

FACT SHEET

Pennsylvania Hydrography Dataset

The Pennsylvania Department of Conservation and Natural Resources (DCNR) Bureau of Geological Survey is generating a statewide elevation-derived hydrography dataset. The Pennsylvania Hydrography Dataset (PAHD) will be a dynamic dataset that is scale equivalent to the most detailed lidar elevation data available. As new lidar is flown, PAHD will be updated to reflect spatial and temporal changes that include improved resolution.

Importance of Hydrography Data

Hydrography is the science that deals with the physical aspects of Earth's surface waters. It includes the geographical description of these waters. The PAHD details the location of Pennsylvania's real and potential water pathways and the junctions of its water network.

The influence of the PAHD will be far-reaching. Nonprofit organizations with goals of environmental conservancy invest significantly in projects that include hydrography data. Two examples from the year 2020 are as follows:

- The William Penn Foundation awarded approximately \$10 million in grants to watershed protection projects, nearly all of which utilized hydrography data.

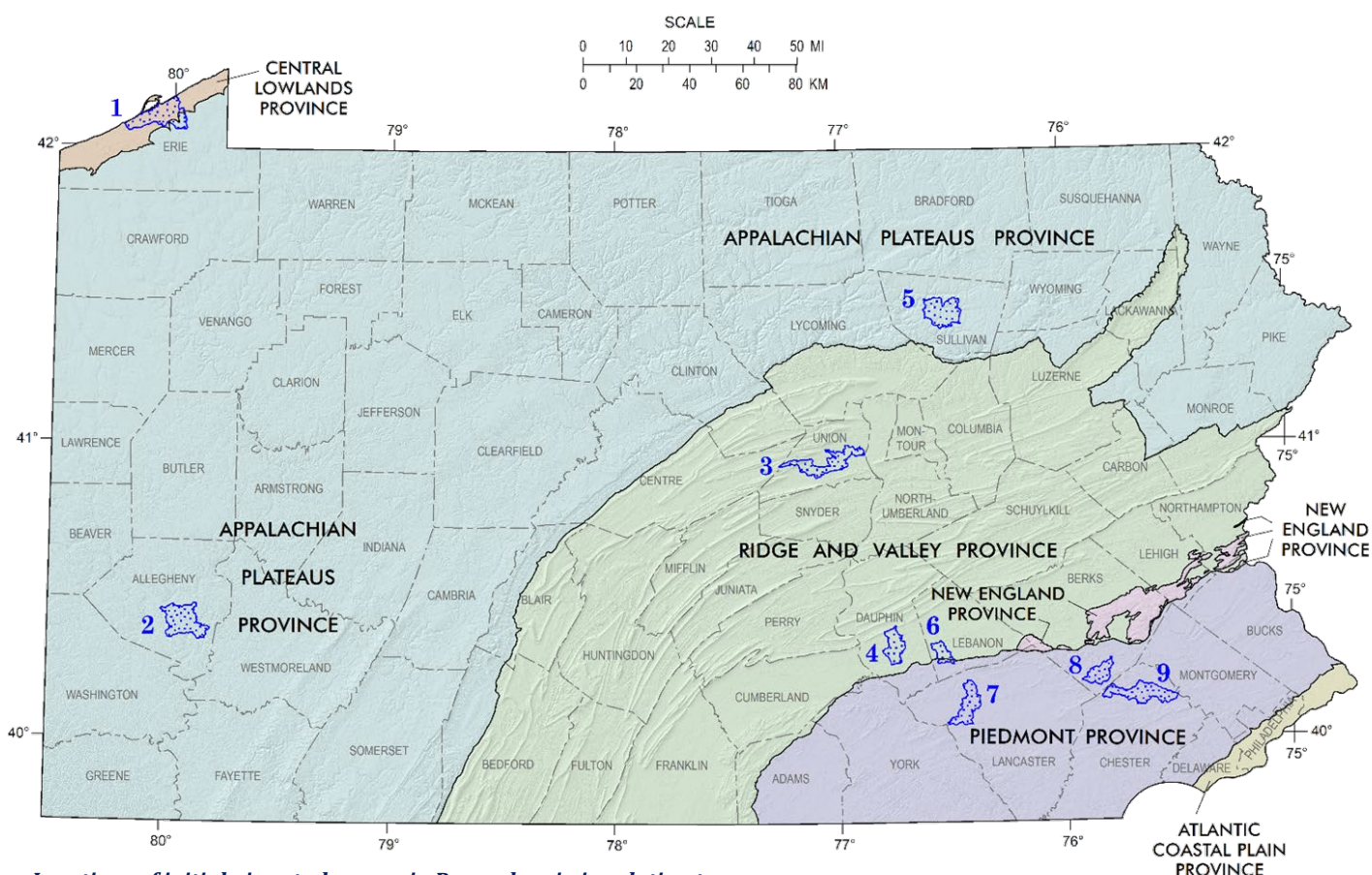
- The Stroud Water Research Center and partners secured more than \$20 million from the U.S. Department of Agriculture's Resource Conservation Partnership Program, with the intent of supporting agriculture conservation and restoration projects on farms in the Delaware and Chesapeake Bay watersheds.

Within Pennsylvania government, the DCNR Bureau of Forestry relies on hydrography data to accomplish goals that include the protection of water quality, coordinated tree planting along streams, and providing access and informational materials for forest-recreation opportunities.

Likewise, the Department of Environmental Protection requires hydrography data to administer environmental regulations or answer public concerns about topics such as stormwater, wastewater, drinking water, water conservation, sinkholes, septic systems, and private wells.

PAHD Methodology

The bureau has benefited from the counsel of local U.S. Geological Survey researchers in addition to U.S. Geological Survey documentation covering the standards and specifications for the National Geospatial Program's National Hydrography Dataset. Even so, the methodology



Locations of initial nine study areas in Pennsylvania in relation to physiographic provinces and topography.

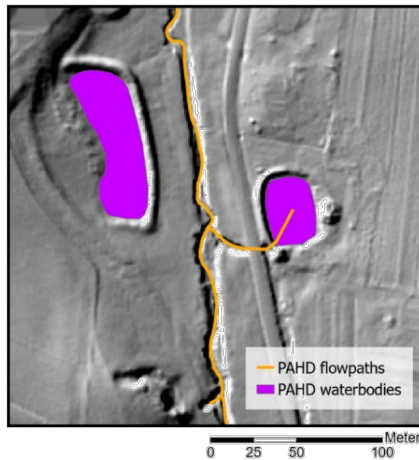
used to create the PAHD is a work in progress. Progress Report 21–01.0, *Pennsylvania Hydrography Dataset—The Pennsylvania Geological Survey’s Process for Generating Flowpaths*, outlines the most recent iteration of the method.

Because hydrography features alter surrounding topography, the method uses elevation data to infer the locations, connections, and flow directions of water features in the state. PR 21–01.0 can be downloaded from http://elibrary.dcnr.pa.gov/GetDocument?docId=3603818&DocName=PR21-01_PaHydroDataset_Process.

Study Areas and Data

Upon the publication of this fact sheet, hydrography data for 13 study areas are available for download from <ftp://ftp.pasda.psu.edu/pub/pasda/PAHydrographyDataset>. For each of these study areas, the PAHD includes flowpaths (lines), wide streams (polygons), waterbodies (polygons), and a digital elevation model (DEM) that has the hydrography features burned into its image.

PAHD Data on Hillshade



Orthoimagery



PAHD flowpaths and waterbodies in part of the Lower Chickies Creek HU12 basin in Lancaster County, Pa.

The data in the PAHD are produced and packaged on 12-digit hydrologic unit (HU) levels (subwatershed areas). The nine HU12 basins forming the initial study areas were chosen to represent an array of physiographic provinces, geologies, land covers, drainage patterns, and anthropogenic influences.

Statistics for the Initial Nine Subwatershed (HU12) Areas Included in the PAHD

Map no.	HU12 name (HUC12 number)	Area	Cumulative flowpath length	Drainage pattern	Features of interest	Most common land cover types ¹
1	Mill Creek-Frontal Lake Erie (041201010406)	146.28 km ² (36,147.48 acres)	350,138.9 m (217.5658 mi)	Generally dendritic; abundant urban-related, directed drainage	Urban development Coastal settings Directed subsurface flow	Developed, low intensity Developed, medium intensity Deciduous forest
2	Streets Run-Monongahela River (050200050808)	140.59 km ² (34,740.55 acres)	162,402.1 m (100.9120 mi)	Generally dendritic; some urban-related, directed drainage	Urban development Directed subsurface flow	Developed, medium intensity Developed, low intensity Developed, open space
3	Buffalo Creek (020502061005)	119.32 km ² (29,484.61 acres)	224,534.8 m (139.5195 mi)	Generally dendritic; some agricultural-related, directed drainage	Low-relief drainageways Agricultural land use Directed surficial flow	Low vegetation Tree canopy Impervious surfaces
4	Beaver Creek (020503050905)	70.60 km ² (17,445.64 acres)	187,802.3 m (116.6950 mi)	Dendritic	Suburban development Forested region	Low vegetation Tree canopy Impervious roads
5	Killinger Creek (020503050801)	38.72 km ² (9,567.92 acres)	42,902.35 m (26.65828 mi)	Dendritic	Karst influence Suburban development Agricultural land use	Low vegetation Tree canopy Impervious surfaces
6	Little Loyalsock Creek-Loyalsock Creek (020502060304)	118.03 km ² (29,165.85 acres)	179,720.3 m (111.6730 mi)	Dendritic	Glacially influenced terrain Forested region	Low vegetation Tree canopy Impervious roads
7	Lower Chickies Creek (020503060804)	90.09 km ² (22,261.72 acres)	138,108.6 m (85.81671 mi)	Dendritic	Suburban development	Low vegetation Tree canopy Impervious surfaces
8	Hay Creek (020402030608)	57.30 km ² (14,159.14 acres)	107,906.3 m (67.04990 mi)	Dendritic	Well-defined floodplains Suburban development	Low vegetation Tree canopy Impervious surfaces
9	Lower French Creek (020402030702)	121.6 km ² (30,048.01 acres)	263,670.2 m (163.8371 mi)	Dendritic	Suburban development Agricultural land use	Low vegetation Tree canopy Impervious surfaces

¹Top three land covers in terms of surface area—land covers for maps 1 and 2 are from the 2011 National Land Cover Database (NLCD), and land covers for maps 3–9 are from the Chesapeake Conservancy 2013/2014 land cover dataset.

