USU LUMINESCENCE LABORATORY
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HOW TO TAKE A SAMPLE FOR LUMINESCENCE DATING

Items to bring:

1. opaque metal conduit (DO NOT USE PVC) purchased and cut at hardware store, 1.5” x 8” ideally, may need end filed to sharpen
2. hammer to pound tube into outcrop
3. quart ziplock bags to collect dose-rate samples
4. film container (or other airtight) to collect for water content
5. duct tape to cap sample tube
6. good luxuries = pounding caps (pipe ends), styrofoam insulation plug in tube to prevent mixing of sediment, plastic caps (Giddings core-end caps), packing tape

Step 1: position

Target fine-medium sand with original sedimentary structures, avoiding bioturbation and soils. If possible, sample a thick unit, or at a point with relatively uniform sediment within a foot radius. Also best if sample is more than 1 m below the landform top to minimize cosmogenic dose errors.

Place sharpened end of tube, with styrofoam plug, at target point. Align tube at angle desired. Place pounding cap over other end, using a round of duct tape to hold it on during pounding.

Step 2: hammer

Pound sample tube into outcrop until you feel and hear change indicating tube is full, or until tube is at least flush with the outcrop face. Tube must be full and packed tightly to avoid mixing during transport.

Step 3: moisture

Sample horizon for moisture content using an air-tight container, such as a film canister. Fill completely. Note evidence for ground or vadose water and describe expected water content history of the sampled deposit.

Step 4: doserate

Sample for the environmental doserate into a 1-quart ziplock freezer bag. Representatively capture sediment from ~1 foot radius surrounding the sample, being particularly complete nearer the tube. This effort also provides headway towards digging out the sample tube from cohesive sediment. Fill bag half full or more.

Step 5: extract tube

At some point before the tube falls out of its own accord, stop excavating around it and gently turn tube to loosen and extract. With open end of tube carefully pointed up, pack any extra space with more sediment, tamping it down lightly. Material at the ends of the sampling tubes is discarded in the lab. If greater than 1 cm needs to be added, lay a strip of duct tape in to mark beginning of sample before filling and tamping, record this on sample sheet and notes.

Step 6: cap and tape

Place cap on end and tape both vertically and horzontally with at least two layers of duct tape. Turn tube over, remove pounding cap, fill and tamp if necessary, cap and tape again.

Step 7: label

Mark tube, moisture sample, and doserate bag with sharpie. Give samples individual labels, relatively simple in scheme, that relate to your specific project.

Step 8: tape

Consider putting clear packaging tape over tube and baggie labels to protect marker from wearing off and becoming indecipherable.

Step 9: package

Also consider throwing the tube, moisture, and dose rate sample components into a separate large ziplock baggie for orderly transport.

Step 10: measurements

Stratigraphic context is important, of course. Depth of burial below the landform surface is needed to calculate cosmic doserate. If there has been recent erosion or excavation, estimate the original depth. If the sample was collected from a deposit indicating incremental accumulation and burial, make notes of the depth and significance of buried soils-surfaces.

Record the latitude, longitude, and elevation of the sample, also for calculation of the cosmic doserate.

Finally, record any other sedimentological observations of possible interest.