

VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison
Potential Collision Accident Frequency

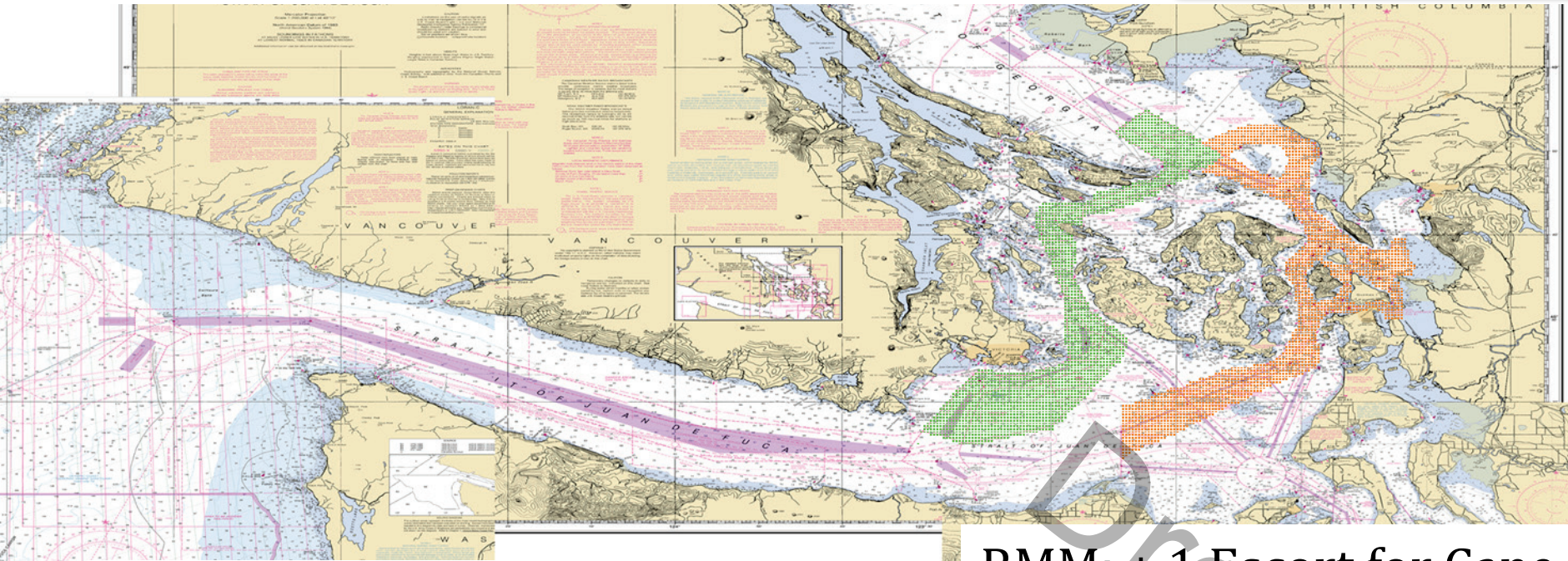
CASE T: GW – KM – DP & +1 Escort Cape Size

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

November 2013



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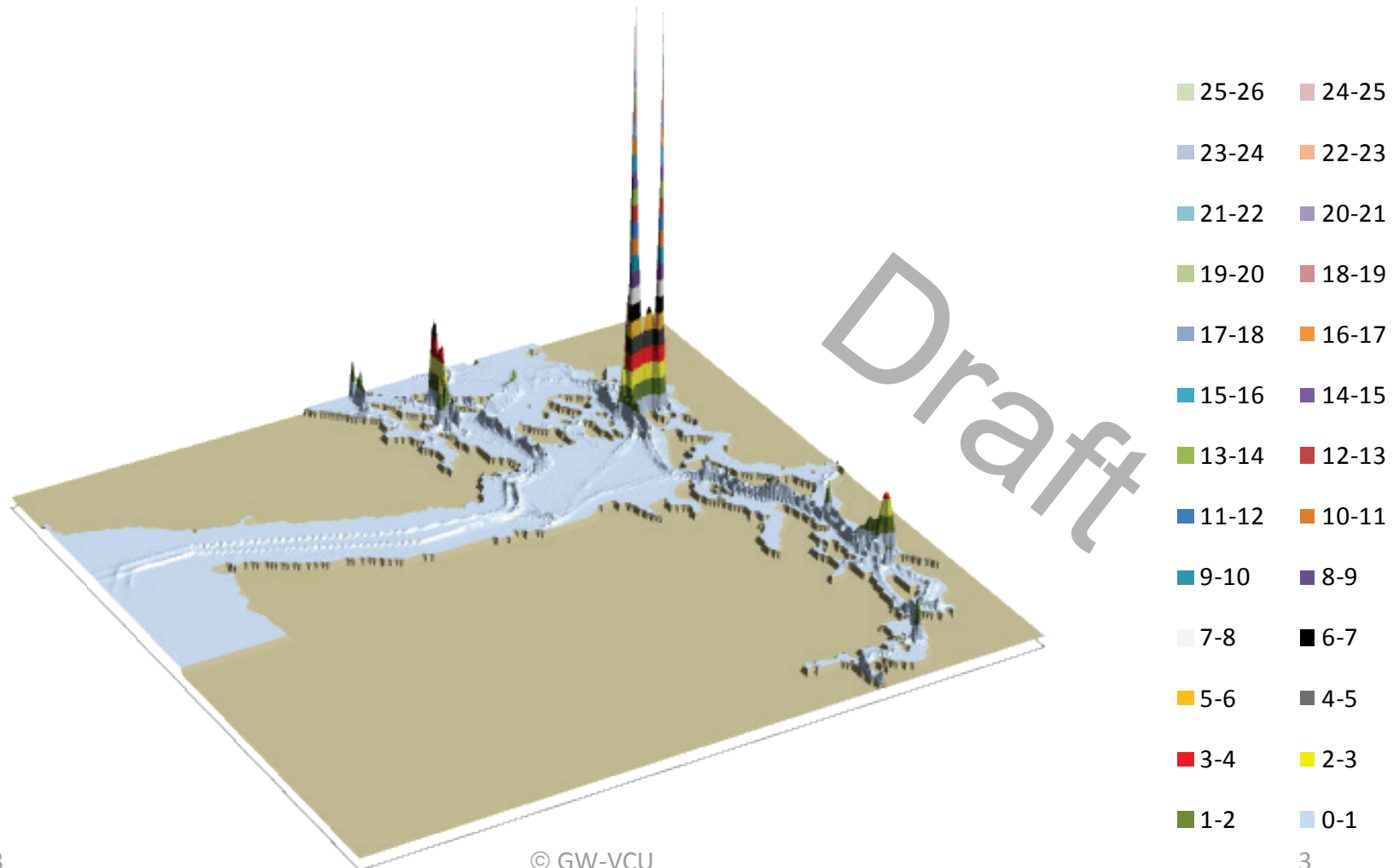


**DEFINITION OF ASSUMED LOCATIONS
FOR ADDED ESCORT VESSEL
FOR HARO-BOUNDARY ROUTES (GREEN)
AND
FOR ROSARIO ROUTES (ORANGE)**

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

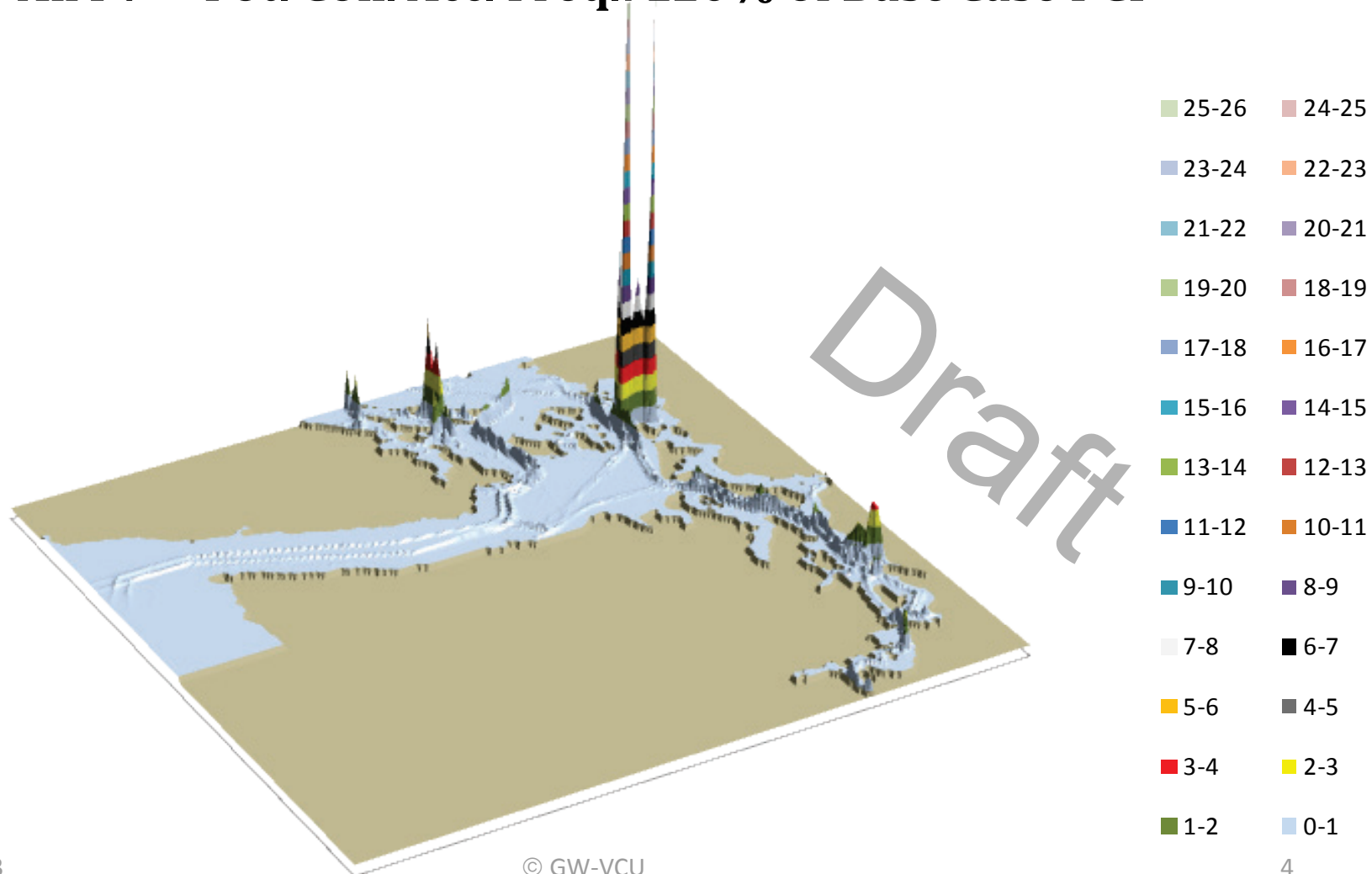
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP 3D Risk Profile
All FV - Pot. Coll. Acc. Freq.: 121% of Base Case PCF



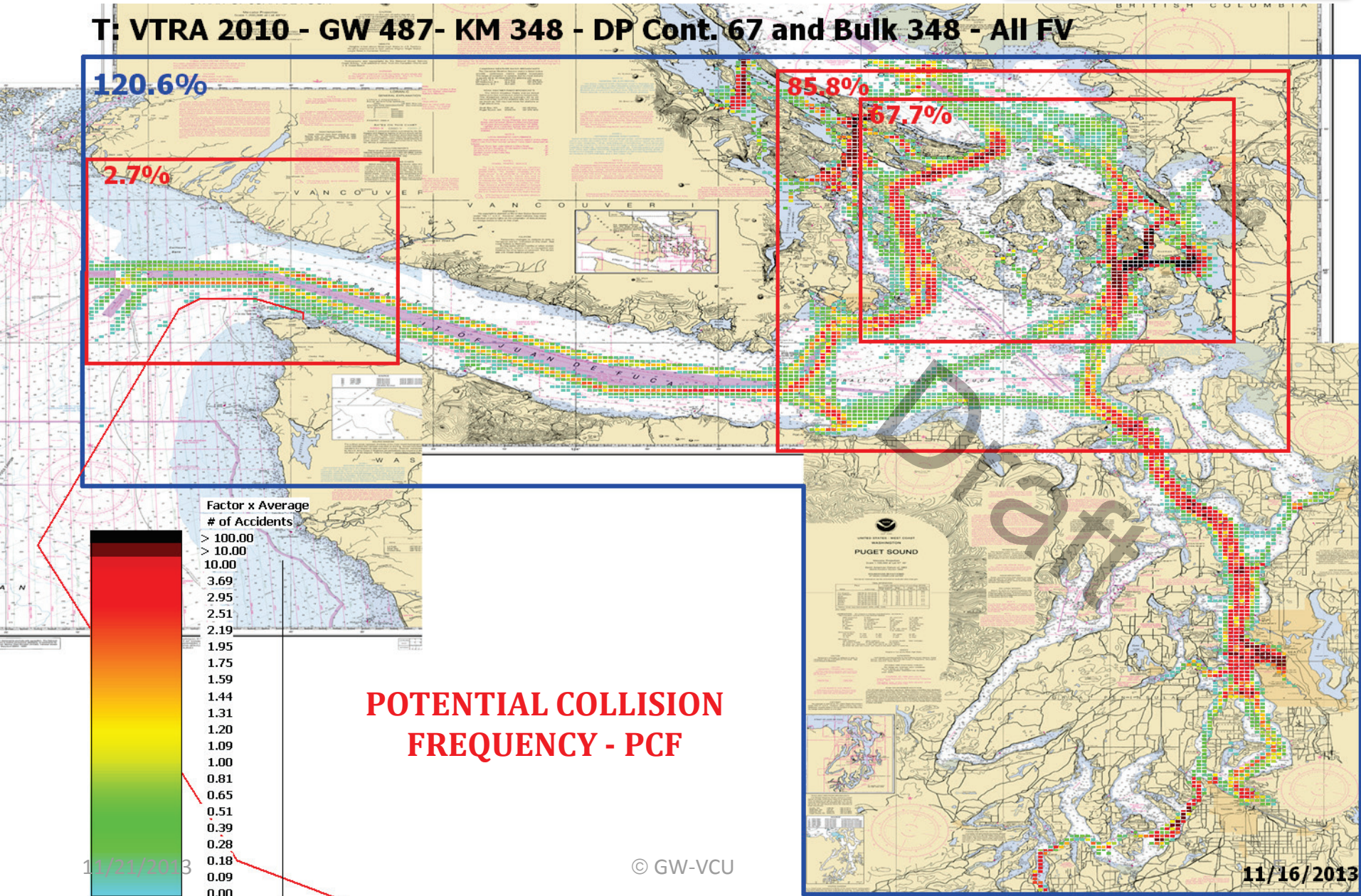
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP & EC 3D Risk Profile All FV - Pot. Coll. Acc. Freq.: 120% of Base Case PCF



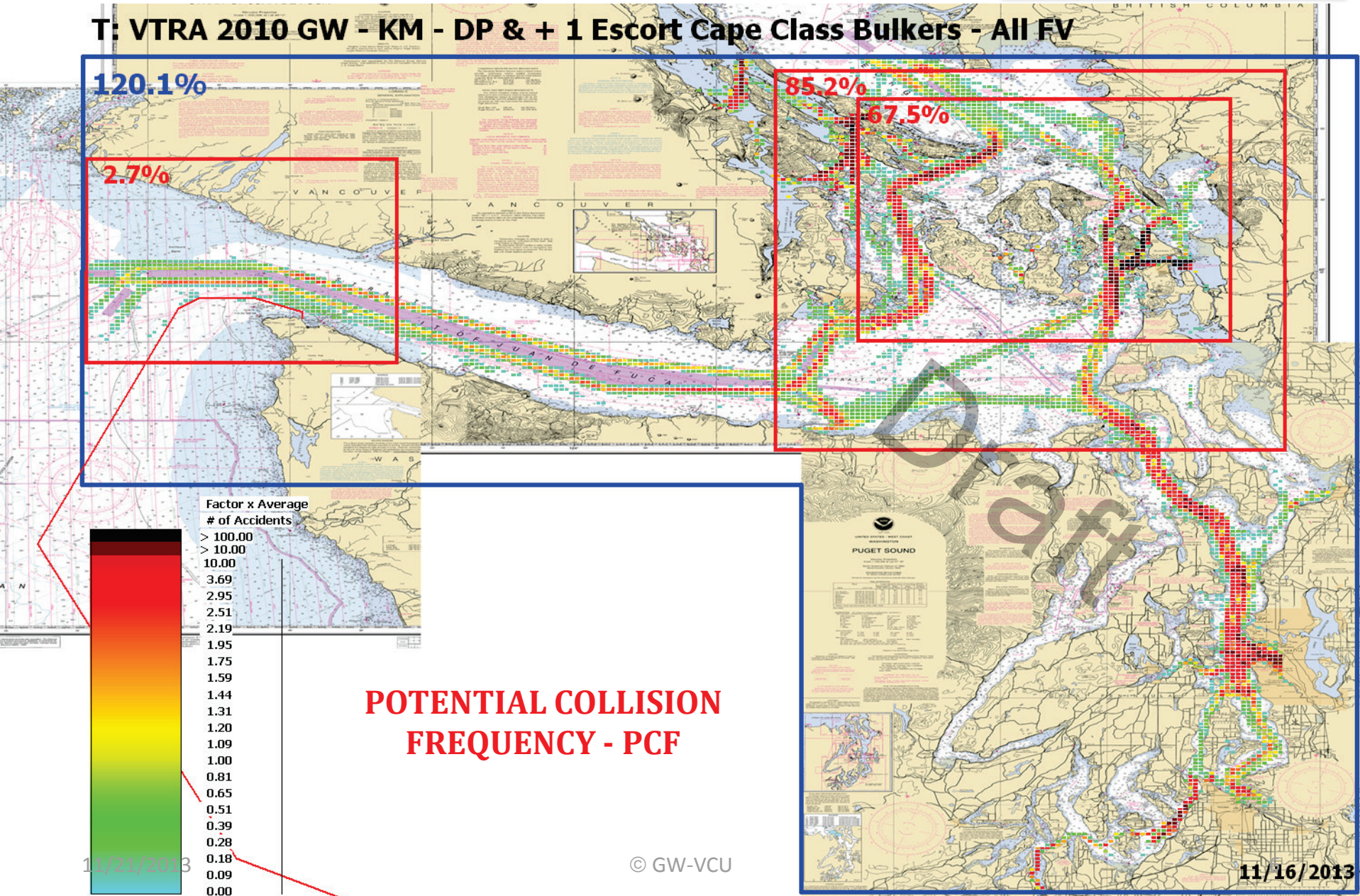
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



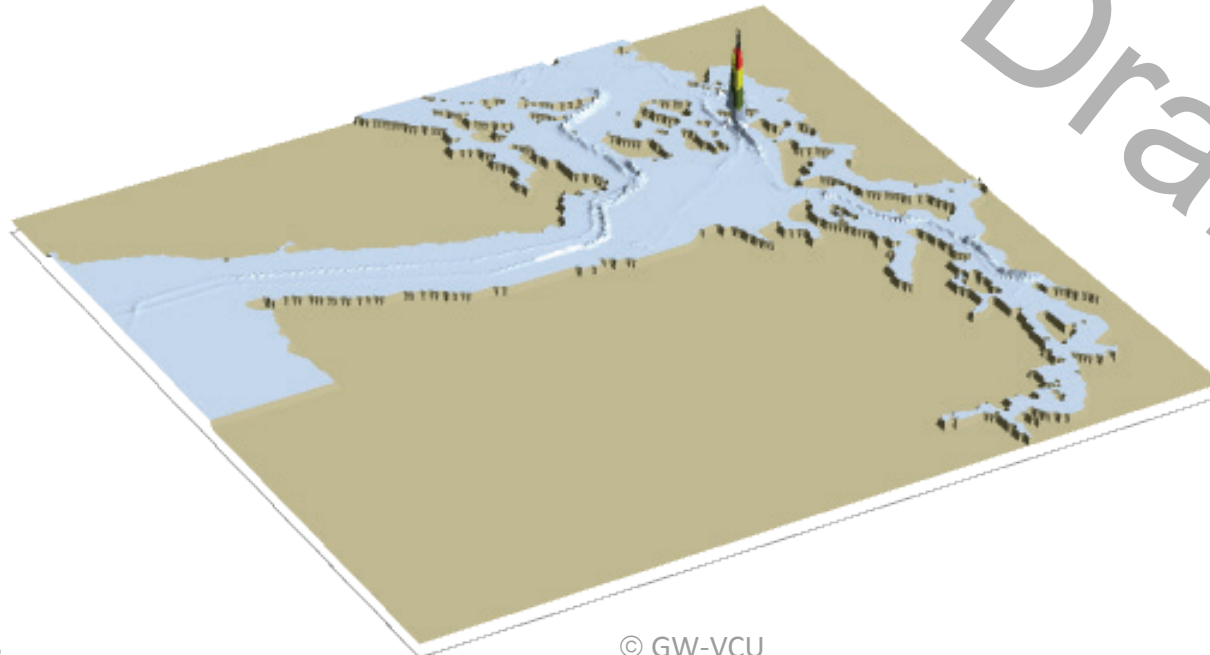
11/21/2013

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11/16/2013

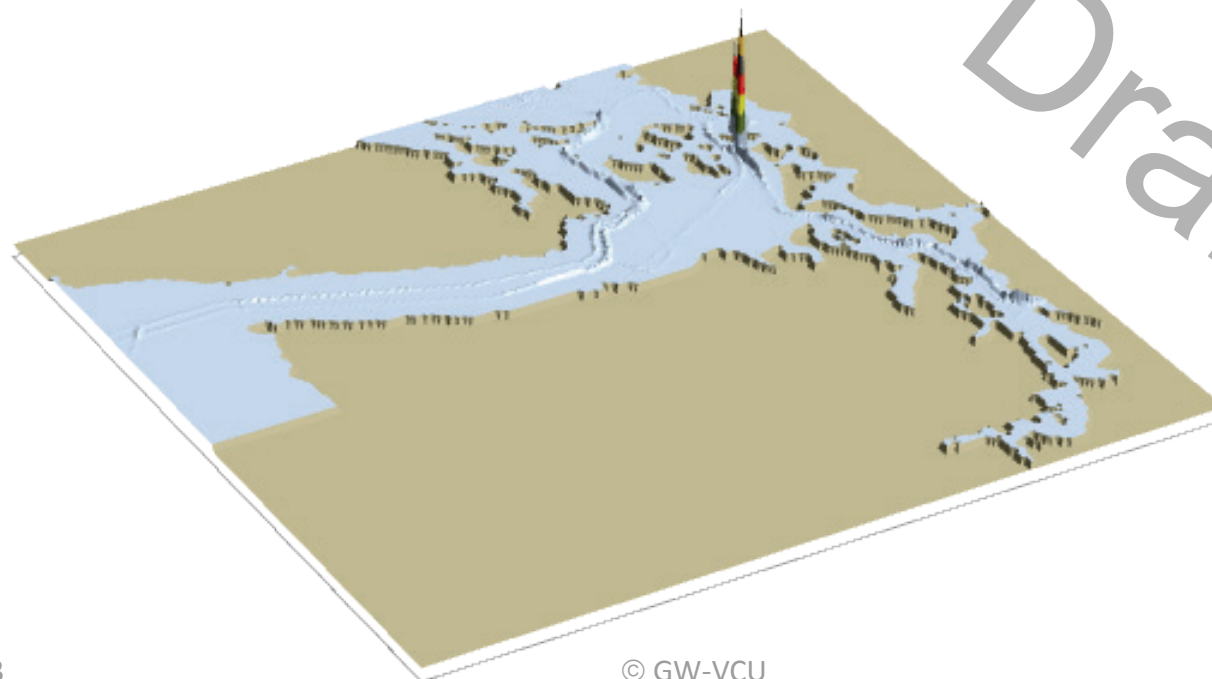
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP 3D Risk Profile What If FV - Pot. Coll. Acc. Fr.: 18% of Base Case PCF



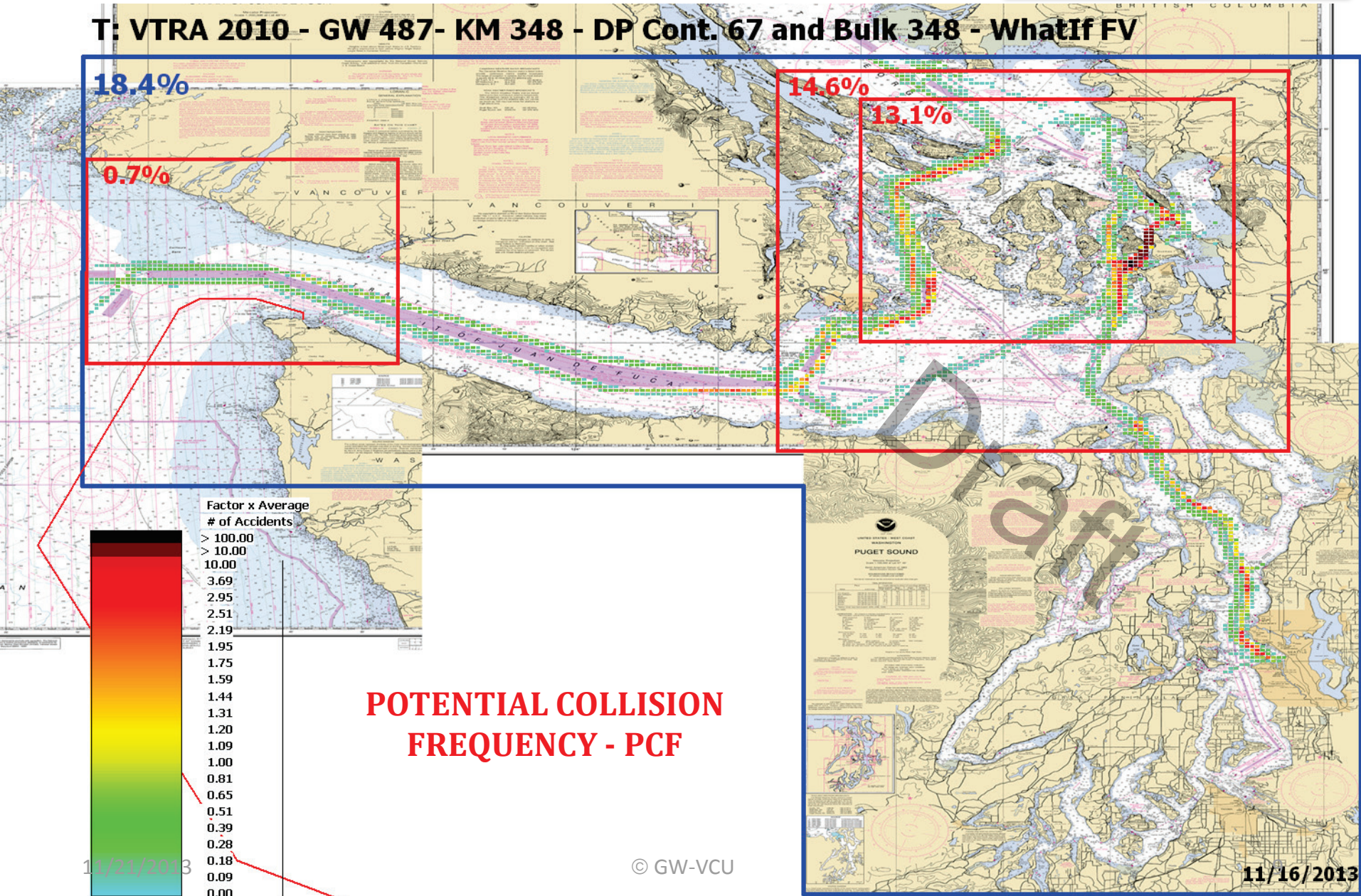
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP & EC 3D Risk Profile What If FV - Pot. Coll. Acc. Fr.: 18% of Base Case PCF



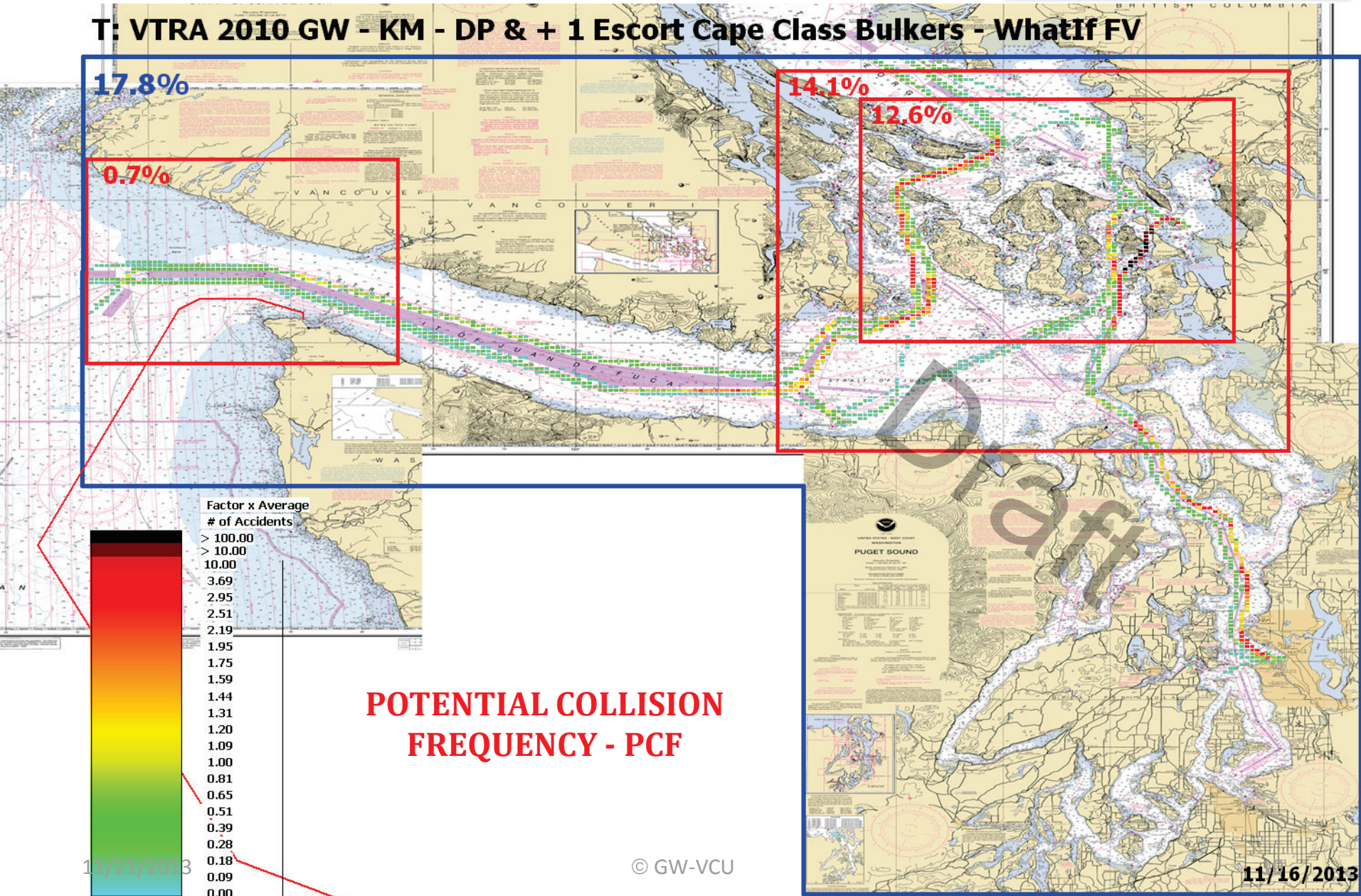
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



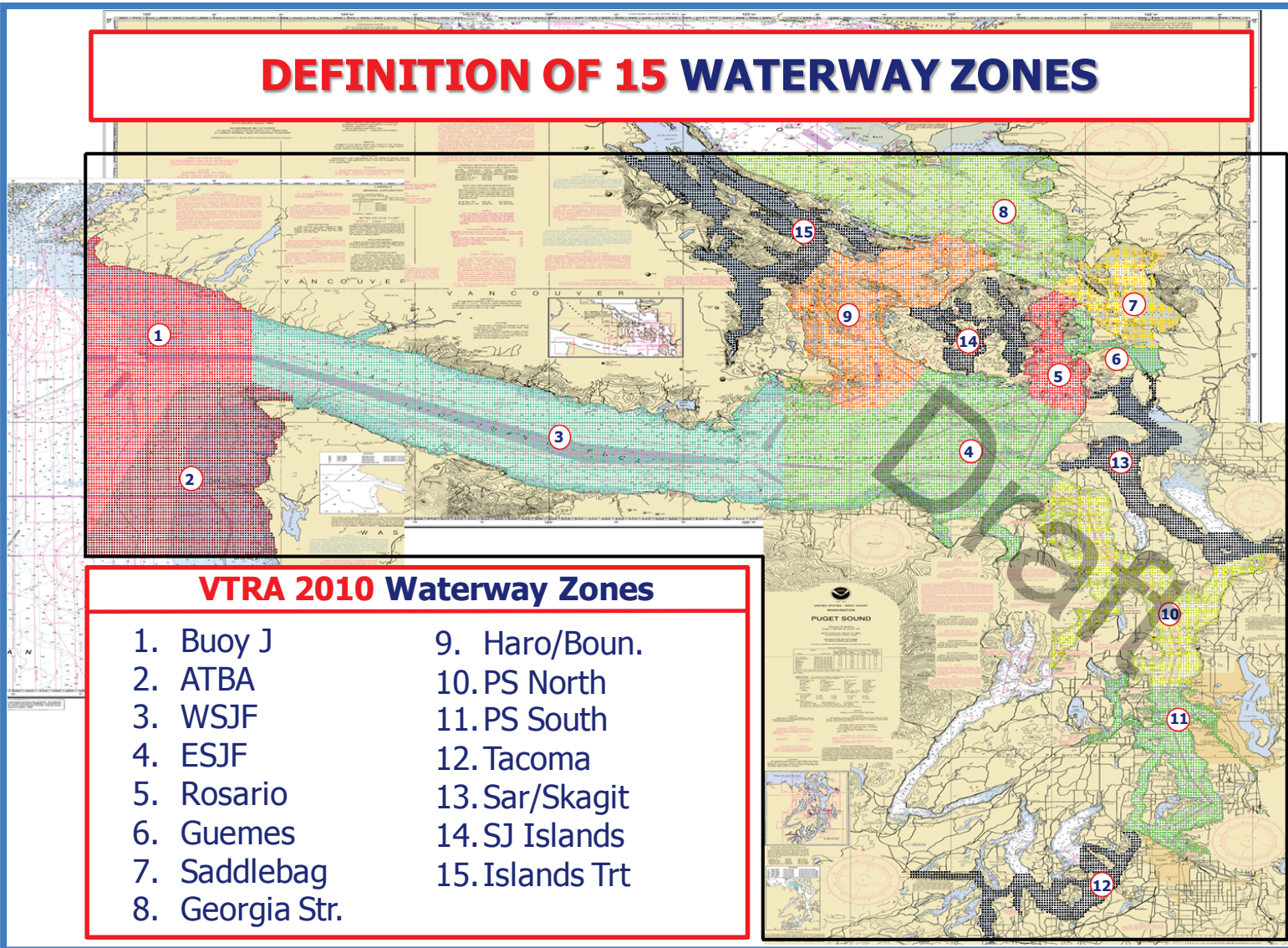
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

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



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

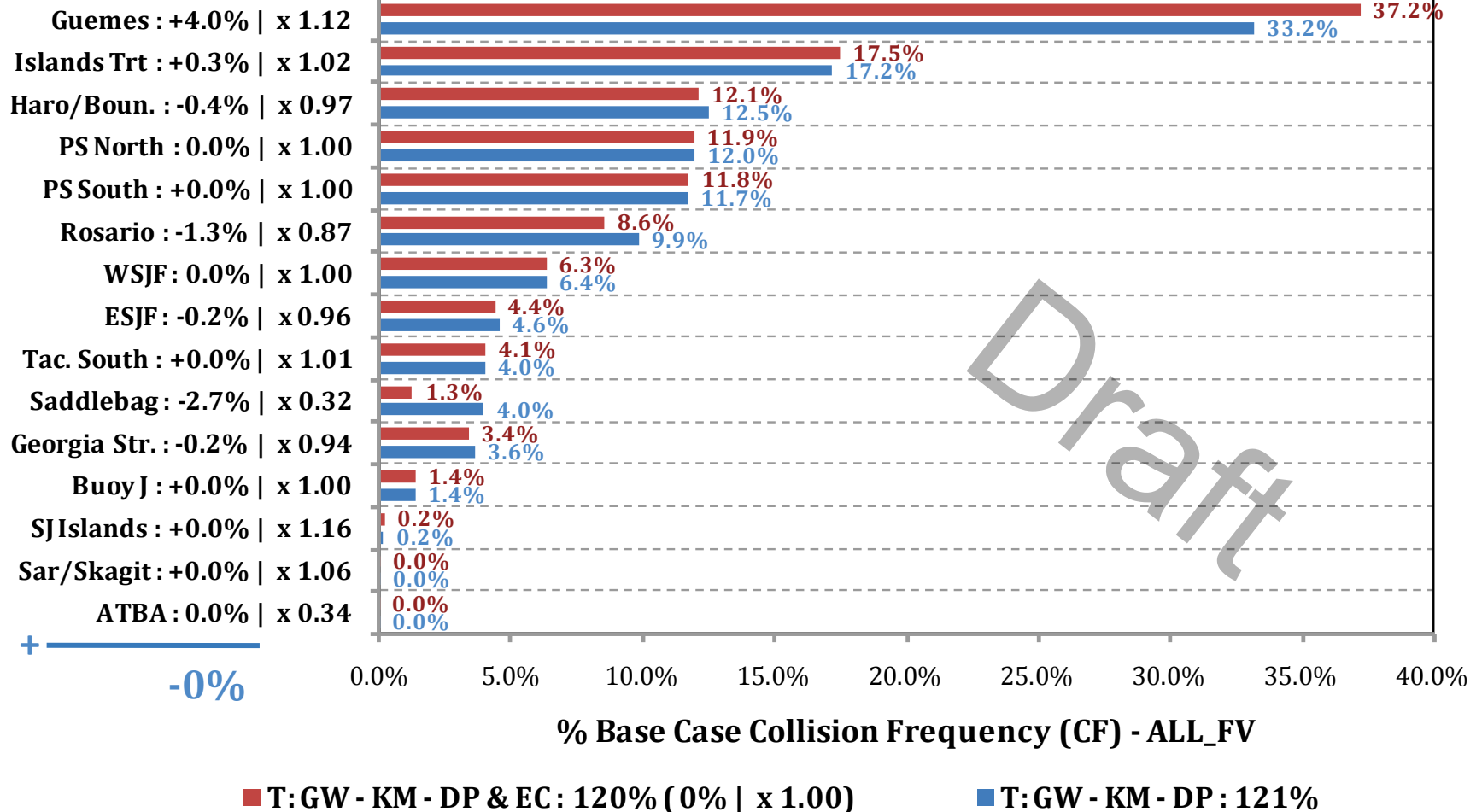
DEFINITION OF 15 WATERWAY ZONES



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Collision Frequency - ALL_FV

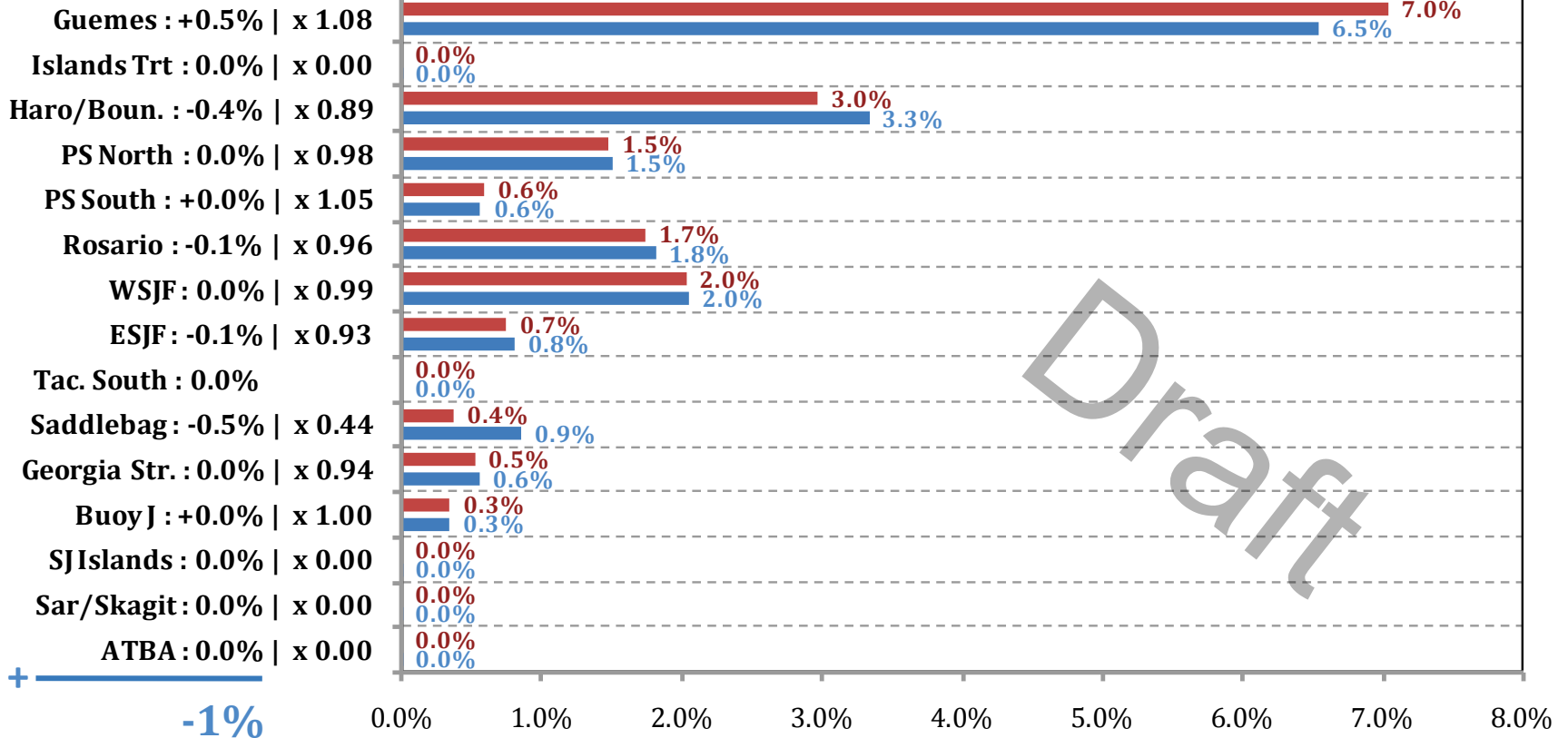
Waterway Zone:



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Collision Frequency - WhatIf

Waterway Zone:



% Base Case Collision Frequency (CF) - WhatIf

■ T:GW - KM - DP & EC : 18% (-1% | x 0.97)

■ T:GW - KM - DP : 18%