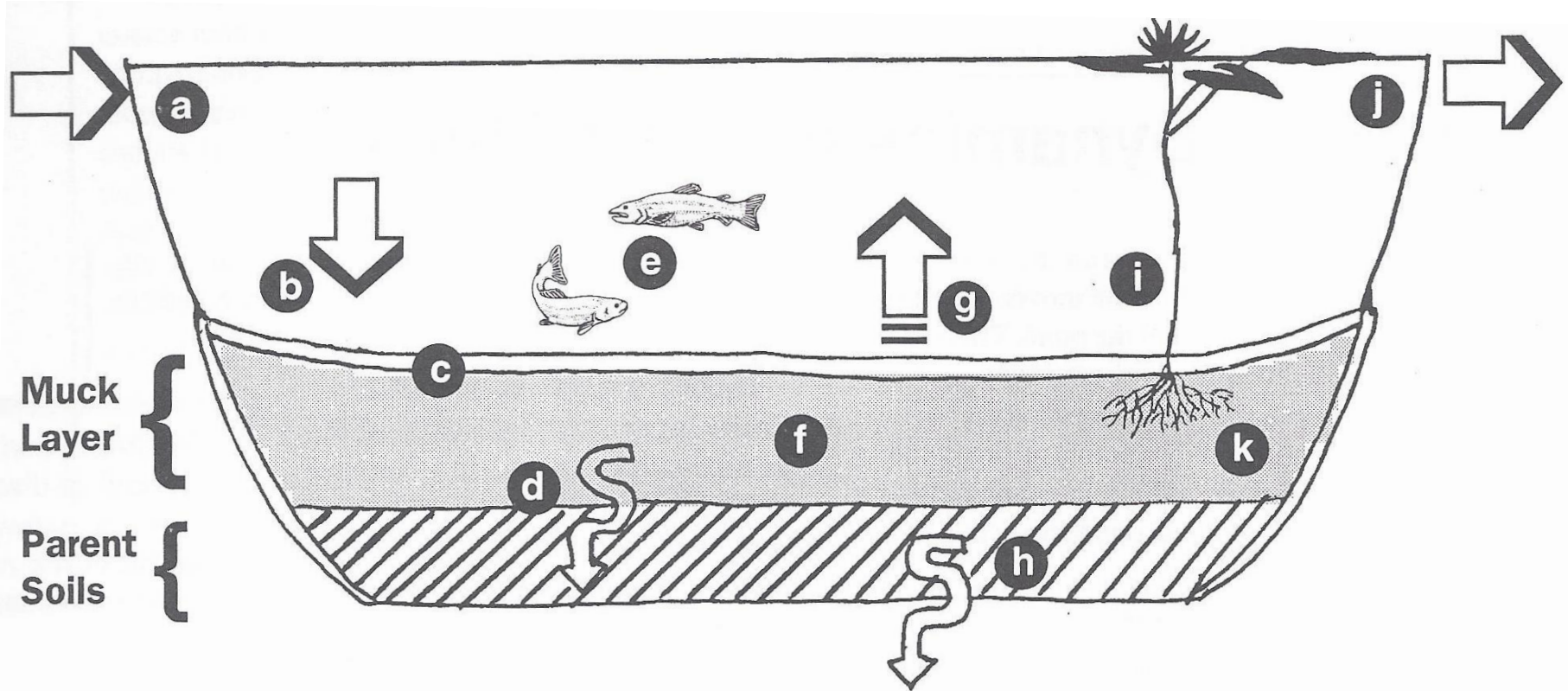


Nutrient Content of Stormwater Pond Sediments

Chesapeake Stormwater
Network
STAC Workshop

A Field Guide to the Muck Layer



- a. Pollutant Inflow
- b. Sediment Deposition
- c. Muck Microlayer
- d. Downward Migration
- e. Fish Bio-magnification
- f. Sediment Diagenesis

- g. Phosphorus Release
- h. Groundwater Migration
- i. Wetland Plant Uptake
- j. Pollutant Export from Pond
- k. Sediment Clean-outs

The Nature of Pond Muck

Distinguishing between the “muck layer” and the original soils of the pond bottom.

“Muck” soils can be characterized by:

- “Soupy” texture ~ 57% moisture (n=15)
- Distinctive grey to black color
- High organic matter content ~ 6% volatile suspended solids (n=16)
- Low density ~ 1.3 g/cm³
- Poorly sorted sands and silts



Characteristics of Pond Muck, Schueler 1994

	% Moisture	% Volatile Suspended Solids	TKN (ppm)	TP (ppm)	N:P
Range	32 - 77	1.1 - 10.4	219 - 11,200	100 - 3,863	0.4:1 - 26:1
Median	60	6.0	2,298	499	4:1



Nutrient Content of Pond Muck

Mean concentrations of BMP sediments

Study	N (ppm)	TP (ppm)	N:P
Schueler, 1994 (n=23 studies)	2,931 (TKN)	583	5:1
Berretta et al, 2011 (n=124 studies)	2,648 (TN)	647	4:1