

# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison  
Potential Grounding Accident Frequency

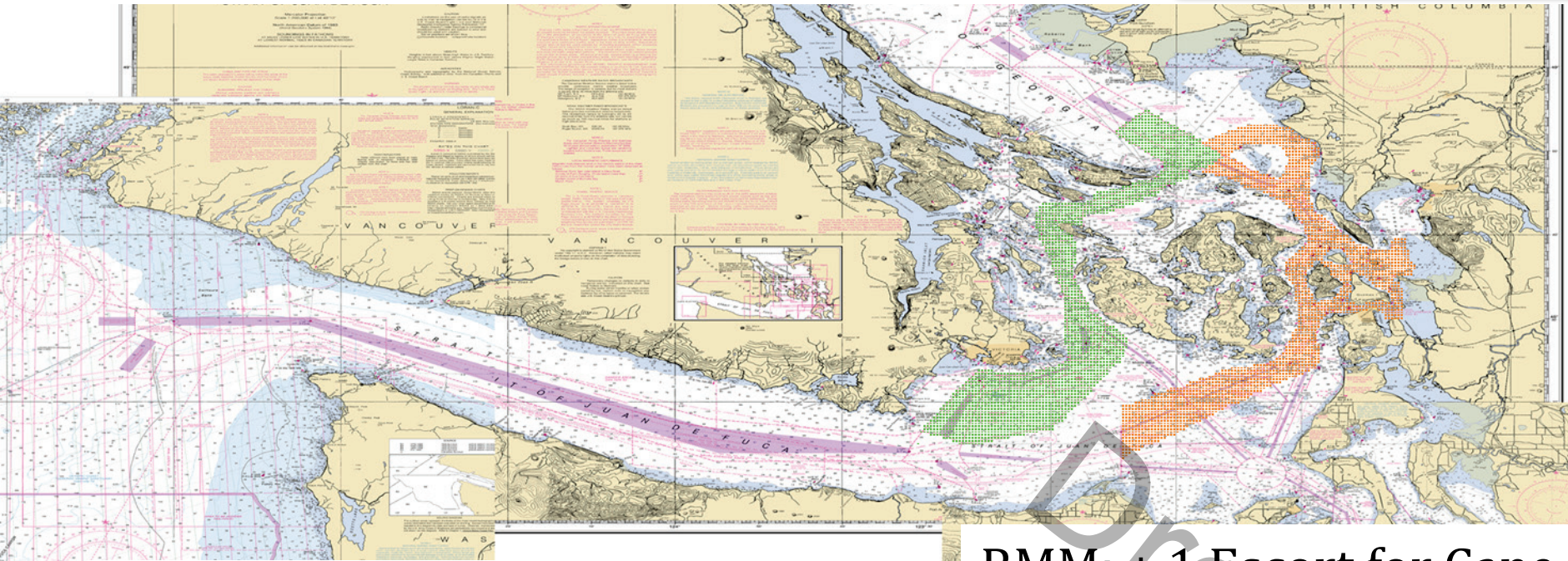
**CASE T: GW – KM – DP & +1 Escort Cape Size**

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

**November 2013**



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

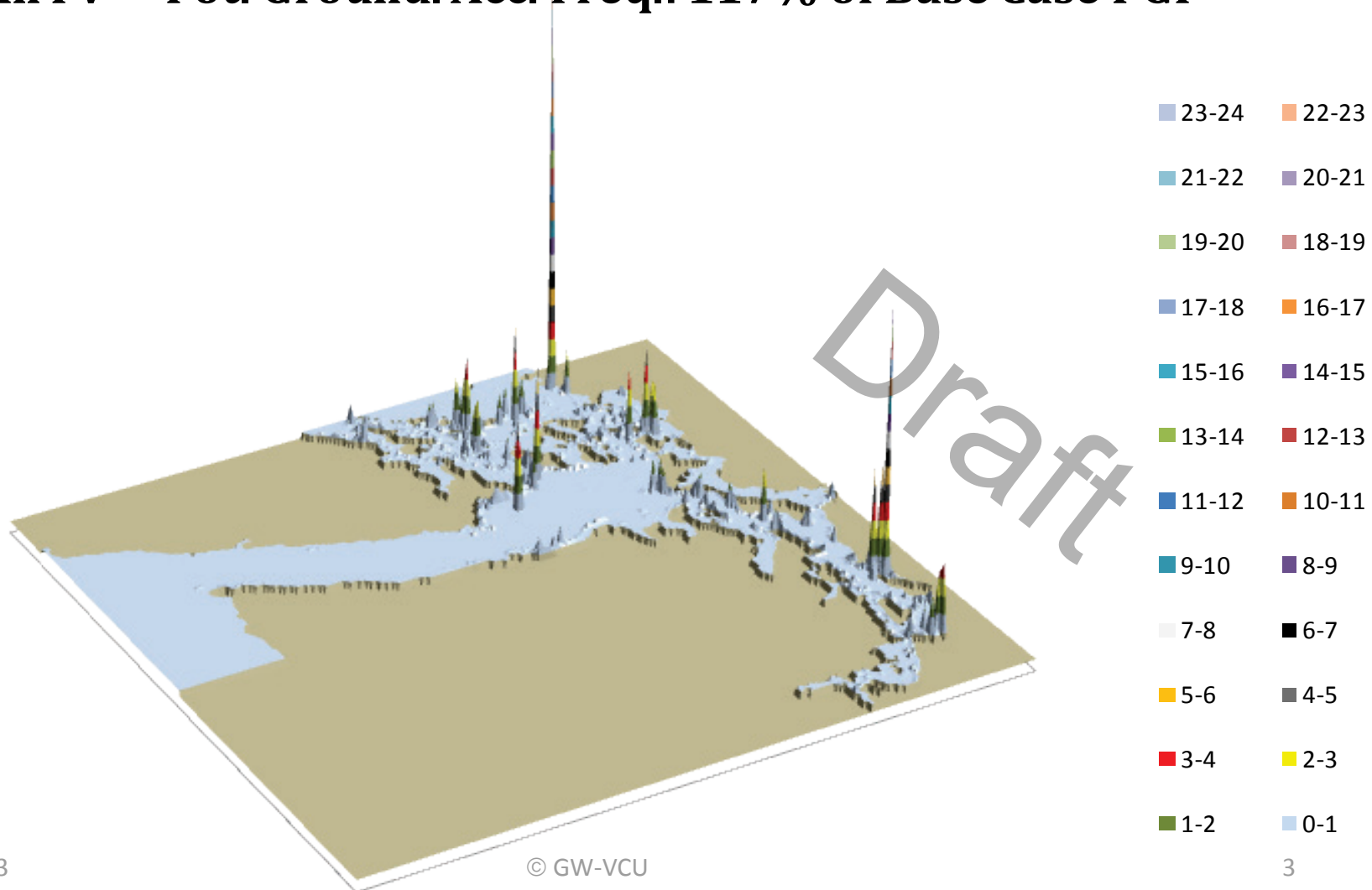


**DEFINITION OF ASSUMED LOCATIONS  
FOR ADDED ESCORT VESSEL  
FOR HARO-BOUNDARY ROUTES (GREEN)  
AND  
FOR ROSARIO ROUTES (ORANGE)**

RMM: + 1 Escort for Cape  
Size Bulk Carriers on  
Rosario Routes (Orange)  
and  
Haro – Boundary Pass  
Routes (Green)

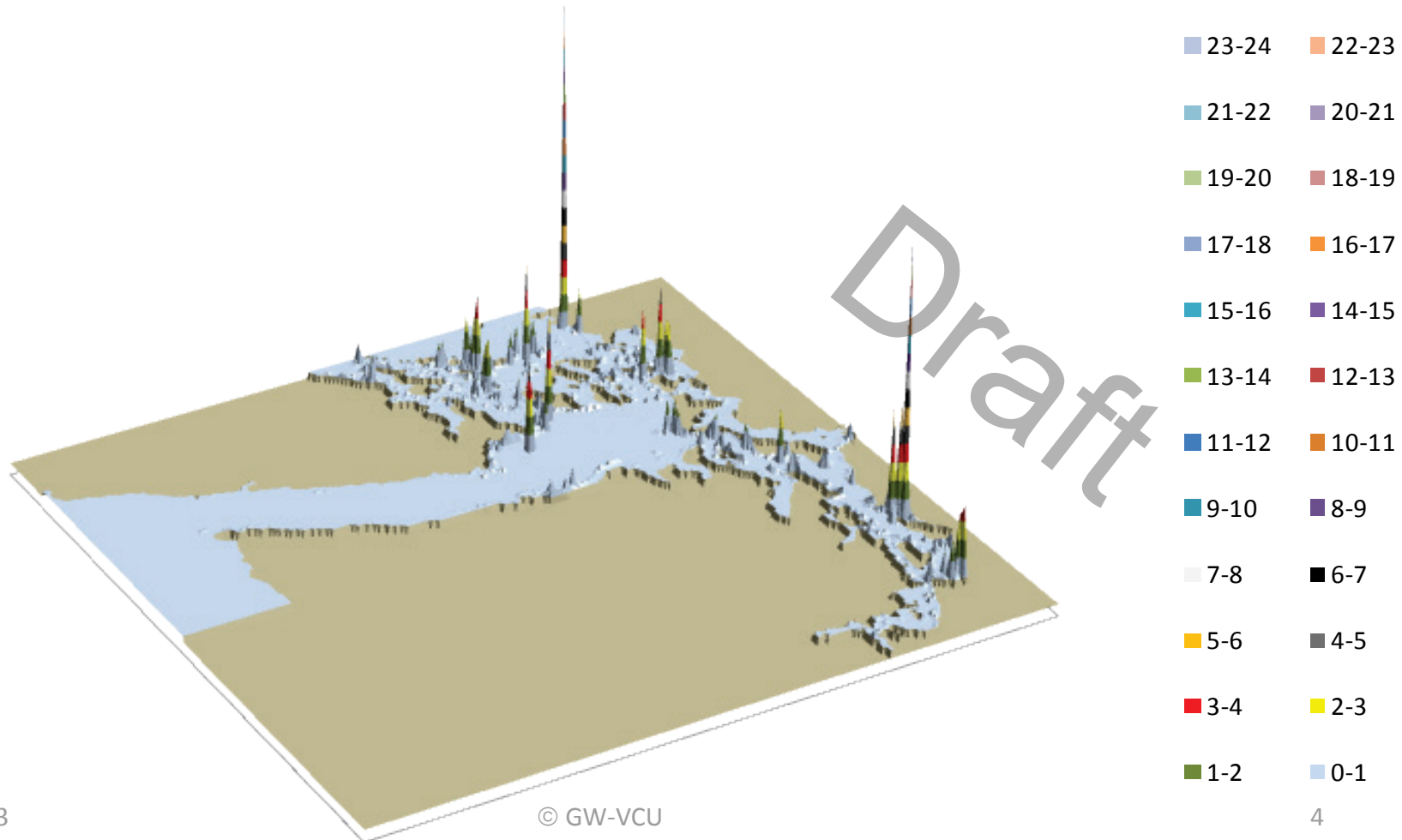
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## T: GW - KM - DP 3D Risk Profile All FV - Pot. Ground. Acc. Freq.: 117% of Base Case PGF



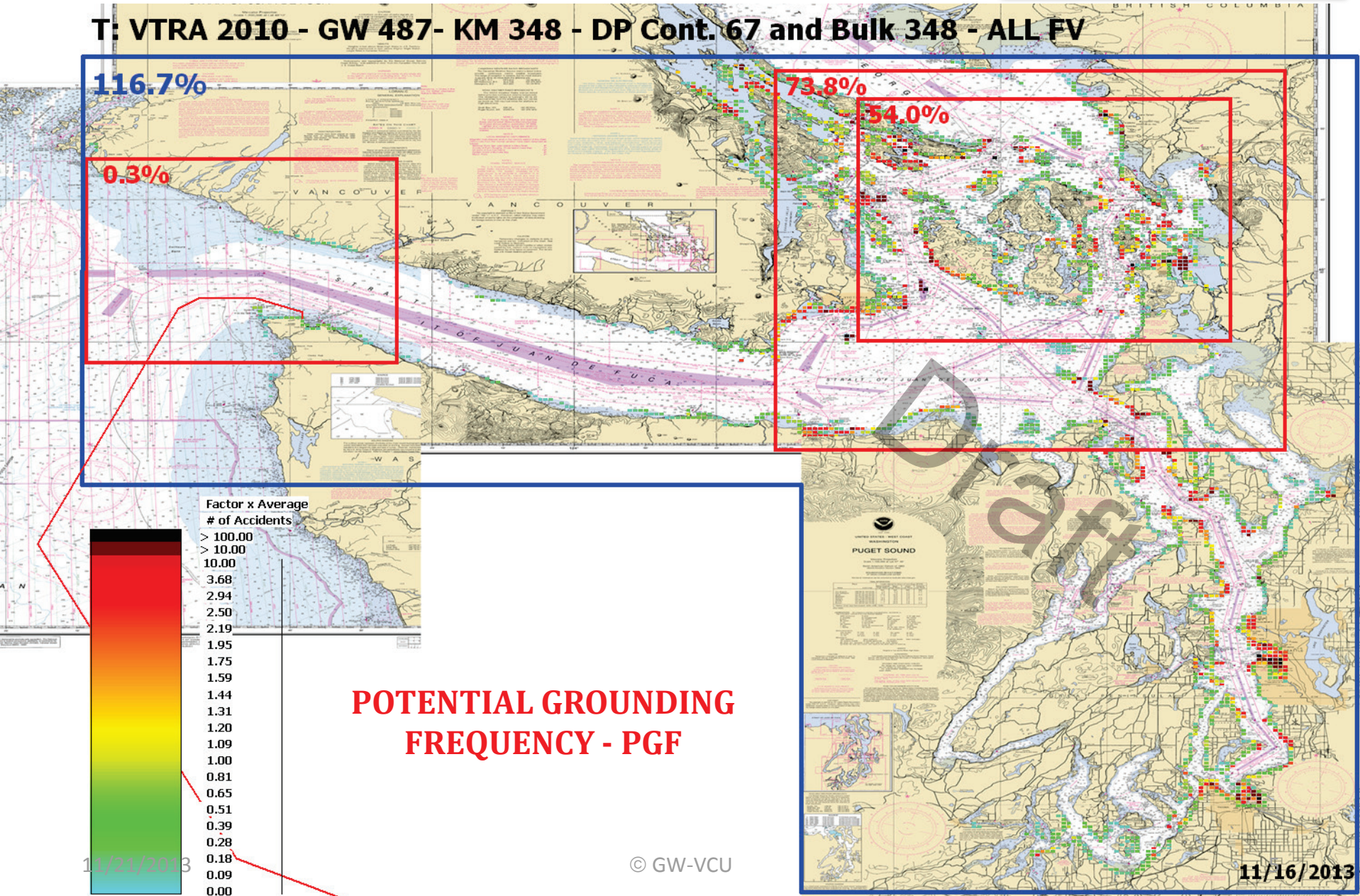
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## T: GW - KM - DP & EC 3D Risk Profile All FV - Pot. Ground. Acc. Freq.: 113% of Base Case PGF



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



POTENTIAL GROUNDING FREQUENCY - PGF

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# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 GW - KM - DP & + 1 Escort Cape Class Bulkers - ALL FV

113.4%

0.3%

70.5%

50.8%

Factor x Average  
# of Accidents

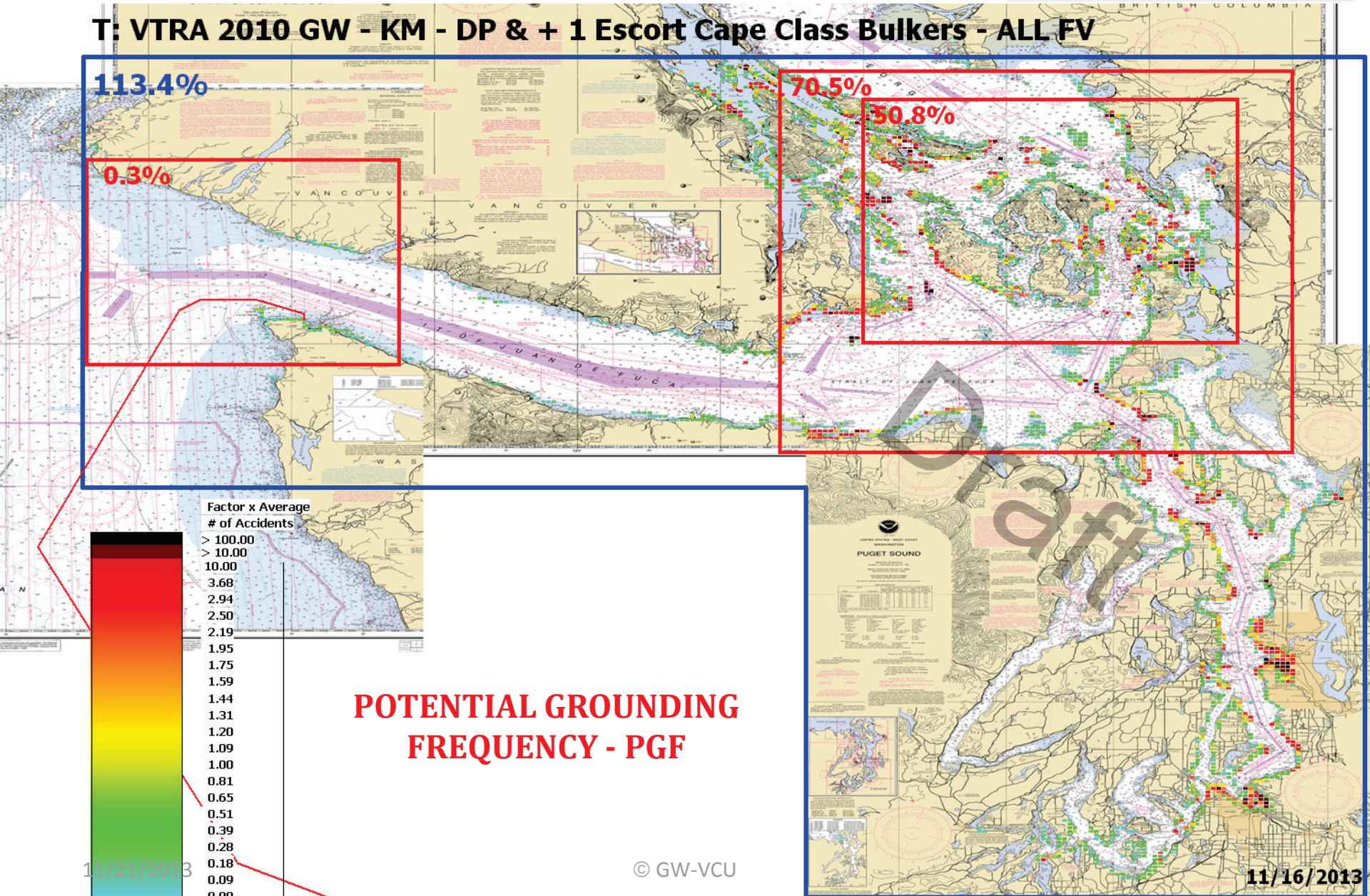
- > 100.00
- > 10.00
- 10.00
- 3.68
- 2.94
- 2.50
- 2.19
- 1.95
- 1.75
- 1.59
- 1.44
- 1.31
- 1.20
- 1.09
- 1.00
- 0.81
- 0.65
- 0.51
- 0.39
- 0.28
- 0.18
- 0.09
- 0.00

POTENTIAL GROUNDING  
FREQUENCY - PGF

11/21/2013

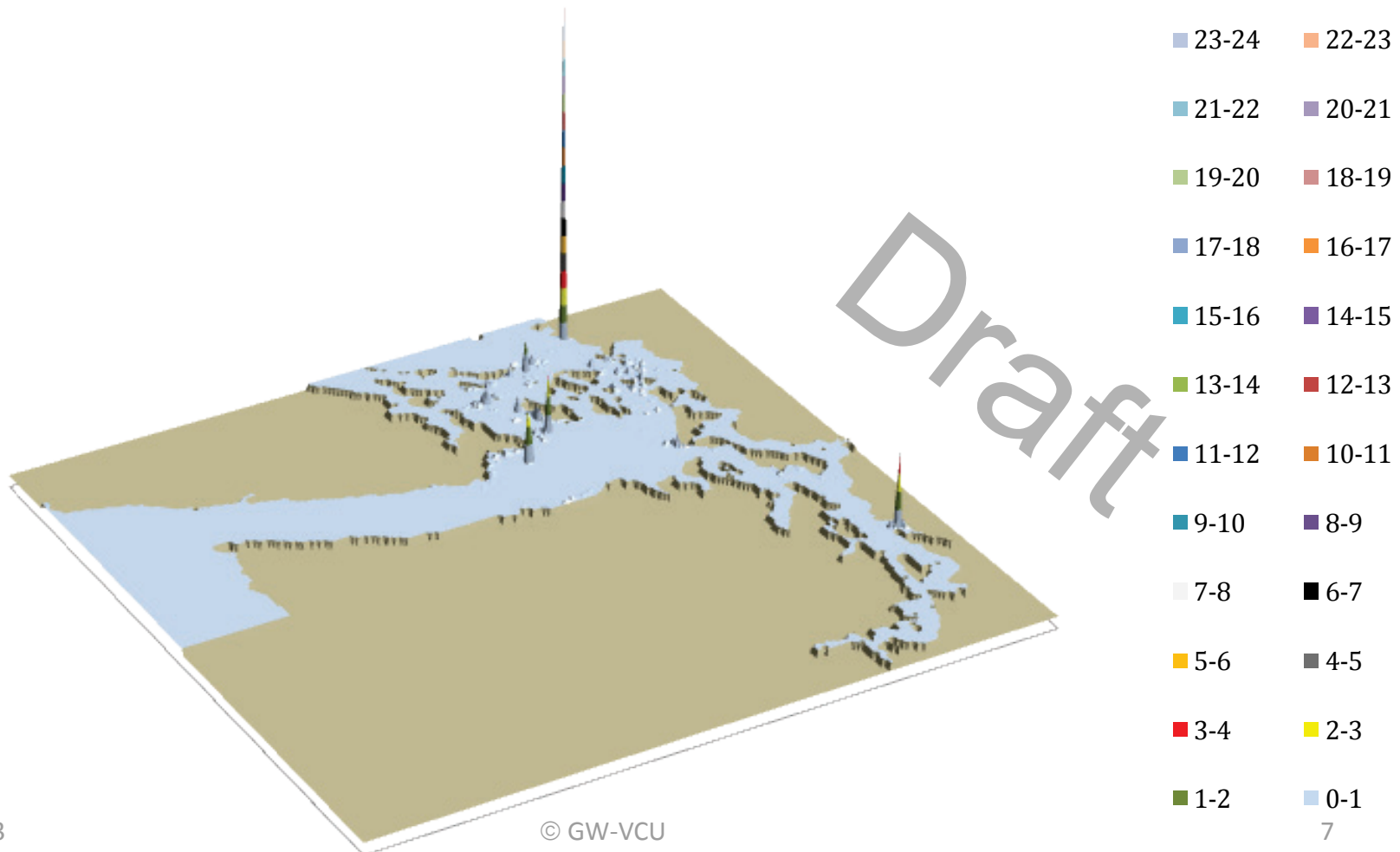
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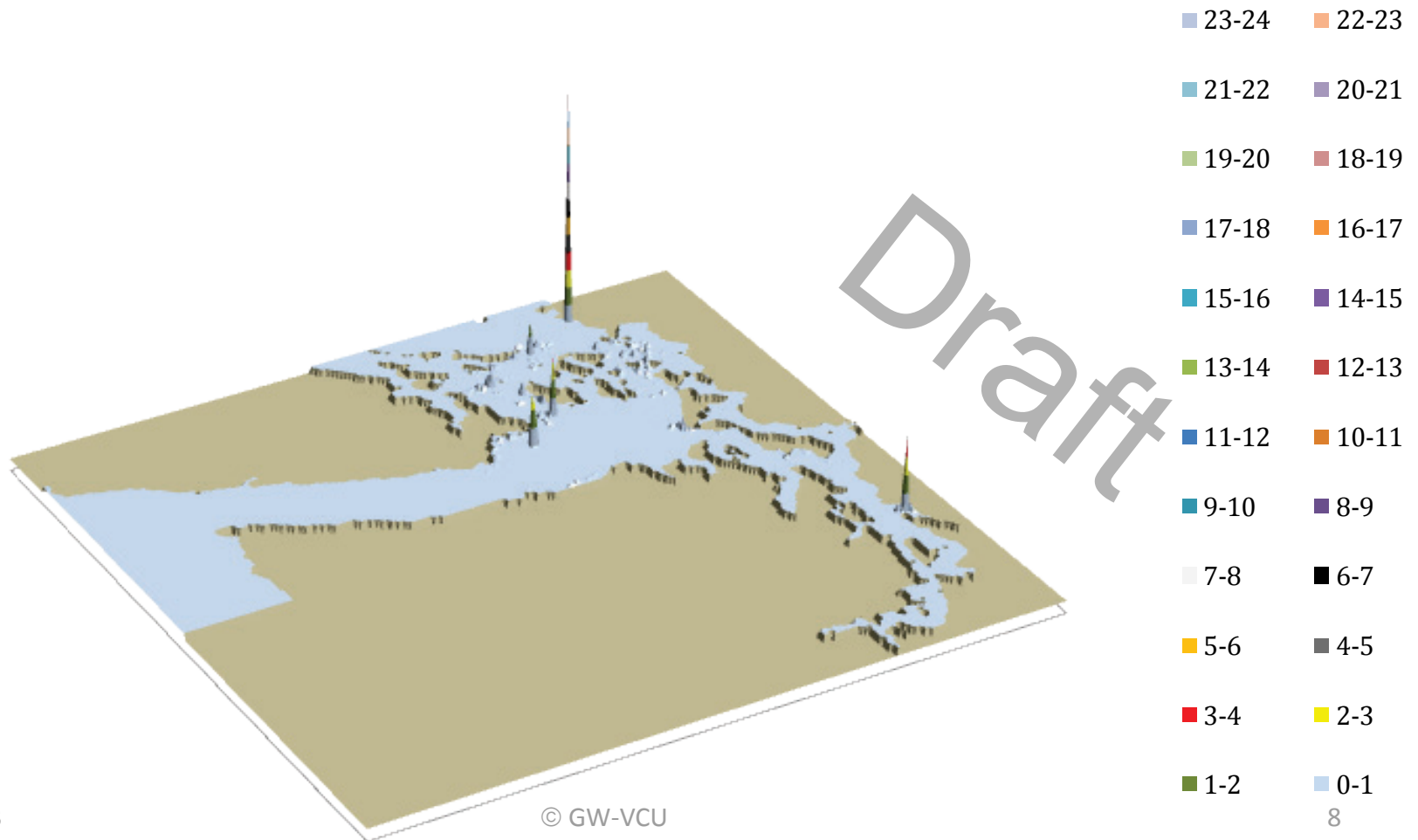
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## T: GW - KM - DP 3D Risk Profile What-If FV - Pot. Grou. Acc. Fr.: 19% of Base Case PGF



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

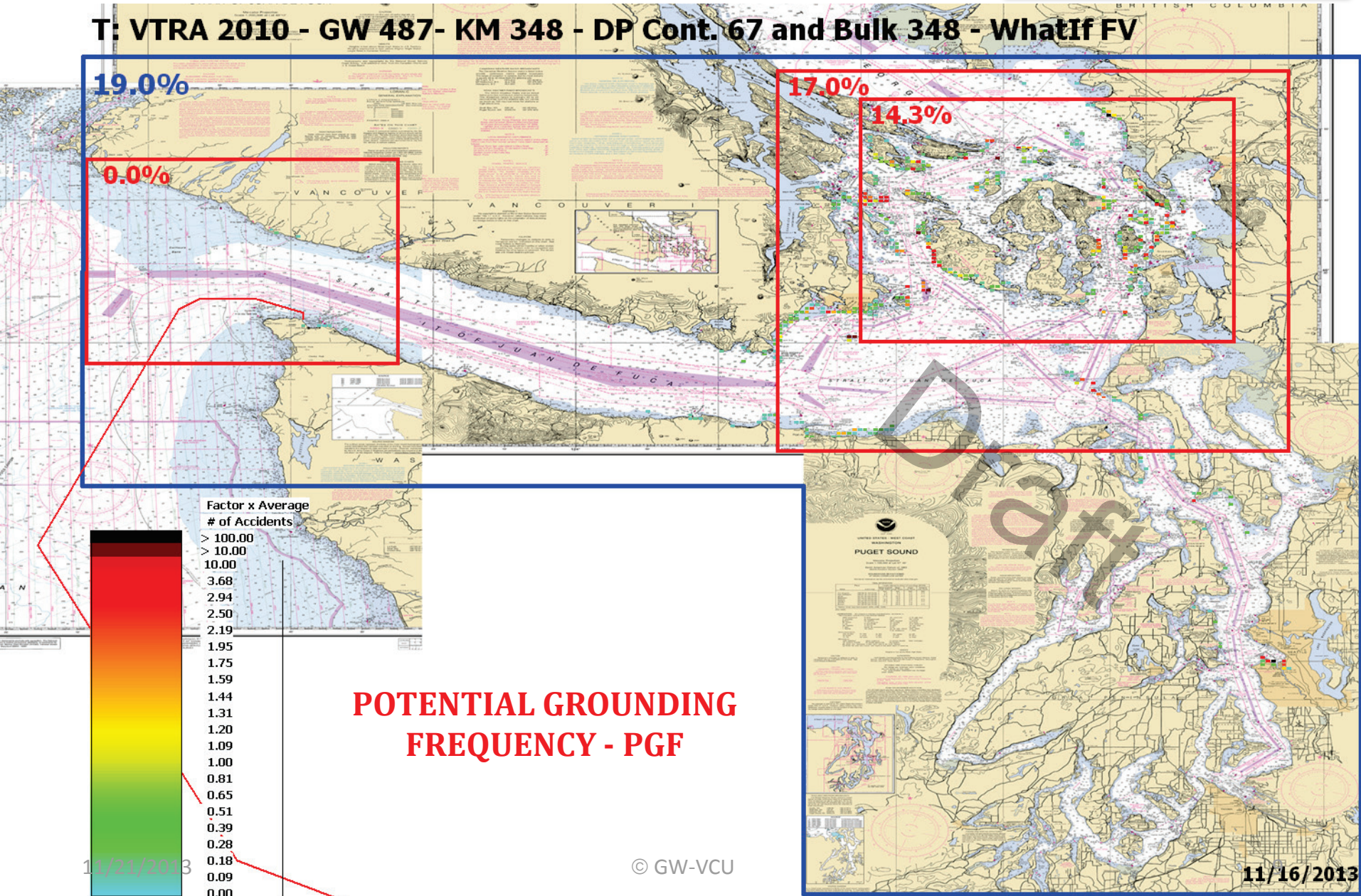
## T: GW - KM - DP & EC 3D Risk Profile What-If FV - Pot. Grou. Acc. Fr.: 16% of Base Case PGF





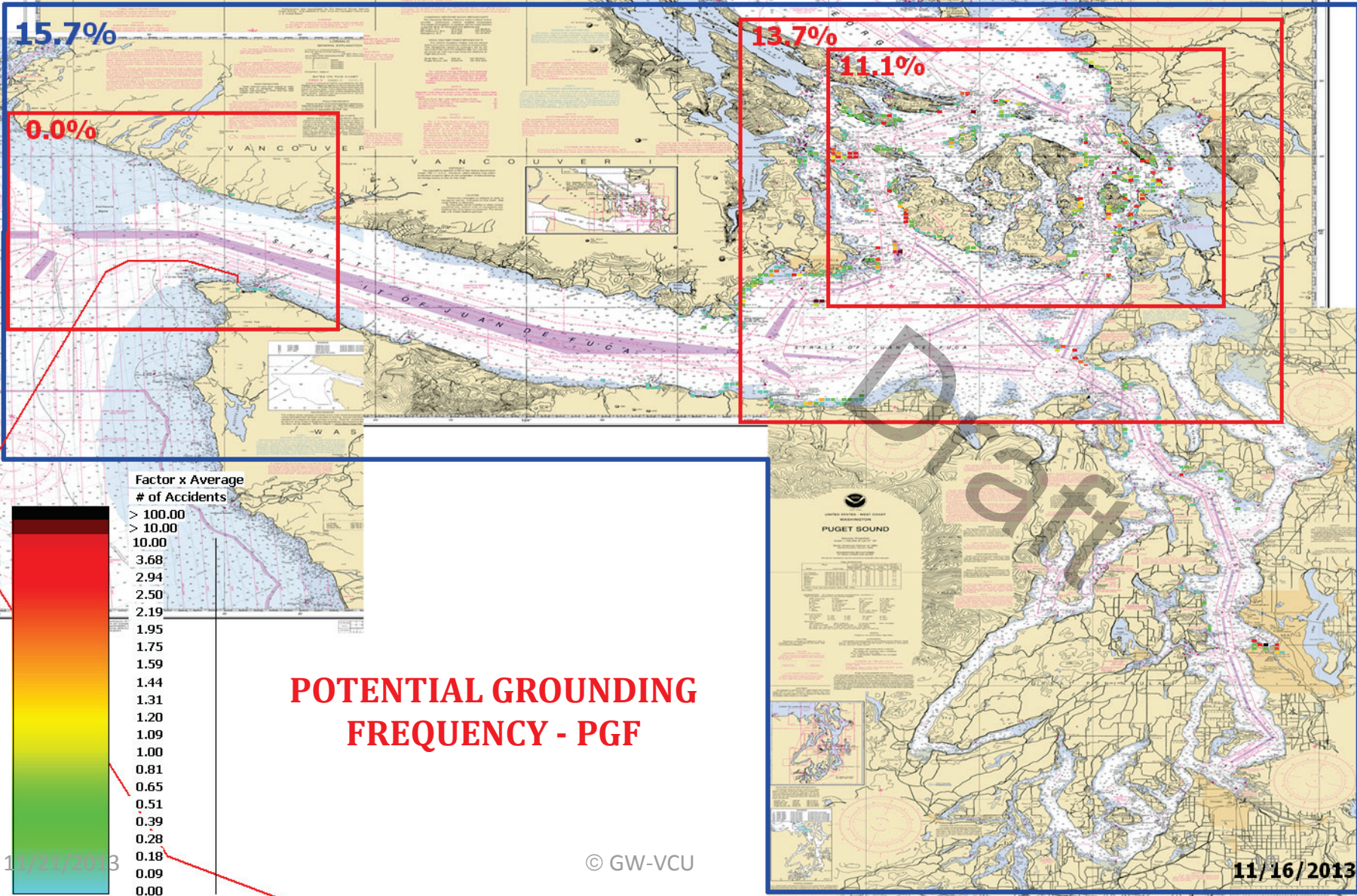
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 GW - KM - DP & + 1 Escort Cape Class Bulklers - WhatIf FV



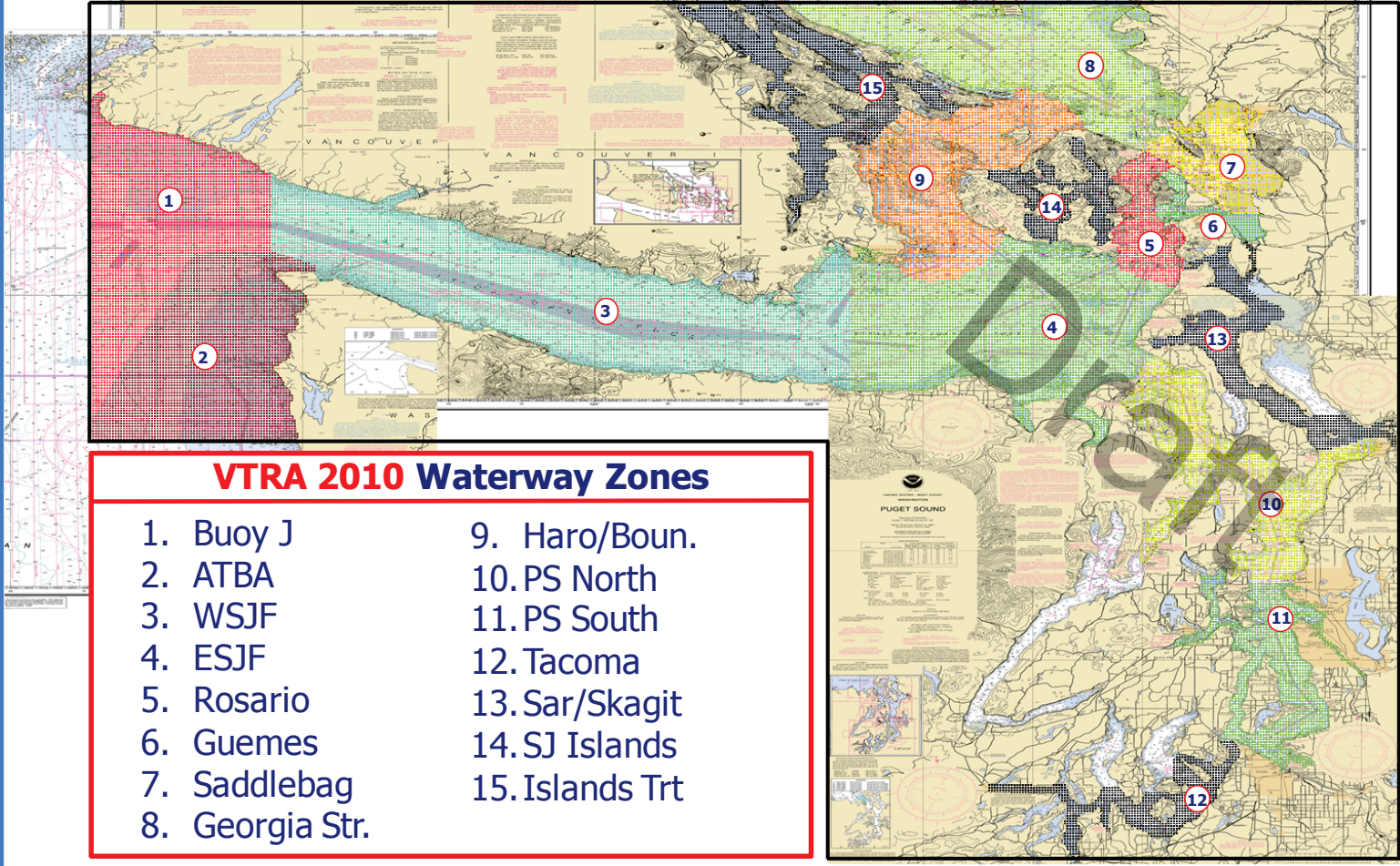
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# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## DEFINITION OF 15 WATERWAY ZONES



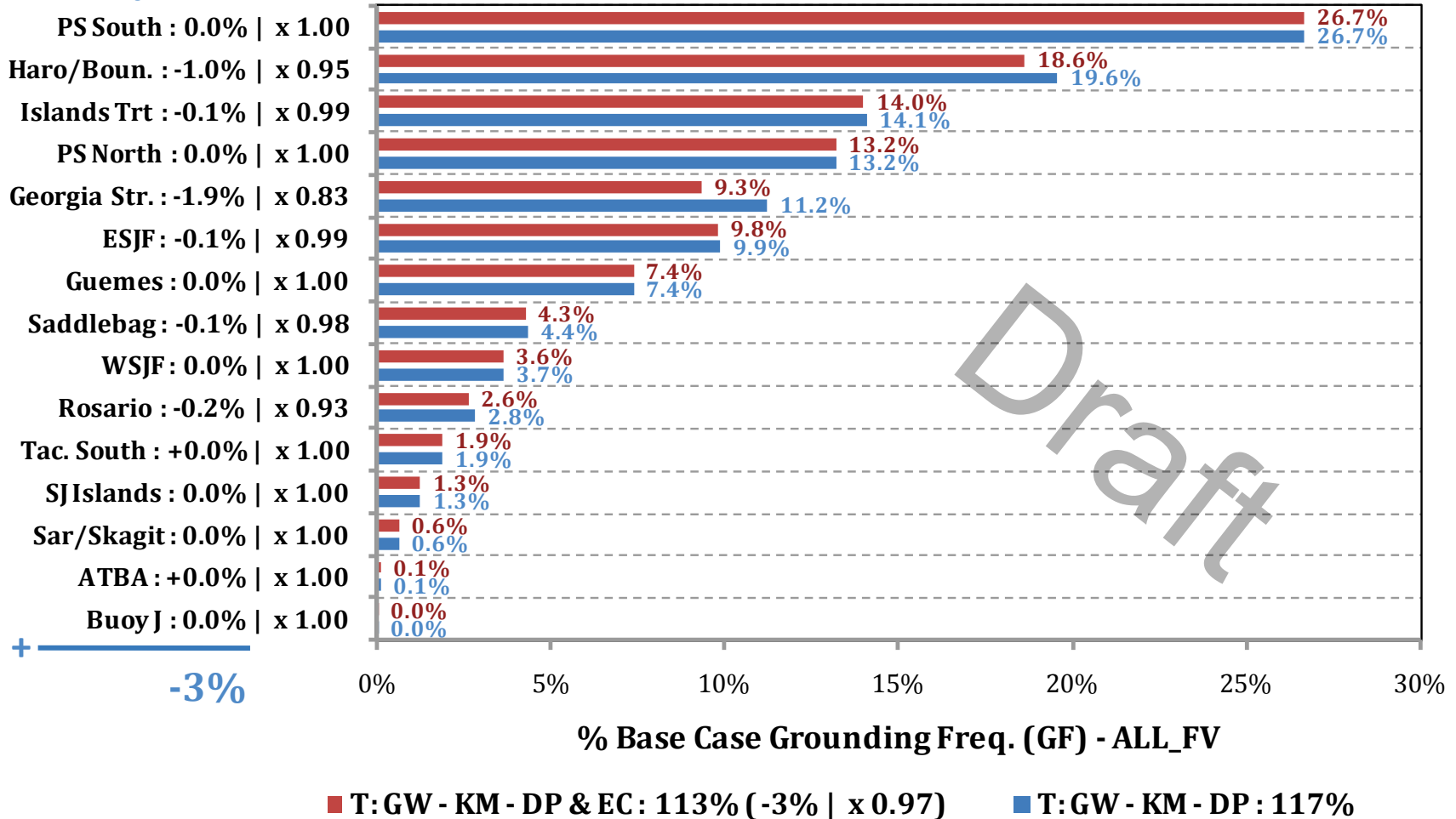
### VTRA 2010 Waterway Zones

- |                 |                 |
|-----------------|-----------------|
| 1. Buoy J       | 9. Haro/Boun.   |
| 2. ATBA         | 10. PS North    |
| 3. WSJF         | 11. PS South    |
| 4. ESJF         | 12. Tacoma      |
| 5. Rosario      | 13. Sar/Skagit  |
| 6. Guemes       | 14. SJ Islands  |
| 7. Saddlebag    | 15. Islands Trt |
| 8. Georgia Str. |                 |

# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## % Base Case Grounding Frequency - ALL\_FV

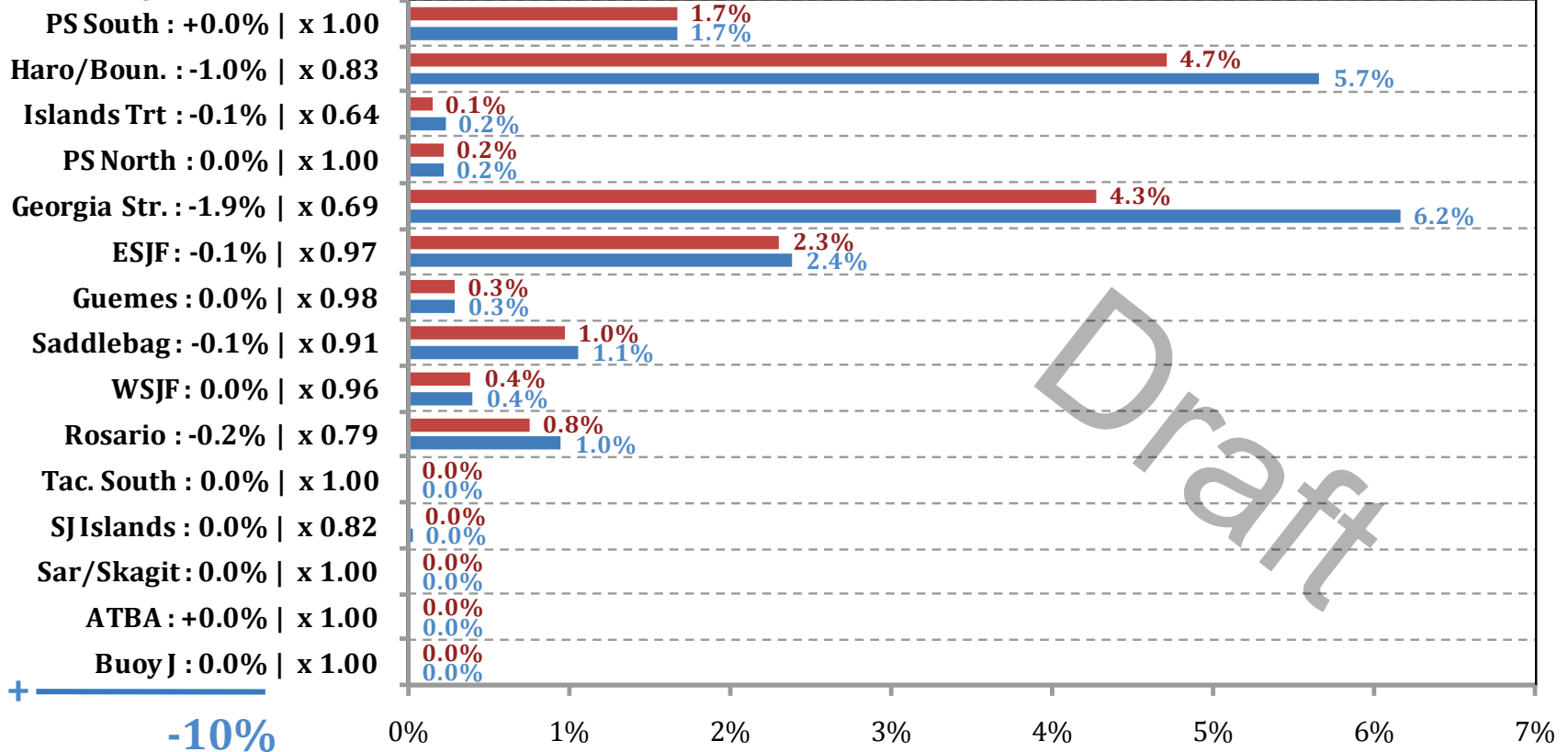
### Waterway Zone:



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## % Base Case Grounding Frequency - WhatIf

### Waterway Zone:



## % Base Case Grounding Freq. (GF) - WhatIf

■ T:GW - KM - DP & EC : 16% (-3% | x 0.83)

■ T:GW - KM - DP : 19%