

CENTRE COUNTY CHAPTER - PA SENIOR ENVIRONMENTAL CORPS 2024 ANNUAL REPORT

STATEMENT FROM THE CCPaSEC PRESIDENT: *The annual report is an overview of Centre County stream conditions and trends over the past year. The data CCPaSEC collects determine water quality, flow patterns, and ecological health, which are essential for effective management and conservation. The report demonstrates the importance of CCPaSEC's monitoring and collaboration to ensure the long-term health of Centre County watersheds.*

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The Centre County chapter of the PA Senior Environmental Corps (CCPaSEC) ended 2024 with 15 teams comprising more than 50 volunteer citizen scientists/first observers monitoring dozens of sites on 30-plus streams (and one spring) spanning parts of five of the 12 major watersheds* that drain Centre County lands. One of those five watersheds, Beech Creek, stretching across the north-central part of the county, alone accounts for 19 CCPaSEC-monitored surface waters and includes streams whose long history of impairment (mostly from coal mining) is being updated to include threat from a more recent extractive industry: natural-gas drilling in the Marcellus Shale formations.

While the number of CCPaSEC members and the makeup of teams varied slightly during 2024, their work remained largely unchanged since the organization's founding some 22 years earlier. Each month (as weather and staffing levels permit) teams visit sites to collect data on such physical attributes as stream width, depth, flow rate and appearance, as well as chemical properties including alkalinity, pH, specific conductance, dissolved oxygen, and nutrient levels. Twice a year, teams conduct biosurveys of macroinvertebrate populations as a gauge of their streams' overall health. In 2024, as in previous years, CCPaSEC members tallied hundreds of volunteer hours and drove thousands of miles across the county to perform these tasks. The results of their efforts are compiled in a growing database available to the public on the organization's website, <https://ccpasec.org/data/>. (Water samples collected by CCPaSEC members from Beech Creek and several of its feeder streams are also analyzed by Penn State University scientists as part of a larger effort to study the impact of Marcellus Shale drilling on that watershed. These data can be accessed from the CCPaSEC website by visiting the Marcellus Region Sites grouping and clicking the "Chemical Data – PSU Lab" tab at the bottom of each stream's entries page.)

In a word, "stable" seems to capture the state of most streams monitored by CCPaSEC members during 2024. Seasonal fluctuations in stream widths, depths and flows were

noted by teams across the breadth of Centre County, with persistent dry-to-drought conditions in late-summer months modifying what's come to be accepted as "normal." Most teams reported little change in chemical parameters measured, while biosurveys of streams yielded generally consistent results season to season. Numbers and varieties of macroinvertebrates collected (then released unharmed) resulted in water-quality scores ranging from "fair" to "good" to "excellent," indicating the overall positive health of monitored streams. There were, however, some departures from this trend of stability. Among them:

- Team #13, which monitors Beech Creek and several of its tributaries deemed at-risk from impacts of Marcellus Shale drilling, reported "quite an improvement" in pH readings during its 2024 sampling of Beech Creek near the community of Monument. Readings in previous years that were consistently in the 4s (akin to acid rain) are now in the 6s (approaching neutral), the team noted. And fisherpeople told the team they were catching trout at the creek's confluence with Monument Run – something that hasn't happened in decades along this stretch of stream long devoid of aquatic life from the effects of acid mine drainage. The team attributed the recovery to placement of an acid-buffering lime doser on the North Fork of Beech Creek.
- Water levels in Galbraith Gap Run, a tributary to Spring Creek near that fabled stream's source, have been consistently and significantly lower over the past three years, compared with flows of 2019 and 2021, according to Team #1. Team members also reported high nutrient readings last year for nitrates and phosphates at monitoring sites on Galbraith Gap Run and Slab Cabin Run, another Spring Creek tributary. Still, macroinvertebrate surveys on both streams in 2024 resulted in water-quality scores that were just short of "good."
- In Nittany Valley, riparian improvements and a farewell to cows may be responsible for altering the profile and chemical signature of a sluggish segment of Little Fishing Creek. Team #2, which monitors two sites on the stream, reported it moved its Tice Farm sampling location 10 feet upstream when the previous location became too narrow and "boot-sucking" mucky to wade. The team attributed this change in stream character to recent stream-side buffer plantings. Those plantings and the removal of cattle from adjacent pastures may also account for notable changes in nitrate and phosphate concentrations in water samples the team has collected over the years. Across both sampling sites, however, Little Fishing Creek remains a healthy stream, with pH readings last year averaging in the low 8s (just slightly basic).

Elsewhere in 2024, Team #15 noted increased activity near one of its monitoring sites on Halfmoon Creek, a tributary to Spruce Creek and the focus of ongoing efforts by multiple state and federal agencies (and non-governmental organizations, including CCPaSEC's parent group, ClearWater Conservancy) to restore the watershed after years of impairment from agricultural runoff. Last year saw a weeks-long riparian buffer enhancement conducted by the U.S. Fish and Wildlife Service take shape near the team's downstream site, while Team #15 members interacted with staff from the U.S.

Department of Agriculture and graduate students from Penn State University who maintain water-quality monitoring stations of their own at and near the team's downstream site.

Finally, CCPaSEC and its members were acknowledged for their contribution to a survey of PFAS contamination in some Centre County surface and ground waters. The 2024 report of this survey identified the existence of Per- and Polyfluoroalkyl Substances in Spring and Bald Eagle creeks "at levels exceeding (federal Environmental Protection Agency) health guidelines and Pennsylvania State Drinking Water Regulations." PFAS, a large group of "forever" chemical compounds with widespread industrial and commercial applications, have been linked to cancer and other health problems in humans. The survey noted that the appearance of PFAS in these waterways may be traced to the State College Regional Airport (formerly University Park Airport) and its regulated use of fire-fighting foams. The report, prepared by the Sierra Club Moshannon Group, can be accessed from the CCPaSEC website at <https://ccpasec.org/wp-content/uploads/2024/08/pfas-survey.pdf>.

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*For a map of what Centre County defines as its 12 "Major Watersheds," refer to (<https://gisdata-centrecountygov.opendata.arcgis.com/datasets/CentreCountyGov::major-watersheds/explore?location=40.947120%2C-78.135227%2C9.68>)