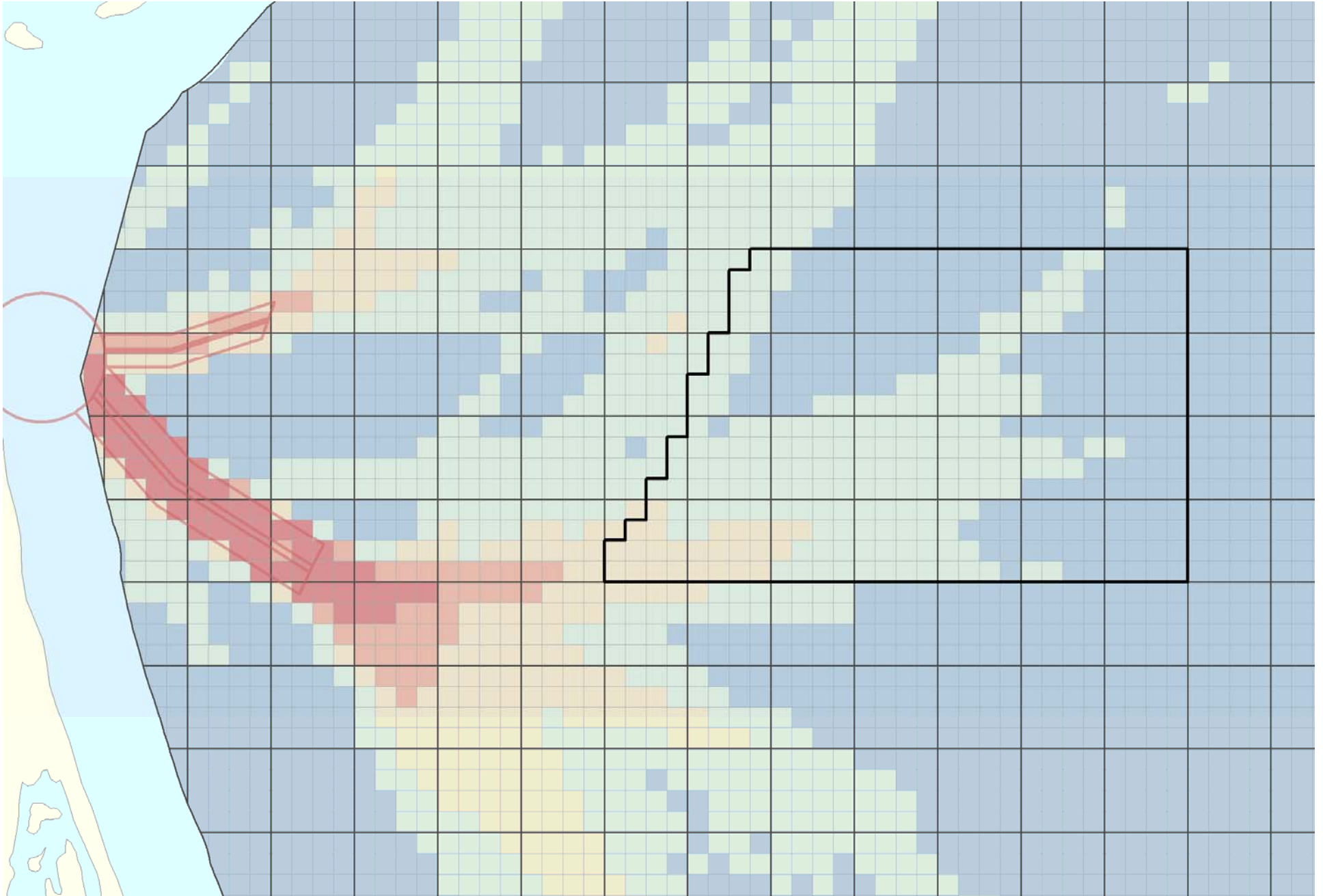


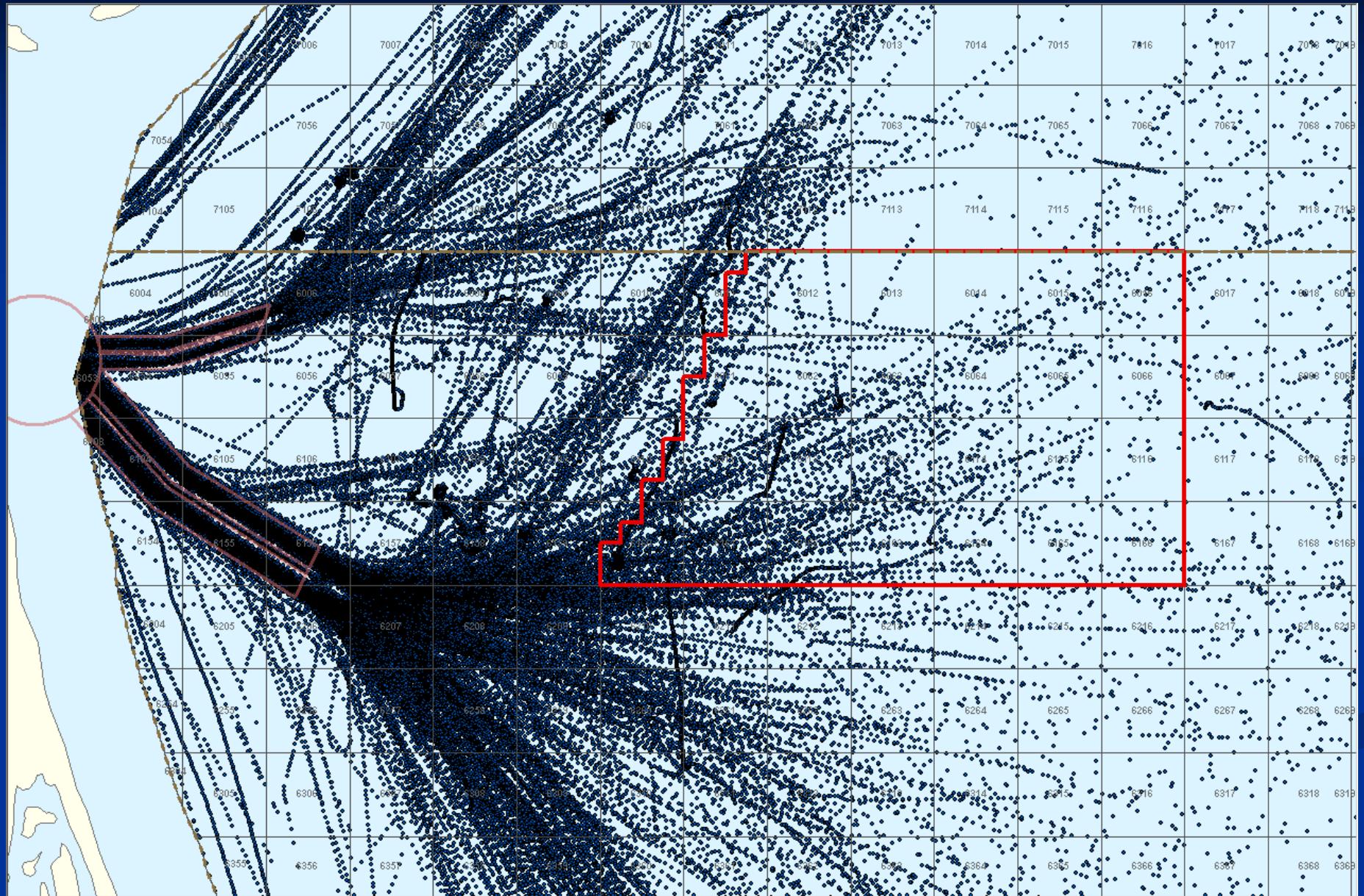
# Vessel Traffic Data and Analysis



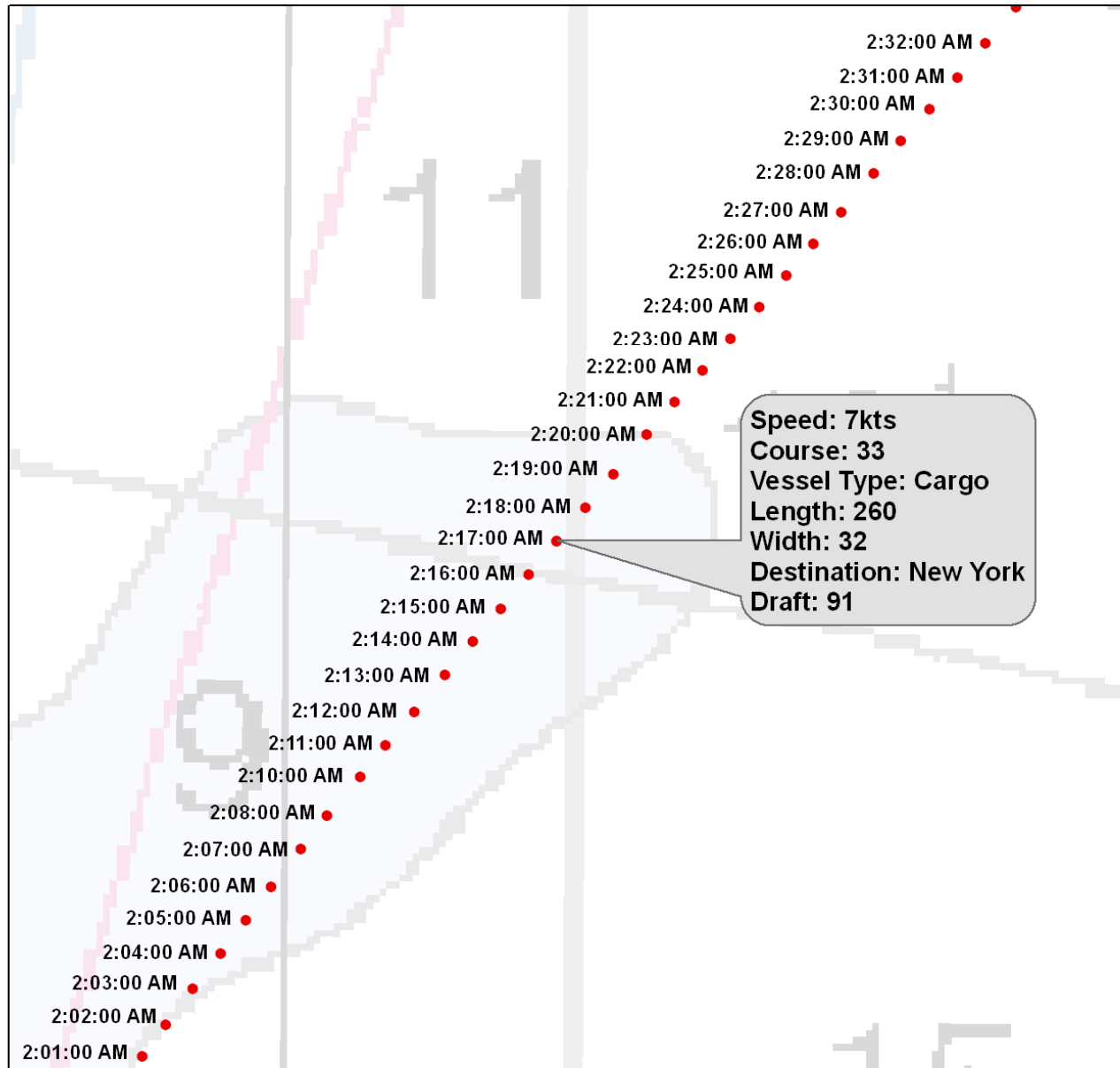
## AIS Analysis Input Data

- AIS Returns for 2009
- Monthly Data for UTM Zones 17,18,19
- Each Month is Clipped by Protraction, then Merged
- AIS Analysis Input Includes all Months for 2009

# AIS returns – January 2009

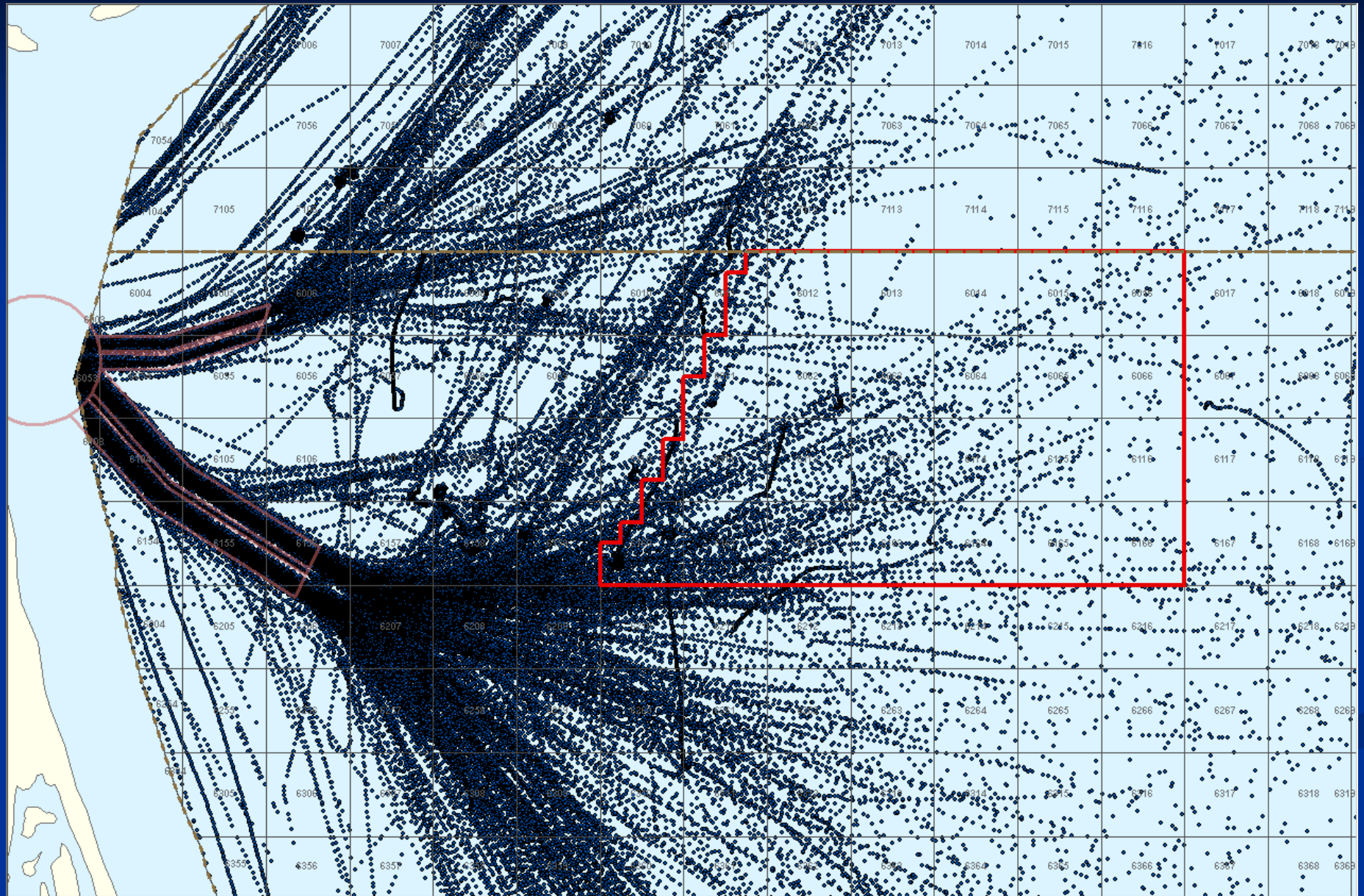


# AIS returns – Vessel Data

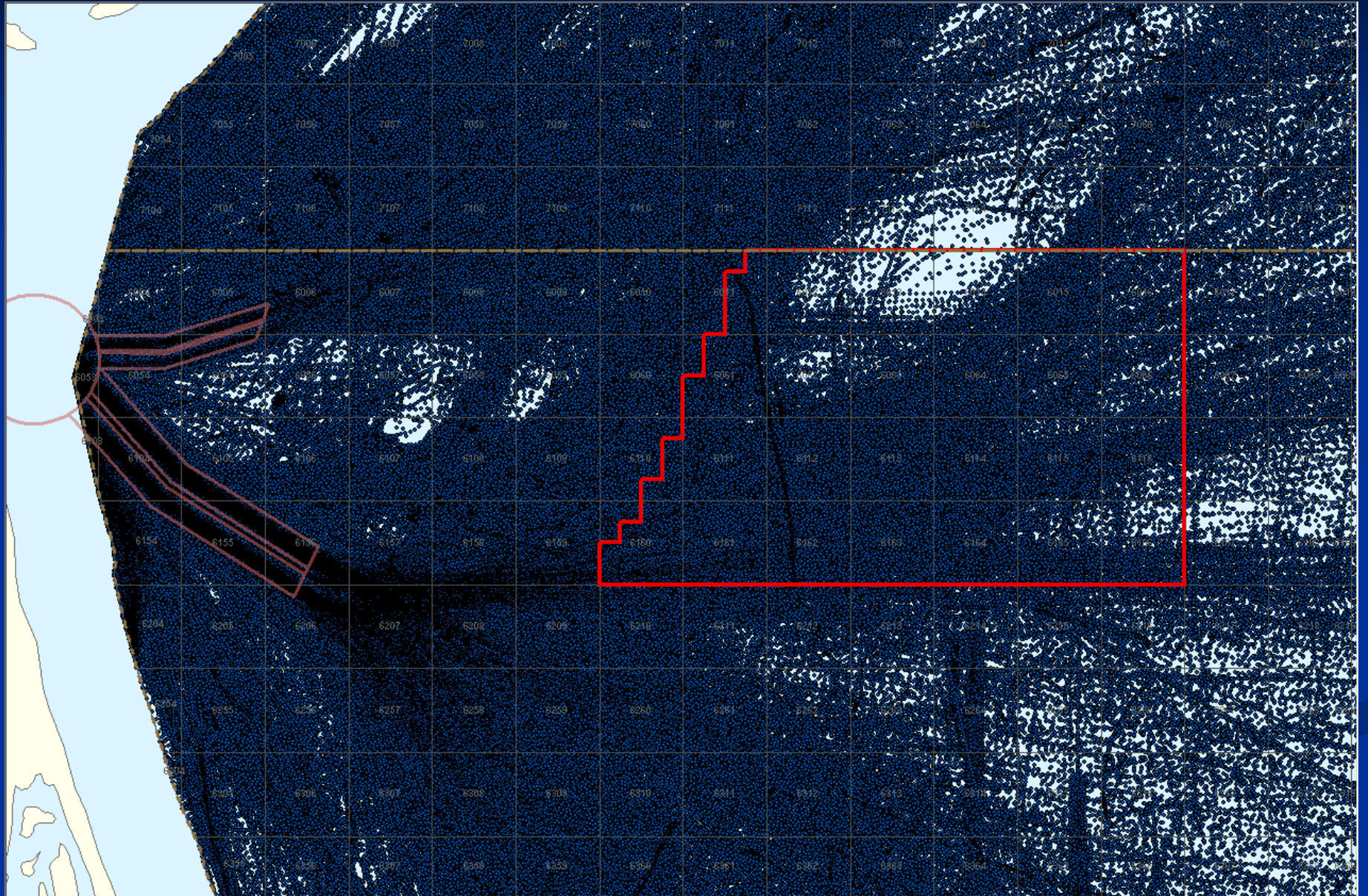




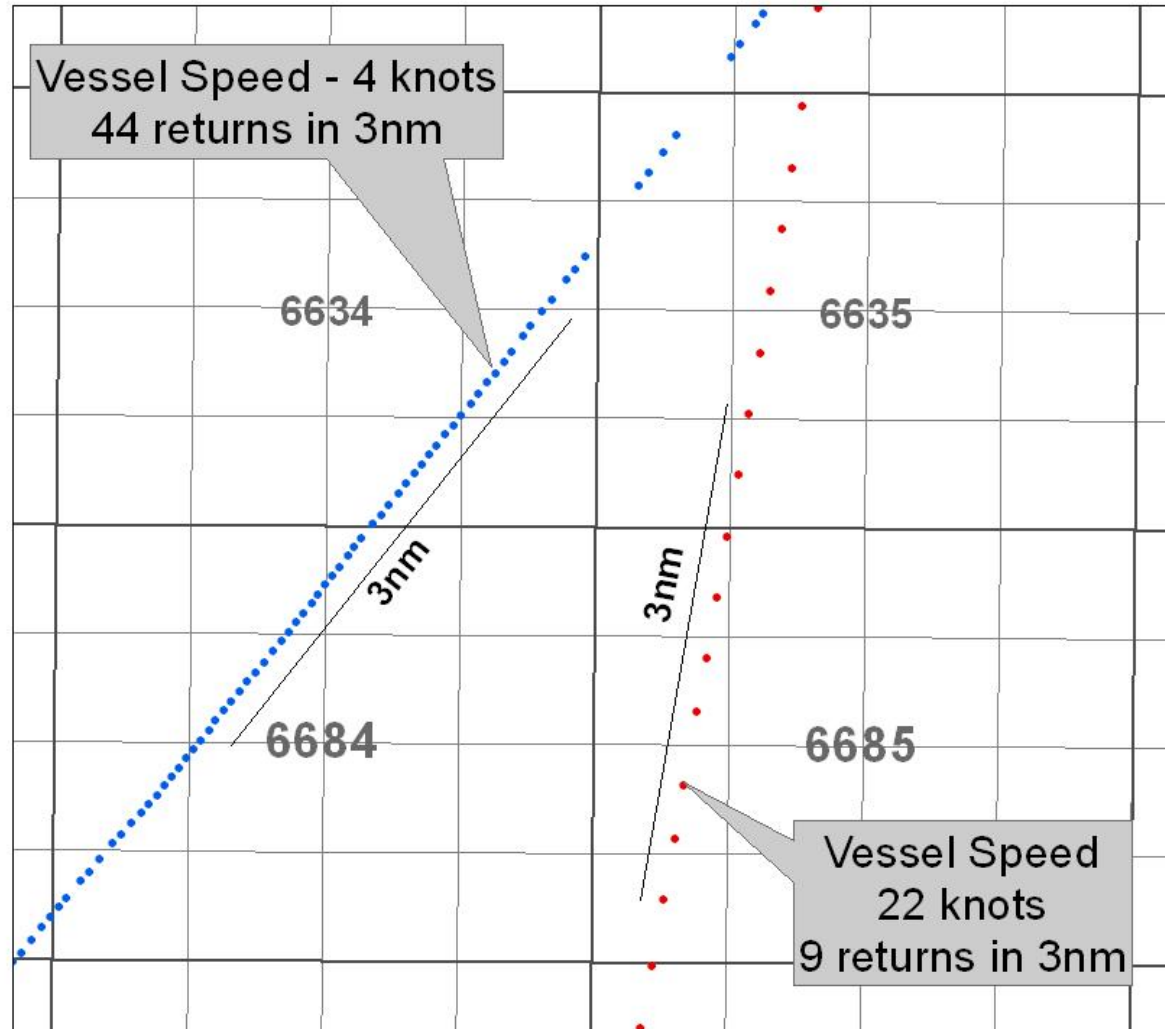
# AIS returns – January 2009



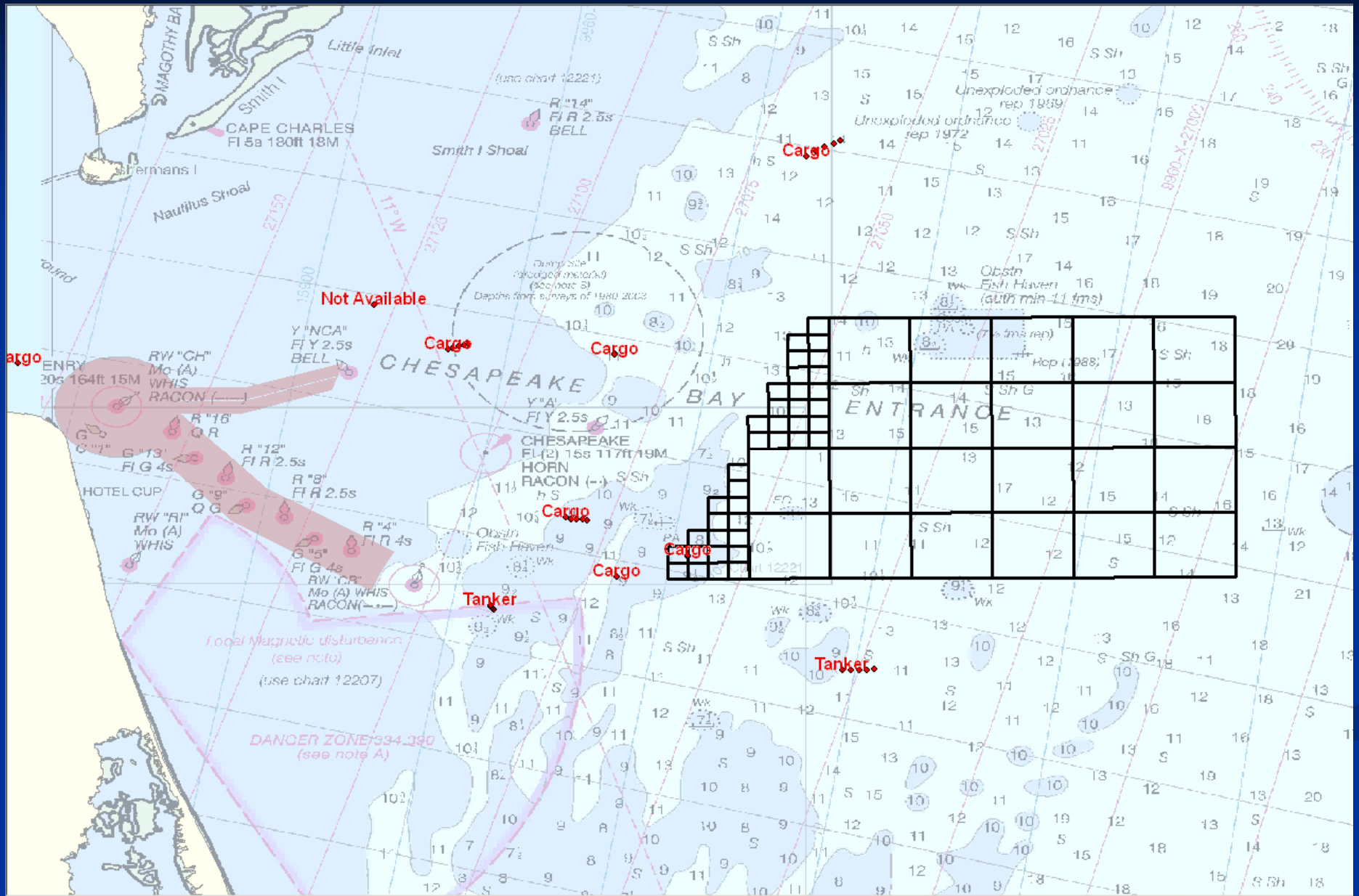
# AIS returns – All Months 2009

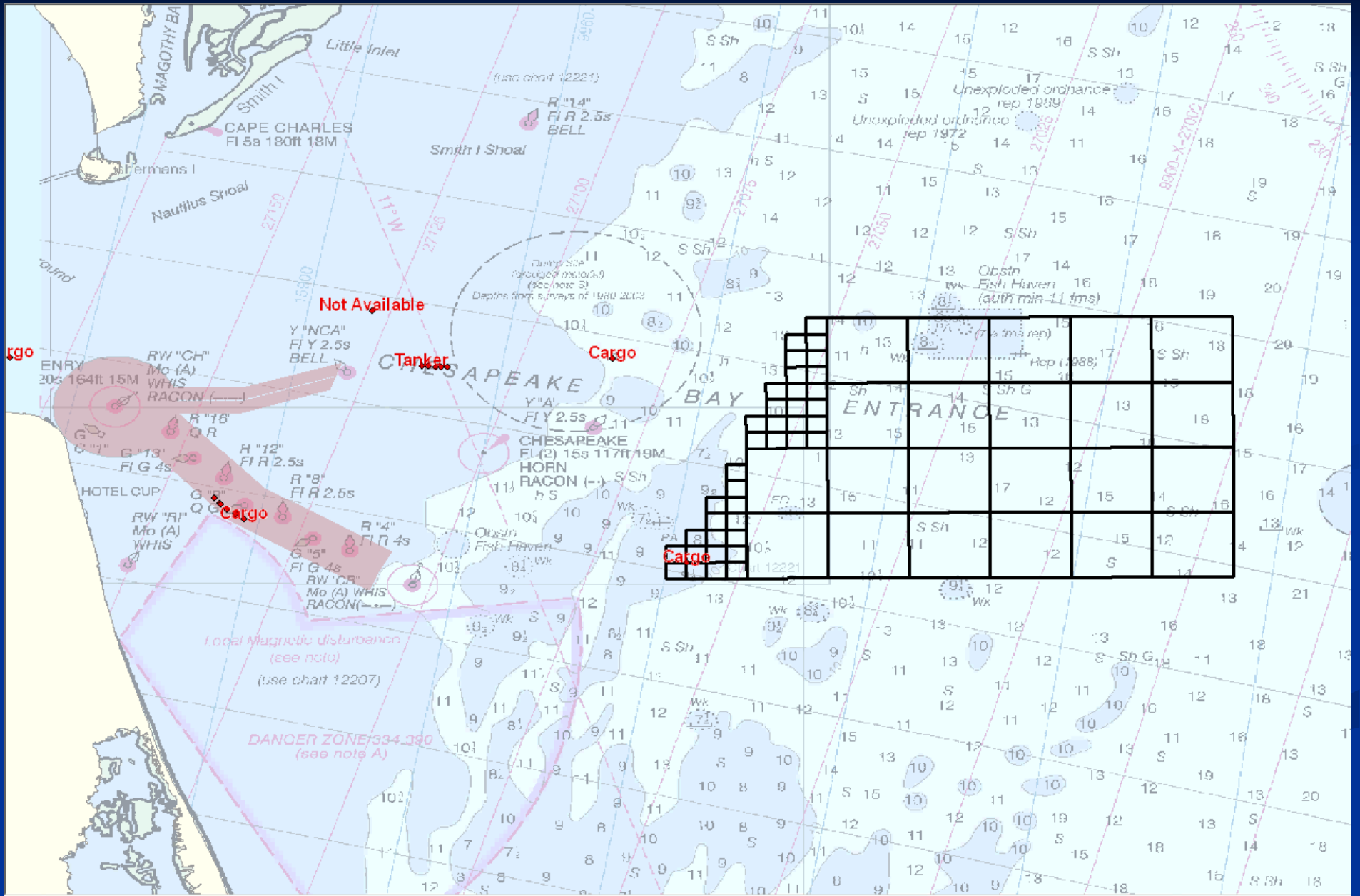


# Vessel Speed and AIS Point Density









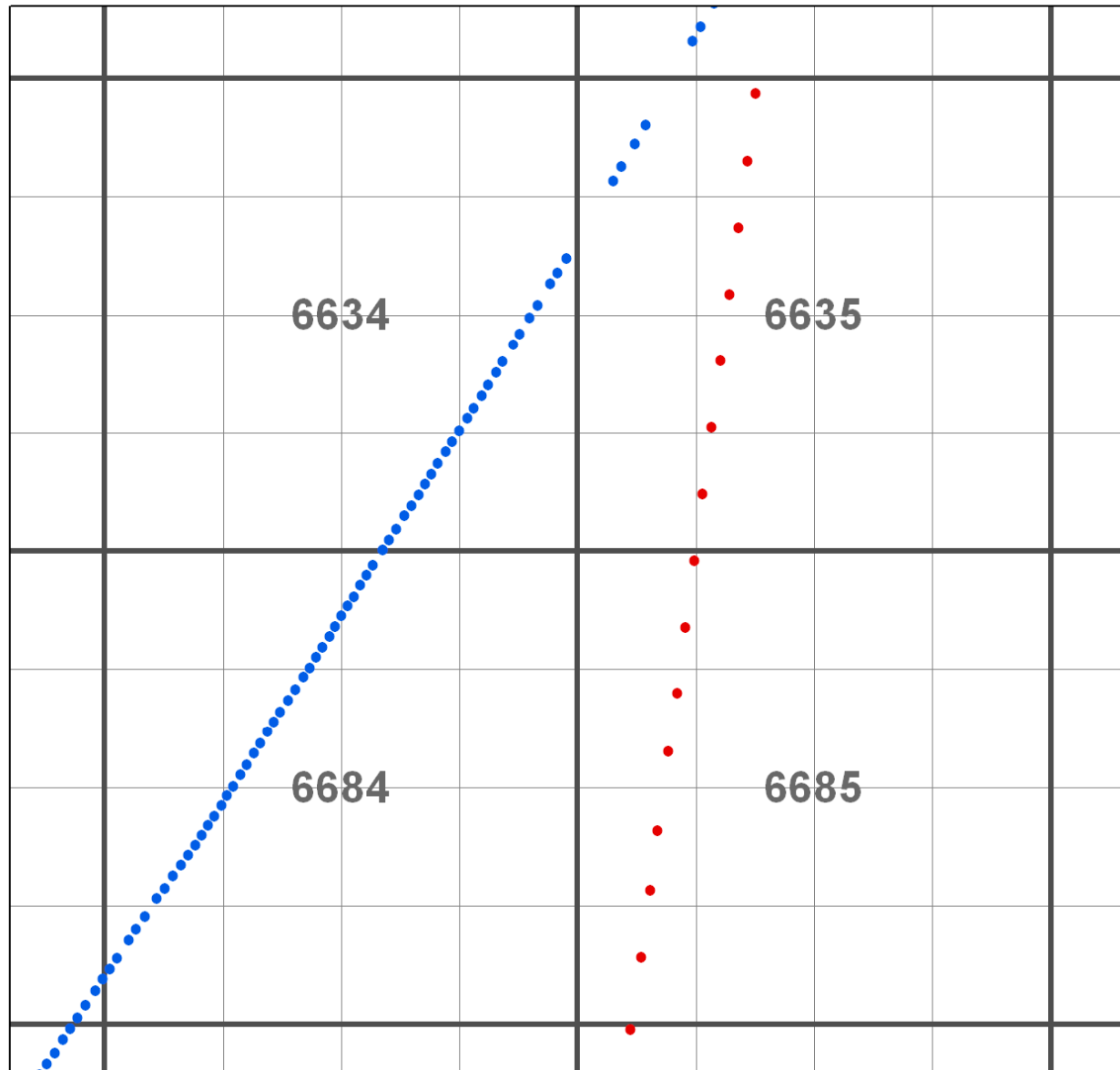
## AIS Density Mapping

- Quantify unique vessels (MMSI) passing through each leasing unit (aliquot) per year.
- Extract deep draft vessel types for depicting traffic volume for larger vessels.
- Other mapping includes avg. vessel time in aliquot, avg. speed, etc.

OCS Blocks – 2.6nm x 2.6nm, Aliquots (sub-blocks) - .65nm x .65nm

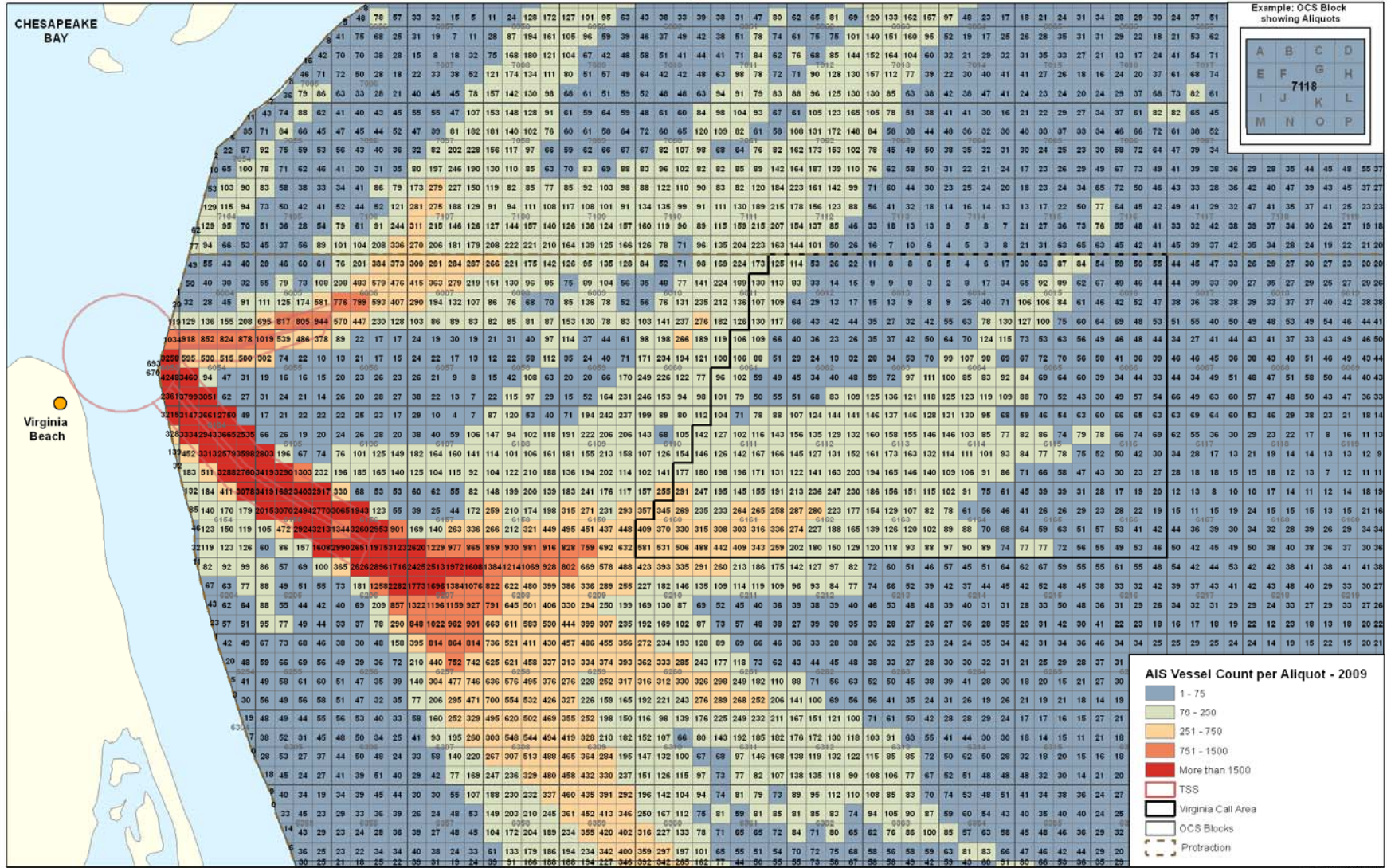
	A	B	C	D	A	B	C	D	
	E	F	G	H	E	F	G	H	
		<b>6629</b>				<b>6630</b>			
	I	J	K	L	I	J	K	L	
	M	N	O	P	M	N	O	P	
	A	B	C	D	A	B	C	D	
	E	F	G	H	E	F	G	H	
		<b>6679</b>				<b>6680</b>			
	I	J	K	L	I	J	K	L	
	M	N	O	P	M	N	O	P	

## Filtering by Date to Remove Duplicate Returns



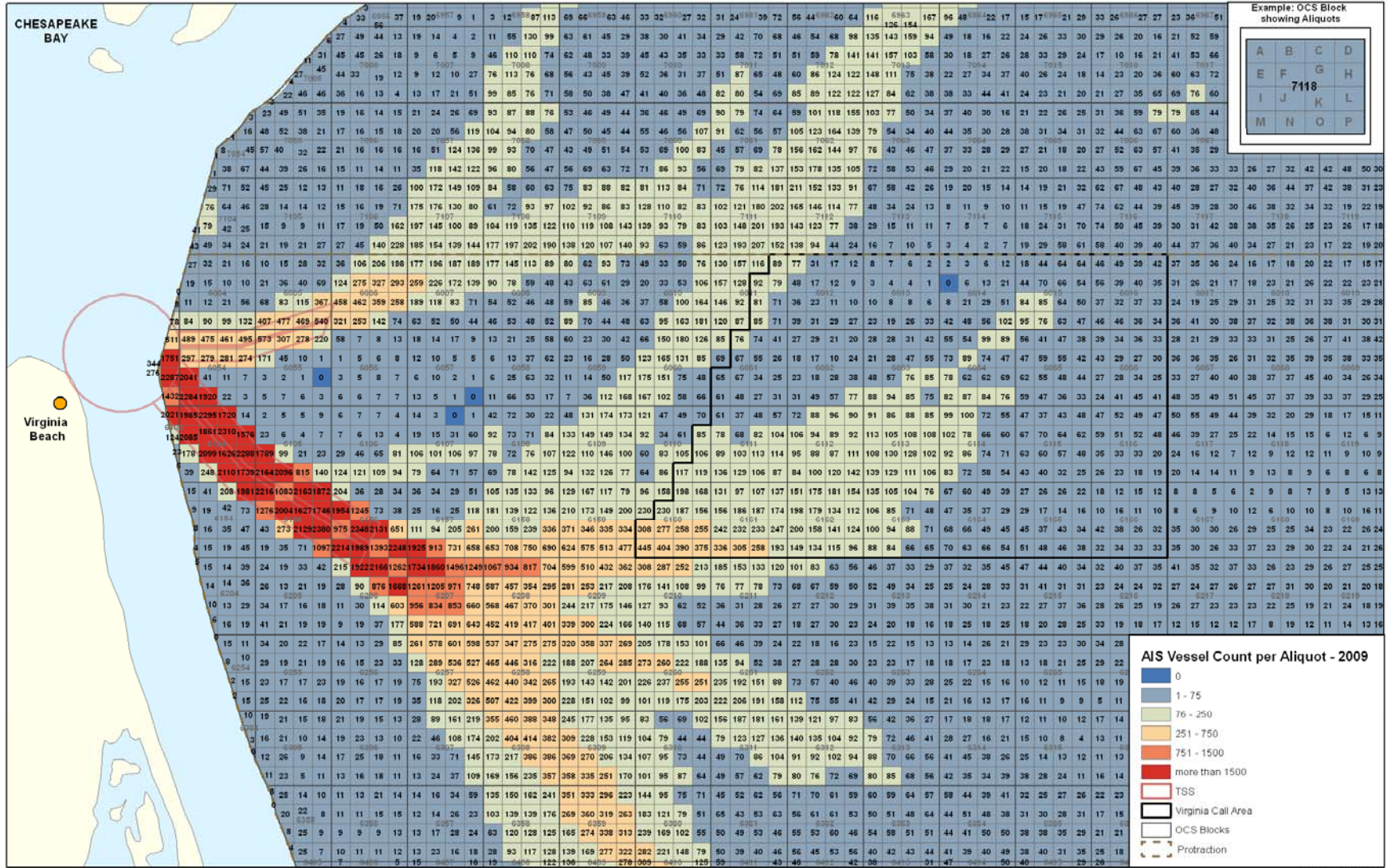
# All Vessel Types vs. Deep Draft

2009 Vessel Counts by Aliquot - All Vessels



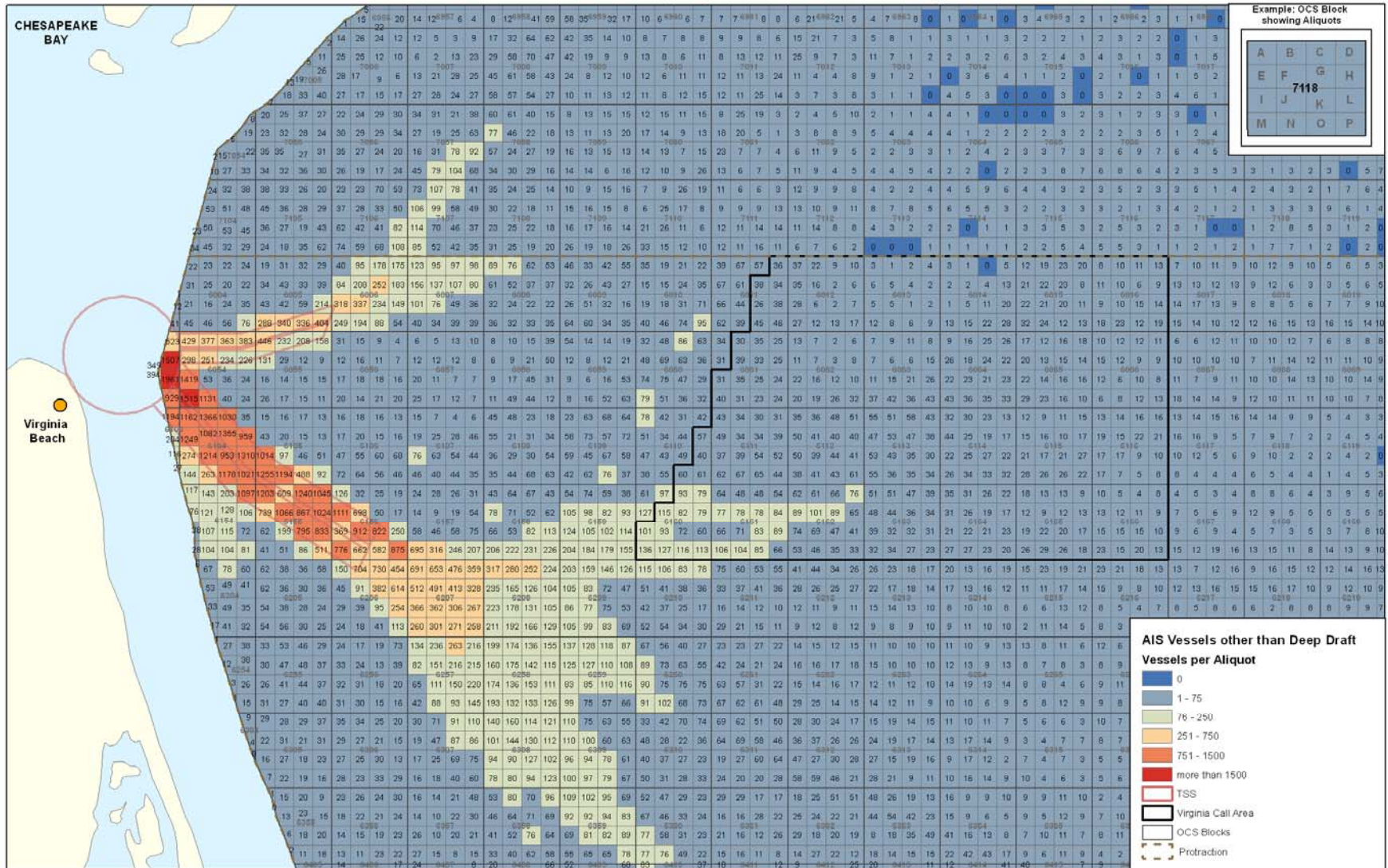
# Deep Draft Vessel Types

2009 Vessel Counts by Aliquot - Deep Draft Vessel Types (Cargo, Tanker, Towing, Towing >200m, Tugs)



# Other than Deep Draft Vessels (Subtraction)

2009 Vessel Counts by Aliquot - Vessels other than Deep Draft



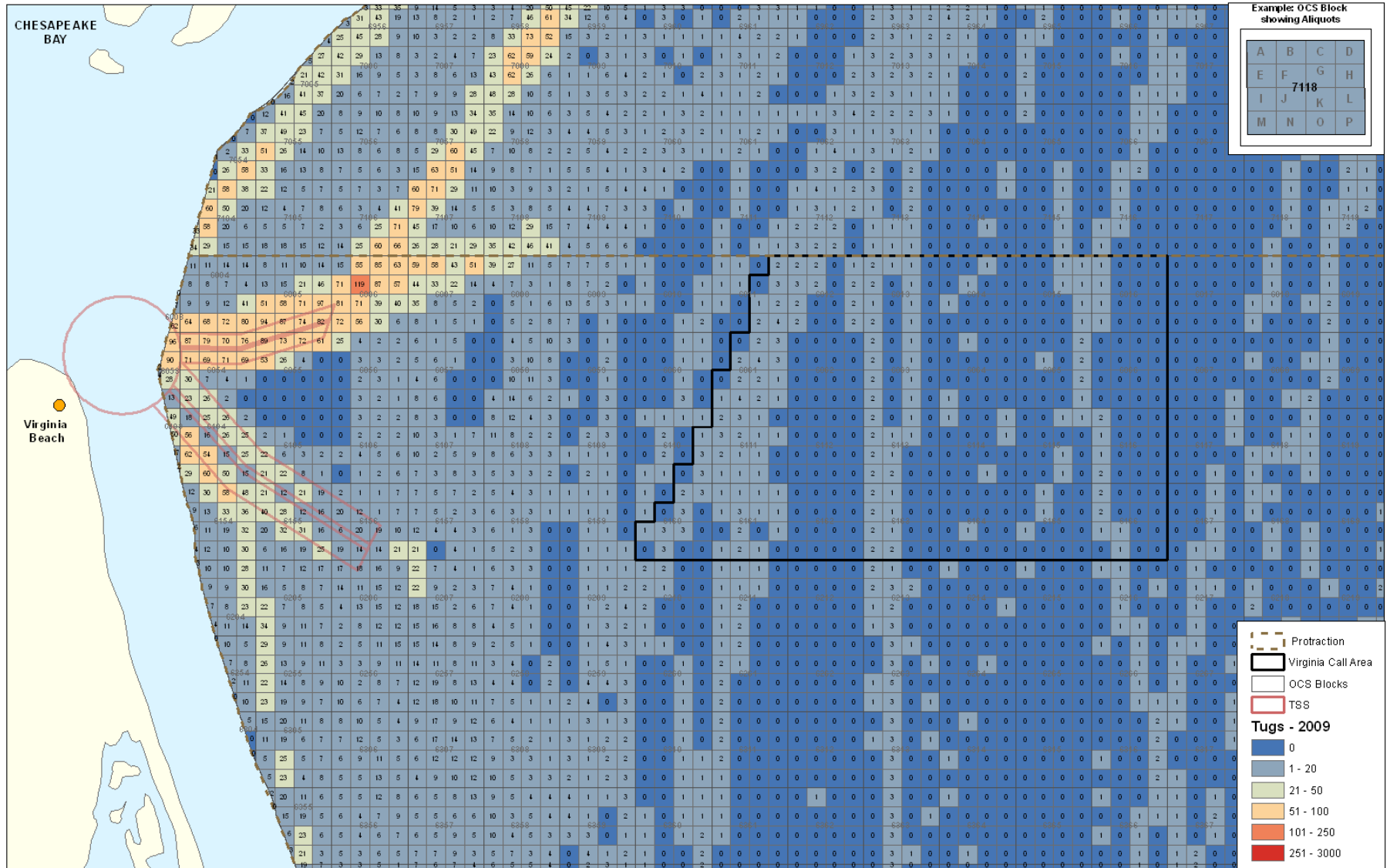


## Extracting Vessels by Deep Draft Type

- Cargo Vessels, Tankers, Tugs, Towing, Towing > 200m
- Comparison of unique traffic patterns by type.
- Maps use a more sensitive color scale to display lower volume types.

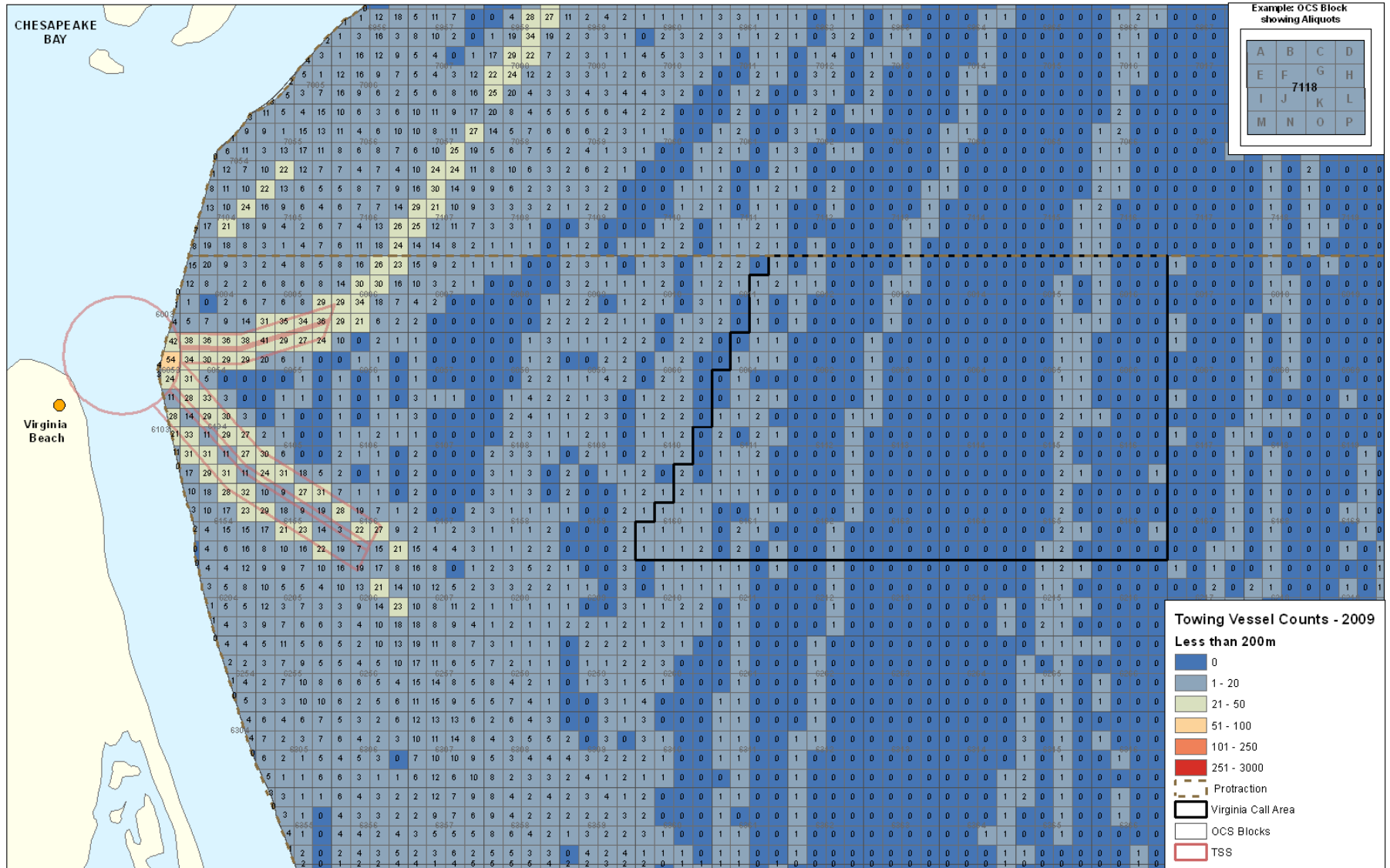
# Tugs - 2009

## 2009 Vessel Counts by Aliquot - Tugs



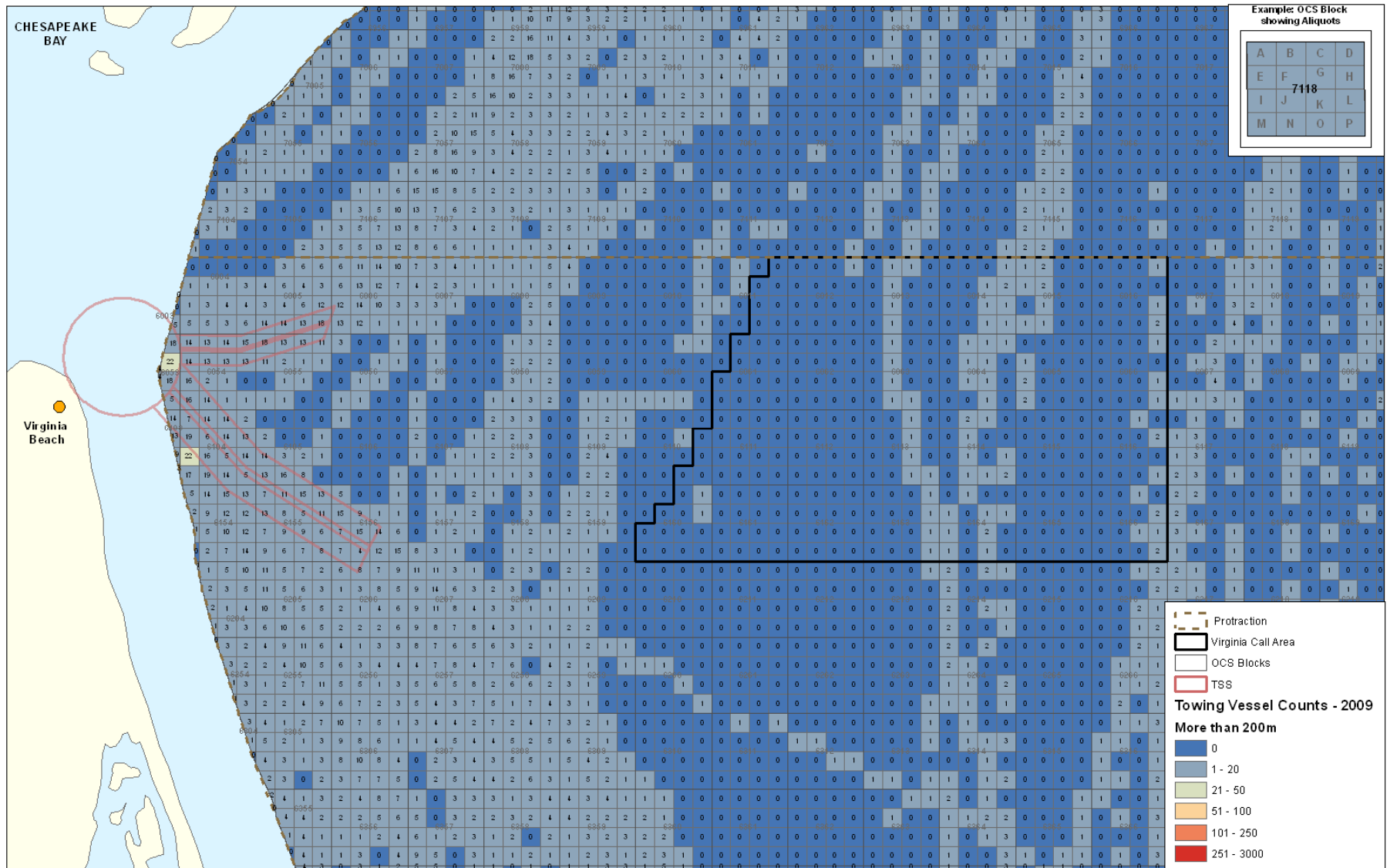
# Towing Vessels - 2009

2009 Vessel Counts by Aliquot - Towing less than 200m



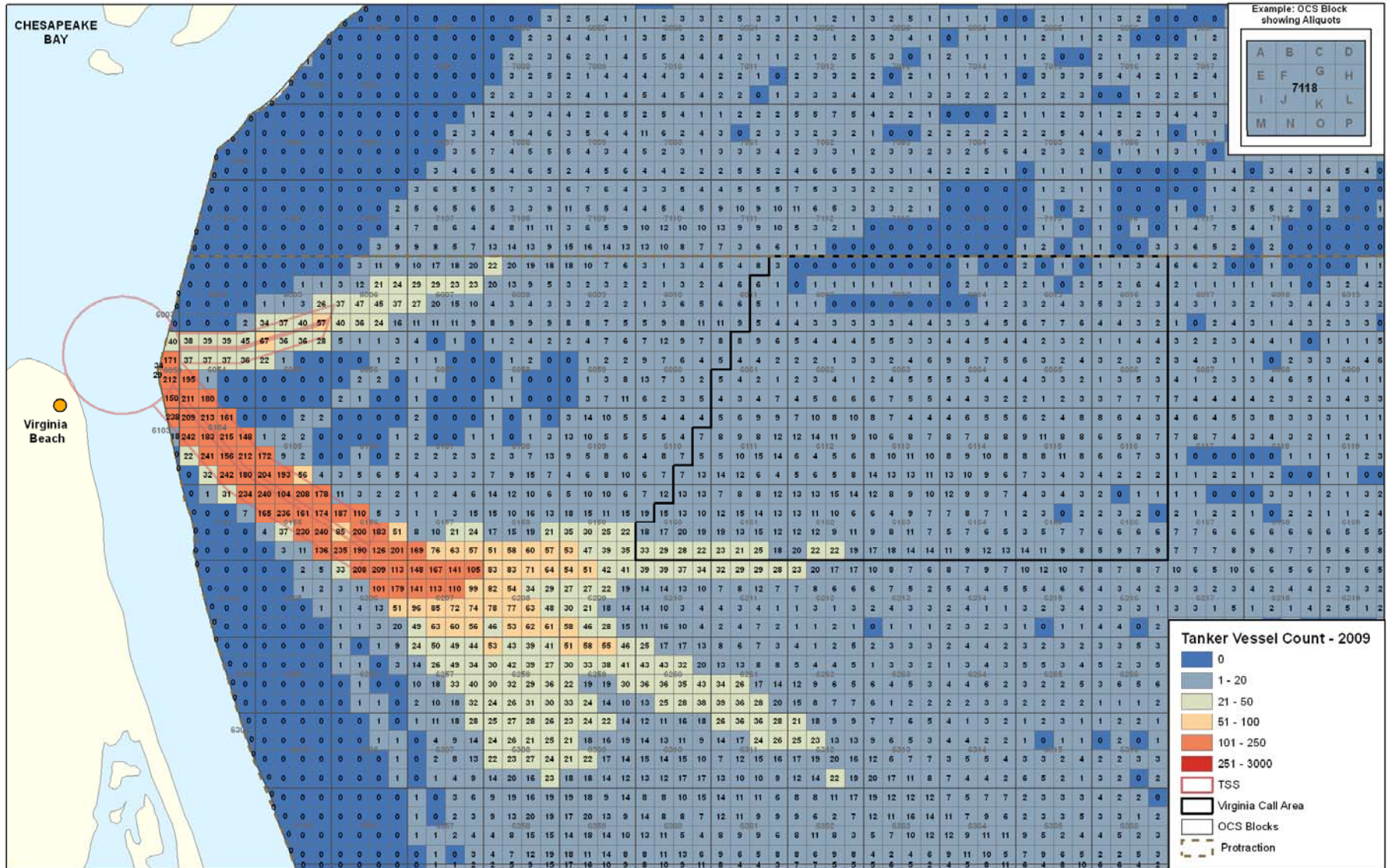
# Towing Vessels over 200m - 2009

2009 Vessel Counts by Aliquot - Towing more than 200m



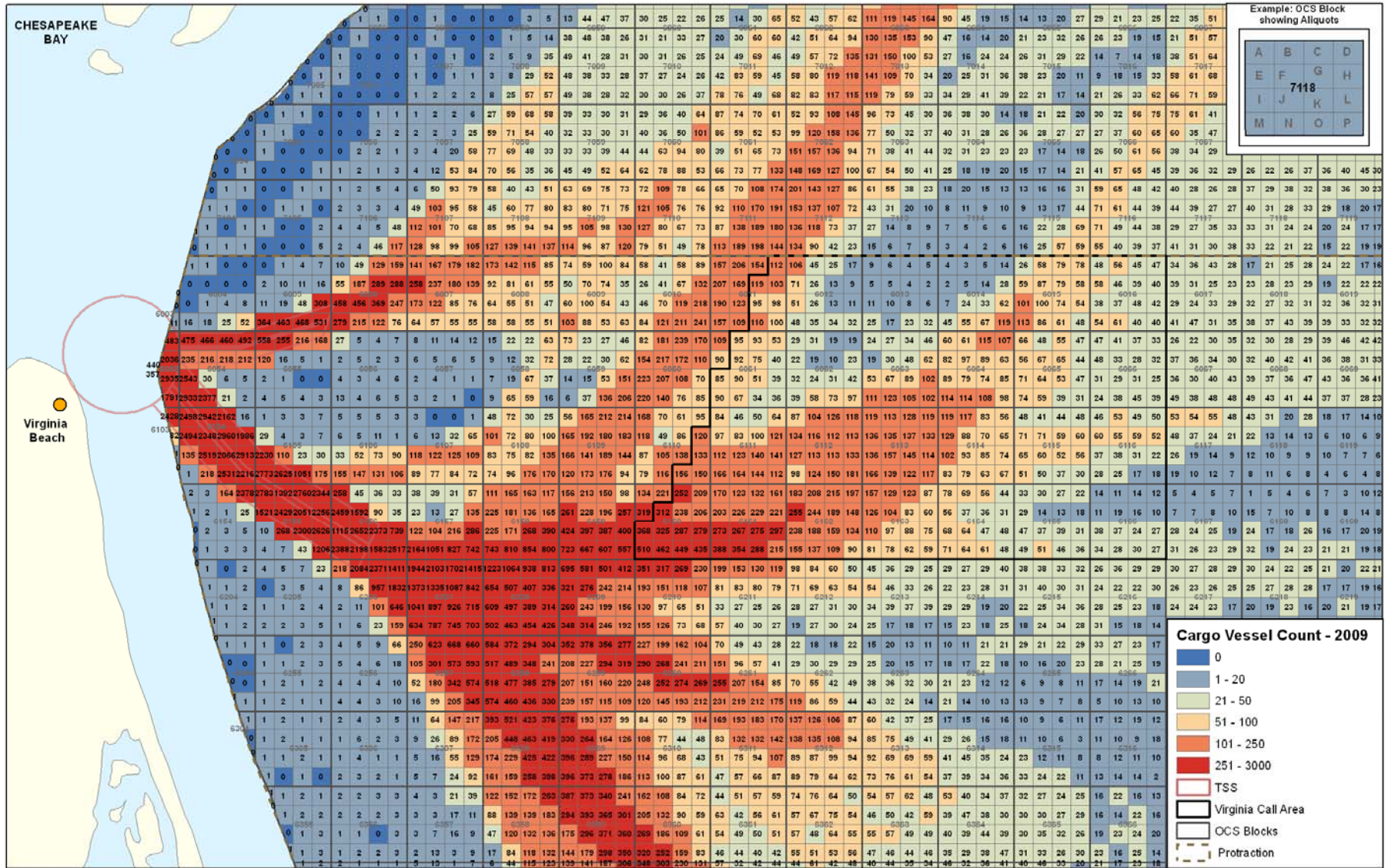
# Tankers - 2009

2009 Vessel Counts by Aliquot - Tankers

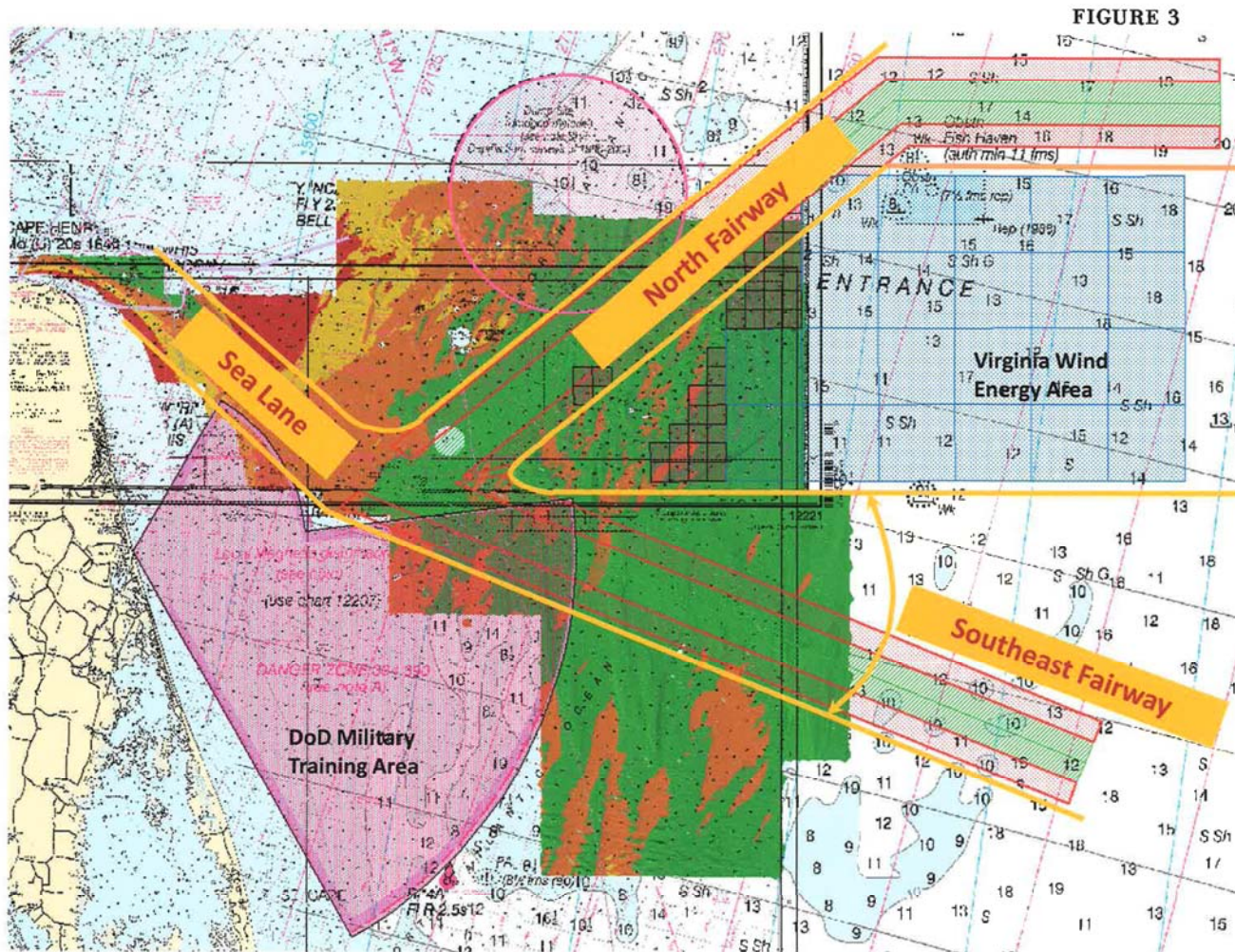


# Cargo Vessels - 2009

2009 Vessel Counts by Aliquot - Cargo Vessels

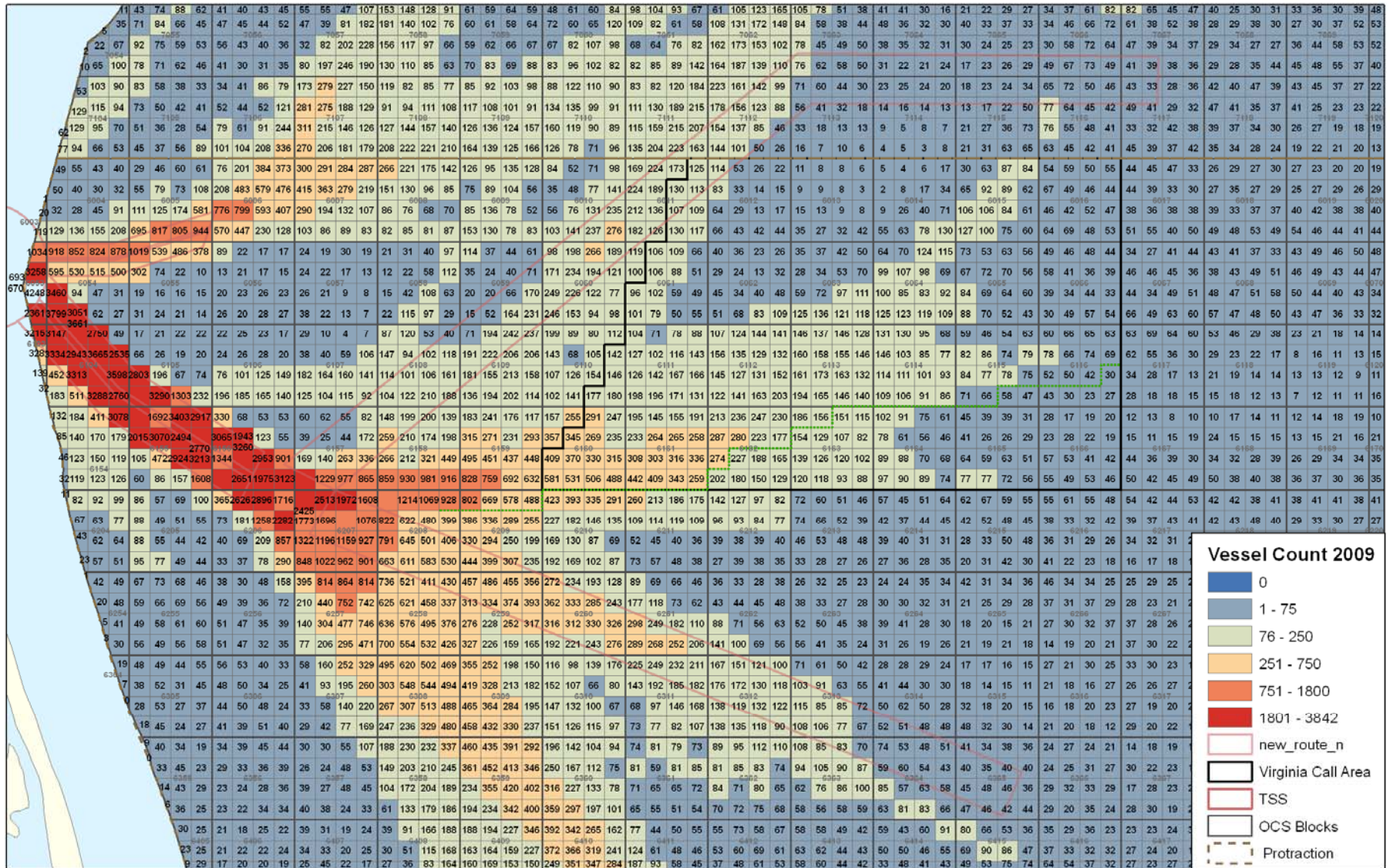


- Navigational comments received from The Virginia Port Authority on Mid Atlantic WEA Draft EA.
- Delineation of a northern and southern route using existing deep water access.
- Analysis options for predicting “approximate” fairway traffic volume.



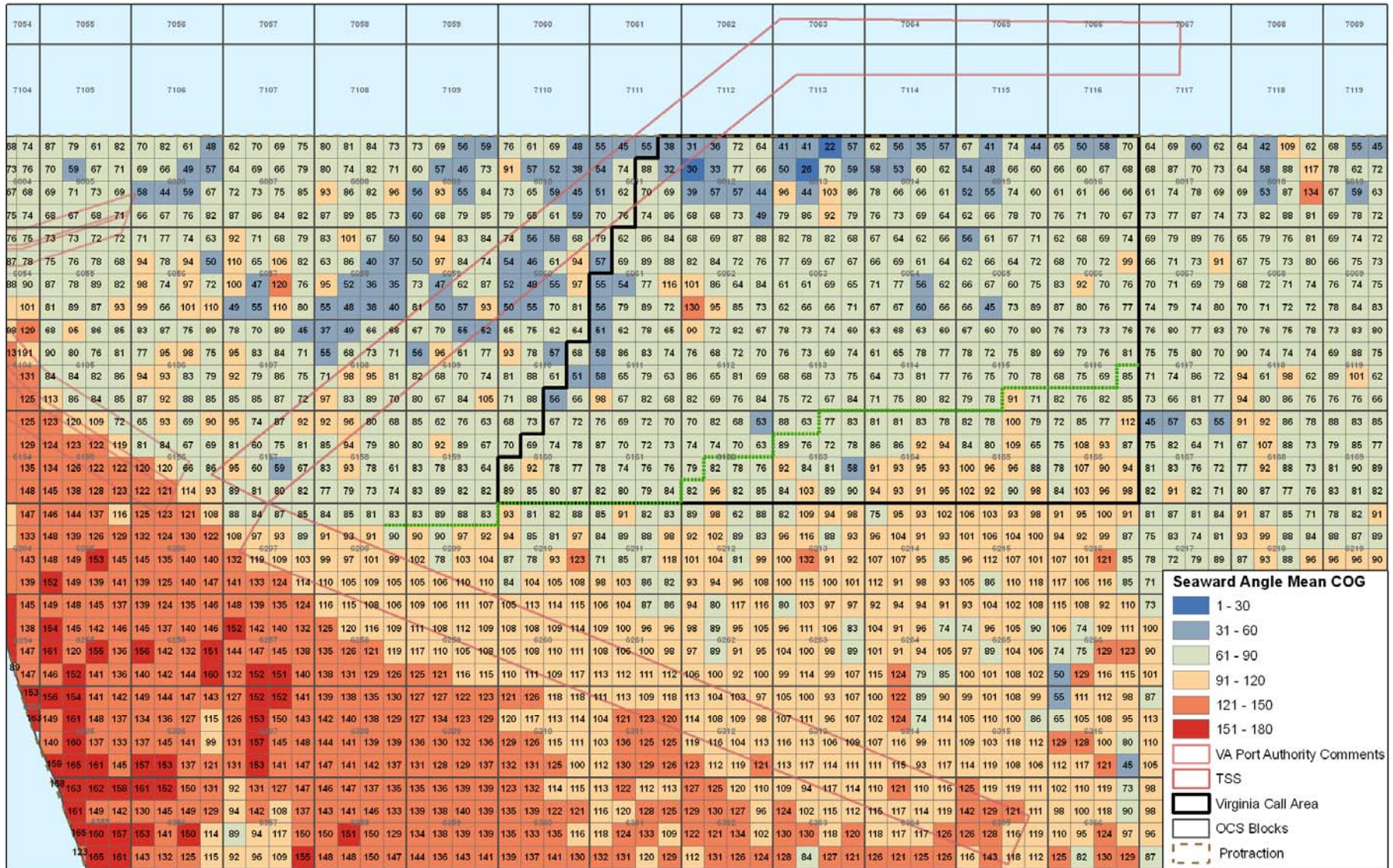
# Current Traffic

## 2009 Vessel Counts - Current Traffic





# South Route vs. North Route - Mean Seaward Course Angle



# Rerouted Traffic

2009 Vessel Counts with Altered Traffic

