

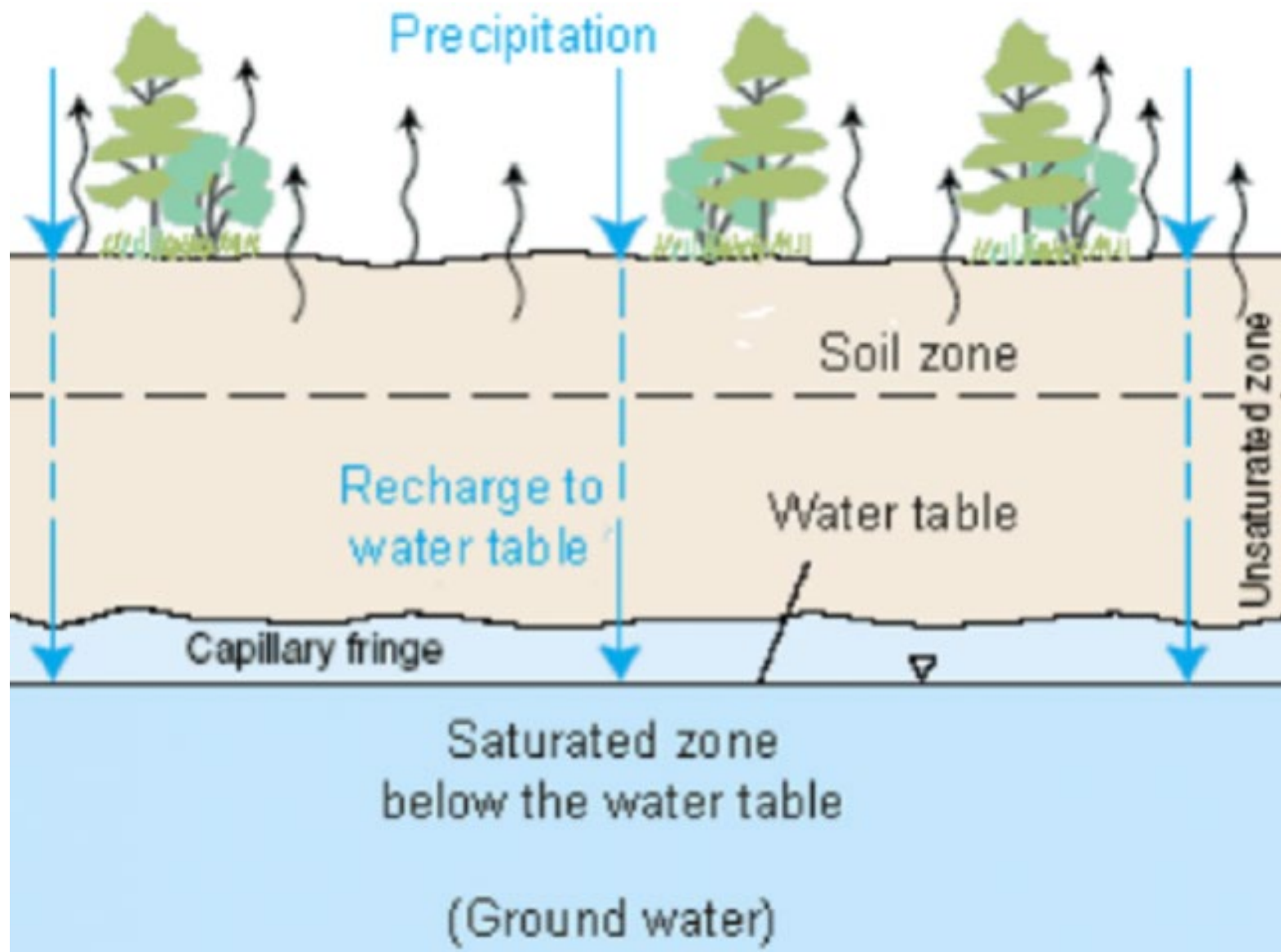
At an Eco-Station, be ready for questions such as:

- What is a watershed and how have (or could) people affect the water quality/habitat?
- How does the water fit into the eco-system at the station?
 - What does the topography tell you?
 - What may influence the flow of the water?
- Interpret water quality data (macroinvertebrates)
- What aquatic species might be found in a local aquatic habitat?

A Watershed..

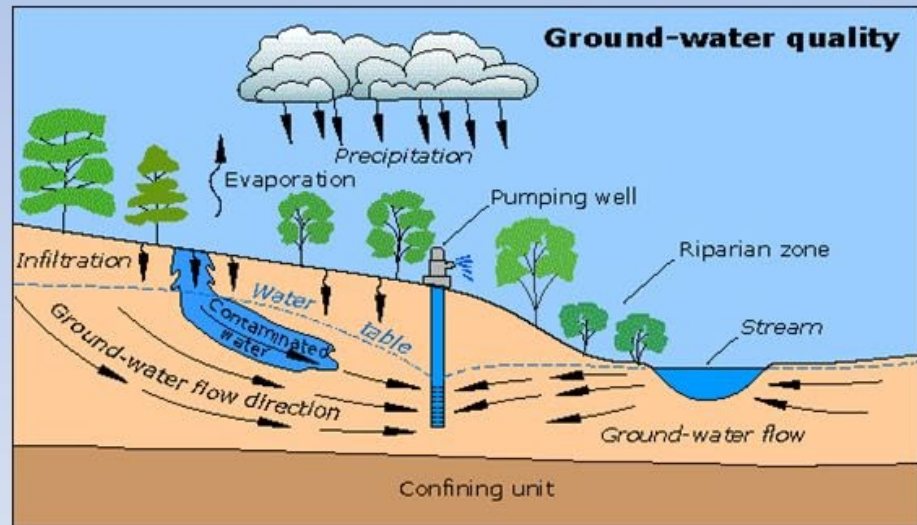
is an area of land that all surrounding water drains into.





Groundwater Movement

- Groundwater moves from areas of high pressure to areas of low pressure
- Groundwater can flow into
 - Oceans
 - Rivers (gaining streams)
 - Wetlands
 - Lakes





Piedmont Drainage

1. Naamans Creek
2. Shellpot Creek
3. Brandywine Creek
4. Red Clay Creek
5. White Clay Creek
6. Christina River

Delaware Bay Drainage

7. Delaware River
8. Army Creek
9. Red Lion Creek
10. Dragon Run Creek
11. C & D Canal East
12. Appoquinimink River
13. Blackbird Creek
14. Delaware Bay
15. Smyrna River
16. Leipsic River
17. Little Creek
18. St. Jones River
19. Murderkill River
20. Mispillion River
21. Cedar Creek
22. Broadkill River

Chesapeake Bay Drainage

23. Elk Creek
24. Perch Creek
25. C & D Canal West
26. Bohemia Creek
27. Sassafras River
28. Chester River
29. Choptank River
30. Marshyhope Creek
31. Nanticoke River
32. Gum Branch
33. Gravelly Branch
34. Deep Creek
35. Broad Creek
36. Wicomico
37. Pocomoke River

Inland Bays/Atlantic Ocean

38. Lewes-Rehoboth Canal
39. Rehoboth Bay
40. Indian River
41. Iron Branch
42. Indian River Bay
43. Buntings Branch
44. Assawoman
45. Little Assawoman

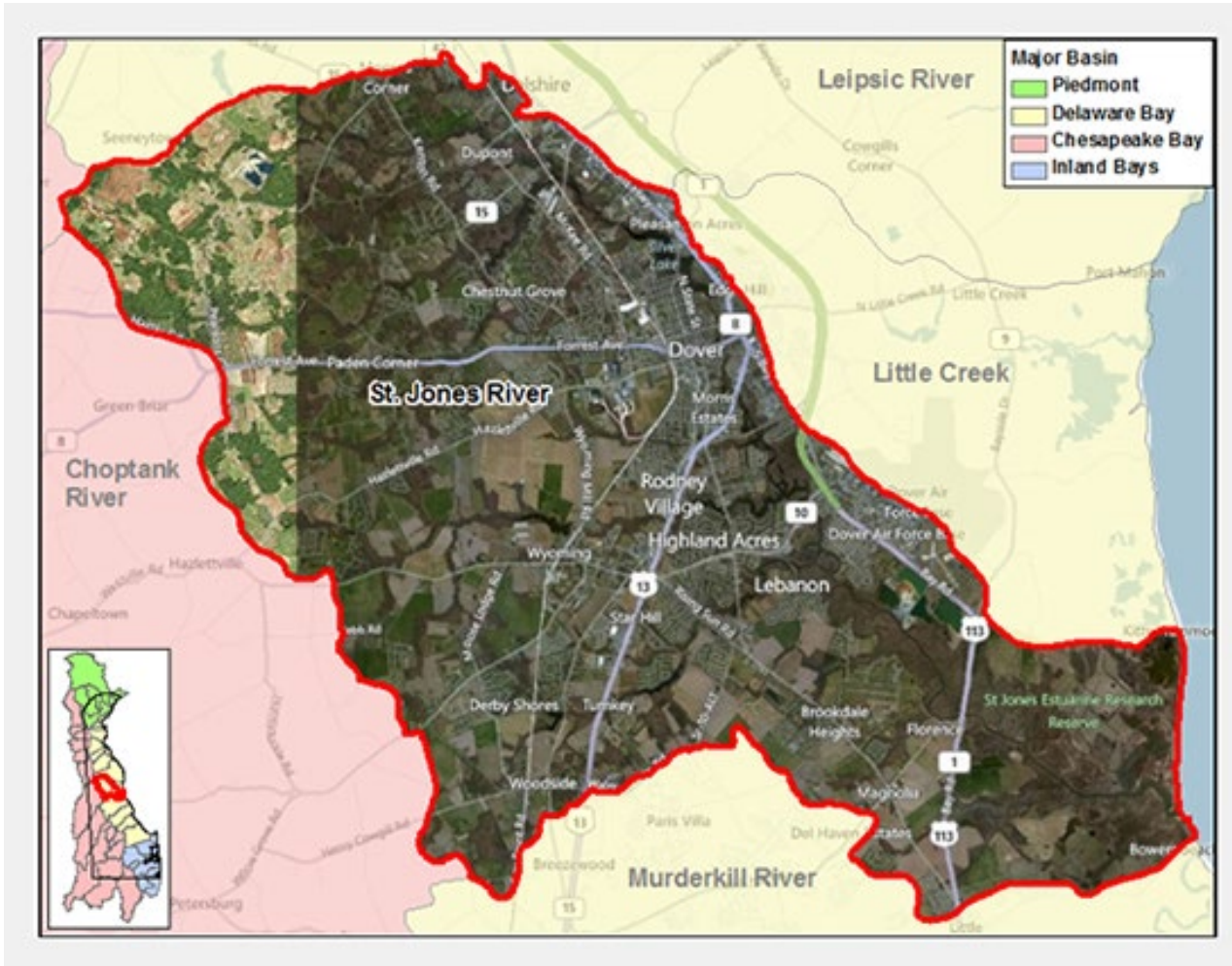
Each watershed has unique water quality concerns based upon its land use

[Click here for more information specific to Delaware watersheds](#)

Two main categories of Pollution

- Point Source Pollution
 - Comes from a single source
 - Factories (pipe), sewage treatment plant, etc.
- Nonpoint Source Pollution
 - Comes from a variety of sources hard to trace back to source
 - Agriculture, lawns, etc.



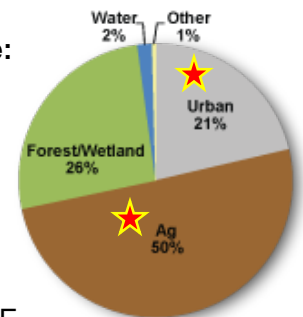


Size: 90 square miles

Population: 68323

Source: U.S. Census

Land Use:



States: DE

Counties: DE: Kent

[Click here for specific information on the St. Jones Watershed](#)

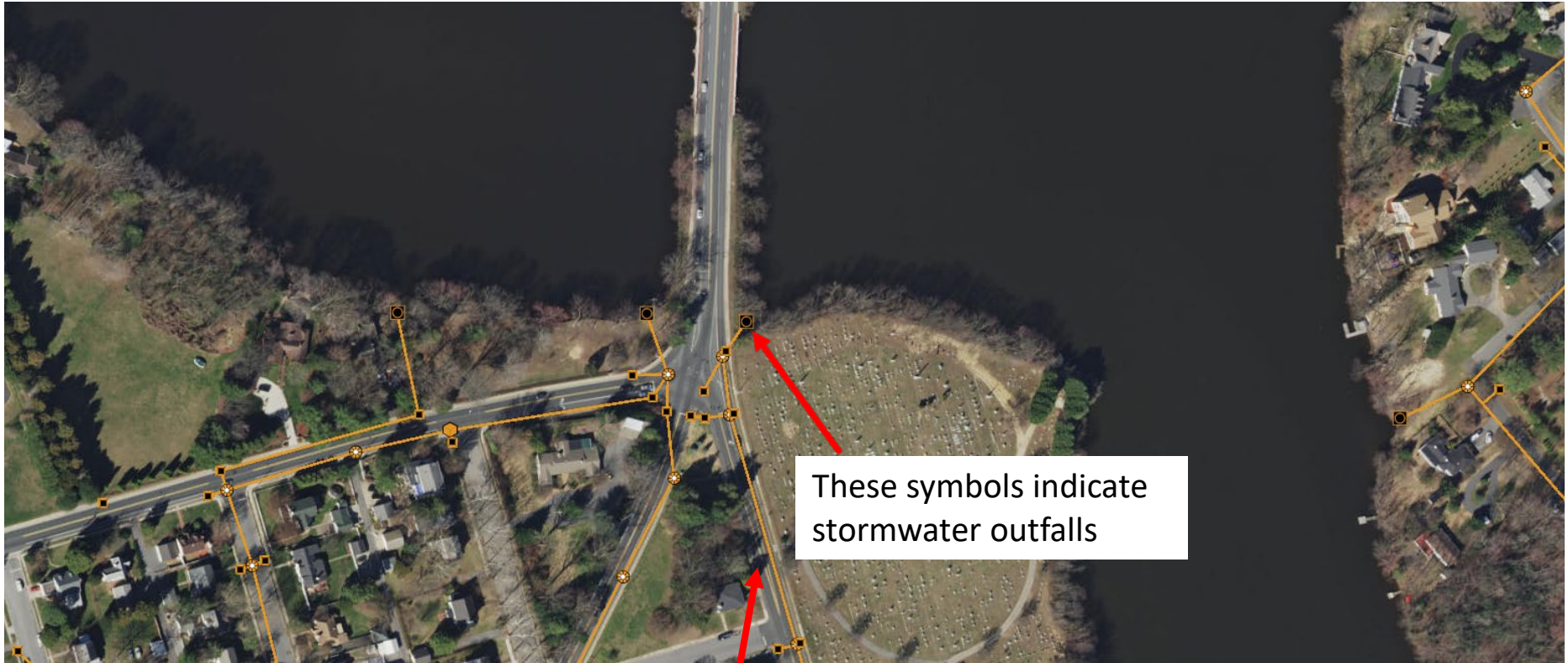




Examples of Agricultural Best Management Practices (BMP)

- 1) Shade (reduces temps, increases dissolved oxygen)
- 2) Roots (prevent erosion)
- 3) Trees (habitat)
- 4) Reduce flooding
- 5) Reduce pollution

[Click here for more information on agriculture BMPs](#)

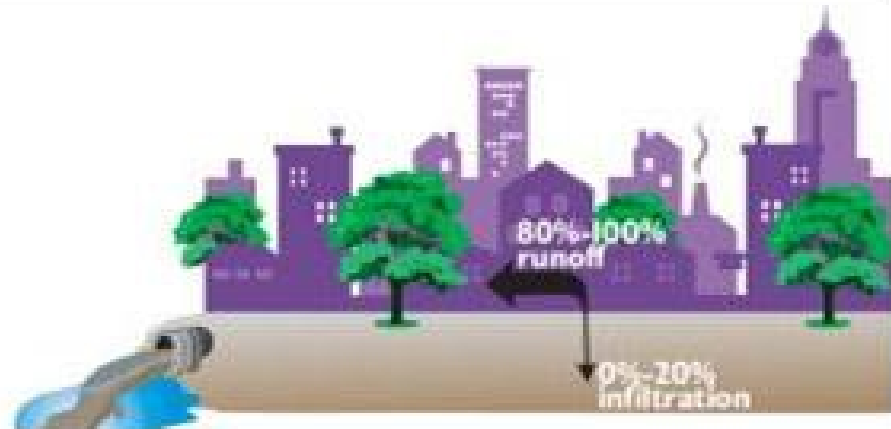
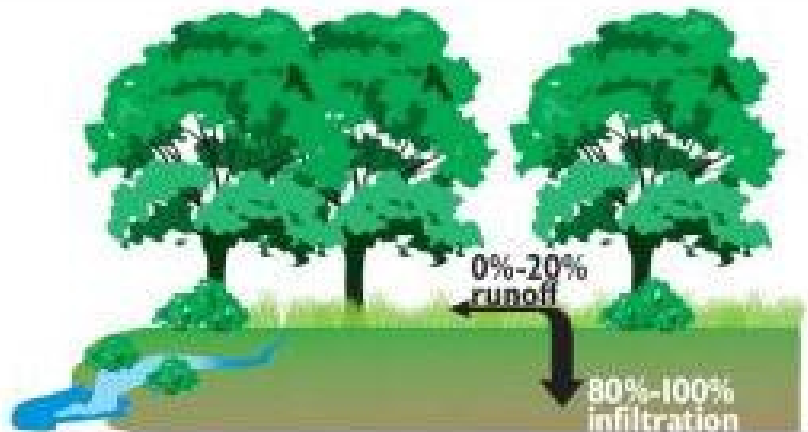


These symbols indicate stormwater outfalls

Orange lines are storm sewers



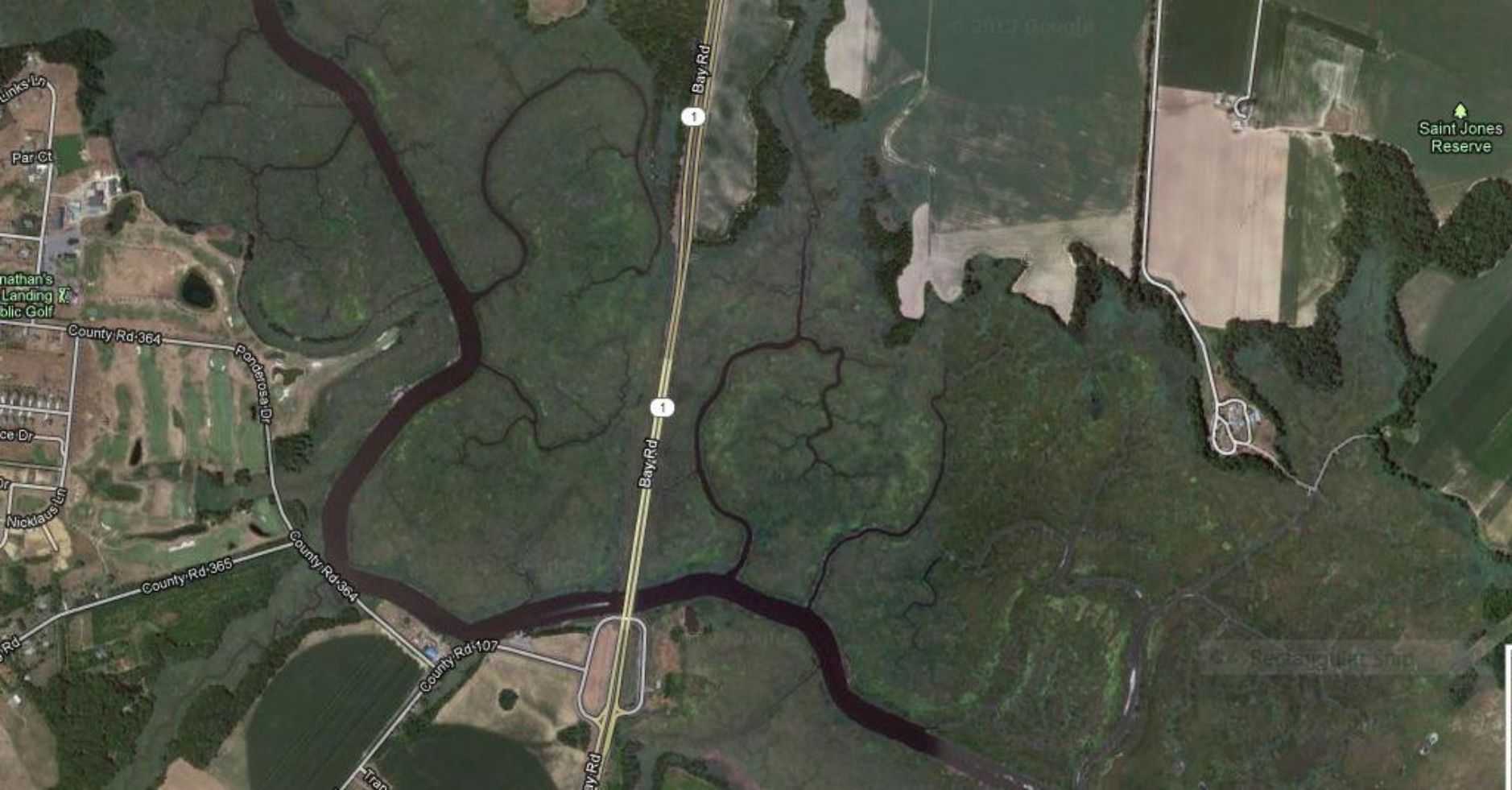






**Example of stream erosion and habitat degradation
due to excess stormwater**





How does land use impact water quality? Consider development, agriculture, roads etc.

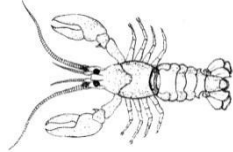


How to determine if a stream/river is polluted?

- Chemistry
 - pH
 - Dissolved Oxygen
 - Nitrate/phosphate
 - Turbidity
- Macroinvertebrates
 - Which indicate clean or poor water quality
- Bacteria

Which Stream Is Healthier?

Stream A



All photographs taken by David H. Funk, Stroud Water Research Center

Stream B



All photographs taken by David H. Funk, Stroud Water Research Center

Envirothon Aquatics –Watersheds Resources

Sample Tests, Exercises, and Training Resources:

- <http://www.delawareenvirothon.org/aquatic.html>
- [Freshwater Ecosystems and Their Communities \(October 2009\)](#)
- [Water Quality Interpretation Guide](#)