

# Field Radar Guidelines Quicksheet (printable)

## Quick Start Guide

You'll need to acquire a small amount of velocity and channel data beyond what a normal field trip demands. Data should be collected at the cross section-of-interest and in the vicinity of the **VELOCITY** radar footprint. Keep in mind that the radar's ability to return a surface-water velocity is influenced by (1) the quality of scatterers or waveforms on the water surface, (2) the air gap or the distance between the bridge deck and the water surface, and (3) the potential noise imposed by wind drift, eddies, secondary flows, and macro turbulence.

- Follow the same principles used to site a conventional streamgage (Site Selection, p. 9; Turnipseed and Sauer, 2010):
  - *Straight channels with parallel streamlines*
  - *Streambed free of large rocks, weeds, obstructions that would create turbulence/slack water*
  - *Sections that are parabolic, trapezoidal, or rectangular*
  - *Avoid variable flow conditions downstream of piers or channel obstructions (please note it is important they we target surface scatterers to achieve sufficient radar returns, but highly turbulent conditions should be avoided)*
  - *Velocities greater than .5 to 1 feet per second (fps) and depths greater than 0.5 feet (ft)*
  - *Avoid sections influenced by tributaries or contributing drainage*
- Collect the following streamflow and channel data at the cross section-of-interest:
  - *Station number and measurement number*
  - *Date of measurement*
  - *Width*
  - *Area*
  - *Mean-channel velocity*
  - *Gage height*
  - *Discharge*
  - *Lat/long of the starting and ending edge of water*
  - *Lat/long of the vertical (termed the "y-axis") where the maximum in-stream or maximum surface-water velocity is measured*
  - *At the y-axis, record the surface-water velocity and point velocities near the water surface, close to the channel bottom, 0.2D, 0.3D, 0.4D, 0.5D, 0.6D, 0.7D, 0.8D, 0.9D using a current meter, FlowTracker, or Stationary Moving Bed Analysis with an ADCP*
  - *Confirm the location of the y-axis by repeating this procedure to the left and right of the y-axis*
  - *Water depth at the y-axis*
  - *Wind speed and direction*
- To estimate the stationing of the y-axis, rely on the location of the maximum-surface water velocity; it generally coincides at the same vertical as the maximum-instream velocity
- Develop a stage-area rating using AreaComp (<https://hydroacoustics.usgs.gov/indexvelocity/AreaComp.shtml>)
- Generally, data collection and radar deployments point should be upstream of bridges or structures to avoid eddies, secondary flows, and macro turbulence.
- Velocity radars can be deployed by hand or fixed on bridges, light cableways, or cable stays



## Related articles

- [Guidelines for Siting and Operating Surface-water Velocity Radars](#)
- [Field Radar Guidelines Quicksheet \(printable\)](#)