



Department of the Environment

Report of the Governor's Advisory Committee on the Management and Protection of the State's Water Supply

MDE Ground Water Symposium

September 25, 2008





MARYLAND



The Advisory Committee on the Management and Protection of the State's Water Resources was created by executive order in 2003 to evaluate the ability of the State to meet its future water needs.





Advisory Committees

- First Committee Report
May 2004
- Second Committee
Interim Report July
2006
- Second Committee
Final Report July 2008





- Final Report of the Committee on the Management and Protection of the State's Water Resources
- July 2008

*Water for Maryland's Future:
What We Must Do Today*



Final Report of the Advisory Committee on the
Management and Protection of the
State's Water Resources

M. Gordon Wolman
Chairman

VOLUME 1: FINAL REPORT

July 1, 2008

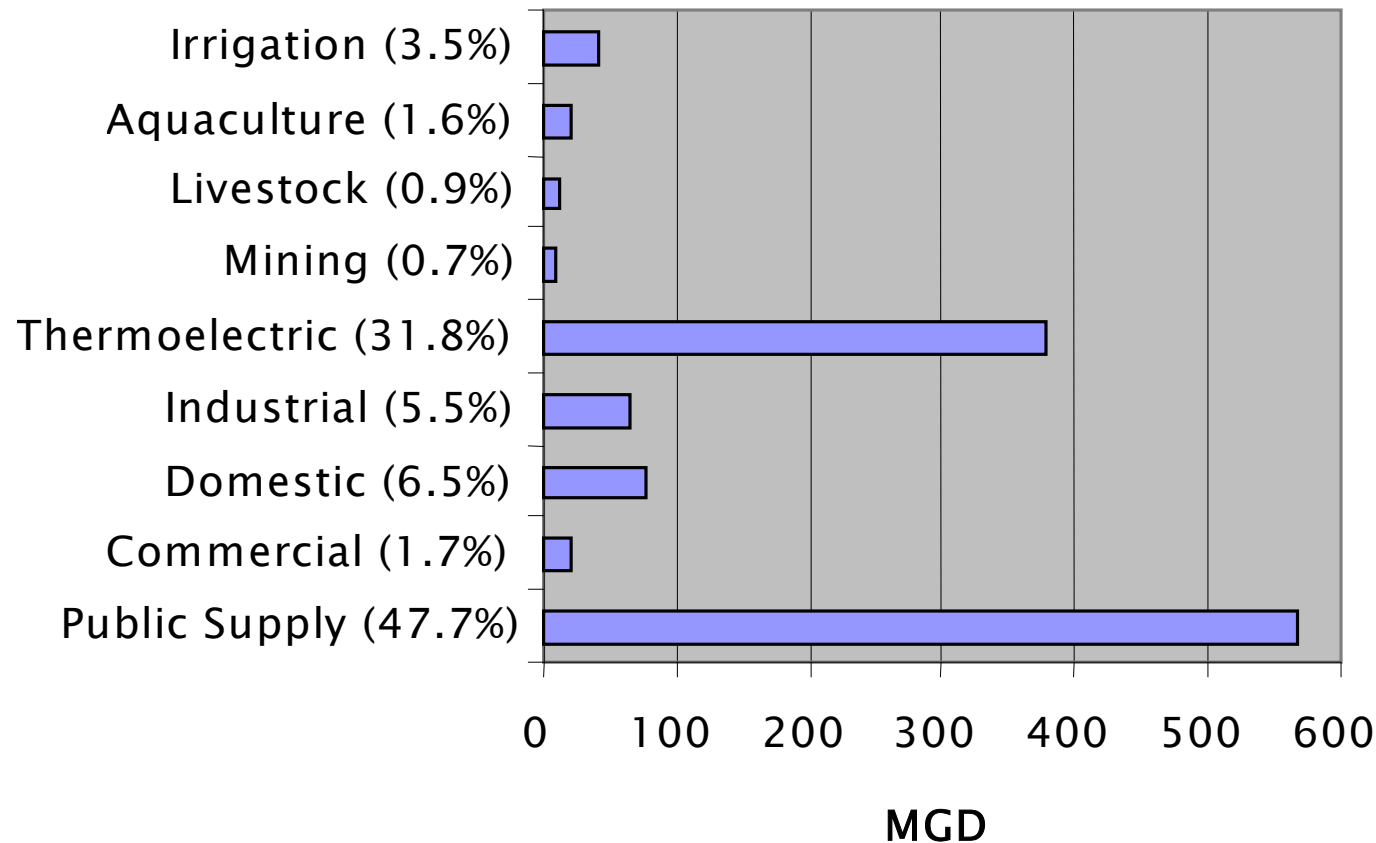
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Marylanders Use Almost 1.5 Billion Gallons of Water a Day

Maryland Water Withdrawals





Challenges

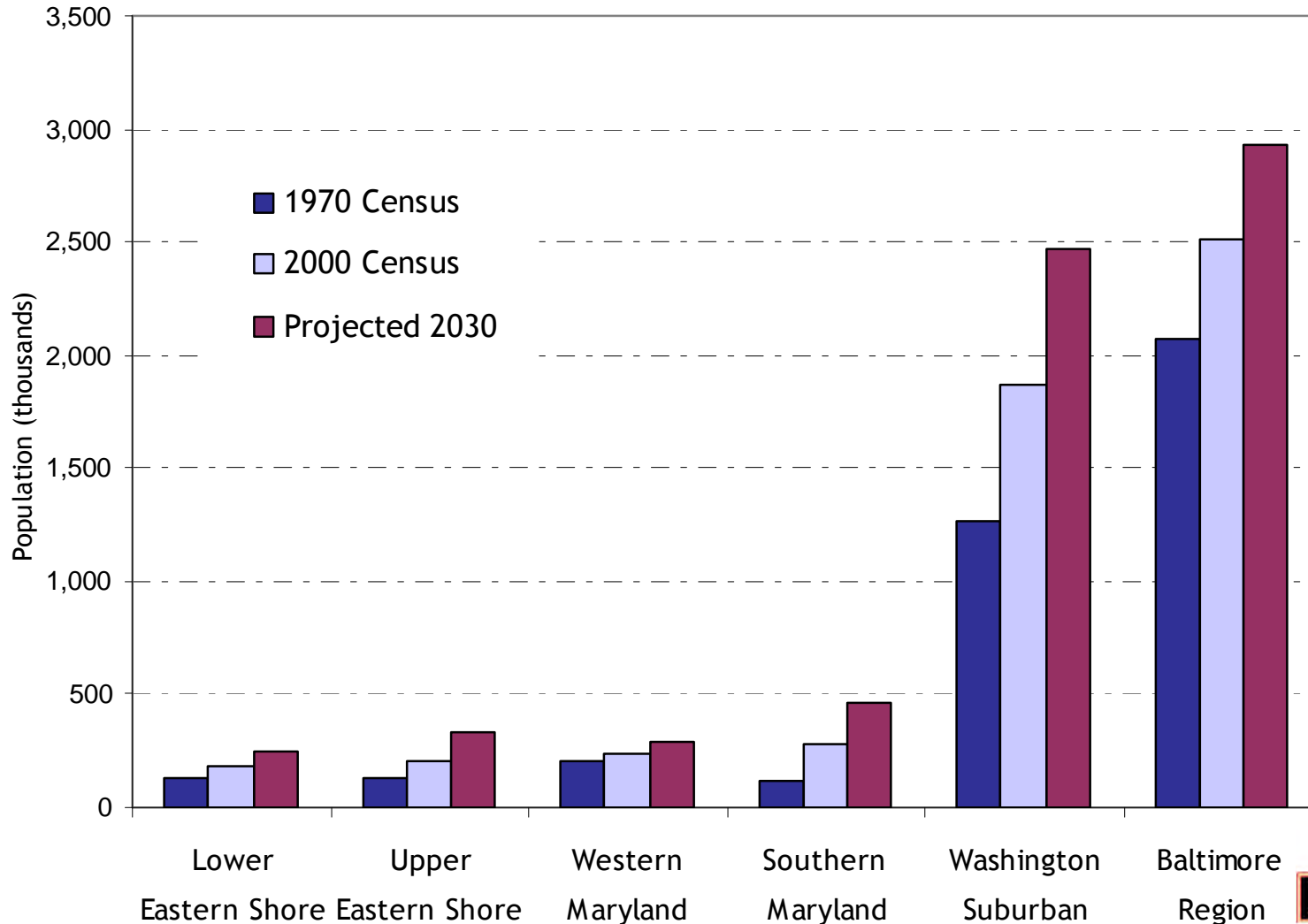
- Population Growth
- Water Quality
- Patterns of Land Use
- Increase in Irrigated Agriculture
- Climate Change





Maryland's Population Will Continue to Grow

Regional Population Growth



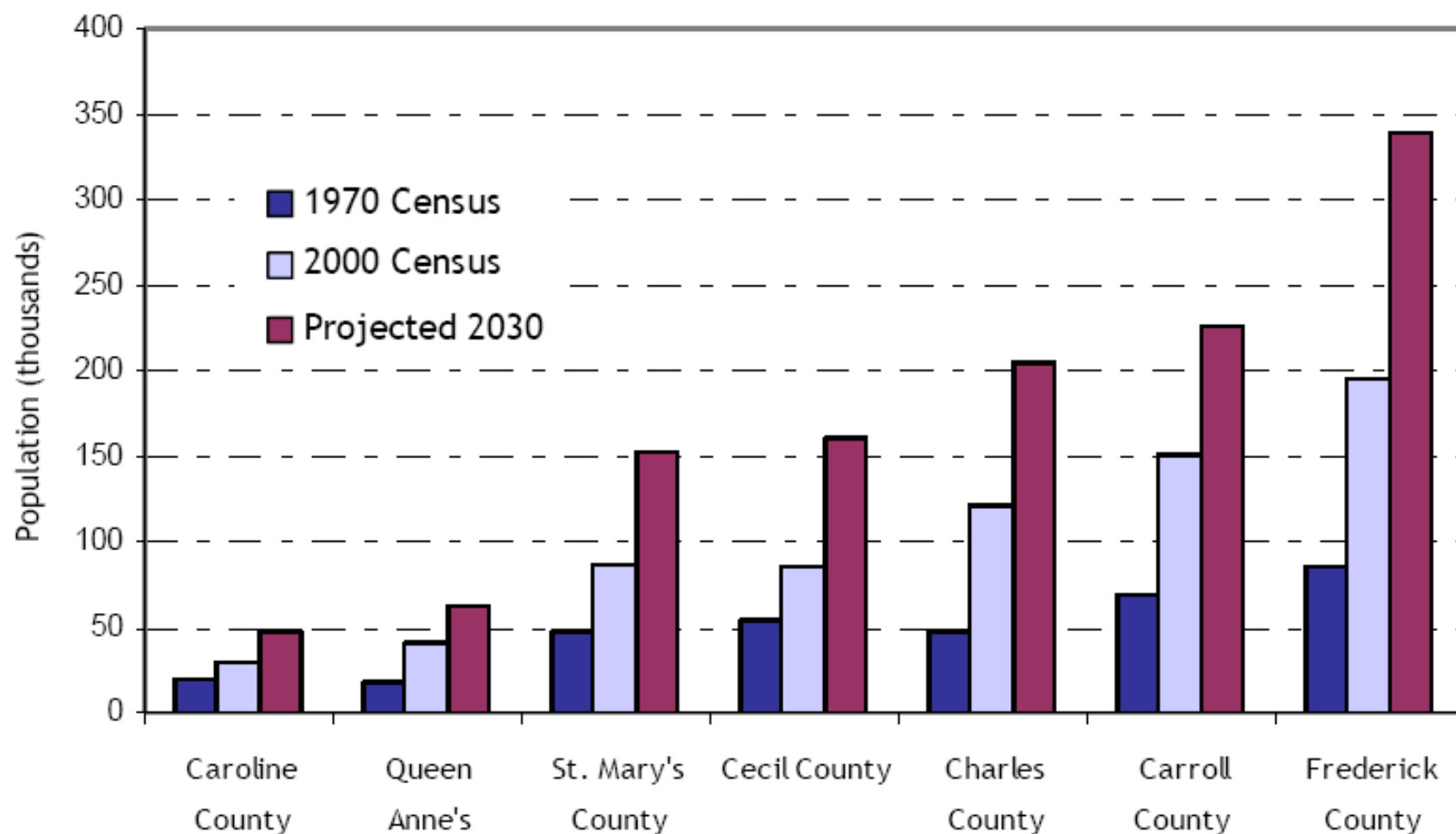


Figure 2. Population Growth in Rapidly Growing Counties. These seven counties are expected to grow by more than 50 percent between 2000 and 2030.

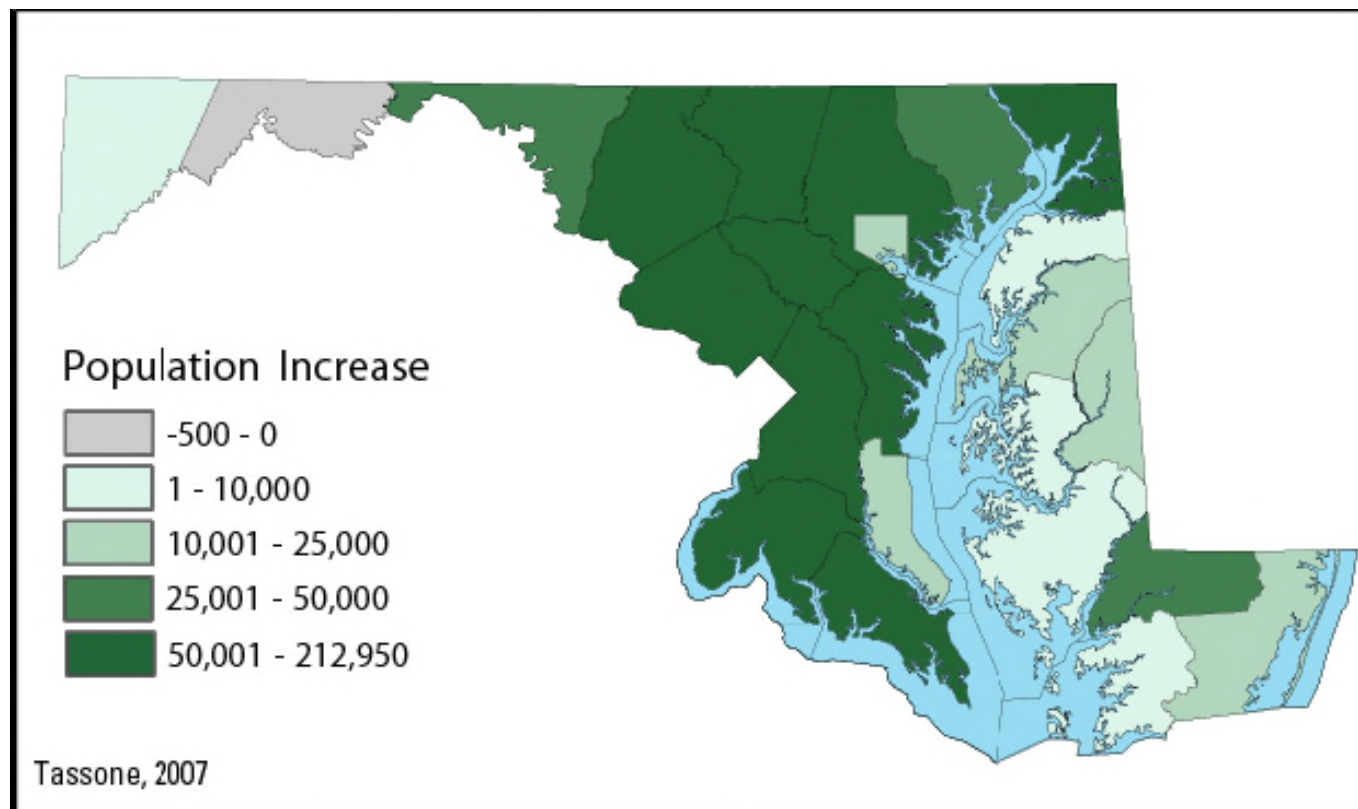
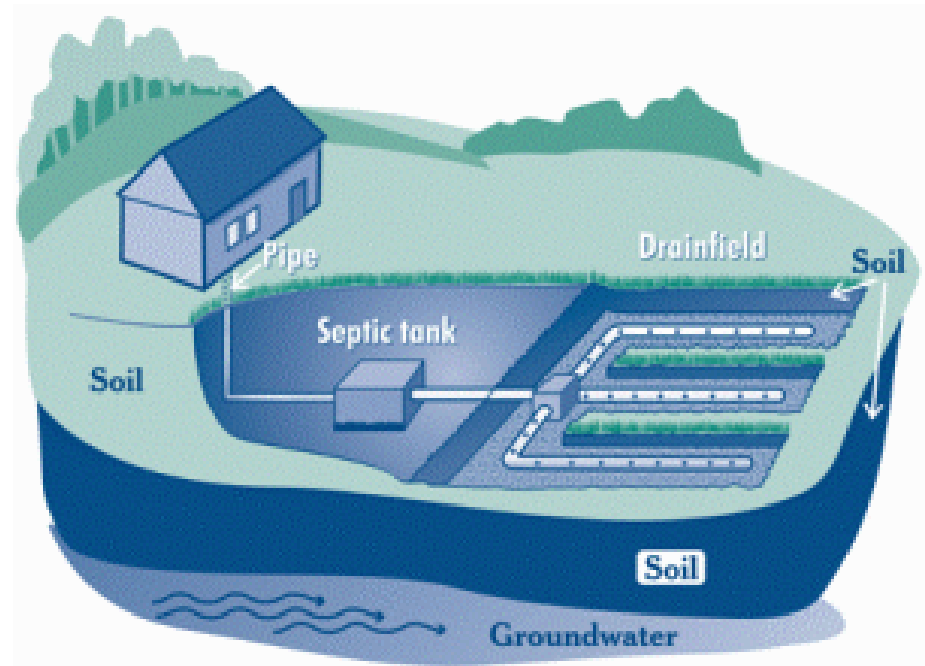


Figure 6. Projected population increase from 2005 to 2030 in Maryland.



Water Quality Issues

- Human activity
 - Past disposal practices
 - On site sewage disposal systems
 - Contamination from the surface
 - Emerging pollutants
 - Polluted runoff
- Naturally occurring substances
- Salt water intrusion



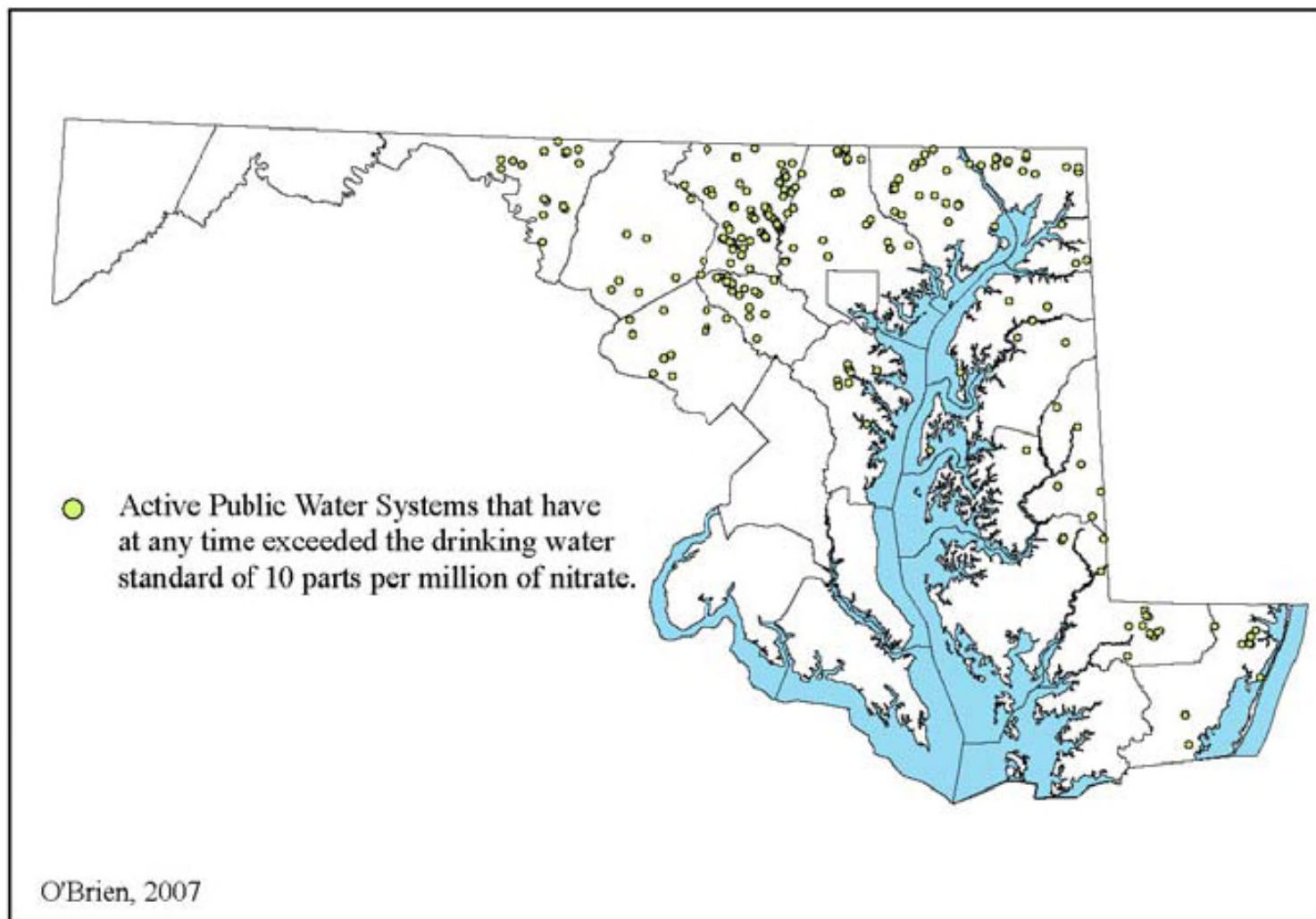


Figure 12. Occurrence of nitrate in Maryland Public Water Systems.

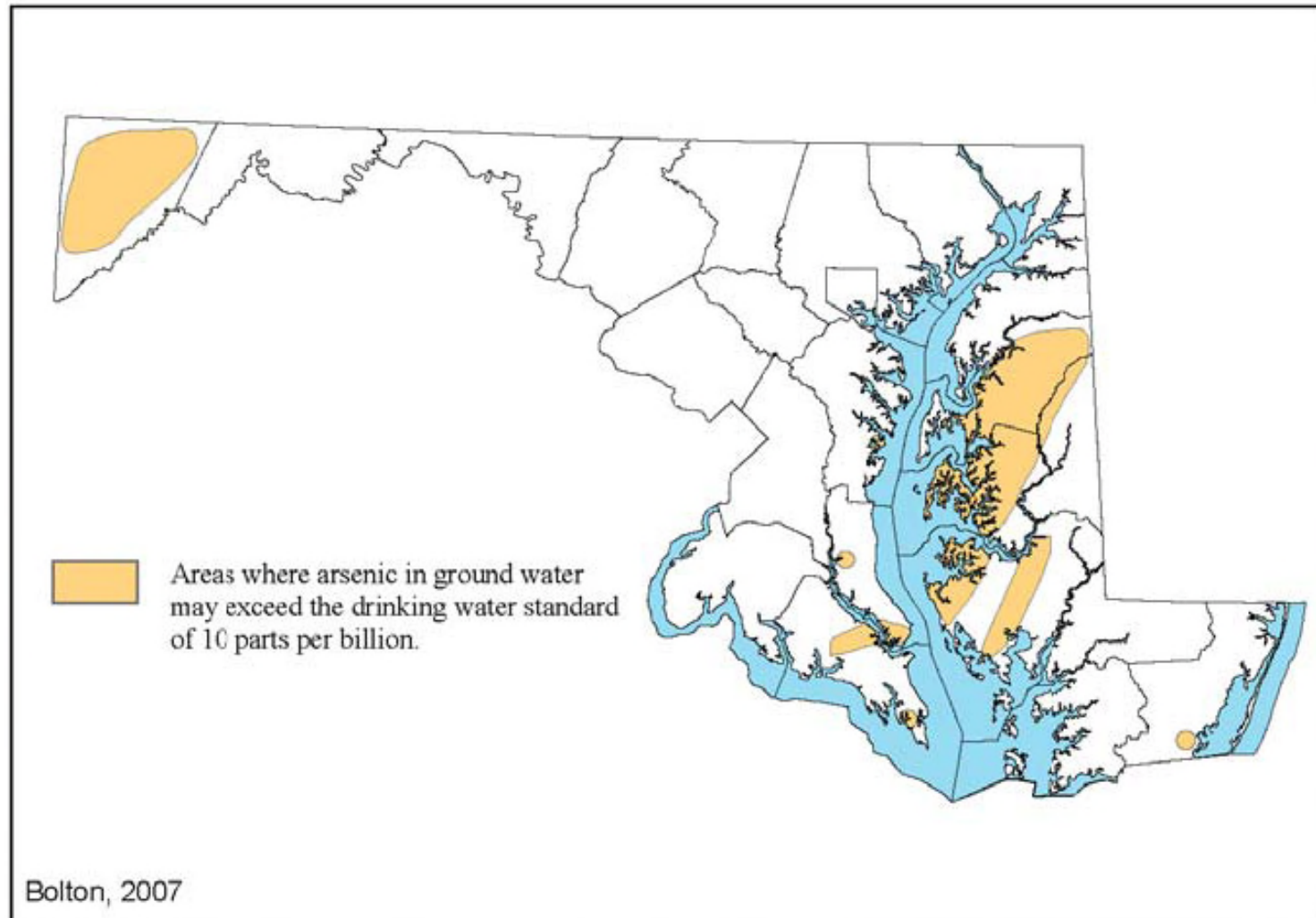


Figure 9. Distribution of arsenic in ground water in Maryland.

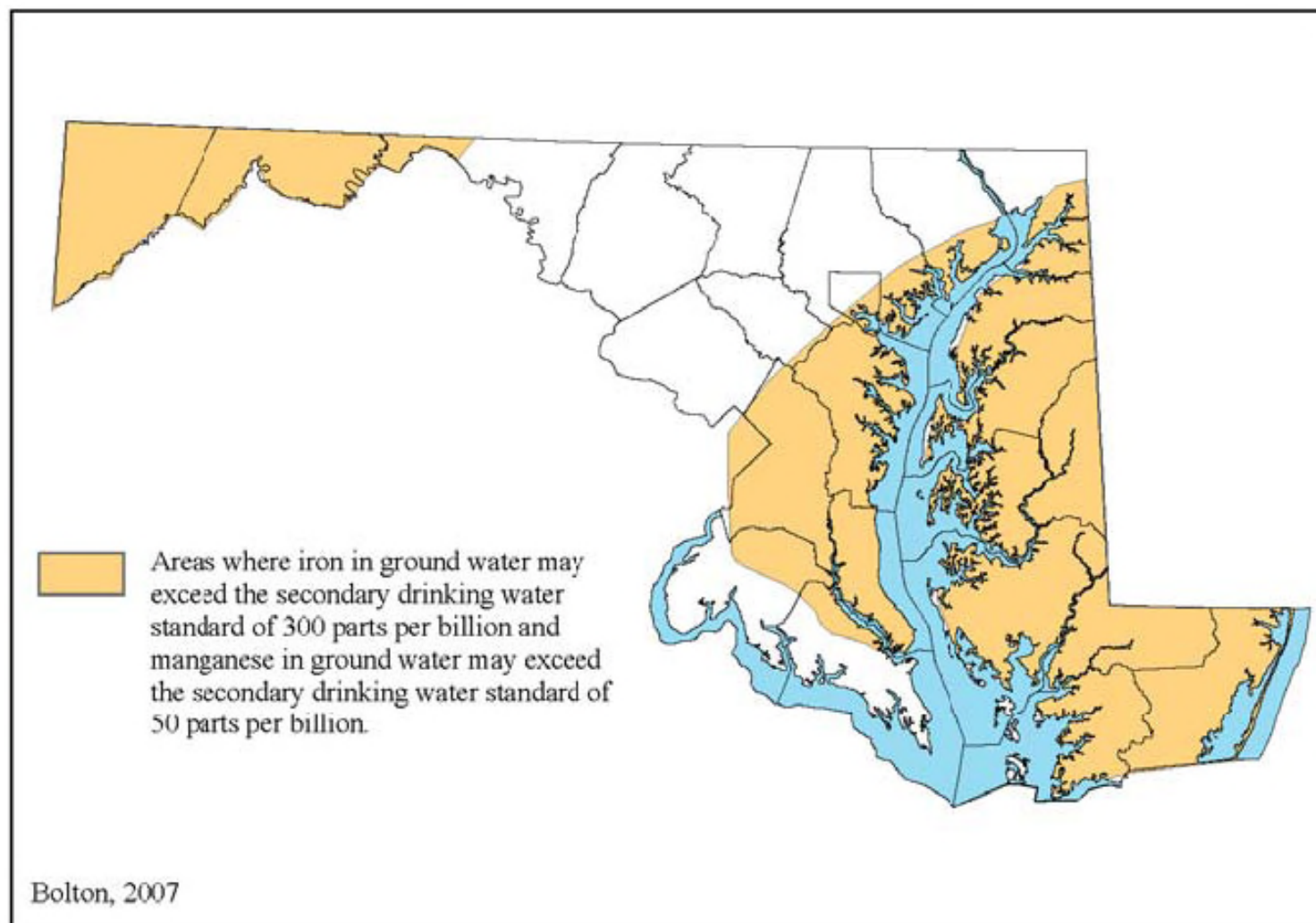
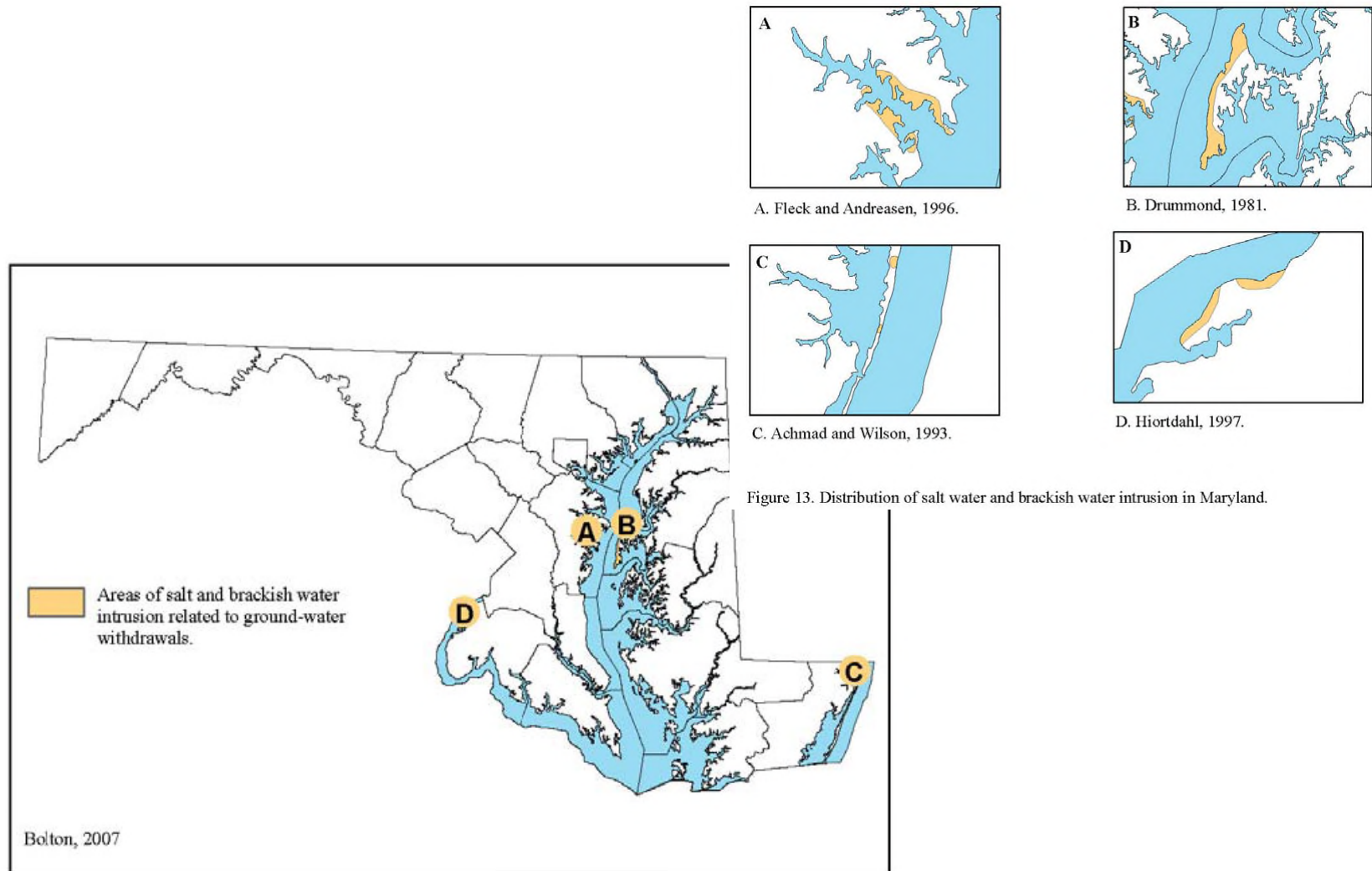


Figure 8. Distribution of iron and manganese in ground water in Maryland.

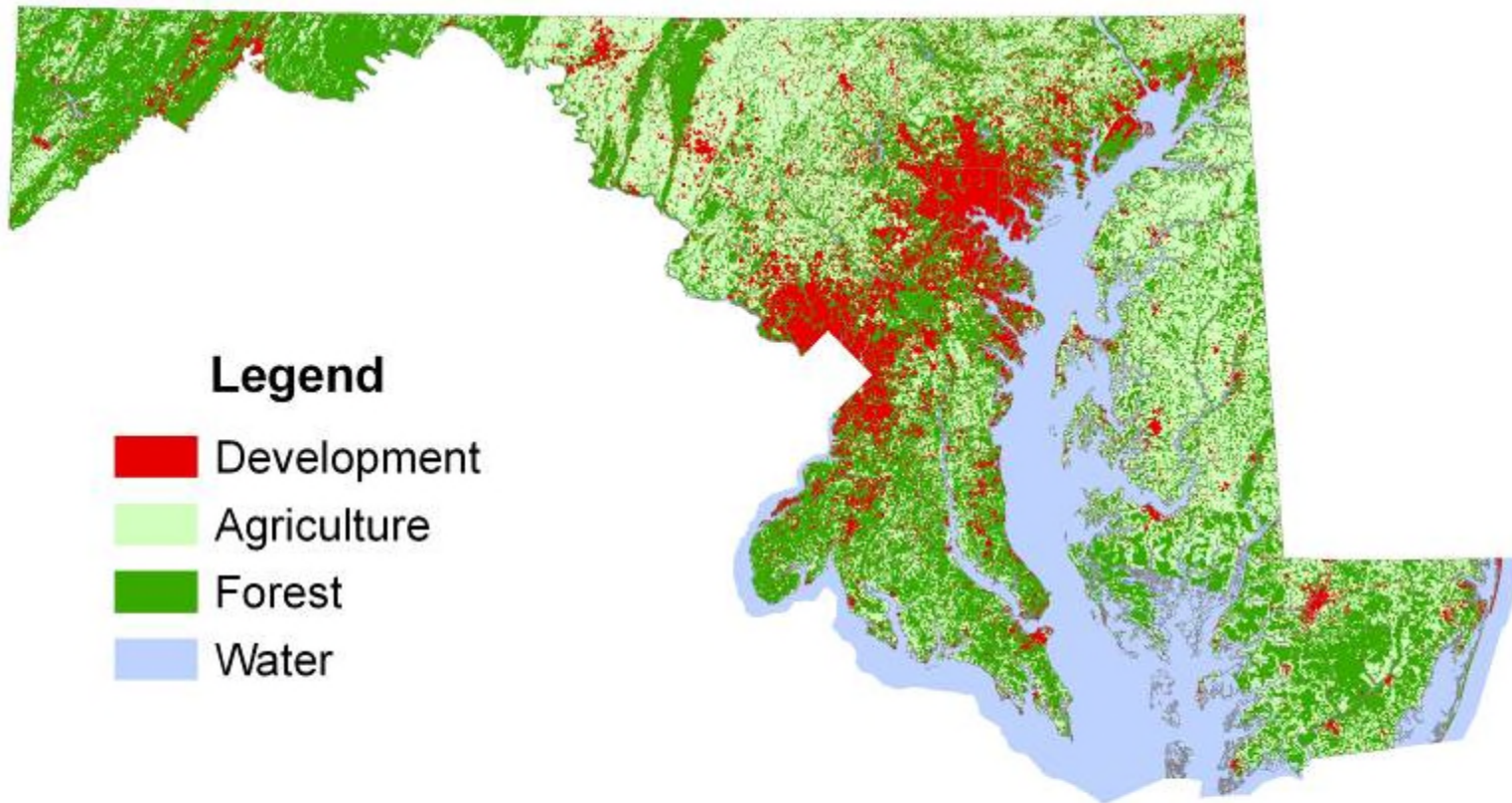




Protecting the land



1973 Land Use / Land Cover for Maryland

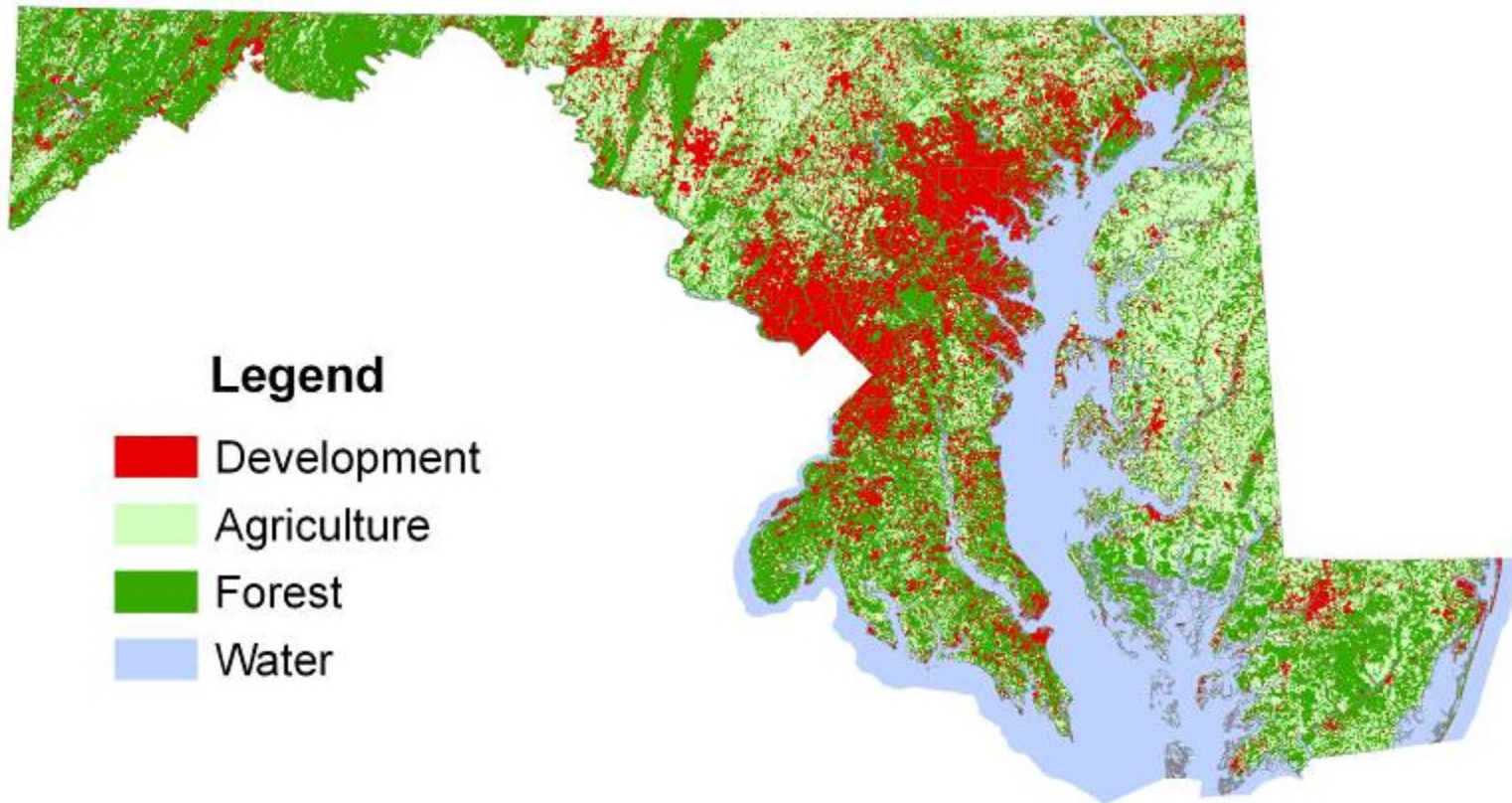


0 5 10 20 30 40
Miles



MDP

2002 Land Use / Land Cover for Maryland

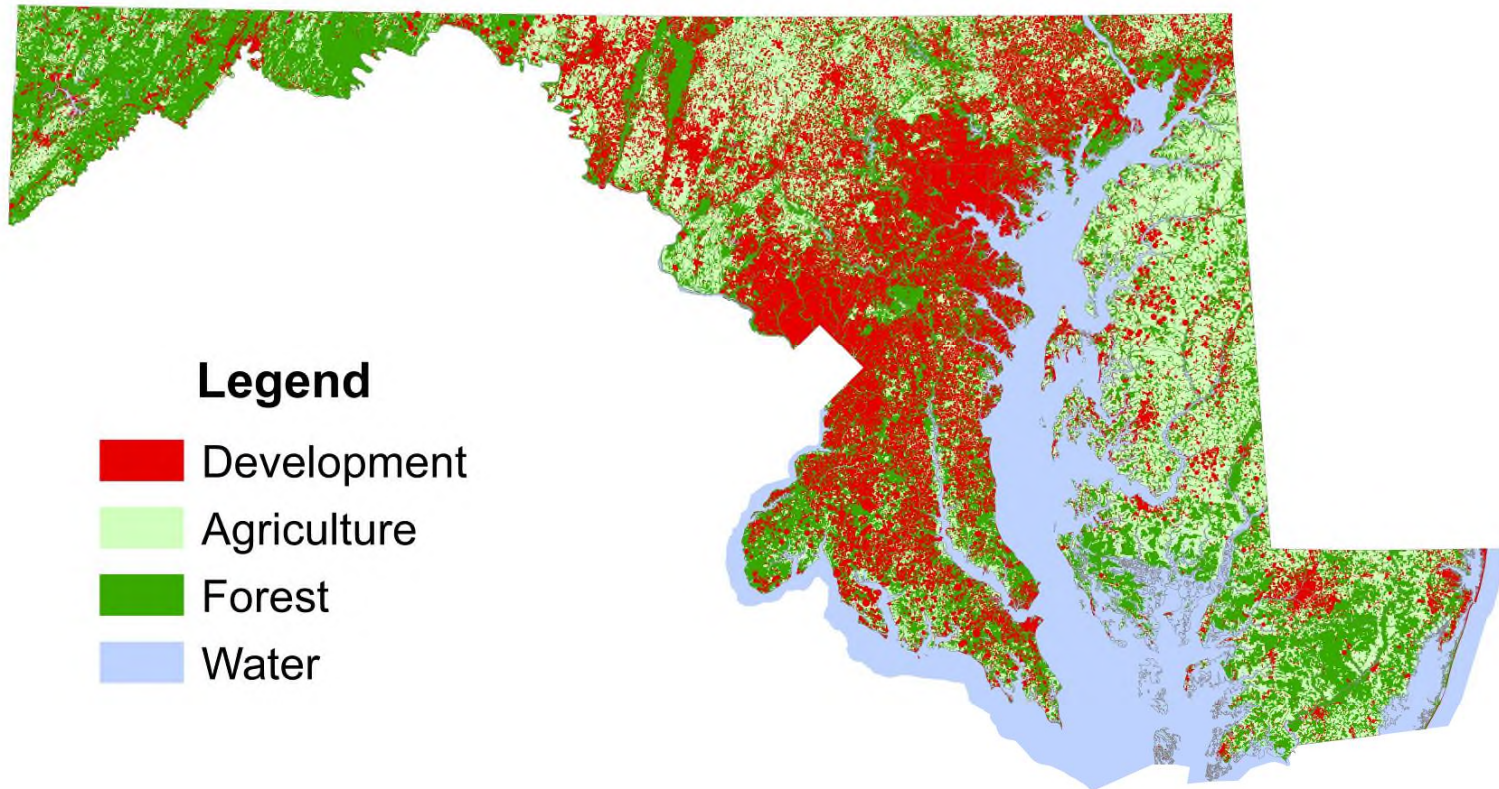


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MDP

2030 Land Use for Maryland Current Trend Scenario



Legend

- Development
- Agriculture
- Forest
- Water

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Competition for Water

- Public supply
- Irrigation
- Power Production
- Recreation



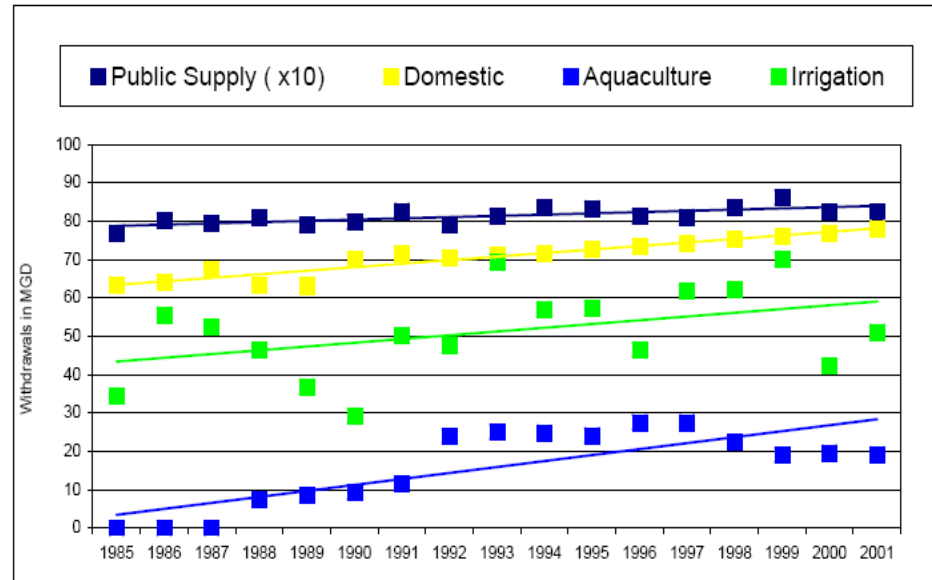


Figure 2-5. Fresh Water Withdrawal Categories that show an increasing trend from the period, 1985-2001.

- Public supply, domestic wells, aquaculture and irrigation uses are increasing.

- Commercial, industrial, thermoelectric and livestock uses have been stable.

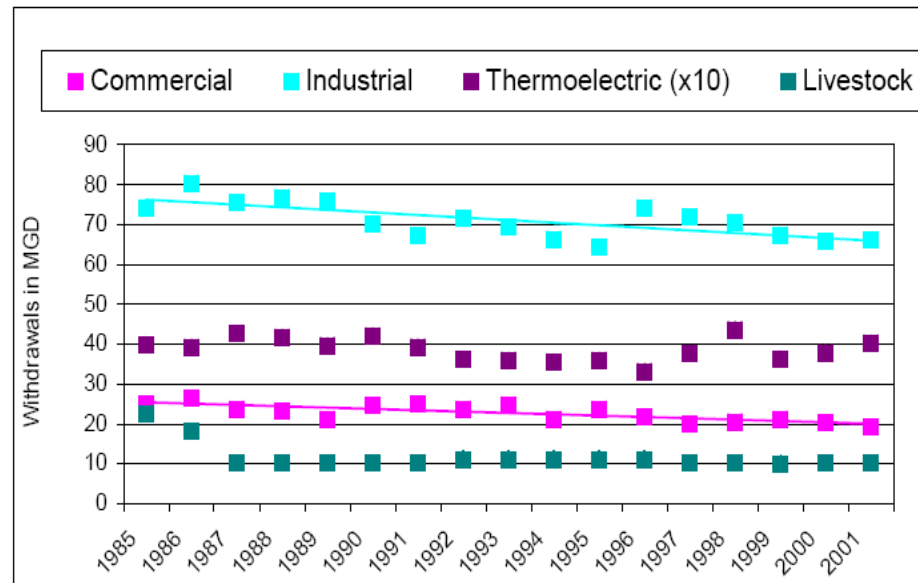


Figure 2-6. Fresh Water Withdrawal Categories that show a decreasing trend or no observable trend for the period 1985-2001.





Public supply, thermoelectric, domestic wells, irrigation and aquaculture water use in Maryland are expected to increase 16% by 2030.

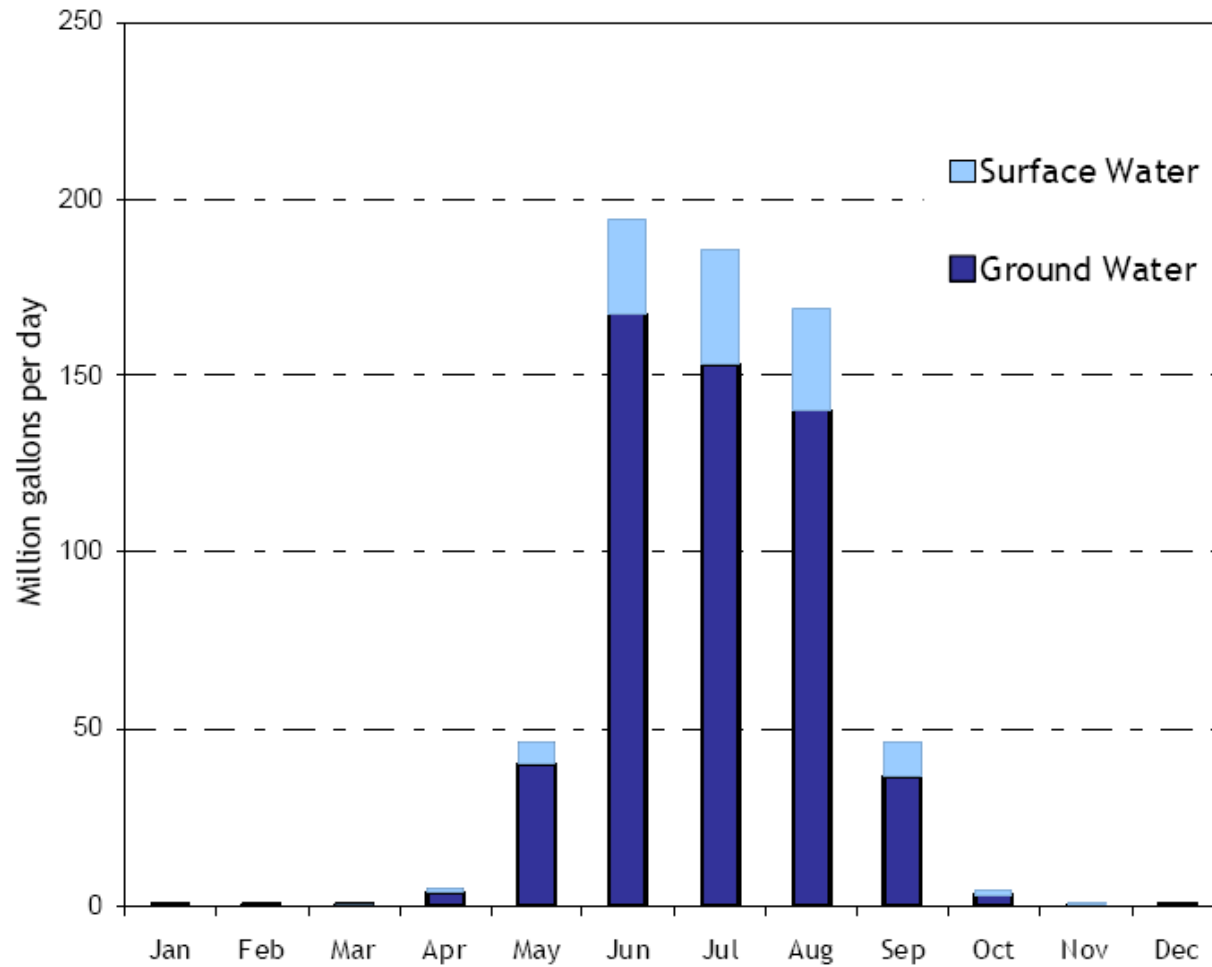
	<u>2000 Water Demand</u>	<u>Projected Water Demand Increase by 2030</u>
Public Supply	824	+ 58
Thermoelectric	379	+ 54
Domestic Self-Supplied	77	+ 17
Industrial	66	*
Irrigation	42	+ 84
Aquaculture	20	+ 20
Commercial	21	*
Livestock	10	*
Mining	8	*
Total	1,447 (mgd)	+ 233 (mgd)

(* Not projected)





Irrigation Use by Month in Maryland's Coastal Plain





Climate Change

- Changed pattern of precipitation
- Increased evaporation
- Sea level rise (salt water intrusion)
- Higher temperatures increase demand
 - Drinking water
 - Irrigation
 - Power production





Second Advisory Committee Final Report July 2008

- Maryland must develop a more robust water resources program.
- The staffing, programmatic, and information needs must be adequately and reliably funded.
- Specific legislative, regulatory and programmatic changes should be implemented.





A More Robust Water Resources Program

- Critical basic data
- A Statewide plan
- Regional Planning





Critical Basic Data

- Coastal Plain Aquifer Study
- Fractured Rock Water Supply Study
- Expanded Monitoring Network



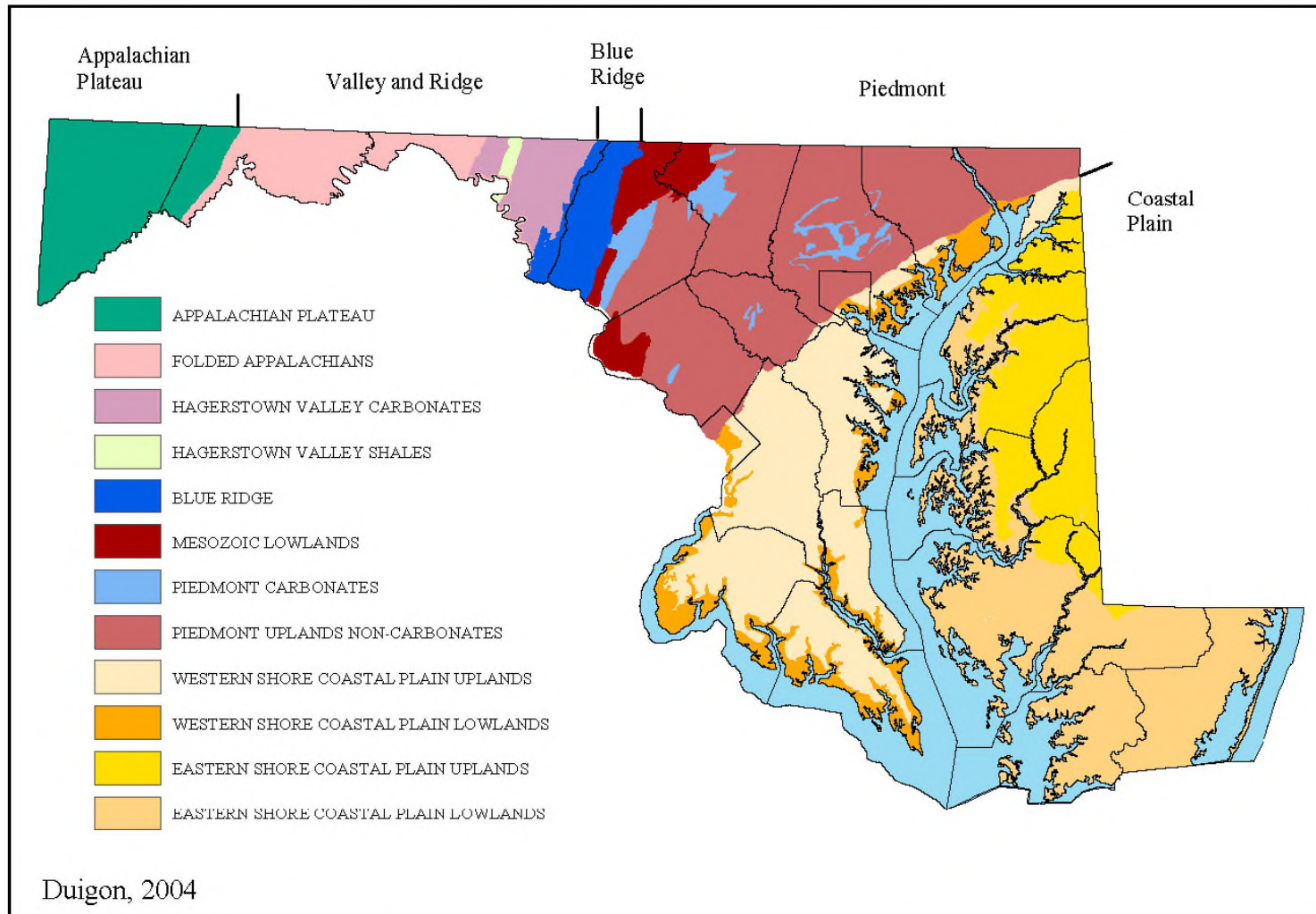


Figure 1. Generalized physiography and hydrogeology of Maryland.



Coastal Plain Aquifer Study

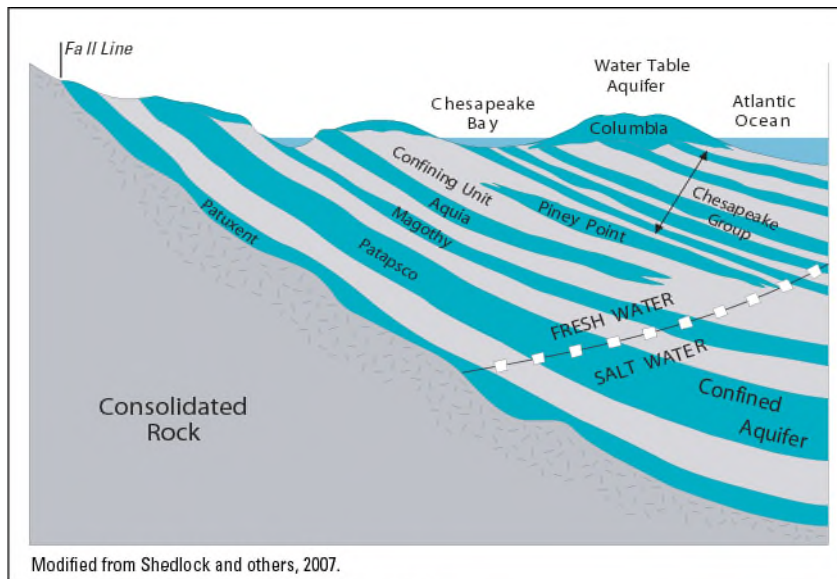


Figure 2. Maryland's major Coastal Plain aquifers.



Fractured Rock Water Supply Study

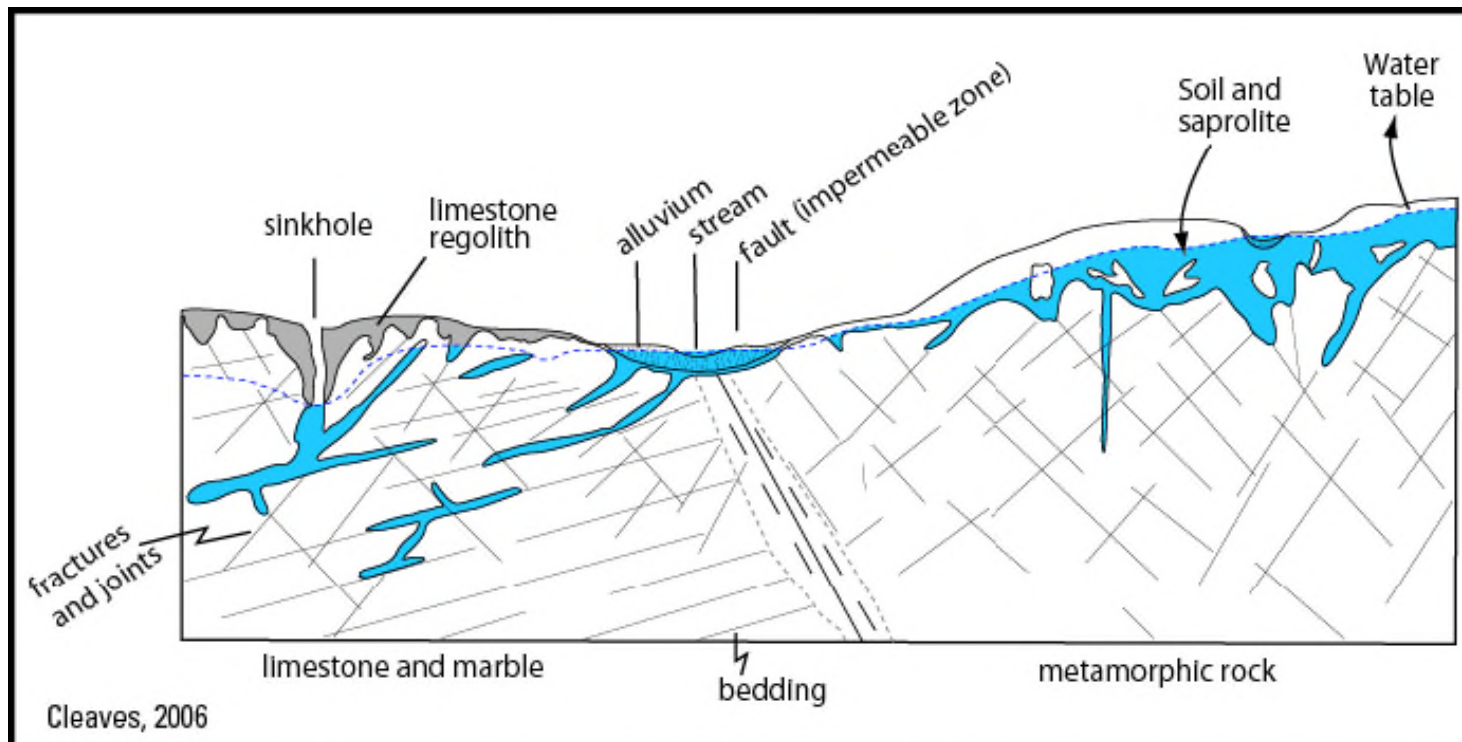
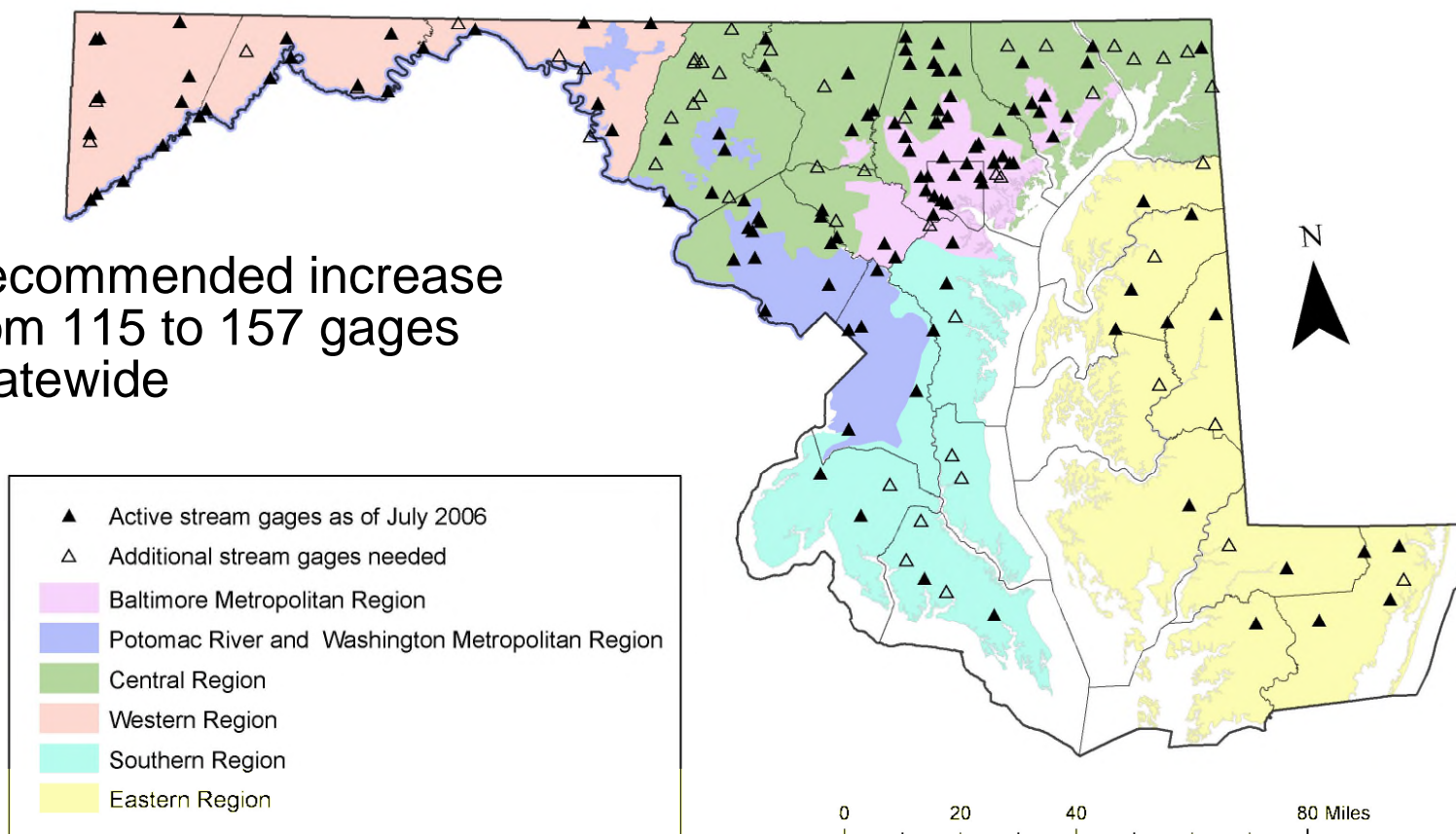


Figure 3 . Cross-section showing hydrogeologic framework in the Piedmont of Maryland.



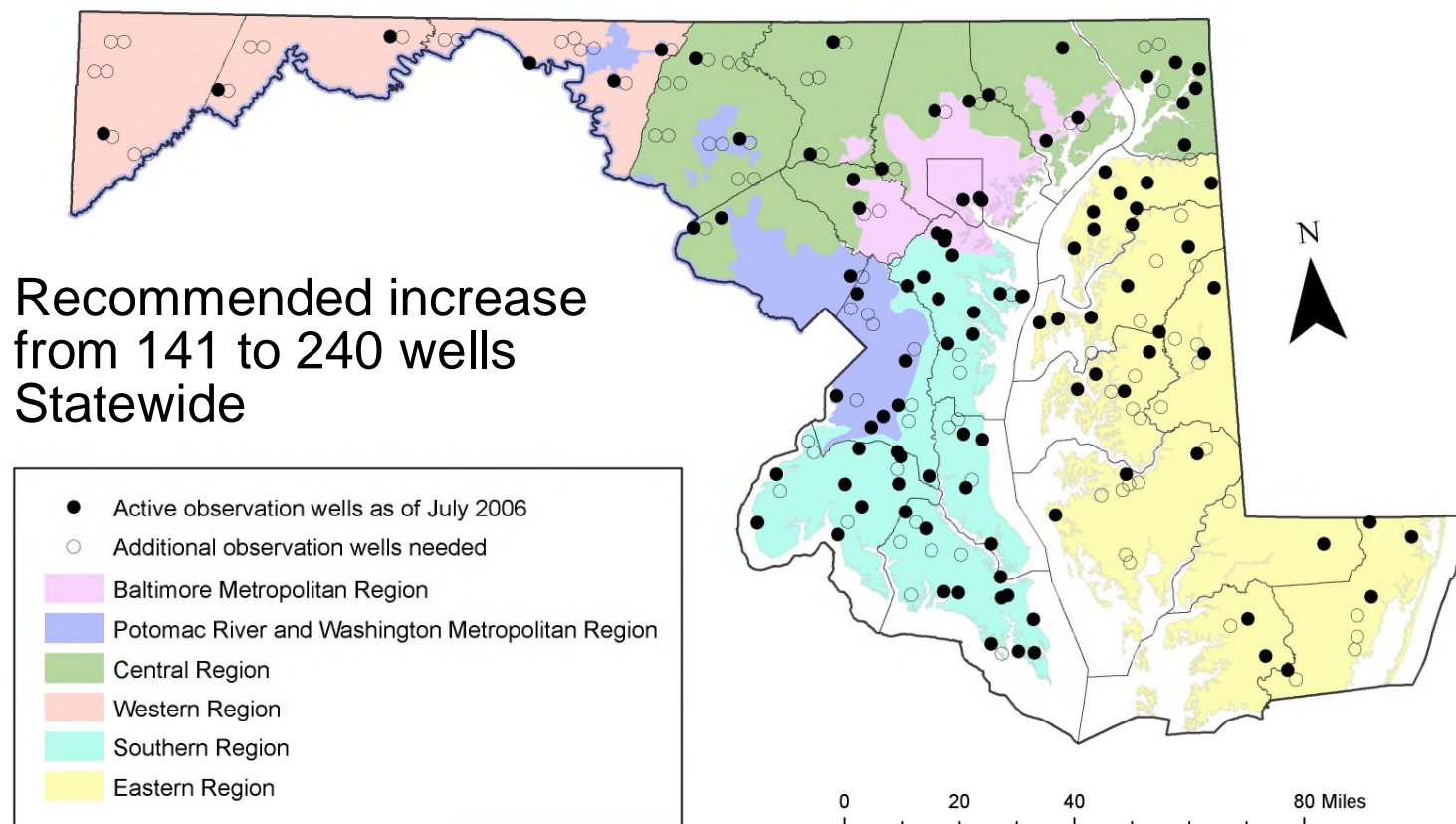
Maryland Stream Gage Network

Recommended increase
from 115 to 157 gages
Statewide





Maryland Observation Well Network





A Statewide Water Supply Plan

- Education and Outreach
- Conservation
- Water quality
- Inter-basin transfers
- Ecological integrity
- Source protection
- Allocation policies
- Water reuse





Regional Planning



- Cooperative
- By region, watershed, aquifer
- Focus on safeguarding supplies





Regional Planning

- Political boundaries are largely irrelevant to surface and ground water supplies
- Governments must overcome the preference for planning along jurisdictional lines





Protect Those on Individual Wells

- Additional testing
- Periodic retesting
- Outreach





Discourage The Use of Individual Wells in Areas at High Risk for Contamination

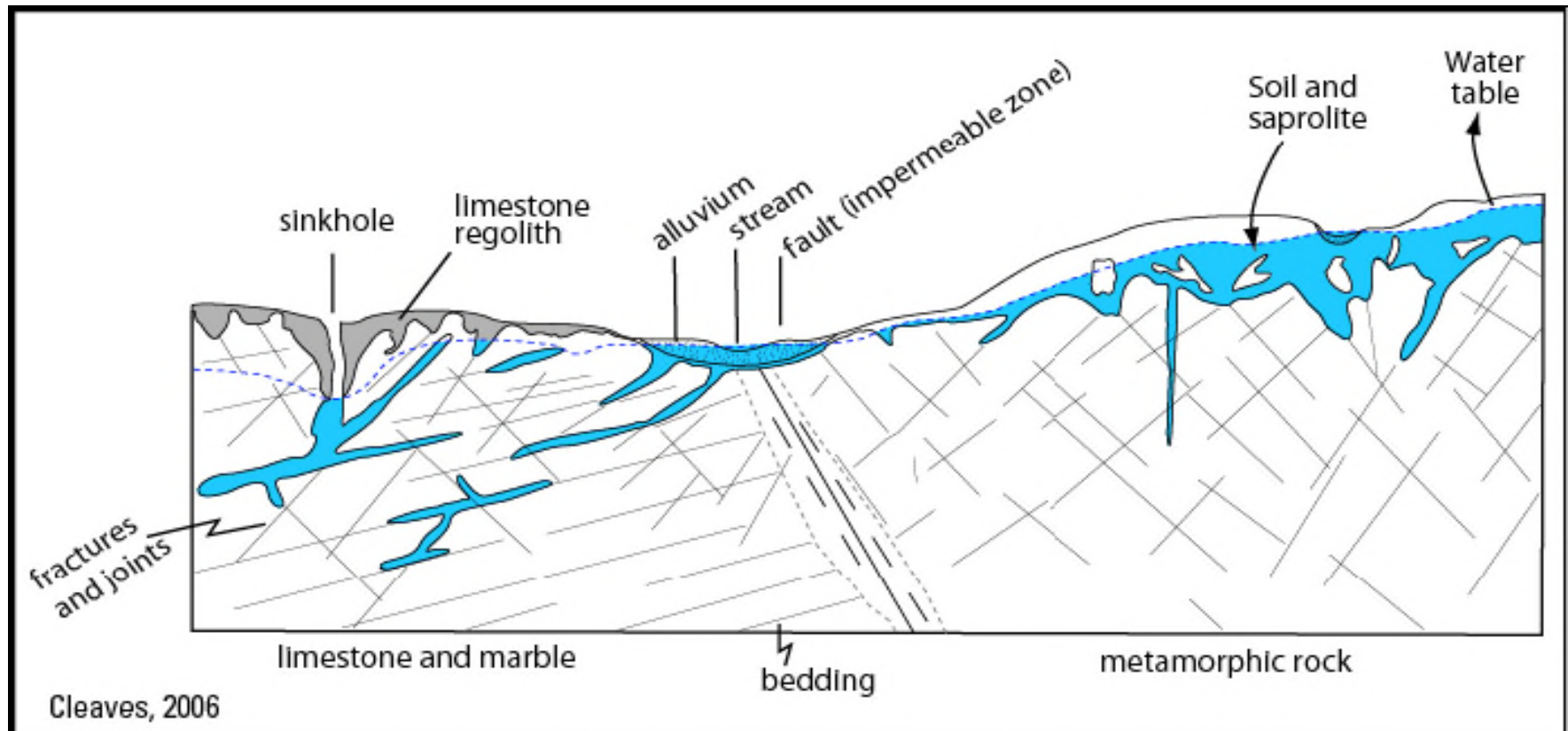


Figure 3 . Cross-section showing hydrogeologic framework in the Piedmont of Maryland.



Strengthen Programs

- Water conservation
- Water reuse
- Demand management





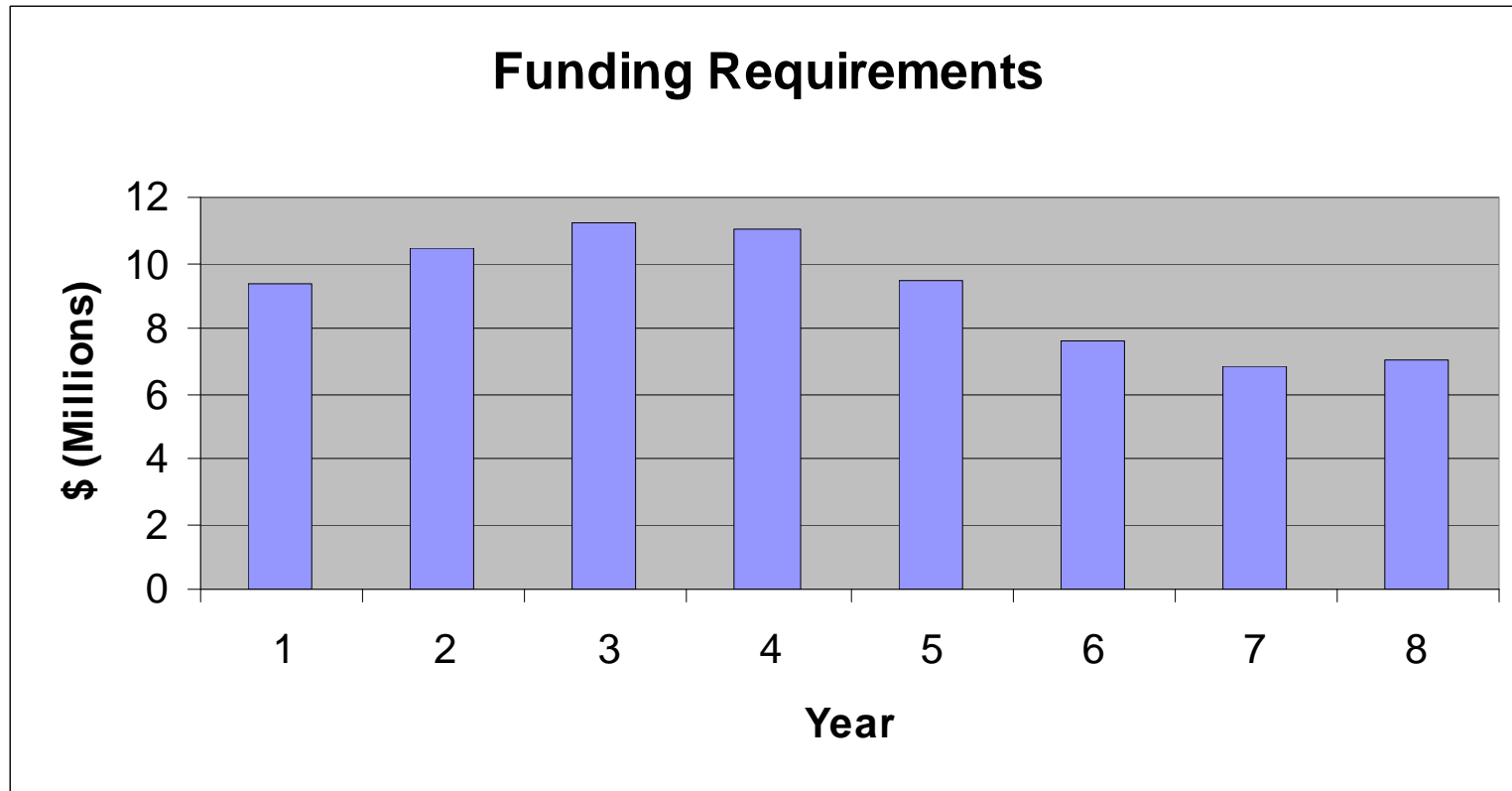
Funding

- Permit fee for water appropriations
- Funding for the two hydrologic studies
- Funding for the expanded monitoring network
- Assistance to local governments





Funding Required to Implement All Suggestions





Outreach

- Water supply challenges are likely to become more frequent and intense
- A well informed public is essential
- Individual choices matter
- Political will matters





**All Advisory Committee Reports are
available on MDE's website under new
PUBLICATIONS - more publications**

www.mde.state.md.us

