LOWEST LOADING LAND USE

Urban Stormwater Workgroup

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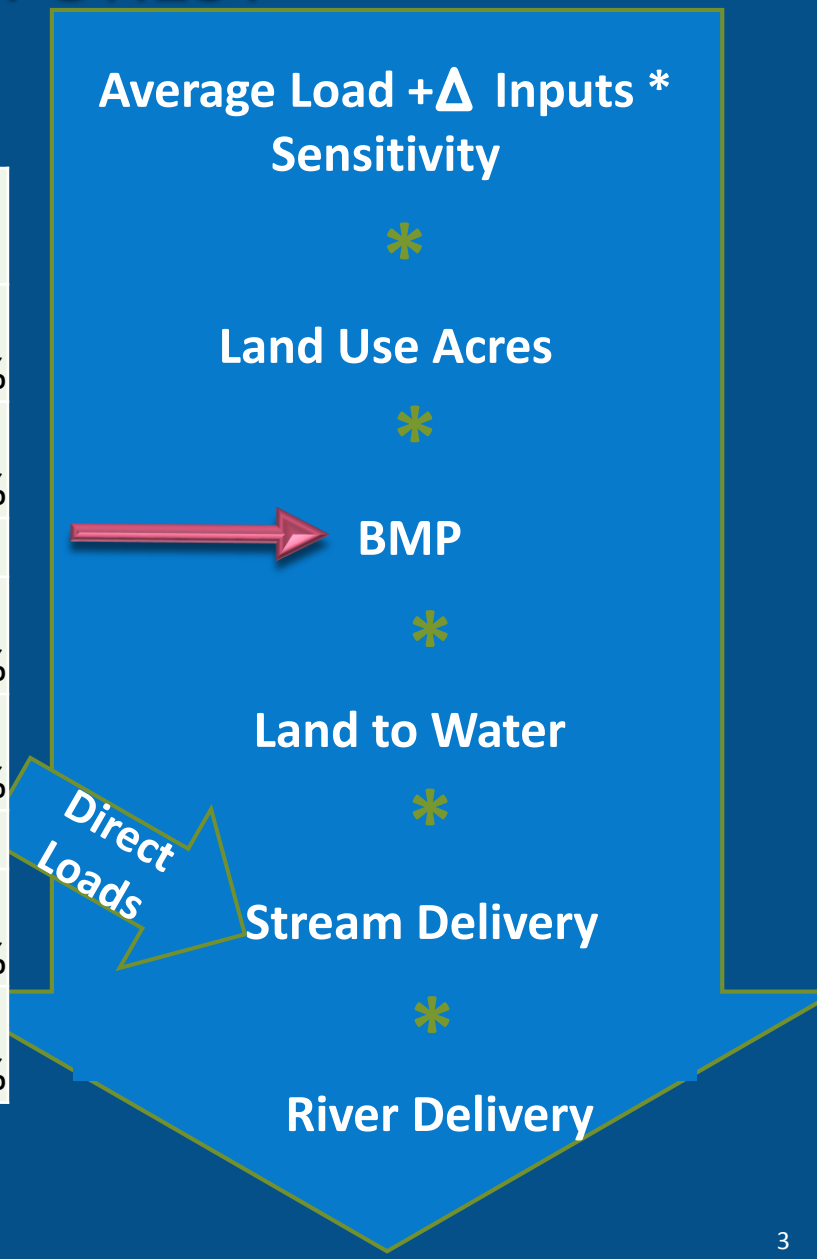
ISSUE: MODEL LOADS BELOW THAT OF FOREST

- Is it realistic for the loads from developed land uses to be lower than forest?
- Mathematically, BMPs can reduce loads below forest.
- Should reductions be limited?
  - It happens for 952 lbs TN on developed land uses in the Beta 3 E3 scenario
  - This represents 0.003% of the total TN developed load

TN WATERSHED MODEL LOADS < FOREST

- Edge of Stream – Includes BMPs

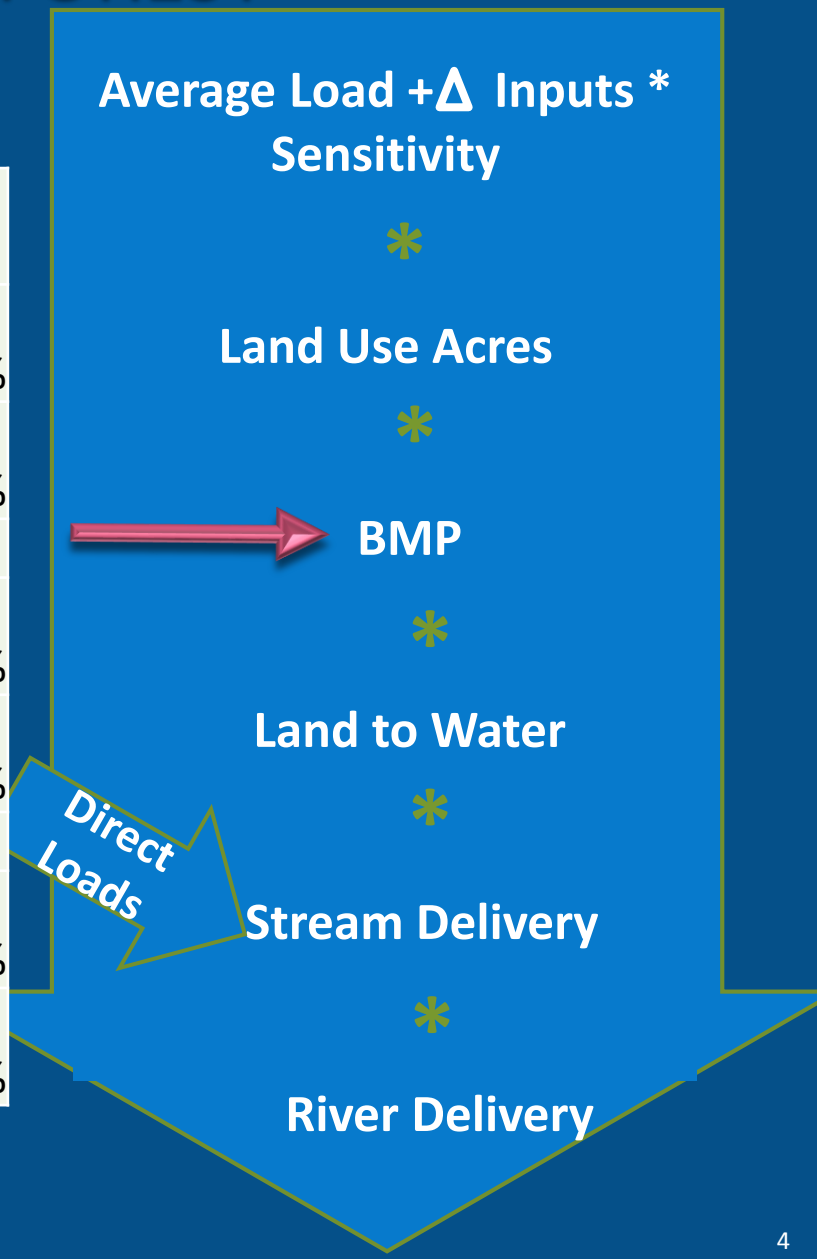
	Scenario	Load type	Land Uses (lbs)	NonForest < Forest (lbs)	Pct. of Load Eliminated
Developed	Beta 3 E3	TN	35,076,496	952	0.003%
All Sectors	Beta 3 E3	TN	117,430,926	1,470	0.001%
Developed	Beta 3 WIP2	TN	53,073,188	11	0.000%
All Sectors	Beta 3 WIP2	TN	159,204,565	615	0.000%
Developed	Beta 4 Calib	TN	83,002,782	0	0.000%
All Sectors	Beta 4 Calib	TN	325,136,280	149,814	0.046%



TP WATERSHED MODEL LOADS < FOREST

- Edge of Stream – Includes BMPs

	Scenario	Load type	Land Uses (lbs)	NonForest < Forest (lbs)	Pct. of Load Eliminated
Developed	Beta 3 E3	TP	1,782,084	0	0.000%
All Sectors	Beta 3 E3	TP	6,089,859	867	0.014%
Developed	Beta 3 WIP2	TP	3,011,604	0	0.000%
All Sectors	Beta 3 WIP2	TP	10,257,456	296	0.003%
Developed	Beta 4 Calib	TP	4,068,739	0	0.000%
All Sectors	Beta 4 Calib	TP	14,925,199	64	0.000%



WHY THIS IS OCCURRING

- BMPs
  - Example: Infiltration BMP reduces 85% of TN
    - 7.81 Lbs. TN (from turfgrass land use acre in FIPS 54063) * (1-0.85) = 1.171 Lbs. TN
    - Forest loads at 1.48 Lbs. TN
- Multiple BMPs compound the problem
  - Example: Bioretention reduces 80 % N and Urban Nutrient Management reduces 9% N
    - 7.81 Lbs. TN (from turfgrass land use acre in FIPS 54063) * (1-0.8) * (1-0.09) = 1.42 Lbs. TN
    - Forest loads at 1.48 Lbs. TN

CONSIDERATIONS AND OPTIONS

- BMPs
  - Could set the forest loading rate as the lowest loading land use
  - No BMPs are applied to forest.