
Agricultural Research Service in Ohio

North Appalachian Experimental Watershed

Coshocton, Ohio

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An outdoor laboratory for land- and water-management research



North Appalachian Experimental Watershed

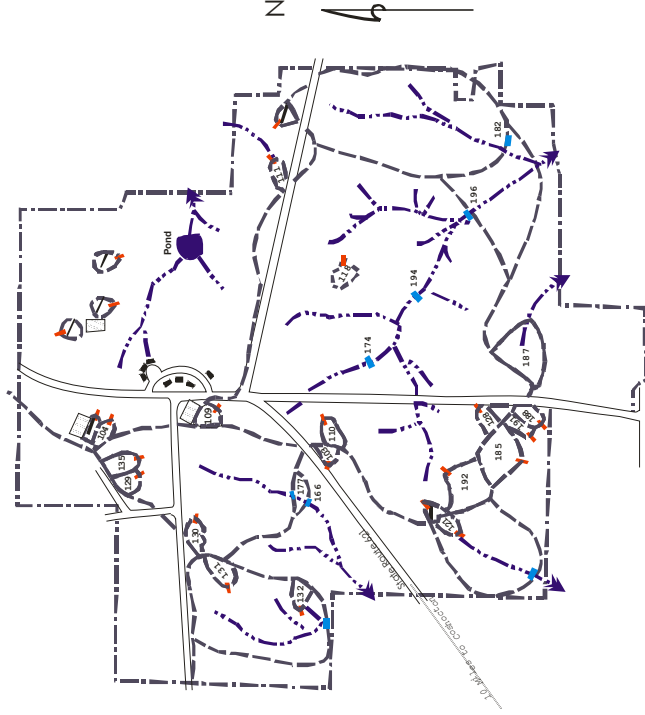
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Overall NAEW Research Mission

Evaluate effectiveness of innovative land-management practices to control runoff and water quality

NAEW Facility

- Built in ~1935 by CCC and WPA labor force
- 1050 acres controlled by ARS for watershed and other experiments
- “Test beds” of permanent environmental instrumentation – *lysimeters, weather, small watersheds (runoff/water quality), rain gauges, springs, wells, etc.*
- Close collaboration with OSU
- Staff of 14 (3 scientist and 11 support positions) + OSU (3)



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NAEW Strengths

- Instrumentation infrastructure ready to use
- 70-yr data base on small watershed hydrology and water quality
- 1050-ac outdoor lab allows much flexibility in field experiments
- Water-chemistry lab
- Scientific and support expertise
- We conduct research off site

Opportunities to Solve Environmental Problems

- Watershed runoff
- Ground water
- Water quality
- Soil carbon
- Climate change
- Watershed modeling
- Effects of land-management practices
- Biofuels



Success Stories

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•Environmental testing of no-till agriculture

- First test of environmental benefits of no till – recommended practice
- Used by billion dollar USDA farm programs nationwide
- Numerous studies with OSU on soil carbon and land management practices (grad students, etc.)

•Beneficial use of paper-mill sludge for reclaiming surface mines

- Reduced monitoring cost for paper mill
- Maximum application rate by paper mill allowed
- Ohio EPA changing regulations

•Historic NAEW lysimeter data used for design development of evapotranspiration land fill covers

- Model validated
- US Air Force – will work at 93% of sites worldwide
- Cost savings (1/2 of that for conventional covers)
- >30 ET landfill covers installed (e.g., Denver WWII waste site, AF Academy)
- Numerous training sessions promoted by USEPA across US
- Estimated savings of \$20B in US

•Ongoing collaboration testing filter medium with private firm

- Test for removal of nutrients, pesticides, and erosion reduction from farm fields
- ARS nonfunded cooperative agreement



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Opportunities to Capitalize on NAEW

- Environmental aspects of livestock production
 - Benefits of grazing practices
 - Quantifying impacts of applying manure to frozen soil
- Quantifying impacts of climate change (weather, flooding, droughts, agriculture)

Strengths

- Increases in soil carbon due to land management
- Environmental aspects of urban areas (hydrology, water quality, soil carbon, best management practices, etc.)
- Environmental trading (runoff, water quality, carbon)
- Organic agriculture
 - Current collaborator with OSU on organic grazing
 - Planning grant submitted to NIFA

