

Sonic Core NAPL FLUTE Procedure

The NAPL FLUTE system was first developed for installing color reactive liners in holes formed by cone penetrometers or Geoprobe type push rod methods. However, the utility of the color reactive cover developed by FLUTE has been extended to installations via the FLUTE everting liner system for stable holes (e.g., core holes in rock) and to mapping of NAPLs and DNAPLs in core obtained via sonic drilling methods. This procedure is for the use of the NAPL FLUTE cover to map NAPLs in sonic drilling core.

The NAPL FLUTE cover is the dye striped hydrophobic tubular covering shown in the first photo on the reel. The cover is pulled from the reel for a length 2 ft. longer than the core to be mapped (typically 5+2 ft.) and cut to that length. If the stripes are on the outside, the cover must be inverted (turned inside out) so that the stripes are on the inside. A knot is then tied near the end of the NAPL FLUTE cover. The NAPL FLUTE cover is now ready to be slipped up over the sonic core barrel which contains the core.

The second photo shows the cover being slipped up over the core barrel. The normal tubular plastic cover used for containing the core is then knotted at the end and slipped up over the NAPL FLUTE cover on the core barrel.

The third photos shows the core being extruded by vibrating the core barrel. The core extrudes into the bag formed by the concentric coverings. Once the core has been fully extruded, the open end of the coverings is knotted to contain the core and any fluids entrained in the core. The packaged core is then laid on a tarp or other horizontal surface to allow the fluid in the core to drain (filled core bags shown in the first photo).

If the core contains any DNAPLs, the DNAPLs can sink to the bottom of the core bag as it lies on its side. The DNAPLs are wicked into the hydrophobic NAPL FLUTE cover carrying the dye to the outer (white) side of the covering for observation through the clear plastic outer covering.

The core bag should be labeled as appropriate for the core interval and hole designation. If the core needs to be examined, the bag can be slit for examination or collection of core samples. A PID can be pushed through the plastic and NAPL FLUTE covering via a small slit in the coverings for a gas survey.

The relatively air-tight plastic covering will prevent the immediate evaporation of the more volatile liquids contained in the core. In that way, any solvents, or the like, can be better mapped by the staining process of the NAPL FLUTE system.

If any DNAPL contacts the covering, it will produce a highly visible stain. If no stains are produced, it does not prove that the core does not contain any DNAPL. It only proves

that the DNAPL did not contact the covering. The core bag might be rolled about to better expose the pore fluids to the cover material.

Examples of stains of the covering are shown in the last photos. These photos are of NAPL FLUTE covers installed via push rods or into open core holes.

It is also possible that the coring procedure does not recover the DNAPL/NAPL. The in situ technique of the installation of the NAPL FLUTE system into the ground does allow an in situ assessment. The NAPL FLUTE covering on the exterior of a liner dilated in the hole is commonly installed via pushrods and also, recently, via the interior of a sonic casing using the same technique as for the push rod installation. That procedure is described at the FLUTE web site www.flute.com. For more information on this procedure, prices, references, or the other FLUTE flexible liner methods, call 888-333-2433.



NAPL cover on reel and inverted with knot in end.



Sliding the NAPL FLUTE cover over the core barrel



sliding the plastic cover over the NAPL FLUTE cover



Core extruding into bag sliding off the core barrel



Bleeding fracture stains from core hole



Globules produce spots on the covering in a Geoprobe hole.