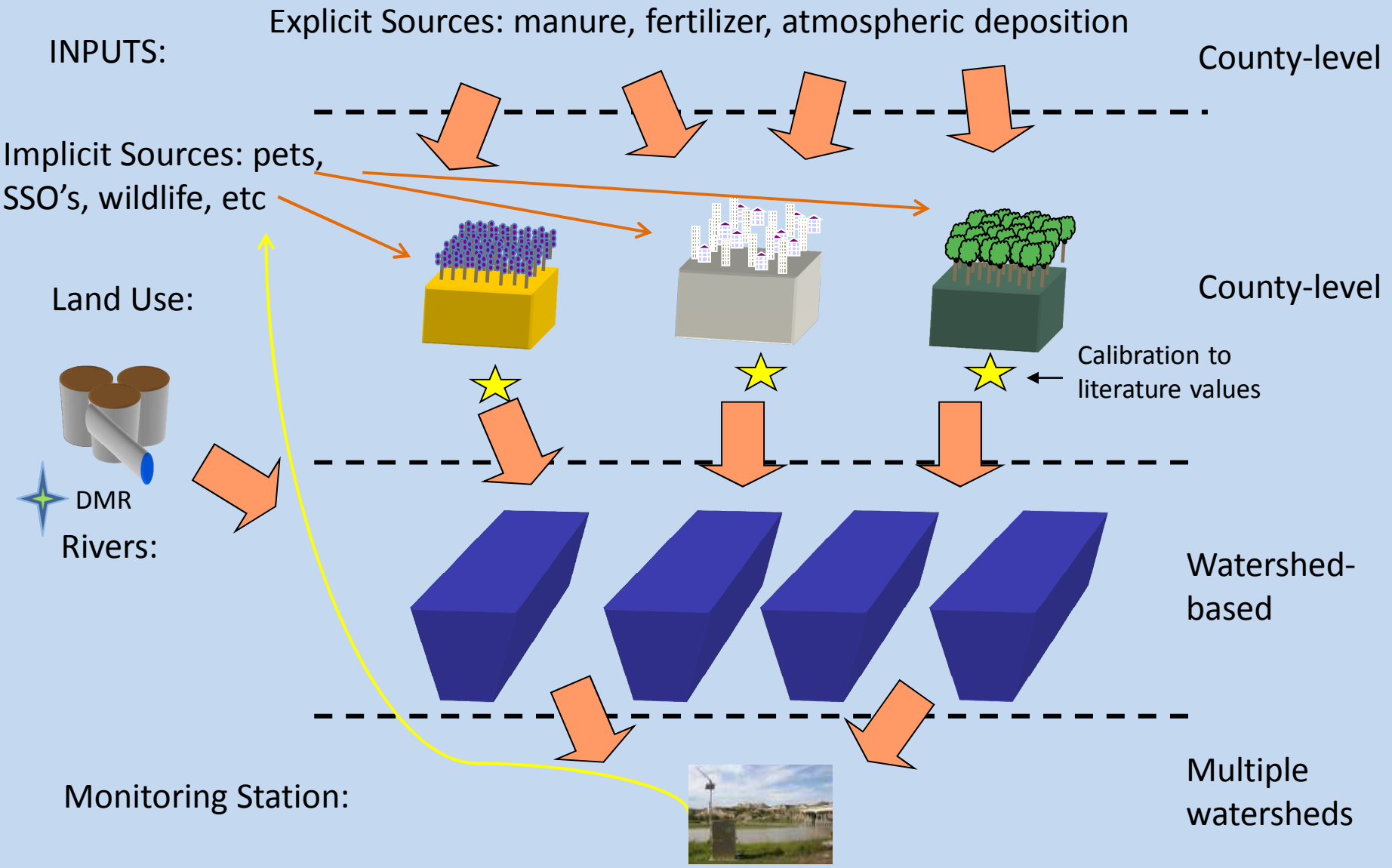
Virginia's Technical Concerns on Grey Infrastructure BMPs

A Presentation to the Chesapeake Bay Program Urban Stormwater Workgroup

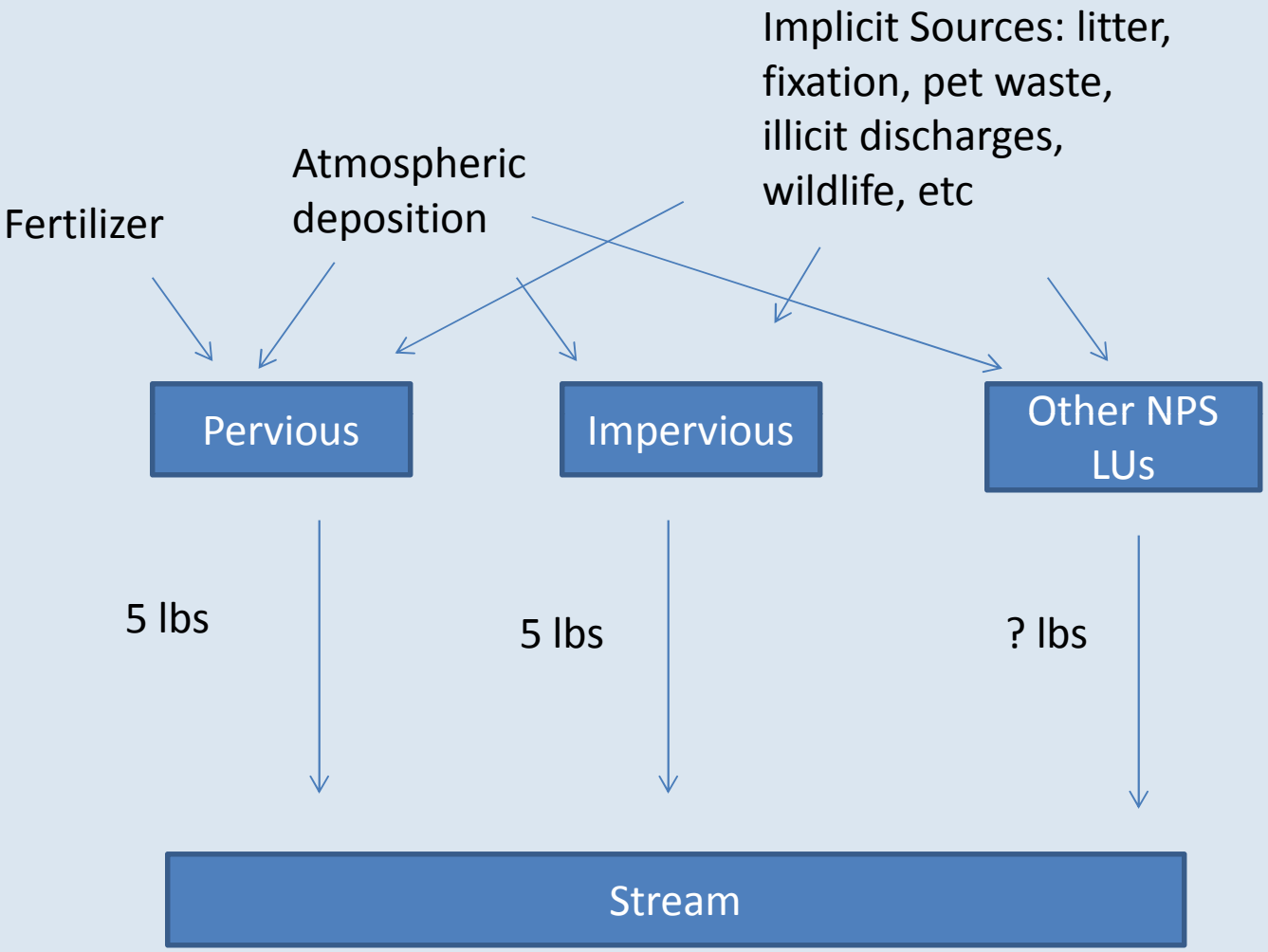
9/23/2014

Scale of phase 5 output

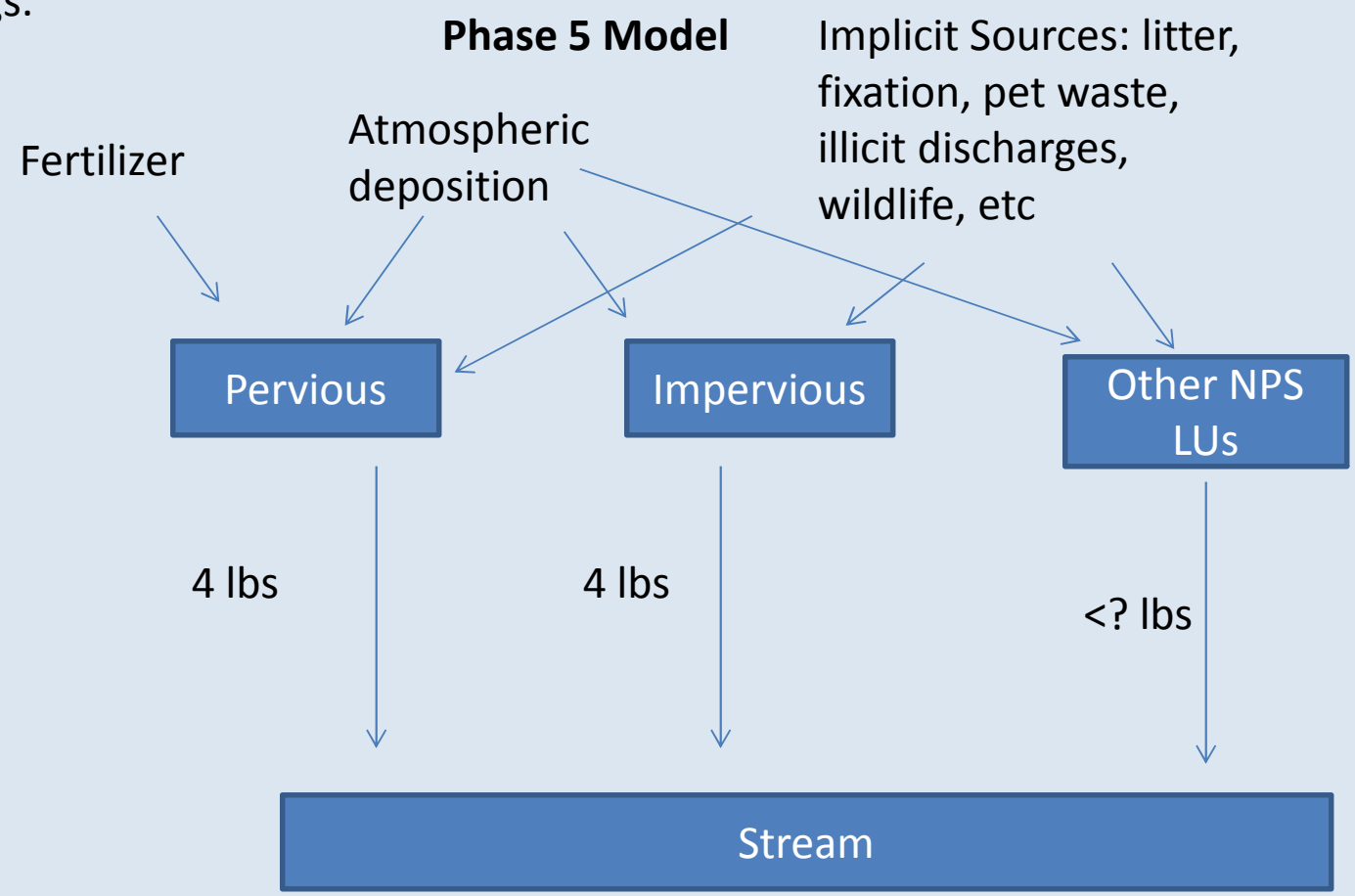


Given: Through calibration, literature, and regression analysis, it has been determined that developed land in this area contributes 10 lbs/acre through nonpoint source and that illicit discharges are captured implicitly and simulated as part of the overall NPS loadings.

Phase 5 Model

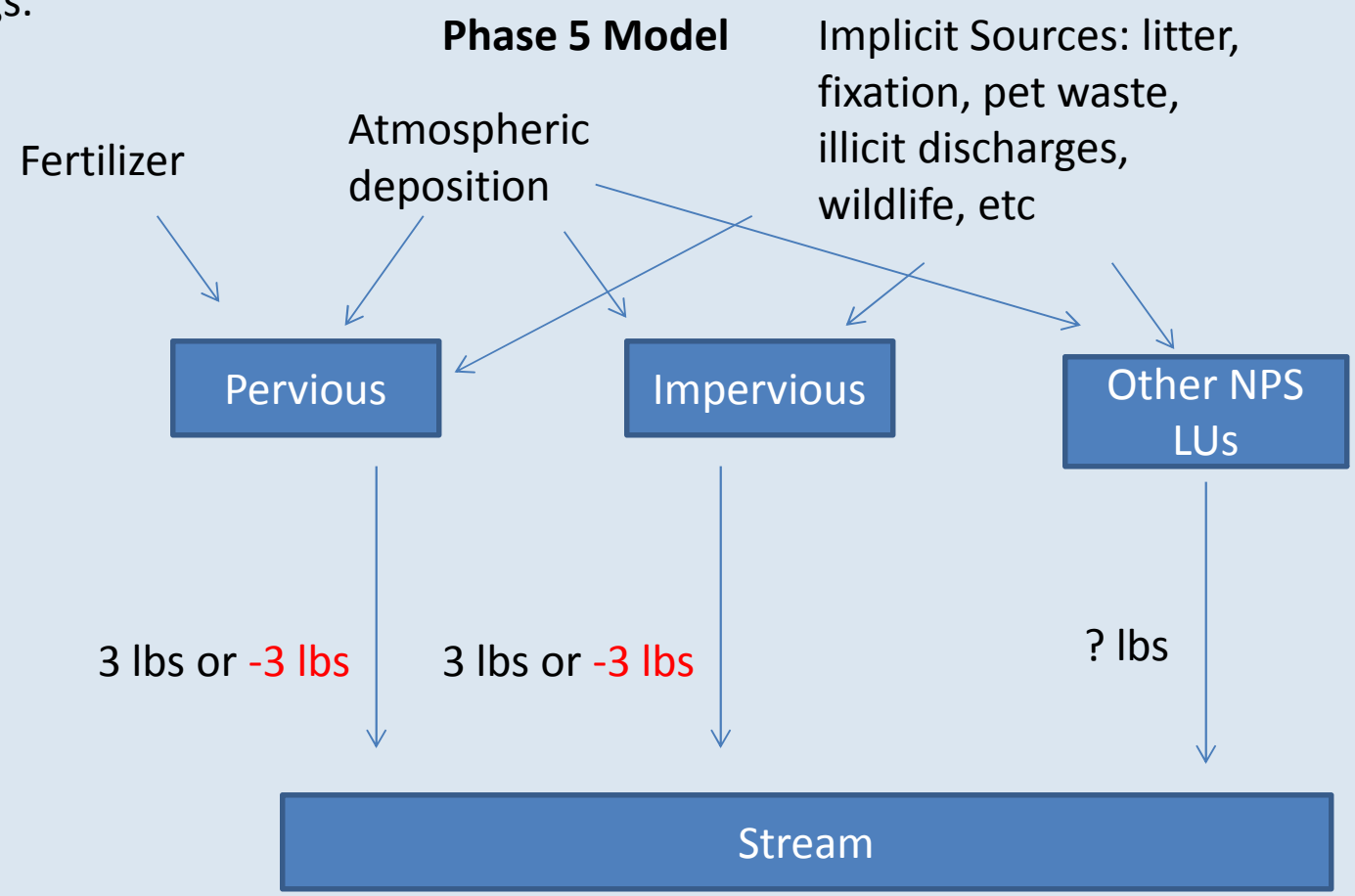


Given: Through calibration, literature, and regression analysis, it has been determined that developed land in this area contributes 10 lbs/acre through nonpoint source and that illicit discharges are captured implicitly and simulated as part of the overall NPS loadings.



A BMP applied to any land use or end of pipe would still have the same effect

Given: Through calibration, literature, and regression analysis, it has been determined that developed land in this area contributes 10 lbs/acre through nonpoint source and that illicit discharges are captured implicitly and simulated as part of the overall NPS loadings.



A Grey Infrastructure BMP applied to urban land use after NPS BMP history applied would have what effect?

Examples of Low Available Loadings

2013 Progress Run All Basins and LRsegs

LU	# of lrseg	% TN < 100 lbs (n)	% TP < 50 lbs (n)	% TSSX < 1000 lbs (n)
Non Regulated Extractive	677	(139) - 21%	(214) - 32%	(14) - 2%
Non Regulated Impervious Developed	1,686	(193) - 11%	(365) - 22%	(90) - 5%
Non Regulated Pervious Developed	1,631	(173) - 11%	(518) - 32%	(180) - 11%
Regulated Construction	1,210	(412) - 34%	(588) - 49%	(67) - 6%
Regulated Extractive	172	(40) - 23%	(62) - 36%	(5) - 3%
Regulated Impervious Developed	912	(170) - 19%	(278) - 30%	(83) - 9%
Regulated Pervious Developed	901	(146) - 16%	(339) - 38%	(146) - 16%
All	7,189	(1,273) - 18%	(2,364) - 33%	(585) - 8%

Level of Treatment p532 with SWM BMPs

- Based on analysis of 2010 no-action and 2010 Progress runs – Virginia Only
- For TN up to 40.5% of available 2010 no-action urban land use load treated
- For TP up to 44.5% of available 2010 no-action urban land use load treated
- Did not conduct analysis on TSS loadings
- Some localities in model world have near 100% available urban land uses treated with these BMPs

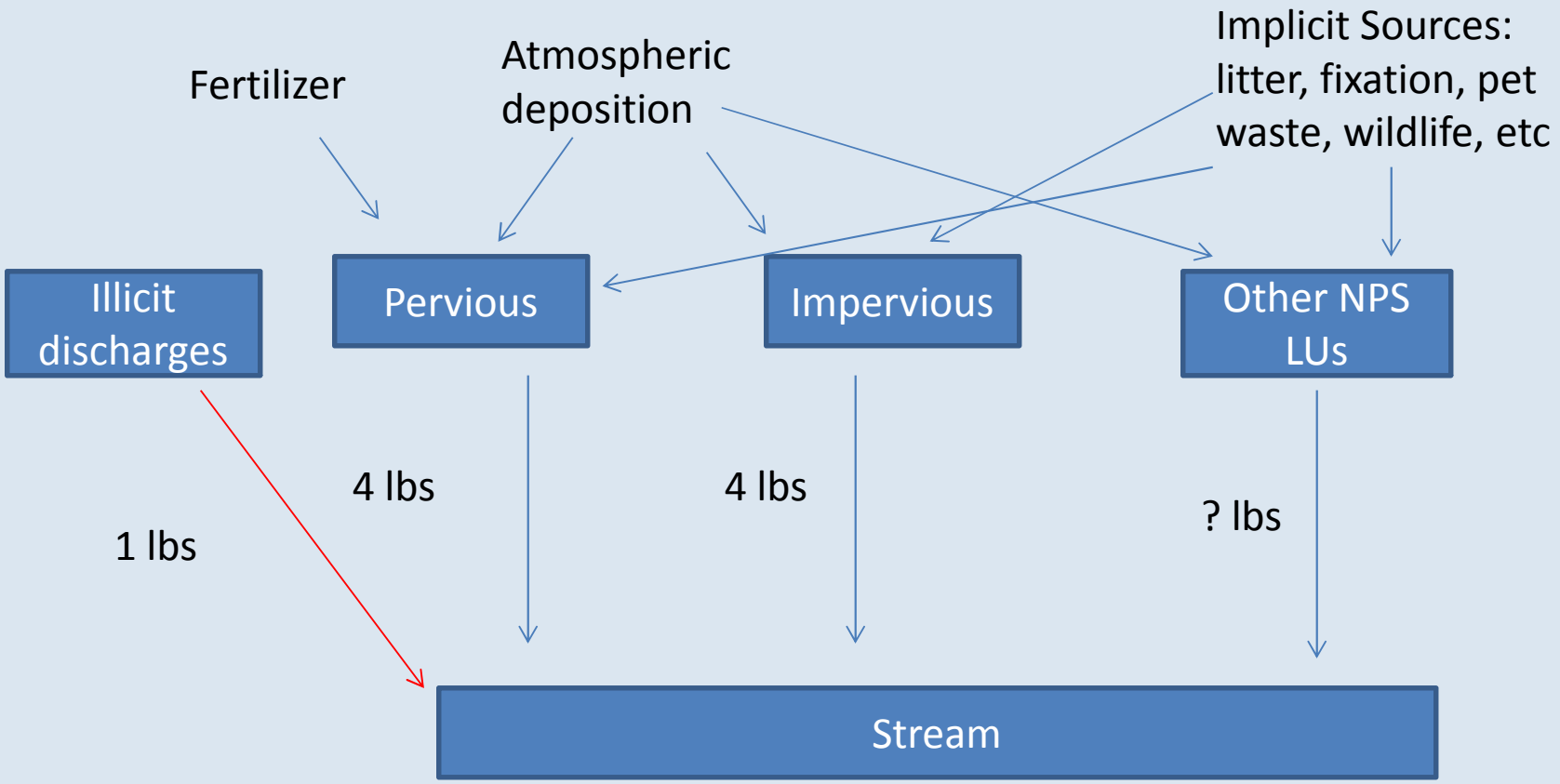
Technical Concerns

- All loading sources and BMP impacts are captured implicitly via monitoring
- Limited number of calibration stations and not all stations calibrated equally – uncertainty on final disposition or attribution of these loads to NPS land uses
- Explicit reductions from Implicit sources can impact overall load accounting in the model – scale matters
- Attribution to sources from implicitly captured loads appears not exclusive to land uses panel recommends crediting GI BMPs against
- Temporary and transitory nature of these events does not support a cumulative credit but annual
- If explicitly captured in p6 WSM how do we deal with history of corrections throughout the calibration period?

Inclusion of Grey Infrastructure Loads in p6 WSM

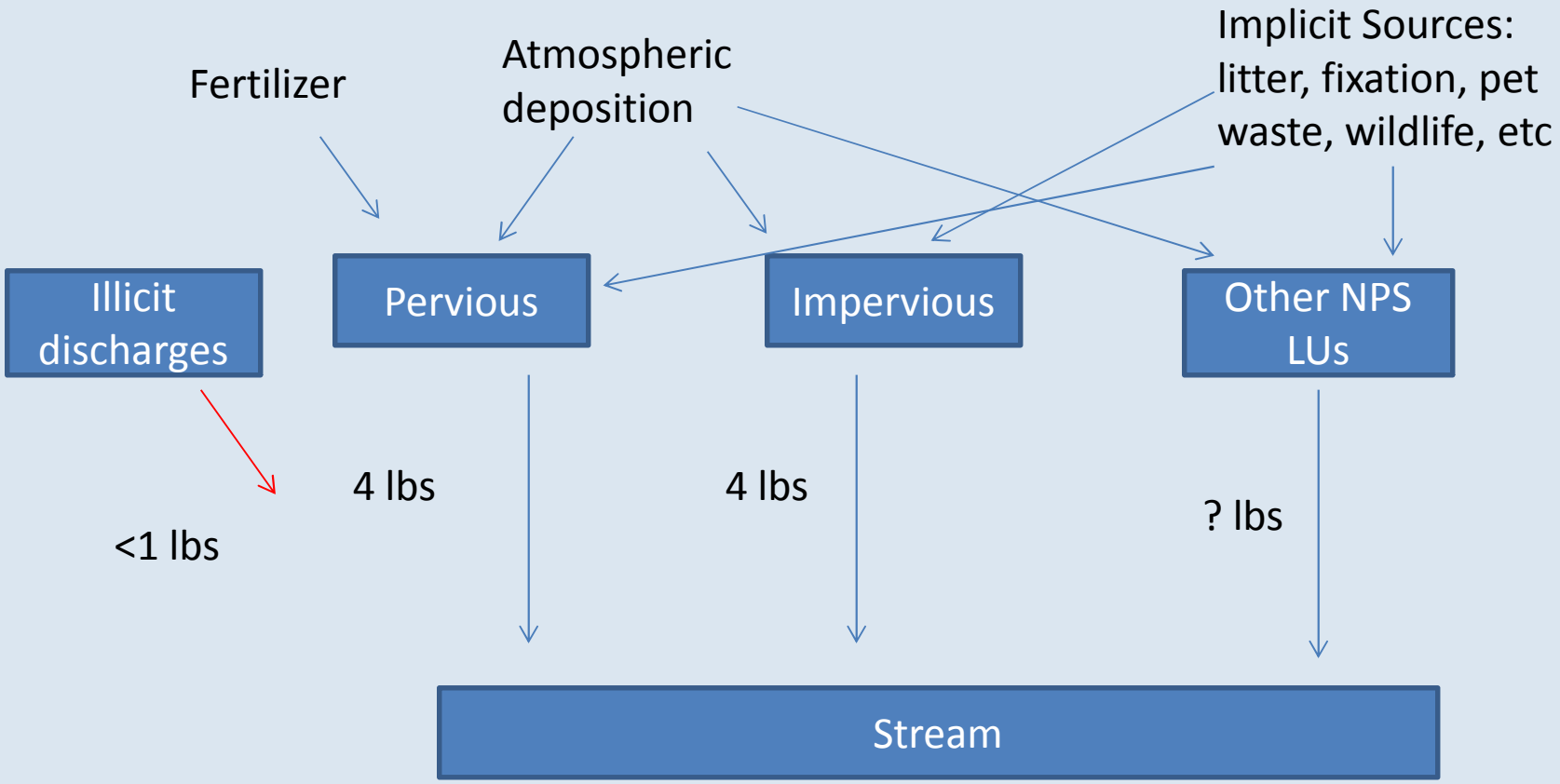
Given: Through calibration, literature, and regression analysis, it has been determined that developed land in this area contributes 10 lbs/acre through nonpoint source and that illicit discharges are explicitly simulated

Phase 6 conceptual Model



Given: Through calibration, literature, and regression analysis, it has been determined that developed land in this area contributes 10 lbs/acre through nonpoint source and that illicit discharges are explicitly simulated

Phase 6 conceptual Model



A Grey Infrastructure BMP applied to explicitly simulated source would reduce an input to the stream