57th Annual Meeting of the Delaware Water Resources Center

Hillside Park
103 Hillside Dr.
Newark, Del.
May 5, 2022

Gerald Joseph McAdams Kauffman
Director
University of Delaware
Water Resources Center

Martha B. Narvaez
Associate Director
University of Delaware
Water Resources Center

NIWR
THE NATIONAL INSTITUTES
FOR WATER RESOURCES

JOSEPH R. BIDEN, JR. SCHOOL OF PUBLIC POLICY & ADMINISTRATION
www.bidenschool.udel.edu
MEMORANDUM

TO: Advisory Panel of the University of Delaware Water Resources Center
    Undergraduate/Graduate Water Research Students and Advisors

FROM: Gerald J. Kaufman, Director
       Martha B. Narvaez, Associate Director
       University of Delaware Water Resources Center

DATE: April 25, 2022

SUBJECT: 57th Annual UDWRC Advisory Panel Meeting, May 5, 2022, 10 am-1 pm

You are invited to the 57th Annual Meeting of the Advisory Panel of the University of Delaware Water Resources Center at 10 am on Thursday May 5, 2022 to be held outdoors adjacent to the campus of the University of Delaware at the beautiful new City Hillside Park at 103 Hillside Drive in Newark, Delaware. Our purpose is to review the research presentations of the FY22 water resources students, discuss upcoming FY23 research projects, discuss the DOI/USGS WRRA FY23 budget appropriation, and establish water research priorities in Delaware for the upcoming year. Students will present a poster that presents your research to the DWRC Advisory Panel on May 25, 2022 and your 10 - 15 page research report will be due June 21, 2022. For guidance on posters and templates, please see our website here. https://www.wrc.udel.edu/education/internships/

Agenda
Delaware Water Resources Center
57th Annual Advisory Panel Meeting
May 5, 2022

10:00 am
Hillside Park (103 Hillside Dr.)
Newark, Del.

1. Introductions 10:00 am
2. DWRC 5-yr Strategic Plan 10:10 am
3. FY22 Undergraduate/Graduate Research Presentations 10:30
4. DOI/USGS WRRA FY23 Budget Request 11:30
5. FY23 Undergraduate Water Internship Proposals (start Jun or Sep 2022) 11:40
6. DWRC Advisory Panel Membership 11:55
7. Federal/State/Local/Foundation Water Finance Opportunities 12:10
8. Luncheon 12:30 pm
CHAPTER 109—WATER RESOURCES RESEARCH

Sec. 10901. Congressional findings and declarations.
10902. Congressional declaration of purpose.
10903. Water resources research and technology institutes.
10904. Research concerning water resources-related problems deemed to be in national interest.
10905. Development of water-related technology.
10906. Administrative costs.
10907. Types of research and development.
10909. New spending authority; amounts provided in advance.

§ 10901. Congressional findings and declarations

The Congress finds and declares that—

(1) the existence of an adequate supply of water of good quality for the production of materials and energy for the Nation’s needs and for the efficient use of the Nation’s energy and water resources is essential to national economic stability and growth, and to the well-being of the people;

(2) the management of water resources is closely related to maintaining environmental quality, productivity of natural resources and agricultural systems, and social well-being;

(3) there is an increasing threat of impairment to the quantity and quality of surface and groundwater resources;

(4) the Nation’s capabilities for technological assessment and planning and for policy formulation for water resources must be strengthened at the Federal, State, and local governmental levels;

(5) there should be a continuing national investment in water and related research and technology commensurate with growing national needs;

(6) it is necessary to provide for the research and development of technology for the conversion of saline and other impaired waters to a quality suitable for municipal, industrial, agricultural, recreational, and other beneficial uses;

(7) the Nation must provide programs to strengthen research and associated graduate education because the pool of scientists, engineers, and technicians trained in fields related to water resources constitutes an invaluable natural resource which should be increased, fully utilized, and regularly replenished; and

(8) long-term planning and policy development are essential to ensure the availability of product water, considering the amortization of all components of the demonstration plant and ancillary facilities. Such report shall be accompanied by a proposed contract (or cooperative agreement) between the Secretary and a State or local governmental entity, in which such entity shall agree to provide not less than 15 percent and not more than 25 percent of the total cost of the demonstration; such cost to include, without being limited to, necessary water rights, water supplies, field development, power, source interconnections, brine disposal facilities, land, construction, ancillary facilities, and the operation and maintenance costs for a period of four years following final acceptance of the operation of such demonstration plant by the contract holder. The contributions of the non-Federal entity under such proposed contract may include in-kind. During the participation by the Secretary in the construction and the operation and maintenance of such demonstration, access to the demonstration and its operating data will not be denied to the Secretary or his representatives. The period of participation by the Secretary in the operation and maintenance of any such demonstration shall not exceed four years. The Secretary is authorized to include in the demonstration contract provisions for conveyance, appropriate, and in such amounts as are appropriate, rights, titles, and interest of the Federal Government in the demonstration project to the non-Federal entity.

No provision is to be made for the commencement or continuation of design, construction, or operation and maintenance of any demonstration plant authorized under this Act (Title III), the Secretary may, in connection with such design, construction, or operation and maintenance, enter into contracts and cooperative agreements for micromanagement of services, for materials and supplies, as well as for construction, which may cover several periods of time, as the Secretary may consider necessary, but in which the liability of the United States shall be contingent upon appropriate arrangements being made therefor.

For termination of Trust Territory of the Pacific Islands, see note set out preceding section 381 of Title 48, Territorial and Insular Possessions.

§ 10902. Congressional declaration of purpose

It is the purpose of this chapter to assist the Nation and its State and local governments in meeting their water resources science and technology needs by—

(1) assure supplies of water sufficient in quantity and quality to meet the Nation’s expanding needs for the production of food, materials, and energy;

(2) discover practical solutions to the Nation’s water and water-related problems, particularly those related to impaired water quality;

(3) assess theNation’s needs and enhancement of environmental and social values in connection with water resources management and utilization; and

(4) promote the interest of State and local governments as well as private industry in research and the development of technology that will reclaim waste water and to convert saline and other impaired waters to water suitable for municipal, industrial, agricultural, recreational, and other beneficial uses.

Section 10903. Water resources research and technology institutes

(a) Establishment; designation of site by State legislature or Governor

Subject to the approval of the Secretary of the Interior therefor in this chapter referred to as the “Secretary”) under this section, one water resources research and technology institute, center, or equivalent agency (hereafter in this chapter referred to as the “institute”) may be established in each State (as used in this chapter, the term “State” includes the Commonwealth of Puerto Rico, the District of Columbia, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Mariana Islands and the Federated States of Micronesia) at a college or university which was established in accordance with the Act approved July 2, 1962 (12 Stat. 363) (7 U.S.C. 301 et seq.), or at some other institution designated by act of the legislature of the State concerned. If there is more than one such college or university designated by the Governor of the State, Two or more States may cooperate in the establishment of a single institute or regional institute, in which event the same otherwise allocated to institutes in each of the cooperating States shall be paid to such single or regional institute.

(b) Scope of research; other activities; cooperation and coordination

Each institute shall—
DWRC has two Delaware offices: its main office on the University of Delaware’s Newark campus, between Parliamentary Hall and the Perkins Student Center, and on the Hugh H. Sharp campus of the University of Delaware in Lewes. Detailed directions for both locations are at www.wrc.udel.edu.

Directions

DWRC Newark Office
DGS Annex
201 Academy Street
University of Delaware
Newark, Delaware 19716

DWRC Lewes Office
805 Pilottown Road
Pollution Ecology Lab, Room 109
Lewes, Delaware 19958

Water Resources Center

The Delaware Water Resources Center (DWRC) is an institute of the University for Public Administration (IPA), a research center within the School of Public Policy & Administration at the University of Delaware. Director Leonard Lewis is the IPA Director and can be reached at 302-831-8071.

Mission

The University of Delaware Water Resources Center (DWRC), established in 1966, is organized to focus research, education, and public outreach programs on water management issues of importance to Delaware citizens and to the greater public. The DWRC carries out its educational role through participation in outreach activities, offering courses, seminars and workshops with a water resources focus, and advising undergraduate and graduate students through funded assistantships.

Public Service

DWRC provides water policy assistance to governments in Delaware and the surrounding region. This public service role is significant to the mission of the College of Arts & Sciences and the School of Public Policy & Administration (SPPA). DWRC takes a regional, intergovernmental approach to water management since waterways and aquifers cross many political jurisdictions.

Research

DWRC seeks opportunities to collaborate with University faculty, scientists, and students to fund, conduct, and publish water resources research.

University of Delaware Experimental Watershed Development of an experimental watershed as an on-campus education and research laboratory.

Geospatial Analysis and Information Management

Repository of core DWRC data and information collaboration in water research with other groups on campus and beyond. Advancement of GIS and remote-sensing technologies for water resources management.

Publications and Presentations

Research on topics such as water policy, watershed management, water rates, and public-private water management at regional and national conferences.

Education

DWRC provides an important role in water resources education at the University of Delaware and to the greater public. The DWRC carries out its educational role through participation in outreach activities, offering courses, seminars and workshops with a water resources focus, and advising undergraduate and graduate students through funded assistantships.
JFK signs 1961 DRBC Compact

LBJ signs 1964 Water Resources Research Act

Joe Biden, UD ‘65 elected in 2020 as 46th President of the United States.
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<thead>
<tr>
<th>Last</th>
<th>First</th>
<th>Major</th>
<th>Research</th>
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<tr>
<td>Bianchini</td>
<td>Brielle</td>
<td>Environmental Science</td>
<td>Forest Hydrology and Stream Health in the Hickory Run Watershed at Mt. Cuba Center</td>
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<td>Blackburn</td>
<td>Andrew</td>
<td>Chemical Engineering</td>
<td>Use of Biochar to Modify Soil Structure to Assist the Filtration of Stormwater</td>
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<td>Gutkowski</td>
<td>Nicole</td>
<td>Marine Science - Oceanography</td>
<td>Utilizing Bivalves in Monitoring Heavy Metal and Emerging Contaminant Concentrations</td>
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<td>Jarocki</td>
<td>Megan</td>
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<td>Kennedy</td>
<td>Brian</td>
<td>Energy &amp; Environ. Policy</td>
<td>Watershed Characterization of 1st Order Tributaries along the White Clay Creek</td>
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<td>Levi</td>
<td>Nathaniel</td>
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<td>The Effects Mill Dams Have on Insects and Spiders in Aquatic and Riparian Ecosystems</td>
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<td>Erik</td>
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<td>Roros</td>
<td>Andreanna</td>
<td>Geological Sciences</td>
<td>Impact of Stormwater Infiltration on Groundwater Radium Levels in Delaware</td>
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<td>Talley</td>
<td>Sophia</td>
<td>Environmental Engineering</td>
<td>White Clay Creek Wild &amp; Scenic River Water Quality Assessment</td>
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<td>Pasquariello</td>
<td>Karmyn</td>
<td>Environmental Engineering</td>
<td>Hydraulic Analysis of Drought and Flood along the Brandywine River in Wilmington, Del.</td>
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<tr>
<td>Rost</td>
<td>Hayley</td>
<td>Master of Public Administration</td>
<td>Reconnaissance of Eligible Rivers in Delaware for the National Wild &amp; Scenic River System</td>
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<tr>
<td>Shields</td>
<td>Elizabeth</td>
<td>Master of Public Policy</td>
<td>Indigenous, European, and American Place Names of Streams and Rivers in Delaware</td>
</tr>
</tbody>
</table>
**Figure 10. Congressional water and climate committees (Van Scyoc 2021)**

Authorization

Legislation establishing or extending a program and setting funding limits and policy

- Senate: Environment and Public Works
  - Chair: Tom Carper (D-DE)
  - Rank: Manchin, Jim (D-WV)

- House: Natural Resources
  - Chair: Raúl Grijalva (D-AZ)
  - Rank: Raskin, Jamie (D-CA)
  - Rank: Brasch, Tom (D-CA)

Appropriation

Legislation that provides annual funding for agencies and programs

- Senate: Appropriations
  - Chair: Patrick Leahy (D-VT)
  - Rank: Risch, James (R-ID)

- House: Appropriations
  - Chair: Rosa DeLauro (D-CT)
  - Rank: Mink, Grace (D-HI)
  - Rank: Grimm, Steve (R-NY)

Subcommittee: Transportation and Infrastructure
- Chair: Ben Cardin (D-MD)
- Rank: Menendez, Bob (D-NJ)

Subcommittee: Water, Oceans and Wildlife
- Chair: Jared Huffman (D-CA)
- Rank: Thompson, Tom (D-CA)

Subcommittee: Interior, Environment, and Related Agencies
- Chair: Chellie Pingree (D-ME)
- Rank: Mrazek, Dan (D-OR)
- Rank: Easley, Henry (D-NJ)

Subcommittee: Appropriations
- Chair: Rob Cresenti (D-US)
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<tr>
<td>Smith</td>
<td>Adam</td>
<td>Political Science and Criminal Justice</td>
<td>Climate policies</td>
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<tr>
<td>Bertneski</td>
<td>Theodora</td>
<td>Food Science</td>
<td>AMR detection and analysis of spread through Delaware watersheds</td>
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<td>Wentzel</td>
<td>Alyssa</td>
<td>Energy &amp; Environ. Policy</td>
<td>Water quality monitoring and evaluating microplastics and Delaware's waterways</td>
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<tr>
<td>Feeny</td>
<td>Cooper</td>
<td>Economics and Public Policy</td>
<td>Plastic pollution</td>
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<td>Talley</td>
<td>Sophie</td>
<td>Environmental Engineering</td>
<td>Watershed characterization of the tidal Christina River in Wilmington, DE</td>
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<td>Manning</td>
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<td>Discenza</td>
<td>Francesca</td>
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<td>Water Quality Trends in White Clay Creek Nat'l Wild &amp; Scenic River</td>
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<td>Shields</td>
<td>Elizabeth</td>
<td>MS Public Policy</td>
<td>Red Clay Creek Watershed Restoration Plan</td>
</tr>
<tr>
<td>Franks</td>
<td>Lydia</td>
<td>MS Water Science &amp; Policy</td>
<td>Governance and Policy in the Chesapeake &amp; Delaware Basins</td>
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DWRC Water Resources Research and Education Priorities

- Water quality (nutrients, pathogens, public health), harmful algal blooms, PFOA contamination
- Climate change and sea level rise,
- Flooding (riverine, coastal, and urban)
- Water policy (governance and economics, impacts)
- Storm water (hydrology, runoff management and control)
- Water supply, demand, and conservation (resource evaluation, infrastructure/, and echnology)
- ‘Surface water and groundwater interaction
- Groundwater (flow, transport, remediation, and treatment) • Watershed management
- Wetlands (hydrology, protection ,and restoration)
- Wastewater management (treatment and reuse)
- Water, food, and energy nexus
April 1, 2019

Dr. Gerald Kupershon
University of Delaware
Water Resources Center
400 Market St.
Newark, DE 19716

Dear Jerry,

I am pleased to announce that you have been elected to the Board of Directors of the UCOWR. As a member of the Board of Directors, you will be an integral part of the UCOWR’s mission to advance the understanding and management of water resources.

Your term will begin at the 2019 UCOWR Conference to be held in St. Louis, Missouri, on May 20-23. The conference will provide you with an opportunity to network with leaders in the field of water resources and to learn about the latest research and technologies in the field.

Your duties as a member of the Board of Directors will include attending meetings, reviewing and discussing reports, and participating in decision-making processes. You will also be expected to contribute to the planning and execution of the UCOWR’s initiatives and programs.

Your election to the Board of Directors is a testament to your dedication and commitment to advancing the field of water resources. I am confident that your expertise and experience will contribute significantly to the success of UCOWR.

Thank you for your willingness to serve on the Board of Directors. I look forward to working with you to further the mission of UCOWR.

Sincerely,

Karl W. J. Willard
Executive Director

[Signature]
DWRC Advisory Panel

Jayme Arthurs
USDA Natural Resources Conservation Service
Dover, DE 19904

Mr. Chris Bason
Center for the Inland Bays
39375 Inlet Rd.
Rehoboth, DE 19971

Mr. Ethan Robinson, Public Works Director
City of Newark
220 S. Main St.
Newark, DE 19711

Dr. Asia Dowtin
Department of Forestry, Natural Resources East Lansing, MI 48824

Dr. Mingxin Guo
Dept. of Agriculture & Natural Resources Delaware State University, 1200 N. DuPont
Dover, DE 19901

Ms. Kate Hutelmeyer
Partnership for the Delaware Estuary
Wilmington, DE 19801

Stacy McNatt
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New Castle, DE 19720

Dr. Shreeram Inamdar
Department of Plant & Soil Science University of Delaware, Townsend Hall
Newark, DE 19716

Dr. Paul Imhoff
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Newark, DE 19716

Dr. Thomas McKenna
University of Delaware
223 Delaware Geological Survey
Newark, DE 19716

Ms. Kristin Travers
Delaware Nature Society
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Hockessin, DE 19707

Ms. Chris Oh
City of Wilmington, Dept. of Public Works
City/County Building
Wilmington, DE

Ms. Betzaida (Betzy) Reyes
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1289 McD Drive
Dover, DE 19901

Mr. Kash Srinivasan
603 E. Matson Run
Wilmington, DE 19802

Mr. Jim Jordan
Brandywine Valley Association
1760 Unionville-Wawaset Rd.
West Chester, PA 19382

Ms. Jennifer Volk
Kent County Cooperative Extension UD
Dover, DE 19904

Mr. Steve Williams
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Dover, DE 19901

Ms. Jennifer Walls
Delaware DNREC, Div. of Watershed Stewardship
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Dover, DE 19901

Christian Hauser, Associate Director
Delaware Sea Grant College Program
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