

VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison
Potential Grounding Oil Loss

CASE T – GW 487 – KM 348 – DP 415

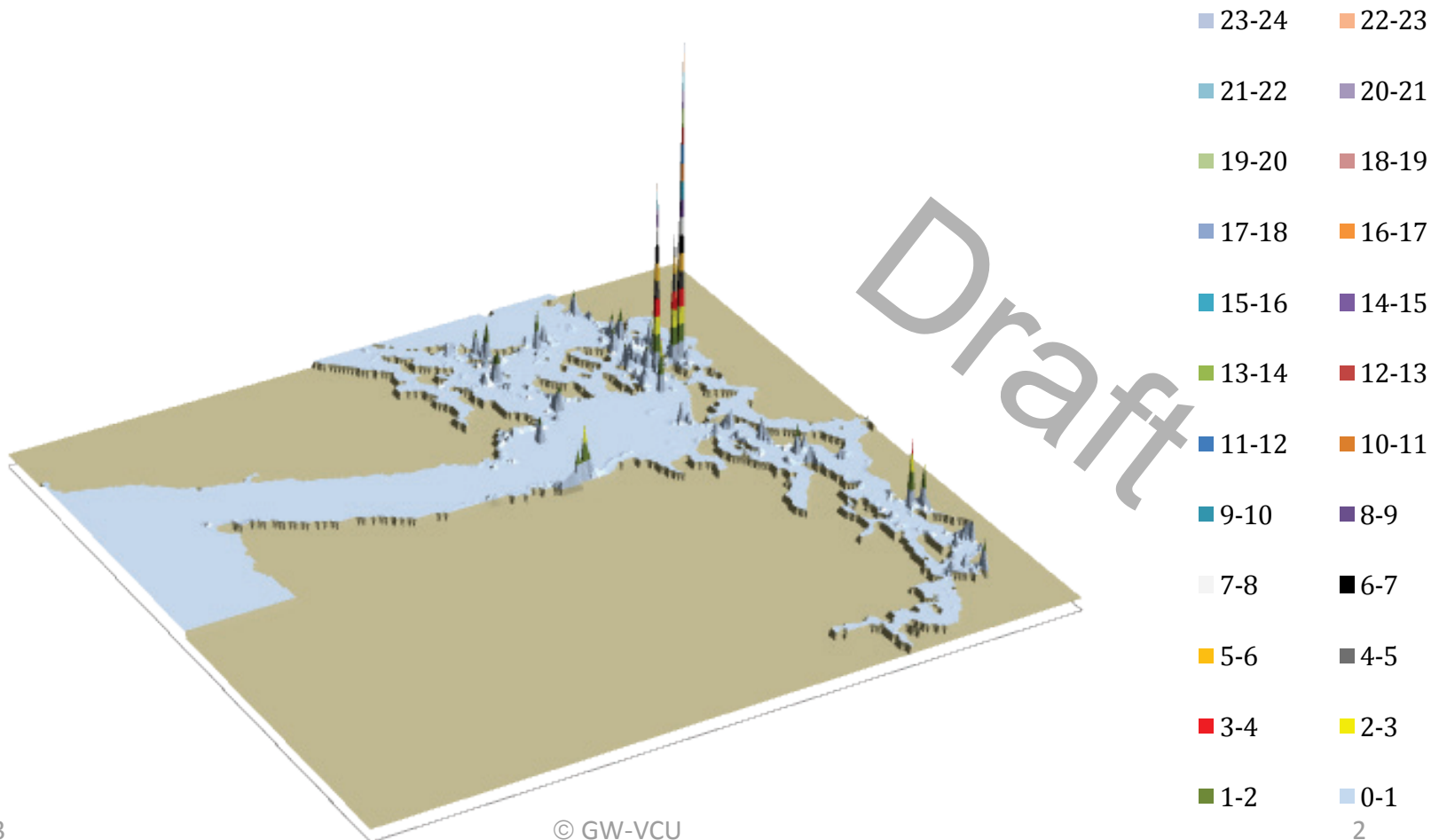
Dr. J. Rene van Dorp and Dr. Jason R.W Merrick

November 2013



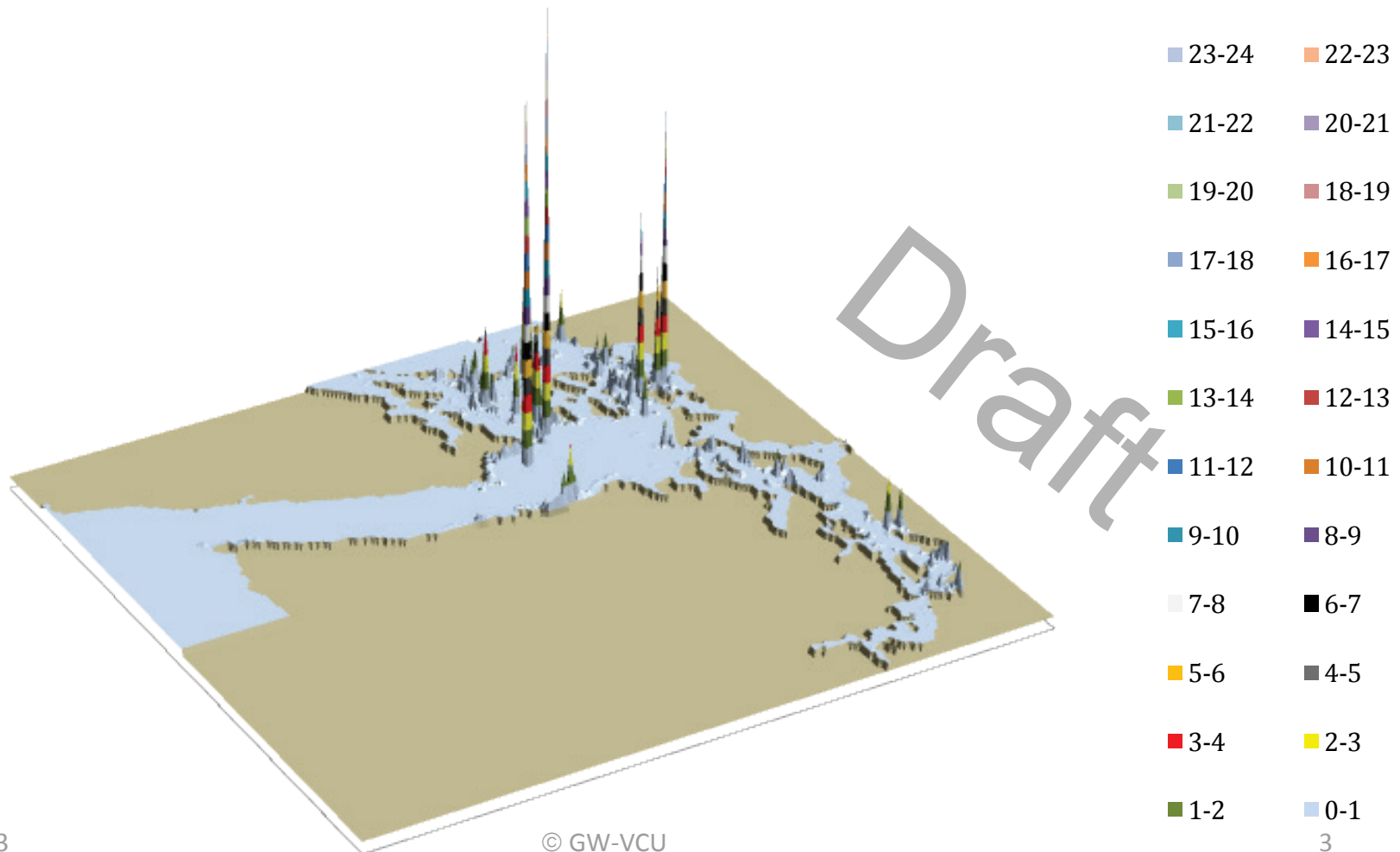
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP 3D Risk Profile All FV - Pot. Ground. Oil Loss: 159% of Base Case PGO



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

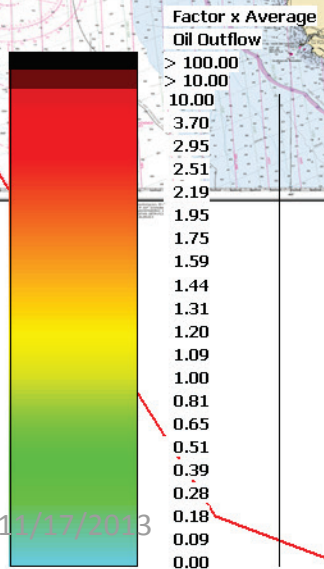
P: VTRA 2010 - BASE CASE

100.0%

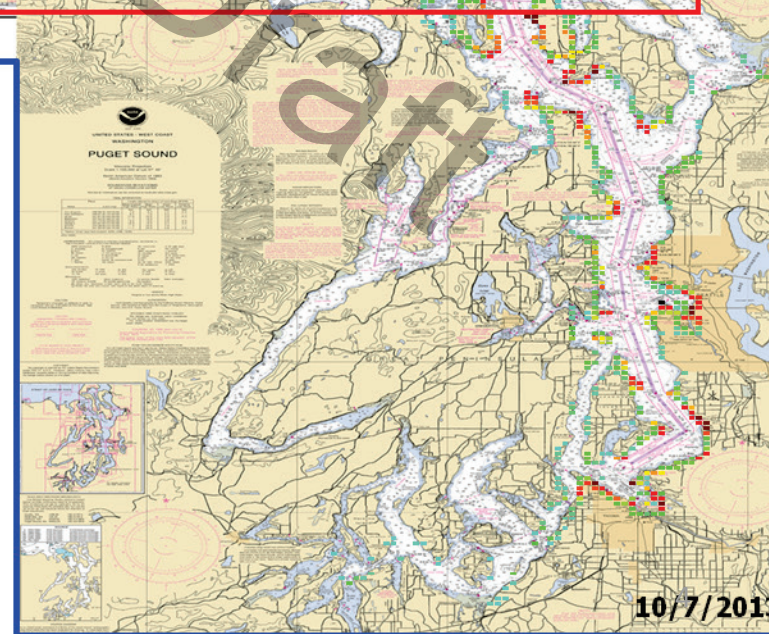
0.6%

78.7%

60.6%



POTENTIAL GROUNDING OIL LOSS - PGO



11/17/2013

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VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW 487- KM 348 - DP Cont. 67 and Bulk 348 - ALL FV

159.3%

0.8%

137.7%

102.4%

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

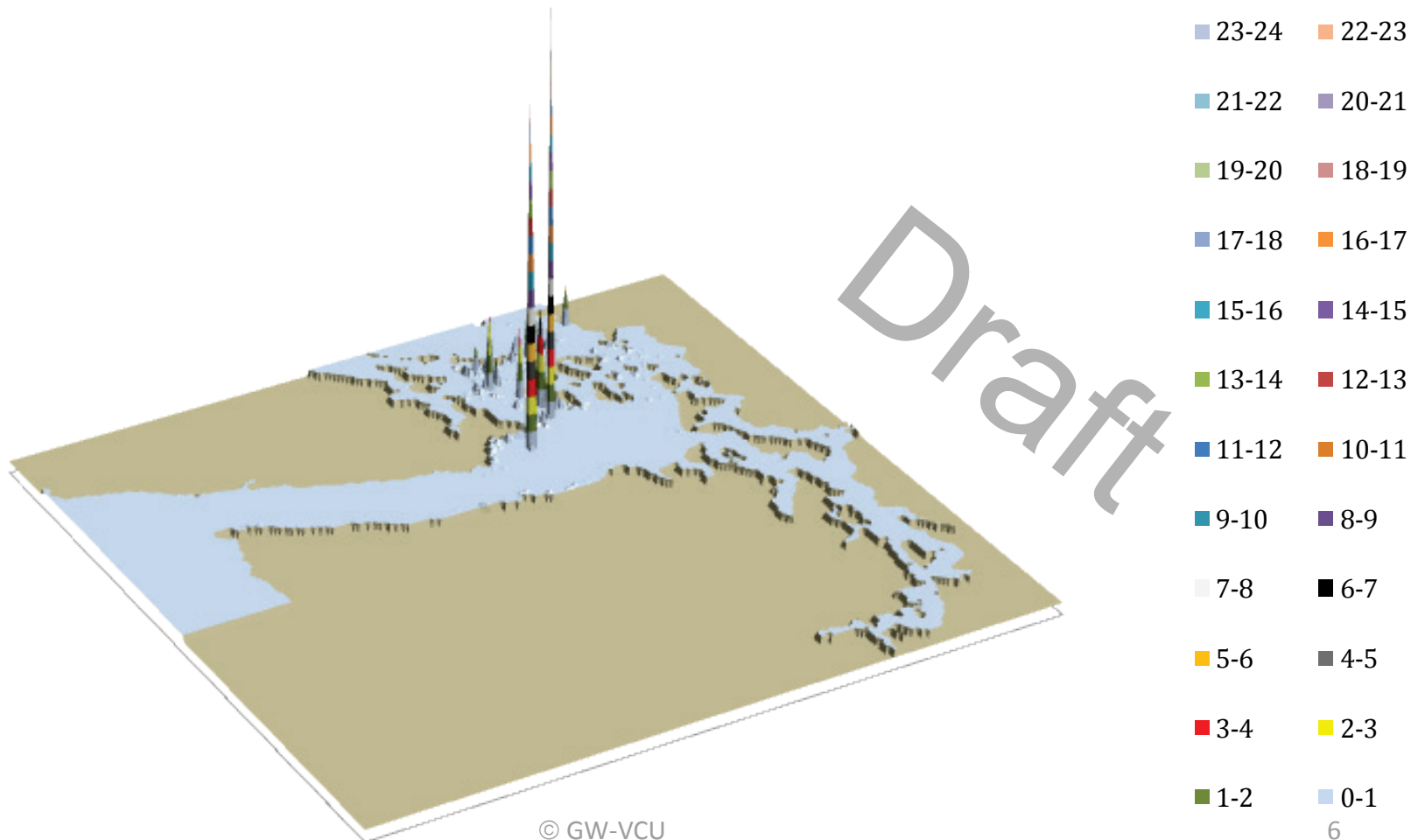
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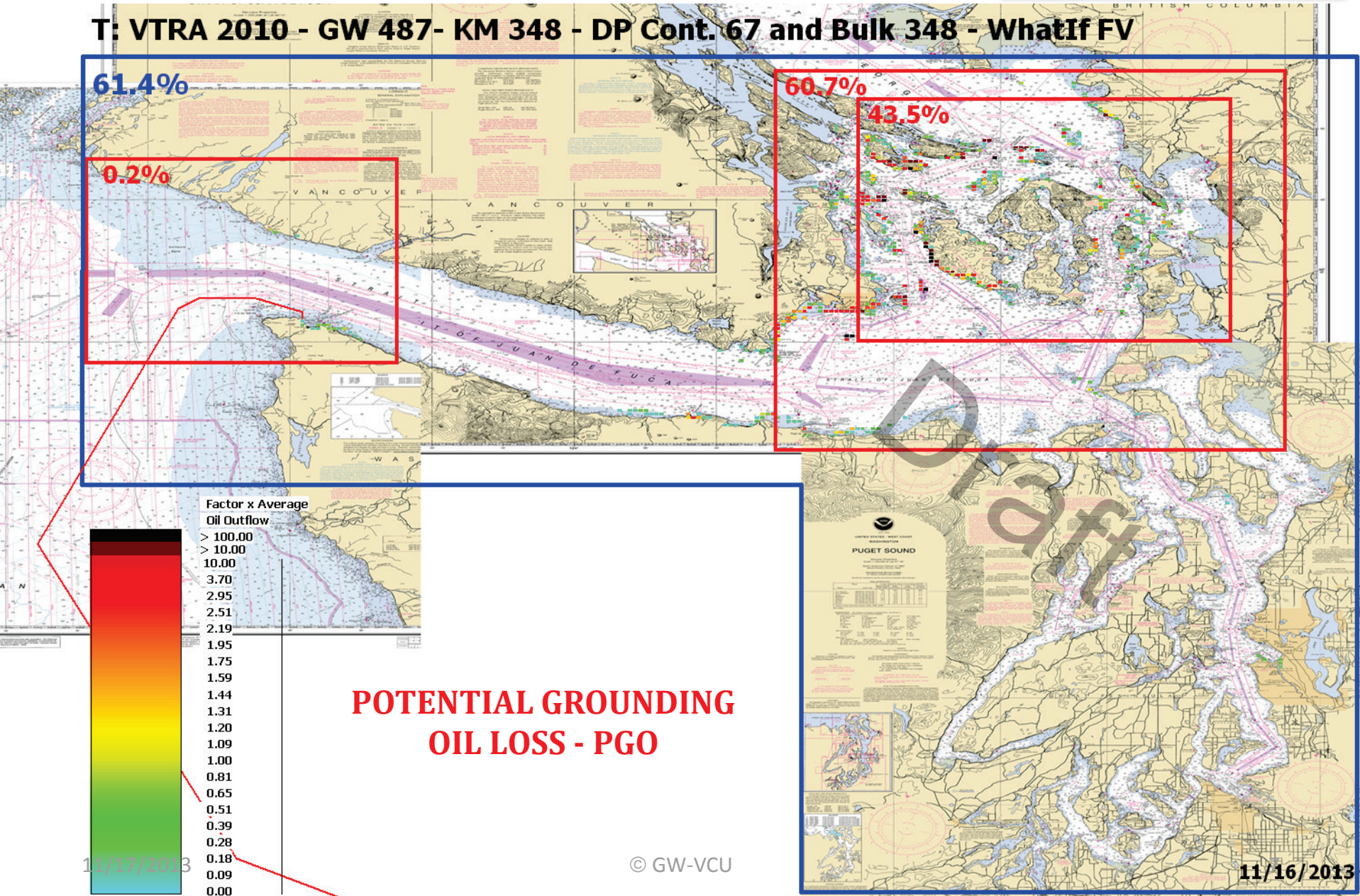
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP 3D Risk Profile What-If FV - Pot. Grou. Oil Loss: 61% of Base Case PGO



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW 487- KM 348 - DP Cont. 67 and Bulk 348 - WhatIf FV



POTENTIAL GROUNDING OIL LOSS - PGO

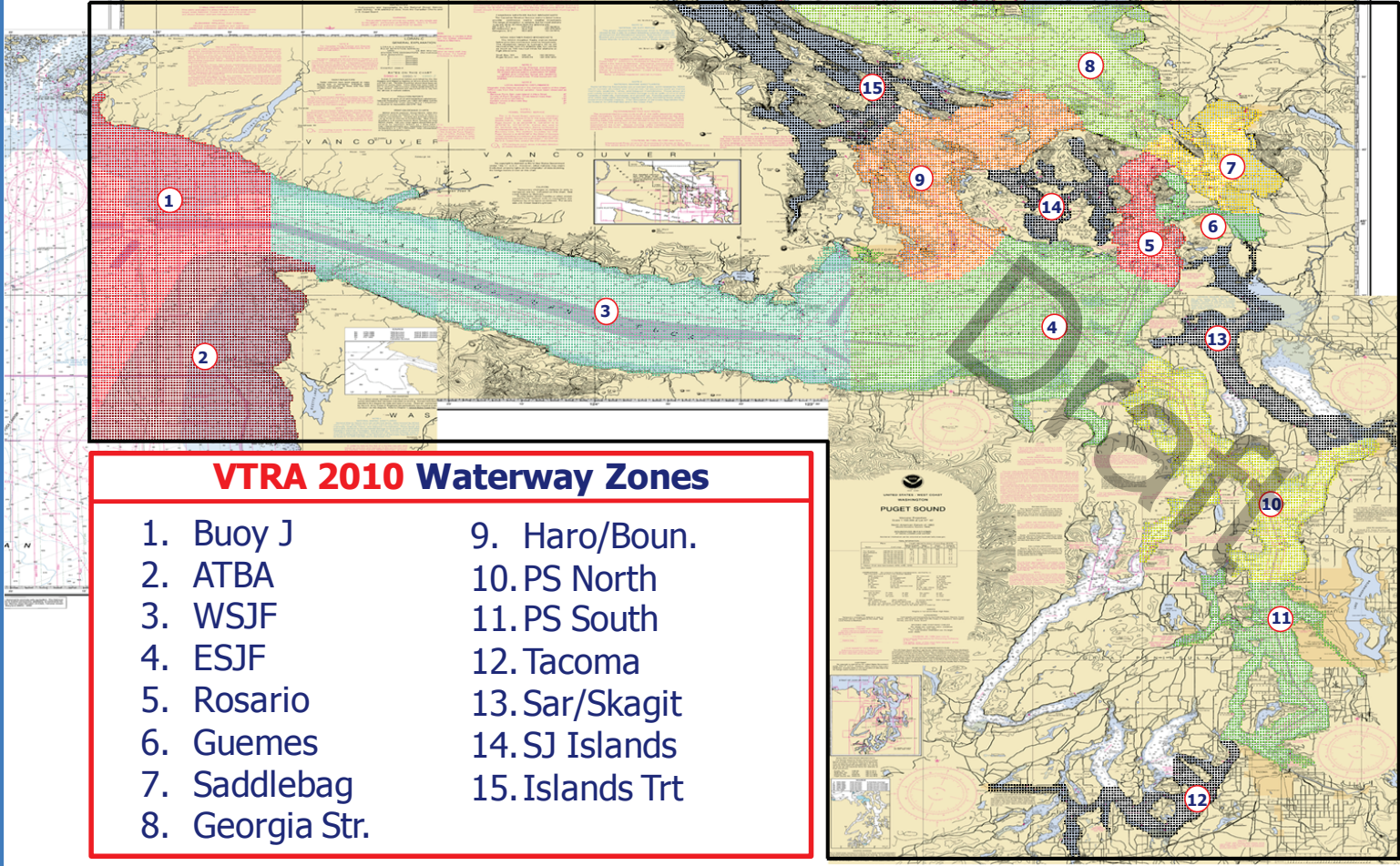
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VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

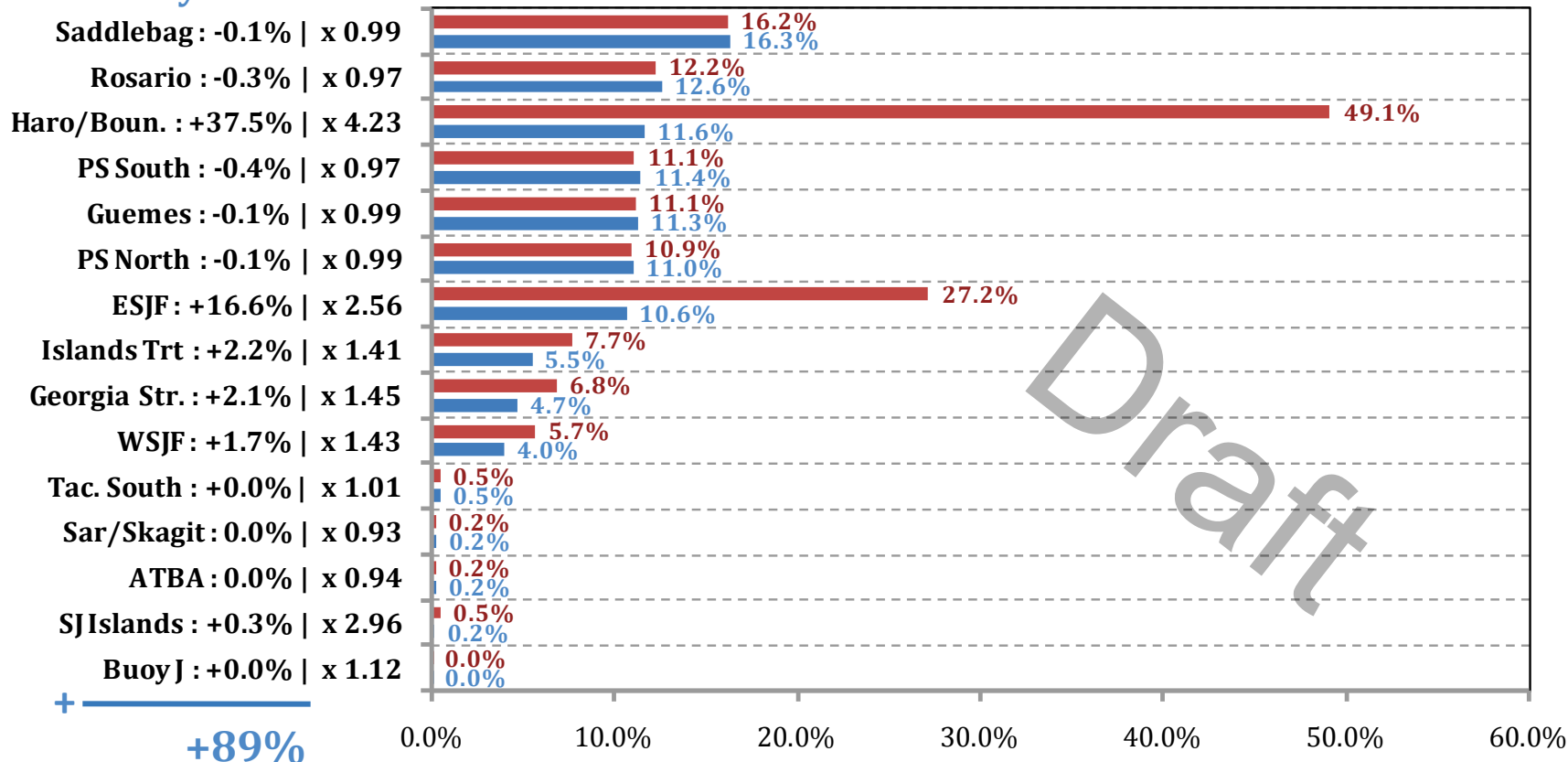
DEFINITION OF 15 WATERWAY ZONES



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Grounding Oil Loss - ALL_FV

Waterway Zone:



% Base Case Grounding Oil Loss (GOL) - ALL_FV

■ T: GW - KM - DP : 159% (+59% | x 1.59)

■ P: Base Case: 100%

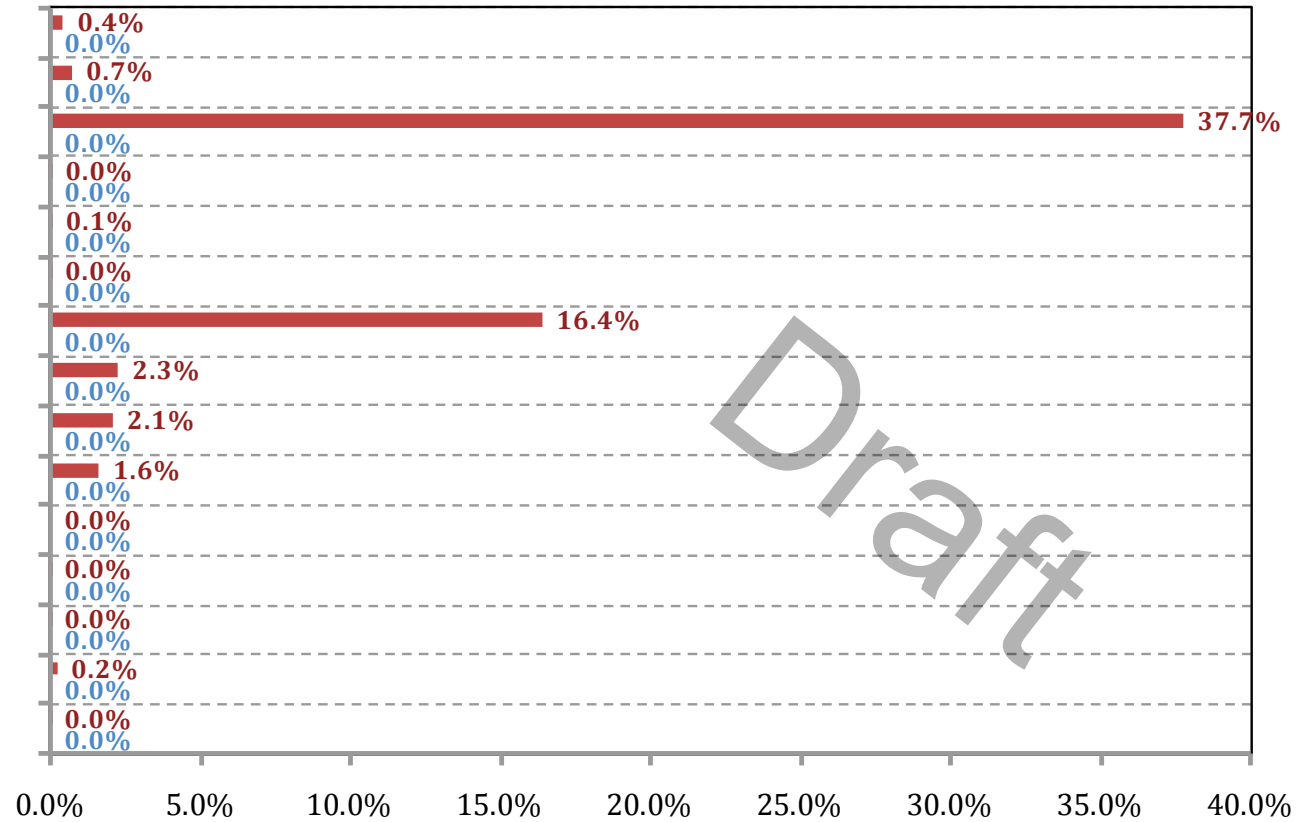
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Grounding Oil Loss - WhatIf

Waterway Zone:

- Saddlebag : +0.4%
- Rosario : +0.7%
- Haro/Boun. : +37.7%
- PS South : +0.0%
- Guemes : +0.1%
- PS North : +0.0%
- ESJF : +16.4%
- Islands Trt : +2.3%
- Georgia Str. : +2.1%
- WSJF : +1.6%
- Tac. South : +0.0%
- Sar/Skagit : +0.0%
- ATBA : +0.0%
- SJIslands : +0.2%
- Buoy J : +0.0%

+ **+62%**



% Base Case Grounding Oil Loss (GOL) - WhatIf

■ T: GW - KM - DP : 62% (+62%)

■ P: Base Case: 0%