Unleash Your Inner Engineer!

The 3rd annual Model Water Tower Competition will be held **Saturday November 2nd, 2019**, at the Service Authority building, **4 County Complex Court. Woodbridge, VA 22192** from **9:00am-11:30am.**

Prince William County students can enter the competition and work as individuals, or in teams of up to three people, to design and build a functional model water tower. Any PWC student in a **grade 5 SIGNET program,** **or in** **grades 6 through 8** is eligible to enter, and teams may be formed with students from any grade or school within PWC.

Winners will receive prizes of up to $100!

The Model Water Tower Competition is free to enter and snacks will be provided for all attendees.

Team registration can be found [here,](https://www.surveymonkey.com/r/H3XCF7M) and all participants must have a parent or guardian contact listed.

To enter via email, please complete the Registration and Participant Release forms on the next two pages and send the information to [outreach@pwcsa.org](mailto:outreach@pwcsa.org).

**Only 1 registration form is required per team, however each team member needs to fill out a participant release**.

Registration will close **October 18, 2019**.

Registration Form

|  |  |
| --- | --- |
| Team Name: |  |
| School(s): |  |
|  |  |
| Teacher or Advisor: |  |

Complete this form and bring with it you to the check-in.

List the name of your team members below. Teams may have from 1 to 4 members.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Name/Grade* |  | *Parent/Guardian Name* |  | *Parent/Guardian Contact Info* |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

*\*Each team member must bring a signed Participant Release Form.*

Participant Release Form

**INSTRUCTIONS:** *Each team member must bring a copy of this form signed by their parent or guardian.*

I AM THE PARENT/GUARDIAN OF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

I HEREBY AUTHORIZE THE MEMBERS OF THE MODEL WATER TOWER COMPETITION COMMITTEE, A SPECIAL PROJECT OF THE VIRGINIA AMERICAN WATERWORKS ASSOCIATION-STUDENT ACTIVITIES COMMITTEE TO:

1. PREPARE ANY PROMOTIONAL MATERIAL SUCH AS PRESENTATIONS, SLIDE SHOWS, VIDEO TAPES, PHOTOGRAPHS AND MOVIE FILMS IN WHICH MY CHILD WILL SPEAK AND/OR APPEAR.
2. USE, REUSE, PUBLISH AND REPUBLISH THE SAME IN THE WHOLE OR IN PART INDIVIDUALLY OR IN CONJUNCTION WITH OTHER PHOTOGRAPHS , VIDEO OR FILM IN ANY MEDIUM FOR ANY PURPOSES WHOSOEVER, INCLUDING (BUT NOT BY WAY OF LIMITATION) ILLUSTRATION, PROMOTION AND ADVERTISING BY THE COMMITTEE.

I HEREBY WAIVE ANY MONETARY RIGHTS OR OTHER RIGHTS THAT I MAY HAVE TO INSPECT AND/OR TO APPROVE THE FINISHED PRODUCT OR THE ADVERTISING COPY THAT MAY BE USED IN CONNECTION THEREWITH OR THE USE TO WHICH IT MAY BE APPLIED. I UNDERSTAND AND AGREE THAT ALL RIGHTS, ROYALTIES AND MATERIALS WILL BELONG TO THE COMMITTEE.

Parent/Guardian (Print Full Name)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­\_\_\_\_\_\_\_\_\_\_\_

Parent/Guardian (Signature)\_­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phone #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Competition Guidelines

Students will work together to build a functional model water tower that fits within the established guidelines, and utilizes creativity! Participants will get a taste of what it takes for clean water to get into their homes each and every day and experience the huge world of the water industry.

**Construction Requirements**

All towers must:

* Be 2.5 feet high total from the base to the top
* Be at least 1.5 feet tall from base to the bottom of the tank
* Have a base that fits into a 1 foot square
* Be able to hold between 1 and 2.5 gallons of water without leaking
* Have an open area, or a removable area on top large enough for a funnel
* Use a 3/8” diameter connector on the piping/tubing in order to drain the tank

The use of recycled materials is highly encouraged, and any items purchased for the tower must be listed and the price recorded.

*PLEASE NOTE: Electricity will* ***NOT*** *be supplied to towers*

**Judging Criteria**

Points will be rewarded to towers at each phase of the judging period. Totals will be calculated at the end to determine winners. Penalties will be applied for failing to meet the necessary requirements.

Structural Stability

Structural efficiency of the tower will be calculated using a predetermined formula.

The weight of the empty model will be divided by the height of the tank, multiplied by the amount of water it holds. The lower this number, the better.

This is shown with the following formula:



Hydraulic Efficiency

Hydraulic Efficiency is determined by the amount of time is takes for the tower to fill and drain **1 gallon** of water.

The use of the required 3/8” diameter connector is factored into this scoring. Connectors can be found at Home Depot or Lowes and can be any of the following brands: *WATTS Model No. PL-3022 Quick Connect 3/8” OD by 3/8” OD Union Elbow* ***OR*** *BrassCraft 3/8-in x 3/8-in dia 90-Degree Standard Elbow Push Fitting* ***OR*** *SharkBite 3/8 in. O.D. x 3/8 in. O.D. Quick Connect Elbow.*

The cost of this connector will not be considered as part of the Cost Effectiveness score.

Cost Effectiveness

Towers will be evaluated for the total cost of construction. Recycled materials will not add to the overall cost, only materials purchased for the sole purpose of constructing the tower will contribute to the score.

**All** materials must be listed on the materials page. Recycled or reused items may be listed as such using an “R”, and prices must be listed for those purchased items. Receipts for purchased items should be attached to the form. Penalties will be given for missing receipts.

The price to point totals are as such:

|  |  |
| --- | --- |
| $0.00 - $5.00 | 5 pt |
| $5.01 - $10.00 | 4 pt |
| $10.01 - $15.00 | 3 pt |
| $15.01 - $20.00 | 2 pt |
| More than $20.00 | 1 pt |

Design Creativity

The design of the towers will be evaluated by examining:

* Craftsmanship (is the model put together nicely)?
* Imagination (are the design or materials unique)?
* Creative Vision (does the model have creative ideas, colors or themes)?

Each category will be ranked in a 3-point scale.

**Materials List Form**

|  |  |
| --- | --- |
| Team Name: |  |
| Participants: |  |

Complete and bring this form and all receipts on the day of the contest. List the materials and costs used to construct your model water tower. Put an ‘R’ in the cost column where recycled materials are used. Use additional sheets if necessary to list all materials. A penalty will be given for not bringing this form and required receipts.

**MATERIAL COST**

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**TOTAL** \_\_\_\_\_\_\_\_\_\_\_

**Model water tower checklist**

* All forms (registration, photo release, and materials list) are completed
* Online registration form has been completed [here](https://www.surveymonkey.com/r/H3XCF7M)
* Tower is 2.5 feet high total from the base to the top
* Tower is at least 1.5 feet tall from base to the bottom of the tank
* Tower has a base that fits into a 1 foot square
* Tower holds between 1 and 2.5 gallons of water without leaking
* Has an open area, or a removable area on top large enough for a funnel
* Uses a 3/8” diameter connector on the piping/tubing in order to drain the tank
* All receipts for purchased materials have been included

**On the day of the competition, November 2nd, 2019, please bring all completed forms, and completed tower to 4 County Complex Court, Woodbridge VA, 22192.**

**Snacks will be provided for all participants!**