BIENNIAL STRATEGY REVIEW SYSTEM
Chesapeake Bay Program

Logic and Action Plan: Post Quarterly Progress Meeting

Land Use Methods and Metrics – 2019-2020

*[NOTE: make sure to edit **pre**- or **post**- in the text above, to tell the reader whether this logic and action plan is in preparation for your quarterly progress meeting or has been updated based on discussion at the quarterly progress meeting.]*

Long-term Target: Assess and understand the impacts of land use change on watersheds, habitats, and communities at a scale relevant to county-level decision-makers.
Two-year Target: (increment of metric for success)

Instructions: Before your quarterly progress meeting, provide the status of individual actions in the table below using this color key.
Action has been completed or is moving forward as planned.
Action has encountered minor obstacles.
Action has not been taken or has encountered a serious barrier.

Additional instructions for completing or updating your logic and action plan can be found on ChesapeakeDecisions.

Factor	Current Efforts	Gap	Actions	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential (to help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*
Scientific and Technical Understanding: Development of separate metrics for impervious surface, forest, farm, and	The Geospatial Award will result in 1m resolution monitoring of forest, farmland, and impervious	No affordable method exists to track wetland conversion and change.	**1.1** Design and implement a manual, stratified sampling approach at the county level and assess land cover change from			

wetland conversion at a resolution sufficient to inform county-level decisions.	surface change every 4-5 years.	QL-1 or QL-2 LiDAR data are needed throughout the watershed.	high resolution imagery circa 2009-2013.			
			1.2 Assess land use change throughout the Bay Watershed and Bay States from the early 1980's through mid-2010's using the CBP 2013 high-res land use coupled with the Land Change Analysis and Monitoring Program Database and National Land Cover Database, the NRCS National Resources Inventory, and the USFS's Forest Inventory and Assessment data.			
			1.3 Assess difference in high resolution land cover maps at the County level.			
			1.4 Investigate options for monitoring "hot spots" of land change every two years.			
			1.5 Monitor "hot spots" of change			
			1.6 Map and ReMap High-res land cover/use: 2013/14; 2017/18; 2021/22			
			Continued full support of the Geospatial Award.			

Scientific and Technical Understanding: Methodology to quantify impacts to water quality, habitats and healthy watersheds, and communities.	Impacts to water quality have been addressed via CAST.	Impacts to habitats, healthy watersheds, and communities.	**2.1** Quantify impact of land conversion on water quality (explaining changes in nutrient and sediment that relate to monitored and modeled land conversion) **2.2** Quantify impact of land conversion on healthy watersheds, wildlife, and stream habitats **2.3** Quantify impact of land conversion on communities Management elevation of importance of this outcome.			
Public Engagement: Development of a plan to communicate findings with the public, elected officials and the Bay Program.	Launch of the Chesapeake Bay Land Change website including development of land change forecasts.	No work done on the development of a Local Engagement Strategy that will integrate and disseminate results of land use methods and metrics outcome and land use options evaluation outcomes.	**3.1** Link the results of the Land Use Methods and Metrics Outcome Land Use Options Evaluation Workplan **3.2** Chesapeake Bay Land Change website			

ACTIONS – 2019-2020					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
Management Approach 1: Monitor the rate of conversion of forests, wetlands, and farmland, (and the rate of impervious surface change).					
	Design and implement a manual, stratified	Acquire NAIP imagery for 2009, 2013	USGS, CBPO GIS Team	Prince George's County, MD	Spring 2018

ACTIONS – 2019-2020					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
1.1	sampling approach at the county level and assess land cover change from high resolution imagery circa 2009-2013.	Design sampling framework	USGS, CBPO GIS Team	Watershed counties	Winter 2019
		Classify samples using Land Image Analyst or other software	CRC Staffers/ Interns	Prince George's County, MD	Summer 2020
1.2	Assess land use change throughout the Bay Watershed and Bay States from the early 1980's through mid-2010's using the CBP 2013 high-res land use coupled with the Land Change Analysis and Monitoring Program Database and National Land Cover Database, the NRCS National Resources Inventory, and the USFS's Forest Inventory and Assessment data.	Work with CBP GIS Team to assign and completed task	USGS, CRC Staffers	Watershed counties	Summer 2020
1.3	Assess difference in high resolution land cover maps at the County level.	Quantify change between two independently classified high-res land cover datasets.	CRC Staffers/ Interns	Prince George's County, MD	Summer 2019
		Compare with results from 1.1.	USGS, CBPO GIS Team		Summer 2020
1.4	Investigate options for monitoring "hot spots" of land change every two years.	Review literature of the science and technologies associated with remote sensing and image interpretation as well as consultation with remote sensing professionals	Chesapeake Conservancy	Watershed counties	Fall 2019
		Provide recommendations on the most effective and efficient approach			

ACTIONS – 2019-2020					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
1.5	Monitor "hot spots" of change	Assess "hot spots" of change from 2013/14 - 2017/18 - 2019/20 - 2021/22	Chesapeake Conservancy	Watershed counties	Summer 2019, Summer 2021, and Summer 2023
1.6	Map and ReMap High-res land cover/use: 2013/14; 2017/18; 2021/22	Using the best available methods, map high-res land cover/use wall-to-wall every four years, remapping previous years in the process.	Chesapeake Conservancy, University of Vermont	Watershed counties	Summer 2020, Summer 2023
Management Approach 2: Quantify the impacts of land conversion on water quality, healthy watersheds, and communities.					
2.1	Quantify impact of land conversion on water quality (explaining changes in nutrient and sediment that relate to monitored and modeled land conversion)	Assess the impact of future 2025 land use scenarios (Land Policy BMPs) on nutrient and sediment pollutant loads	USGS, CBPO GIS Team	Watershed counties	Fall 2018
		Assess the impact of future 2050 land use scenarios on nutrient and sediment loads			Summer 2019
2.2	Quantify impact of land conversion on healthy watersheds, wildlife, and stream habitats	Identify specific components of "health" and "habitat" to be evaluated and collect data, 1985- 2015	CBP Habitat and Healthy Watersheds GITs	State-identified healthy watersheds and habitats of interest	Spring 2020
		Analyze observed changes in land cover/use relative to changes health and habitat metrics (1985 - 2015)	USGS, CBPO GIS Team		Fall 2020
		Forecast changes in land cover/use through 2050 and relate to potential changes in health and habitat metrics	USGS, CBPO GIS Team		Spring 2021
2.3	Quantify impact of land conversion on communities	Identify specific components of "communities" to be evaluated.	LGAC, LGEI, LUWG, CCP	Watershed counties	Summer 2020
		Conduct literature review on the relationship between land change and community components.	TBD?	National	Fall 2020

ACTIONS – 2019-2020					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
		Forecast changes in land cover/use through 2050 and relate to potential changes in communities	USGS, CBPO GIS Team	Watershed counties	Spring 2021
Management Approach 3: Communicate the results to the public, elected officials, and to the Bay Program.					
3.1	Link the results of the Land Use Methods and Metrics Outcome Land Use Options Evaluation Workplan	Participate in the development of a Local Engagement Strategy that will integrate and disseminate results of land use methods and metrics outcome and land use options evaluation outcomes	LGAC and CBP Local Leadership Workgroup	Watershed counties	Spring 2021
3.2	Chesapeake Bay Land Change website	Launch Phase 6 land use data website	USGS, CBPO Web Team	Watershed counties	Summer 2017
		Testing, refinement, expansion	USGS, CBPO Web Team		
		Develop land change forecasts	USGS, LUWG		