

Delaware River Basin Commission

Groundwater Management Update

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June 20, 2019

Water Management Advisory Committee



Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Agenda

- *Groundwater Availability / Use - Basinwide
- * Southeast PA Groundwater Protected Area

Resolution 2002-34 issued on 11/25/2002

DRBC engaged USGS in the “*GIS-Based Ground-Water Availability Analysis for the Delaware River Basin*” to “provide technical support for the comprehensive planning process”. Together with the “*Development of Water Budgets for Selected Watersheds in the Delaware River Basin*” this contract cost \$173,500.

This resulted in USGS scientific investigations report 2006-5125... “Estimated Ground-Water Availability in the Delaware River Basin, 1997-2000” by Ronald Sloto and Debra Buxton.

USGS' Estimated Groundwater Availability in the Delaware River Basin 1997-2000

- * Estimated 2, 5, 10, 25, and 50-year annual base-flow recurrence interval values for each USGS derived watershed [HUC-147 total] in the DRB
- * Each of the 147 HUCs have an identified quantity of groundwater available over a range of climatic conditions
- * Availability portrayed as:
 - * Annual Withdrawal
 - * Annual Percent Availability

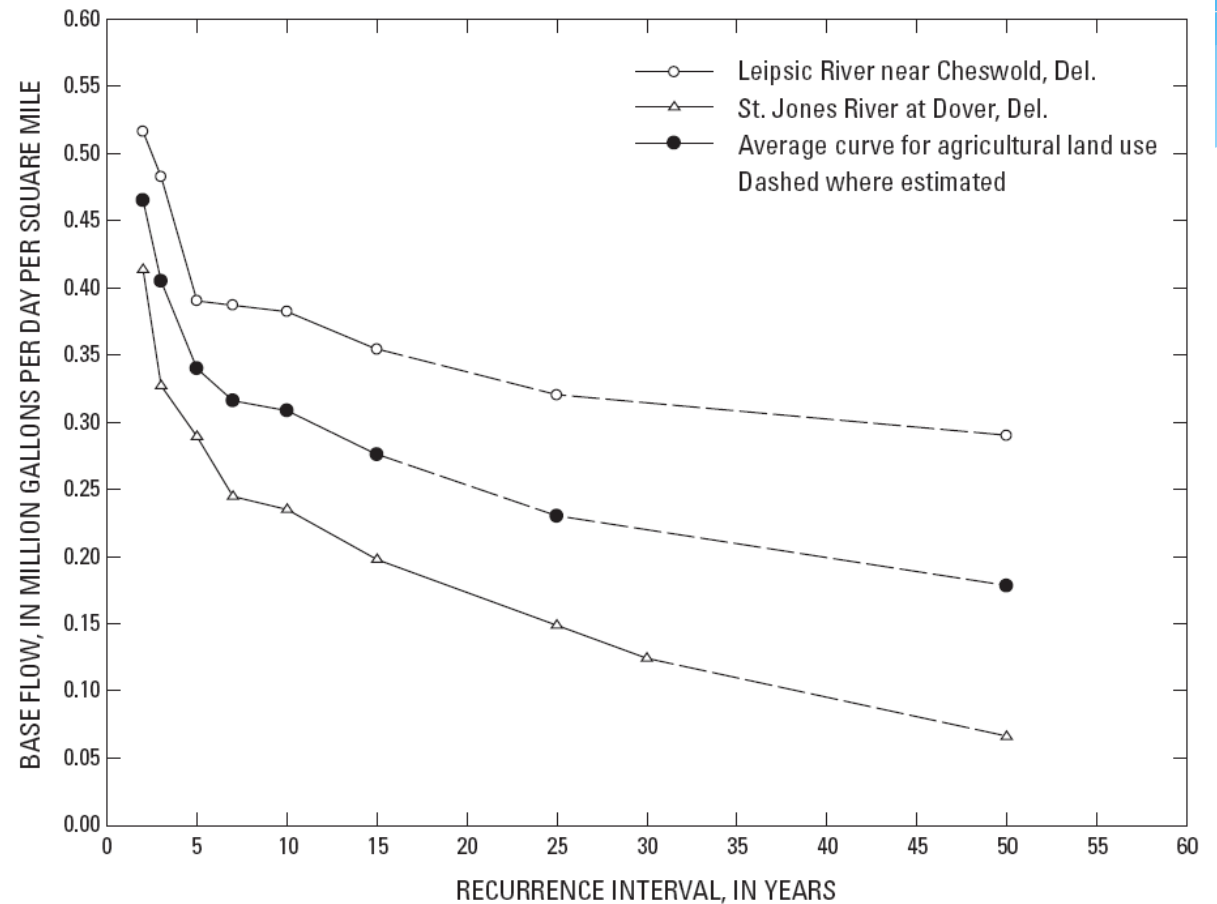


Figure 32. Base-flow-frequency curves for streamflow-gaging stations in the Delaware Coastal Plain with agricultural land use.

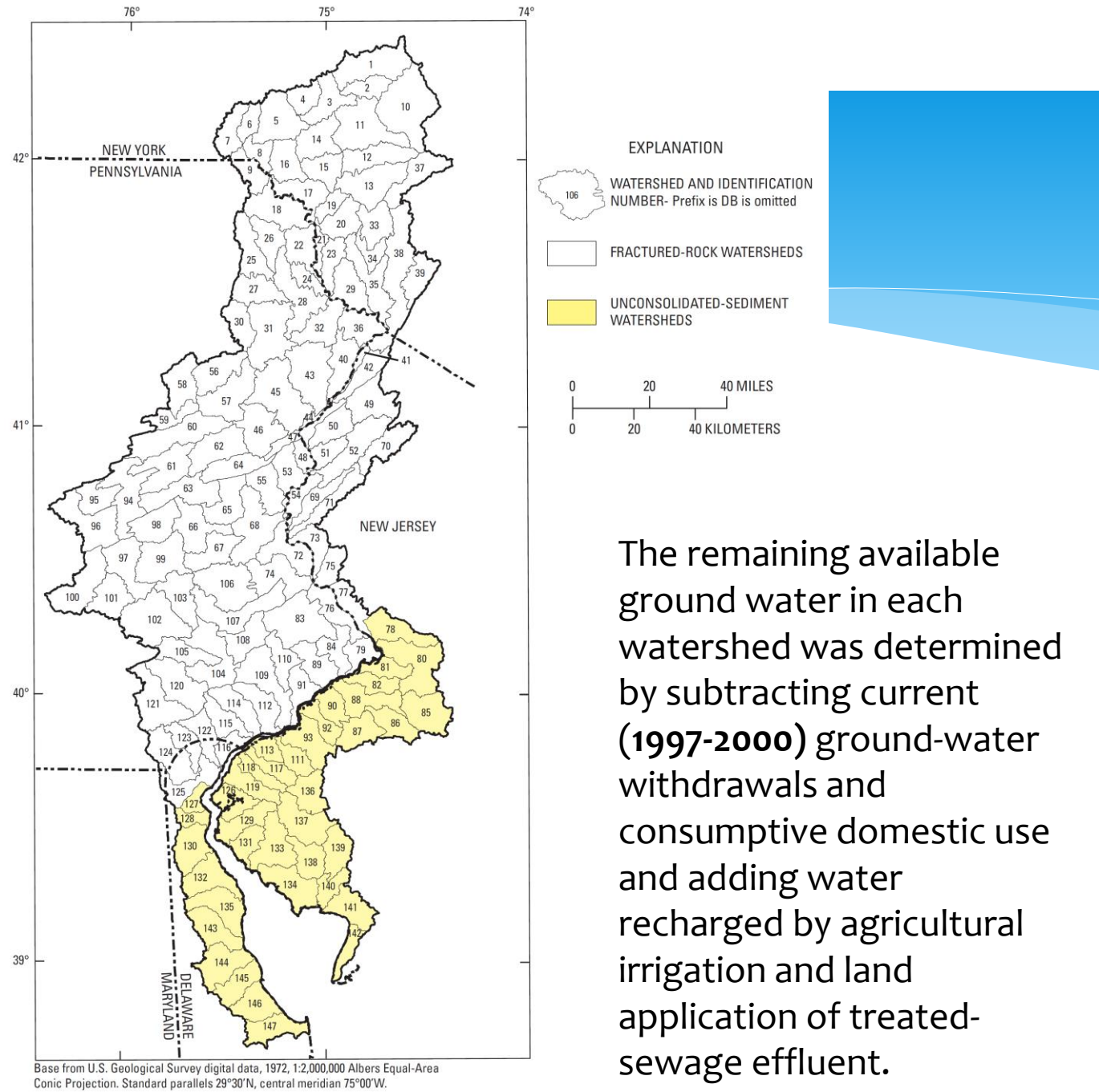


Figure 2. Watersheds in the Delaware River Basin. Watershed names are listed in table 1.

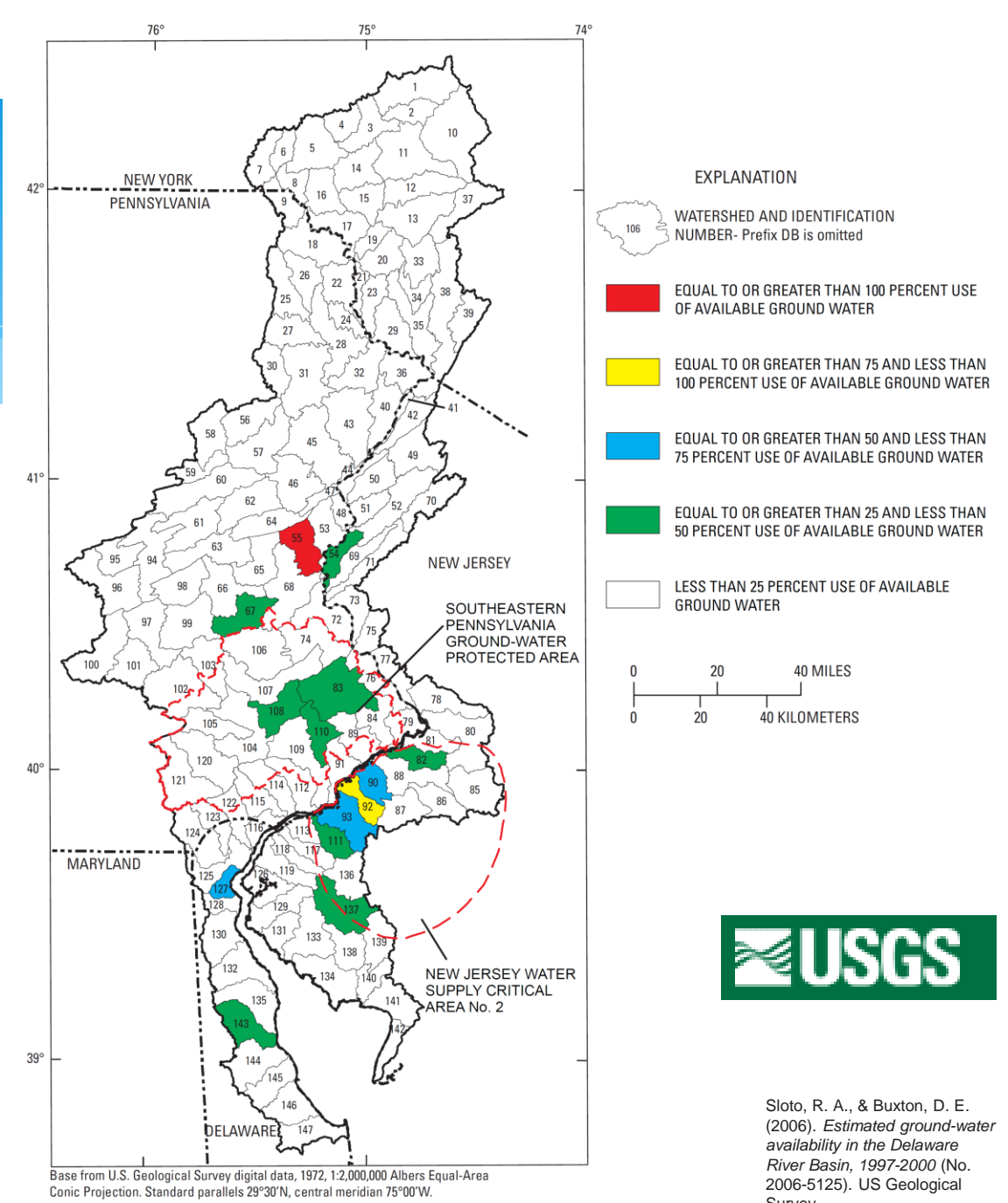
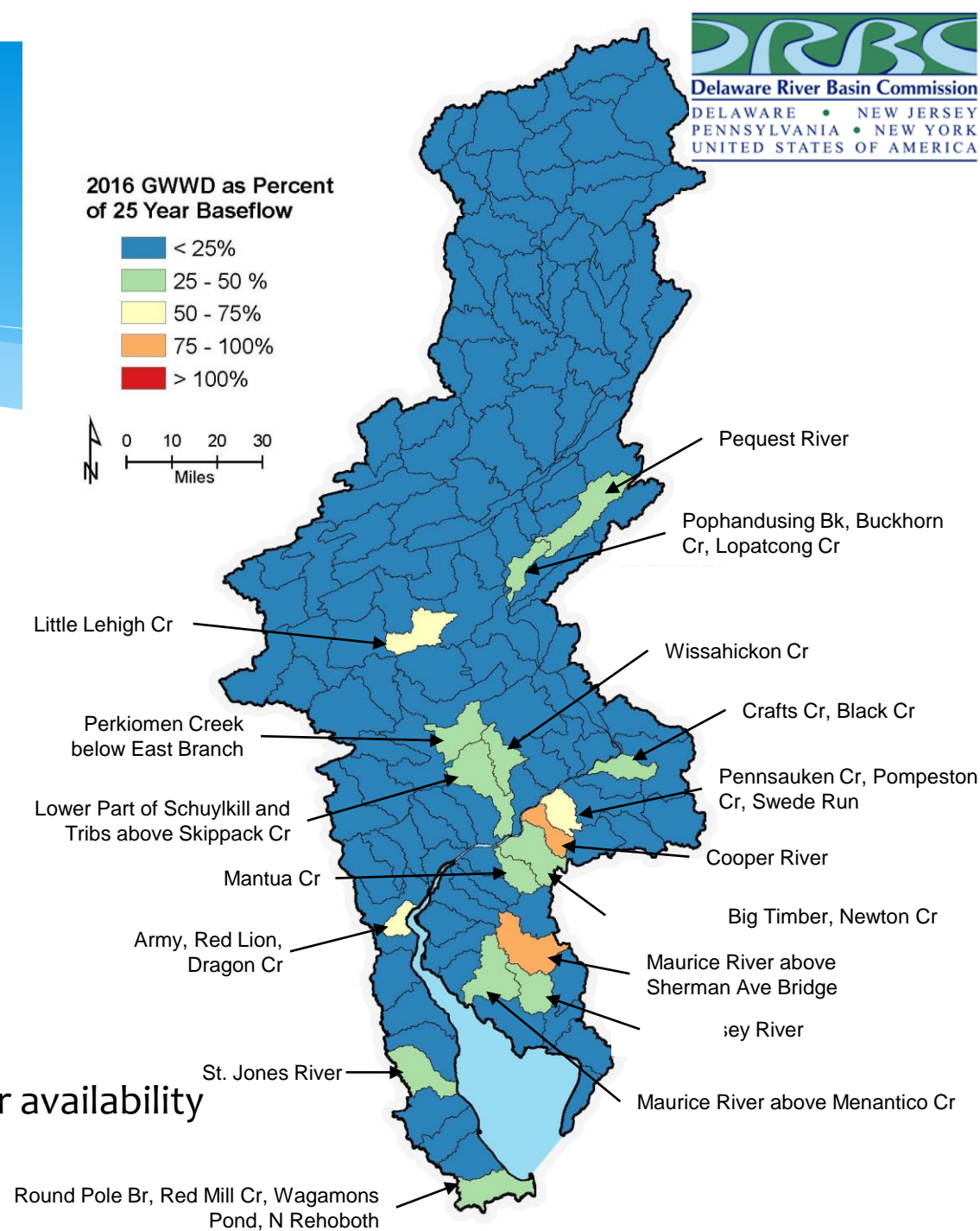


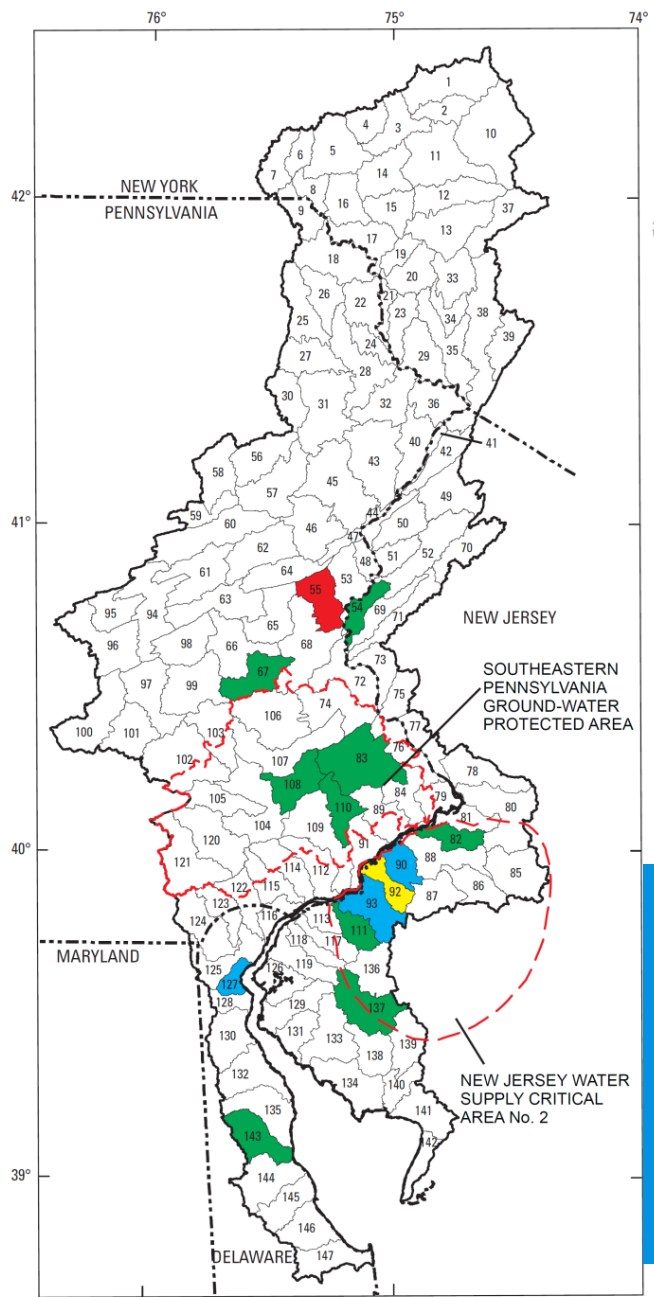
Figure 36. Percent of ground-water use for 25-year annual base-flow recurrence.

2016 Groundwater Withdrawals based on USGS Baseflow Estimates

- * 2016 withdrawals as % of 1:25 year baseflow
- * Assumption that withdrawals are from unconfined aquifer—1:1 impact on surface water
- * Caveats: Other groundwater management programs & their metrics – NJDEP Critical Area, NJ Pinelands, NJ Highlands

Generally, the basin is in good shape with regards to groundwater availability given current use.





EXPLANATION

WATERSHED AND IDENTIFICATION NUMBER- Prefix DB is omitted

EQUAL TO OR GREATER THAN 100 PERCENT USE OF AVAILABLE GROUND WATER

EQUAL TO OR GREATER THAN 75 AND LESS THAN 100 PERCENT USE OF AVAILABLE GROUND WATER

EQUAL TO OR GREATER THAN 50 AND LESS THAN 75 PERCENT USE OF AVAILABLE GROUND WATER

EQUAL TO OR GREATER THAN 25 AND LESS THAN 50 PERCENT USE OF AVAILABLE GROUND WATER

LESS THAN 25 PERCENT USE OF AVAILABLE GROUND WATER

0 20 40 MILES
0 20 40 KILOMETERS

1997-2000 vs. 2016

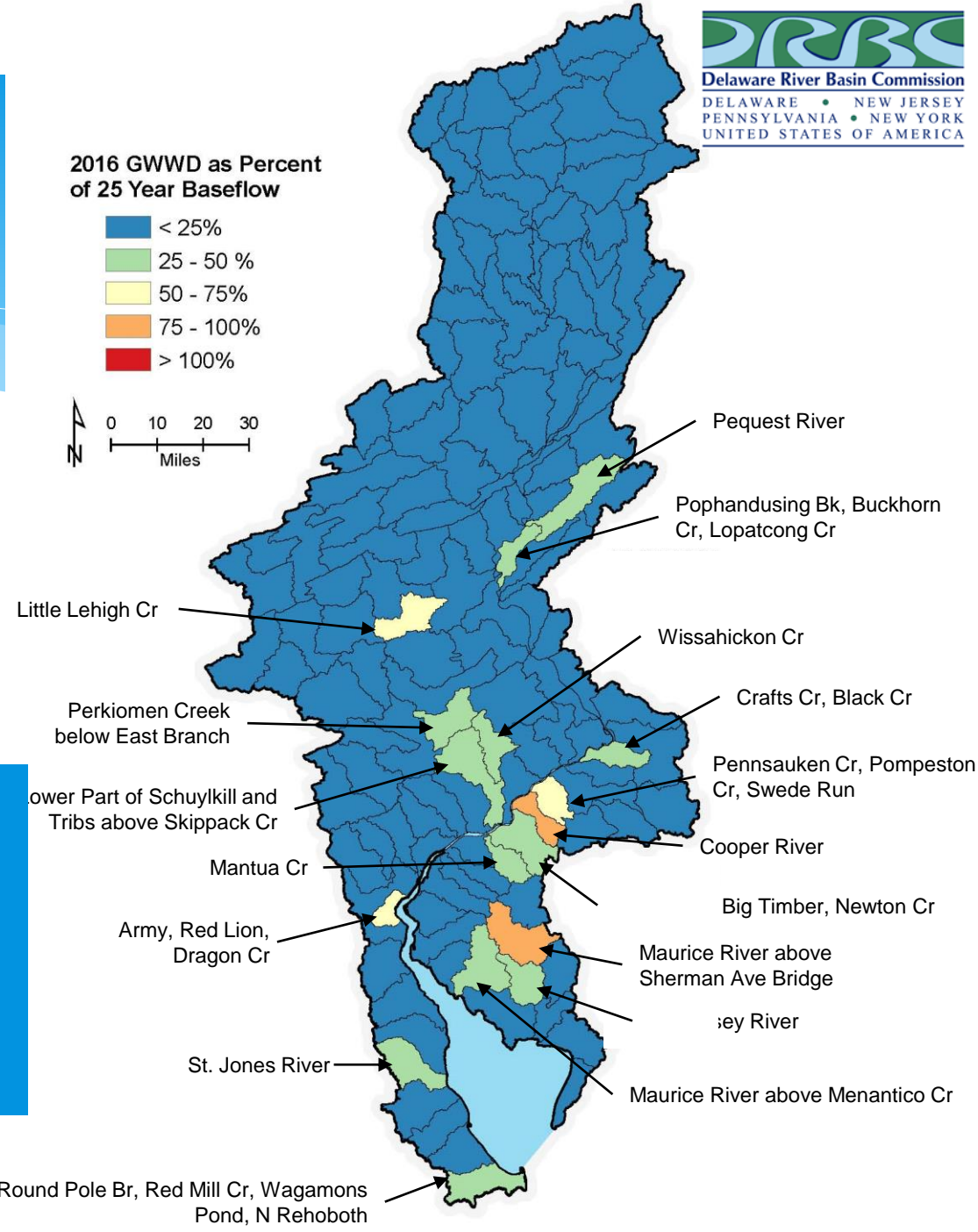
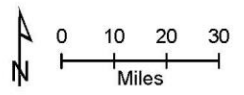
Base from U.S. Geological Survey digital data, 1972, 1:2,000,000 Albers Equal-Area Conic Projection. Standard parallels 29°30'N, central meridian 75°00'W.

Figure 36. Percent of ground-water use for 25-year annual base-flow recurrence.



2016 GWWD as Percent of 25 Year Baseflow

- < 25%
- 25 - 50 %
- 50 - 75%
- 75 - 100%
- > 100%



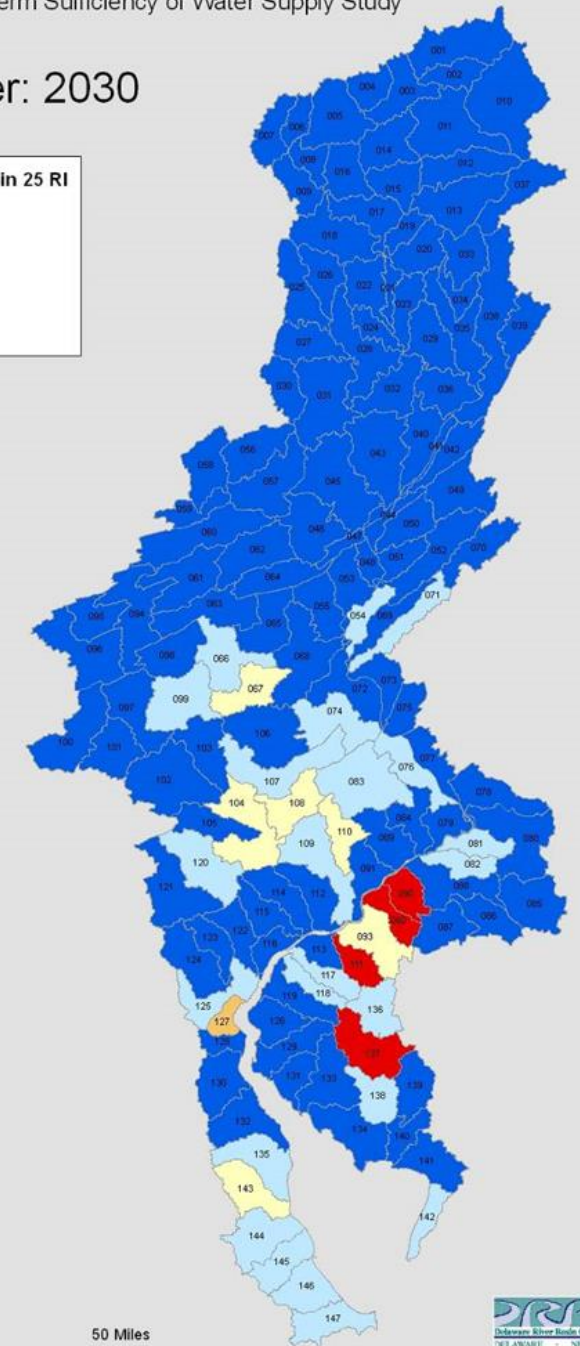
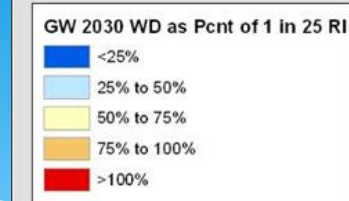
Groundwater: USGS study used for 2008 *Multijurisdictional*

- * DRBC & USACE effort
- * Utilized early-mid 2000 water use data
- * Forecasted groundwater demand to 2030

- * Current DRBC Efforts:
 - * Reforecasting groundwater use for 2030
 - * First time forecasting groundwater use for 2060



Ground Water: 2030



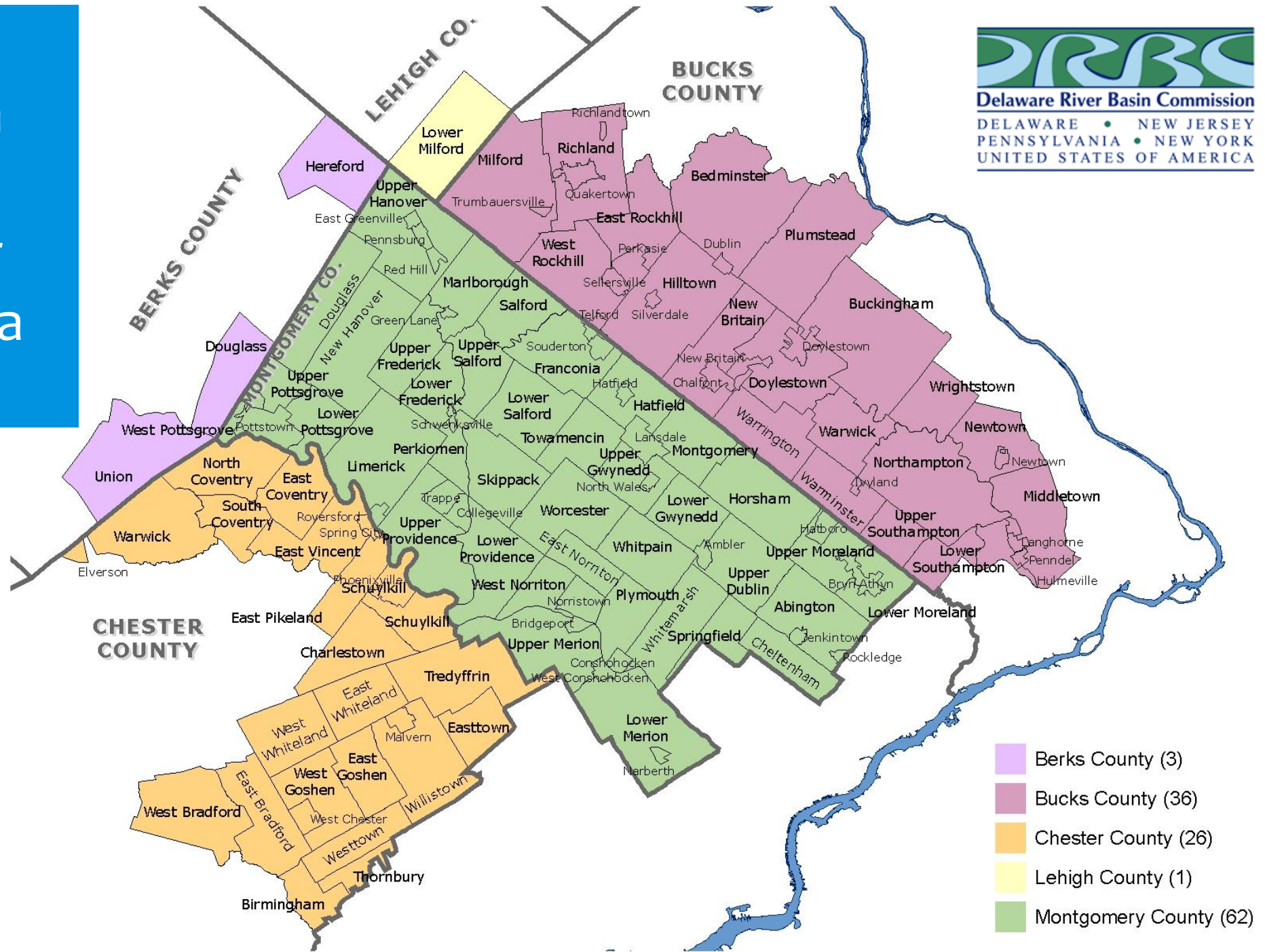
DRAFT



0 12.5 25 50 Miles

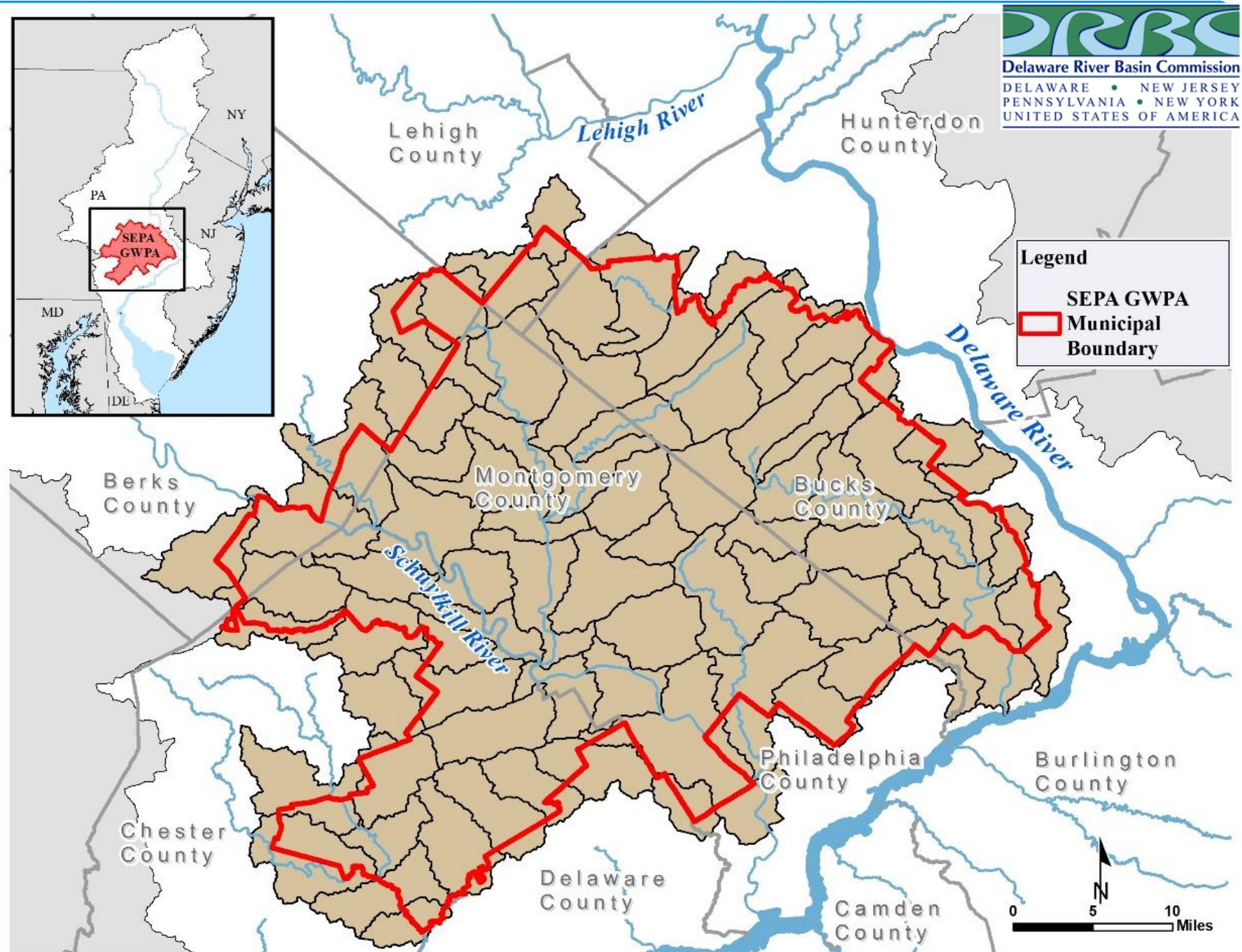
Southeastern Pennsylvania Groundwater Protected Area

- * Established in 1980
- * Regulations apply to municipal boundary
- * Between 1990-2013 total withdrawals were reduced by approximately 8.5 billion gallons or 23.4 million gallons a day

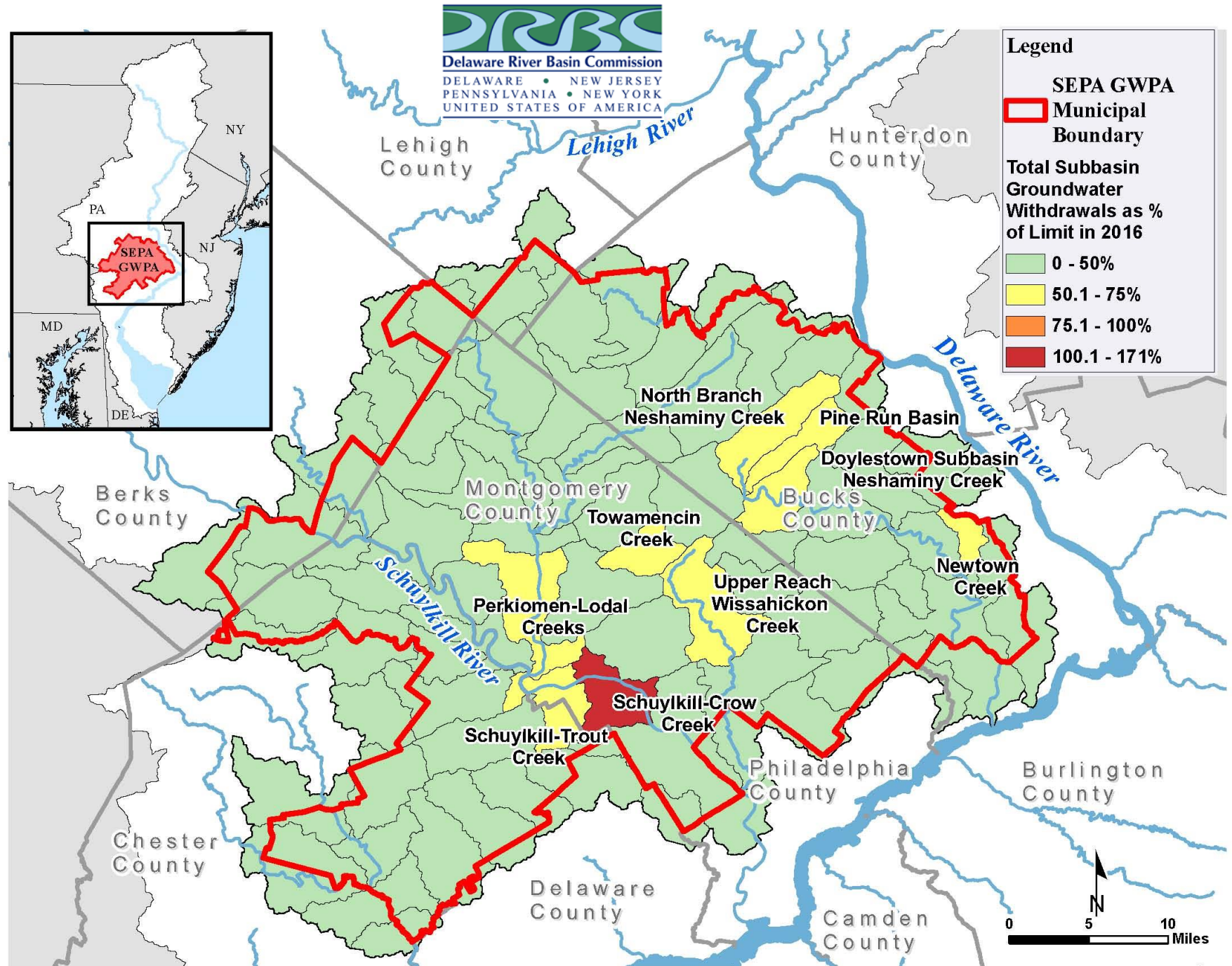


Southeastern Pennsylvania Groundwater Protected Area

- * 76 subbasins associated by municipality and consisting of all of Montgomery and also parts of Berks, Bucks, Chester, and Lehigh Counties
- * Each subbasin contains an annual withdrawal limit
- * Withdrawals limits established in 1998, 1999
- * Withdrawal limit = 1-year-in-25 average annual baseflow
- * Potentially stressed = >75% of withdrawal limit



2016 Groundwater Percent Withdrawals Based on Withdrawal Limits



* Subbasin Names > 50% Withdrawal Limits

- * Schuylkill- Crow Creek (171%)
- * Perkiomen-Lodal Creeks (64%)
- * Pine Run Basin (64%)
- * North Branch Neshaminy Creek (63%)
- * Newtown Creek (63%)
- * Doylestown Subbasin Neshaminy Creek (63%)
- * Upper Reach Wissahickon Creek (58%)
- * Schuylkill-Trout Creek (53%)
- * Towamencin Creek (52%)

Southeastern Pennsylvania Groundwater Protected Area

- * Cumulative groundwater withdrawals from 1987-2016
- * Reductions since 2000

