-specific coordination; ONGOING

- **Phase 5:** Perform physical changes to project controls, including updating/establishing new tide staffs; ONGOING

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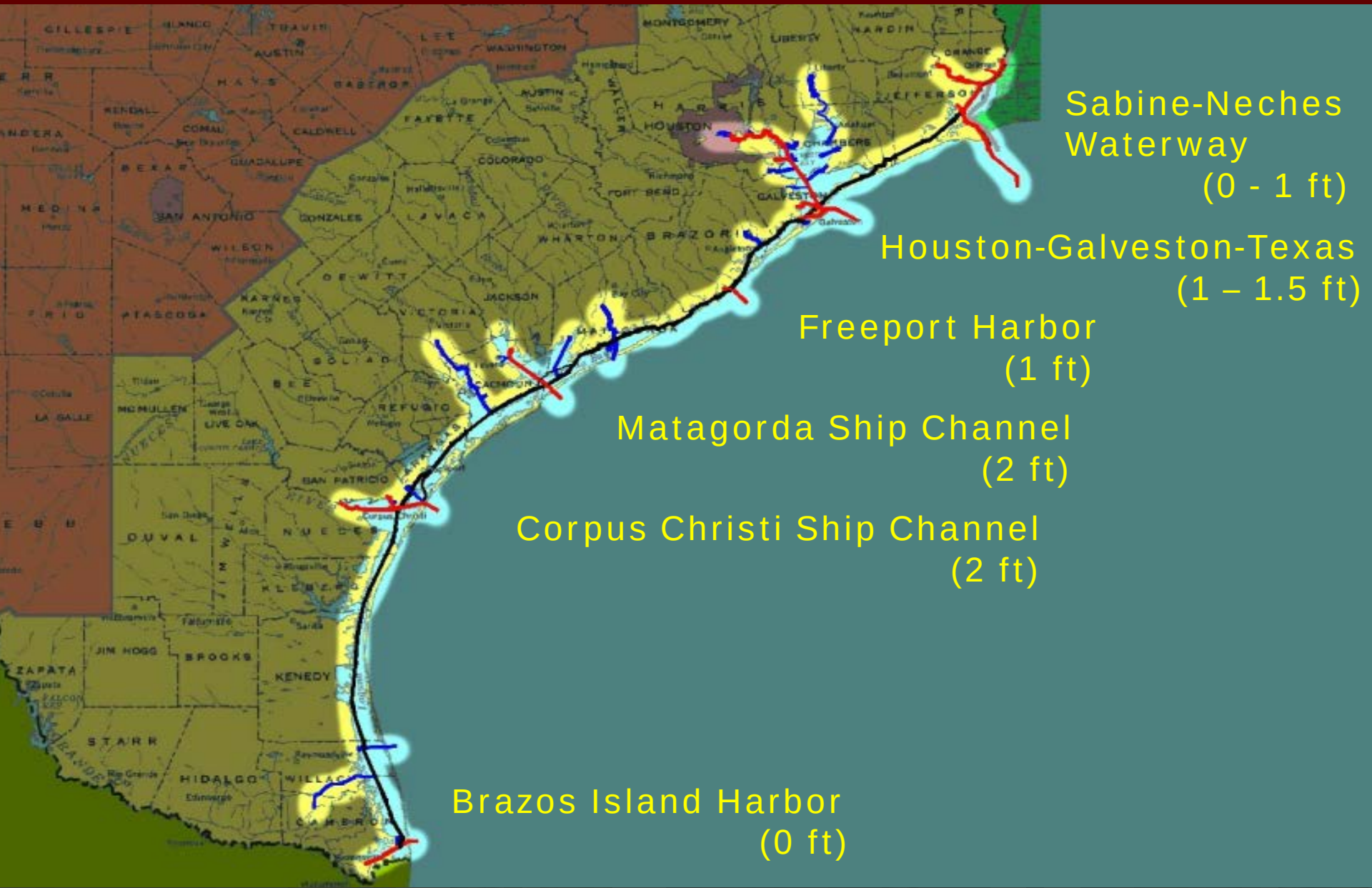

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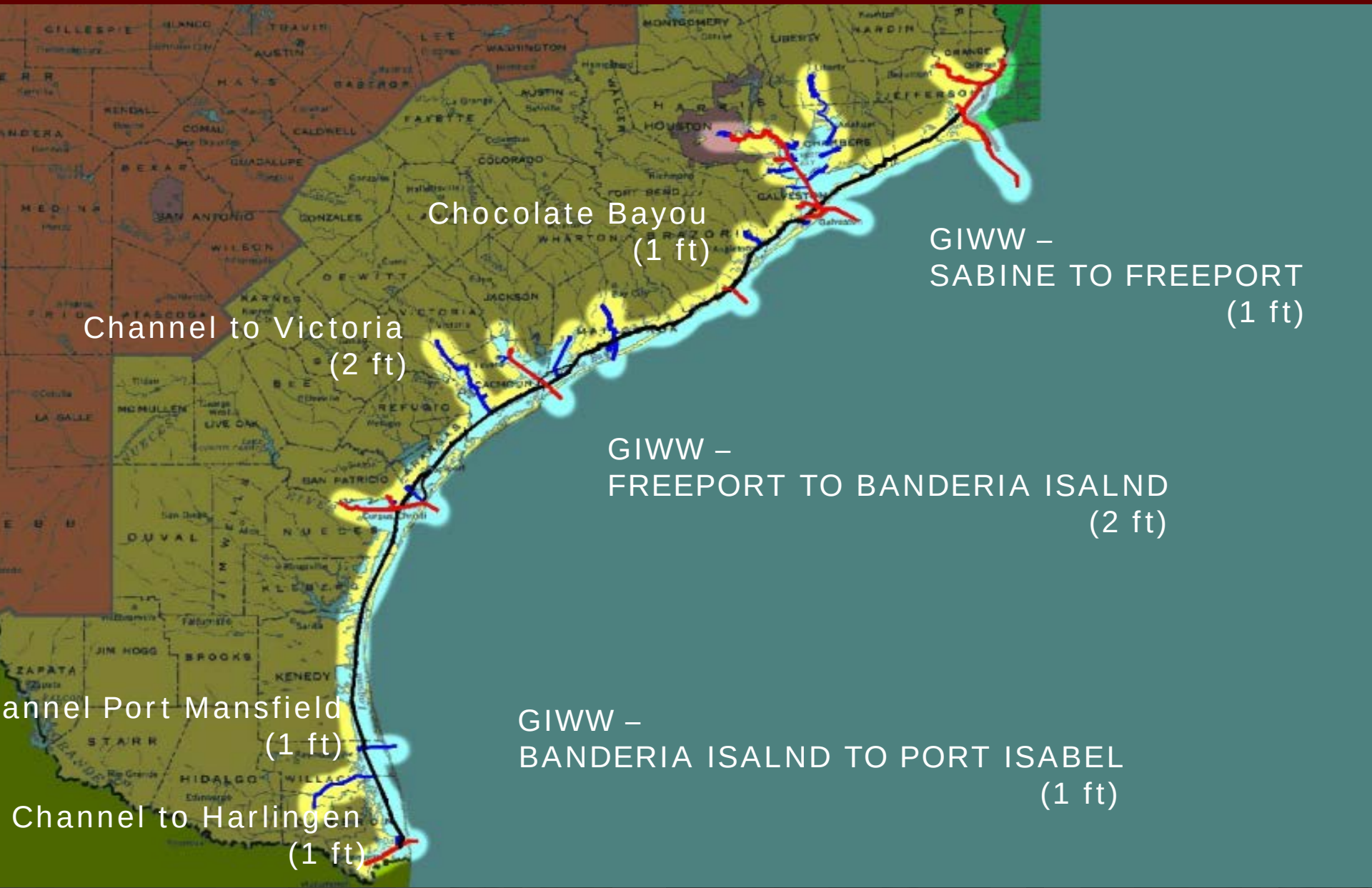

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Questions/Comments?