

Margin of Safety

Definition

- **CWA 303 (d)(1)(C)** Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section [1314 \(a\)\(2\)](#) of this title as suitable for such calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a **margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.**
- Regulations say the same basic thing

“Real” definition

- MOS accounts for uncertainty
- MOS is not a temporary thing – can’t be used later (i.e., \neq future growth)
- MOS can be implicit and/or explicit
- Only real “definition” – NRDC NY case
- There is no commonly accepted number (i.e., 10%)



Explicit MOS

- A portion of the loading capacity is “set aside” before the allocations determined
- Most common:
 - X% of the LC
 - (100 lb = 15 (MOS) + 60 (LA) + 25 (WLA))
- Has ranged from 5% - 40%+

Implicit MOS

- Conservative assumptions used in developing the TMDL
 - Conservative model assumptions (IL, WI)
 - Twice as large C factor, sediment delivery ratios, etc.
 - However, stakeholders don't always like this (*"We want the model as real as possible!"*)
 - Conservative assumptions in target selection
 - Target based upon pristine reference streams; therefore targets are generally higher than needed (Ohio)
 - Lower target (can be below WQS): TP target = 0.08, run model and do allocations based on 0.07

Implicit MOS

- Conservative assumptions in implementation activities
 - WI #1: model assumes direct run-off to the waterbody (Becky Creek)
 - Reality is that there are buffer strips that retain sediment
 - Therefore, overestimating sediment reaching stream, and thus the reduction needed is overestimated
 - WI #2: underestimated the reductions from BMPs (Castle Rock Creek)
- Other conservative assumptions
 - No die-off of bacteria (IN, MI)
- Tip: Use as many as possible

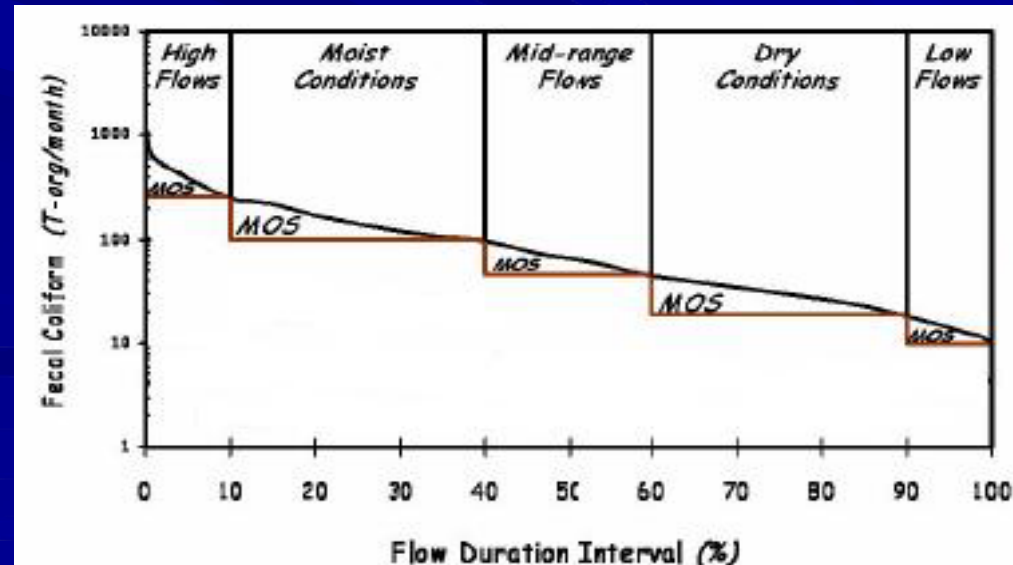
Justification of MOS

- Whichever you choose, need to explain why and how this accounts for uncertainty
- NRDC NY decision – 20% deemed adequate since good calibration and validation of model; uncertainty was evaluated
- Note#1: make sure to explain why an assumption is conservative – overestimates loading because...; overestimates reductions because..., etc.
- Note #2: permit load based upon design flow and permit limits is not conservative by itself

LDC MOS

■ One idea

- Choose low end of flow regime
- LDC itself reduces uncertainty (still working on language)
 - Usually lots (> 25 years) of flow data
 - Direct measure of load at any flow
 - Can determine when exceedences are occurring



Questions?