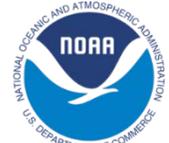


# Blandy Experimental Farm History

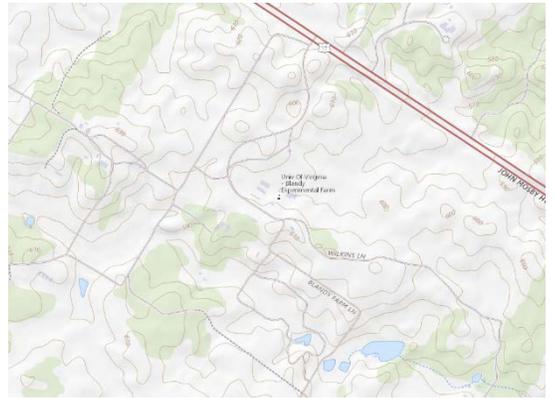


Grade	6 <sup>th</sup>
Time	45 minutes
Overview	Students understand that methods to access water were different in the 1800s to how we access water today. They realize that methods for home location often depended on the proximity of water.
Place-based adjustments	<i>This lesson is an example examination of human land use and history in our location. Yours most likely has a different history. Consider the included methods as a guide to thinking deeply about how human history and ecology have overlapped in your space. Your local historical association and other organizations will likely have the tools you need to make this lesson relevant to your setting.</i>
Objectives	<p><u>Understanding:</u> Access to water is an important determining factor in deciding where to live. Prior to the creation of tap water systems, people had to devise their own methods to access sufficient quantities of clean water to sustain themselves and their home sites.</p> <p><i>In your area, how would humans in the past access drinkable water? What modifications to the water would need to happen for it to be fit for human consumption?</i></p> <p><u>Skills &amp; Processes:</u> Students develop map reading skills to identify where freshwater can be found. They use math skills to measure a cistern width and calculate the volume of water a cistern could store.</p> <p><i>How could you calculate the volume of the local drinkable water? How much water does a person need? (See extension suggestion: Runaway Rain)</i></p> <p><u>Values:</u> Students develop an appreciation for the importance of plentiful and clean water.</p>
Essential Question	How did people who lived in the Quarters and the Tuleyries get their water? Why did they build where they did & how they did?
Primary VA SOL	Social Science (2017): USi.1

<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Laminated photos (Quarters site); 1 photo set for each group of students</li> <li>• Tuleyries house: external photo &amp; internal photo of U.S. Seal (laminated poster-size images); 1 of each for the instructor to show students</li> <li>• Data sheets (one per student)</li> <li>• Pencils (one per student)</li> <li>• Calculators (one for each group of students)</li> <li>• Field measuring tape; 50 m</li> </ul>	<p><b>Special Safety</b></p> <p>No sitting or standing on the cistern edge.</p> <p>Inspect the field measuring tape before giving it to students to make sure the tape is intact. If not, add new tape to cover the claw.</p>
<p><b>Set Up</b></p> <ul style="list-style-type: none"> <li>• Print data sheets</li> <li>• Gather all materials and place in the Quarters courtyard</li> </ul>	

<p><b>Instructional Strategy</b></p>	
<p>Recommended Grouping/Instructional style</p>	<p>Small groups Hands-on Sampling and Identification</p>
<p>Steps</p>	<p>1. <b>Engage:</b></p> <p>HISTORIC SITE 1. The Quarters (viewed from the courtyard) Instruct students to take two minutes to look around and make some initial observations.</p> <p><u>Guided inquiry:</u></p> <ol style="list-style-type: none"> <li>Does this building look old? What is your evidence for your claim?</li> <li>Do all sections of the Quarters (there are three) look the same? If not, what is different? What do you wonder about this building, based on your observations?</li> <li>Look at the historic photo of the Quarters (at the end of the lesson plan). Compare the photo with what you see now; has the building been structurally altered? What changes do you see?</li> <li>Explain that Blandy Experimental Farm's 700 acres were once part of a plantation named The Tuleyries. The plantation was active from the early 1800s until the Civil War. Based on this knowledge, what do you think the purpose of the Quarters was for the plantation?</li> </ol>

- e) **Examine the topographic map:** Where could enslaved people who lived in the Quarters have gotten the water they needed for drinking, cooking, and cleaning? (For more information on the people enslaved at Blandy, [visit our website](#) and the [2021 research completed by Antonio Austin](#), a Ph.D. student in History at Howard University.) Estimate how far it is from the Quarters to Rattlesnake Spring, the closest reliable source of water.



- Do you think the slaves were allowed to walk to and from Rattlesnake Spring whenever they needed water? Leave this question unanswered--answer will be obvious soon!
- f) Next, walk around to the east side of the Quarters. Give students a minute or two to examine this side of the building, then look at the historic photo of this side of the building. Does the building look similar to how it looks today? What is different? What is the same? What is the woman doing in the photo? Does the photo provide any clues for how she got the water she is using to wash clothes?

HISTORIC SITE 2. Quarters cistern. NOTES: (1) A sample of the cistern water is at the water chemistry station where its quality will be tested. (2) The volume of the cistern will be calculated in the mathematics classroom. At Blandy, we will measure the cistern diameter.

- a) Have students examine the cistern (but don't use this term, yet). What do you think this structure is? What function might it have had during the Tuleyries plantation days?
- b) Once students surmise that this structure is a water storage tank, tell them that this type of structure is called a "cistern."

Ask students: How did the water get into the cistern for the Quarters slaves to use? Tell them to look around for evidence (Some students will observe a pipe



- leading from the Quarters to the cistern. Cisterns commonly get filled by collecting water from a roof via a pipe system leading from the roof to the cistern.) Make sure all students see the pipe to understand how water fills the cistern.
- c) ASK: How would we figure out how much water the cistern can store? What do we need to know? (Volume of a cylinder is

height/depth  $\times \pi \times \text{radius}^2$ ) Tell them that Blandy's Facilities Manager said the cistern is 10 feet deep, then ask students to measure the diameter/radius.

- d) MEASURE: Use the field measuring tape to measure the cistern volume. One student holds the handle, and another carefully walks around to the other side of the cistern. Both students should hold the field measuring tape level with the cistern rim and measure the diameter of the inside of the rim (remind students that to find the volume of a cylinder, split the diameter in half to find the radius). Make sure all students record the diameter & depth of the cistern. Careful!!! Consider the units of measurement. The volume calculation can be finished back at school.
- e) THINK/JOURNALING: How can the cistern be modified to keep the water cleaner for human usage?

HISTORIC SITE 3. The Tuleyries.

- a) Walk west down Dogwood Lane to peer at the Tuleyries mansion. Have students look at [the topographic map](#) again.
- b) Based on your reading of the map, why do you think the Tuleyries was built where it is? Write ideas in your journals.
- c) What was the nearest source of water for the Tuleyries during the plantation days? How do you think people living in this house got the water they needed for drinking, cooking, and washing?

**2. Conclusion/Journaling:** What are some major differences in how you get water compared to how people living in the 1800s at the Tuleyries got their water? Do you think you use water differently than people did in the 1800s?

#### Extensions

1. Please consider how you could modify this plan and activity for your locality.
  - a) What are the historic and water resources in your locality?
  - b) How have humans used this area?
2. What is your water footprint (how much water do you use)? There are multiple online resources to help you calculate this, and [Project Wet has an activity as well](#). These calculations could easily translate into graphing and other mathematical data analysis.
3. Use our [Runaway Rain lesson plan](#) to calculate how much rain (on average) falls on your school roof. What could you do if you captured it all? (Obviously, you would need to adjust for your school roof area and local climatic conditions.)
4. Visit our website. Under [Ed Programs Activities and Lessons](#) is place-based Watershed Awareness (SOLs for 3<sup>rd</sup>-6<sup>th</sup>) Also check out the lessons and resources in our [Watershed Education Projects](#) page.

# Quarters: built between 1825 and 1830

<p><b>For your analysis, you will use a topographic map, historical photos, and landscape observations.</b></p>	<p>Examine the map and look at the landscape, find the nearest body of natural permanent water. Where is it?</p>
<p>Who lived in the Quarters in the 1800s?</p> <p>Why do you think the Quarters were built here?</p>	<p>How did people get their water when they lived here in the 1800s?</p>
<p>How would your water usage amount be different if you lived here in the 1800s? (Think about how you use water today to compare.)</p>	

A cistern is a holding tank for water. The Quarters cistern was built in the early 1800s. Look at the cistern water and the surrounding area.

<p>How does water get here?</p>	<p>How much water can it hold? <math>V = \pi r^2 h</math></p>	<p>Think about how much water you use in a day. For which uses is it OK if the water is a little yucky?</p>
---------------------------------	---	---

What would you have to do to use this water for the other purposes? How could you change the cistern to keep the water cleaner?

How would your water usage be different from today if you lived here in the 1800s?

# Tuleyries mansion (Completed 1833)

Examine the map, the close-up photo, and look at the landscape.

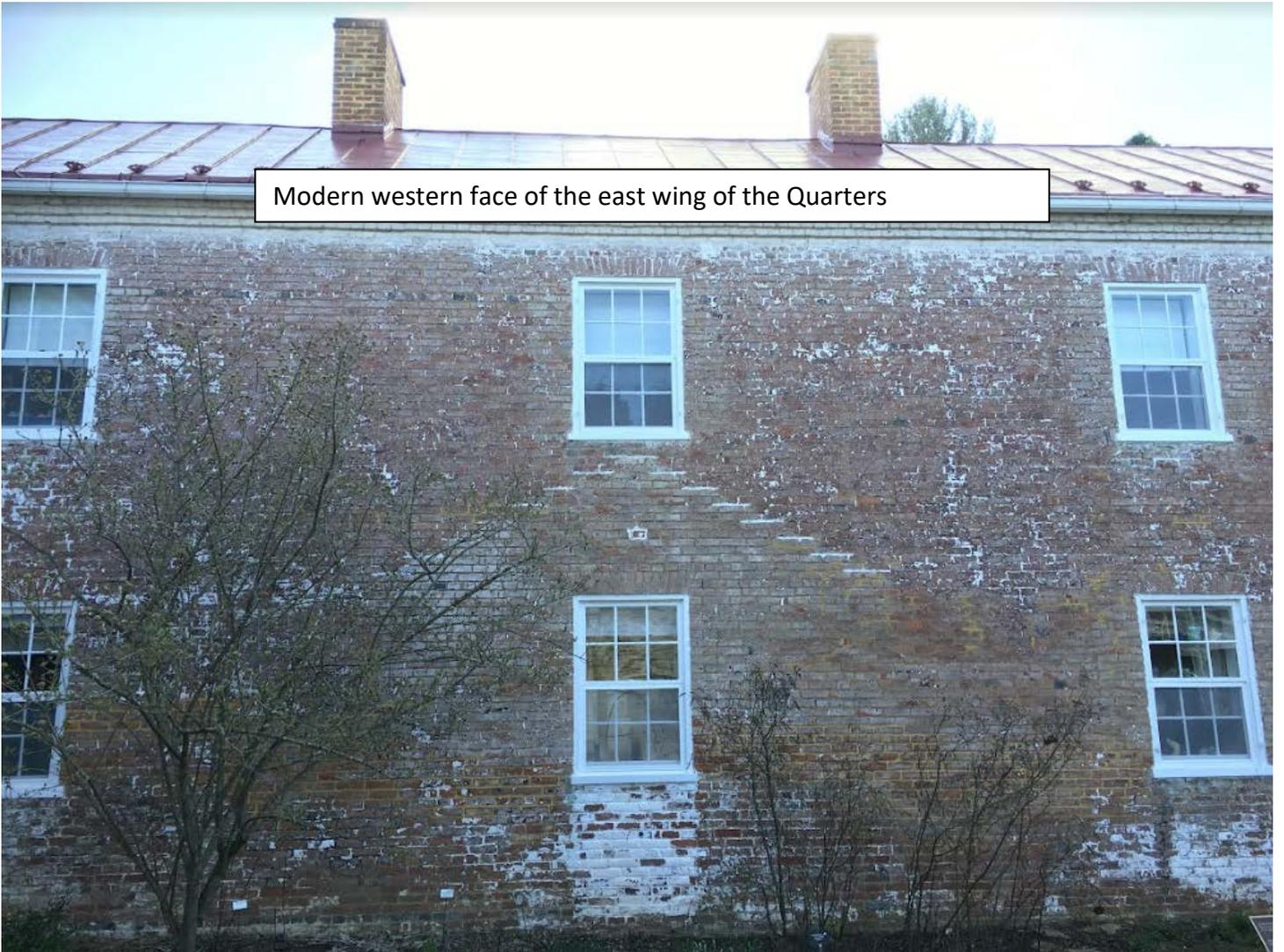
Why do you think this structure was built here?

How is this house different from the Quarters?

Think about how much water you use in a day. For which uses can the water be not 100% clean?

Examine the map and look at the landscape. Find the nearest body of natural **permanent** water. Where is it?

How would your water usage amount be different if you lived here in the 1800s? (Think about how you use water today to compare.)



Modern western face of the east wing of the Quarters



Historic photo of the Quarters



Stained glass seal in the Tuleyries mansion

Tuleyries mansion



