

GHG Verification Standard Sampling Plan

As Greenhouse Gas (GHG) Forestry verification professionals, Forester's Co-Op (FCO) has developed a "Standard Sampling Plan" for use in the Verification of forestry projects meeting the requirements of one of the three Registries; The California Climate Action Registry (CCAR), The Climate Registry (TCR), and/or the Voluntary Carbon Standard Registry. This "Standard" sampling plan format is designed to be used as a starting point for further refinement depending on the project type, scale and objectives. Prior to commencement FCO will tailor a project specific sampling plan required to meet the rigor of the appropriate forestry project protocol for GHG offset registration. Before to implementing field measurements FCO will complete a "pre-sample" of the selected forestry sampling plan to determine if adjustments are warranted. FCO will submit a completed forestry inventory GHG projects to the appropriate Registry (CCAR, TCR, or VCS) as desired by project proponent for third review and validation. FCO forestry protocols will be site specific to the project and follow all verification and statistical standards as outlined in specified Registry. The following is an example of our "Standard" GHG forestry project Sampling Plan.

Variable Plot – Monument with metal stakes and white flagging

(B1) BAF (33.61 Factor)

1. Measure first "in" merchantable tree greater than 10 in. dbh. Start cardinal North, and swing the plot clockwise.
 1. Species
 2. Age Class (1, 2, 3) "3 being the oldest"
 3. DBH (nearest tenth)
 4. Merchantable Height and Log Lengths (8 inch top) and **Total Height**
 5. Form Factor (Outside Bark at 16' from Stump)
 6. Every plot take Incremental Growth (Past 10 and 20 Years)
 - a. Note if tree is growing, slowing, or stagnant
 - b. Note whether tree is intermediate, co-dom, or dom
 - c. No suppressed trees for growth data – take sample of tree within plot if measure tree is suppressed.
2. Tally remaining "in" merchantable conifer trees greater than 10 in. dbh
 1. Species
 2. Age Class (1, 2, 3) "3 being the oldest"
 3. Estimated DBH
 4. Estimated Merchantable Height and Log Lengths (8 inch top) and **Total Height**
3. Between Every other plot take one site tree, representative of the stand potential.

Site Trees should have the following measurements:

 1. Species
 2. Total Age (Note increment growth for past 15 years and average over the last 30 years) see above
 3. DBH (nearest tenth)
 4. Total Tree Height
 5. Form Factor (Outside Bark at 16' from Stump)

(B2) BAF (20 Factor)

1. Tally all "in" hardwood trees and snags
 1. Species
 2. Count: 12-18 inches dbh
 3. Count: > 18 inches dbh (note if snag is "hard" – long lasting)

(D1)- Downed Woody Surface Fuel Transect

Brown's downed woody surface fuel transect is used to assess the fuel loading at a plot. The transect protocol was taken from Handbook for Inventorying Downed Woody Material, by J.K. Brown. From plot center, a standard azimuth of 150° is established as the transect line. Linear transect sampling begins 5 feet from plot center and ends at 52.6 feet from the plot center along the established azimuth. Downed woody surface fuels of varying diameters intersecting the transect line will be tallied at different length intervals. Table 1 shows which diameter fuels will be tallied at which length intervals:

Table 1

Twig type	Fuel Diameter (inches)	Length interval (ft)
Twig 1	0-.24	5-10
Twig 2	.25-.99	5-10
Twig 3	1.0-2.99	5-15
Downed Fuel	>3.00	5-52.6

Tally Rules for the Downed Fuel Inventory

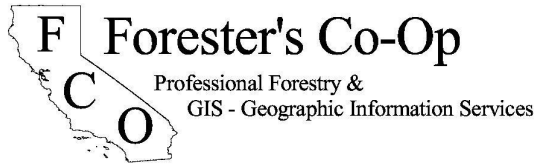
- Particles qualifying for tally include downed, dead woody material (twigs, stems, branches, and bolewood) from trees and shrubs. Dead branches attached to boles of standing trees are omitted because they are not downed vegetation. Consider a particle "downed" if it has fallen to the ground, or is severed from its original source of growth. Cones, bark flakes, needles, leaves, grass, and forbs are not counted. Dead woody stems and branches still attached to standing brush and trees are not counted.
- Twigs or branches lying in the litter layer and above are counted. However, they are not counted when the intersection between the central axis of the particle and the sampling plane lies in the duff (forest floor below the litter).
- If the sampling plane intersects the end of a piece, tally only if the central axis is crossed. If the plane exactly intersects the central axis, tally every other such piece.
- Don't tally any particle having a central axis that coincides perfectly with the sampling plane.
- If the sampling plane intersects a curved piece more than once, tally each intersection.

For all downed woody fuel that is 3" in diameter or greater, the following information is also collected:

- Diameter of fuel at crossing of transect to the nearest 1/10th inch.
- Diameter of fuel at the small end to the closest 1/10th inch.
- Diameter of fuel at large end to the nearest 1/10th inch.
- Length of fuel to the closest 1/10th inch.
- Decay class of fuel (see Table_2)

Table 2

Code	Bark	Twigs	Texture	Shape	Wood Color	Portion of log on ground
1	Intact	Present	Intact	Round	Original	None, elevated on supporting points
2	Intact	Absent	Intact to soft	Round	Original	Parts touch, still elevated, sagging slightly
3	Trace	Absent	Hard large pieces	Round	Original to faded	Bole on ground
4	Absent	Absent	Soft blocky pieces	Round to oval	Light brown to faded brown	Partially below ground
5	Absent	Absent	Soft, powdery	Oval	Faded light yellow or	Mostly below ground



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