DRAFT 10-15-12

Land Use Workgroup

Mission:
To ensure that scientifically and locally credible land use data informs the suite of Chesapeake Bay Program (CBP) models and accounting systems.

Primary Roles and Responsibilities:

1. **Develop protocols and methods for using local LULC data to improve the CBP models.**
    a. Develop categorical crosswalk between local and CBP LULC
        i. Develop list of desired LULC classes for 2017 Watershed Model
        ii. Collect representative sample of local LULC data
        iii. Compare local categories CBP land use categories
        iv. Identify missing classes and source data for those classes
        v. Develop crosswalk options
    b. Develop impervious surface and tree canopy coefficients for relevant LULC classes
        i. Collect high-resolution impervious surface and tree canopy data
        ii. Summarize impervious surface and tree canopy percentages per LULC class
    c. Develop protocol for reconciling local LULC with Census of Agriculture
        i. Compare extent of cropland and pasture/hay extent from Census with local LULC
        ii. Use USDA Farm Service Agency's Common Land Unit polygons to spatially identify areas misclassified as agriculture in local LULC.
        iii. Discuss options for correcting classification errors.

2. **Increase the spatial, temporal, and categorical resolution of land use information used to inform CBP models.**
    a. Spatial resolution
        i. Identify gaps in local LULC across the Bay watershed
            1. Cost-out options for filling gaps with LULC data derive from remotely sensed imagery.
        ii. Explore issues with using local LULC at native resolution vs. resampling to convert local LULC to coarser resolution
            1. Identify optimal resolution for hybrid local/CBP LULC
    b. Temporal resolution
        i. Inventory availability of historic LULC from 1980 to present.
        ii. Explore backcasting options given available data.
    c. Categorical resolution
        i. Review and evaluate suggested changes to LULC classes (e.g., commercial, low-density residential, wetlands, riparian forest buffers, high-functioning forests)
        ii. Evaluate available data and feasibility of mapping new LULC classes
            1. NASS Cropland Data Layer

2. Longitudinal Employer-Household Dynamics database
3. Housing density by Census Block
4. Annual impervious surface change (Landsat 5 & 7)

d. Local LULC for ground-truthing CBP LULC
   i. Evaluate the accuracy of impervious surface and tree canopy coefficients applied to the CBP LULC.
e. Probabilistic LULC
   i. Explore methods for developing probabilistic estimates of land use/land cover using data fusion and accounting for uncertainty.
      Example: Rather than classifying an area as "commercial", it could be classified as 50% likely to be commercial, 35% likely to be residential, and 15% likely to be pasture. Multiplying the probability by the size of the area will yield unique acreages for each land use.
   ii. Possible STAC workshop topic

3. **Improve the accuracy, plausibility, and usefulness of future land use scenarios to support local TMDL implementation and maintenance**.
   a. Solicit comments on the alternative future scenarios developed in Sept 2011 workshop with county planners.
      i. Present scenario results at LUWG meeting
      ii. Present scenario results via webinar to original workshop participants.
   b. Adjust scenario narratives, assumptions, and data inputs based on feedback.
      i. Focus particular attention on methods to estimate demand for land, infill/redevelopment proportions, and spatial allocation assumptions.
   c. Review and comment on methods to forecast and adjust trends in agriculture through analyzing annual data from NASS and the 5-year Census of Agriculture (1982 – 2007).
   d. Explore metrics to evaluate the alternative scenarios: e.g., per-acre, per-capita, and per-sector N, P, and Sediment loads, green infrastructure conversion and fragmentation, farmland conversion, and WQ offset demand and capacity.

4. **Evaluate the accuracy and utility of land use datasets, estimates, and scenarios used to inform CBP management decisions.**
   a. Identify land uses and areas of the watershed for which accurate information is most critical for informing CBP management decisions.
   b. Identify and assemble a ground-truth dataset composed of county and/or municipal land use data representing a gradient of rural to urban conditions.
   c. Compare the P532 and updated versions of the Chesapeake Bay Land Use Dataset to the ground-truth datasets.
   d. Characterize the accuracy of the CB Land Use Datasets in terms of omission and commission errors in both rural and urban areas.
   e. Based on these observations, explore means of improving the accuracy of the CB Land Use Datasets

5. **Explore methods for reporting land use changes to evaluate 2-year progress runs and explore the use of land use projections to develop/assess 2-year milestones.**
    a. Identity jurisdictions that develop land use updates every 2-5 years.
    b. Develop local land use evaluation criteria for reporting purposes.
    c. Evaluate the local and regional land-use change data products for reporting purposes.

Secondary Roles and Responsibilities:

1. Increase the accuracy of estimated populations and households on sewer and septic used to inform CBP models. (*Leads: Wastewater and Watershed Technical Workgroups*).

2. Improve the consistency of MS4 mapping criteria among states. (*Lead: Urban Stormwater Workgroup*).

3. Estimate future water quality offset requirements based on future land use scenarios. (*Leads: Trading and Offsets and Watershed Technical Workgroups*).

4. Explore the utility of future land use scenarios for crediting land conservation in the TMDL. (*Leads: Healthy Watershed GIT, Trading and Offsets Workgroup*).

5. Explore methods to identify and map forests and wetlands providing greater than average water quality services based on spatial factors such as depth to water table and other soils attributes, upslope land uses, and hydrologic connectivity. (*Leads: Urban Stormwater Workgroup, Habitat GIT, Healthy Watershed GIT, and Forestry Workgroup*)