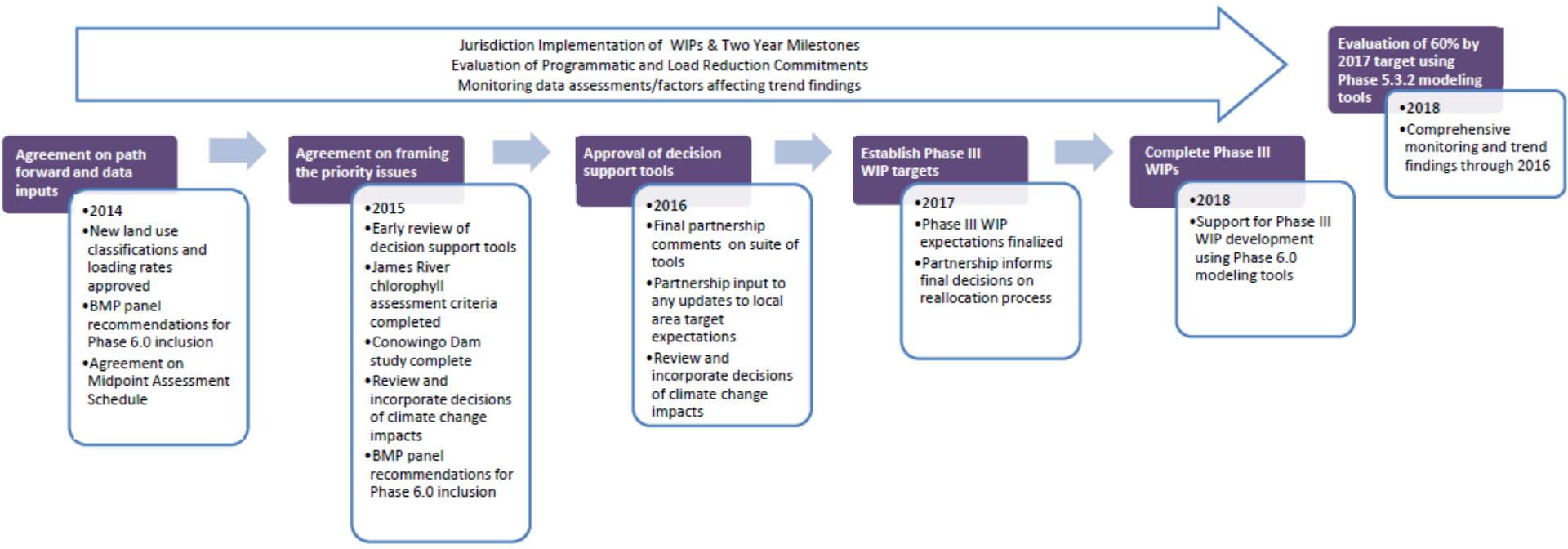
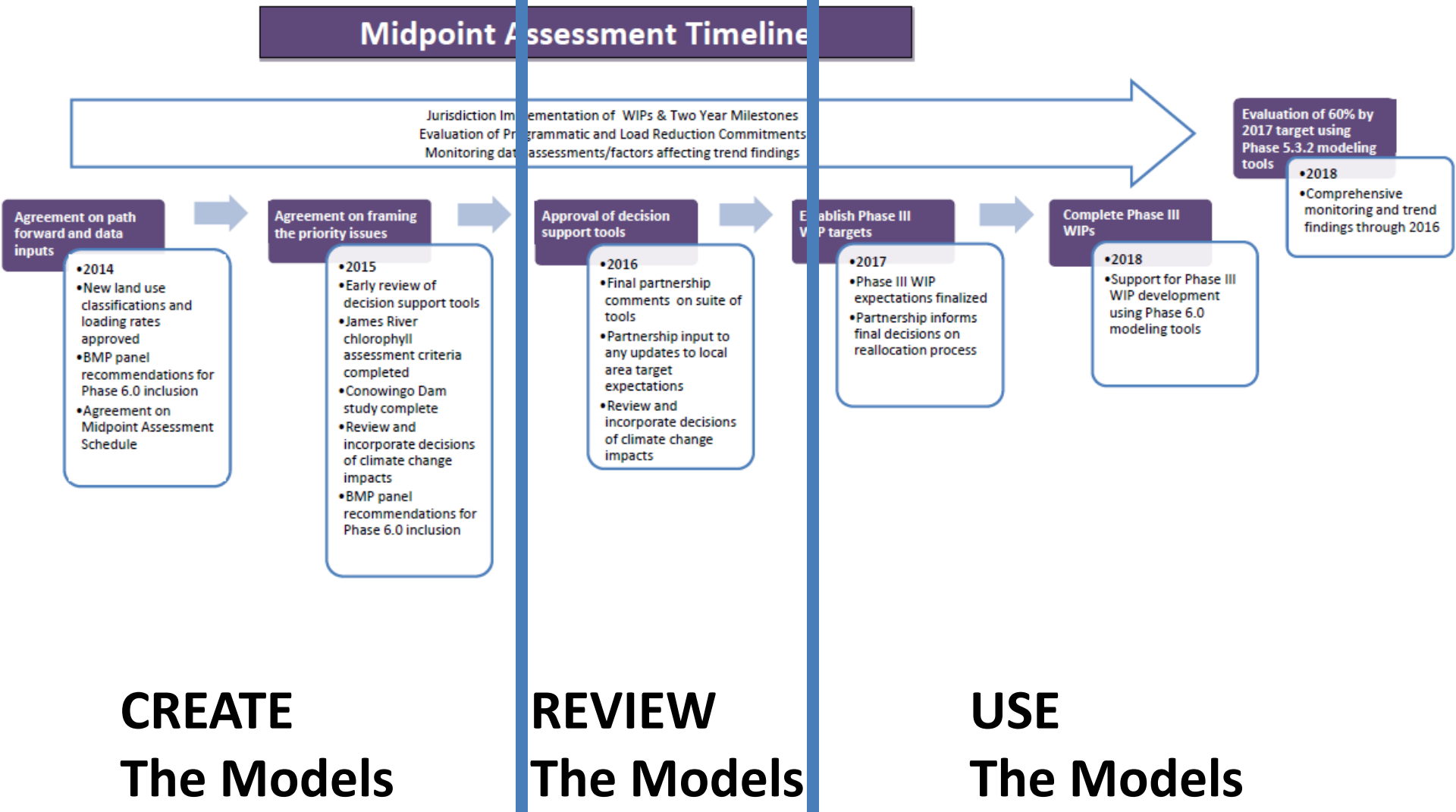
Scenario Builder and Watershed Model Progress toward the MPA

Gary Shenk WQGIT 7/14/14

Midpoint Assessment Timeline





CREATE The Models

REVIEW The Models

USE The Models

Draft Modeling Schedule for MPA

Dec 20, 2016 - All models are final. The partnership decision-making process begins to discuss how these new models will be used in the WIP3 process

REVIEW
The Models

September 2016 – Final comments on the draft Phase 6 model

Dec 20, 2015 - Phase 6 draft model is complete. Evaluation followed by fine tuning during this year

Oct 20, 2015 – All inputs are final and delivered to the WSM by the scenario builder team for the final calibration run

March 20, 2015 – All major partnership decisions are made on changes to scenario builder processing and data. Scenario builder final modifications begin.

Oct 20, 2014 – Rough Draft of major changes to nutrient processing in Scenario Builder will need to be complete. (Examples: land use types and manure application rules)

CREATE
The Models

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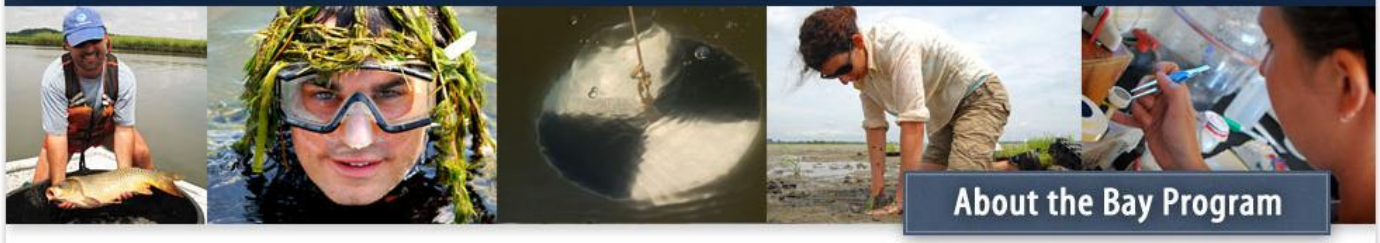


Who We Are
How We Work
How We're Organized
Chesapeake Executive Council
Principals' Staff Committee
Management Board
Citizens Advisory Committee
Local Government Advisory Committee
Scientific and Technical Advisory Committee
Communications Workgroup
Scientific and Technical Analysis and Reporting

Water Quality Goal Implementation Team (GIT 3)

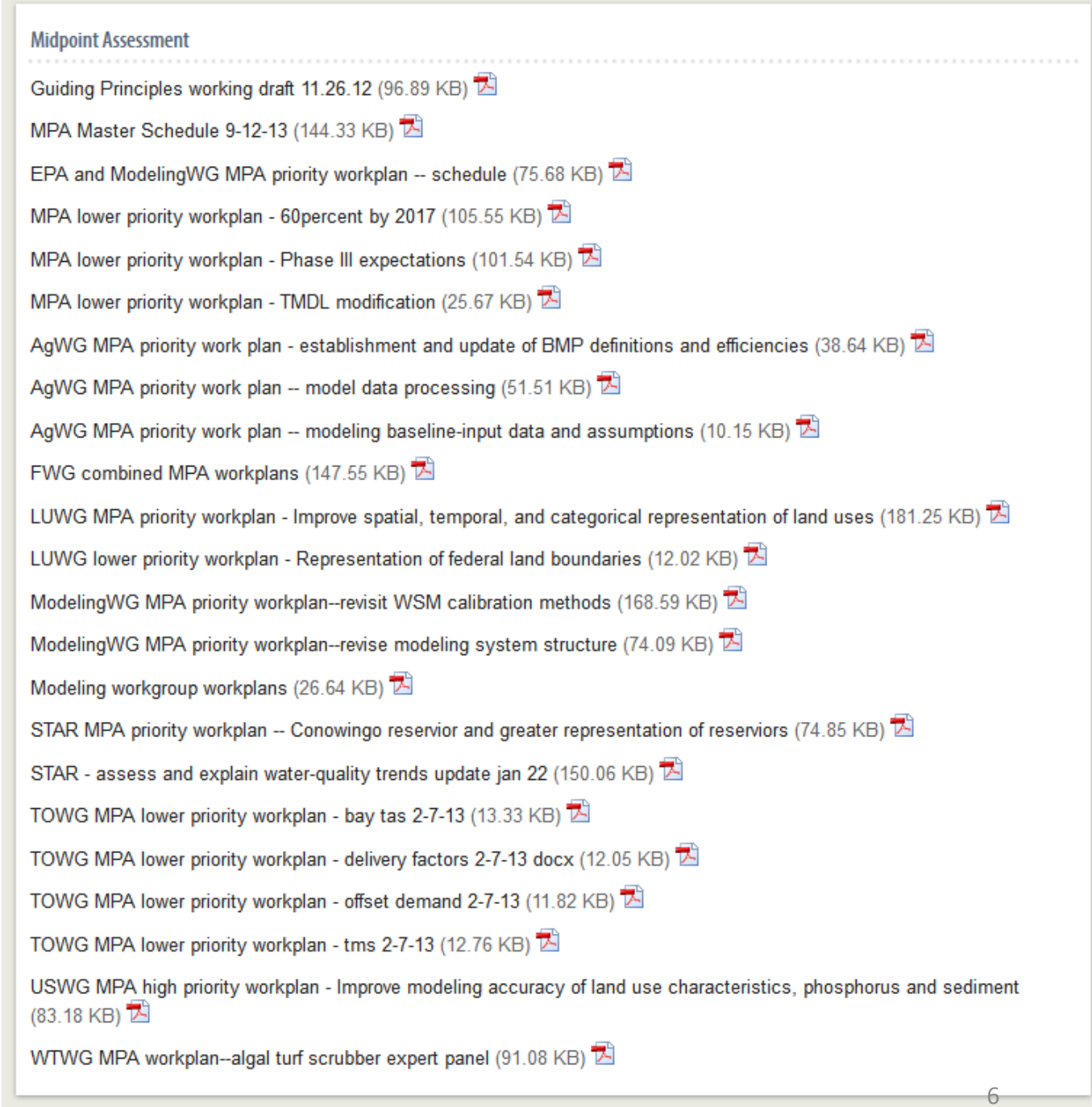
Scope and Purpose

The charge of the Water Quality Goal Implementation Team (WQGIT) is to evaluate, focus, and accelerate the implementation of practices, policies, programs that will restore water quality in the Chesapeake Bay and its tributaries to conditions that support living resources and protect human health. The Team reports to the Management Board and Principals' Staff Committee. Functions include:

- Provide a forum for discussion, exchange of information, and evaluation among federal, state, and local agencies, river basin commissions, industry groups, universities, and other interested parties on water quality goals, data, modeling, authorities, and restoration efforts.
- Evaluate and promote strategies to reduce nutrient, sediment, and chemical contaminant loads from municipal, industrial and onsite wastewater; agricultural lands and animal operations; urban and suburban stormwater; forested lands; tidal and in-stream sediment; and air emissions.
- Promote consistent, uniform and transparent processes to model, track, report, and verify water quality restoration efforts.
- Identify, define, quantify, and incorporate pollutant reduction and conservation practices into the Chesapeake Bay Program decision support system.
- Provide technical expertise and leadership to support the development, implementation, and tracking of the Chesapeake Bay TMDL, Watershed Implementation Plans, and two-year milestones that support long-term Bay restoration goals.

Members | Meetings | Workgroups & Task Groups | Projects & Resources | Publications

Already Here, but Partnership needs to be able to get the whole picture "at a glance"



Midpoint Assessment

Guiding Principles working draft 11.26.12 (96.89 KB)

MPA Master Schedule 9-12-13 (144.33 KB)

EPA and ModelingWG MPA priority workplan -- schedule (75.68 KB)

MPA lower priority workplan - 60percent by 2017 (105.55 KB)

MPA lower priority workplan - Phase III expectations (101.54 KB)

MPA lower priority workplan - TMDL modification (25.67 KB)

AgWG MPA priority work plan - establishment and update of BMP definitions and efficiencies (38.64 KB)

AgWG MPA priority work plan -- model data processing (51.51 KB)

AgWG MPA priority work plan -- modeling baseline-input data and assumptions (10.15 KB)

FWG combined MPA workplans (147.55 KB)

LUWG MPA priority workplan - Improve spatial, temporal, and categorical representation of land uses (181.25 KB)

LUWG lower priority workplan - Representation of federal land boundaries (12.02 KB)

ModelingWG MPA priority workplan--revisit WSM calibration methods (168.59 KB)

ModelingWG MPA priority workplan--revise modeling system structure (74.09 KB)

Modeling workgroup workplans (26.64 KB)

STAR MPA priority workplan -- Conowingo reservior and greater representation of reserviors (74.85 KB)

STAR - assess and explain water-quality trends update jan 22 (150.06 KB)

TOWG MPA lower priority workplan - bay tas 2-7-13 (13.33 KB)

TOWG MPA lower priority workplan - delivery factors 2-7-13 docx (12.05 KB)

TOWG MPA lower priority workplan - offset demand 2-7-13 (11.82 KB)

TOWG MPA lower priority workplan - tms 2-7-13 (12.76 KB)

USWG MPA high priority workplan - Improve modeling accuracy of land use characteristics, phosphorus and sediment (83.18 KB)

WTWG MPA workplan--algal turf scrubber expert panel (91.08 KB)

Not Quite “At a glance”

Major Topics – Modeling WG

- Watershed Model Development and Code Versioning
- Calibration Methodology
- Land use Loading Rates (with WQGIT and WGs)
- Sensitivities to inputs
- Fine Scale Processes (with LUWG)
- Lag Time
- Atmospheric Data
- Climate Change
- Conowingo and other Reservoirs

Major Topics - WQGIT

- Land use
- Fertilizer and Manure Applications
- BMP effectiveness
- BMP implementation accounting
- Scenario Builder Development and Code Versioning

BMP effectiveness

CBP Oversight: WQGIT

Lead: Jenn Volk, James Davis-Martin, Brian Benham

CBPO Contact: Lucinda Power

Priorities:

establishment and update of BMP definitions and efficiencies: AgWG

Description:

The WQGIT is evaluating new BMPs, and improving their definitions and associated effectiveness values through the partnership approved BMP protocol process.

WQGIT BMP Review Protocol

Progress:

The panels have been very active and continue to deliver BMP recommendations to the partnership. A consortium of universities under the leadership of Virginia Tech has received funding to help coordinate BMP expert panels as a supplement to the CBP process. In addition, Tetra Tech is available to provide technical and logistical support as well.

Completed panel reports are listed on ChesapeakeStat.

A separate web page for BMP panel reports is being prepared.

Next Steps:

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Expected Completion Date:

Oct 1, 2015

Summary

- Document / Web site being prepared to keep the Partnership up-to-date on model development
- Hierarchical structure allows
  - At-a-glance overview
  - Drill down to detailed information
- Continual updates
- Your name is on the page
  - You own the content.

Major Topics - WQGIT

- Land use
- Fertilizer and Manure Applications
- BMP effectiveness
- BMP implementation accounting
- Scenario Builder Development and Code Versioning

BMP implementation accounting

CBP Oversight: WQGIT

Lead: Jenn Volk, James Davis-Martin

CBPO Contact: Jeff Sweeney

Priorities:

Revisit watershed model calibration methods: MWG

Assess and explain water-quality trends: STAR

Description:

The effectiveness of CBP partnership watershed modeling in guiding decisions is dependent on accurate accounting of BMP implementation. This includes state and federal records as well as the systems that are used to collect the data

Progress:

There are several related efforts on BMP implementation

Historical BMPs – Jeff Sweeney - WTWG

Jeff is working with the partnership on the updating of the historical BMP database

NEIEN updates – Jeff Sweeney – WTWG

Jeff is supervising the changes to NEIEN based on input from the partnership

Non-Cost-Shared Data –Peter Claggett– AgWG

Peter is working on getting NRCS implementation data into a form that can be used publicly by the CBP.

Next Steps:

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Expected Completion Date:

Oct 1, 2015

Land use

CBP Oversight: Land Use Workgroup
Lead: Jenny Tribo and Karl Berger
CBPO Contact: Peter Claggett
Priorities:

Improve Spatial, temporal, and categorical representation of land uses: LUWG
Review and refine modeled assumptions about forest: FWG
Representation of federal land boundaries: LUWG

Description:

The Land Use Workgroup (LUWG) is leading the development of the Phase 6 land use data, including both historical and future projections. The LUWG is working closely with source sector workgroups under the WQGIT and with state agencies and local governments to ensure that the land use information used in Phase 6 is accurate, current, and reflects the state of the science and management actions for water quality restoration.

Progress:

Through close coordination with the WQGIT workgroups, the LUWG has developed a master list of proposed new land uses for Phase 6. The CBP Land Data Team and state agencies are actively developing, refining, and evaluating mapping protocols for each proposed land use. To map these new land uses, the LUWG distributed a request for local land use and land cover to state resource agencies. Tetra Tech is currently soliciting additional information from county and municipal governments. To date, data have been received from over 40 counties. Because the categories and resolution of land use/land cover data varies across jurisdictions, the LUWG is beginning the process to reconcile and cross-walk these data to the proposed Phase 6 classes.

Federal Land Boundaries

Mapping of federal property boundaries is important for accurately assigning responsibility for nutrient and sediment load reductions. The CBP GIS Team has worked with the CBP Federal Facilities Team to assemble a federal property boundary database. The GIS Team has also developed a web-based tool for federal facility managers to review and revise boundary and land use information.

Next Steps:

Need to know the list of land uses by Oct 2014 with draft acreage by Feb 2015

Expected Completion Date:

Oct 1, 2015

Scenario Builder Development and Code Versioning

CBP Oversight: WQGIT

Lead: Jenn Volk and James Davis-Martin

CBPO Contact: Jeff Sweeney

Priorities:

Model Data Processing: AgWG

modeling baseline-input data and assumptions

Cross-cutting priority as necessary for all changes to the modeling structure

Description:

Incorporate decisions from the CBP partnership. Test the effects of assumptions during development of recommendations. Re-structure scenario builder code to incorporate recommendations

Progress:

Restructured code to make future changes more easily implemented

Next Steps:

Move to cloud architecture

Expected Completion Date:

Oct 1, 2015

Fertilizer and manure application

CBP Oversight: WQGIT / AgWG

Lead: Curtis Dell

CBPO Contact: Matt Johnston

Priorities:

Model Data Processing: AgWG

modeling baseline-input data and assumptions

Improve Spatial, temporal, and categorical representation of land uses: LUWG

Description:

The Ag Modeling Subcommittee (AMS) of the Ag Workgroup is working on updates to fertilizer and manure application as part up the update for scenario builder. Matt Johnston is the coordinator for this group.

Progress:

The AMS has prioritized the list of potential updates to scenario builder based on their impact on modeled nutrient and sediment loads and is discussing land use definitions. The AMS is making progress on determining data sources for nutrient and sediment loads.

Next Steps:

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Expected Completion Date:

Oct 1, 2015

Land Use Loading Rates

CBP Oversight: Modeling Workgroup
Lead: Lee Currey and Dave Montali
CBPO Contact: Tetra Tech, Gary Shenk
Priorities:

Improve Spatial, temporal, and categorical representation of land uses: LUWG
Revisit watershed model calibration methods: MWG
Improve modeling accuracy of land use characteristics land uses: USWG

Description:

Land use loading targets will be based on multiple lines of evidence. Different types of modeling and monitored information will be incorporated from many sources. The MWG will oversee the process, but will welcome input from the WQGIT and its workgroups, particularly for relationships between different sub-classes within a large class. TetraTech will oversee the process as follows:
Set overall loading ratios between different broad land use types using large scale analyses.
Develop relationships between land use sub-classifications using literature and modeling
Apply relationships developed through other tracks
- Sensitivity to inputs
- Regional delivery differentiation
- Small scale effects

Final adjustments through Calibration to water quality data

Progress:

Broad Scale Analysis – USGS

The USGS will be using the Sparrow model with the CBP land use classifications to determine the overall ratio of loading rate between different large land use classifications in the Chesapeake Bay Watershed.

Literature reviews - TetraTech

TetraTech has already completed a literature review of urban land uses and will be conducting one on agricultural land uses. Several literature reviews already exist, which should be incorporated as well.

Peculiarities of Pervious Workshop – STAC

STAC will be delivering a workshop report that will have recommendations for urban land classifications and loading rates.

Expected Completion Date:

Oct 1, 2015