2020 FSAWWA Region XI and UF Student Chapter Model Water Tower Competition
Attention Middle School Teachers:

Your local region of American Water Works Association, Region XI, is proud to announce our Annual Model Water Tower Competition. This competition provides students with a fun-filled, science oriented contest aimed at introducing middle school students to engineering and the water profession. We are pleased to invite your child to participate with other Region XI middle school students in this unique competition.

This competition requires students to design and build a water tower with specific size and height requirements. The judging takes place on 1/25. The location is currently UF TREEO Center at 3900 SW 63rd Blvd., Gainesville, FL 32608 and will start at 9:00 am. The models are judged based on 4 categories including: cost efficiency, hydraulic efficiency, structural efficiency, and design/materials ingenuity. Cash prizes will be awarded to the top three overall winners. All of the specific requirements for the water tower model judging are defined in the Judging Handout, and their associated scoring factors are listed within this packet.

- Each student will receive a packet that includes all necessary information to successfully enter and build a water tower model. The Water Tower Model Competition Registration must be completed, online at www.fsawwa.org/mwtc select Region XI, by 12/31. While the individual or student team must build the models, parents are encouraged to coach and mentor their student throughout the design and build phase of their water tower model.

- Classroom Registration – Students will have until 12/31 to sign up online for the event at www.fsawwa.org/mwtc.
- Model Building - will occur by students in their spare time up until the Judging Day.
- Judging Day – 1/25. Location is UF TREEO Center.

Registration is held from 9:00-10:00 am. Students arriving after 10:30 AM will not be eligible to compete. Judging and final awards will occur when all towers have been processed. Breakfast will be provided for all who attend.

For additional information regarding the Model Water Tower Competition, please contact Izzy McAlister at 352-294-2894 (izzymcal@ufl.edu).

Sincerely,

Elizabeth McAlister
FSAWWA Region XI Chair
Model Water Tower Competition Chair

Lauren Judah
UF AWWA  Event Coordinator
Model Water Tower Competition Planner

“From Today’s Youth Come Tomorrow’s Leaders-Let’s Lead Some to the Water Profession”
Instructions

General

- The 13th Annual Model Water Tower Competition will be held as follows:
  - When: Saturday, January 25th
  - Time: Check-in is between 9:00 – 10:00 am
  - Where: UF TREEO Center; 3900 SW 63rd Blvd., Gainesville, FL 32608
- There is no cost to enter. To participate, arrive at the check-in with the following materials:
  - Bring your completed model water tower.
  - Bring your completed Participant Release, a blank form is attached.
  - Bring your completed Materials List, a blank form is attached.
- Model water towers may be of any design and constructed from any materials. In fact, you will be awarded for using creative designs and innovative materials. A creative design is a water tower that will function even though it does not look like any other tower. Examples of innovate materials are an old broom stick from your garage as a support structure, a gas can as a tank, or any other atypical items that you might find laying around the house.

Objective

The objective of the competition is to make participants aware of the importance of reliable drinking water and the rewarding opportunities available in the water profession. The competition meets this objective by having students develop an idea into a functioning water tower, just like water professionals do in the real world.

Prizes will be awarded to the top three finishers in the middle school and high school categories. The lowest scores win. Judges decision is final and non-refutable.

Judging will be based on four criteria – structural efficiency, hydraulic efficiency, cost efficiency, and design ingenuity. Understand and achieve these criteria to do well! They are explained below.

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Structural Efficiency

Structural efficiency is calculated by dividing the weight of the model when it is empty by the average height of the tank times the amount of water it holds. The lower this number is the more structurally efficient is the tower’s design. This is shown with the following formula:

\[
Structural\ Efficiency = \frac{Weight\ of\ the\ tower\ when\ empty\ (pounds)}{Average\ tank\ height\ (ft) \times Amount\ of\ water\ the\ model\ holds\ (gal)}
\]

This criterion is similar to what engineer’s use in the real world! Remember, the tank should be between 1.5 feet and 2.5 feet high (See Drawing Provided) and hold at least 1 gallon of water but no more than 2.5 gallons!

Hydraulic Efficiency

Hydraulic efficiency is the amount of time it takes the judges to fill the model with 1 gallon of water and drain it back out again. The judges will fill the tank through the 3/8 inch connector. The less time it takes to fill and drain the tank through the connector the better. The tank must have a vent or a cover so the judge can see into the tower during filling. Coverless towers will not be considered vented.

Cost Efficiency

Cost efficiency measures your ability to save money while building your model. Bring receipts for all items purchased for your model. Points will be assigned as follows (the lower the score the better):

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

List all items used in your model and their costs on the Materials List Form. This form is required on the day of the event. Where recycled items are used, put the letter “R” in the cost column. You may use as many recycled materials as you wish. A penalty of 1 point will be given for each missing receipt for items purchased new specifically for tower construction. A 3 point penalty will be added to the student’s score if the Materials list form is missing. No receipt is necessary for recycled items; however, the items must be accounted for on the materials list form. The cost of glue, nails, screws, general adhesives, and items used to decorate the tower should not be counted towards the tower’s total cost. The cost of the tower should not include tax.

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Design Ingenuity

Ingenuity (in·ge·nu·i·ty) is how much imagination and skill were used in your model. Water professional must often use ingenuity; they use skill and imagination to solve difficult problems. The judges will look at several items:
- Craftsmanship (is the model sturdy, do the parts fit together nicely)?
- Imagination (are the design and materials unique)?
- Artistic merit (does the model have creative ideas, colors or themes)?

Required Design Standards and Penalties

Keep to the following standards when designing and constructing your model:
- The base of the model must fit in a square 1 foot on each side.
- The tank must be between 1.5 and 2.5 feet high.
- The tank must have a vent or removable lid so the judges can tell when it is full. Uncovered towers or non-vented towers will result in a penalty of 1 point.
- When full, the tank must hold between 1 and 2.5 gallons of water and it should not leak. Hint: test your model to make sure the tower can hold the weight of the water!
- The model must use the 3/8 inch connector as supplied (See Drawing for additional details).
- Bring receipts for all materials purchased for your model. A one point penalty will be given for each item not having a receipt (Max of 3 points).
- Bring materials list. 3 points will be added to the score if a list is not provided.
- Structural instability (i.e., tower has to be supported by a person during filling or during any evaluation) – 2 point penalty will be added to the score.

Penalties will be assessed for not following the above standards.

Additional Information:
For more information please contact the event organizers as follows:

Izzy McAlister
FSAWWA Region XI Chair
Model Water Tower Competition Chair
Email: izzzymcal@ufl.edu
Phone: 352-294-2894

Lauren Judah
UF AWWA Event Coordinator
Model Water Tower Competition Planner
Email: laurenjudah@ufl.edu

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INSTRUCTIONS: Complete this form with your parent or legal guardian’s signature and return to your teacher. Teachers must return the forms to the Event Coordinator before the pre-registration deadline (12/31).

I AM THE PARENT/GUARDIAN OF _____________________________________________

I HEREBY AUTHORIZE THE MEMBERS OF THE WATER TOWER COMPETITION COMMITTEE, A SPECIAL PROJECT OF THE AMERICAN WATERWORKS ASSOCIATION-YOUTH EDUCATION 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 #_________________________________
# Materials List Form

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.

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TOTAL

* Use additional sheets if necessary to list all materials. A penalty will be given for not bringing this form or receipts.

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Model Water Tower Connector

The proper 3/8" diameter push-on connector will be provided to all registered contestants. You must use the connector given to you to avoid a penalty. Contact your teacher sponsor to receive the connector. If you do not have a teacher sponsor, contact the event organizer as follows to receive a connector:

Izzy McAlister  
FSAWWA Region XI Model Water Tower Competition Chair  
352-294-2894

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