

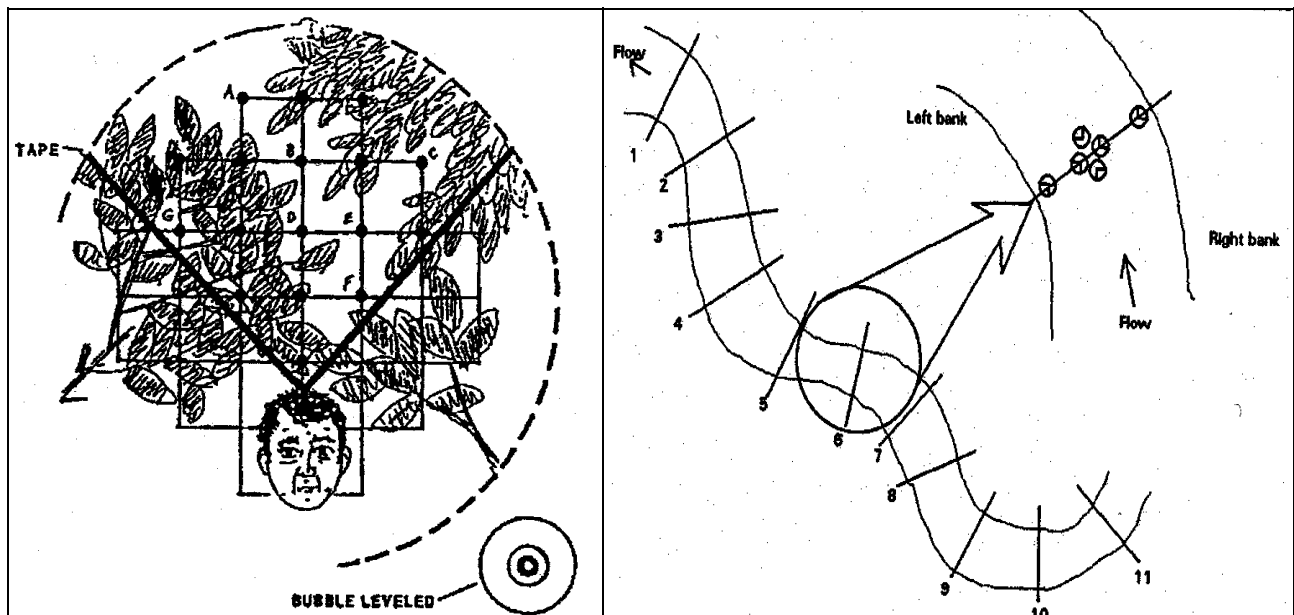
**Figure 6-3.** Reach layout for physical habitat measurements.

### 1.1.1.1 Percent Canopy Cover

The amount of riparian vegetation intercepting solar radiation may be quantified as the average percent canopy density. Average percent canopy density is used for SSTEMP Total Maximum Daily Load (TMDL) stream temperature modeling when a temperature impairment is determined through the use of seasonal thermograph deployments.

Canopy cover over the stream is determined at each of the 5 cross-section transects (Transects A – E). A concave, spherical densiometer is used (Lemmon 1957). Mark the densiometer with a permanent marker or tape exactly as shown in **Figure 6-7** to limit the number of square grid intersections to 17. Densiometer readings can range from 0 (no canopy cover) to 17 (maximum canopy cover). Six measurements are obtained at each cross-section transect (four measurements in each of the four directions at mid-channel and one at each bank).

The procedure for obtaining canopy cover data is presented in **Table 6-7**. Densiometer measurements are taken at 0.3 m (1 ft) above the water surface, rather than at waist level, to (1) avoid errors because people differ in height; (2) avoid errors from standing in water of varying depths; and (3) include low overhanging vegetation more consistently in the estimates of cover. Hold the densiometer level (using the bubble level) 1 foot above the water surface with your face reflected just below the apex of the taped “V”, as shown in **Figure 6-7**. Concentrate on the 17 points of grid intersection on the densiometer that lie within the taped “V”. If the reflection of a tree, branch, or leaf overlies any of the intersection points, that particular intersection point is counted as having cover. For each of the six measurement points, record the number of intersection points (0 to 17) that have vegetation covering them in the appropriate section of the **Percent Canopy Cover Field Form**. To convert the measurements to percent canopy cover, the readings are summed and divided by the total possible points (Fitzpatrick, et al. 1998).



**Figure 6-7.** Proper use of densiometer and measurement locations within each transect (Mulvey et. al. 1992).

---

**Table 6-7. Procedure for Canopy Cover Measurements**

---

1. At each cross-section transect (Transects A – E), stand in the stream at mid-channel and face upstream.
  2. Hold the densiometer 0.3 m (1 ft) above the surface of the stream. Level the densiometer using the bubble level. Move the densiometer in front of you so your face is just below the apex of the taped “V”.
  3. Count the number of grid intersection points within the “V” that are covered by either a tree, a leaf, or a branch. Record the value (0 to 17) in the *CENUP* field of the canopy cover measurement section of the **Percent Canopy Cover Field Form**.
  4. Face toward the left bank (left as you face downstream). Repeat Steps 2 and 3, recording the value in the *CENL* field of the field data form.
  5. Repeat Steps 2 and 3 facing downstream, and again while facing the right bank (right as you look downstream). Record the values in the *CENDWN* and *CENR* fields of the field data form.
  6. Move to the water’s edge (either the left or right bank). Repeat steps 2 and 3 again, this time facing the bank. Record the value in the *LEW* or *REW* field of the field data form. Move to the opposite bank and repeat.
  7. Repeat Steps 1 through 6 at each regular cross-section transect (Transects A – E) including any additional side channel transects established when islands are present.
-

**\*\*\*TEMPERATURE Assessments\*\*\***

# Percent Canopy Cover Field Form

Station Name or ID: \_\_\_\_\_

Date (MM/DD/YYYY): \_\_\_\_\_

GPS Coordinates (middle of reach): Lat/Long: \_\_\_\_\_

Field Crew: \_\_\_\_\_

NOTES: \_\_\_\_\_

<i>Transect --&gt;&gt;</i>	A	B	C	D	E
LEW – Facing Left Bank					
GenUp – center looking u/s					
GenL – center looking at LEW					
GenDwn – center looking d/s					
GenR – center looking at REW					
REW – Facing Right Bank					
<b>TRANSECT TOTAL</b>					

Average % Canopy Cover for reach  
 = SUM of all transect totals / total number of transects =

