

IGWA Student Research Opportunity 2020 Request For Proposals

Background: The Iowa Groundwater Association (IGWA) was established in 1984 as an independent statewide association organized for the understanding of Iowa's groundwater resources. This group consistently holds biannual conferences, publishes a premier magazine (*IGWA UnderGround* - formerly the *Groundwater Quarterly* newsletter), promotes legislative awareness, and networks with groundwater professionals in neighboring states.

The *Iowa Groundwater Association's Mission* is to:

- Promote education and research on Iowa groundwater and water resource issues;
- Improve communication among state agencies, academic institutions, municipalities, the general public, and water resource/environmental professionals;
- Foster collaboration and information exchange; and
- Participate in national, state, and local activities related to groundwater management and water resource protection.

IGWA wishes to encourage student participation in our organization while simultaneously supporting investigation into Iowa's groundwater issues at a scale that may not be covered by statewide monitoring programs, regulatory activities, or graduate research programs.

The main objectives of the IGWA Student Research Opportunity are to:

1. Provide an opportunity for highly motivated high school or undergraduate students to gain first-hand experience conducting field, laboratory, social, or computer-based research related to groundwater issues in Iowa.
2. Encourage local groundwater monitoring, modeling, or assessment that promotes healthy and sustainable communities and ecosystems in Iowa.
3. Encourage exchange of ideas and expertise between students and IGWA members.
4. Provide students the opportunity to share their results and experiences with IGWA members via conference presentations and/or an article in the *IGWA UnderGround* magazine.

Applications for this Request for Proposals (RFP) should be submitted by the high-school or undergraduate students, themselves; however, funds may be directed to individuals or the student as necessary. Up to \$1000 will be awarded to each grantee. Multiple grants will be awarded if funds are available.

IGWA Student Research Opportunity Description: The goal of the IGWA Student Research Opportunity is to increase our understanding of groundwater issues in Iowa and to facilitate interaction between students and IGWA members. To this end, projects that can be accomplished in within approximately one year are appropriate. Projects may fit into one or more of the categories listed below:

1. **Hydrogeology:** This includes projects that aim to understand groundwater flow velocity and direction. Projects could include gathering data to determine capture zones for a well, computer modeling, geological mapping, analysis of pump tests, dye tracing, or other methods.
2. **Water Quality:** These projects could include collection of drinking-water or raw groundwater from private wells or municipal water supplies, followed by laboratory analyses, or compilation of existing water quality data and analysis. Iowa's ambient groundwater monitoring program collects untreated samples from municipal wells around the state. The results of these analyses are available via the Iowa DNR's AQUIA website. These projects could also include field experiments or laboratory experiments that help identify factors that control contaminant transport or test treatment practices. Projects could also include testing of tap-water to determine whether contamination is occurring during distribution.
3. **Treatment/Solutions:** Projects in this category would focus on evaluating methods for treating contaminants, filtering water, increasing efficiency of water-intensive activities, effects of land-use changes, or other conservation activities.
4. **Water Quantity:** These projects include assessment of water use in a region, recharge, and prediction of long-term sustainability of a resource under various use and/or climate scenarios. Water level data could be collected manually or from existing records and analyzed.
5. **Outreach/Communication:** These projects focus on making groundwater data available to the public via maps, interactive applications, or educational materials, collection of new data via online systems, or other creative ways of sharing groundwater information or getting local participation in groundwater protection.
6. **Human or Ecosystem Health:** Projects that focus on the effects of groundwater quality or quantity problems. Examples include testing the effects of various levels of contamination on fish or other aquatic organisms, risk assessment based on published toxicological data, epidemiological assessment, or ecological studies of caves, fens, or other groundwater-fed aquatic systems.
7. **Policy and economics:** Projects relating to changes in regulation, evaluation of existing regulations, economic effects of groundwater policies, or comparison between policies in neighboring states. Students interested in regulations concerning public drinking water supplies, underground storage tanks, solid waste facilities (landfills), animal feeding operations, and other entities, could analyze permits and other information collected by the Iowa Department of Natural Resources.
8. **Social perceptions:** These projects could include surveying a local population about issues related to groundwater quality, water use, land-use practices, or regulations.

Eligibility:

Students must be enrolled in high-school or college in Iowa at the time of application. Students will only be allowed one IGWA Research grant, and should not apply if they have received one in the past.

Requirements:

A partial payment of the award will occur shortly after the award is announced (see Timeline below). One progress report is required to be submitted via email by August 10 the year of the award in order for the student to receive their second disbursement. However, students are encouraged to keep IGWA board members updated on their progress, and IGWA will make every effort to help students overcome challenges during the course of their project. Students who are not able to complete their proposed work can choose to return dollars to IGWA or present on the challenges they faced when attempting to achieve their goals. All awardees are required to share their results with IGWA members either via a presentation at one of our biannual meetings, or through an article in the *IGWA UnderGround* magazine, which is usually completed in July and published in August.

Application Materials Required Include:

1. A 2-5 page **Proposal** including
 - a. Title of the Project
 - b. Student's Contact information
 - c. Mentor/supporter's contact information
 - d. Background: A brief summary of the issue, included a limited review of recent literature on the subject, and a discussion of the implications for health, policy, or economics.
 - e. Research objectives: Clearly stated objectives of the project. What questions are you trying to answer? What are your hypotheses? Describe how these objectives relate to the numbered topics listed in the "Description" above.
 - f. Methods: A description of what actions are necessary to complete the project referencing standard sampling and/or analytical methods as appropriate. If the project requires water sampling, description of the timing and frequency of samples should be included. If the project requires any surveys or questionnaires, include a basic outline of these with a few sample questions. Discuss how the results will be analyzed, including ideas for graphical representation or statistics.
 - g. Budget: including costs of equipment, materials, analyses, travel, and student allowance. IGWA encourages students interested in water quality to consider use of a certified laboratory for their analyses rather than attempting sophisticated analyses themselves. Clearly the dollars provided by IGWA cannot be used to support any illegal activities! The dollars can be used to pay for the student's time to complete the project. Conference registration fees, travel costs, and accommodations necessary for presenting results will be covered for the student and one mentor.
 - h. References: list all peer-reviewed literature, websites, or other supporting documents mentioned in the text. Where available, hyperlinks to the material are appreciated, but should not substitute for the author's name(s), year of publication, title of the document, publisher, volume number, page numbers, and other information necessary to locate the document.
2. **Letter of Support:** A short (1-page) letter of support from a parent, teacher, mentor, or advisor describing the student's ability to complete the proposed project and any additional monetary support or expertise that the individual will provide to assist the student in completion of the project. If the student proposes to conduct field work or laboratory analyses, this letter must

include assurance that all appropriate precautions will be taken to protect the student's health and that IGWA will not be held liable for any injury incurred while conducting this project. IGWA highly encourages those interested in water quality analyses to use the funds provided to cover the costs of analyses at a certified laboratory.

Please note: The role of the student is not envisioned as a “gopher” for a teacher, mentor, or faculty member, but instead the student's role is to conceive of, and conduct a stand-alone project with guidance and assistance from their mentor(s).

Timeline:

March 5, 2020: Grant announcement

April 30, 2020: Grant application due – Email to Claire.hruby@dnr.iowa.gov

May 31, 2020: Awards announced (some awards may be contingent on making small changes to the project proposal as recommended by the IGWA board)

June 10, 2020: First disbursement (½ of the award amount **or** full cost of materials necessary for project completion)

August 1, 2020: Progress report (email to IGWA board member outline progress and any needs)

August 10, 2020: Second disbursement (remaining balance of the award)

Presentation of results at Fall 2020, Spring 2021, Fall 2021, or article written for summer 2021 IGWA UnderGround magazine

Questions/Contacts:

Claire Hruby, Treasurer– Claire.hruby@dnr.iowa.gov

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Iowa Groundwater Association webpage: <http://www.igwa.org>