

VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison
Potential Grounding Oil Loss

**CASE P: BASE CASE & Reduction Human Error
Incident on Oil Barges by 50%**

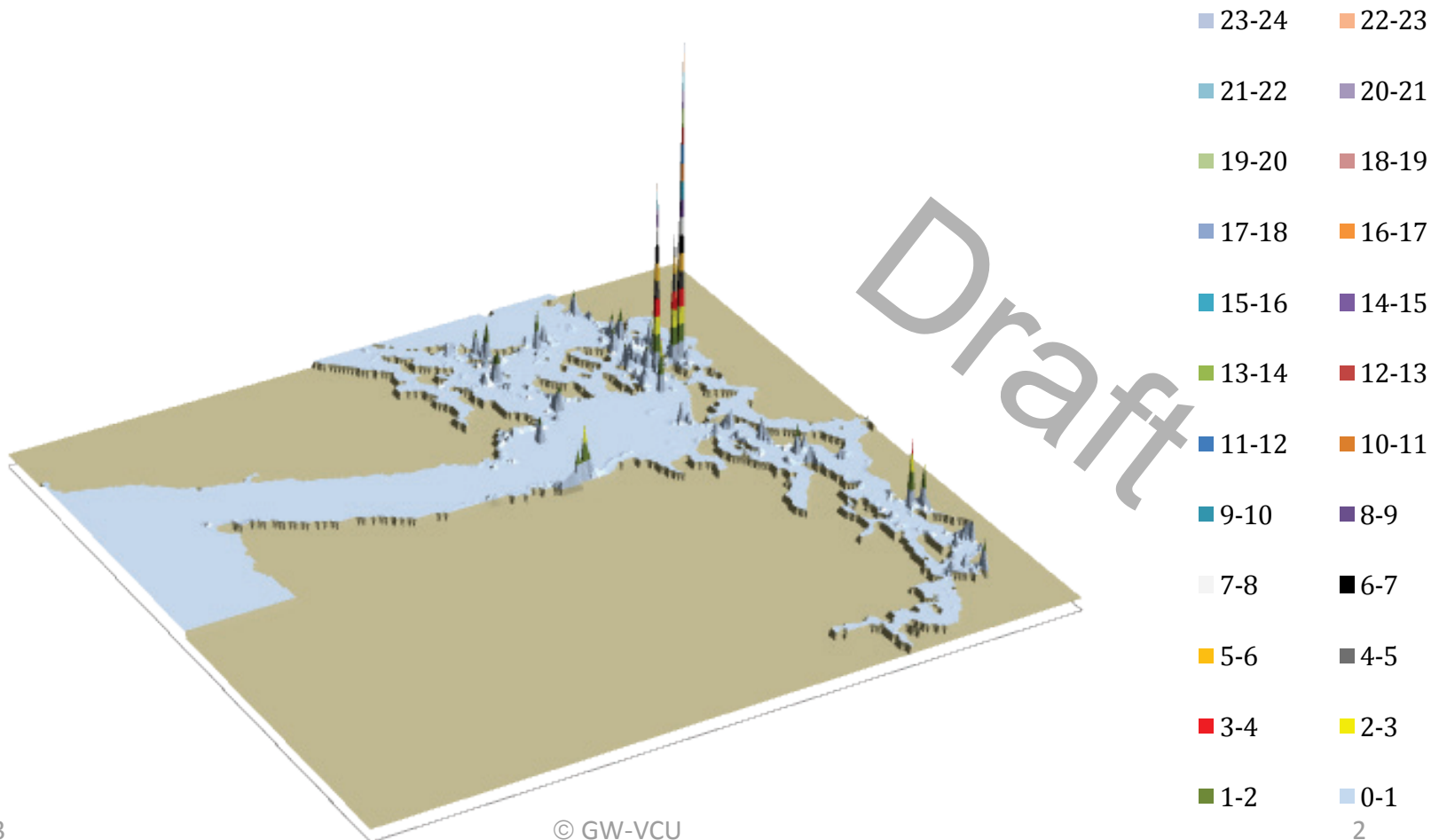
Dr. J. Rene van Dorp and Dr. Jason R.W Merrick

November 2013



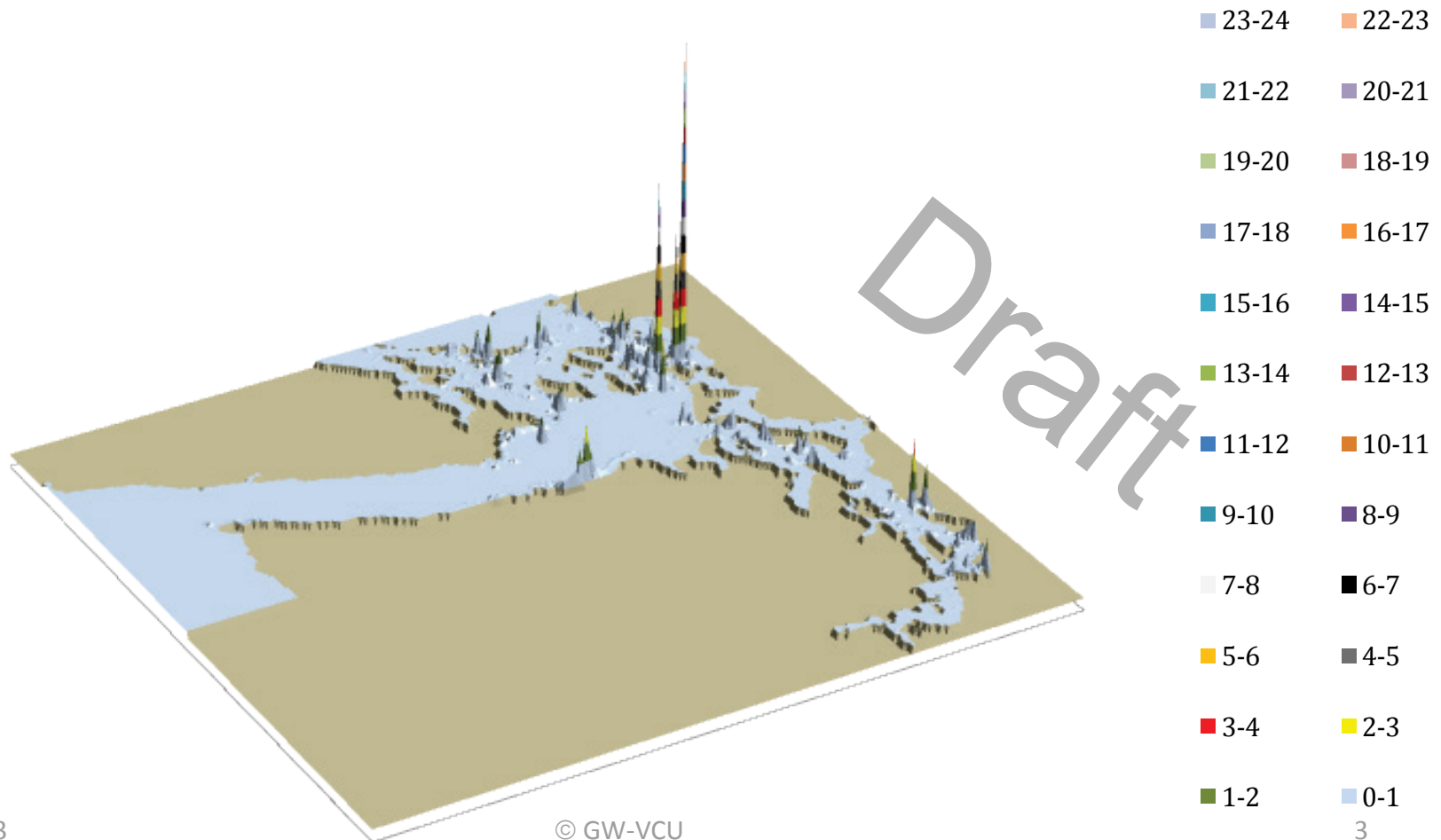
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: Base Case 3D Risk Profile All FV - Pot. Ground. Oil Loss: 100% of Base Case PGO



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: BC & OB HE50 3D Risk Profile All FV - Pot. Ground. Oil Loss: 100% of Base Case PGO



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: VTRA 2010 - BASE CASE

100.0%

0.6%

78.7%

60.6%

Factor x Average
Oil Outflow

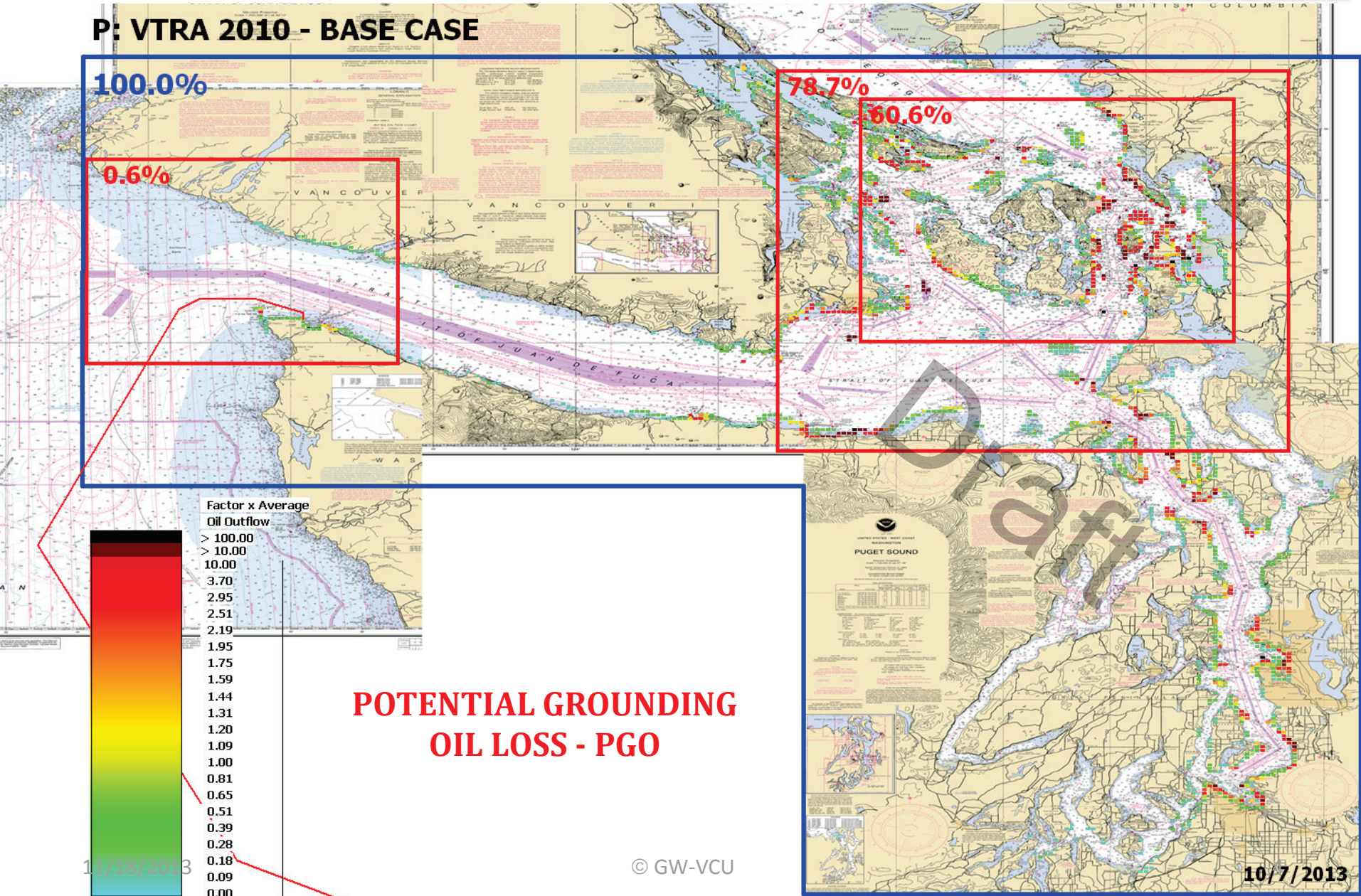
- > 100.00
- > 10.00
- 10.00
- 3.70
- 2.95
- 2.51
- 2.19
- 1.95
- 1.75
- 1.59
- 1.44
- 1.31
- 1.20
- 1.09
- 1.00
- 0.81
- 0.65
- 0.51
- 0.39
- 0.28
- 0.18
- 0.09
- 0.00

POTENTIAL GROUNDING
OIL LOSS - PGO

11/18/2013

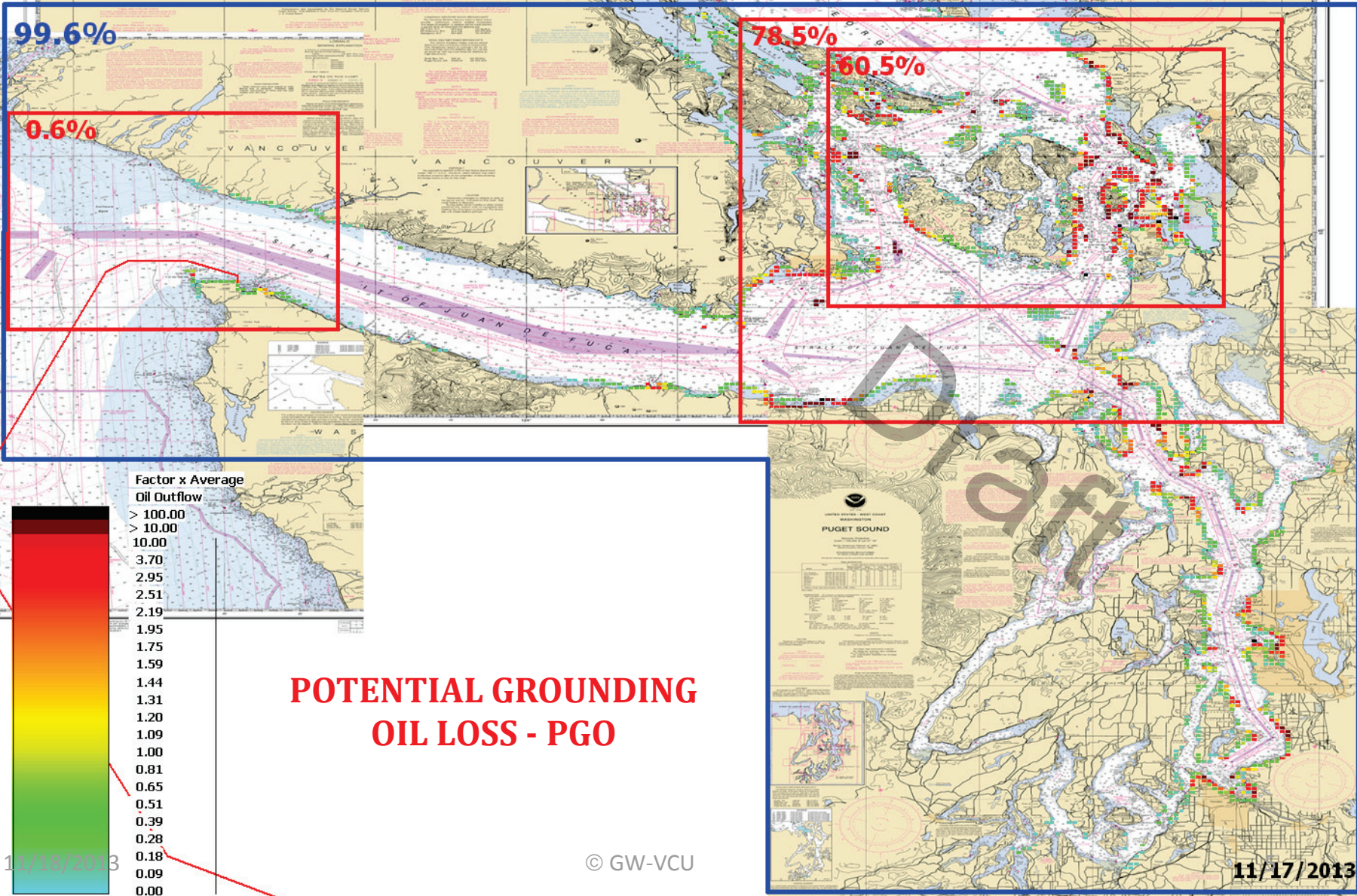
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10/7/2013



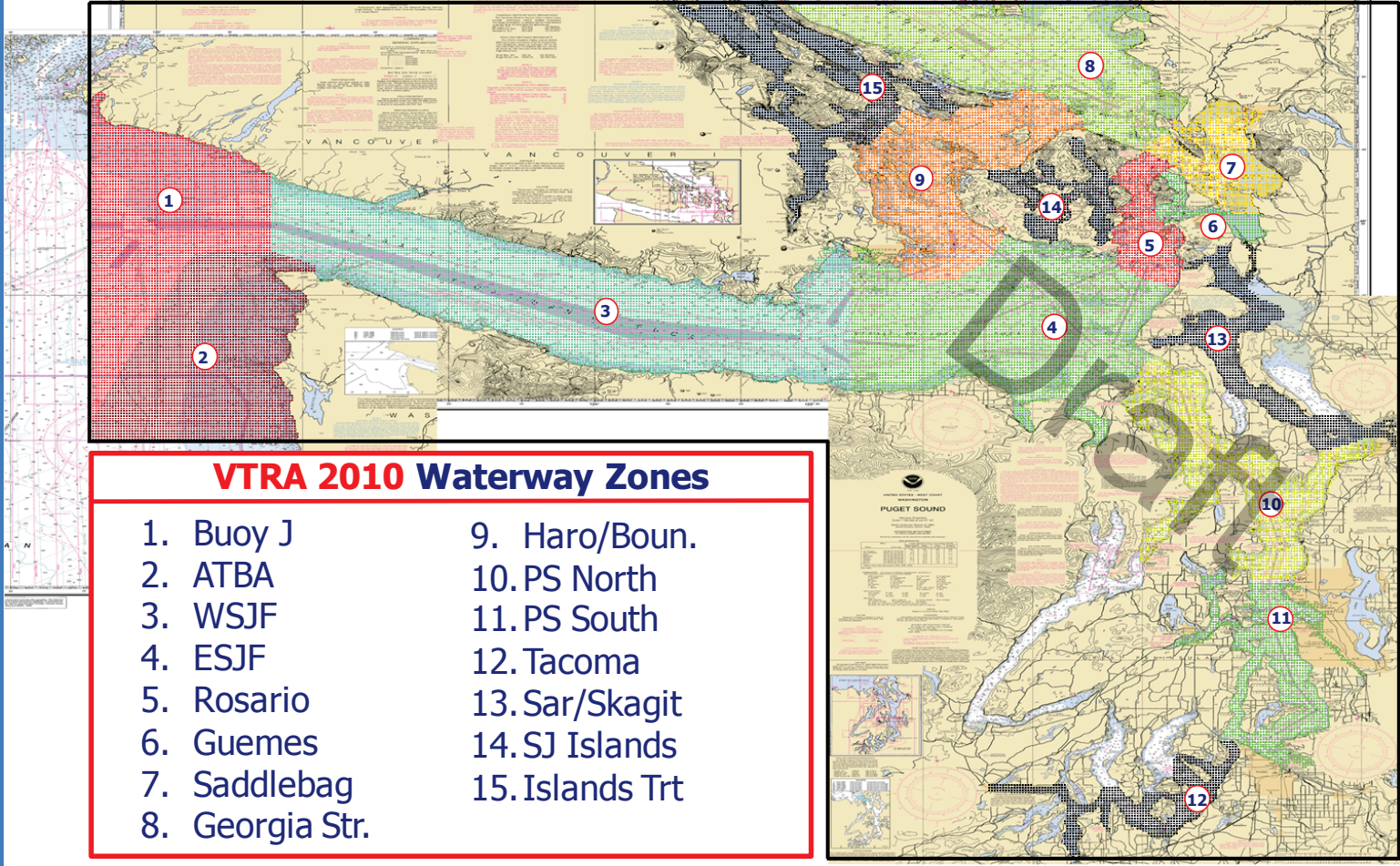
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: VTRA 2010 - BASE CASE & HUMAN ERROR OIL BARGE @ 50% - ALL FV



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

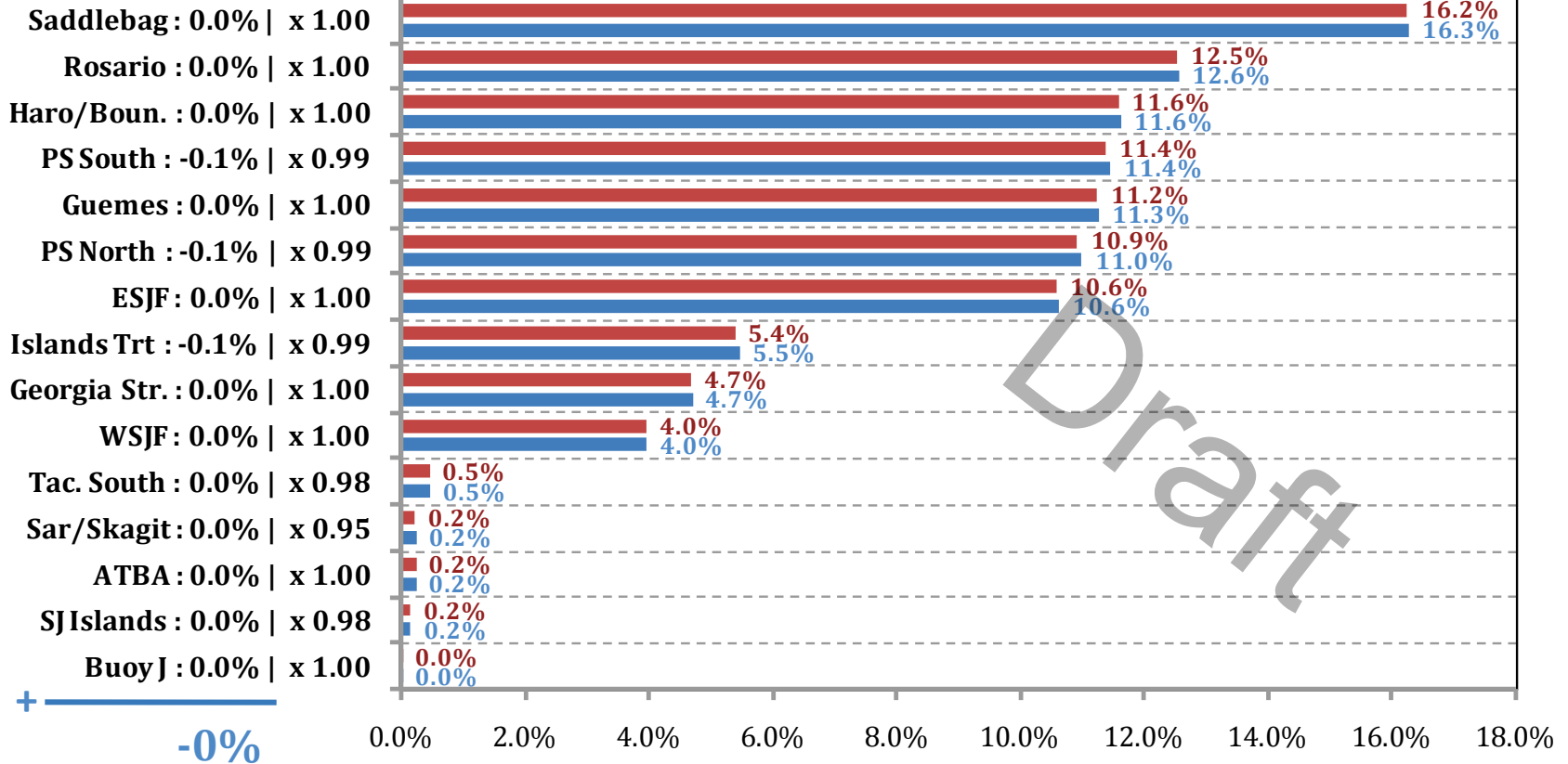
DEFINITION OF 15 WATERWAY ZONES



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Grounding Oil Loss - ALL_FV

Waterway Zone:



% Base Case Grounding Oil Loss (GOL) - ALL_FV

■ P: BC & OB HE50: 100% (0% | x 1.00)

■ P: Base Case: 100%