High-resolution Land Use/Land Cover for the Chesapeake Bay Watershed and Applications for Tree Canopy Tracking

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Metropolitan Washington Council of Governments – Climate, Energy, and Environment Policy Committee
September 24th, 2025

Chesapeake Bay Program Land Use/Land Cover (LULC) Project: A Brief History

2013/14
- 16-classes
- First 1-meter LULC product

2017

2017/18
- 54-classes
- First 1-meter LULC Change product (2013/14 – 2017/18)

2022

2021/22
- 56-classes
- Three dates of 1-meter LULC and three LULC Change products

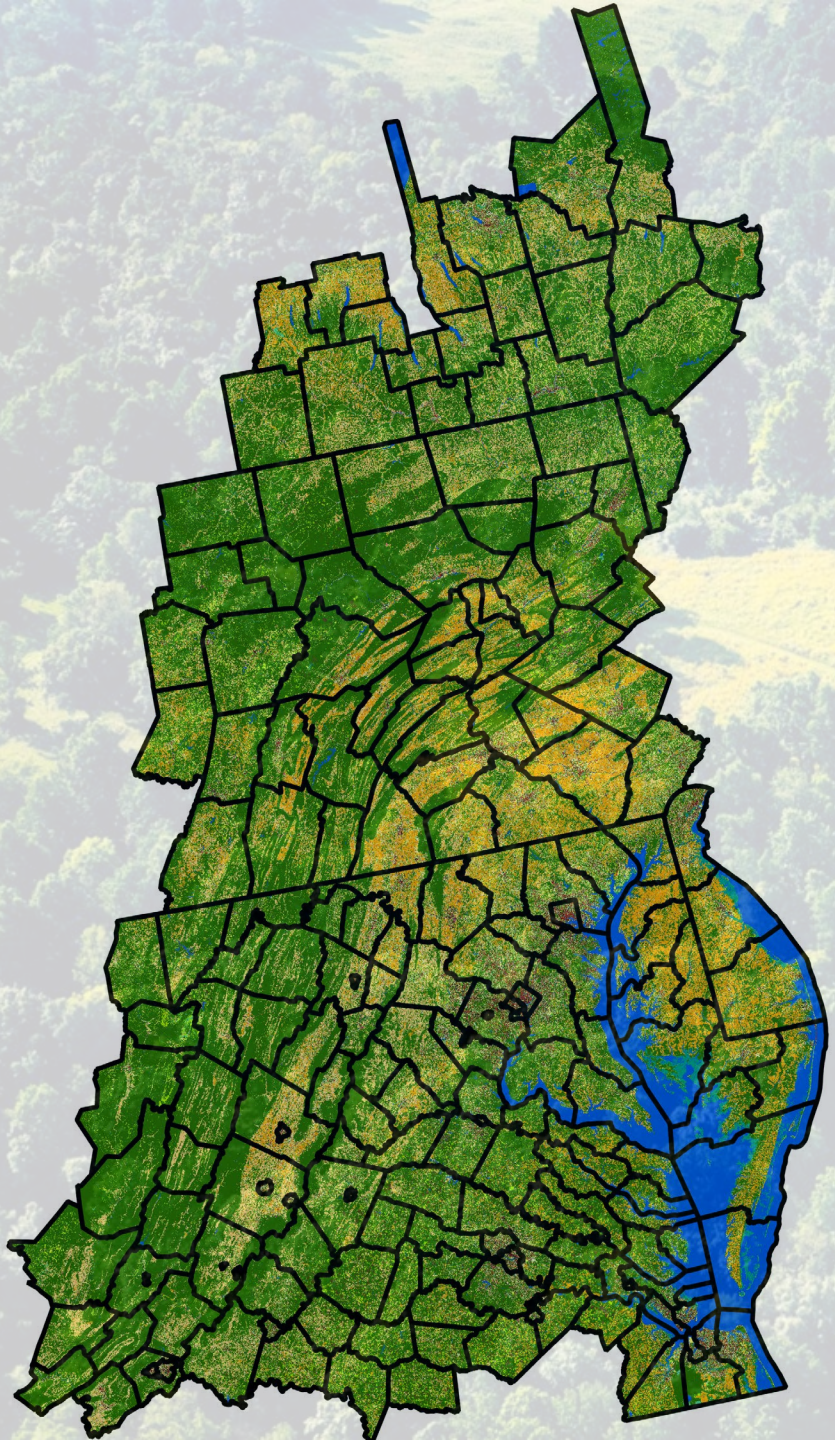
2024

2025/26
- 56-classes?
- First time mapping land cover and change with AI

2028

Land Use/Land Cover Monitoring

With each newly mapped year, the previous year(s) are remapped using the same methods for consistent change detection

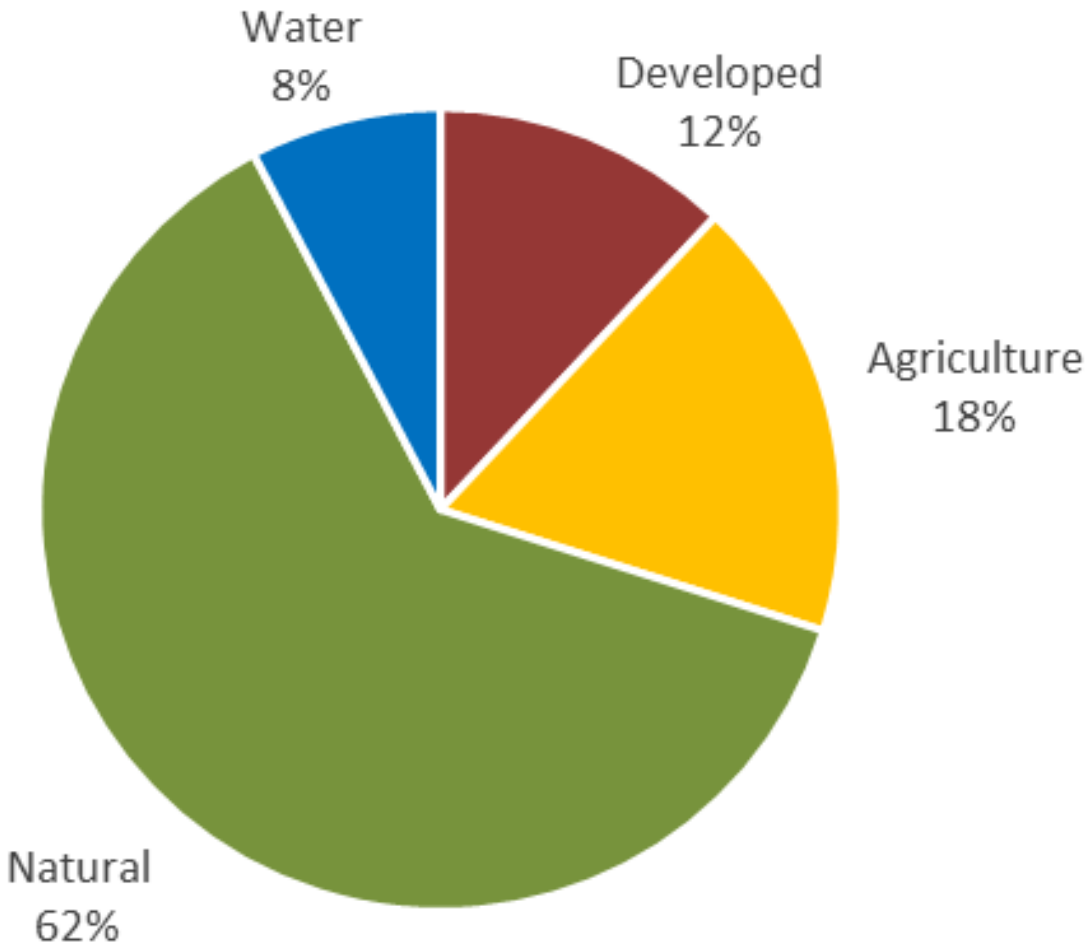


Spatial Extent and Resolution

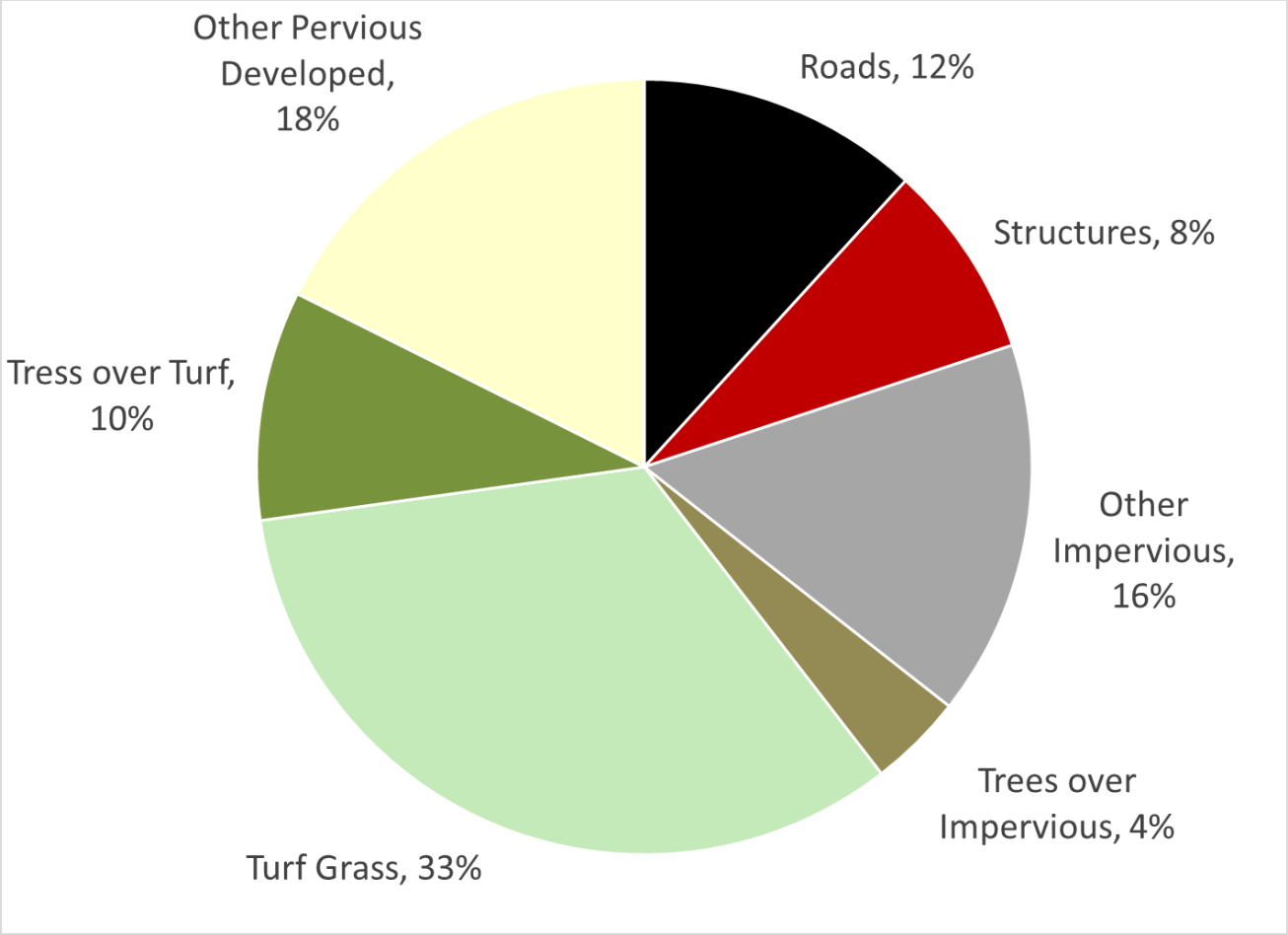
- Mapped extent
  - 205 counties intersecting or adjacent to the Chesapeake Bay watershed
  - 99,000 square miles
- Spatial Resolution
  - 1-meter^2 cells
- Temporal Resolution
  - 2013/14, 2017/18, 2021/22
- Categorical Resolution
  - 56 Land Use/Land Cover classes

Chesapeake Bay Basin Land Use

2021/22 1-meter resolution imagery



Components of Development



What is Land Cover?

University of Vermont Spatial Analysis Lab

The physical characteristics of the land surface (e.g., impervious, tree canopy, herbaceous)

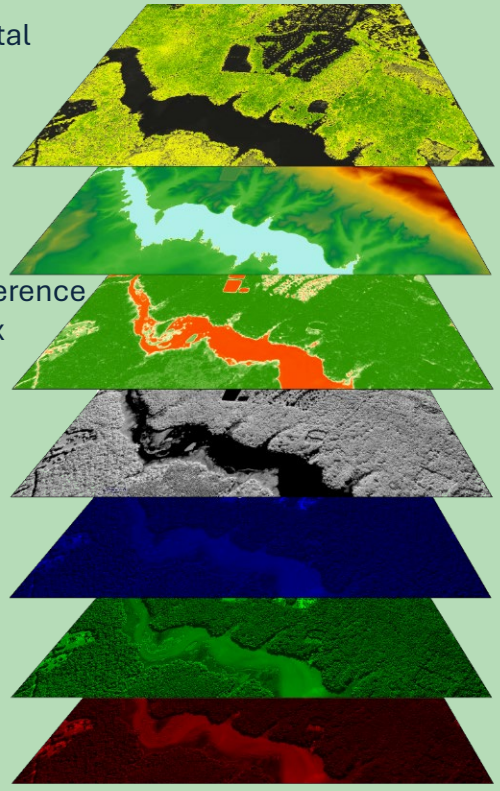
Inputs	Derivatives	Process	Land Cover

Light Detecting and Ranging (LiDAR)

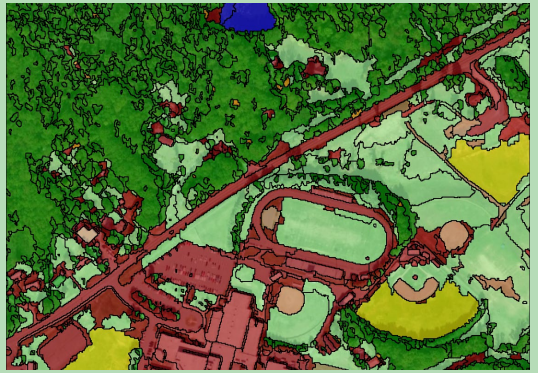
- Normalized digital surface model (nDSM)
- Digital elevation model (DEM)

National Agriculture Imagery Program (NAIP)

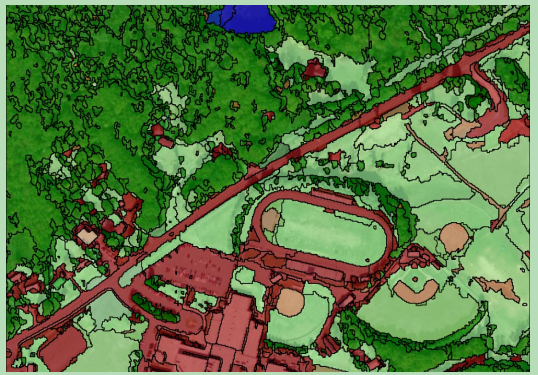
- Normalized difference vegetation index (NDVI)
- Near Infrared (NIR)
- Blue
- Green
- Red

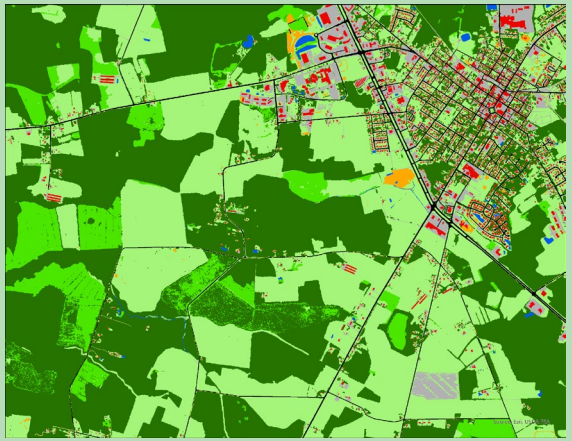


Rule-based, object-oriented image classification with eCognition software



Manual Corrections





- Structures
- Other Impervious
- Roads
- Tree Canopy over Structures
- Tree Canopy over Other Impervious
- Tree Canopy over Roads
- Tree Canopy
- Shrubland
- Low Vegetation
- Barren
- Water

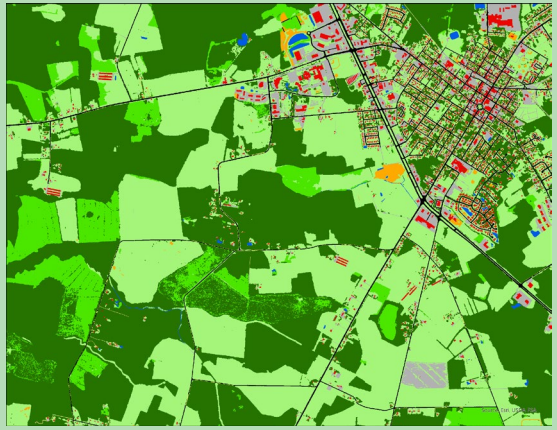
* Emergent Wetlands not included in release

What is Land Use?

How humans use the land (e.g., residential, agriculture, recreation)

Inputs*

Land Cover



Timber Harvest

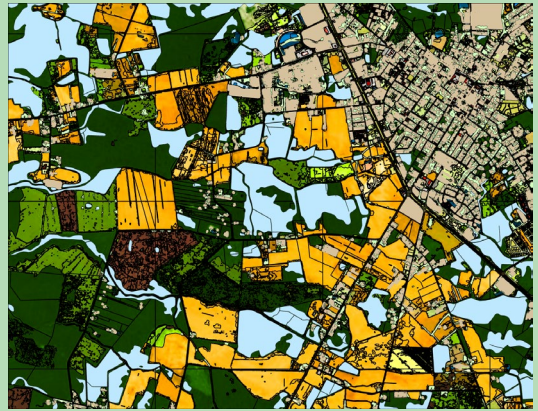
Parcels

Cropland Data Layer (CDL)

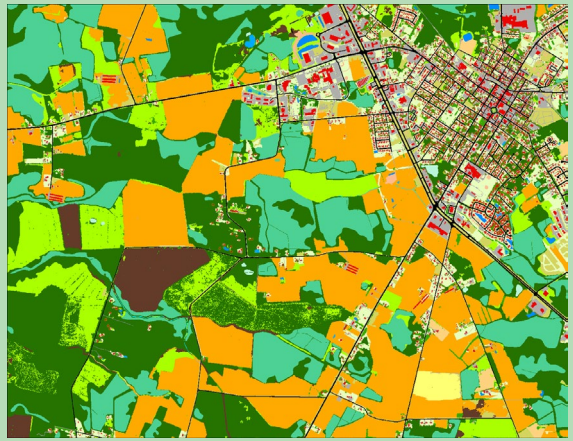
* Subset of inputs shown (over 25 ancillary datasets used)

Process

Rule-based, geospatial model in open-source Python to produce vector overlays and reconcile them into a land use raster



Land Use

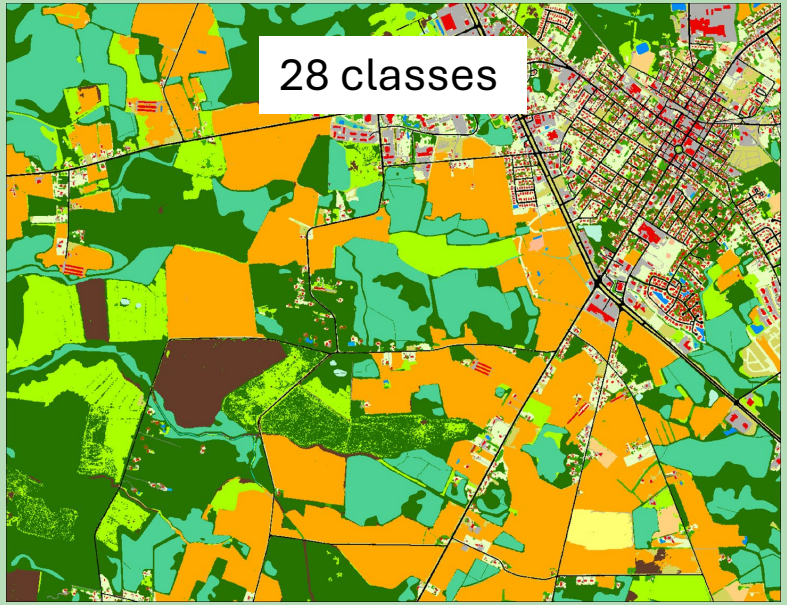


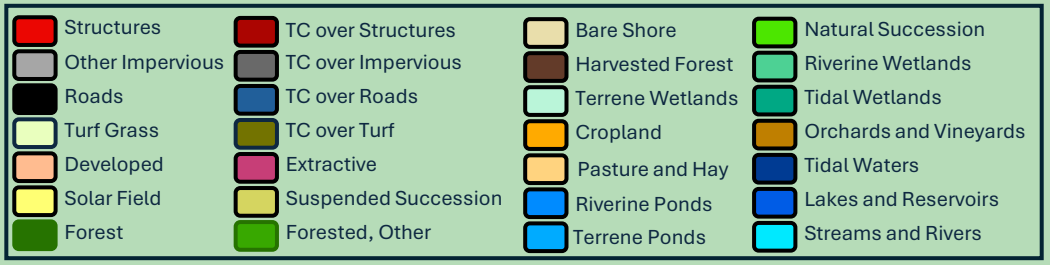
- Structures
- Other Impervious
- Roads
- Turf Grass
- Developed
- Solar Field
- Forest
- Bare Shore
- Harvested Forest
- Terrene Wetlands
- Cropland
- Pasture and Hay
- Riverine Ponds
- Terrene Ponds
- TC over Structures
- TC over Impervious
- TC over Roads
- TC over Turf
- Extractive
- Suspended Succession
- Forested, Other
- Natural Succession
- Riverine Wetlands
- Tidal Wetlands
- Orchards and Vineyards
- Tidal Waters
- Lakes and Reservoirs
- Streams and Rivers

What is Land Use/Land Cover (LULC)?

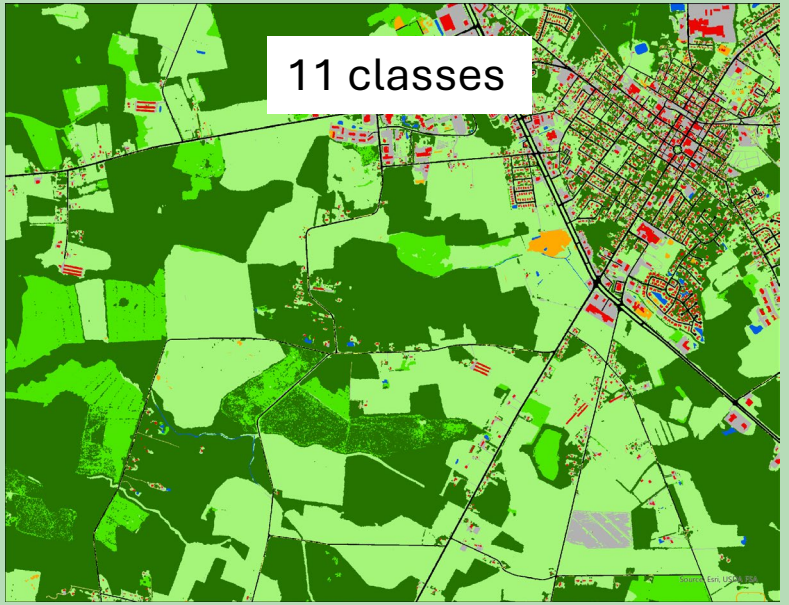
The combination of land use and land cover, reflecting both the physical surface and how humans make use of the land.

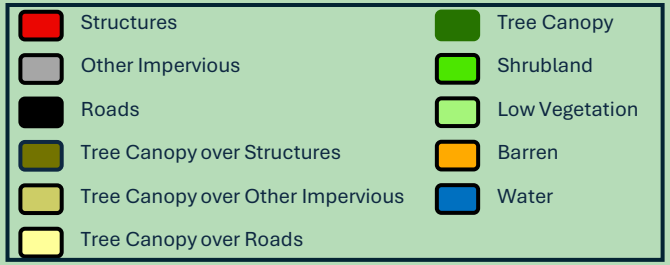
Land Use





Land Cover





Land Use / Land Cover

56 Land Use/Land Cover Classes

Example

Natural Succession
+
Shrubland
=
Natural Succession
Shrubland

Land Use / Land Cover (LULC) 56-Class Schema

Development

Roads
Structures
Other Impervious
Solar Field Panel Arrays
TC over Roads
TC over Structures
TC over Other Impervious
Turf Grass
Tree Canopy over Turf Grass
Bare Developed
Solar Field Barren
Solar Field Herbaceous
Solar Field Shrubland
Suspended Succession Barren
Suspended Succession Herbaceous
Suspended Succession Shrubland
Extractive Barren
Extractive Impervious

Agricultural

Cropland Barren
Cropland Herbaceous
Orchards and Vineyards Barren
Orchards and Vineyards Herbaceous
Orchards and Vineyards Shrubland
Pasture and Hay Barren
Pasture and Hay Herbaceous

Water

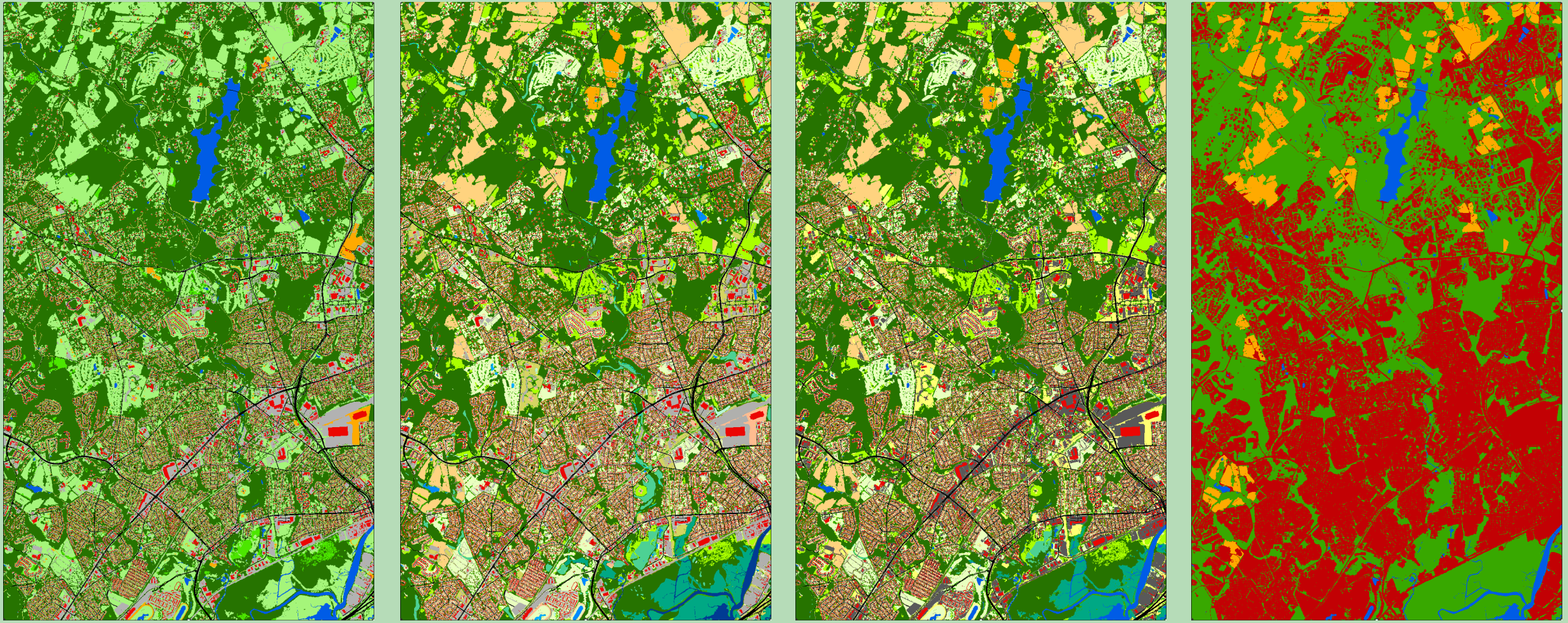
Tidal Waters
Lakes and Reservoirs
Riverine Ponds
Terrene Ponds
Streams and Rivers

Natural

Forest
Riverine Wetlands Forest
Terrene Wetlands Forest
Tidal Wetlands Forest
Forested, Other
Riverine Wetlands Tree Canopy
Terrene Wetlands Tree Canopy
Tidal Wetlands Tree Canopy
Natural Succession Barren
Natural Succession Herbaceous
Natural Succession Shrubland
Bare Shore
Harvested Forest Barren
Harvested Forest Herbaceous
Riverine Wetlands Harvested Forest
Terrene Wetlands Harvested Forest
Tidal Wetlands Harvested Forest
Riverine Wetlands Barren
Riverine Wetlands Herbaceous
Riverine Wetlands Shrubland
Terrene Wetlands Barren
Terrene Wetlands Herbaceous
Terrene Wetlands Shrubland
Tidal Wetlands Barren
Tidal Wetlands Herbaceous
Tidal Wetlands Shrubland

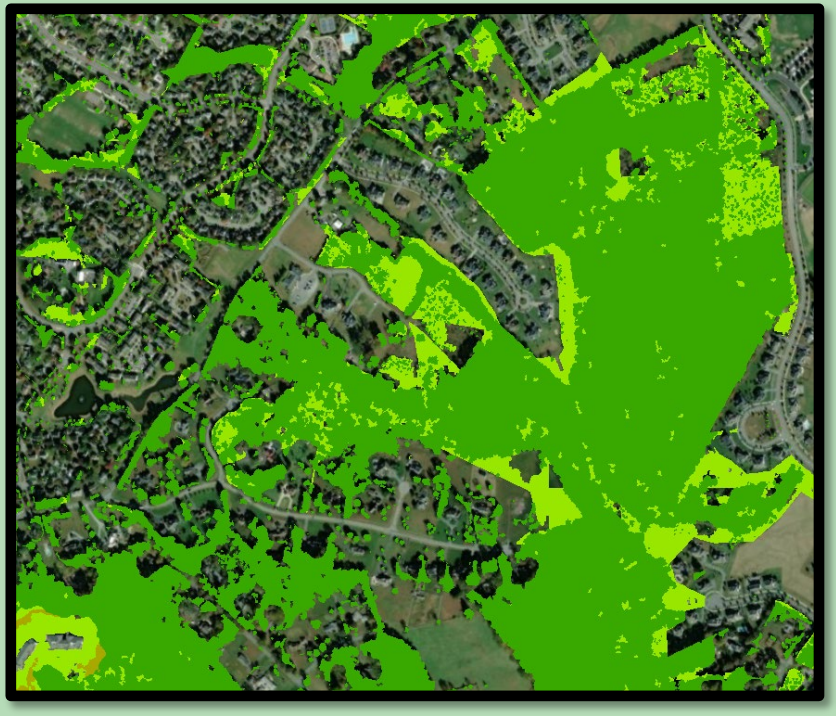
Aggregating Land Use/Land Cover Classes

Land Cover (11)	Land Use (28)	General Land Use (18)	Macro Land Use (4)



Defining Tree Canopy and Forested Extent

Forested Extent



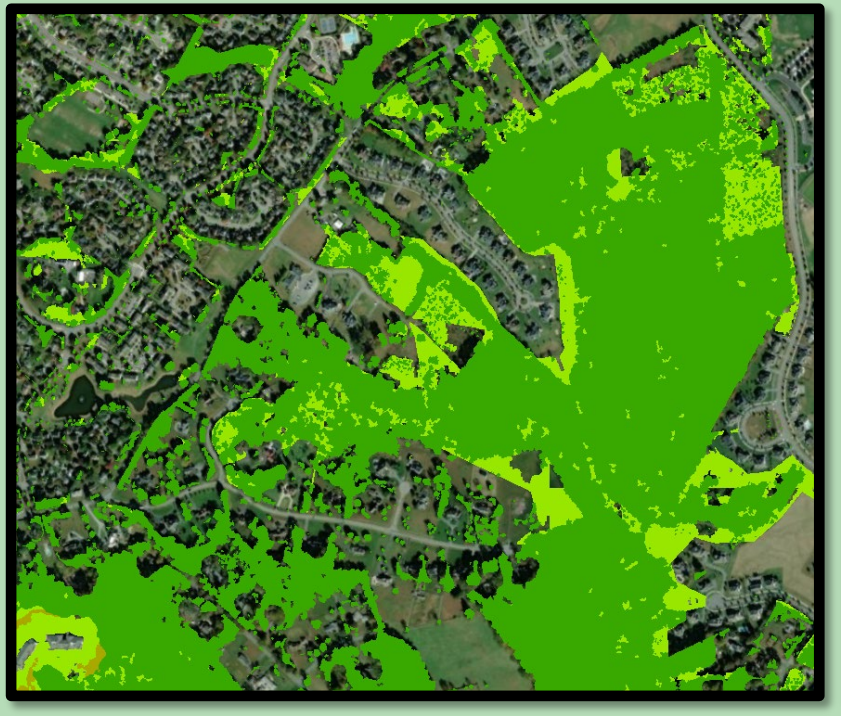
Tree canopy with an unmanaged understory (i.e. forest) and early successional forests, including recently harvested areas and areas undergoing natural succession

Tree Cover

All tree canopy cover including tree canopy over turf, tree canopy over impervious, and forested areas.

Tree Canopy and Forested Extent

Forested Extent



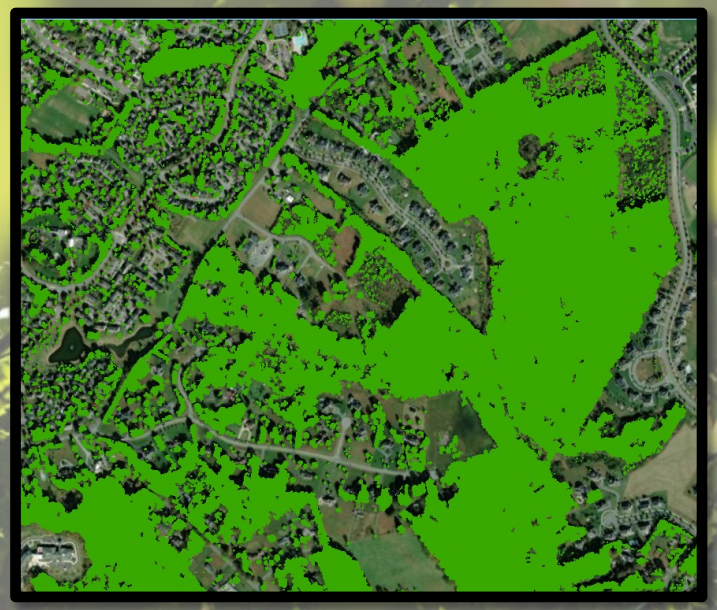
Tree canopy with an unmanaged understory (i.e. forest) and early successional forests, including recently harvested areas and areas undergoing natural succession.

Tree Cover

All tree canopy cover including tree canopy over turf, tree canopy over impervious, and forested areas.

State	% Total tree cover	% Total forested extent
DC	34.8%	23.3%
MD	49.4%	50.1%
VA	64.0%	70.0%

Tree Canopy in the COG region



FIPS	Name	Land_Area	TC_2013/14	TC_2018	TC_2021	pTC_2013/14	pTC_2018	pTC_2021
24017	Charles County	292,735	198,905	198,128	196,872	67.9%	67.7%	67.3%
51153	Prince William County	214,374	122,147	120,974	118,800	57.0%	56.4%	55.4%
51059	Fairfax County	251,866	140,172	139,276	137,859	55.7%	55.3%	54.7%
24033	Prince George's County	308,031	168,030	160,768	160,509	54.5%	52.2%	52.1%
24031	Montgomery County	316,587	153,217	147,597	148,301	48.4%	46.6%	46.8%
51107	Loudoun County	330,872	147,947	145,066	141,359	44.7%	43.8%	42.7%
24021	Frederick County	423,252	181,584	181,696	180,079	42.9%	42.9%	42.5%
51610	Falls Church city	1,310	540	535	531	41.2%	40.9%	40.5%
51600	Fairfax city	4,008	1,638	1,628	1,612	40.9%	40.6%	40.2%
11001	District of Columbia	39,339	13,662	13,650	13,694	34.7%	34.7%	34.8%
51013	Arlington County	16,625	5,660	5,657	5,562	34.0%	34.0%	33.5%
51685	Manassas Park city	1,939	621	619	607	32.0%	31.9%	31.3%
51510	Alexandria city	9,622	2,646	2,658	2,631	27.5%	27.6%	27.3%
51683	Manassas city	6,287	1,498	1,494	1,476	23.8%	23.8%	23.5%

Tree Canopy Change in the COG region

FIPS	Name	TC_2021	TC_2013/14_2018_22ed	TC_2013/14-18	TC_2018-21	TC_2013/14-21	pTC_chng
24033	Prince George's County	160,509	(7,291)	(7,262)	(259)	(7,521)	-4.7%
51107	Loudoun County	141,359	(2,863)	(2,881)	(3,707)	(6,588)	-4.7%
24031	Montgomery County	148,301	(5,784)	(5,620)	704	(4,916)	-3.3%
51153	Prince William County	118,800	(1,234)	(1,173)	(2,173)	(3,347)	-2.8%
51685	Manassas Park city	607	(1)	(2)	(12)	(14)	-2.3%
51013	Arlington County	5,562	8	(3)	(96)	(99)	-1.8%
51610	Falls Church city	531	(5)	(5)	(5)	(9)	-1.8%
51059	Fairfax County	137,859	(821)	(896)	(1,417)	(2,313)	-1.7%
51600	Fairfax city	1,612	(10)	(11)	(16)	(26)	-1.6%
51683	Manassas city	1,476	(4)	(4)	(17)	(21)	-1.5%
24017	Charles County	196,872	(789)	(778)	(1,256)	(2,034)	-1.0%
24021	Frederick County	180,079	2,117	113	(1,618)	(1,505)	-0.8%
51510	Alexandria city	2,631	19	12	(27)	(15)	-0.6%
11001	District of Columbia	13,694	(458)	(12)	44	32	0.2%

Tree Canopy and Forested Extent Change to Development in the COG region

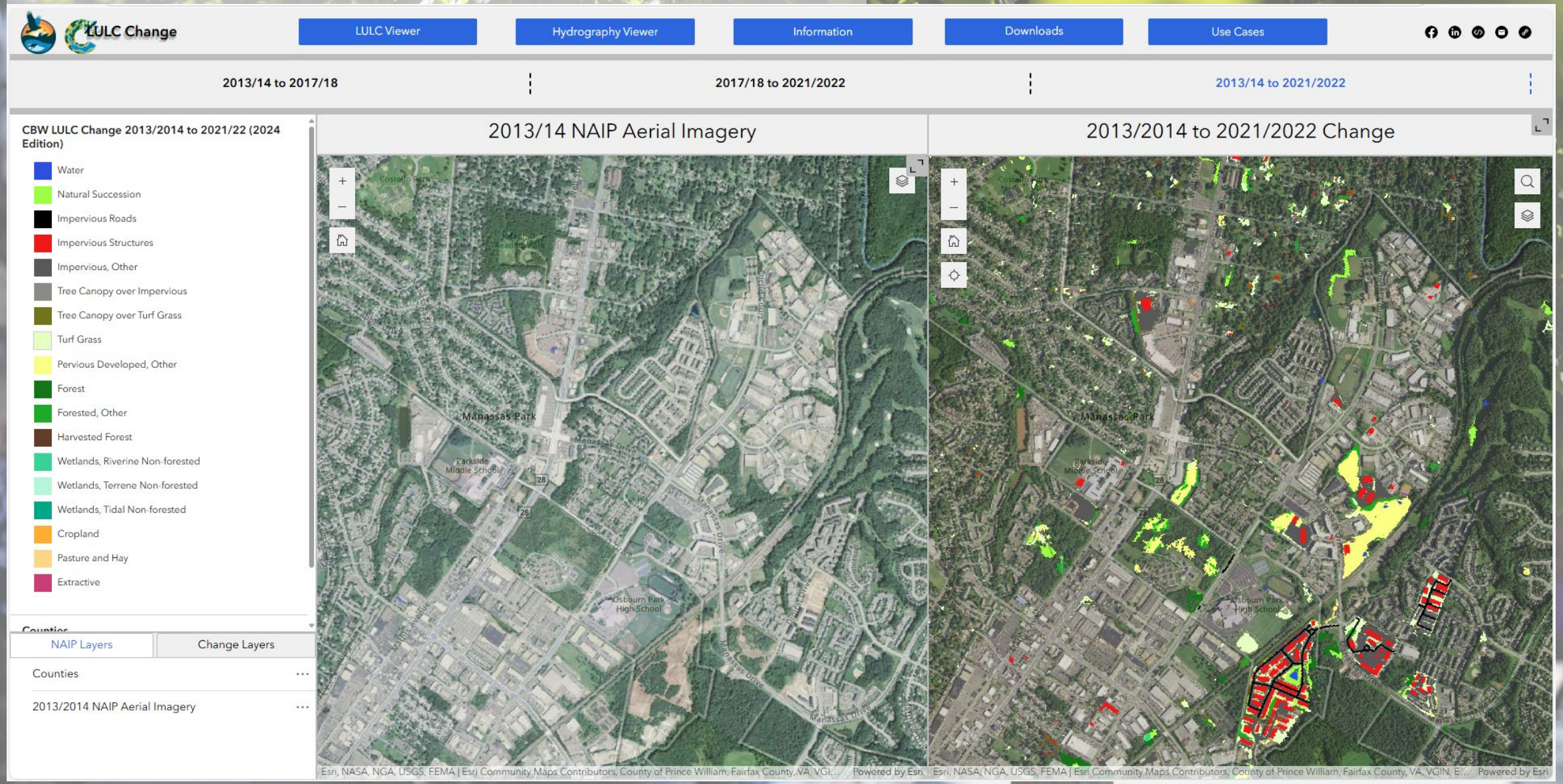
FIPS	Name	TCdev_t1_t2	TCdev_t2_t3	Tcdev_t1_t3	pTCdev_chng	FEdev_t1_t2	FEdev_t2_t3	FEdev_t1_t3	pFEchng
51685	Manassas Park city	(1.6)	(14.5)	(16.2)	-2.6%	(10.5)	(19.8)	(29.6)	-3.0%
24033	Prince George's County	(4,312.4)	201.2	(4,102.9)	-2.4%	(3,719.5)	(1,378.2)	(4,917.8)	-1.6%
24031	Montgomery County	(4,078.3)	431.1	(3,666.2)	-2.4%	(2,940.1)	(1,049.9)	(3,884.8)	-1.5%
51107	Loudoun County	(1,947.5)	(1,410.4)	(3,399.9)	-2.3%	(3,912.2)	(1,987.3)	(5,821.3)	-2.0%
51683	Manassas city	(4.4)	(27.0)	(31.4)	-2.1%	(22.2)	(41.8)	(62.8)	-3.6%
51610	Falls Church city	(4.7)	(5.4)	(10.0)	-1.9%	(8.8)	(2.8)	(11.5)	-3.3%
51600	Fairfax city	(10.7)	(19.0)	(29.8)	-1.8%	(13.6)	(12.2)	(25.3)	-1.5%
51153	Prince William County	(918.6)	(1,001.5)	(1,951.8)	-1.6%	(1,482.3)	(1,374.9)	(2,814.2)	-1.2%
51013	Arlington County	0.2	(83.0)	(82.9)	-1.5%	(22.0)	(42.6)	(63.7)	-1.2%
51059	Fairfax County	(650.0)	(1,086.1)	(1,735.6)	-1.2%	(1,258.1)	(1,177.6)	(2,390.6)	-1.1%
24021	Frederick County	(439.4)	(1,151.2)	(1,574.8)	-0.9%	(1,365.8)	(2,408.8)	(3,644.2)	-1.0%
24017	Charles County	(937.5)	(161.5)	(1,105.0)	-0.6%	(1,365.5)	(773.2)	(2,105.3)	-0.5%
51510	Alexandria city	12.1	(14.6)	(2.4)	-0.1%	(10.9)	(28.8)	(39.4)	-1.5%
11001	District of Columbia	(16.0)	16.4	(1.2)	0.0%	(97.2)	(170.5)	(259.4)	-1.5%


2024
Yorkshire
YORKSHIRE VILLAGE
YORKSHIRE PARK
YORKSHIRE ACRES
Bull Run
Bull Run
Manassas Park
Loch Lomond
Image © 2025 Airbus
Google Earth


2024
Yorkshire
YORKSHIRE VILLAGE
YORKSHIRE PARK
YORKSHIRE ACRES
Bull Run
Bull Run
Manassas Park
Loch Lomond
Image © 2025 Airbus
Google Earth

Manassas Park City, Virginia

(https://lulc-viewer.cicapps.org/)



Manassas Park City, Virginia

Tree Cover Status & Change
FOR MANASSAS PARK, VA 2014–2021

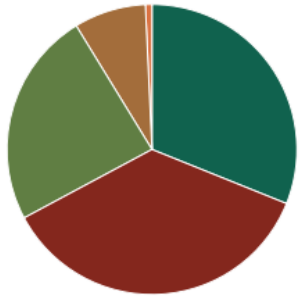
31%
Total percent of land with Tree Cover

$483,000
Annual benefits provided by Tree Cover (in reduced air pollution, stormwater, & carbon dioxide)

-16 Acres
Net loss of Tree Cover on developed lands, 2014 to 2021

What is the land use/land cover breakdown in your community?

1,938 ACRES OF LAND AREA
IN MANASSAS PARK



31%	Tree Cover[1] 607 acres	36%	Impervious 696 acres
24%	Turf Grass 457 acres	8%	Other[2] 164 acres
0.73%	Agriculture 14 acres	< 0.1%	Non-Forested Wetlands 0.13 acres

1 . Tree cover includes all trees occurring on all land uses, such as individual trees found over turf, impervious, agricultural, wetlands, or other lands. It also includes areas of "forest," defined in this dataset as patches of tree cover 1 acre or greater, with a minimum patch width of 36 meters.

2 . Other includes a mixture of non-treed land uses not captured in the main pie chart categories. See the *Data Guide* for detailed definitions of "other" and all the land use categories as well as accuracy statistics.

Land use/land cover statistics were generated based on 2021 imagery using the 2024 edition of the *Chesapeake Bay Land Use and Land Cover Database*.

Where does tree cover occur in your community?

54% is in forest (**325** acres)

3% is over impervious (**18** acres)

24% is over turf grass (**148** acres)

19% is other tree cover (**115** acres)

What are some benefits of tree cover in your community?

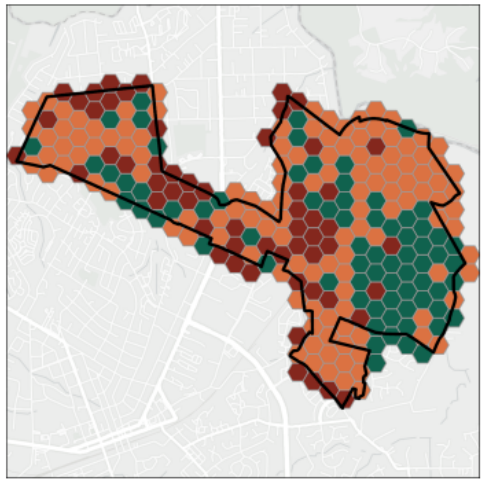
Total Air Pollution Removal Value
29,000 lbs removed annually
$48,000 saved annually
Total air pollution removal includes CO, NO_2, O_3, SO_2, and Particulate Matter (PM2.5, PM10).

Gallons of Reduced Stormwater Runoff Value
8.0 million gallons reduced annually
$72,000 saved annually

Carbon Sequestered Value
760 tons removed annually
$363,000 saved annually

Calculated based on 2021 tree cover data using: *landscape.itreetools.org*

How is tree cover changing on developed and developing lands?



> 2000 ft^2 Net Tree Cover loss | Minimal Tree Cover Change (± 2000 ft^2) | > 2000 ft^2 Net Tree Cover gain

*Hexagons that are >90% water are not shown on the map.

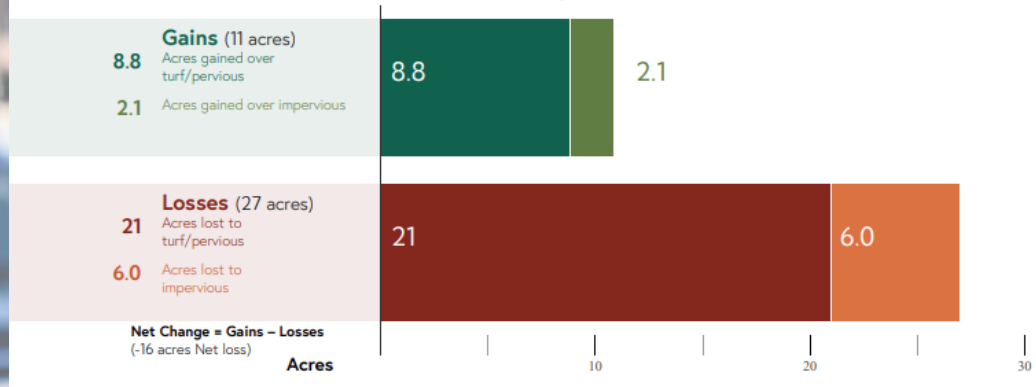
Understanding how your tree cover changes over time can inform the sustainable management of forests and community trees. The map to the left shows where your community has lost and gained tree cover from 2014 to 2021, focusing on land that is already or newly developed.

Tree cover can be lost quickly due to human activities (e.g., construction) or natural events (e.g., severe weather).

Tree cover can be gradually increased through tree planting and natural regrowth, but these gains may take 10-15 years to be detected in high resolution imagery.

Since mature, healthy trees provide significantly greater community benefits than newly planted trees, it is important to both preserve existing tree cover and seek opportunities to grow new trees and forests. Local land use planning, ordinances, and tree programs play a critical role!

Tree Cover Change on developed/developing lands (2014–2021)



Chesapeake Bay Land Use/Land Cover (LULC) Database 2024 Edition

View

Dates

Publication Date : 2025-06-23
Start Date : 2013
End Date : 2022

Citation

Claggett, P. R., McDonald, S. M., O'Neil-Dunne, J., MacFaden, S., Walker, K., Guinn, S., Ahmed, L., Buford, E., Kurtz, E., McCabe, P., Pickford, J. A., Royar, A., Schulze, K., 2025, Chesapeake Bay Land Use/Land Cover (LULC) Database 2024 Edition: U.S. Geological Survey data release, https://doi.org/10.5066/P14BEBRC.

Summary

The Chesapeake Bay Land Use/Land Cover (LULC) Database facilitates the characterization of the landscape over time for three discrete time periods at 1-meter spatial resolution. The database was developed by Chesapeake Conservancy (CC) in cooperation with the University of Vermont's Spatial Analysis Laboratory and U.S. Geological Survey (USGS) as part of a 6-year Cooperative Agreement between Chesapeake Conservancy and the U.S. Environmental Protection Agency (EPA) and a separate Interagency Agreement between the USGS and EPA to

... show more ...

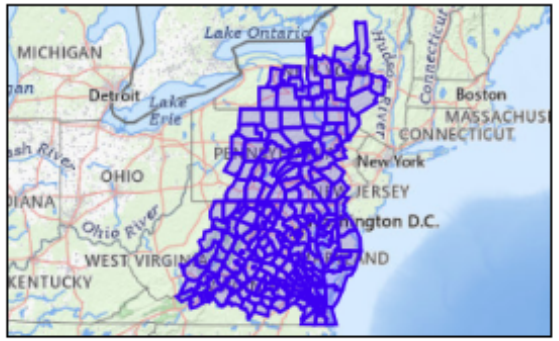
Child Items (4)

- Land Use/Land Cover (LULC) Rasters
- Land Use/Land Cover Change (LULCC) Rasters
- Land Use/Land Cover Change (LULCC) Tabular Matrices
- Region, State, and County Summary Tables
  - Land Use/Land Cover (LULC) Summary Tables
  - Land Use/Land Cover Change (LULCC) Summary Tables

Contacts

SDC Data Owner : Lower Mississippi-Gulf Water Science Center

Map »



Spatial Services

ScienceBase WMS : https://www.sciencebase.gov/catal

Communities

- USGS Chesapeake Bay

Associated Items

- *constituent* Kent County (10001), Delaware
- *constituent* Land Use/Land Cover Change (LULCC) Rasters
- *constituent* Pennsylvania
- *constituent* Snyder County (42109), Pennsylvania
- *constituent* Blair County (42013), Pennsylvania

View Associated Items

Chesapeake Bay Land Use/Land Cover (LULC) Database 2024 Edition

View

Dates

Publication Date : 2025-06-23
Start Date : 2013
End Date : 2022

Citation

Claggett, P. R., McDonald, S. M., O'Neil-Dunne, J., MacFaden, S., Walker, K., Guinn, S., Ahmed, L., Buford, E., Kurtz, E., McCabe, P., Pickford, J. A., Royar, A., Schulze, K., 2025, Chesapeake Bay Land Use/Land Cover (LULC) Database 2024 Edition: U.S. Geological Survey data release, https://doi.org/10.5066/P14BEBRC.

Summary

The Chesapeake Bay Land Use/Land Cover (LULC) Database facilitates the characterization of the landscape over time for three discrete time periods at 1-meter spatial resolution. The database was developed by Chesapeake Conservancy (CC) in cooperation with the University of Vermont's Spatial Analysis Laboratory and U.S. Geological Survey (USGS) as part of a 6-year Cooperative Agreement between Chesapeake Conservancy and the U.S. Environmental Protection Agency (EPA) and a separate Interagency Agreement between the USGS and EPA to

... show more ...

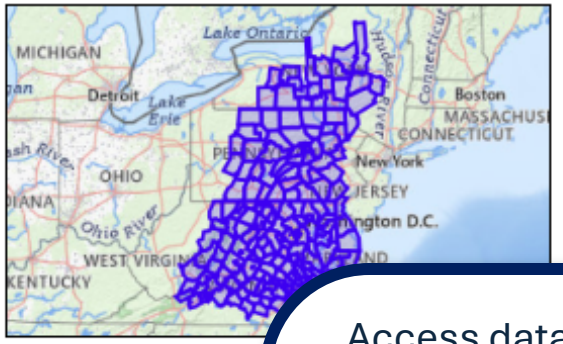
Child Items (4)

- Land Use/Land Cover (LULC) Rasters
- Land Use/Land Cover Change (LULCC) Rasters
- Land Use/Land Cover Change (LULCC) Tabular Matrices
- Region, State, and County Summary Tables
  - Land Use/Land Cover (LULC) Summary Tables
  - Land Use/Land Cover Change (LULCC) Summary Tables

Contacts

SDC Data Owner : Lower Mississippi-Gulf Water Science Center

Map »



Spatial Service

ScienceBase WMS : https://www.scienceb

Communities

- USGS Chesapeak

Associated Ite

- *constituent* Kent C
- *constituent* Land U (LULCC) Rasters
- *constituent* Penns
- *constituent* Snyder Pennsylvania
- *constituent* Blair County

View Associated Items

Access data release, here:

Chesapeake Bay Land Use/Land Cover (LULC) Database 2024 Edition

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New in 2024 edition -- Tabular summaries of LULC for States and Counties

Contacts

SDC Data Owner : Lower Mississippi-Gulf Water Science Center

Map »

Spatial Service

ScienceBase WMS : https://www.scienceb

Communities

- USGS Chesapeak

Associated Ite

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- *constituent* Land U (LULCC) Rasters
- *constituent* Penns
- *constituent* Snyde Pennsylvania
- *constituent* Blair County

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state_lulc-summary-tables_2024-Edition

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Comments Viewing Edit a copy

A1 State

State	T3	TotalAcres	LandAcres	ROAD	IMPS	IMPO	TCIS	TURF	TCTG	PDEV	FORE	FORO	HARF	NATS	CROP	PAST	EXTR	TDLW	RIVW	TERW	WATR
DC	2021	43,744.0	39,335.0	5,252.4	6,333.8	6,790.6	2,329.1	4,348.4	3,247.3	1,843.1	5,496.7	2,621.3	4.0	1,047.6	-	-	-	16.5	3.9	0.4	4,409.0
DE	2021	1,592,818.0	1,230,539.9	30,542.9	27,003.0	42,871.8	7,196.2	94,154.6	26,324.1	42,808.8	387,116.0	33,424.3	5,641.2	37,630.4	395,016.8	17,370.5	427.2	73,848.8	7,504.7	1,658.6	362,278.1
MD	2021	7,939,753.3	6,190,375.2	140,164.8	119,538.9	216,535.4	59,240.4	434,315.2	145,590.6	191,258.3	2,664,935.2	228,271.8	20,629.3	244,030.3	1,134,631.8	348,846.7	7,988.9	201,177.6	28,293.0	4,926.9	1,749,378.1
NY	2022	10,339,784.2	9,985,179.6	139,879.5	54,801.5	86,685.8	38,018.9	351,150.3	70,511.7	215,955.0	5,808,223.9	215,791.3	24,374.5	560,627.0	765,897.3	1,535,666.0	6,655.3	-	99,209.9	11,731.6	354,604.7
PA	2022	19,532,264.2	19,290,194.5	202,687.6	161,973.0	332,735.1	62,373.6	740,039.6	173,630.2	507,143.5	11,719,864.4	405,254.4	94,349.7	1,063,493.4	1,974,971.2	1,710,304.1	39,077.7	-	89,166.5	13,130.4	242,069.7
VA	2021	19,163,859.3	17,082,297.5	296,559.9	175,991.1	352,051.7	87,157.0	699,564.8	228,450.8	314,445.8	10,033,509.6	395,797.0	508,974.2	999,373.9	1,044,990.8	1,686,924.0	11,916.4	171,327.9	71,678.0	3,584.7	2,081,561.8
WV	2022	5,153,275.2	5,130,610.4	22,489.0	13,161.1	33,137.1	18,729.1	101,159.7	20,015.0	81,278.8	3,928,245.8	65,693.4	31,897.8	251,756.5	64,327.5	475,708.5	4,222.8	-	17,460.5	1,327.7	22,664.9
region	2021/2022	63,765,498.3	58,948,532.0	837,576.3	558,802.3	1,070,807.5	275,044.4	2,424,732.7	667,769.6	1,354,733.2	34,547,391.7	1,346,853.5	685,870.6	3,157,959.1	5,379,835.4	5,774,819.8	70,288.4	446,370.8	313,316.5	36,360.4	4,816,966.2

lulc T3 lulc T2 lulc T1 general T3 general T2 general T1 lc T3 lc T2 lc T1 LULC_Definitions LC_Definitions README

Workbook Statistics

Access data release, here:

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Land Use/Land Cover Change Matrices (Loudoun County, VA)

2014-2021	ROAD	IMPS	IMPO	TCIS	TURF	TCTG	PDEV
ROAD	-	3.5	8.0	42.4	1.6	2.5	1.3
IMPS	0.2	-	6.8	29.0	1.3	5.3	2.1
IMPO	177.0	247.6	-	64.3	261.5	11.9	96.0
TCIS	38.8	59.6	31.9	-	26.1	0.1	15.9
TURF	8.7	40.1	278.8	0.2	-	145.7	45.6
TCTG	0.4	14.1	38.7	0.7	148.3	-	24.9
PDEV	195.2	426.6	674.3	0.5	1,342.9	26.2	
FORE	173.7	421.9	840.0	1.3	652.7		9
FORO	28.2	46.6	117.7	1.1	406.3		3
HARF	4.1	2.3	15.3	0.0	0.5		5
NATS	45.9	233.8	391.4	0.2	699.7		8
CROP	34.5	11.1	34.6	0.0	9.3		3
PAST	61.7	180.9	422.0	0.1	37.7	13.6	77.0
EXTR	0.0	0.6	0.0	0.2	0.1	0.1	16.3
TDLW	-	-	-	-	-	-	-
RIVW	0.6	1.7	5.1	0.0	10.3	-	-
TERW	0.1	0.1	0.2	0.0	0.7	-	-
WATR	0.1	1.9	7.1	0.0	3.1	0.1	3.7
Increase	**769.4**	**1,692.5**	**2,871.9**	**140.1**	**3,602.0**	**746.9**	**1,468.6**
Decrease	**73.9**	**48.3**	**995.2**	**256.8**	**581.3**	**330.9**	**3,249.9**
Net Change	**695.5**	**1,644.2**	**1,876.6**	**(116.7)**	**3,020.7**	**416.0**	**(1,781.3)**

1,759 acres of Forested Extent converted to Turf Grass from 2014-2021

Thank you!

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Visit the State of the Forests StoryMap, here:

Access the Chesapeake Conservancy's LULC Viewer, here.

Access 2024 edition LULC data release, here: