

## Components of the Watershed

**Essential Question:** What are components of the Hillsborough River Watershed?

**Objective:** At the end of the lesson, students will be able to explain how the Hillsborough River changed from its beginnings in the Green Swamp to its mouth at Hillsborough Bay and how the watershed is connected to this change.

**Standard(s):**

LAFS.6.RI.1.1

Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

LAFS.6.RI.3.7

Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

LAFS.6.W.2.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

**Materials:**

- Student page: **The Hillsborough River Watershed** - one copy per group (4 students per group).
- Pen or Pencil
- A copy of the Quick Write Question student page: **How does the Hillsborough River change from its beginnings in the Green Swamp to its mouth at Hillsborough Bay? How is the Hillsborough River Watershed connected to this change?**
- Student page: **Reading Summary Web**.

**Setup/Prep time:** N/A

**Lesson Duration:** 50 minutes/one class period:

**Directions:**

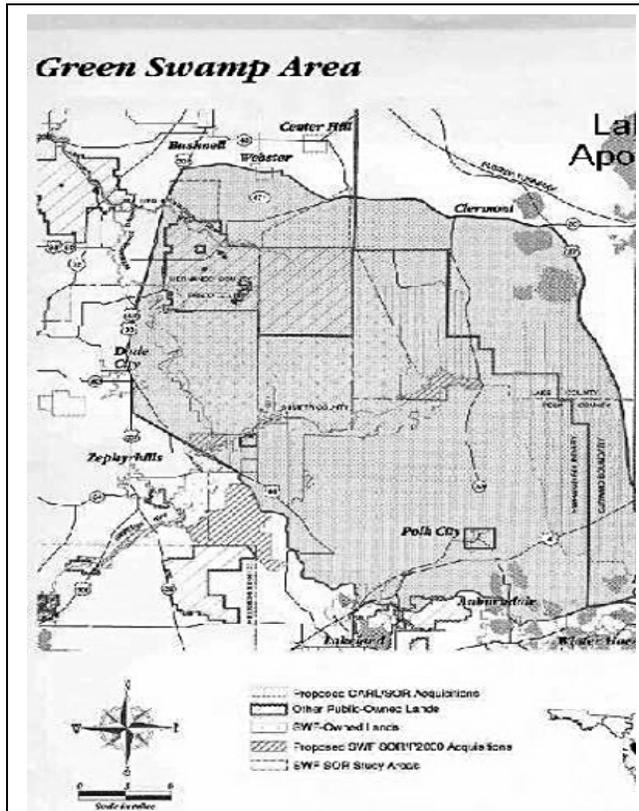
1. Have students read **The Hillsborough River Watershed** as a group and individually take notes.
2. Have them individually complete the **Reading Summary Web**.

**Assessment:** As an assessment students will individually complete the Quick Write summary question: **How does the Hillsborough River change from its beginnings in the Green Swamp to its Mouth at Hillsborough Bay? How is the Hillsborough River Watershed connected to this change?** (15 min)

**Alternative Strategies:**

- Ecological Community Comparison Chart
- Concept Map
- Venn Diagram

### The Hillsborough River Watershed



As a plateau above surrounding areas, the Green Swamp region is an important physiographic feature of Florida. Its 560,000 acres of wetlands, flatlands and low ridges are bounded by prominent sandy ridgelines. Rainwater drains across the surface to create the headwaters of four major rivers: the Withlacoochee, the Ocklawaha, the Hillsborough and the Peace. Rainwater also trickles down through the soil to replenish the Floridan aquifer system, the primary source of drinking water for most Floridians.

Because the Green Swamp region is elevated above outlying areas and the underground aquifer rises very close to the land surface, the region functions as the pressure head for the aquifer. Protecting the Green



The **watershed** of the Hillsborough River is very similar to that of other rivers on the west coast of Florida. It resembles a flat shallow pan tilted up on one end. The highest part of this watershed is north and east of the borders of Hillsborough County in an area known as the Green Swamp.

The lowest corner of the watershed is at the mouth of the river where it empties into Hillsborough Bay. The southern boundary of this watershed runs east almost to Lakeland. The western boundary roughly follows U.S. 41 north into Pasco County. The Hillsborough River is just one of several sub-watersheds that make up the larger watershed of Tampa Bay.

The water that fills the Hillsborough River officially begins its journey at US 98 in Pasco County. Here during the rainy season, water collects in the Green Swamp and flows outward into four rivers.

At US 98 the Withlacoochee River flow turns from west to north and the Hillsborough heads southwest out of this same area. This makes it difficult to pin down an exact length for the Hillsborough.

During the dry season, there is very little if any flow to the Hillsborough from the Withlacoochee. During the wet season their water supply mingles. This is why you will see the length of the Hillsborough given as anywhere between 54 and 57 miles long.

From US 98, the river flows through an area with little influence other than small farms and cattle ranches. Before it reaches SR 39 however it passes a by both a limerock mine and a phosphate processing plant.

Just down river from SR 39 the river receives between 24 and 30 million gallons of clear cool **groundwater** a day from Crystal Springs. It

shares this spring flow with millions of people as this is the source of Zephyrhills bottled water.

Just north of US 301, Blackwater Creek joins the river. This creek drains agricultural land in northeast Hillsborough County and adds additional nutrients to the river.

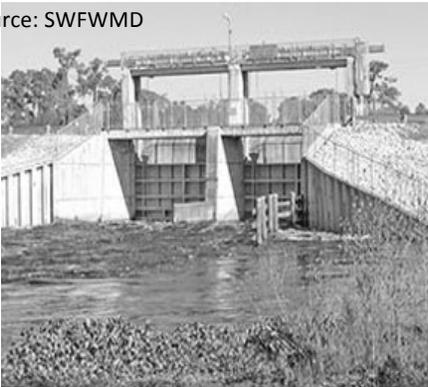


Within the Hillsborough River State Park the river runs over a series of limerock outcroppings creating rapids. The limerock neutralizes any tannic acid that flows out of the swamps but leaves the rich reddish brown color.

Further down river, Flint Creek collects water, including treated **wastewater**, from Plant City. It flows west, passing through Lake Thonotosassa, and into the river. This **tributary** and the lake are green with algae produced by excess nutrients.

South of Morris Bridge Road, Trout Creek, Clay Gully Creek and Cypress Creek all drain the fast growing residential area in the northern portion of the watershed. They carry **stormwater runoff** contaminated with fertilizers, pesticides, and other types of **suburban** wastes into the river.

Source: SWFWMD



At I-75 the Southwest Florida Water Management District constructed a water control structure across the river. This is closed during periods of extreme high water as a result of large storms such as hurricanes. Water continues to flow over the structure but also flows south through the **riverine swamp** to the Tampa Bypass Canal that routes it to McKay Bay. This protects residents down river from flooding. South of I-75 the river enters the suburbs of New Tampa, Temple Terrace and Tampa.

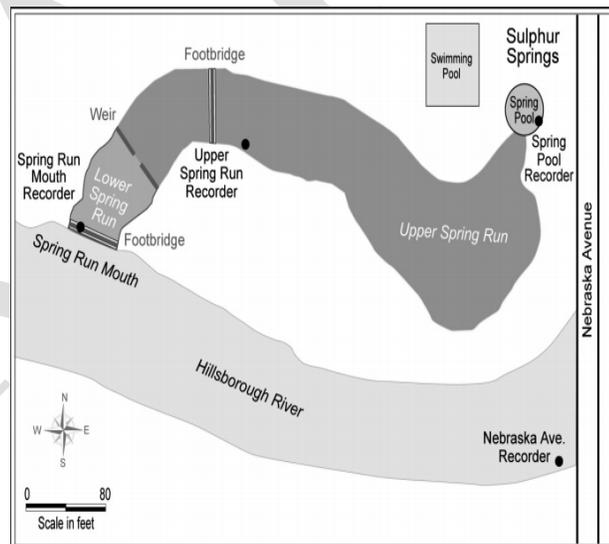
In the suburbs, the river is used by people primarily for fishing and boating. It also receives stormwater runoff from numerous streets and yards.



South of 40<sup>th</sup> street, the river gets wider and deeper. The reason is the City of Tampa Water Department’s dam. This dam interrupts the flow of water and creates a reservoir from which the city draws much of its drinking water supply. During drought years there isn’t any flow of water over the dam. The Southwest Florida Water Management District has a plan to restore a minimal flow of water at the dam into the lower Hillsborough River.

Down river from the dam, the river flows into the urban area of Tampa. Here, stormwater sewers dump stormwater runoff into the river after every rain. Some stormwater retention ponds have been constructed to help cleanse this water but there is limited space in the city to **retrofit** or add these structures into the existing landscape.

The last major water source for the river before it reaches its mouth is groundwater from Sulphur Springs. The pool at this spring used to be a neighborhood swimming hole. But now, unlike the clear clean water from Crystal Springs, the water from Sulphur is contaminated by urban runoff. Sinkholes allow stormwater to enter the aquifer. This contaminated water flows through the aquifer to the spring.

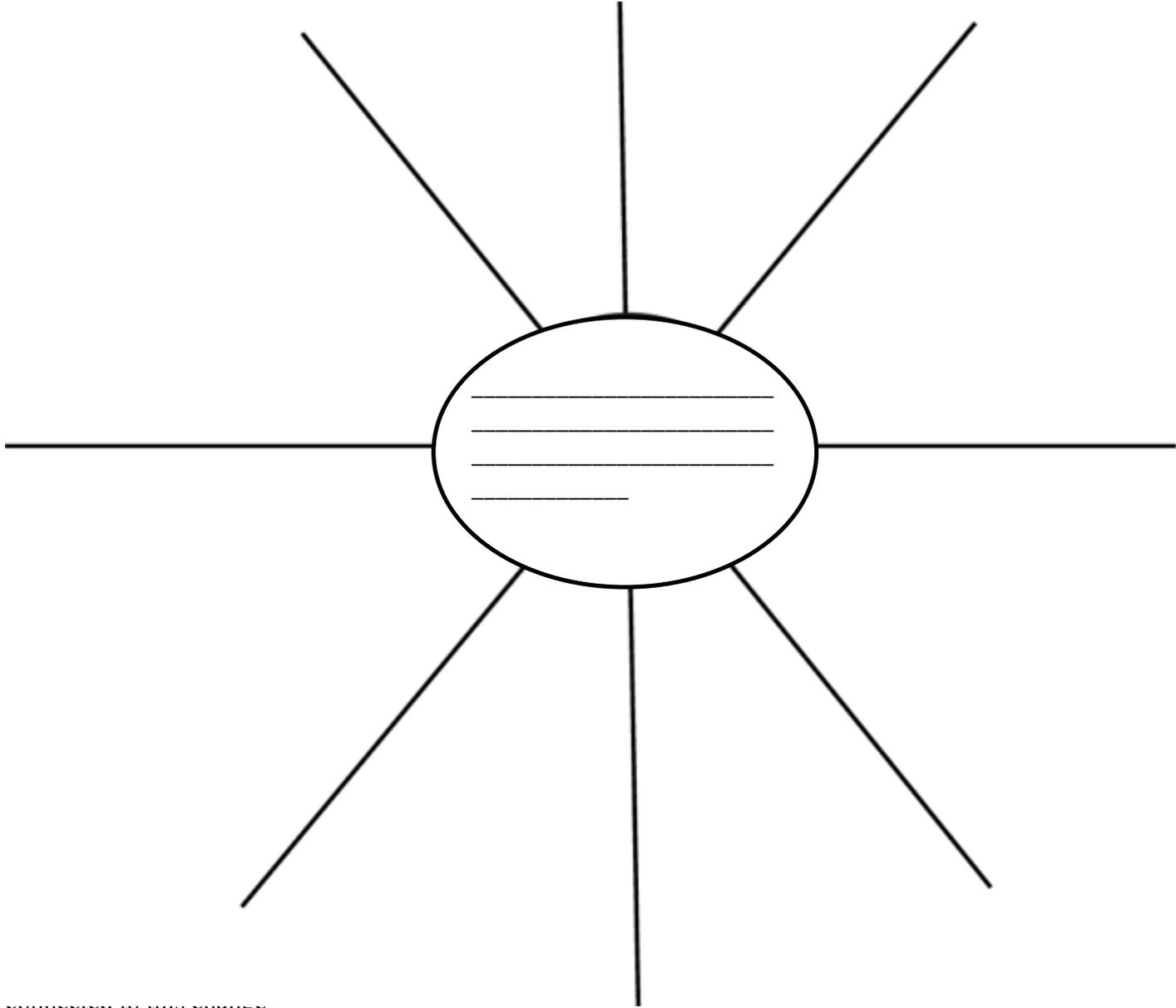


Below Sulphur Springs the Hillsborough River runs through downtown Tampa. In this section, the water is a mix of freshwater and saltwater from the bay called **brackish**. The river continues to receive stormwater waste as it eventually makes its way to Hillsborough Bay.

Source: SWFWMD

Name \_\_\_\_\_ Date \_\_\_\_\_

**Reading Summary Web**



connected to this change.

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