"Backout" in the CBP Watershed Model

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What is “Backout”?

- “Backout” is the subtraction of acres of historic land use-change BMPs from “credit” in the model simulation because the benefits are assumed to be captured by new landcover/land use data introduced with model updates.

Backout Example

- From 2007 to 2012, 100 acres of riparian forest buffers are reported as planted in a developed area in a county.

Backout Example

- In the model, 100 acres were moved in that period from a higher-loading pervious urban land use to the lowest loading land use, forest – yielding a loading reduction of nutrients and sediment.
  - Turf Grass converted to True Forest

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  - When saplings are planted, they receive full model benefits the year they're reported as if they're a mature tree stand.
    - The purpose of the management model is to estimate steady-state long-term changes.

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  - When saplings are planted, they receive full model benefits the year they're reported as if they're a mature tree stand.
    - The purpose of the management model is to estimate steady-state long-term changes.
  - In addition to model "credit" for the change in land use type, there's additional model credit to upland areas that are treated by the riparian buffer – again assuming a mature tree stand the year saplings are planted.

Backout Example

- In 2013, we introduced new landcover data
  - In addition to new Census of Agriculture, etc.
- It is assumed that the new data picks up the land use change that occurred 2007-2012, including the 100-acre conversion from pervious urban to forest for the buffers.

Backout Example

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  - In addition to new Census of Agriculture, etc.
- It is assumed that the new data picks up the land use change that occurred 2007-2012, including the 100-acre conversion from pervious urban to forest for the buffers.
- Beginning in 2013, the historic 100 acres is backed out from the model simulation so the benefits are not double-counted
  1) Continue with the explicit land use conversion in the model
  2) This same land use change is assumed to be captured in the new data

Backout Example

- Although the land use change in the model is backed out, the upland benefit remains.
- The 100 acres is still reported out in the BMP accounting system because it was an on-the-ground management action, it just does not continue to get load reduction "credit" for the model conversion from pervious urban to forest.

Backout Example

- New acres of buffers reported in 2013 for the 2012-2013 period get both the land use change "credit" and upland benefit "credit" – and this continues until the next landcover dataset.

Backout

- Currently, the backout baseline for land use change BMPs is 2017.
  - 2017 Census of Agriculture
  - 2013 – 2015 land use acres; Chesapeake Conservancy data

Land Use Change BMPs With Backout

- Ag Forest Buffers + Narrow
- Ag Grass Buffers + Narrow
- Tree Planting- Ag + Urban
- Land Retirement
- Carbon Sequestration/ Alternative Crops
- Urban Forest Buffers
- Urban Forest Planting
- Urban Grass Buffers
- Impervious Surface Reduction
- Abandoned Mine Reclamation
- Wetland Restoration
- Wetland Creation
- Wetland Enhance/Rehabilitate

Back-out

- In reality, the new landcover data may not recognize the newly planted trees – or the Ag Census may not explicitly pick up the converted land – but it is assumed that they do.
- The newly planted saplings get the credit of mature trees because the CBP Watershed Model is a management tool to estimate long-term, steady-state conditions, not exact conditions for each "progress" year.

Questions for You To Answer

- Is it appropriate to delay the backout of tree plantings and buffers until the tree stands are detected in the imagery?
- How long is the period from planting to detection?