Conservation and Survey Division

Our Mission

The Conservation and Survey Division (Nebraska Geological Survey), the natural resource survey component of the School of Natural Resources, is a unique, multi-disciplinary research, service and data-collection organization established by state statute in 1921.

The Division's mission is to investigate and record information about Nebraska's geologic history, its rock and mineral resources, the quantity and quality of its water resources, land cover and other aspects of its geography, as well as the nature, distribution and uses of its soils.

Cover photo:
Smith Falls, Cherry County, is one of Nebraska's most scenic features. The falls are developed on the siltstones of the Rosebud Formation (Oligocene) and they began to form during the Late Pleistocene as the Niobrara River incised its valley.
Conservation and Survey Division

Annual Report 2021

February 2022

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Director, Conservation and Survey Division
Senior Associate Director, School of Natural Resources

University of Nebraska–Lincoln
CSD 2021 Accomplishments at a Glance

Extension contacts by CSD personnel: 1,835

Number of organizations/programs/other entities served worldwide: 119

Requests for data and analysis served by CSD personnel: 5,779

Footage of test holes drilled and/or logged by CSD personnel: 5,400 ft

Automated groundwater-data entries overseen by CSD personnel: 122,304

Groundwater quality results processed by CSD personnel: 1,310

Teaching contribution of CSD personnel:
CSD faculty taught 122 students in 10 different courses in 4 different programs at UNL, producing 364 student credit hours

Students advised by CSD personnel:
3 undergraduate students and 23 graduate students

Continuing education units for professionals (CEUs) generated by CSD personnel: 345

Total grant funding with which CSD personnel were associated: >$3.86 million

Total scientific publications of all kinds authored or coauthored by CSD personnel: 46
• Peer-reviewed scientific journal articles: 26
• Book chapters: 1
• Survey reports, bulletins, and field guides: 5

Major field trips run or co-run by CSD personnel:
1 (Nebraska Geological Society)

Presentations by CSD personnel: 44

Media interviews by CSD personnel: 4

Total page views of CSD website: 103,438

Downloads of CSD publications from UNL Digital Commons:
800 CSD publications downloaded 13,033 times by users in 117 countries

Awards:
UNL Soil Judging Team, Region 5 contest, coached by CSD’s J.K. Turk:
• 3rd overall
• 2nd in group judging
• One 1st place individual


Martens, K., & Burbach, M., 2021. Rancher preferences for conservation program in Nebraska’s grasslands. USDA NIFA SARE Project Reports [https://www.sare.org/grants/about-project-reports/].


**Video Tutorials by CSD Personnel in 2021**


Cameron, K., 2021. “AEM Data in Google Earth Tutorial Part 3.” Eastern Nebraska Water Resources Assessment [https://www.cloudhq.net/screencast/03d38c56d0edf3].


Cameron, K., 2021. “AEM Data in Google Earth Tutorial Part 5.” Eastern Nebraska Water Resources Assessment [https://www.cloudhq.net/screencast/8f123c5c6ace9c].

**Organizations for which CSD Personnel Fulfilled Requests for Information, Consultation or Services in 2021**

Adaptive Resources, Inc.
Advance Resources International
Advantek Waste Management Services, LLC
American Association of Petroleum Geologists
Aqua Africa
Audubon Society
Bartlett and West Consulting Engineers
*Basin Research* (journal)
Battelle Memorial Institute
Black Hills Energy
Budapest University of Technology and Economics
Bullock, Inc. Oil Exploration and Oil Well Services
Butler County, Nebraska
California Geological Survey

Catena (journal)
Cedar Knox Rural Water Project
Central Platte NRD
*Chemical Geology* (journal)
China Science and Technology Network
City of Gering, Nebraska
City of New York, New York
City of Norfolk, Nebraska
City of Scottsbluff, Nebraska
Darrah Oil
Department of Earth and Atmospheric Sciences, UNL
Dougherty Water for Food Global Institute
Duck Creek Ranch
Selected Objectives for 2022
Gilmore, Waszgis, Szilagyi, Hanson, Korus, Turk, Burbach, Young, Steele, Hallum, Joeckel, Cameron, Lackey

- Assessment of critical minerals in Forest City Basin and environs
- Begin characterization of hydrogeologic framework of eastern Knox County and parts of Cuming and Burt counties
- Cenozoic fluvial systems of the Great Plains
- Complete NGWMN commitments and observation-well upgrades
- CSD test-hole database
- Demonstration of evapotranspiration estimation accuracy by complementary relationship method
- Develop cyberinfrastructure and interactive GIS
- Development and evaluation of Nebraska Water Leaders Academy
- Development of method for field estimation of SOC in Nebraska soils
- Development of online mapping interface for historic aerial photos
- Documentation of Cretaceous paleoclimates and global carbon-sysle changes
- Documenting historic changes in Nebraska soils in relation to land use
- Eastern Nebraska Regional Groundwater Recharge Mapping
- Eastern Nebraska Water Resources Assessment
- Ecohydrologic studies using ground-based camera networks and new cyberinfrastructure
- Geology and formation of Nebraska’s Rainwater Basins
- Groundwater installations and outline tutorial sessions to Sandhills Interactive Natural Resources Educational Complex (SINREC) at Valentine
- Groundwater transit times, nitrate, and solute delivery to streams
- Human dimensions of natural-resources management
- Increase production of surficial geologic maps through U.S. Geological Survey STATEMAP Cooperative Geologic Mapping Program
- Integration of airborne EM and groundwater model applications
- Investigation of possible localized land-surface subsidence
- Mapping and analysis of eolian erosional landforms on Great Plains, including Nebraska
- Nebraska Core Preservation, Inventory and Database, Phase II: Dam and Infrastructure Study Core
- Nebraska Critical Minerals Database, Phase II: Elk Creek carbonatite sample and data preservation
- Nebraska Critical Minerals Strategic Plan
- Nebraska GeoCloud
- Nebraska Groundwater level monitoring program
- Nebraska Groundwater Quality Database Phase II enhancements and interface with new data acquisition
- Publication of open-access groundwater tracer textbook
- Revisions of regional Pennsylvanian stratigraphy
- Stream-groundwater relationships of the lower South Platte River
- Update CSD groundwater maps (elevation of water table and aquifer saturated thickness)
- Watershed science education through NebraskaWAVES program