
IV-1. General Stream Survey

A general stream survey is a good place to start your field investigation. It will provide some basic information on your stream, such as appearance and smell, that suggest a potential problem. Information on the stream's surroundings (land use) may provide clues to the source of a water quality problem. Other observations, such as weather and time, will help you interpret your water quality data when you return to the classroom and help you compare data collected on different dates.

Filling out the “General Stream Survey Data Sheet”

The following information and directions will help you understand the information requested in the General Stream Survey. NOTE: If you take separate sets of data (e.g., sample once in the morning and once in the afternoon) fill out a different data sheet for each set.

Site and Sampling Date Information

Stream – Name of stream.

Date – Include day, month and year.

Time of day – List the beginning and ending times (e.g., 10:30 am – 1:00 pm).

Watershed – The name of the major watershed in which your stream section is located (e.g. Spring Creek is in the Bear River Watershed).

School/group name – Self explanatory.

Teacher/leader – Self explanatory.

Group members – The name of group members with their monitoring roles in parentheses.

Location of stream section – The “stream section” runs from the furthest upstream sampling station to the furthest downstream sampling station. Be detailed in your description. Document the location as if you were describing it to someone who had never been there before. The following steps will help you determine and document a precise location.

1. Locate and mark your stream section on a 7.5' (1:24,000 scale) topographic map (available at sporting goods stores or from the U.S. Geological Survey on-line at <http://www.water.usgs.gov/>). You may want to include the latitude and longitude or UTM for your location.
2. Write directions to your stream section from a main access point or road. Include the county in which the stream is located.
3. Describe the stream section. Include the furthest upstream and downstream locations. For example, “The stream section begins at the downstream side of the bridge and runs 150 yards downstream to the cottonwood stand.”
4. Include any other significant identifying landmarks or features.

Weather in past 24 hours – Choose all categories that apply to the weather over the past 24 hours. Past weather will affect volume of flow, turbidity, temperature, and other factors in your stream. If a weather event was an unusual one, your results may be unusual, too.

Weather now – Choose the one category that best represents the weather while you sampled.

Air temperature – Use the field thermometer to record the air temperature. Take the temperature in the shade.

Water and Watershed Information

Water appearance

Water appearance is often the most obvious water quality indicator that people notice. However, it is not a precise indicator of stream health and is best considered in combination with other data you will collect. Healthy streams may range from clear to brown. Unhealthy streams are often crystal clear. The following are common stream colors and possible causes.

Brown – Often results from decaying organic matter in the stream. Streams that drain wetlands may be stained a very dark brown.

Clear – Usually associated with healthy waters. However, clear waters may be polluted with colorless substances. Very clear water without any living organisms may indicate a severe pollution problem.

Multi-colored sheen – A heavy sheen may indicate floating oil from dumping or run-off from sewers, roads and parking areas. A light sheen may result from the natural breakdown of vegetation.

Foamy – If foam is fairly thin – less than 6 inches high – and grayish it may be the result of natural oils, soil particles and pollen. Heavy foam (more than 6 inches off the surface of the water) may be the result of detergents or animal waste runoff.

Milky – This color may indicate pulp or paper manufacturing discharge, a dairy operation or natural sediments.

Scummy – May result from floating algae or decaying plant material.

Muddy / Cloudy – May result from high amounts of sediment and indicate erosion upstream. Consider stream type and location, amount of sediment, recent storms, or seasonal events such as snowmelt.

Orange / Red – May indicate runoff from mines or oil wells; may result naturally from drainage through soils rich in iron or tannins.

Green – Slightly greenish water results from the presence of microscopic plants or algae and usually indicates healthy conditions. Deep green, or pea soup color, often results from an overabundance of algae (phytoplankton). Heavy nutrient loads from fertilizers (agriculture, golf courses, lawns), animal waste (feeding operations) and poor sewage treatment often promote heavy amounts of algae.

Other – What other colors do you see? Be specific.

Smell

Smell is another useful, but limited, tool that should be considered in combination with other indicators. Below are some common smells that result from both healthy and unhealthy waters.

Rotten egg – A sulphurous smell which often indicates sewage or animal waste pollution. Anaerobic (without oxygen) decomposition processes and minerals delivered from sulphur springs also give off this smell.

Musky – May indicate raw sewage, animal waste or heavy algal accumulation and decomposition.

Chlorine – May result from heavy chlorination of treated sewage.

Other – Smell another odor? Make a note.

Land Use Around the Sampling Site

Land uses around your stream and throughout your watershed can have both positive and negative effects on your water quality.

Factories – Industrial facilities and others may represent a direct, or point-source of pollution. Point source pollution can be sewage, chemicals or heated water.

Pavement – Paved surfaces and roof tops (malls, stores, parking lots) don't allow water to infiltrate into the soils. Pollutants on these surfaces (oil, antifreeze, sediment) often wash directly into streams.

Agriculture – Farm lands have the potential to deliver sediment, nutrients and pesticides to streams. Some irrigation practices in areas such as the Colorado River Basin wash salts from the soil and increase salinity levels in rivers and streams.

Logging – Silvicultural activity (logging) often increases runoff and sediment and nutrient supply to the stream.

Grazing – Overgrazing can potentially deliver organic matter and nitrates to the stream. Excessive grazing of the riparian zone may damage vegetation, causing increased erosion and loss of shading by woody plants.

Homes – Fertilizers and pesticides applied to lawns often find their way into local streams during rain storms. Faulty septic tanks may increase bacteria levels and nutrients in streams. Oil and household chemicals are other common impacts.

Mining – Various forms of mining may lower pH, increase heavy metal concentrations and sediment loads, and decrease streamflows.

Wildlands – Healthy, well-vegetated woodlands and fields stem the flow of nutrients and organic matter to streams.

Waste treatment plants – Plants that treat sewage and other polluted water often release water containing high concentrations of nutrients.

Unpaved roads and trails – Unpaved roads and associated road cuts and trails created by off-road vehicles can be significant sources of sediment to streams.

Stream modifications – This category includes dredging, damming, filling or channelizing through culverts.

General Stream Survey

Site and Sampling Date Information

Stream name _____ Date _____

Time of Day _____ Watershed name _____

School/group name _____ Teacher/leader _____

Group members _____

Location of stream section _____

Weather in past 24 hours:	Weather now:	Air Temperature
storm (heavy rain)	storm (heavy rain)	_____
rain (steady rain)	rain (steady rain)	
showers (intermittent rain)	showers (intermittent rain)	
overcast	overcast	degrees F
clear/sunny	clear/sunny	degrees C

Water and Watershed Information

Water appearance:	Smell:	Land use around site:
clear	rotten egg (sulphurous)	factories
brown	musky	pavement
multi-colored sheen	chlorine	agriculture
foamy	other _____	logging
milky		grazing
scummy		homes
muddy/cloudy		mining
orange/red		wildlands
green		water treatment plant
other _____		stream modifications
		unpaved roads/trails
		other _____

NOTES
