Loading capacity

How much is too much?

Determining Loading Capacity

- Models
  - There are no “approved” EPA models
  - Remember – simple is good
  - Explain why you chose your model
    - Cost, data needs can be factors
    - Explain how it meets the conditions of your TMDL
    - Summarize what and how your model works
    - Provide calibration/validation to show how well the model simulates the waterbody (also helps for MOS)
    - Provide a discussion of the strengths and weaknesses of the model

Critical condition

- Required in a TMDL 40 CFR 130.7(c)(1)
  - "Determinations of TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters." (underline added)
- When is the loading or water quality impact the greatest?
  - Storm events
  - Spring run-off

Daily does not mean only 1 number

- You can have a daily number only
- You can have a daily number based upon the months
  - May = 5 lbs/day, June = 4 lbs/day, July = 3 lbs/day
- You can have a daily number based upon the seasons
  - spring = 10 lbs/day, summer = 8 lbs/day
- You can have 2 daily numbers
  - Daily average = 5 lbs/day
  - Daily max = 9 lbs/day

Flow-based loads

Table 9. Fecal Coliform TMDL for Sangamon River Segment E_18[2]

Sangamon River Flow (cfs)	Fecal coliform Load Capacity (cfu/day)	WLA for Table 7 dischargers (cfu/day)	CSO and Excess flow WLA (cfu/day)[1]	Load allocation (LA) (cfu/day)
10	4.89E+10	2.07E+10		2.82E+10
30	1.47E+11	2.07E+10		1.26E+11
100	4.89E+11	2.07E+10		4.69E+11
300	1.47E+12	2.07E+10		1.45E+12
500	2.45E+12	2.07E+10		2.43E+12
1000	4.89E+12	2.07E+10	6.23E+10	4.81E+12
3000	1.47E+13	2.07E+10	6.23E+10	1.46E+13

[1] For purposes of this table, CSOs and excess flow outfalls discharge only during high flows. A WLA is not provided for the two Monticello WWTP high river stage outfalls because measured flows are not available (they have not discharged between 2002 and April 2007). The WLA for these two outfalls will be calculated from their flow volume and a concentration of 200 cfu/100ml, consistent with water quality standards.

[2] An implicit MOS is used in this TMDL

NOW, where are we at?

- ☑ Watershed described
- ☑ Pollutant and impairment ID'ed
- ☑ WQS ID'ed
- ☑ Target ID'ed

Now we have;

- ☑ the loading capacity determined and justified
- ☑ Critical condition determined and justified (Parts 1, 2 and 3 of the approval template)

Load Allocation

What is needed?

- The portion of the load that is attributed to non-point sources
- “Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments…”
- “Wherever possible, natural and nonpoint source loads should be distinguished.”

Options

- Can be a single number
  - 1000 kg/day
- Can be by land use
  - Row crop 10 kg/day
  - Pasture 8 kg/day
  - Forest 1 kg/day
- Flow regime
  - High flow 100 kg/day
  - Midrange 50 kg/day
  - Low 2 kg/day

Warning!

- Be prepared to explain if you use 0.

Wasteload Allocation

USEPA Region 5

What do I submit?

- For individual permit, each permit must have an individual WLA
  - Should be calculated based upon
    - permitted design flow
    - Permit limit
  - If you know the facility is going to expand, use the “expanded” load (avoids having to modify later)
  - At a minimum, we need name; permit number; WLA
- We don’t approve permit limits

WLA Example

Table 2 List of permittees (loads in kg/day of phosphorus)

Facility Name	Permit #	WLA
Blue Moon Motel	N/A	.022
Eastwood School WWTP	2PT00026	.134
Graymont Dolime Inc	2IJ00063	.068
Martin Marietta Materials, Inc.	2IJ00040	.236
Otterbein-Portage Valley Retirement Village	2PS00005	.351
Rocky Ridge Elementary	2N/A00029	.019
Troy Energy, LLC	2IB00018	.142
Uretech International	2IR00008	.033
Village of Genoa WWTP	2PB00008	2.57
Village of Luckey STP	2PA00080	.057

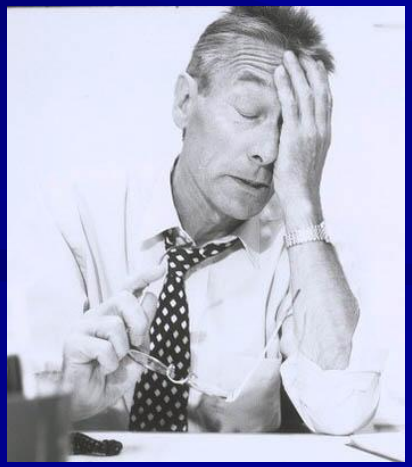
TMDL/NPDES connection

- 122.44 (d)(1)(vii)(B) - Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7.
- This is how reductions in a TMDL link to the permits
- “Consistent” allows some flexibility on how the TMDL daily load is integrated into the permit

What we don’t approve…

- We don’t approve permit limits in the TMDL – only loads
- We don’t approve permit/compliance schedules in the TMDL
- We don’t approve BMPs in the TMDL
- We don’t approve how they get implemented – permits, LTCPs

Margin of Safety



“Real” definition

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

MOS

- Implicit MOS
  - Conservative assumptions used in developing the TMDL
    - Conservative model assumptions
    - Conservative assumptions in target selection
- Explicit MOS
  - A portion of the loading capacity is “set aside” before the allocations determined
  - X% of the LC

    (100 lb = 15 (MOS) + 60 (LA) + 25 (WLA))
  - Has ranged from 5% - 40%+

Implementation/Reasonable Assurance

- Explain what the ongoing activities are in the watershed (Federal, state, county, local)
- Explain what are the expected/planned activities (Federal, state, county, local)
- If nothing is ongoing or planned, then list out the specific options that could be used
- Provide for both point and non-point

Process

- Involve all stakeholders
- State will handle public notice
- Open and transparent
  - If there is an agenda, no one will buy in

Communicate with the State

(And EPA)

For More Information

- EPA TMDL homepage - http://www.epa.gov/owow/tmdl
  - EPA guidance, protocols, and documents
  - Maps and information on impaired waters
  - Links to other TMDL websites, including States and Regions
- USEPA – David Werbach 312-886-4242