

Teacher Worksheet

You are a water quality engineer at the South Florida Water Management District. You are in charge of Storm Treatment Area 2 (STA-2), and you want to make sure it is operating as expected. You have received an Excel file with data readings from the station from Cell 3 – one of the largest cells in STA-2. Graph the data in the table to answer the questions below.

Tp In = Total Phosphorus reading into Cell 3 in parts per billion (ppb)

Tp Out = Total Phosphorus reading out of the cell, in parts per billion (ppb)

Flow = amount of water that flows through the cell in cfs (cubic feet per second)

Questions:

1. What months have the highest level of water flow into Cell 3?

August and September have the highest water flow.

2. What months have the highest Tp In readings?

August and September have the highest Tp readings.

3. Look at the precipitation data for 2012 in the Excel spreadsheet. What two months have the highest precipitation rate?

September has the highest followed by August and June.

4. Do you see a connection between precipitation, water flowing into the cell and phosphorus? Explain your answer.

Students should notice that when precipitation increases, there are more release events into the cell causing greater flow into Cell 3. The rain and flow through the areas north of Cell 3 causes the release of phosphorus. Therefore, the inflow of phosphorus increases after large amounts of precipitation.

5. What is the range (low to high) of phosphorus at the outflow of Cell 3? What is the average? (Hint: you can calculate this in Excel.)

The range is 9-40ppb and the average is 18ppb.

6. The South Florida Water Management District's goal is to achieve <10ppb of Total Phosphorus for water before it enters the Everglades. How close are your results to the target?

Students should notice that the outflow readings are very close to the desired amount even in times when incredibly large amounts of phosphorus are entering the cell.