

VWEA/VA AWWA Student Activities Committee

23rd Annual

VWEA Student Design Competition



December 2025

Guidelines



Introduction

The VWEA 2026 Student Design Competition is intended to promote “real world” design experience for students interested in pursuing an education and/or career in engineering and science related to the water environment (water reuse/wastewater/stormwater). This competition tasks teams of VWEA student members to demonstrate their ability to evaluate alternatives, develop a comprehensive design, and present a solution that meets the requirements of a socially relevant problem statement. This competition is intended for both undergraduate and graduate students; assigned problem statements will be at the senior capstone project level and shall meet the requirements described herein. Presentations should reflect a professional consultant format.

Student Design Competition

The following instructions apply for both the Wastewater Design Competition and the Water Environment Design Competition. The VWEA Student Design Competition consists of two parts: (1) a written design report submitted for review prior to (2) a presentation of the design problem, analysis, and solution. The presentation portion will take place at the VWEA Student Design Competition on **Thursday, April 9, 2026**.

The **Wastewater Student Design Competition** is based on addressing a given design problem related to the wastewater environment, while the **Water Environment Student Design Competition** is an open-ended competition. The Water Environment Competition is intended to include design projects related to, but not limited to, stormwater management, watershed management, green infrastructure, low impact development, water reuse, wetland construction, distributed treatment systems, groundwater treatment, drinking water treatment systems, and other related topics.

Students are expected to work with little assistance from an advisor and/or professor and are expected to work together as a team to recommend and design a solution. Students may use whatever references or resources they choose and must cite all sources appropriately. For the Wastewater Design case, the students will also have access to a utility for real-world plant information and utility staff input. Students are encouraged to ask questions of the designated client to better understand the issues associated with the plant and create a solution they, as designers, and the client can agree on.

Students are expected to perform the necessary calculations for the project. This is not intended to be a research project or literature review. Although some initial literature review and/or research will be required, the bulk of the project should incorporate pertinent calculations and design for the project.

For example, judges should expect that a standard design project involving a wastewater treatment plant expansion would include many or all of the following components:

- Sufficient background information with a clearly stated problem statement;
- Analysis of alternative solutions which may include a decision matrix;
- Hydraulic profile;

- Process flow diagram;
- Preliminary sizing of major equipment (aeration basins, clarifiers, chlorine contact chambers, dewatering/solids thickening equipment, digesters, etc.);
- Incorporated information from different manufacturers;
- Population analysis to determine design flow rates; and
- Preliminary cost evaluation for both capital and operational costs.

All alternatives analyses and design work should be included in the written submittal, clearly labeled, and referenced. See Entry and Report Submission Requirements section for information regarding the report. Remember: reasons for not pursuing an alternative are just as important as reasons to pursue an alternative. The presentation should succinctly present a summary of the alternatives analysis and clearly describe the recommended solution and its basis of design.

Significant Submittal Items & Dates

Each entry will consist of the following:

1. The online participation form shall be submitted by **February 9, 2026**. This submittal does not need to identify individual team members but must include contact information (phone and email) for each team planning a submittal.
 - a. There is no entry fee.
 - b. **Students must be VWEA/WEF members** to participate in the Student Design Competition. It is recommended that students register as VWEA/WEF members when submitting the entry form (see “Student Membership” section).
2. An abstract providing a summary design problem shall be submitted online with the participation form by **February 9, 2026**. The abstract **shall not exceed 200 words**.
3. The official entry form, including a list of all team members, a designated team contact person, all members’ VWEA/WEF membership numbers, and presentation title shall be submitted to the Student Design Competition Representative by **March 26, 2026**.
4. A written design report (meeting the format requirement described below) shall be received **via the VWEA ShareFile site** by the Student Design Competition Representative by **no later than March 26, 2026 at 5:00 pm Local Time** and **shall not exceed 20 pages, not including appendices**.
5. Final presentation materials (in Microsoft PowerPoint) shall be presented on the day of the competition.

Contact

Student Design Competition Representative for VWEA/VA AWWA Student Activities Committee:

BJ Ward

Hampton Roads Sanitation District

(757) 374-6810

bjward@hrsdc.com

Venue

The presentation portion will take place at the VWEA Student Design Competition on Thursday, April 9, 2026 at the following venue:

VWEA Education Seminar

The Westin Richmond

6631 W Broad St., Richmond, VA 23230

Attachments to the Guidelines

A – Scoring Sheet – Written Design Report

B – Scoring Sheet – Presentation

Project Evaluation

Wastewater Design: The proposed alternatives will be judged based on several criteria including, but not limited to, engineering analysis, economic feasibility, likelihood of success, ability to implement, ability to comprehend client's expectations, and use of creative or innovative solutions.

Water Environment Design: The proposed design will be judged based on several criteria including, but not limited to, engineering analysis, economic feasibility, likelihood of success, ability to implement, environmental consciousness, and use of creative or innovative solutions.

In addition, all entries will be evaluated based on the comprehensiveness of the information provided and the analytical details provided by the team. The VWEA/VA AWWA Student Activities Committee reserves the right to not select a winner for this competition if there is not a suitable candidate.

Nature and Manner of the Presentation

It is recognized that environmental professionals must possess a well-developed ability to communicate both orally and in writing. The competition is designed to emphasize the value of delivering high quality written and oral technical presentations. Teams will conduct themselves as a consulting firm. Reports and presentations should be in a professional format and not resemble a student thesis presentation. Scoring of the project will be determined through an evaluation of both the competitors' written and oral presentation skills, along with the technical content of the problem solution. Written and oral skills will be evaluated separately, and the scores will be added for the total score (see Attachment A and Attachment B). The written portions will be judged blindly.

The written design report submission (submitted in electronic format) will be evaluated by the judges prior to the oral presentation. Scores based on the written submission will not be released until the completion of the oral presentations. The written design reports will be available to the judges during the oral presentation for their reference and questions may be posed to the teams based on information contained in the written design report.

Each university may submit up to two team entries per design category, but the VWEA/VA AWWA Student Activities Committee retains the right to limit the number of presentations by each university to fit the time allowed while retaining the representation of each participating university. In the case of a university having more than two teams per category, the educational entity should rank their teams to allow for reasonable determination of non-presenting teams should it be necessary to eliminate presentations.

General Requirements

The general requirements for the presentations are as follows:

1. Each university may submit up to two team entries per design category (see "Nature and Manner of Presentation" above).
2. Each member of each team must be a VWEA/WEF Student Member in good standing who:
 - a. Is a full-time student in good standing at the university being represented as of April 2026;
 - b. Has been selected by his/her university or Student Chapter to participate; and
 - c. Has been certified by VWEA as a Student Member in good standing. To be thus certified, a new Student Member must have filed an application prior to April 1, 2026.The same holds true for continuing student members (see "Student Membership").
3. Each entry shall include a written design report that complies with requirements set forth in the following section on "Entry and Report Submission Requirements."
4. Registration for the VWEA SDC. Team members shall register as Student Design Competition participants.

5. The first-place team is **required** to present an exhibition of their presentation at the VWEA/VA AWWA Joint Annual Meeting (WaterJAM 2026) in Virginia Beach (September 14-17, 2026). Feedback received during this presentation should be incorporated into the final national competition presentation.
6. The first-place team is **required** to participate in the national WEF Student Design Competition at WEFTEC 2026 in New Orleans (September 27, 2026). Information regarding entry forms and requirements for the WEF competition can be found on WEF's website under Students & Young Professionals programs (<https://www.wef.org/membership--community/students--young-professionals/yp-student-design/>). Funds for travel and related expenses to attend this competition are provided as part of the first-place award (see "Prizes" below).

Additional Information:

1. All entry materials become the property of the VWEA/VA AWWA Student Activities Committee.
2. A representative of the VWEA/VA AWWA Student Activities Committee will preside during the contest and ensure that there is adherence to the time schedule and competition rules.
3. Teams are required to be in attendance for the duration of the competition. If there are two teams presenting solutions to the same project (i.e., two teams from the same university), the VWEA/VA AWWA Student Activities Committee reserves the right to determine which teams may be in the room during another team's presentation.

Entry and Report Submission Requirements

One copy of the abstract, and written design report submission shall be provided in electronic form as separate files on the VWEA ShareFile site. These files shall be in PDF format. Late entries will not be considered. Special indices, bookmarks, or other features are appreciated, but not required. To maintain blind judging of the written design report submittals, **information included in the report on the VWEA ShareFile site should provide no indication of the competing team's university.**

Entry Submission Requirements

The following shall be submitted in **separate PDF files on the VWEA ShareFile site**:

1. **Cover Page** with the project name, university name, year, and entrants' names
2. **Table of Contents**
3. The submitted project abstract, which includes a summary of the design, **not to exceed 200 words**
4. A summary of the project team including:
 - Each team member's role in the effort
 - The names of any other individuals that assisted in the effort

5. The written design report (as described below), **not to exceed 20 total pages**

Report Submission Requirements

The report submission should include (this information should not include any identifying information regarding the team and should be in digital format):

1. A clear description of the design problem to be addressed by the proposed solution.
2. A discussion of the alternatives analysis and proposed solution. The discussion must cover the salient facts upon which the recommendation is made, give a clear analysis of the evaluation technique, and present a clear recommendation of action. Relevant data should be presented in the discussion in a clear form. All elements shown on the judging form should be addressed.
3. Colored diagrams, charts, and photographs that reflect the unique features of the project. Each graphic/photo is to be identified with an appropriate descriptive caption. Graphics/photos included within the project description will count toward the 20-page limit.
4. Drawings, calculations, tables, vendor submittals, cost estimate, project implementation schedule, prioritized project list, and other supporting documents.

Presentation Requirements

The competition is designed to emphasize the value of the ability to deliver oral presentations. Half of a contestant's total score is determined through an evaluation by the judges of the competitor's relative capability to communicate orally, including evidence of an ability to respond effectively to a question-and-answer period.

Each team will have **20 minutes for oral presentation followed by 10 minutes reserved for questions from the judging panel**. Team presentations will be held to the 20-minute time limit and will not be permitted to continue beyond the limit. Five minutes will be provided before and after for setup and breakdown of the presentation equipment. The presentation should be prepared in Microsoft PowerPoint. Other visual aids may be utilized by the project teams as they see fit.

Questioning is limited to the judges during the question-and-answer period. Each team may have **up to four members** on the presentation team. If additional team members attend, they may not speak during the presentation. All presenting team members are encouraged to participate in the presentation and the question-and-answer session.

Judging Criteria

The contest will be judged by a panel consisting of a diverse range of industry professionals such as members of the VWEA Board of Directors, WEF Officers, and/or Student Activities Committee members. All presentations in the same category will be judged by the same panel of judges.

The VWEA and VA AWWA are multi-disciplined environmental organizations dedicated to quality in the practice of the profession. Accordingly, judging will be based on the elements outlined below and on the scoring sheets provided in Attachment A and Attachment B. The Student Design Competition Representative will hold the results of the written submittal scores until after the presentations are complete and scored. The score sheets will be collected after the presentation, and the scores will be added to the report scores and tallied. The team with the highest score will be awarded First Place and nominated to represent VWEA at WEFTEC 2026. In the event of a numerical tie, the winner will be decided by a second scoring of the presentations (alone). For this second scoring, each team will be ranked in each of the judging elements, and the highest ranked team shall be declared the winner. If this ranking also results in a tie, the judges will further discuss the presentations and will decide a winner based on an evaluation of everything submitted.

Report Submission:

- 1. Technical.** Was the Project Description section of the report organized effectively with a Statement of Problem, appropriate background information, clear description of the alternatives evaluated, etc.? Was a continuous, logical sequence of steps taken to solve the design problem? Was the recommended solution feasible and appropriate to address the problem statement? Was a creative and innovative approach used? Was knowledge of subject matter demonstrated? Was the design solution analyzed for economic feasibility; was this analysis presented? Were works cited and credit to resources and assistance correctly presented?
- 2. Presentation.** Were visual aids (graphs, supporting info, pictures, etc.) presented clearly? Were correct grammar, correct spelling, and appropriate technical writing methods used? Was the formatting and organization of the report presented in a logical manner?

Oral Presentation:

- 1. Content.** To what extent was the subject of interest to a technical audience? Was credit given for source of material or contribution by others? How much knowledge of the subject was exhibited? Was work independent and original? Was the subject technical or general in nature?
- 2. Organization.** Was there any novel approach to the subject? Was there sufficient background information provided to introduce the audience to the subject? Were facts developed in a

logical and continuous sequence? Was there a definite conclusion and was it adequately based on the facts or data presented?

- 3. Delivery and Effectiveness.** Were the words distinctly pronounced and was proper volume used to be heard by all? Did the contestant use proper English and was the vocabulary sufficient? Was personal appearance appropriate? Were there any distracting mannerisms? Was the manner of delivery (conversation, memorized, read from manuscript) satisfactory? If visual aids were used, how effectively were they used? Was the presentation completed within the time limit of 20 minutes?
- 4. Discussion.** Did the presentation evoke spontaneous questions from the panel? Did questions indicate the need for clarification of facts presented, or were they merely of the type seeking additional information? How readily and with what self-assurance did the speaker answer questions? Did the answers indicate knowledge of subject beyond that disclosed in the presentation?

Prizes

The VWEA will be providing the prizes shown below:

First Place Cash Prize	\$1,500 In addition to the WEFTEC 2026 Travel Allowance*
Second Place Cash Prize	\$750

*The first-place team will present the winning design at the national WEF Student Design Competition to be held at WEFTEC 2026. Travel allowance is restricted to a maximum of four days of travel to WEFTEC (before and after the competition), food, and lodging. No entertainment charges are allowed. Travel plans shall be reviewed by the VWEA/VA AWWA Student Activities Committee prior to bookings.

Student Memberships

VWEA offers membership to students at no cost and offers complimentary WEF student membership to VWEA student members. Students may sign up through the VWEA website (<https://www.vwea.org/page/StudentActivities>) or may contact the Association Manager, Kathy Rabalais (via email at admin@vwea.org or phone at (804) 332-5286), to register for a no-cost VWEA/WEF student membership.

Contact with Equipment Manufacturers

Teams may need to contact equipment manufacturers and local area equipment sales representatives to assist them in cost estimating and/or design.

Questions or Comments

Please review the entire package and contact the Student Design Competition Representative for clarification on any of the rules or guidelines of the competition.

Attachments

Attachment A

JUDGE: _____

2026 VWEA STUDENT DESIGN COMPETITION

SCORING SHEET – REPORT SUBMISSION

TEAM NAME: _____

TECHNICAL SCORE (70 Points) _____

- Were all issues addressed
- Completeness of the research
- Credit to source of research material
- Is the solution workable and economically feasible
- Were facts presented in logical and continuous sequence
- Was the problem solution made understandable to the technical audience
- Was there a novel approach to the problem
- Was sufficient background information presented

PRESENTATION SCORE (30 Points) _____

- Organization of the Submission
- Grammar, spelling, technical writing
- Were graphs, pictures formatted appropriately
- Professional consultant format

TOTAL SCORE: _____

Attachment B

JUDGE: _____

2026 VWEA STUDENT DESIGN COMPETITION

SCORING SHEET – PRESENTATION

TEAM NAME: _____

TECHNICAL SCORE (60 Points) _____

- Were all issues addressed
- Completeness of the research
- Credit to source of research material
- Is the solution workable and economically feasible
- Were facts presented in logical and continuous sequence
- Was the problem solution made understandable to the technical audience
- Was there a novel approach to the problem
- Was sufficient background information presented

PRESENTATION SCORE (20 Points) _____

- Organization of the Presentation
- Presentation within time allotment
- Vocal delivery- volume, proper English, manner of delivery (monotone/conversational), proper diction
- Body language - good eye contact, no distracting mannerisms, personal appearance
- Visual aids- how effectively were they used, were they relevant to presentation, clarity of data
- Professional consultant format

OPEN DISCUSSION (20 Points) _____

- Did presentation evoke spontaneous question from the panel
- Did the question indicate the need for clarification of fact or seeking of additional information
- Did the answers indicate knowledge of subject beyond that disclosed in the original presentation
- How readily and with what self-assurance did the speaker answer question

TOTAL SCORE: _____
