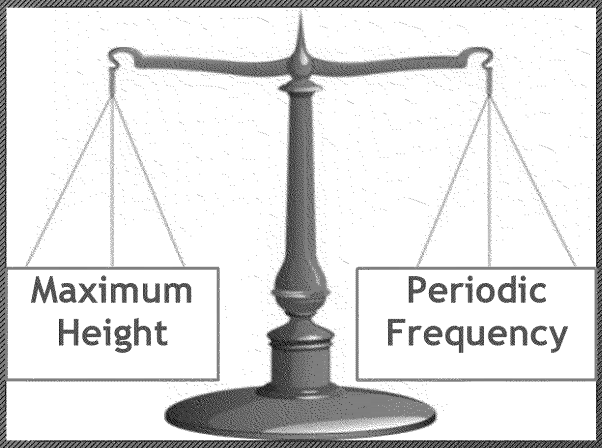
HTL = High Tide Line

- Landward Extent of Clean Water Act Jurisdiction in Tidally Influenced Waters of the United States
- Regulatory Definition:
  - **Maximum height** reached by a rising tide
  - Encompasses
    - **Spring high tides** &
    - Other high tides that occur with **periodic frequency**,
  - But ***not*** storm surges or other departures from the **predicted reach** of the tide
- Intent (from the Preamble):
  - Many types of aquatic areas along the coast are above the mean higher high mark (MHHW)
  - HTL includes those "inundated with sufficient frequency & regularity to be included as **part of the aquatic resource**"

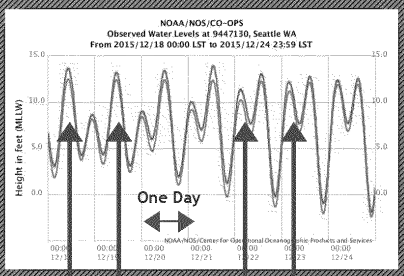
So, what's the problem?

- Not tied to a specific tidal datum
- Defined only in the Corps' regs, not EPA's
- And…



Tidal Cycles

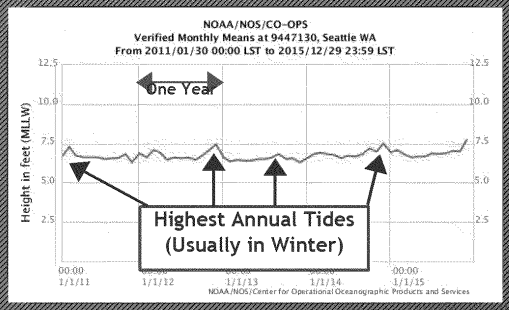
Daily (Mixed Semi-diurnal)



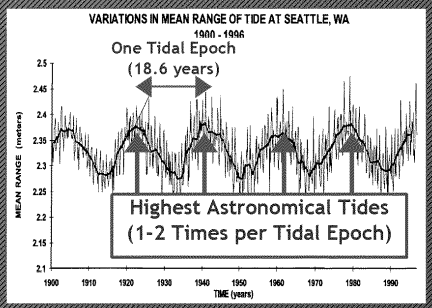
Higher Daily Highs

Lower Daily Highs

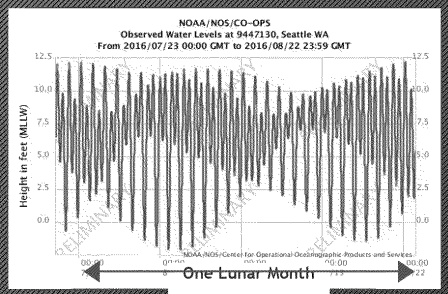
Annual



Epochal



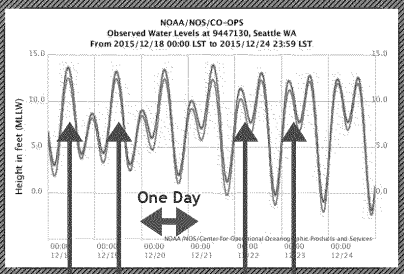
Bi-monthly



Spring Tides
(Twice per Lunar Month)

A veritable "tide" of…

Daily (Mixed Semi-diurnal)



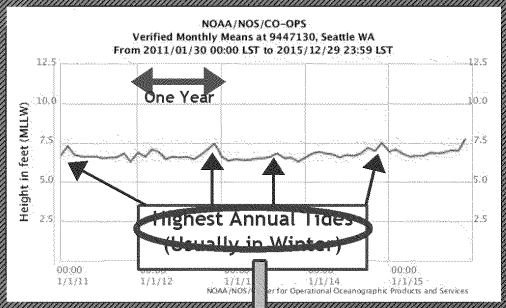
Higher Daily Highs

Lower Daily Highs

Mean Higher High Water (MHHW)

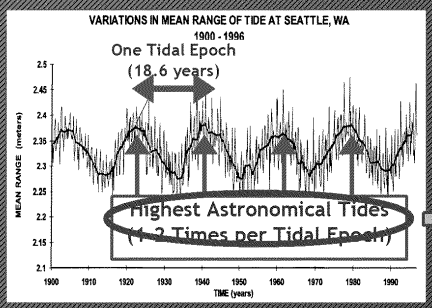
Mean High Water (MHW)

Annual



Mean Highest Annual Tide (MHAT)

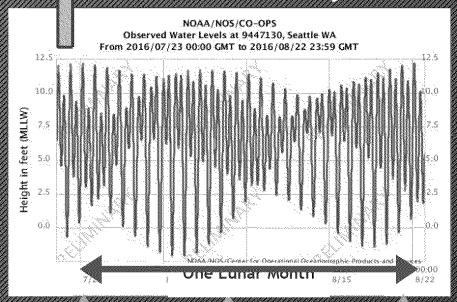
Epochal



(HAT
)

Mean Highest Monthly Tide (MHMT)

Bi-monthly



Spring Tides
(Twice per Lunar Month)

Mean Spring High Tide

FANTASTIC TIDAL DATUMS !!!

COMIC BOOK

FANTASTIC TIDAL DATUMS

An obscure physical oceanographer entombed

in the

Ocean (Tides) and Lake Levels Division

of the

Office of Ocean and Earth Sciences

of the

National Ocean Service

of the

National Oceanic and Atmospheric Administration

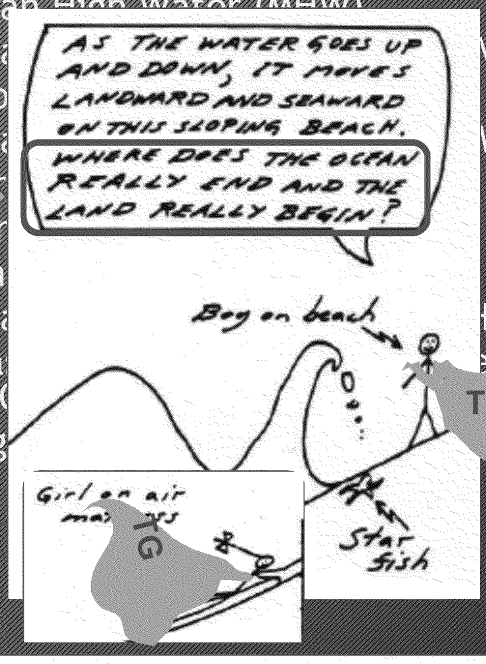
of the

U.S. Department of Commerce

"Department of Commerce?" "Yes, Commerce!"

1988

- Mean High Water (MHW)
- Mea V)
- Tro
- Mea HT)
- Spr
- Per
- Kin
- Mea HT)
- Wa er Mark (WC
- Hig



Send these kids with their smarty pants questions back to summer school in Kansas.

Six or More Different Answers!

What Datum Does the Corps Use for "High Tide Line" in Each State?[1]

Legend

- HAT-ish — Elevation Unique to District; close to Highest Astronomical Tide
- HPT — Highest Predicted (Annual) Tide
- SHTL — "Spring High Tide Line" (same as HPT if highest; lower if mean)
- MHHW — Mean Higher High Water
- MHW — Mean High Water
- ??? — District website &/or posted documents reference multiple datums
- ??? — District website &/or posted documents give no indication or reference only "high tide line"

Alaska

HAT-ish

Two Different Approaches in Region 10

"Been doin' it this way since 1974"!

MHHW

MHHW

???

HPT

HPT

Coast

Isn't the HTL definition from 1977?

TG

TB

Hawaii

North & Mid-Atlantic

HPT

HPT

SHTL

HPT

MHW

SHTL

Gulf of Mexico & South Atlantic

HAT-ish

SHTL

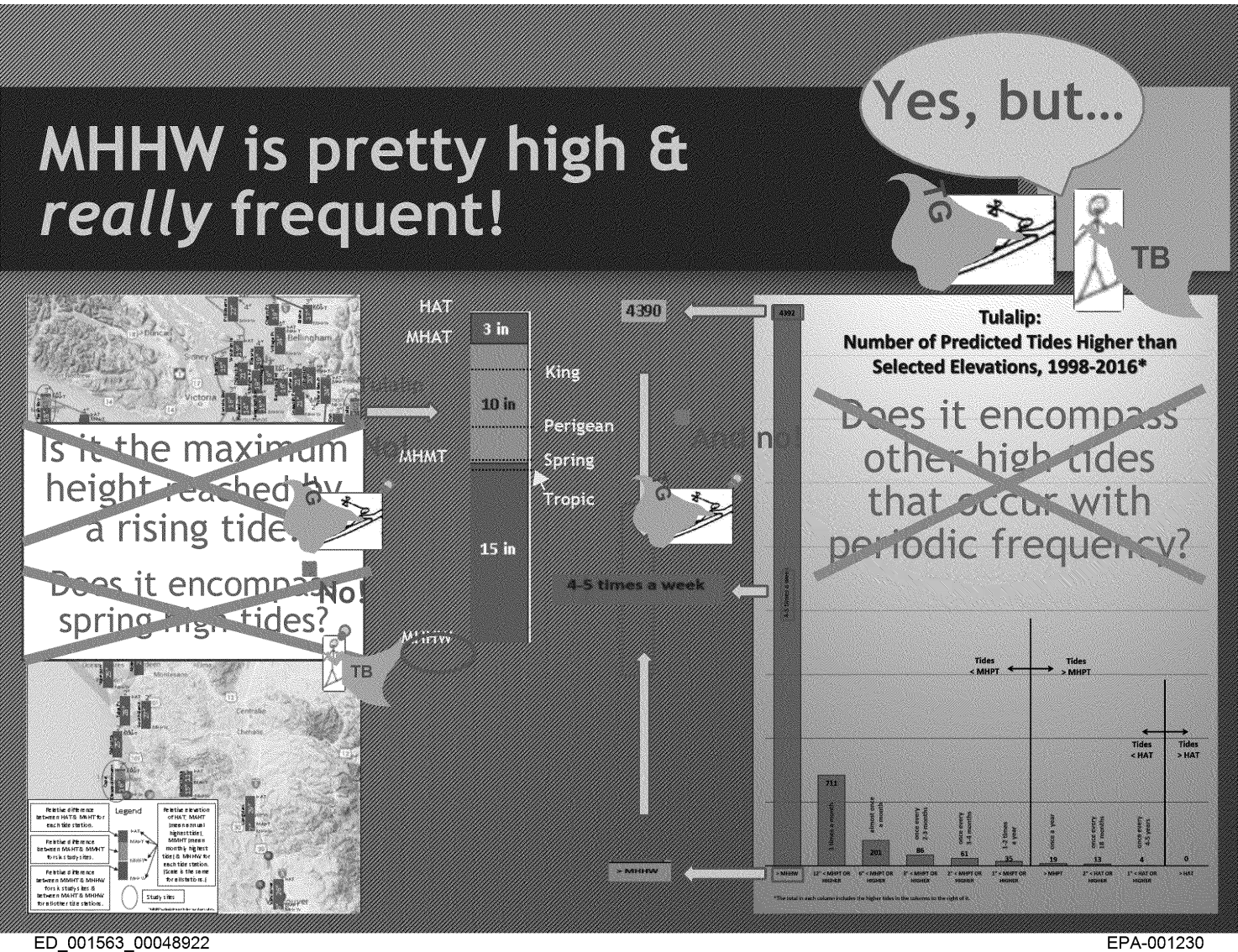
MHW

???

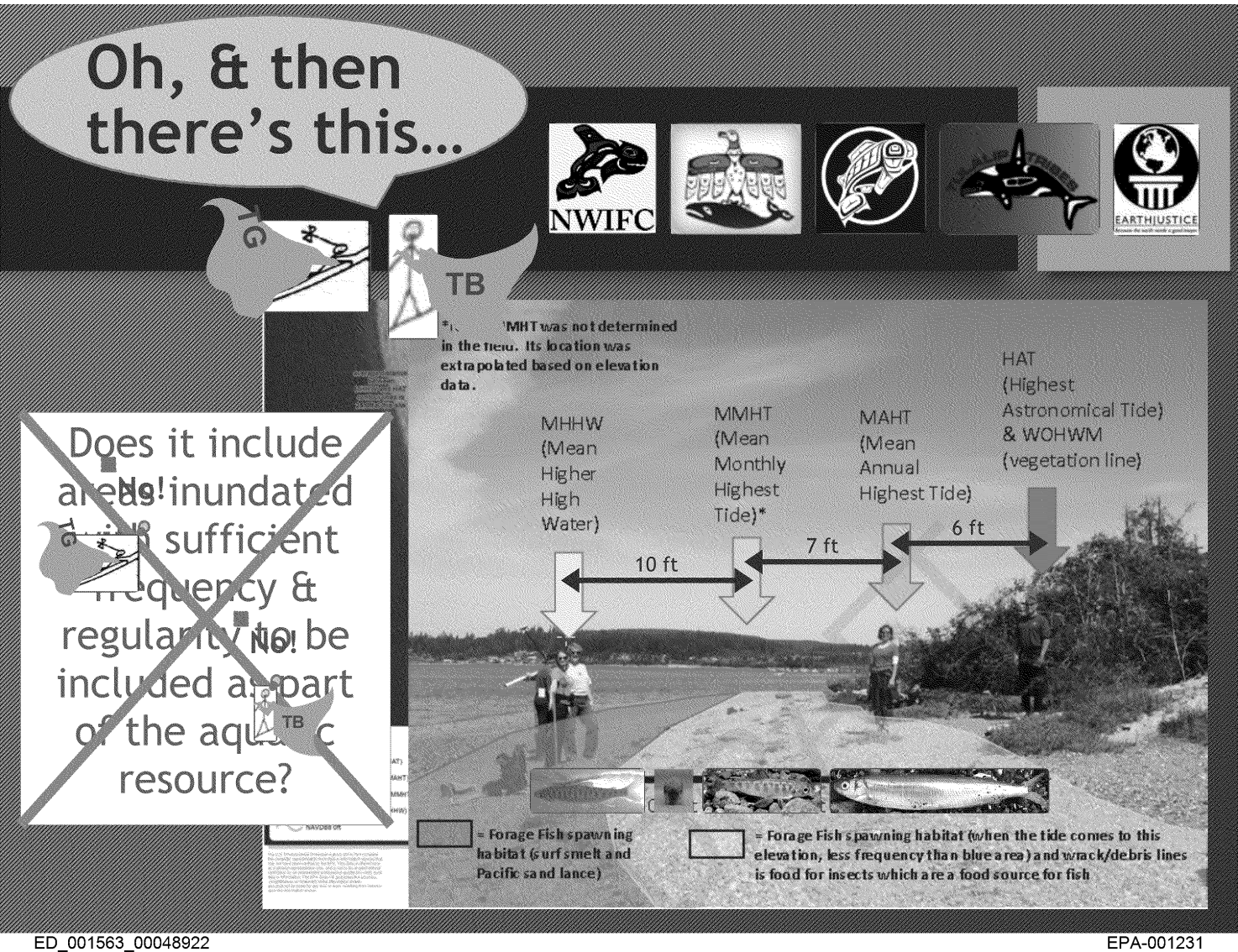
???

MHW

[1]There are 20 Corps Districts with tidally influenced waters: Alaska, Baltimore, Charleston, Galveston, Honolulu, Jacksonville, Los Angeles, Mobile, New England, New Orleans, New York, Norfolk, Philadelphia, Portland, Sacramento, San Francisco, Savannah, Seattle, Vicksburg, & Wilmington. Some Districts (i.e., Mobile, New England, New York, Philadelphia, & Vicksburg) cover tidally influenced areas in multiple states, while some states (i.e., California, Louisiana, Mississippi, & New Jersey) fall within more than one Corps District.


MHHW is pretty high & *really* frequent!
Yes, but...
TG
TB
HAT
MHAT
3 in
King
10 in
Perigean
MHMT
Spring
Tropic
15 in
4-5 times a week
4390
Tulalip:
Number of Predicted Tides Higher than Selected Elevations, 1998-2016*
Does it encompass other high tides that occur with periodic frequency?
Is it the maximum height reached by a rising tide?
Does it encompass spring high tides?
No!
Tides < MHPT
Tides > MHPT
Tides < HAT
Tides > HAT
711
201
86
61
35
19
13
4
0
> MHHW
Legend
Study sites

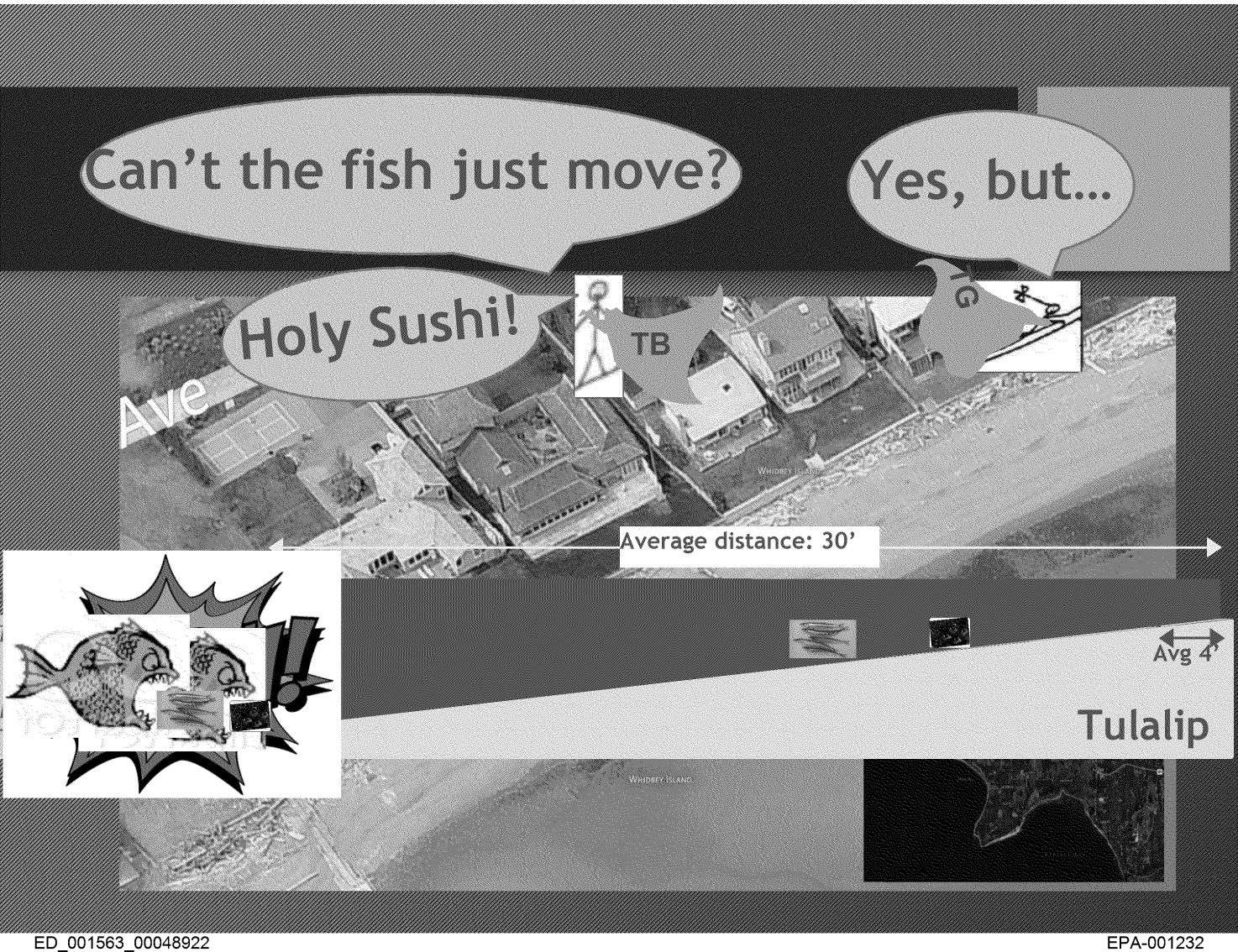
Oh, & then there's this…



Does it include areas inundated with sufficient frequency & regularity to be included as part of the aquatic resource?

No!

No!


Can't the fish just move?
Yes, but…
Holy Sushi!
TB
TG
Ave
Average distance: 30'
Avg 4'
Tulalip
Whidbey Island

So, MHHW doesn't meet the definition & intent of HTL?

Uh….

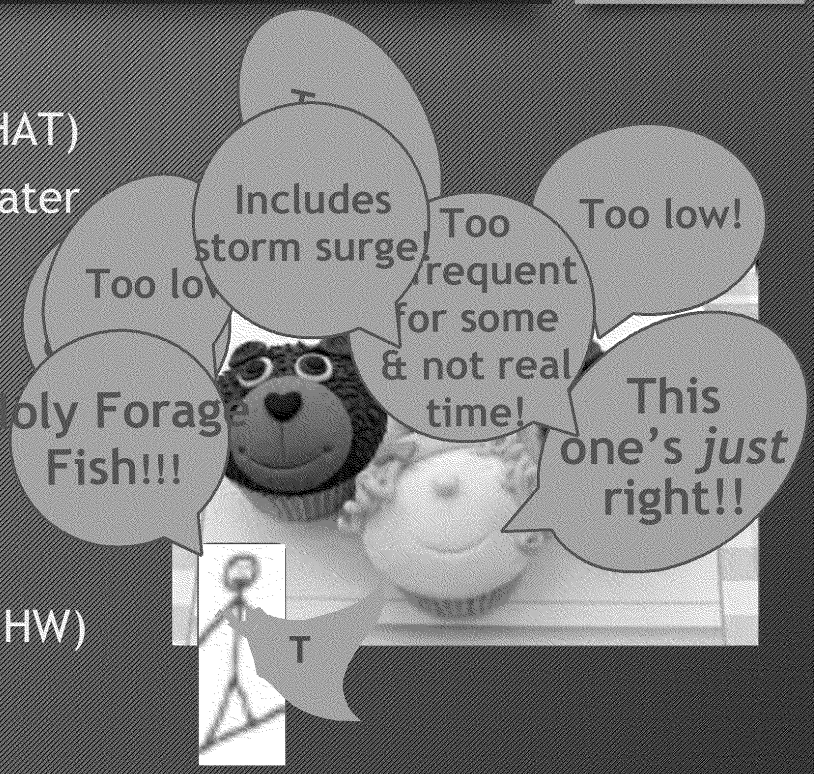
- Maximum height reached by a rising tide
- Encompasses spring high tides
- Encompasses other high tides that occur with periodic frequency
- Does *not* include storm surges
- Includes aquatic areas above MHHW
- Includes areas inundated with sufficient frequency & regularity to be included as part of the aquatic resource

Noooooooo!

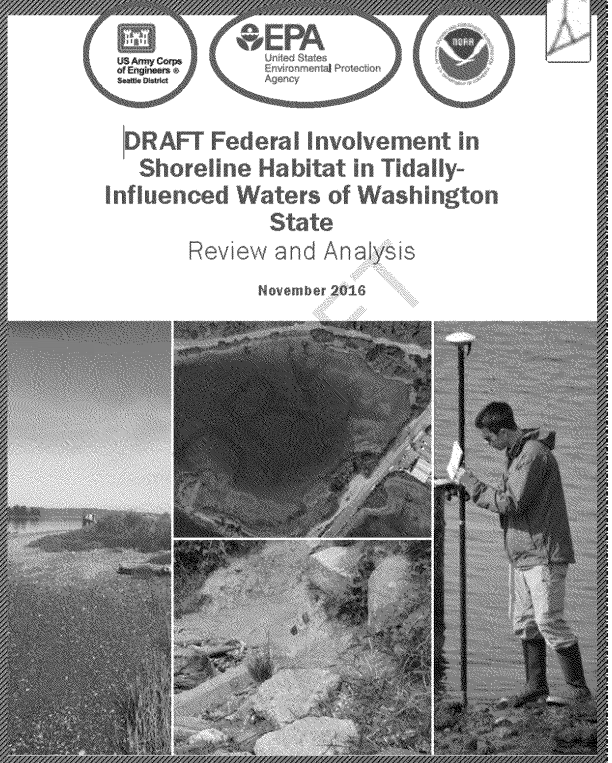
Interagency Workgroup

What are my choices, again?

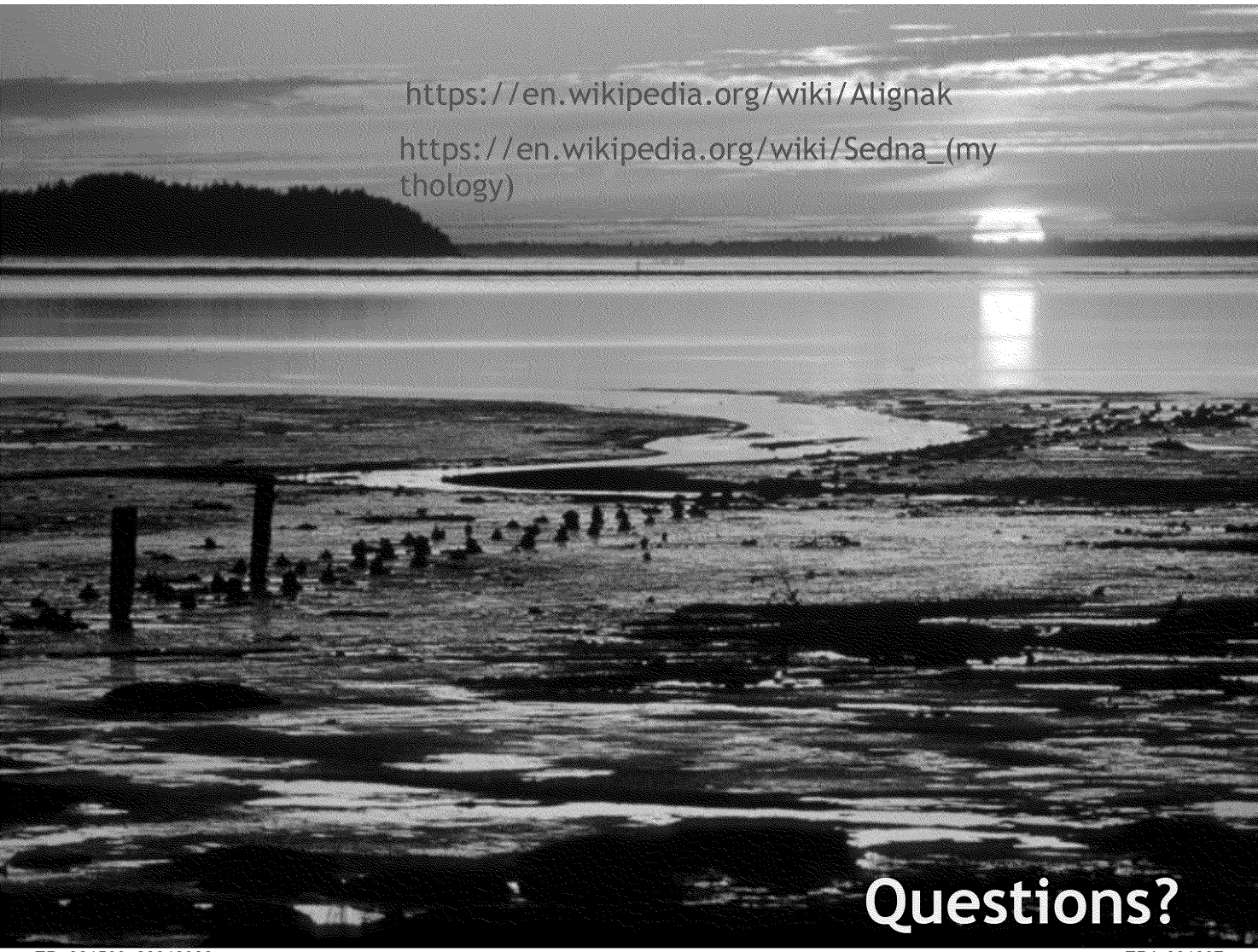
- Highest Astronomical Tide (HAT)
- Washington Ordinary High Water Mark (WOHWM)
- Mean Highest Predicted Tide (MHPT)
- Tropic Higher High Water
- Mean King Tide
- Mean Spring High Tide
- Mean Higher High Water (MHHW)
- Mean High Water (MHW)



Okay, so what now?



Ex. 5 - Deliberative Process


https://en.wikipedia.org/wiki/Alignak
https://en.wikipedia.org/wiki/Sedna_(mythology)
Questions?