Creek Clues

Use multiple sources to investigate water pollution and its possible effects.

ENV.2.5 "Research various resources related to water quality and pollution (e.g., nonfictional text, EPA's Surf Your Watershed, MDEQ publications) and communicate the possible effects on the environment and human health."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the sources named in the passage, circle the possible effects on people and wildlife, and number any statements that warn against drawing a conclusion too quickly.

What Can a Creek Tell Us?

1. After a summer storm, a creek beside a neighborhood turns cloudy. Cloudy water alone does not prove it is unsafe, so a student researcher checks more than one source. An EPA watershed profile can identify streams and reported water-quality concerns across a drainage area. A Mississippi Department of Environmental Quality (MDEQ) monitoring report can give local results and explain whether a stream meets standards for its designated uses. A USGS explanation of runoff helps connect rain to what enters a stream. These sources do different jobs: they locate a concern, supply measurements, and explain a possible pathway.

2. Suppose a local monitoring report finds high levels of E. coli bacteria after storms and notes nearby failing septic systems. E. coli can indicate fecal contamination, but the report cannot prove which system affected a particular sample. Swallowing water contaminated with disease-causing microbes while swimming can cause stomach illness. Waste may also add nutrients that fuel algal growth. When algae die and decompose, oxygen in the water can drop, stressing fish and other aquatic animals. A single high bacteria reading does not show how often these possible effects occur. Researchers would need more samples and information about the waste entering the creek.

3. A state health department fish-consumption advisory might also warn that mercury in fish can harm the developing nervous system of a fetus or young child. Mercury can build up in fish tissue even when the water looks clear. People encounter that risk by eating affected fish, not simply by standing beside the creek. USGS background information can explain how mercury moves through food webs; the advisory gives location-specific guidance about which fish to limit. Researchers should keep these pathways apart: microbes may threaten swimmers, while mercury may threaten people who eat fish. Both pollutants can affect wildlife, but their risks require different evidence.

2 ANSWER WITH EVIDENCE

Use the passage

1. How would an EPA watershed profile and an MDEQ monitoring report help you investigate the cloudy creek in different ways?

2. Trace one possible human-health effect and one possible environmental effect of the waste described in the second paragraph.

3. Why would a fish-consumption advisory be useful when researching mercury, and how is that exposure different from the swimming risk?

4. A report notes failing septic systems near the creek and one high bacteria reading. What claim about the source or frequency of pollution can you not make from that evidence?

3 YOUR TURN

Your own words

After storms, another town's reservoir has fish deaths and a warning against eating its fish. In 4 to 5 sentences, name two source types you would consult, explain what each could reveal, describe one possible environmental effect and one possible human-health effect, and identify a conclusion that needs more evidence.

Creek Clues

PART 1 · READ AND MARK

Underline the sources named in the passage, circle the possible effects on people and wildlife, and number any statements that warn against drawing a conclusion too quickly. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How would an EPA watershed profile and an MDEQ monitoring report help you investigate the cloudy creek in different ways?	**The EPA profile could identify streams and reported concerns in the drainage area. The MDEQ report could provide local measurements and information about whether the creek meets standards for its designated uses.**
2	Trace one possible human-health effect and one possible environmental effect of the waste described in the second paragraph.	**Disease-causing microbes in contaminated swimming water could cause stomach illness if swallowed. Nutrients in waste could fuel algae; decomposition could then lower oxygen and stress aquatic animals.**
3	Why would a fish-consumption advisory be useful when researching mercury, and how is that exposure different from the swimming risk?	**The advisory gives location-specific guidance about which fish to limit. Mercury exposure can occur by eating affected fish, while the swimming risk comes from swallowing water contaminated with disease-causing microbes.**
4	A report notes failing septic systems near the creek and one high bacteria reading. What claim about the source or frequency of pollution can you not make from that evidence?	**You cannot identify which septic system affected the sample or conclude from one reading how often the possible effects occur.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

An MDEQ monitoring report could show whether low oxygen or pollutants were measured after storms. A state health department advisory could identify the contaminant behind the warning and which fish people should limit. Low oxygen might help explain the fish deaths. If mercury is the concern, eating affected fish could harm a fetus's developing nervous system. The warning alone does not show that mercury killed the fish, so I would compare monitoring results before proposing a shared cause.

Accept other evidence-based pathways from the passage. In Part 3, the response should use two distinct source types and treat the cause of the fish deaths as unconfirmed.