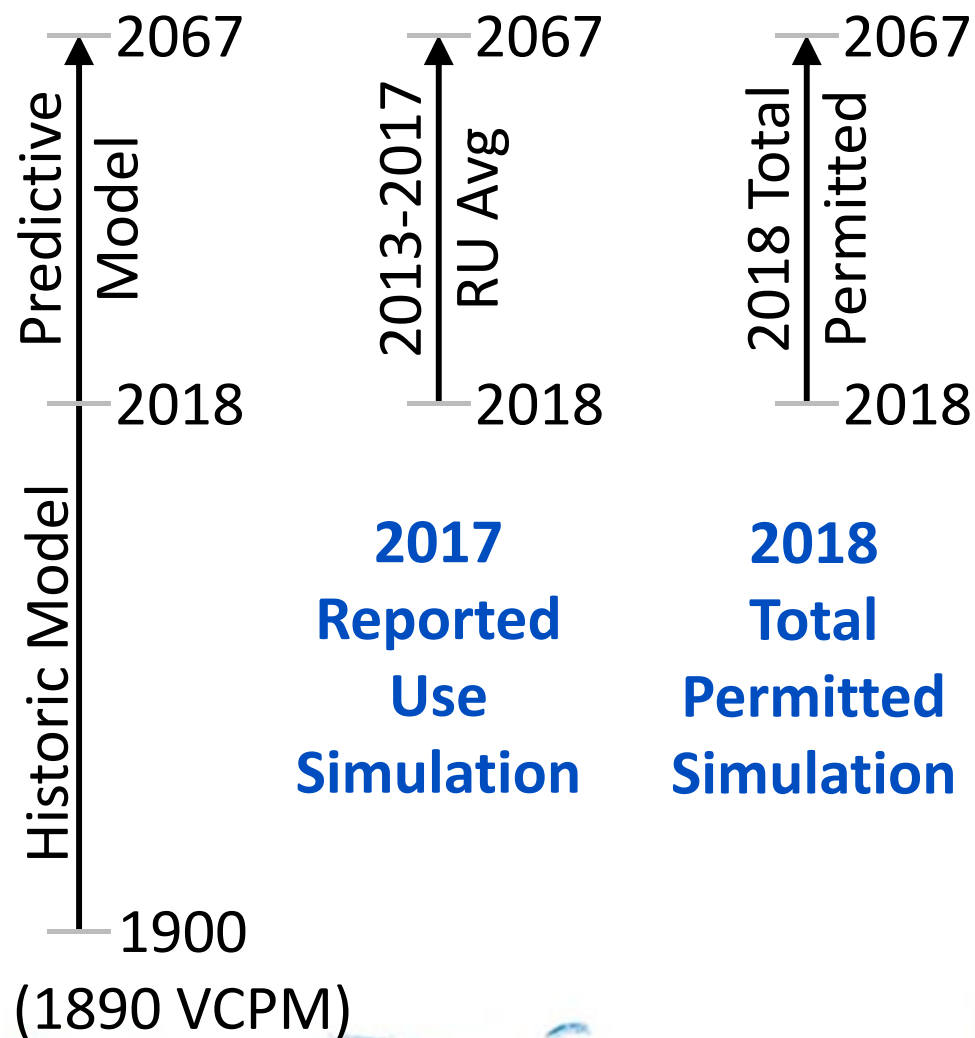


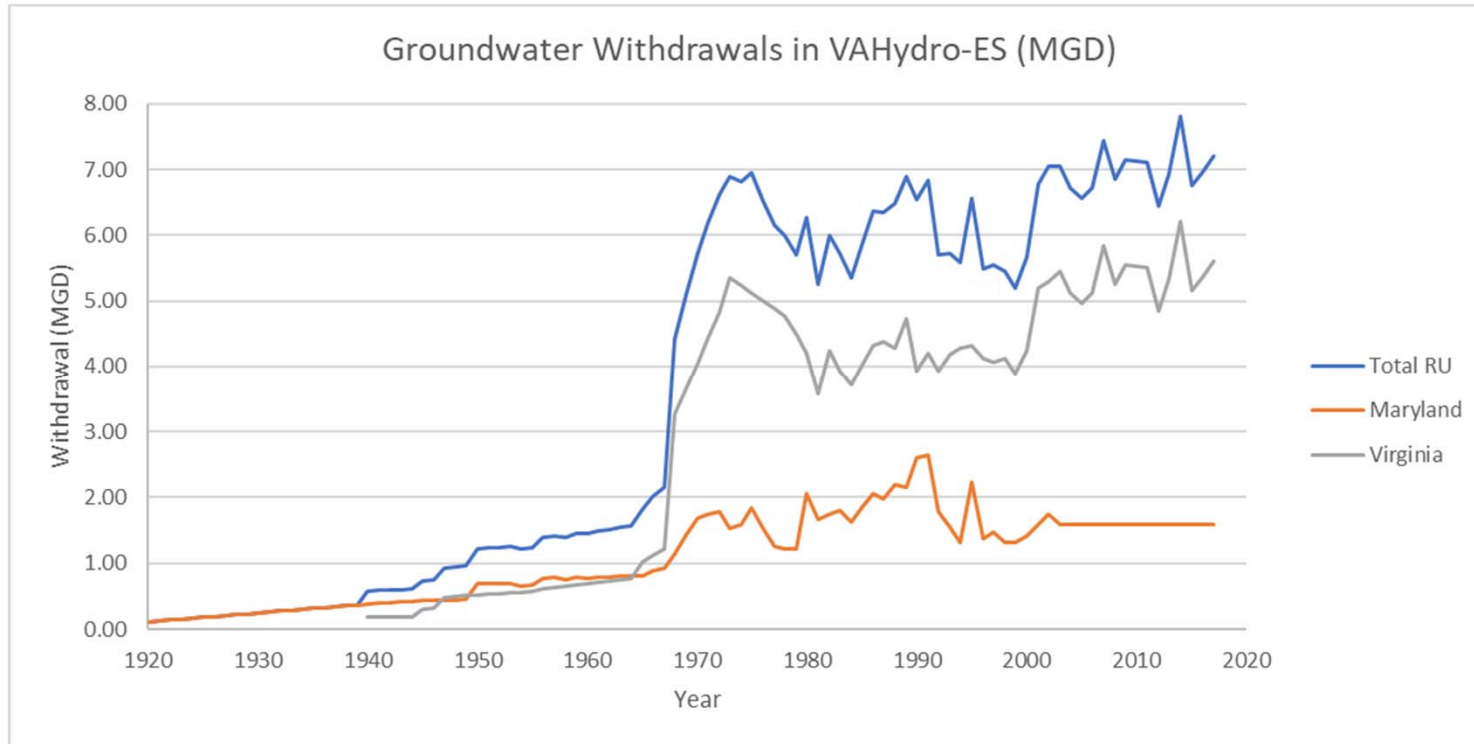
VAHYDRO-ES: 2017-2018 ANNUAL SIMULATION OF REPORTED AND TOTAL PERMITTED USE



- VESM (1900-2003) Adaptation

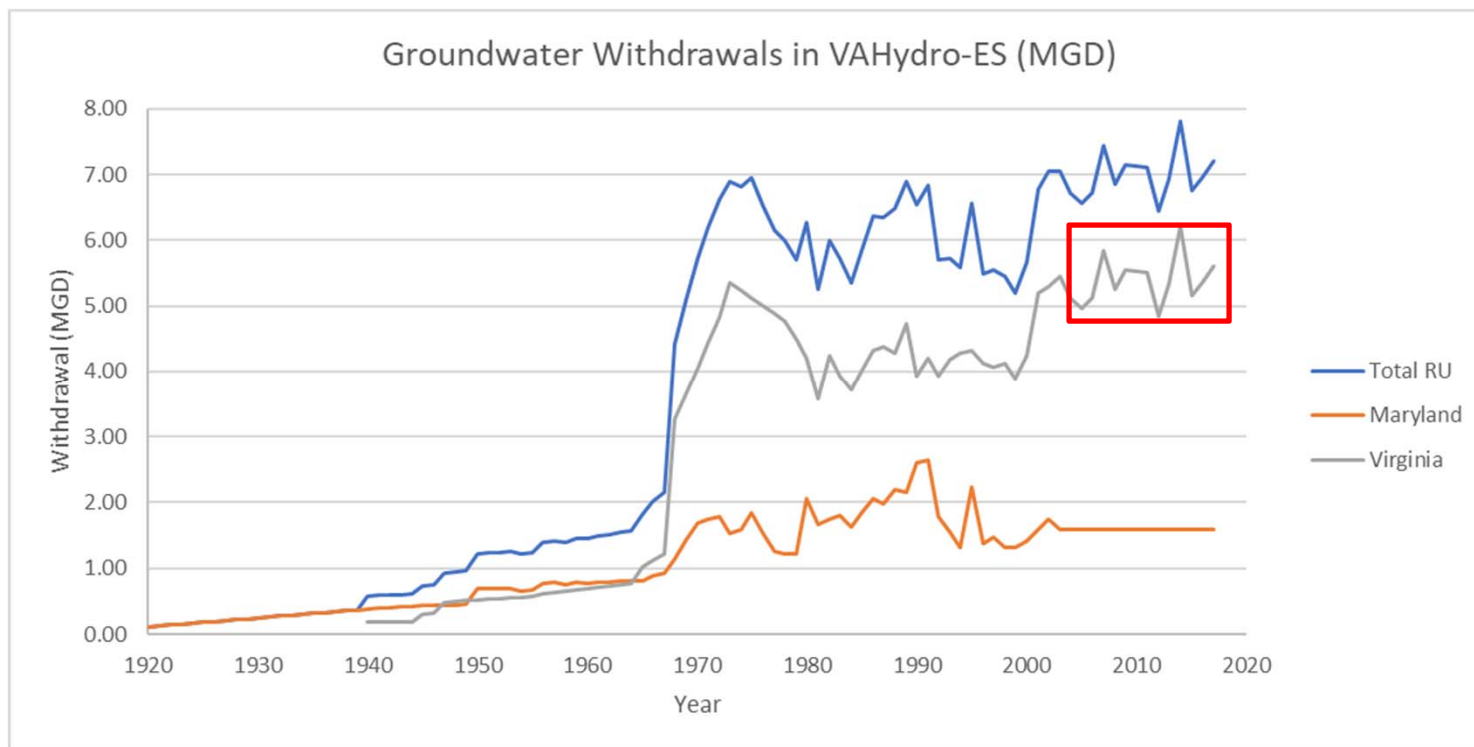
- 2010 Total Permitted created (steady-state)
- 2012 Total Permitted created (steady-state)
- 2015-2016 Total Permitted and Reported Use created (50 years with transport)
- 2016-2017 Total Permitted and Reported Use
- 2017 update and recalibration
- 2017-2018 Annual Report





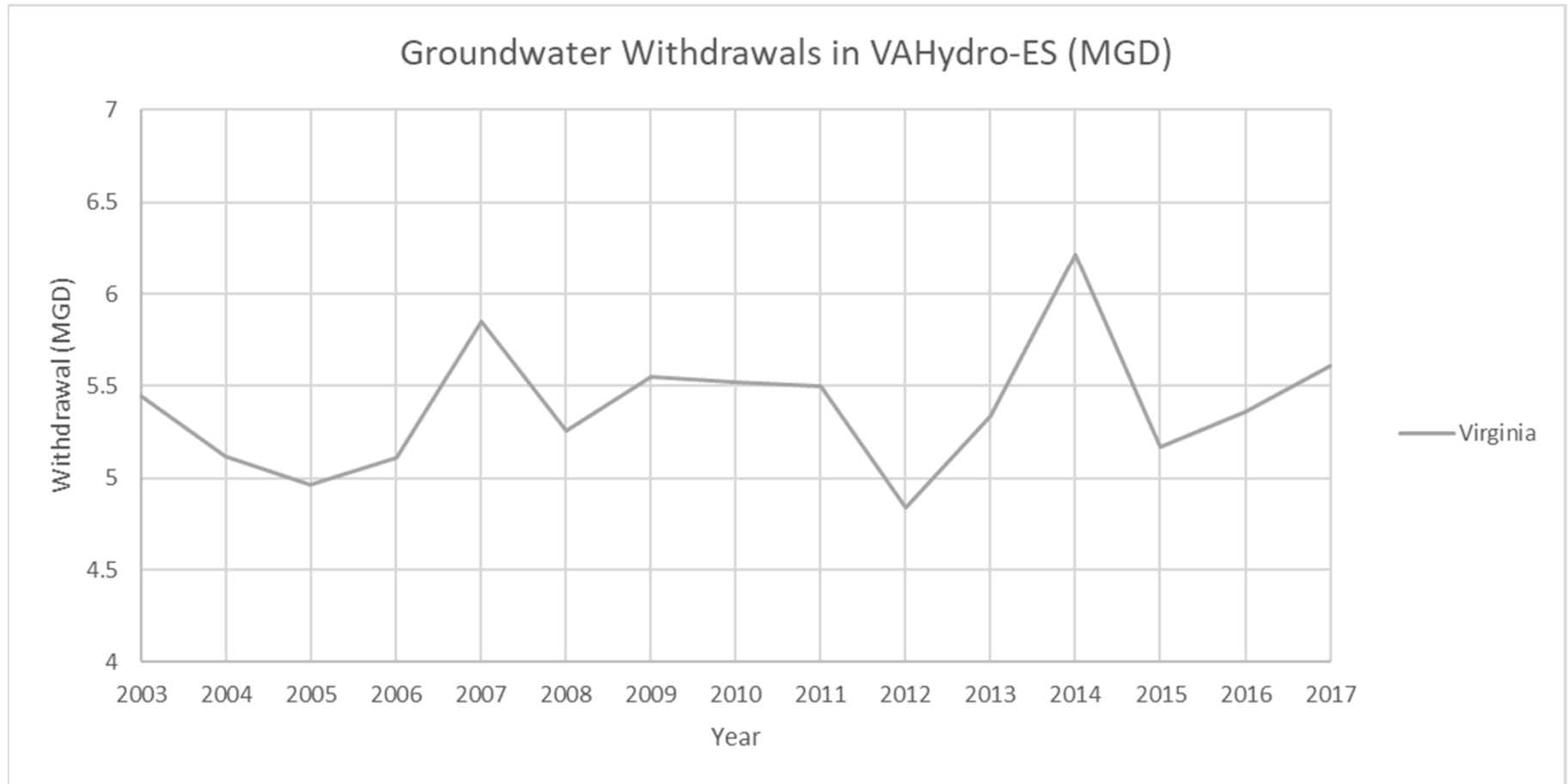
County	2015 Reported Use (MGD)	2016 Reported Use (MGD)	2017 Reported Use (MGD)
Accomack	4.07	4.44	4.76
Northampton	1.1	0.92	0.96
Maryland	1.6	1.6	1.6
TOTAL:	6.77	6.96	7.32





County	2015 Reported Use (MGD)	2016 Reported Use (MGD)	2017 Reported Use (MGD)
Accomack	4.07	4.44	4.76
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Maryland	1.6	1.6	1.6
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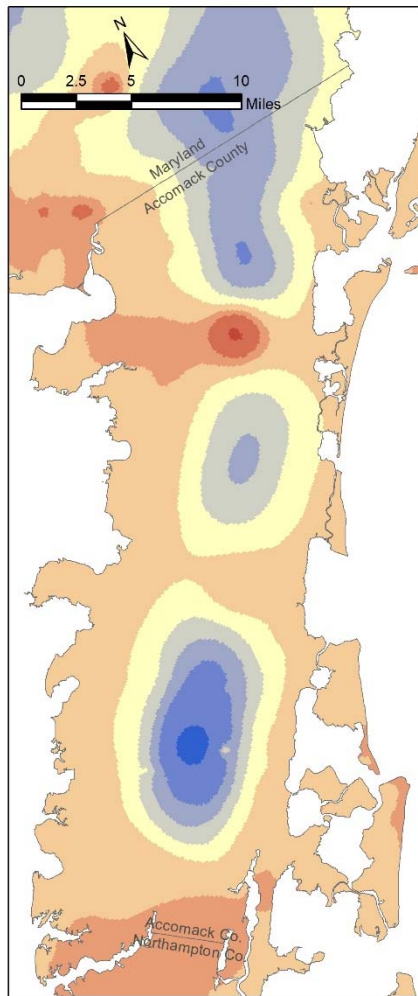
Aquifer	2015 Reported Use (MGD)	2016 Reported Use (MGD)	2017 Reported Use (MGD)
Surficial	0.28	0.38	0.34
Upper Yorktown-Eastover	1.14	0.83	1.12
Middle Yorktown-Eastover	2.15	2.53	2.48
Lower Yorktown-Eastover	1.4	1.42	1.53
Exmore Paleochannel	0.2	0.2	0.26
Eastville Paleochannel	0.001	0.001	0.001
TOTAL:	5.17	5.36	5.72



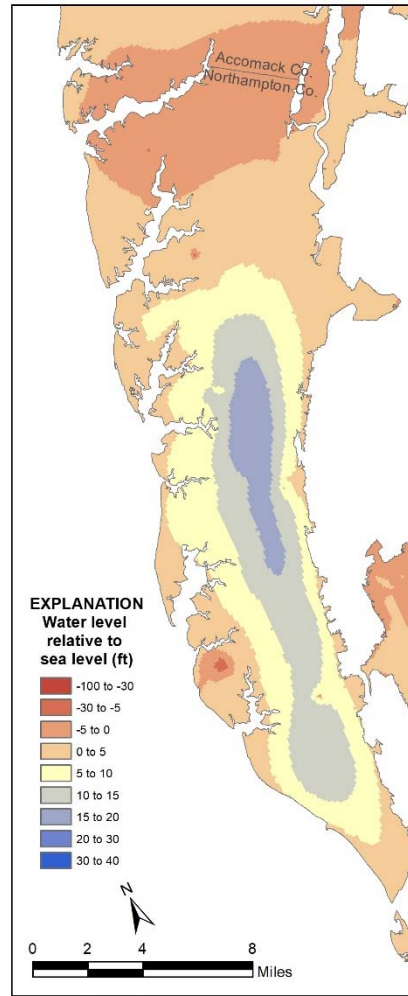
- Surficial - 5.9%
- Upper Yorktown-Eastover - 19.6%
- Middle Yorktown-Eastover - 43.4%
- Lower Yorktown-Eastover - 26.7%
- Exmore Paleochannel - 4.5%
- Eastville Paleochannel - 0.02%



**VAHydro-ES 2017 Reported Use Simulation
Upper Yorktown-Eastover Water Levels**



Accomack County

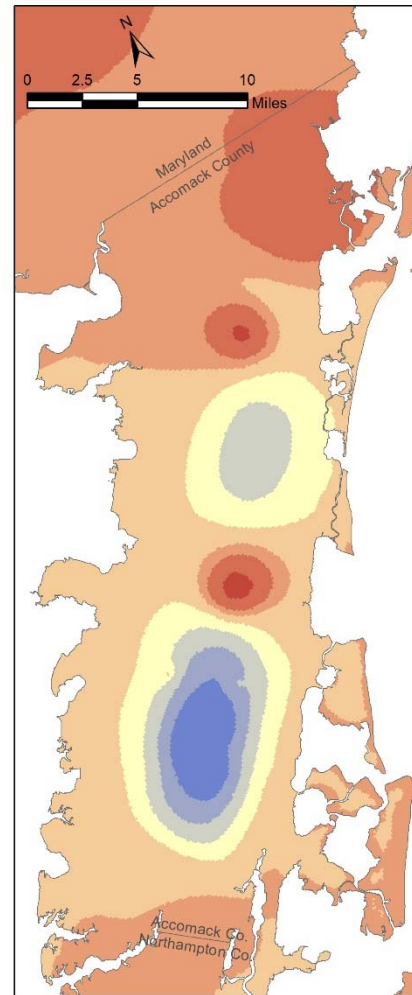


Northampton County

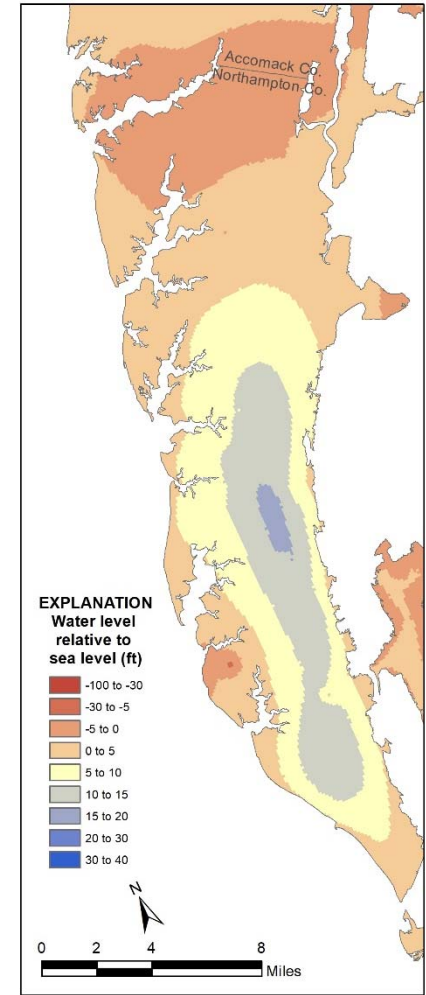
EXPLANATION
Water level
relative to
sea level (ft)

Dark Red	-100 to -30
Red	-30 to -5
Orange	-5 to 0
Light Orange	0 to 5
Yellow	5 to 10
Light Green	10 to 15
Green	15 to 20
Dark Green	20 to 30
Blue	30 to 40

**VAHydro-ES 2017 Reported Use Simulation
Middle Yorktown-Eastover Water Levels**



Accomack County

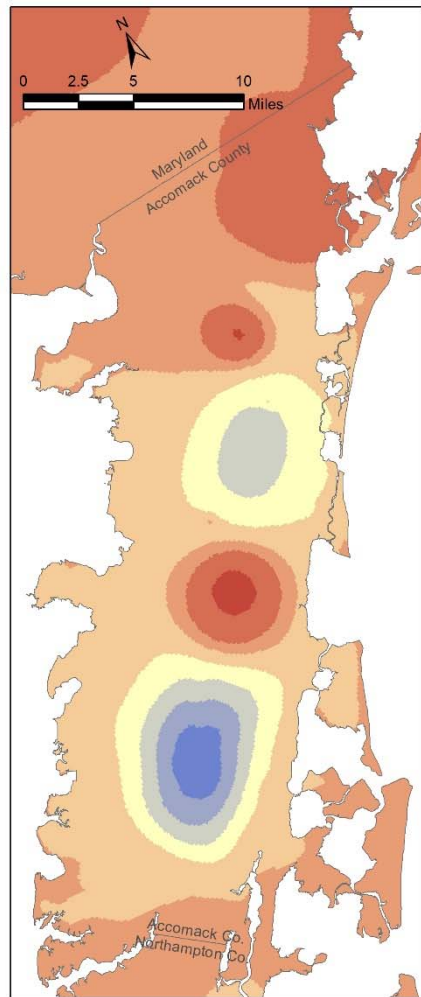


Northampton County

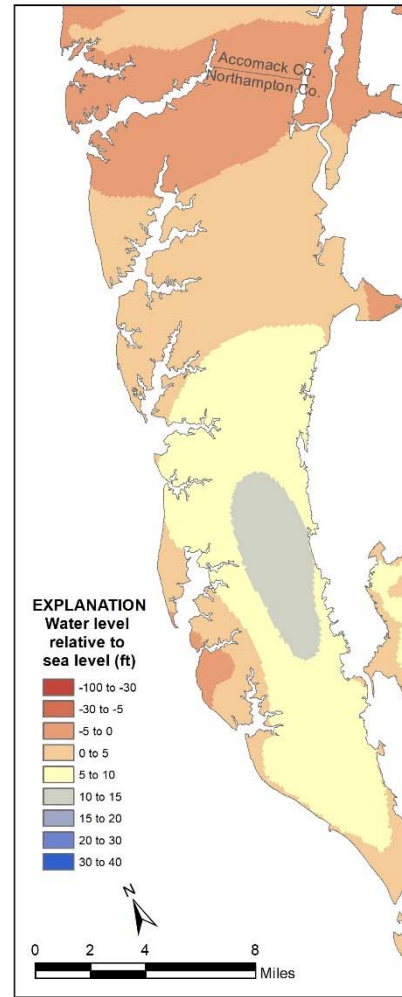
EXPLANATION
Water level
relative to
sea level (ft)

Dark Red	-100 to -30
Red	-30 to -5
Orange	-5 to 0
Light Orange	0 to 5
Yellow	5 to 10
Light Green	10 to 15
Green	15 to 20
Dark Green	20 to 30
Blue	30 to 40

VAHydro-ES 2017 Reported Use Simulation Lower Yorktown-Eastover Water Levels



Accomack County

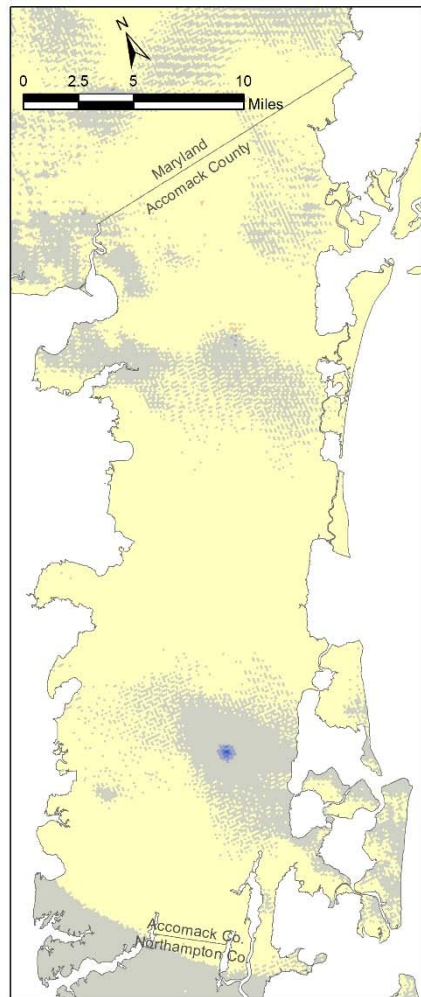


Northampton County

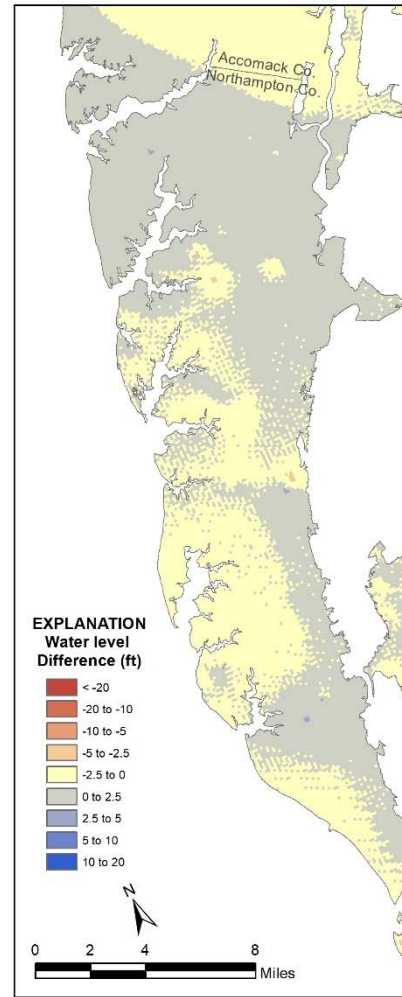
EXPLANATION
Water level
relative to
sea level (ft)

- 100 to -30
- 30 to -5
- 5 to 0
- 0 to 5
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 30
- 30 to 40

VAHydro-ES 2017 Minus 2016 RU Simulation Upper Yorktown-Eastover Water Levels



Accomack County

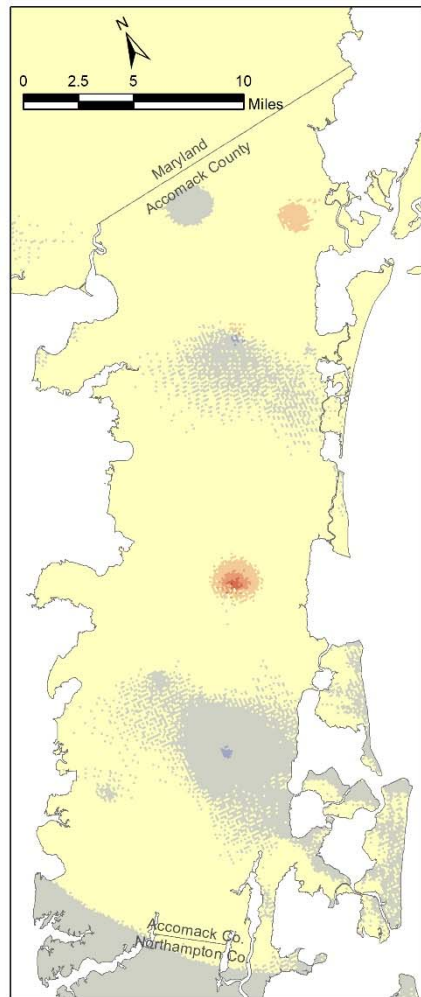


Northampton County

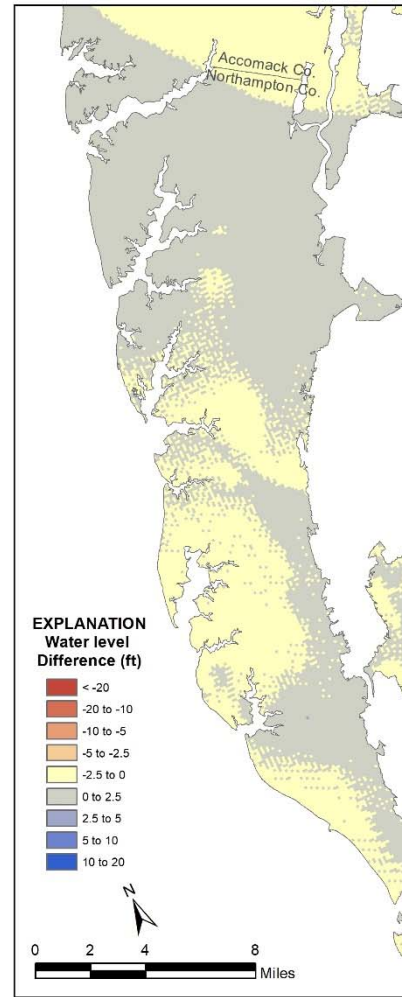
EXPLANATION
Water level
Difference (ft)

- < -20
- -20 to -10
- -10 to -5
- -5 to -2.5
- -2.5 to 0
- 0 to 2.5
- 2.5 to 5
- 5 to 10
- 10 to 20

VAHydro-ES 2017 Minus 2016 RU Simulation Middle Yorktown-Eastover Water Levels

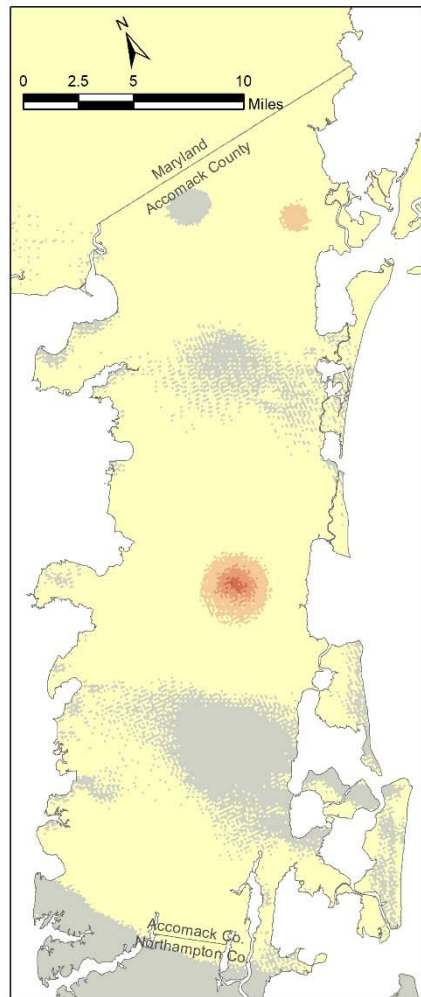


Accomack County

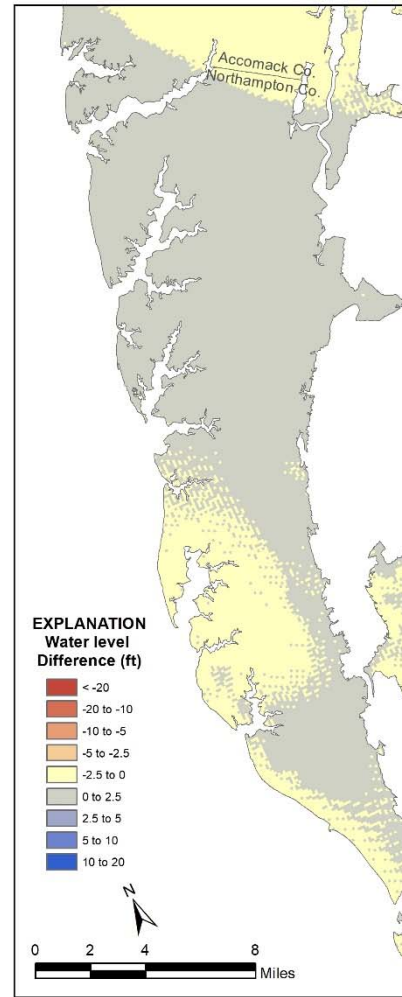


Northampton County

VAHydro-ES 2017 Minus 2016 RU Simulation Lower Yorktown-Eastover Water Levels



Accomack County

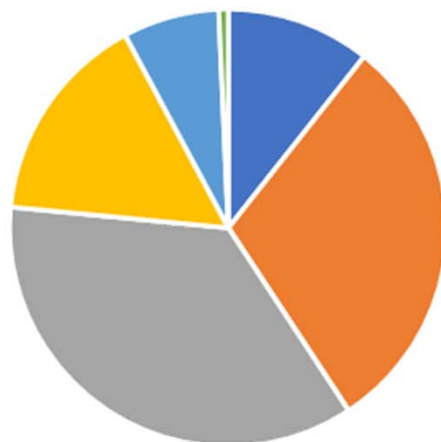


Northampton County

EXPLANATION
Water level
Difference (ft)

- < -20
- 20 to -10
- 10 to -5
- 5 to -2.5
- 2.5 to 0
- 0 to 2.5
- 2.5 to 5
- 5 to 10
- 10 to 20

Aquifer	2017 Total Permitted (MGD)	2018 Total Permitted (MGD)
Surficial	1.09	1.05
Upper Yorktown-Eastover	3.06	2.96
Middle Yorktown-Eastover	3.25	3.52
Lower Yorktown-Eastover	1.42	1.54
Exmore Paleochannel	0.24	0.70
Eastville Paleochannel	0.07	0.07
TOTAL:	9.13	9.8



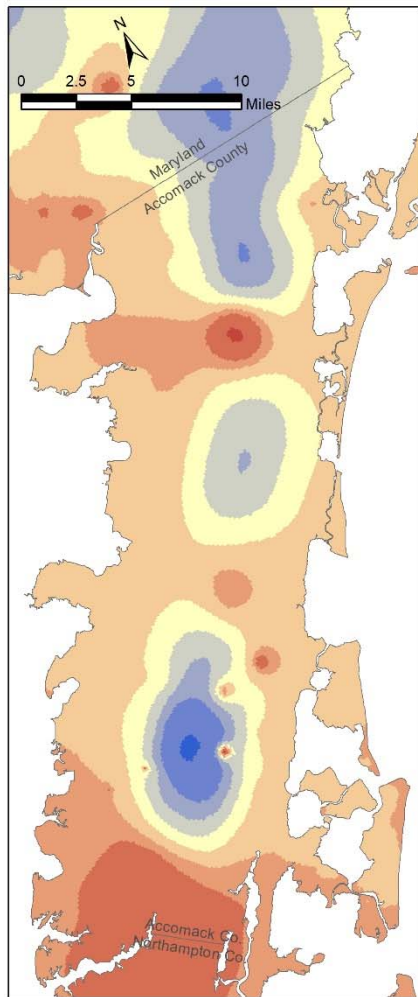
- Surficial - 10.7%
- Upper Yorktown-Eastover - 30.1%
- Middle Yorktown-Eastover - 35.8%
- Lower Yorktown-Eastover - 15.6%
- Exmore Paleochannel - 7.1%
- Eastville Paleochannel - 0.7%



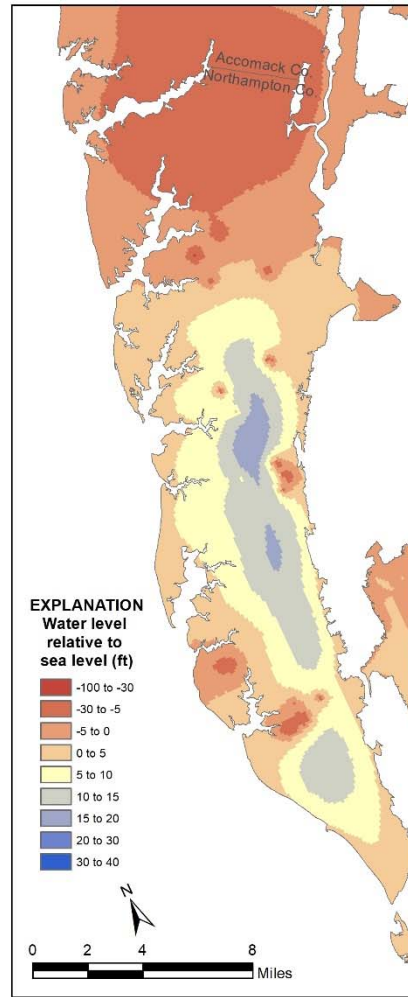
County	2017 Reported Use (MGD)	2018 Total Permitted (MGD)	RU/TP
Accomack	4.76	6.99	68.1%
Northampton	0.96	2.81	34.2%
TOTAL:	7.32	9.8	74.7%



**VAHydro-ES 2018 Total Permitted Simulation
Upper Yorktown-Eastover Water Levels**



Accomack County

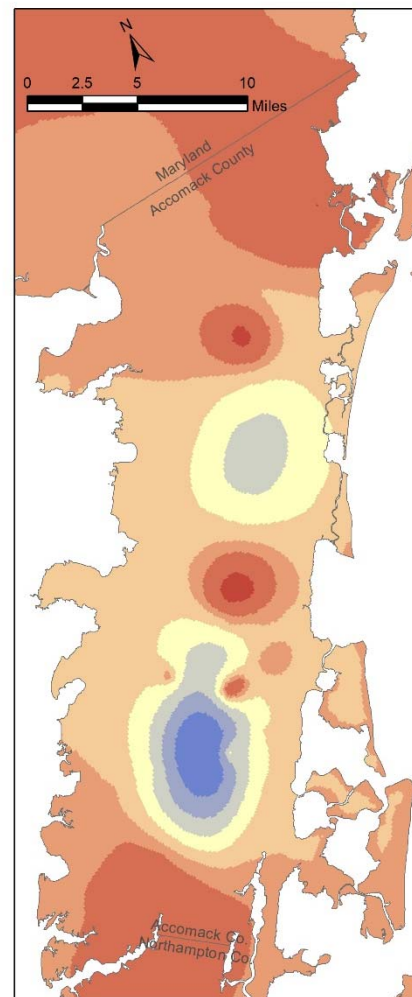


Northampton County

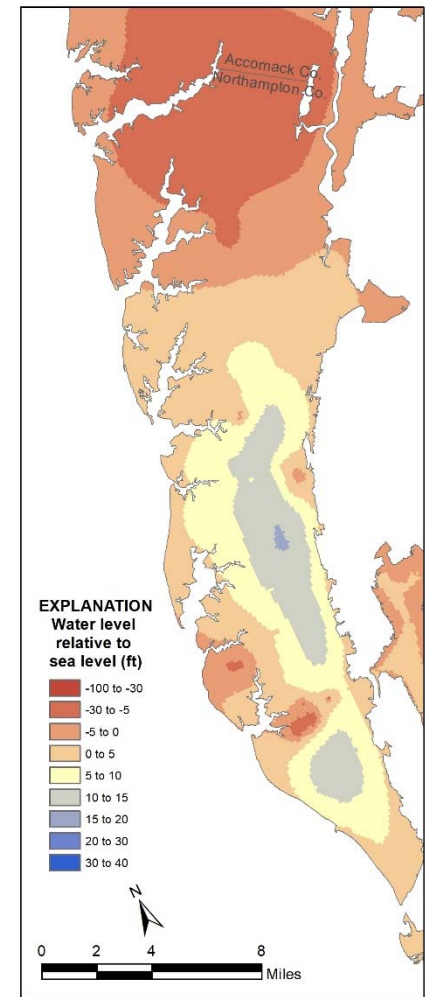
EXPLANATION
Water level
relative to
sea level (ft)

- 100 to -30
- 30 to -5
- 5 to 0
- 0 to 5
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 30
- 30 to 40

**VAHydro-ES 2018 Total Permitted Simulation
Middle Yorktown-Eastover Water Levels**



Accomack County

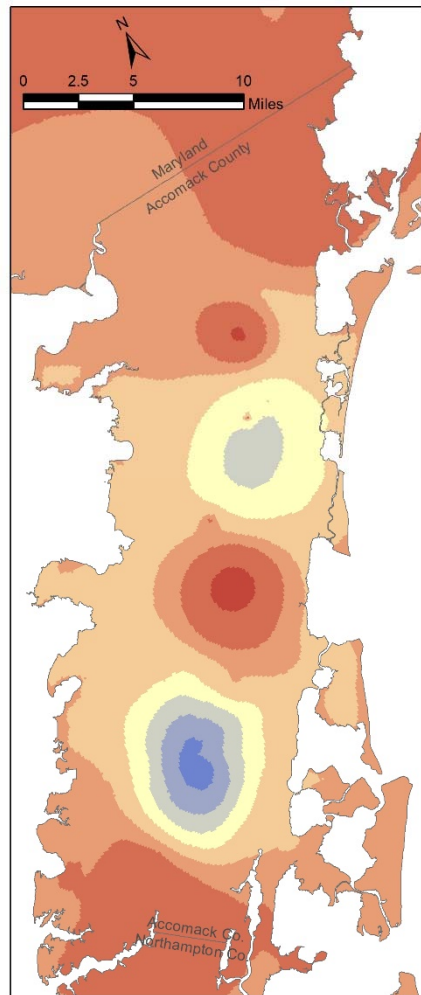


Northampton County

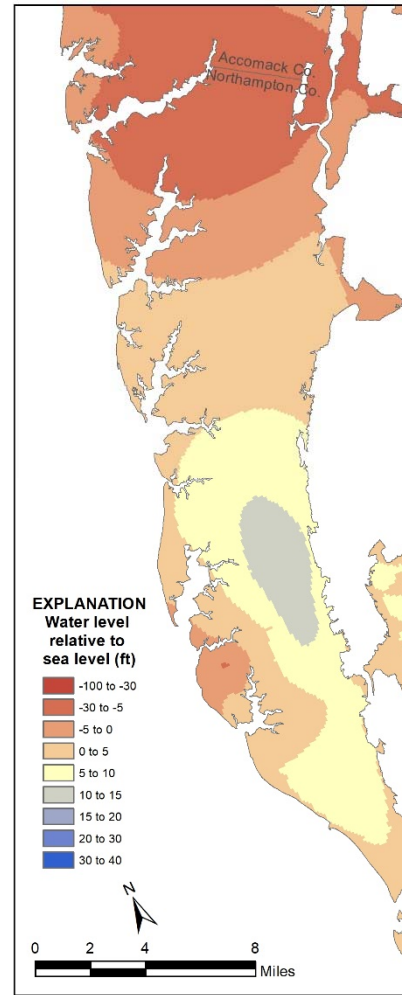
EXPLANATION
Water level
relative to
sea level (ft)

- 100 to -30
- 30 to -5
- 5 to 0
- 0 to 5
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 30
- 30 to 40

VAHydro-ES 2018 Total Permitted Simulation Lower Yorktown-Eastover Water Levels



Accomack County

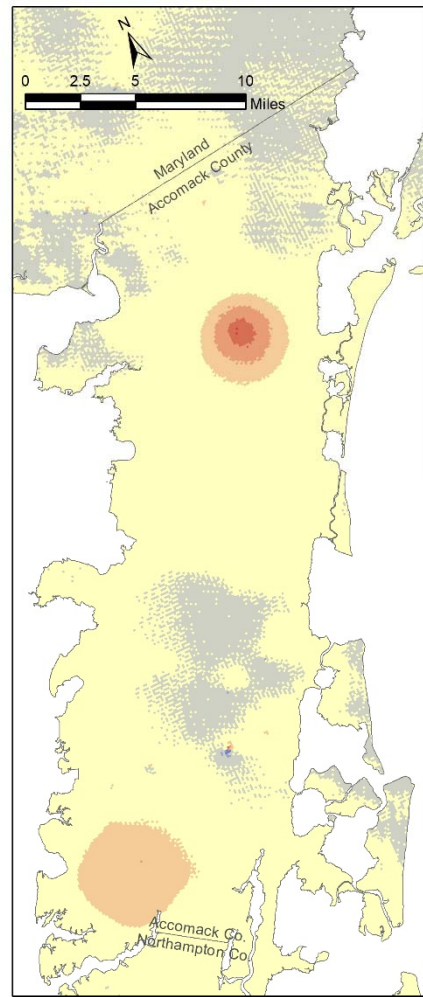


Northampton County

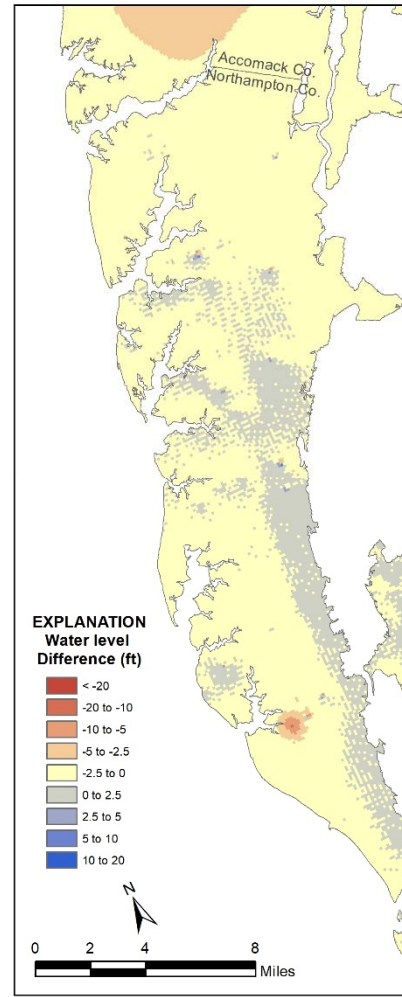
EXPLANATION
Water level
relative to
sea level (ft)

Dark Red	-100 to -30
Red	-30 to -5
Orange	-5 to 0
Light Orange	0 to 5
Yellow	5 to 10
Light Green	10 to 15
Green	15 to 20
Dark Green	20 to 30
Dark Blue	30 to 40

VAHydro-ES 2017 Minus 2016 TP Simulation Upper Yorktown-Eastover Water Levels












Accomack County

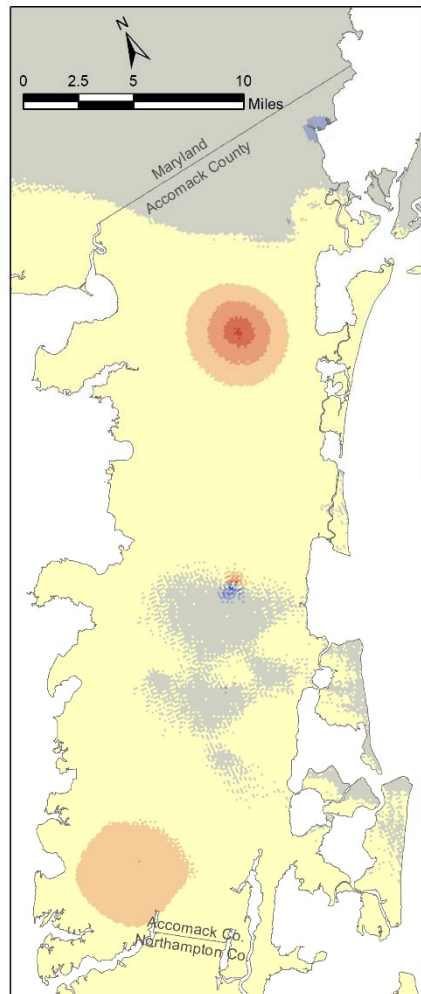


Northampton County

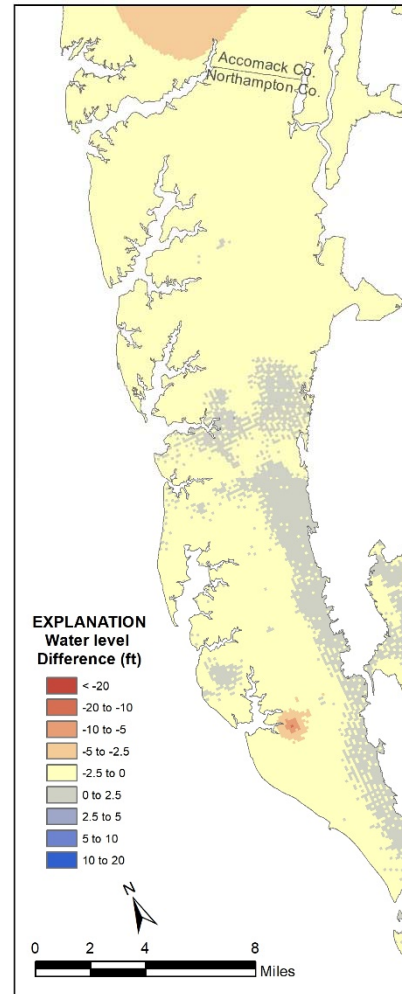
EXPLANATION
Water level
Difference (ft)

-  < -20
-  -20 to -10
-  -10 to -5
-  -5 to -2.5
-  -2.5 to 0
-  0 to 2.5
-  2.5 to 5
-  5 to 10
-  10 to 20

VAHydro-ES 2017 Minus 2016 TP Simulation Middle Yorktown-Eastover Water Levels












Accomack County

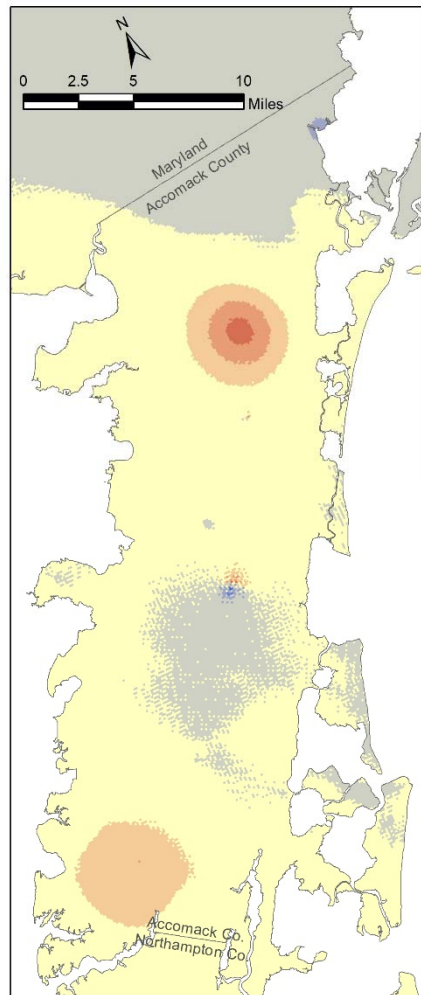


Northampton County

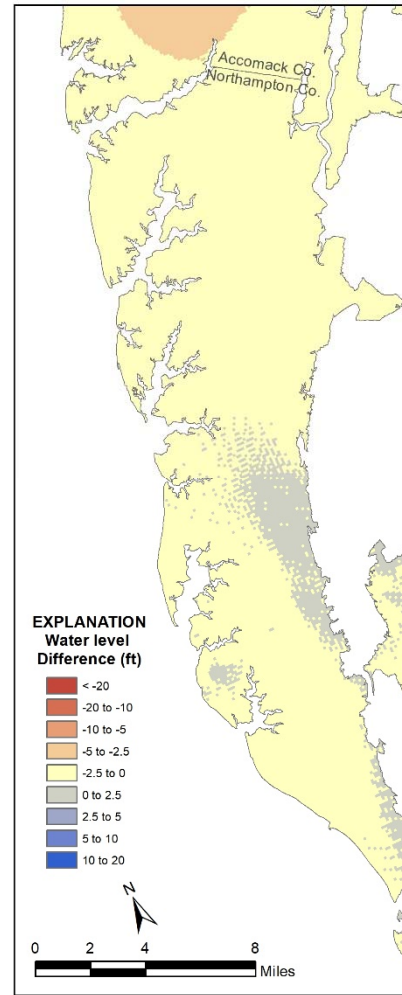
EXPLANATION
Water level
Difference (ft)

-  < -20
-  -20 to -10
-  -10 to -5
-  -5 to -2.5
-  -2.5 to 0
-  0 to 2.5
-  2.5 to 5
-  5 to 10
-  10 to 20

VAHydro-ES 2017 Minus 2016 TP Simulation Lower Yorktown-Eastover Water Levels

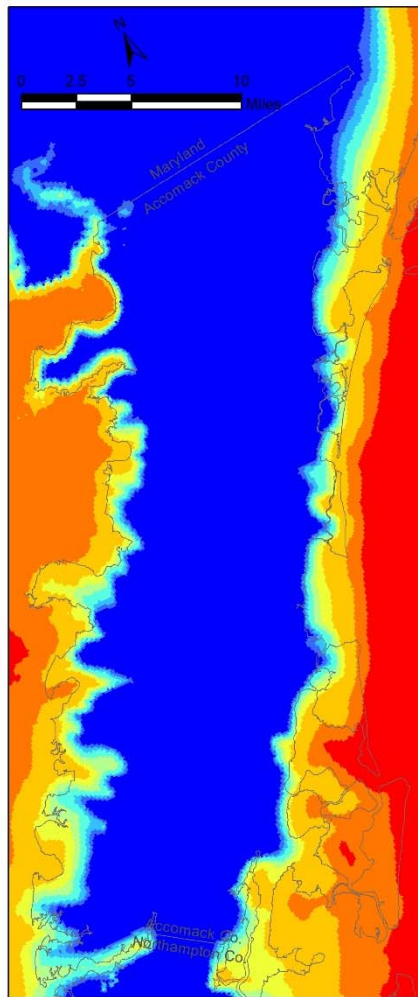


Accomack County

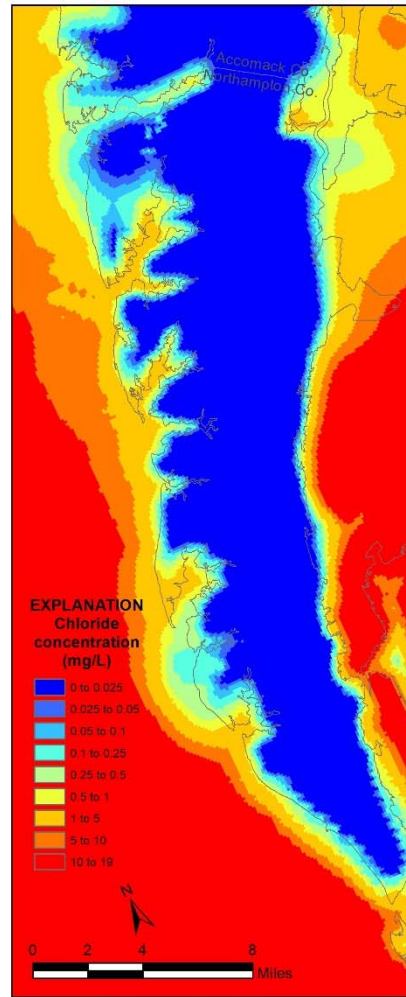


Northampton County

**VAHydro-ES 2018 Total Permitted Simulation
Upper Yorktown-Eastover Chloride Concentrations**

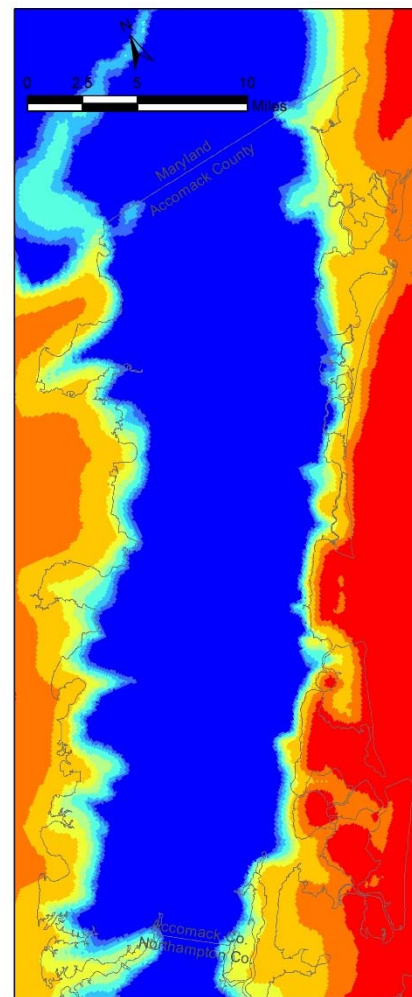


Accomack County

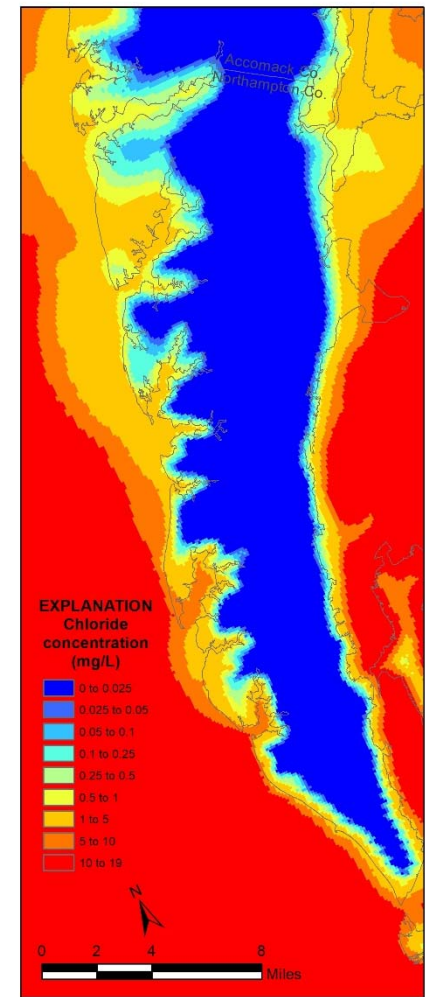


Northampton County

**VAHydro-ES 2018 Total Permitted Simulation
Middle Yorktown-Eastover Chloride Concentrations**

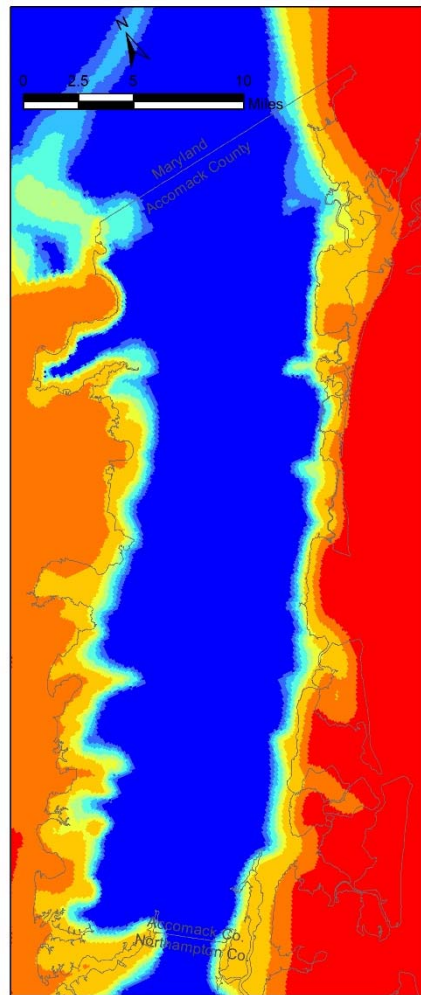


Accomack County

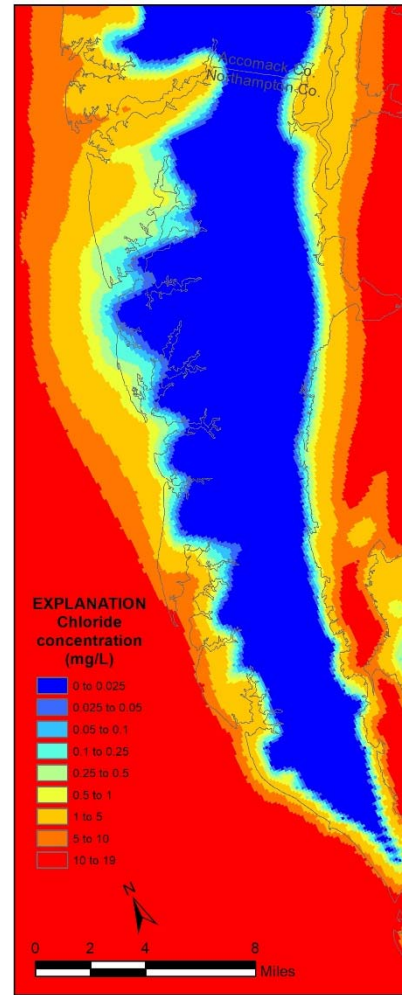


Northampton County

VAHydro-ES 2018 Total Permitted Simulation Lower Yorktown-Eastover Chloride Concentrations



Accomack County

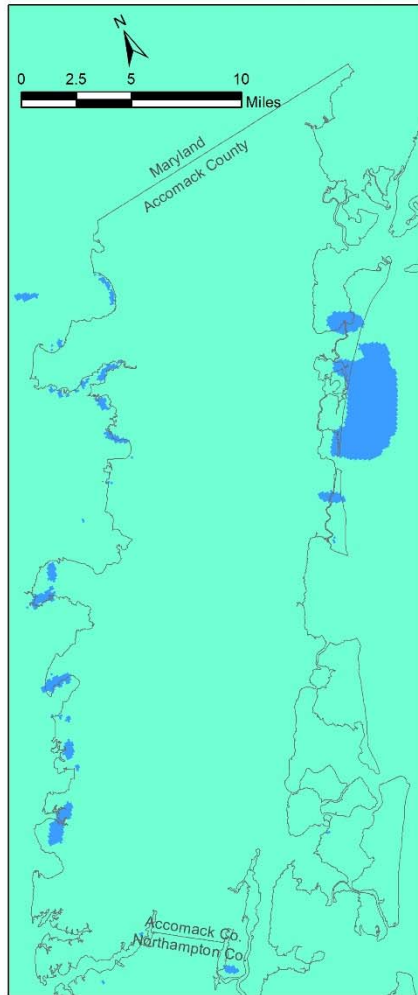


Northampton County

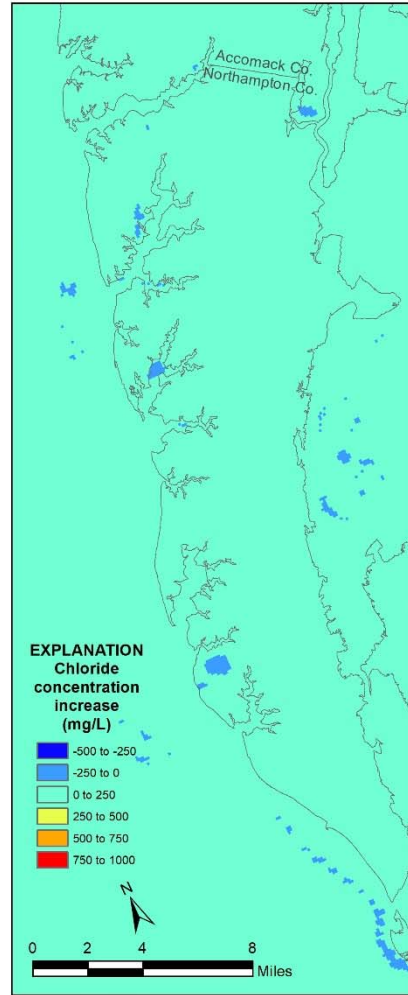
EXPLANATION
Chloride
concentration
(mg/L)

Blue	0 to 0.025
Light Blue	0.025 to 0.05
Cyan	0.05 to 0.1
Light Green	0.1 to 0.25
Green	0.25 to 0.5
Yellow-Green	0.5 to 1
Yellow	1 to 5
Orange	5 to 10
Red	10 to 19

VAHydro-ES 2017 Upper Yorktown-Eastover Aquifer Chloride Concentrations Increase - Total Permitted versus Reported Use

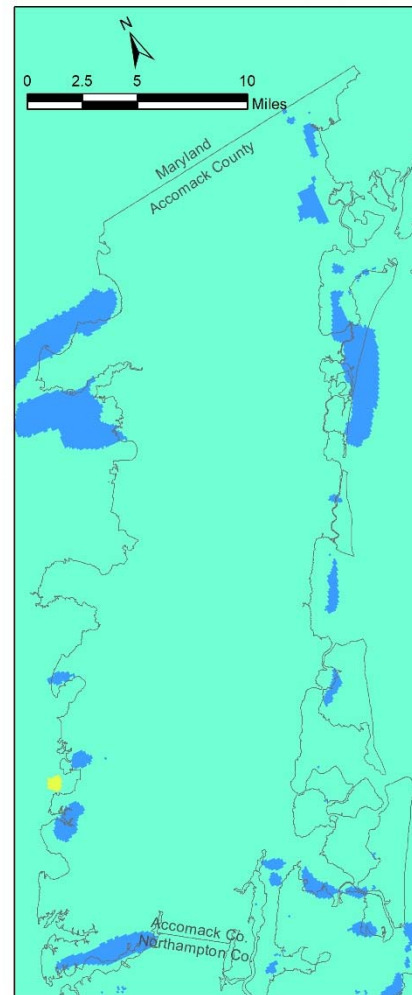


Accomack County

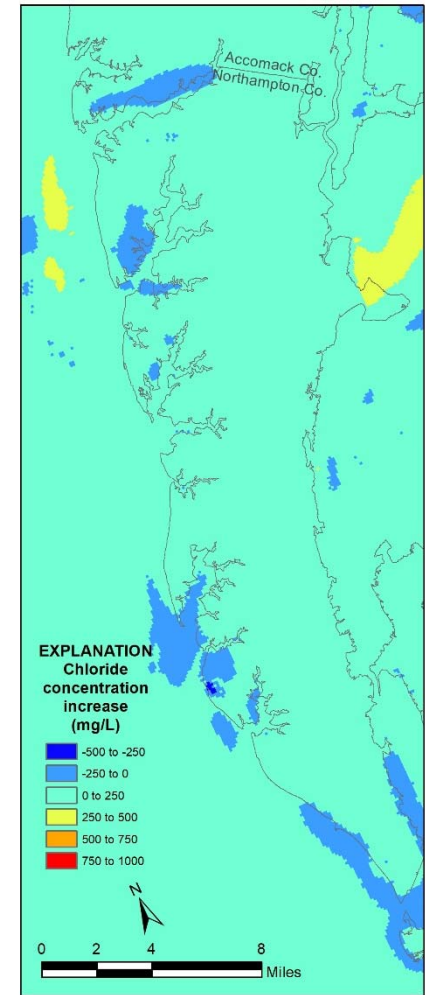


Northampton County

VAHydro-ES 2017 Middle Yorktown-Eastover Aquifer Chloride Concentrations Increase - Total Permitted versus Reported Use

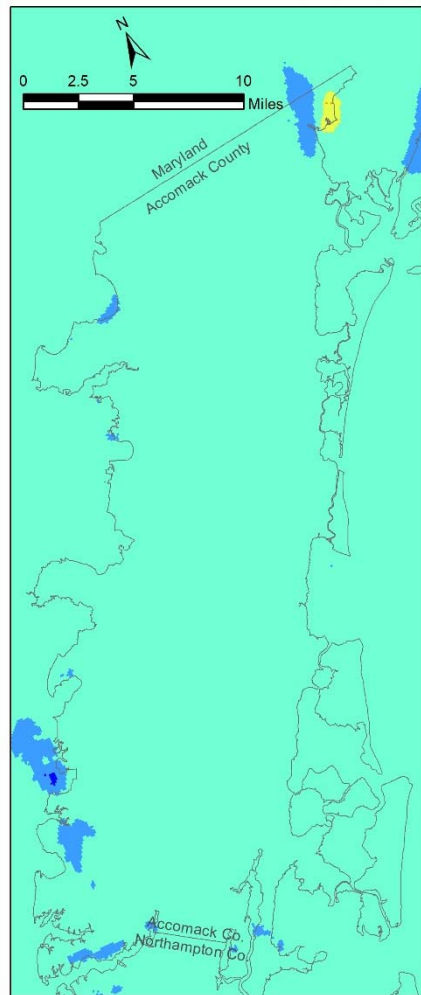


Accomack County

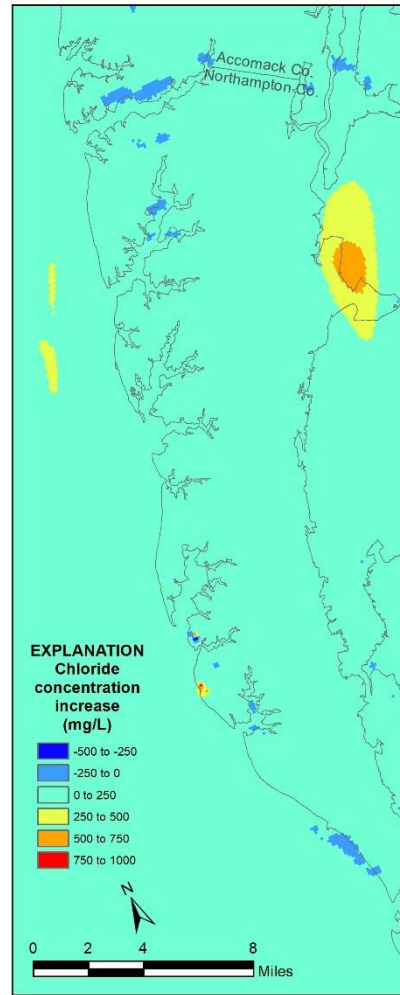


Northampton County

VAHydro-ES 2017 Lower Yorktown-Eastover Aquifer Chloride Concentrations Increase - Total Permitted versus Reported Use



Accomack County



Northampton County

EXPLANATION
Chloride
concentration
increase
(mg/L)

- -500 to -250
- -250 to 0
- 0 to 250
- 250 to 500
- 500 to 750
- 750 to 1000