



Water Resources Research Institute of The University of North Carolina

North Carolina State University
Mailing Address: Campus Box 7912 | Raleigh, NC 27695-7912
P: 919-515-2815 | wrrri.ncsu.edu

REQUEST FOR FACULTY PRE-PROPOSALS AND STUDENT PROPOSALS FOR THE FY 2017-2018 COMPETITIVE GRANTS PROGRAM

SPONSORED BY

THE WATER RESOURCES RESEARCH INSTITUTE
OF THE UNIVERSITY OF NORTH CAROLINA SYSTEM
AND USGS 104(B) PROGRAM

RFP ISSUE DATE: April 19, 2017

PROPOSAL DUE DATE: JUNE 2, 2017, 8:00 A.M.

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FOR QUESTIONS, PLEASE CONTACT:

John Fear, PhD
Deputy Director
jmfear@ncsu.edu
919-515-9104

Nicole Wilkinson
Coordinator for Research & Outreach
nicole_wilkinson@ncsu.edu
919-513-1216

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I. OVERVIEW

The Water Resources Research Institute (WRRRI) of The University of North Carolina is part of a national system of 54 institutes authorized by the Water Resources Research Act (WRRRA) of 1964 (as amended), and represents a federal-state partnership between the US Geological Survey (USGS) and state land grant universities. The North Carolina WRRRI is hosted by North Carolina State University.

This Request for Proposals (RFP) is for research and information transfer projects in the areas of water resources as prioritized by WRRRI with input from the WRRRI Advisory Committee, which comprises stakeholders of various water resources sectors and professions working throughout North Carolina. Guidance is also received from the Urban Water Consortium and the Stormwater Group, two WRRRI-administered consortia representing drinking water/wastewater utilities and municipal stormwater programs around the state.

Per Section 104(b) of the WRRRA, the North Carolina Water Resources Research Institute shall:

- 1) “plan, conduct, or otherwise arrange for competent applied and peer reviewed research that fosters-
 - A. improvements in water supply reliability;
 - B. the exploration of new ideas that-
 - i. address water problems; or
 - ii. expand understanding of water and water-related phenomena;
 - C. the entry of new research scientists, engineers, and technicians into water resources fields; and
 - D. the dissemination of research results to water managers and the public.

- 2) cooperate closely with other colleges and universities in North Carolina that have demonstrated capabilities for research, information dissemination, and graduate training in order to develop a statewide program designed to resolve State and regional water and related land problems.

Each institute shall also cooperate closely with other institutes and other organizations in the region to increase the effectiveness of the institutes and for the purpose of promoting regional coordination.”

II. PROJECT FUNDING & DURATION

Successful projects may be funded in whole or part by federal (USGS) funds contingent upon appropriation by Congress. As of the issue date of this RFP, these federal dollars have not been appropriated. As such, no funding can be guaranteed and all funding levels including the maximum amount per project or the number of projects are subject to change. Applicants whose final

proposals have been accepted may be asked to revise scopes of work and budgets to align with available funding levels.

WRRRI will fund projects along two tracks for FY2017-2018 – faculty pre-proposals and student full proposals. WRRRI intends to fund at least one faculty proposal in each focus area and up to five student proposals (pending quality of proposals, the appropriation of funds and willingness of finalist applicants to adapt scope and budgets as needed).

The starting date for projects accepted for partial/full USGS funding is March 1, 2018. Projects fully funded by non-federal funds can start as late as June 30, 2018.

Faculty Pre-Proposals

Pre-proposals may be submitted for either 1- or 2-year projects. The maximum award for a 2-year project is \$120,000, with a \$60,000 annual limit. The maximum award for a 1-year project is \$60,000. The limit refers only to direct costs. WRRRI does not pay indirect costs.

Funding for the second year of a 2-year award is contingent upon appropriation of funds by Congress in the following fiscal year. In the event funding is limited, previously approved 2-year proposals will receive priority for available funds over newly submitted proposals. Second-year funding is contingent upon satisfactory performance in year 1, as determined by timely submission of progress reports and satisfactory justification and communication with WRRRI in the event year 1 objectives have not been met.

Student Proposals

Full proposals for student research may be submitted for 1-year projects only. The maximum award for a 1-year student project is \$10,000. The limit refers only to direct costs. WRRRI does not pay indirect costs. Please work with your faculty sponsor and university office of sponsored research (or similar) for assistance with budget questions and allowable expenses.

III. APPLICANT ELIGIBILITY

FACULTY

For faculty pre-proposals, faculty of any accredited college or university (public or private) in North Carolina may apply. Undergraduate, graduate, and post-doctoral support may be included in proposals, but students and post-docs are not eligible to apply as a principal investigator (PI). Though not eligible to apply directly, WRRRI encourages industry and private groups to partner with university researchers in response to this call.

For faculty submissions, a single individual may be listed as an investigator on a maximum of two pre-proposals, and serve as PI on only one. That is, if you are involved in two pre-proposals (the maximum allowed), you may be a co-investigator on both, or a co-investigator on one and PI on the other.

WRRRI strongly encourages collaboration among researchers from different academic institutions, and with federal, state, and local agencies. WRRRI also encourages submissions from principal investigators in early-career status.

Timeliness and researcher performance on past projects funded through WRRRI will be a factor in faculty pre-proposal selection. As a consequence, a researcher who is late reporting on or completing an ongoing study funded through WRRRI without an approved no-cost extension might not be eligible to apply as a PI or co-PI on a pre-proposal for the current funding cycle. If you have any questions about your eligibility in this regard, please contact John Fear at jmfear@ncsu.edu or 919-515-9104.

STUDENTS

For student proposals, only full time graduate students in good academic standing attending an accredited college or university (public or private) in North Carolina may apply. Students must have a faculty sponsor who will serve as the official PI/applicant on the proposal. WRRRI is not able to contract directly with students. Undergraduates and post-docs are not eligible for student funding under this funding track, but undergraduate participation in the proposed projects is encouraged.

Student submissions should be distinct, stand-alone proposals and will be evaluated as such through a review process that is separate from the faculty pre-proposal reviews. They should not depend on another faculty pre-proposal submission for supplemental information or justification. Submissions to the two tracks (student and faculty funding) should not be duplicative (i.e. a student submission should not be a “back-up” proposal that is an excerpt or pared down version of a larger \$60K or \$120K faculty pre-proposal). Student proposals must be written by the applying student.

For student submissions, only one proposal per student is allowed. There is no limit to the number of students for whom a faculty member may serve as the sponsoring applicant. Serving as a faculty sponsor of a student does not count as part of the two pre-proposal limit for faculty as explained above.

IV. APPLICANT DIVERSITY

Recognizing that some students and faculty have historically been underserved and under-targeted with research opportunities, and that some students and faculty are underrepresented in the sciences, we encourage submissions by and/or collaborative partnerships with one or more of the following:

- African American, Hispanic and Native American students and African American, Hispanic and Native American sponsoring faculty
- Historically Black Colleges and Universities (HBCUs)
- Minority Serving Institutions (MSIs)

V. SUBMISSION PROCESS & DUE DATE

- The deadline for submissions is 8:00 am, Friday, June 2, 2017.
- In fairness to other applicants, late submissions will not be accepted.
- Proposals must be submitted to WRRRI by e-mail to nicole_wilkinson@ncsu.edu.
- Please note formatting requirements below.
- All elements of the proposal must be combined into a single pdf document.
- The document file name should be formatted as “Lastname-faculty-preprop-2017.pdf” or “Lastname-student-prop-2017.pdf” depending on which funding track you are applying for.
- You will receive an email confirmation of receipt of your proposal within 2 business days of submission. If, after 2 days, you have not received confirmation, call (919) 513-1216.
- Submissions for faculty pre-proposals are submitted directly by PIs and need not come to WRRRI with formal approval from a campus sponsored research office (such approval is only needed for the invited full proposals).
- Submissions for student proposals must have formal approval from a campus sponsored research office.

VI. PROPOSAL ELIGIBILITY

Proposed research must take place in the state of North Carolina.

Proposals may address research questions and methods in the fields of social science, education, communications, natural science, engineering, economics or policy, or a combination of these disciplines (as applied to the focus areas below). We encourage proposals that include meaningful public engagement, public participation, or collaboration with members of the communities where research is to take place.

Proposals must address a specific research question or address clear, need-based objectives (e.g. in the case of informational transfer projects).

Proposals not eligible for funding under this call include those focused on monitoring-only activities, proposals focused only on ocean waters, and proposals on health effects involving humansubjects.

Research that addresses the link between environmental and human health as related to the focus areas below is acceptable (which may require IRB approval from the applicant’s campus).

VII. RFP FOCUS AREAS

Proposals must address one of the focus areas below.

RESEARCH PRIORITY AREA 1: STORMWATER MANAGEMENT

Low impact development How do the lifecycle costs and benefits of low impact development (LID) compare to conventional development in new, retrofit, and redevelopment applications, particularly regarding LID for stormwater treatment in urban and rural settings?

What are the short-term and long-term implementation and maintenance cost and benefits of LID for developers, municipalities, communities, and individuals compared to that of conventional stormwater control measures (SCMs)? What is the short-term and long-term effectiveness of low impact development, specifically as related to stormwater treatment, costs and benefits, and water quality improvement? How can low impact development be encouraged and incentivized in North Carolina? For the questions above, how do costs and benefits for LID and conventional development compare across the different regions of the State?

Impervious cover impacts & mitigation How can we quantifiably mitigate the effects of impervious cover on water quality and aquatic life in different urban and rural stream settings and stormwater systems? What realistic management measures (including stream restoration practices, riparian buffers, and floodplain-stream reconnection) exist or can be further evaluated to address effects of impervious cover? How can watershed restoration activities be implemented to achieve macroinvertebrate recovery and recolonization?

Pollutant removal processes and credits How should pollutant removal credits be determined and evaluated for urban and rural stormwater control measures (SCMs), stream restoration practices and other management practices, in particular those aimed at managing nutrients, pathogens, and sediment? How can we better understand the processes by which SCMs and other management practices remove contaminants from stormwater and reduce impacts to receiving streams? Specifically for the state of North Carolina, and its physiographic regions (mountains, piedmont, and coastal plain), what location-based methods and criteria can be developed for evaluating SCM, stream restoration and management practice performance, credit accounting, and removal rates for pollutants (particularly nutrients, pathogens, and sediment)?

RESEARCH PRIORITY AREA 2: DRINKING WATER, WASTEWATER & WATER INFRASTRUCTURE

Risk and uncertainty In the face of changing population, land use, climate, and regulations, how can we quantify and manage risks and uncertainties in public water supplies? How should rate setting and financing capital improvements for water and sewer utilities be determined in the face of these risks and the changing physical and regulatory landscapes? How can utilities increase their resilience to these changes? What risks exist for human health and well-being related to water consumption and contact? How can these risks be adequately managed and communicated?

Customer behavior and utility relations Using social science and economic valuation methodologies, how can water/wastewater utilities better understand customers' level-of-service expectations, motivations for behaviors, willingness to pay for services (including ecosystem services that are protected through water treatment and management), and customer perceptions, attitudes, opinions and beliefs related to drinking water, wastewater, and reclaimed water? How can this information be applied to utility management? How do the aforementioned questions regarding expectations, behaviors, willingness to pay, etc. apply to private well owners? How do these factors influence the risk and health impacts assumed by private well owners? For private well owners, how are decisions made related to

conducting testing, managing their systems and understanding and assuming risks related to supply, health and contamination?

Alternative water sources What alternative sources (graywater, harvested rainwater, reclaimed water) exist for differing consumptive uses (e.g. home irrigation)? What are the health risks of these alternative sources? What are the impacts of alternative water use on overall water supply and demand? How can public perception barriers or economic barriers be overcome to increase likelihood of acceptance, adoption and use of alternative sources?

Innovative processes What/how can innovative processes and technologies be applied to NC utilities for water and wastewater treatment, plant operation, energy production, distribution systems, waste discharge management, potable and reclaimed water supply, and the repair, management and planning of infrastructure? What information gaps exist and what processes are needed for effective utility management and treatment of emerging contaminants of concern?

RESEARCH PRIORITY AREA 3: GROUNDWATER & SURFACE WATER

What are the human impacts to groundwater and/or surface water availability and quality in North Carolina? What fundamental hydrogeological interactions of surface water and groundwater resources do we need to further understand in order to support the sustainable use of water resources? How can information and data gaps be addressed to better understand and manage groundwater and/or surface water resources?

RESEARCH PRIORITY AREA 4: WATERSHED MANAGEMENT

In NC watersheds where Total Maximum Daily Loads (TMDLs), nutrient management plans, and allocation management strategies and studies have been implemented, what changes in water quality and quantity have been observed? What are the sources, transport and fate of nutrients and sediments in surface waters in these watersheds? What physical, hydrological, biological and/or community dynamics need to be understood to enhance watershed management approaches to improve stream and human health, and ensure adequate supply?

VIII. PRE-PROPOSAL FORMAT FOR FACULTY SUBMISSIONS

In fairness to all applicants, if we receive a pre-proposal that does not adhere to the following format guidelines, we will unfortunately have to disqualify your pre-proposal from the competition. Please double-check the formatting of your pre-proposal carefully before submitting.

Pre-proposals must adhere to the following format:

- 1-inch margins all around
- Times New Roman 12-point font
- Strict page limits as listed below. Note, figures and diagrams are considered part of each section narrative and count towards section page limits.

- Page numbers, starting with the cover page as page 1

Pre-proposals must contain all of, and only, the following elements:

1. Cover page
2. Objectives and technical approach
3. Significance to N.C. water resources
4. References cited
5. CVs
6. Letters of support (optional)

1. **Cover Page** (limited to 1 page)

Cover pages must include the following elements:

- Pre-proposal title
- Proposed start and end dates (projects can start between March 1 and June 1, 2018)
- Budget request (total amount only, no breakdown, keeping in mind the \$60k/yr. limit)
- Name, academic rank or title, university and department/school, mailing address, phone number, and e-mail address for the principal investigator (PI)
- Name, academic rank or title, university and department/school, and e-mail address for each co-investigator(s), or relevant information for non-academic co-investigator(s)
- One to five keywords for the proposed project
- Statement that “The proposed project would OR would not [pick one] involve funds going to a USGS collaborator.” (This is only for WRRRI administrative purposes and is not a factor in identifying the successful pre-proposals.)

2. **Objectives and Technical Approach** (limited to 1 page)

Describe your project and the RFP focus area(s) it addresses. State specifically what you plan to accomplish in the proposed project in terms of goals, objectives, hypotheses to test, or research questions to answer; how it will be done (i.e., the technical approach, engagement/partnership approach, and/or communication approach, brief timeline, major milestones and tasks, and leveraging of existing resources [if applicable]); and/or needs to be met through communication and information transfer†. Be specific and provide detail for reviewers to assess the feasibility and appropriateness of your approaches. Pre-proposals for 2-year projects should clearly identify/distinguish year 1 and year 2 objectives.

3. **Significance to North Carolina and Funding Program‡** (limited to one page)

Explain the significance and relevance of the proposed project for one or more important water resource issues in North Carolina, and the interests/mission of NC WRRRI. Who wants the results of your project?

4. **References Cited** (no page limit)

Use a standard bibliographic format to list the references cited in your pre-proposal. This section does not count towards the page limit of the body of your proposal.

5. **Curricula Vitae** (limited to 2 pages per CV)

CVs are required for lead faculty PI and co-PIs. CVs must be in standard National Science Foundation (NSF) format (see the section on “biographical sketches” at http://www.nsf.gov/pubs/policydocs/pappguide/nsf11001/gpg_index.jsp).

6. **Letters of Support – Optional** (no page limit)

Letters of support, particularly those that speak to the applicability of the proposed project results, are strongly encouraged. Letters may be submitted from partnering organizations, agencies or potential users of the information the proposed project intends to produce. This section does not count towards the page limit of the body of your proposal.

† WRRRI encourages PIs to consider approaches to information and technology transfer and dissemination of research results for all projects. While not a required component of the pre-proposal stage, successful applicants will be asked to address this in a full proposal.

‡ While the reviews of faculty pre-proposals are based on the entire submission, the reviews will prioritize the significance of the project to NC water resources. Pre-proposal reviewers will be WRRRI staff, scientists, engineers, and policy professionals working on water resource issues in N.C., mainly in government agencies, water utilities, non-governmental organizations, and other non-academic settings. As a group, they will have a wide range of backgrounds in physical, chemical, biological, and policy aspects of water resources.

IX. FULL PROPOSAL FORMAT FOR STUDENT SUBMISSIONS

In fairness to all applicants, if we receive a proposal that does not adhere to the following format guidelines, we will unfortunately have to disqualify your proposal from the competition. Please double-check the formatting of your pre-proposal carefully before submitting.

Pre-proposals must adhere to the following format:

- 1-inch margins all around
- Times New Roman 12-point font
- Strict page limits as listed below
- Page numbers, starting with the cover page as page 1

Proposals must contain all of, and only, the following elements:

1. Signed cover page
2. Project proposal
3. References cited
4. Budget
5. CVs
6. Letter of support from sponsoring faculty member
7. Other letters of support (optional, if appropriate)

1. **Signed Cover Page** (limited to 1 page)

Cover pages must be fully executed. Proposals from outside NC State University must bear an authorized university signature from an Office of Sponsored Programs or similar. Proposals from within NC State University must include the proposal's PINS number rather than signatures on the title page. Please consult with your sponsoring faculty member and/or your office of sponsored research if you have questions about this. Cover pages must also include the following elements:

- Proposal title
- Proposed start and end date (projects can start between March 1 and June 1, 2018)
- Budget request (total amount only, no breakdown, keeping in mind the \$10K/yr. limit)
- Name, academic rank or title, university and department/school, mailing address, phone number, and e-mail address for the faculty sponsor (PI)
- Name, degree being pursued, university and department/school, mailing address, phone number, and e-mail address for the student researcher
- Name, academic rank or title, university and department/school, and e-mail address for other co-investigator(s), or relevant information for non-academic co-investigator(s)
- One to five keywords for the proposed project
- Statement that “The proposed project would OR would not [pick one] involve funds going to a USGS collaborator.” (This is only for WRRRI administrative purposes and is not a factor in identifying the successful proposals.)

2. **Project Proposal** (limited to 4 pages)

The body of the proposal should have the following sections:

Description Describe your project and the RFP focus area(s) it addresses. State specifically what you plan to accomplish in the proposed project (in terms of goals, objectives, hypotheses to test, or research questions to answer); and/or needs to be met through communication and information transfer.

Methods, Tasks & Timeline Describe your technical approaches, engagement/partnership approaches, and/or communication approaches; clearly define your tasks; provide a timeline to complete the tasks; list project milestones. Be specific and provide detail for reviewers to assess the feasibility and appropriateness of your approaches.

Significance to North Carolina and Funding Program Describe the significance and relevance of the project to NC, our state’s real-world water issues, and the interests/mission of NC WRRRI. What important issue(s) does it address? How do intend to ensure transferability or application of research results? Describe your outreach/information dissemination plan.

3. **Budget** (limited to 2 pages)

Provide a detailed budget for your project, and an explanation/justification of expenses. Funds may be used for any purpose related to the project. University overhead charges are not permitted. Examples of allowable expenses include, but are not limited to, salaries and wages; tuition and stipends; fringe benefits; supplies; travel; contracted services; communications and publications; and other project-relevant charges. Matching funds are not required for this RFP, but if any matching funds, in-kind contributions or leveraged resources exist, please include them in your budget description.

4. **References Cited** (no page limit)

Use a standard bibliographic format to list the references cited in your proposal as appropriate. This section does not count towards the page limit of the body of your proposal.

5. **Letters of Support from Sponsoring Faculty Member** (no page limit)

Students must include a letter of support from the main faculty PI serving as the official applicant. This section does not count towards the page limit of the body of your proposal.

6. **Other Letters of Support - Optional** (no page limit)

Other letters of support, particularly those that speak to the applicability of the proposed project results, are strongly encouraged. Letters may be included from partnering organizations, agencies, or other faculty or advisors. This section does not count towards the page limit of the body of your proposal.

7. **Curricula Vitae** (limited to 2 pages per CV)

CVs are required for the student and faculty PI (and Co-PIs). Faculty CVs must be in standard NSF format (see the section on “biographical sketches” at http://www.nsf.gov/pubs/policydocs/pappguide/nsf11001/gpg_index.jsp). Student CVs may be in the NSF format or other appropriate format if sections of the NSF format do not apply to them. Student CVs are still limited to 2 pages regardless of which format is used.

X. TIMELINE

April 4, 2017	RFP issued
June 2, 2017	Student full proposals and faculty pre-proposals due
July 17, 2017	Faculty notified of pre-proposal outcome
August 14, 2017	Students notified of full proposal outcome
August 28, 2017	Invited faculty full proposals due
October 30, 2017	Technical committee meets for proposal and peer review evaluation
December 2017	Faculty notified of full proposal outcome
January 2018	Submission of finalist packages to USGS for ratification
March 1, 2018	First eligible spending by approved projects