SURFACE WATER QUALITY STEWARDSHIP TOOLBOX
Field Observations

Recording of field observations is a way for samplers to consider potential temporary or long-term influences on water quality (see Table 1 for examples) and collect information needed for data interpretation. All field observations and protocol deviations should be written down in a waterproof field notebook or tablet. Writing must be clear, neat and accurate, consistently formatted (see example field sheet, Figure 1), and site names written clearly and consistently between sample dates. If site photos are taken, photo file names should be included in the field notes. Some projects or sampling methodology may have preprinted standardized field forms to fill in; if so, these would be provided by the project lead. Field notes will become part of the electronic project files. Thus, scans or images of the original field notes will need to be submitted, and field monitoring results transcribed into consistent electronic formats for submission.

Table 1: *Factors that can influence water quality (see https://www.for.gov.bc.ca/hfd/pubs/Docs/tr/TR079.htm Table 1 for a more detailed list of influences)*

Factor	Examples
environmental variation	weather, bank stability changes, seasonal shifts, time of day, in-stream changes (e.g., large woody debris, leaf litter)
Upstream/nearby human activity	farms, roads, industry, transient populations, swimming, ATV trails, dogs and other domestic animals entering watercourse, evidence of groundwater discharge
terrestrial animals	deer, birds, snakes, beavers, bears
aquatic animals	fish, insect larvae (blackflies, caddis flies, dragonflies)
vegetation	trees, riparian area, shrubs, algae
stream substrate	bedrock or shale, pebbles, sand, silt

- **Environmental factors** such as weather and rain accumulation (going back as far as a week), stream slope, or changes in bank stability can be helpful in interpreting sample results.
- **Human activity** can have a wide variety of effects on water quality. Farm activity and pesticides, road runoff, transient populations living near waterbodies, and industrial discharge are all factors that can input pollutants into streams. Noting these activities helps give a complete understanding of potential water quality impacts.
- **Terrestrial animals** can have impacts on water quality such as the introduction of fecal coliforms or disruption of water flow (such as beavers). In addition, their movement across water bodies can also disturb sediment and increase suspended particulates in water.
- **Aquatic animals** can be a source of fecal coliforms in streams or rivers. However, the presence or absence of benthic invertebrates such as insect larvae or crustaceans can be good indicators

of water quality. Fish can also be indicators, though often fish will have higher tolerances to pollutants than insect larvae.

- **Vegetation** is a biological factor that can be used as another indicator. The presence, absence, and health of plants and small shrubs can indicate pollutants. The type and thickness of algae in-stream can be indicative of nutrient inputs.
- **Stream substrate** can be a predictor for potential impacts to streams. For example, substrate size is related to stream power and general position in the watershed. Also, high amounts of fine silt/sand around rocks (embeddedness) can indicate erosion upstream. Some substrates interact with water, so knowing the geological composition of the streambed can help interpret water quality results and potential sources of dissolved materials in the water.

SAMPLE FIELD SHEET
(required information)

Date — General Weather Conditions — Initials of sample group and Samplers

-partly cloudy -no wind   -FFC -SR -MJ

9 August 2011

Time of first measurement (24 hr clock) →

0900 hrs French CK @ Barclay Cres E24302Z   ← Site name and ID number (Ems # provided on site descriptor sheet)
Temp 15.4°C   SpC 106.2 µS/cm
DO 8.66 mg/L   Turbidity 0.7 NTU

0930 hrs French CK @ Winchester Rd E243023
Temp 14.2°C   SpC 86.5 µS/cm   } Measurements (incl. parameter name, result and units)
DO 9.12 mg/L   Turbidity 0.9 NTU
-exposed gravel on opposite bank (~1-3 m)   ← Site specific physical characteristics (esp. changes from last visit)

0945 hrs French Ck @ Grafton Rd E243024
Temp 14.1°C   SpC 70.2 µS/cm
DO 9.34 mg/L   Turbidity 1.4 NTU
-dog playing in creek d/s   ← Details that may affect measurements (record even if reading does not appear affected)

1020 hrs French CK @ Coombs E203025
Temp 17.2°C   SpC 65.2 µS/cm
DO 7.95 mg/L   Turbidity 0.8 NTU
↳ won't settle (~5-9 mg/L)   -clear skies, sunny   ← Changes in general weather conditions
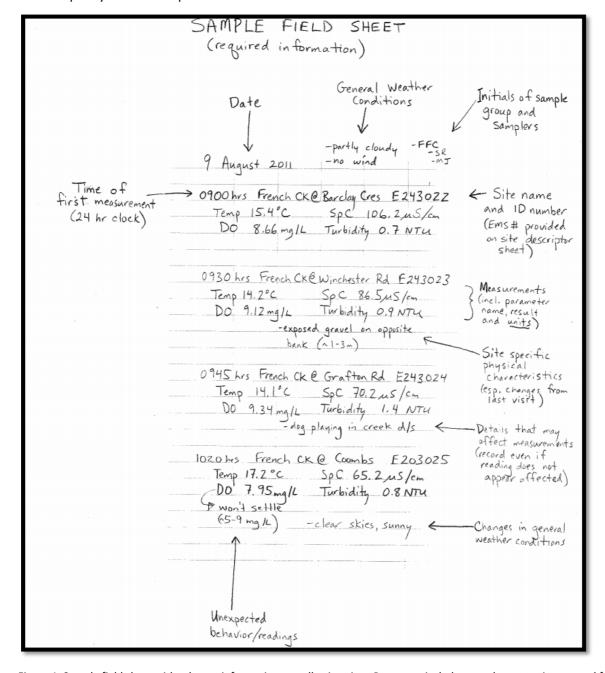
Unexpected behavior/readings

Figure 1. Sample field sheet with relevant information on collection sites. Be sure to include any relevant environmental factors.