

## Explore the St Johns River *Handout*

*Students learn about the St. Johns River and practice for the FCAT.*

*Water Atlas Curriculum Lesson 25 – FCAT Supplement*

The St. Johns River, a major Florida waterway, is unusual in several ways. For example, the St. Johns River is really long, pushing its way through 11 Florida counties and traveling 310 miles before it dumps into the Atlantic Ocean. At its beginning (down near Brevard and Indian River Counties), the St. Johns River is little more than a collection of lakes, swamps, and streams that all flow in the same general direction. Because the St. Johns has so many lakes along its path, the Timucua Indians called it “Welaka,” a word meaning “river of lakes.” In Seminole County, Lakes Harney and Monroe are part of this flow. Along its journey, the character of the St. Johns River changes from sprawling swamps and fresh water lakes into a well-defined river. Because the river is so long, it receives waters from three distinct “watersheds” or “drainage basins.” A watershed includes the land area that drains into a river, along with any tributary streams. The three St. Johns River watersheds are called the Upper Basin (where the river begins near Vero Beach), the Middle Basin (where the river widens in east-central Florida near Lake Harney), and the Lower Basin (where the river winds towards the ocean, Putnam County north to Duval).

In addition to its length, the St. Johns River is unusual because it flows north while many large rivers flow south. So if you travel upstream (against the current), you are moving south. This can be confusing because the direction “south” is usually “down” on a map, and we say “down south.” So, for the St. Johns River, traveling upstream takes you down on a wall map. Traveling downstream takes you up the map. A river’s direction of flow is influenced by the elevation at its beginning and end. Across its entire 310-mile length, the elevation of the St. Johns River changes less than 30 feet. This averages out to a one inch drop in elevation per mile. Such small changes in elevation make for very slow-moving waters.

The St. Johns River’s meager current creates another unusual situation. Salty tidal waters from the Atlantic Ocean are able to push their way far up the river. In fact, sharks sometimes swim as far upstream as Lake George – over 100 miles from the ocean. During rainy years, the river’s salinity (saltiness) decreases because fresh rainwater mixes in and dilutes the river water. During droughts, however, salinity increases. Whether it rains or not, the St. Johns River’s Lower Basin is always somewhat brackish, and its Upper Basin is always fresh.

Because this unusual river changes throughout its journey, it provides a variety of valuable habitats for animals and plants. The St. Johns also offers people many opportunities for recreation, transportation, and economic gain. Learning to appreciate this river’s size and diversity is the first step in keeping it safe and clean for future generations of plants, animals, and people.

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## FCAT-Friendly Reading Questions

1. According to the article, which of the following statements is accurate?
  - a. The St. Johns River starts in Duval County and flows down to Brevard County.
  - b. Most rivers flow in a northerly direction.
  - c. Large changes in elevation make for fast-moving rivers.
  - d. The St. Johns River is unique because salty water flows all the way back to its beginning.
  
2. The Tour & History article includes the following statement: “A watershed includes the land area that drains into a river, along with any tributary streams.” Based on context clues, what is the meaning of the word “tributary”?
  - a. A stream that contributes water
  - b. A stream that drains water away
  - c. A stream that is isolated from the river
  - d. A stream that only flows after heavy rains
  
3. If you needed to rename this article, which of the following titles would be most appropriate?
  - a. The Salty St. Johns
  - b. Tributaries of the St. Johns River
  - c. Florida Watersheds
  - d. A Unique Florida River
  
4. This article describes a relationship between rainfall and the salinity of the St. Johns River. Use details and information from the article to explain this relationship.

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### FCAT-Friendly Writing Prompts

1. The St. Johns River flows for 310 miles through north-east and central Florida. Think about the different natural and man-made things you might experience if you canoed or hiked along the entire length of the river. Write to explain your experiences on this imaginary journey.
2. Today, many Floridians have built homes along the edges of the St. Johns River. Imagine how the river looked long ago when the Timucua Indians first called it Welaka. Write to explain three ways the river may have been different long ago.
3. Property along the St. Johns River is valued for its natural beauty and for its boat access to deep water. Think about how you would respond if two organizations wanted to purchase your parents' undeveloped waterfront property — one to build a housing community, and the other to create a wild bird sanctuary. Write to persuade your parents to sell to the organization of your choice.
4. St. Johns River Clean-Ups are opportunities for kids and adults to improve their environment. Think about how you would respond if teachers at your school offered extra credit for participating in a St. Johns River Clean-Up. Write to persuade your school principal that this is a good idea OR a bad idea.

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## FCAT-Friendly Math Exercises

*Table: St. Johns River Hydrology Data  
Monthly Averages for 2002 and 2003*

Date of Sample	Water Level feet above sea level	Volume of Water Flow cubic feet/second
Jan 2002	2.02	902
Feb 2002	1.31	794
Mar 2002	1.69	885
Apr 2002	0.79	290
May 2002	0.48	93
Jun 2002	1.67	748
Jul 2002	6.1	4587
Aug 2002	7.94	6433
Sep 2002	7.94	6433
Oct 2002	5.13	2344
Nov 2002	2.73	1086
Dec 2002	3.7	2392
Jan 2003	6.25	4304
Feb 2003	3.7	1751
Mar 2003	3.46	1302
Apr 2003	2.89	1117
May 2003	1.26	498
Jun 2003	1.37	851
Jul 2003	2.25	1214
Aug 2003	5.82	4864
Sep 2003	5.98	4176
Oct 2003	5.48	3575
Nov 2003	3.73	1996
Dec 2003	1.94	856

- This table shows that water levels fluctuate throughout the year, perhaps due to seasonal changes in rainfall. What is the difference between the 2002 high and 2002 low water level values?
  - 4.72
  - 7.46
  - 6184.77
  - 6340.88

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2. The table records the volume of flowing water in cubic feet per second. In October 2002, what was the St. Johns River's volume of water flow in cubic METERS per second? (1 cubic meter = approximately 35.31 cubic feet) Hint: 1 cubic meter is equivalent to 264 gallons.
  - a. 66.38 cubic meters per second
  - b. 100.67 cubic meters per second
  - c. 82,766.64 cubic meters per second
  - d. 126,233.25 cubic meters per second
  
3. Which of the following represents the value for the volume of flow in August 2003?
  - a.  $4.864 \times 10^2$
  - b.  $4.864 \times 10^3$
  - c.  $6.433 \times 10^1$
  - d.  $6.433 \times 10^2$
  
4. Based on the information in the table, which year had the higher average water levels? Be sure to show your work. Use the back of a piece of graph paper.
  
5. On the graph side of your paper, use the information in the table to create a line graph comparing the flow volumes during 2002 and 2003. Be sure to title your graph, label your axes, and use appropriate scales.
  
6. On the lines below, write a statement describing a trend you notice in the graph. Explain how a reader's interpretation of annual flow volume might be different if only one year's data had been included on the graph.

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