

TO BETTER KNOW YOUR COUNTY:
FAQs About Calvert's Environment

Formed in 1975, the Calvert County Environmental Commission (EC) is a volunteer advisory committee charged with making recommendations, after thorough study and deliberation, to the Board of County Commissioners (BOCC) on matters pertaining to the environment of Calvert County. The EC's arena of activities includes, but is not limited to, water resources, biodiversity, sustainability, aesthetic impact, socio-economic impact, and the general health and welfare of county residents. Knowledgeable residents can help the EC garner information on environmental issues and make more informed recommendations to the BOCC. These Frequently Asked Questions (FAQs) and answers were developed by the EC to help educate county residents. This list of FAQs and other FAQs posted on the EC's web page will be expanded and updated as needed. If you have a question that doesn't appear here, go to the "Can I Ask a Question?" section at the end of this FAQs list and submit your question(s).

LAND

History of Calvert County

1. What was Calvert County like during the ice ages?

During glacial times, most recently around 25-20 thousand years ago, the area of present Calvert County was covered by a boreal forest, similar to what is today found in Labrador, Canada. Locally, during the coldest time, there may have been park tundra—clumps of black spruce, tamarack, and jack pines interspersed with tundra. There was no Chesapeake Bay back then—the Susquehanna River flowed where the shipping channel is today, around 150 feet below present sea level. After a warming period to near present climate conditions, ice age climates returned 12,800 years ago and lasted to 11,300 years ago. Presumably woolly mammoths thrived here during glacial climates.

2. When did people first visit what is now Calvert County?

Hunting parties probably crossed through present Calvert County by at least 13,000 years ago (Clovis culture), and plausibly already by 15,000 years ago (Pre-Paleo Indians). Earlier arrivals are speculative.

3. What kind of animals lived in what is now Calvert County when people first set foot here?

The first people encountered a variety of animals which later became extinct. In our region, these ancient animals included dire wolves, sabre-tooth cats, mastodons, giant ground sloths, large-headed llamas, giant beaver, and short-faced bears, besides existing species like black bears,

whitetail deer, and wolves. There were also large predatory and carrion feeding birds, species which also went extinct around 12,800 years ago for reasons still being debated.

4. When and where did the earliest Native Americans live in what is now Calvert County?

The oldest known encampments date from 9,500-9,200 years ago (Jefferson Patterson Park and Museum and Pig Point further up the Patuxent River). It seems likely that this was about the time tidewater advanced this far up the Patuxent River, allowing easy upstream and downstream travel by canoe, as well as giving access to new seafood resources.

5. How many people lived in what is now Calvert County when Captain John Smith explored the Chesapeake Bay and Patuxent River in 1608?

In the summer of 1608, Smith mapped about six Native American hamlets along the Patuxent shore of what is today Calvert County. He also noted the number of able bodied fighting men. Taking a reasonable multiplier gives a total population of a few hundred, probably about 300 men, women and children.

6. What kind of animals lived in what is now Calvert County when English colonist arrived?

The animals present then included species now either extirpated (wolves, mountain lions, and black bears) and three bird species now extinct (ivory-billed woodpeckers, Carolina parakeets, and passenger pigeons). An occasional elk may have wandered into the area from the Piedmont.

7. What animals became extinct as a result of English colonization? Which ones just became extirpated (locally extinct)? Of those, what animals have been restored or have come back on their own?

Ivory-billed woodpeckers, passenger pigeons, and Carolina parakeets became extinct, while black bears, wolves, white-tailed deer, turkeys, mountain lions, and probably also beavers and ground hogs were extirpated by English colonists, probably by the early to middle 1700s in Calvert County. After World War II, ground hogs and beavers returned, while deer and turkeys were reintroduced in the late 1940s (deer from Wisconsin) and middle 1970s (turkeys).

8. When was Calvert County founded?

Calvert County was founded in 1650 and first named Charles County. On 3 July 1654, it was renamed Calvert County. Then on 20 October 1654, it was renamed Patuxent County. In 1658, the original name, Calvert County, was restored; but 1654 is considered the official 'birth year' of the county.

9. Who are some famous people who have lived in the County?

- Arthur Storer, first Astronomer in the American colonies
- Louisa Adams, wife of U.S. President John Quincy Adams
- Margaret Taylor, wife of U.S. President Zachary Taylor
- Roger Brooke Taney, Chief Justice of U.S. Supreme Court
- Tom Clancy, author
- Dr. Thomas Turner, Dean of Johns Hopkins Medical School
- Hon. Louis Goldstein, State Senator and then Comptroller
- Thomas Johnson, first Governor of post-colonial Maryland (1777-1779)
- William Sampson Brooks, Author, and 44th Bishop of the African Methodist Episcopal Church
- Simeon Booker, journalist and author
- Charles Ball, autobiographer of influential slave narrative
- Dr. Thomas Parran, Jr. 6th Surgeon General of the US

Calvert Cliffs

1. How old are the Calvert Cliffs?

The Calvert Cliffs are not millions of years old, but are modern, being constantly maintained and modified by erosion. They began to form roughly 5,000 years ago, as rising sea levels widened the Chesapeake Bay, causing the shoreline to advance west to a gradual escarpment, what was left of the earlier ancient Calvert Cliffs when sea levels began to fall at the end of an earlier interglacial warm period—around 120,000 years ago. In some places the modern shoreline has not yet advanced far enough to reoccupy that ancient shoreline, notably northwest from Chesapeake Beach.

2. Where are the Calvert Cliffs located, how long are they, how high and how steep?

The present cliffs extend from just south of Chesapeake Beach to about Drum Point, about 30 miles. Well north of North Beach, a short section of cliffs reappears, the Fairhaven Cliffs. The present Calvert cliffs are generally 50 to 100 feet high and typically have slopes of around 40 to 60 or more degrees.

3. What are the erosion rates of the Calvert Cliffs?

Where the cliffs have been eroding naturally, the rates of shoreline retreat are generally a few to 10 inches per year in the middle and northern cliffs; but along the southern cliffs, the rates may be up to more than one or two feet per year. In a few areas (Cove Point spit and Flag Ponds), sand is accumulating along the shoreline, causing the shoreline to grow outwards.

To read more on this subject see the report "Chesapeake Bay Cliff Erosion in Calvert County": <http://www.co.cal.md.us/DocumentCenter/View/3389/SteeringCommitteeDraftReport?bidId=>

4. How many types of creatures have been found in the Calvert Cliffs?

More than 600 different species have been identified, including foraminifera, diatoms, mollusks, arthropods, birds, fish, amphibians, reptiles, and mammals. Some of the fossils are remains of land animals which inhabited the nearby coastal plain.

5. Why are there so many fossil shark teeth compared to other kinds of teeth?

Sharks produce many teeth during their lifetimes. New teeth form below the older teeth and rotate upward, so a single shark may produce many hundreds if not thousands of teeth in its lifetime.

6. How deep was the Atlantic Ocean when those sharks and whales, whose fossil remains we find today, swam into what is now Calvert County?

Our region was intermittently an embayment of the Atlantic Ocean, and water was never deep, varying from a few feet to perhaps 100-200 feet.

7. Can fossils be found elsewhere in the county?

The same strata (layers) of sediment exposed in the Calvert Cliffs are present under nearly all of Calvert County. Fossils may be found in steep ravines which cut into these layers. However, our acid soil (low pH) means that shells are generally dissolved before any layers are exposed by erosion in ravines.

8. Why does the endangered tiger beetle need eroding cliffs to survive?

There are two species of tiger beetles of concern along the Calvert Cliffs. The Northeastern Beach Tiger Beetle depends on undisturbed beach habitat and has declined sharply since the late 1980s. The Puritan Tiger Beetle is Federally-Threatened, with only three remaining populations and one along some parts of the Calvert Cliffs. This species burrows into moderately-compacted fine to medium sand and lays its eggs. This critical habitat for the Puritan Tiger Beetle generally occurs near the top of the Calvert Cliffs.

Some Statistics

1. How large is Calvert County?

The total land area is 213 square miles, or about 137,000 acres--plus an additional 132 square miles (a little over 84,000 acres) of water. Calvert is the smallest county in Maryland. Elevation ranges from sea level to at least 168 feet.

2. How many people live in the county, and what are the projected population growth trends?

The 2010 Census said that 88,737 people were living in the County. In 2016, the population was closer to 91,000, which yields a density of 414 people per square mile. On April 18, 2019, the U.S. Census Bureau reported that the population of Calvert County was 92,003 and ranks 15th out of Maryland's 23 counties and Baltimore City. According to the Maryland Department of Planning, by 2040, the County's population is projected to grow to 100,450-- a lower rate of increase than occurred during the 1970s through the 1990s.

3. What is the highest point in the county?

According to the Maryland Geological Survey, the highest point is 168 feet above sea level and located in Sunderland near the intersection of Routes 4 and 262 (www.mgs.md.gov/geology/highest_and_lowest_elevations.html). On 1/22/18, Erick Pate (GIS Administrator; Calvert County Technology Services Department) stated that the highest point in the county is closer to 190 feet and located further north, at a location near the intersection of Skinners Turn Rd. and Pinnacle Lane in Owings. A 1928 soil survey of Calvert County by S.O. Perkins and M. Hershberger reported that the elevation of the county ranges from sea level to 181 feet above sea level at Mount Harmony.

4. How many miles of shoreline does Calvert County have along the Patuxent River and the Chesapeake Bay?

Just over 243 miles, according to the Maryland Geological Survey (personal communication with Katherine Knippler, Geologist, on 1/22/18). This is likely the maximum length of shoreline in Calvert County and includes not only the shorelines of the Patuxent River and the Chesapeake Bay (closer to 100 miles), but also shoreline distances along tidal and no-tidal streams that flow into these larger water bodies, in addition to marshy areas and ponds.

5. What's the current picture of land cover/land use in the county?

2010 data from the Maryland Department of Planning paints this picture:

- Forests = 45.8% (includes wooded large-lot subdivisions)
- All developed lands = 37.5 %
- Farmland = 14.3%
- Wetlands = 2.1%
- Extractive/Barren/Bare = 0.2%
- <https://planning.maryland.gov/Documents/OurProducts/landuse/Calvert.pdf>

Another analysis states that there are 81,781 acres (58% of land use) of forest cover with 37% of forest cover or 22% of county land area representing Forest Interior (forest more than 100 meters from a forest edge). Forest Interior provides important habitat for Forest Interior Dwellings Species (FIDS) <https://www.co.cal.md.us/1256/Habitat-Natural-Resources-and-Forests>.

6. What are impervious surfaces and how much of them does the County have?

Impervious surfaces are land cover/land use types such as roads, parking lots, sidewalks, roofs, and packed soil areas that shed rather than absorb rainfall. Impervious surfaces make up 6% of Calvert County, overall. Imperviousness is higher in more developed areas, such as in the Mill Creek watershed (which includes the Solomons Town Center and Chesapeake Ranch Estates), where 15.2% of surfaces are impervious.

To find data on impervious surface coverage for each watershed in Calvert County, explore Calvert County's interactive watershed map:

http://calvertgis.co.cal.md.us/Html5_272/Index.html?configBase=http://ccg-gisweb02.calvert.ccg.local/Geocortex/Essentials/GC_PROD/REST/sites/Subwatershed/viewers/HTML51/virtualdirectory/Resources/Config/Default

7. What are the temperature extremes for Calvert County?

The typical July day in Calvert County has a high temperature of 86 F and a low of 66 F. The record high in Prince Frederick was 103 F in 1980. The typical January day in the county has a high of 44 F and a low of 25 F. The average coldest winter temperatures range from 10-15 F in Solomons to 5-10 F in northwest Calvert County. The record low in Prince Frederick was -9 F in 1996. The coldest winter in modern times occurred in 1976-77. On average, Calvert County's annual snowfall is 15 inches, but as much as 24 inches has fallen in a single storm (February 1979). Proximity to the Chesapeake Bay tends to reduce annual snowfall amounts, extends the growing season, and moderates both summer heat and winter cold.

Soils and Vegetation

1. Why are soils important?

Soils comprise a rich ecosystem made up of living and non-living matter that interacts in many important and beneficial ways. An ecosystem includes all the living things (plants, animals, bacteria, fungi) occurring in a given place, interacting with each other and also with their non-living environment (physical and chemical), and functioning together as a unit. The diversity and abundance of life within soil is greater than in any other ecosystem. A mere handful of soil can contain billions of living organisms that play a critical role in soil quality necessary to support plant growth.

2. What ecological functions does soil perform?

- Soil provides a medium in which plants can grow.
- Soil absorbs and stores moisture needed for plant growth and for the micro-organisms that live in the soil.
- Soil provides habitat for everything from bacteria and fungi to earthworms and beetles—and, yes, even moles.
- Soil is a digestive marvel that decomposes organic matter (primarily carbon) that falls on it and transforms it simpler mineral forms that plants and animals use for growth.
- Soil can be viewed as the diaphragm for plant life, the lungs of the world, that absorbs carbon dioxide and releases oxygen that animals (including we humans) need to survive.
- Soil is a good insulator and protects plant roots from extreme temperatures.

- Soils also plays a central role in the management, processing, degradation, and detoxification of a variety of wastes, both natural and man-made, rendering them less harmful to humans, animals, plants, and the environment.

3. What soil properties are important for plant growth?

Texture (coarse to fine), particle size, porosity, aeration (permeability), organic content, nutrient levels, and water-holding capacity.

4. What are some other soil functions?

Soil is a source of raw materials (clay, sand, top soil) and a platform for man-made structures.

5. How many soil types occur in Calvert County?

According to the Natural Resources Conservation Service of the U.S. Department of Agriculture, there are 59 soil types (map unit names) and 37 different soil series in Calvert County (<https://websoilsurvey.nrcs.usda.gov/app/>).

6. What are the five most extensive soil types in the county?

- a. Downer-Dodson complex, 25-80% slopes = 27,412 acres (12.4% of county)
- b. Dodson and Marr soils, 15-25% slopes = 12,773 acres (5.8% of county)
- c. Dodson-Marr complex, 5-10% slopes = 10,431 acres (4.7% of county)
- d. Ingleside-Woodstown complex, 5-10% slopes = 10,304 acres (4.6% of county)
- e. Zekiah and Issue soils, 0-2% slopes, frequently flooded = 8,851 acres (4.0% of county)

(<https://websoilsurvey.nrcs.usda.gov/app/>)

7. How many acres of prime farmland and farmland of statewide importance in Calvert County?

According to the Natural Resources Conservation Service of the U.S. Department of Agriculture, the county has 20,370 acres of prime farmland (9.1% of county) and 25,568 acres of farmland of statewide importance (11.4% of county).

The 2017 Census of Agriculture states there were 25,152 acres of farmland in the county (https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Maryland/cp24009.pdf)

8. What are the five most dominant soil types in the county that are classified as prime farmland and farmland of statewide importance?

The five dominant soil types (map unit names) classified as prime farmland in Calvert County are: Ingleside loamy sand (2-5% slopes), Marr-Dodon complex (2-5% slopes), Dodon-Crosiadore complex (0-2% slopes), Matapeake-Beltsville complex (2-5% slopes), and Woodstown sandy loam (2-5% slopes).

The five dominant soil types classified as farmland of statewide importance in the county are: Dodon-Marr complex (5-10% slopes), Ingleside-Woodstown complex (5-10% slopes), Annemessex silt loam (0-2% slopes), Piccowaxen loam (2-5% slope), and Woodstown sandy loam (5-10% slopes).

For more information, go to

https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/maryland/calvertMD1971/calvertMD1971.pdf

9. Are we losing or gaining forests and farmland?

According to Maryland Department of Planning, Calvert County lost about 3,000 acres of forest and 1,600 acres of farmland from 2002 to 2010

(<https://planning.maryland.gov/Documents/OurProducts/landuse/Calvert.pdf>).

The Calvert County Critical Area Program, implemented in December 1988, requires the county to maintain 100% of existing forest cover within the Chesapeake Bay Critical Area (land within 1,000 feet of tidal waters).

The U.S. Department of Agriculture's 2017 Census of Agriculture stated that there were 25,152 acres of farmland in the county--a decrease from 32,901 acres reported in 2012 and 26,443 acres reported in 2007.

- https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Maryland/cp24009.pdf
- www.co.cal.md.us/DocumentCenter/View/17500

11. How many native trees and shrubs grow in Calvert County?

According to two documents prepared by staff in the County's Department of Planning & Zoning (<https://www.co.cal.md.us/DocumentCenter/View/261> and <http://www.co.cal.md.us/documentcenter/view/2819>), we have 43 canopy tree species (generally

>35 ft. tall at maturity), 18 understory tree species (generally <35 ft. tall at maturity), 30 large shrub species (generally >6 ft. tall at maturity), and 21 small shrub species (generally <6 ft. tall at maturity) that are native to Calvert County.

12. What are the five most common canopy tree species?

Tulip poplar, sweetgum, red oak, white oak, and red maple (personal communication with Brian Stupak, Forester with the Maryland Forest Service) and (<https://www.co.cal.md.us/DocumentCenter/View/251/Native-Plants-Feb-2011?bidld=>).

13. What are the dominant timber harvest species?

Tulip poplar, red oak, white oak, and Virginia pine/loblolly pine (personal communication with Brian Stupak, Forester with the Maryland Forest Service).

14. Why are trees important to land conservation?

Trees conserve soil, energy, water, wildlife, and withdraw carbon dioxide from the atmosphere. When planted along streams and wetlands, trees prevent erosion and help keep the water clean. Trees also attract wildlife and help with flood control.

15. What is an American Tree Farm vs a Forest Conservation Management Agreement?

The purpose of the Tree Farm program is to encourage forest landowners to practice sound forest management for increased wood production, wildlife habitat, watershed protection, recreation, and aesthetic benefits. Landowners must manage their properties for forest products, wildlife, water protection, and aesthetics and protect their woodlands from fire, insects, and disease. Tree Farms fall under the auspices of the National Tree Farm organization. The agreement made with forest landowners is not a legal document. The National Tree Farm organization provides each landowner with Tree Farm signage they may post on the property.

<https://www.forestfoundation.org/american-tree-farm-system>

To become certified, American Tree Farm System (ATFS) landowners must:

- Own at least 10 acres of forestland
- Implement a written forest management plan and
- Follow ATFS and American Forest Foundation's (AFF) 2015-2020 [Standards of Sustainability for Forest Certification for Private Forestlands](#).

Tree Farms are inspected and certified to assure proper forest management that includes the conservation of soil, water and wildlife. <https://www.forestfoundation.org/becoming-atfs-certified>

A Forest Conservation Management Agreement (FCMA) is a legal document that is recorded in the County Land records office and is in effect for specified time frames agreed to by the landowner. The document's purpose is to encourage landowners to manage their forest land in return for a reduced and/or frozen property tax assessment.

Any owner of five or more contiguous acres of forest land may enter the program. House sites, crop land, and other non-forest open spaces are not eligible. Open land that was recently planted with forest tree seedlings can be included in the program after one growing season. Land used to grow Christmas trees is also eligible if the trees will be cut at harvest.

The program is a legal agreement between the landowner and the Department of Natural Resources and is recorded in the land records of the county in which the property is located. The landowner agrees to manage their forest land according to a management plan that is prepared for their property. The minimum acreage is five and the minimum length of the agreement is 15 years. The property tax assessment on the forest land in the agreement is generally reduced and frozen at a low agricultural rate. If the agreement is broken through failure to follow the plan, sale of the property to someone unwilling to assume the responsibility, or if the landowner just wants to be out of the program, back taxes will be levied and computed back to the beginning of the agreement. The agreement can be amended to increase or decrease acreage and it can be transferred to a buyer if the buyer is willing to assume the responsibilities of the agreement.

<https://dnr.maryland.gov/forests/Documents/fcmp.pdf>

16. What is a Forest Management Plan?

A forest management/stewardship plan is a working document that allows a landowner to maximize a mix of forest benefits, including wildlife, timber, recreation, aesthetic value and other benefits. The basic components of a forest stewardship plan, developed by a registered Forester in conjunction with the landowner, are:

- A statement of your goals and objectives that is meant to express what is desired for the future of the land. This can include maximizing timber production, but also timber harvest activities that enhance wildlife, recreation, forest health, and other forest benefits.
- Maps to denote the property's location, boundaries, forest stands, and soil types.
- A timber inventory complete with fill volume, stocking and species information; an inventory of critical areas and/or endangered species; biological inventory; descriptions of geological features, cultural features, ecological communities, and soil data. The intensity of the survey can vary depending on the lot owners' interests.
- Action steps to meet the mentioned goals and objectives.

<http://paforestry.org/landowners/forest-management-plan/>

17. How is the designation of Tree Farm or Forest Conservation Management Agreement established and by whom?

By the local (Calvert County) Department of Natural Resources Forester, Brian Stupak, or by Dan Rider, both with the Maryland Department of Natural Resources Forest Service at 580 Taylor Avenue, Annapolis, Maryland 21401 (410-260-8583) E-mail: daniel.rider@maryland.gov
<http://dnr.maryland.gov/forests>

18. Does Calvert County have a Forester? What agency is he/she with? What are his/her responsibilities?

Yes. Brian Stupak is the State Forester working in Calvert County. His address/phone number are: Maryland Department of Natural Resources, Forest Service, 6904 Hallowing Lane, Prince Frederick MD 20678, 410-535-1303.

Maryland Forest Service professionals are available to coordinate forestry activities that are provided by private sector vendors. This includes tree plantings, site preparation, aerial spraying, non-commercial timber stand improvement by physical marking of trees for firewood, pulpwood, seed tree designation, routine thinning, etc.---but they cannot mark saw timber, do volume estimates, or determine appraised value. They can conduct an on-site examination of any fields or open areas that landowners wish to plant in trees or shrubs and prepare a planting plan. Forestry equipment rental is also available. Certain specialized forestry equipment is available for rent by private landowners for use on both public and private lands. Contact the Calvert Forestry office for equipment rental information (410-535-1301).

19. What are the responsibilities of the Forestry Board?

The Calvert Forestry Board is a group of citizens who serve as advocates for forestry in the county and who are committed to promoting the benefits of sustainable forest management. Currently there are seven members that have a wide variety of backgrounds including business, teaching, and publishing. The Board is funded annually by a grant from the Board of Calvert County Commissioners. The Forestry Board uses these resources to support various forest education and awareness activities throughout the County. Just a few examples include the Calvert Envirothon, the Arbor Day Poster Contest, the School Forest Program, the fall Tree Farm Tour, and the Natural Resources Careers Camp. For more information, go to their web site:
(<http://www.calvertforestry.org>).

20. What permits are required to harvest timber in Calvert County?

A Sediment & Erosion Control Plan must be prepared in accordance with the *2015 Standards and Specifications* and submitted to the Calvert Soil Conservation District (www.calvertsoil.org; 410-535-1521) if more than 5,000 square feet of soil will be disturbed. A copy of the approved permit should be sent to the Calvert County Planning & Zoning Department (www.co.cal.md.us; 410-535-3248) for their records. The Sediment & Erosion Control Plan must be prepared by a consultant forester licensed in the State of Maryland. Regulations: *2015 MD Soil Erosion & Sediment Control Standards and Specifications for Forest Harvest Operations*. The complete manual can be found at: <https://mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/2011%20MD%20Standard%20and%20Specifications%20for%20Soil%20Erosion%20and%20Sediment%20Control.pdf>

21. Who reviews and enforces Sediment & Erosion Control Plans in Calvert County?

These plans are reviewed and approved by the Calvert Soil Conservation District and the Maryland Forest Service. Enforcement of the sediment and erosion control regulations falls under the aegis of the Maryland Department of the Environment.

22. Does a logger/operator need to be licensed to harvest trees?

Yes. Any person engaged in the business of harvesting, manufacturing, or selling forest products must have a forest products operator's license issued by the Maryland Forest Service (COMAR Natural Resources Code Sections 5-608 & 5-610). In addition, they must also possess a Best Management Practices Training Certification (a "Forest Harvest Green Card") issued by the Maryland Department of the Environment.

23. What types of timber harvests can be carried out in Calvert County?

There are three timber harvest types that are commonly used in Southern Maryland. However, there are no restrictions on what type of harvest can be done, except in areas next to streams and in the Chesapeake Bay Critical Area. The three harvest types are:

1. Clear cut – removal of all trees within a sale boundary.
2. Selective – removal of a portion of the trees (from 25 to 50%) within a sale boundary.

3. Row thinning – primarily used in pine plantations, it also removes a portion of the trees, usually every fourth row and every fourth tree in the remaining rows.

24. Can timber be harvested in the Chesapeake Bay Critical Area?

Yes, although a separate Critical Area Timber Harvest Plan must be reviewed and approved by the Calvert Forestry Board prior to applying for a Sediment Erosion Control Plan (COMAR Natural Resources Code section 5-606). The Critical Area Timber Harvest regulations limit the number of trees that can be harvested within the Critical Area—depending on the forest area, proximity to streams and wetlands, and forest type (e.g., uplands, riparian zones, hardwood vs. pine).

25. Can timber be harvested in subdivision open space areas and/or forest retention areas?

Yes. The timber on open space and/or forest retention areas can be harvested if that is what the landowner wants to do and if no covenants or restrictions on the property specifically exclude timber harvest (Calvert County Zoning Ordinance 8-3.04.S). If the open space and/or forest retention area also has a deed restriction or easement, these documents must be checked to see if a timber harvest is permissible. A timber harvest plan and a forest management plan must be reviewed and approved by the Calvert Forestry Board prior to applying for a Sediment Erosion Control Plan.

26. Who typically owns subdivision open spaces?

Open spaces can be owned by anyone. Typically, it is first owned by the developer of the subdivision. Open space parcels are typically conveyed to a Home Owners' Association, but they can also be retained by the developer or sold to a private individual.

27. Are there any restrictions on the amount of timber that can be harvested within a sale boundary?

No, except in areas adjacent to blue line streams and within the Critical Area. Streamside Management Zones are established along all blue line streams within the timber sale boundary. The minimum width of this zone is 50 ft. and is expanded an additional 2 ft. for every 1% slope. For example, for a 10% slope: the zone width is $50 \text{ ft.} + (2 \text{ ft.} \times 10\%) = 50 \text{ ft.} + 20 \text{ ft.} = 70 \text{ ft.}$ on each side of the stream. Trees may be harvested within the Streamside Management Zone, but at least 60 square feet of basal area/acre must be maintained evenly throughout the zone. See question 24 for timber harvest restrictions in the Critical Area.

28. Are there any setback distances from private property lines that must be maintained during a timber harvest?

No.

29. Once a permit has been approved, must landowners adjacent to the timber sale property be notified that a timber harvest will be taking place?

No.

30. Who is responsible for any damage to an adjacent neighbor's trees or property (e.g., falling trees striking structures, vehicles, personal property, retaining walls, stormwater management devices, other trees) caused by the timber harvest?

The landowner from who property timber is being harvested. These situations are typically handled in civil court by the two affected parties.

31. What happens if a logger accidentally cuts timber on an adjacent property?

This situation is called timber trespass. The adjacent landowner can take the offending party to civil court and sue for damages for up to three times the value of the trees that were accidentally removed. A consultant forester should be hired to estimate the volume and value of the trees involved in the dispute.

32. Who is responsible for any damages to county or state roads at the entrance to the timber harvest area?

The logger/operator cutting the timber.

33. Are there any restrictions on the maximum slope of the land from which timber can be harvested?

The *2015 Standards and Specifications* generally limit the maximum slope of a log skid trail to 20%. However, skid trails can be constructed and used on slopes >25% if approved sediment erosion control practices are installed to prevent soil erosion. This regulation is limited to skid trails. Trees themselves can be cut on slopes greater than 25% and winched to a skid trail in a less steep area.

34. After the timber harvest is complete, is tree replanting in the cut area required?

Generally replanting is not required in a timber harvest area, with the exception of areas subject to the State Pine Reforestation Law (COMAR Natural Resources Code section 5-501). Harvested areas may be allowed to regenerate naturally with seeds from adjacent trees or the landowner may voluntarily replant the area with one or more desired tree species. The Pine Reforestation Law applies to timber harvests of 5 acres or more and where 25% or more of the live trees within the sale area are either loblolly, shortleaf, or pond pine. In these cases, landowners must either leave at least 8 cone-bearing trees standing per acre (>14" diameter at breast height, dbh) in the sale boundary or replant the area to a density of 400 to 650 seedlings/acre.

35. What is a Nutrient Management Plan, why is it important, and who/what does it affect?

Nutrient management plans determine the amount, form, placement, timing, and application of animal manure, commercial fertilizer, biosolids, and other plant nutrients used in the production of agricultural products to prevent water pollution, maintain soil productivity, and achieve realistic yield goals.

A nutrient management plan is a document that combines soil test results, yield goals, and estimates of residual nitrogen to generate field-by-field recommendations. The purpose of nutrient management plans is to help producers reduce nutrient pollution (going into the Chesapeake Bay and other watersheds) by balancing nutrient inputs with plant nutrient requirements, while at the same time optimizing farm profits.

Land owners need a nutrient management plan if they have \$2500.00 in gross annual income from an agricultural operation or 8 animal units or more (the number of animals per unit vary depending on species) https://mda.maryland.gov/resource_conservation/Documents/15.20.07.pdf

Land Trusts

1. What is a Land Trust?

Land Trusts permanently protect natural areas by land purchase, conservation easements, and land leases. Land trusts work with landowners to achieve common goals of protecting natural areas, open space, farmland, historic sites, scenic views, and other valuable resources. Often, the primary motivation is a desire to conserve the special qualities of their land—for example, productive farm soils, scenic beauty, or valuable wildlife habitat. For some families, the estate tax advantages of conservation allow them pass on their land to the next generation. The land is preserved in perpetuity. Decisions about whether to protect a piece of private property lie with the landowners. Tax incentives and conservation programs create options that a landowner can choose to exercise.

2. What are the opportunities and requirements for land preservation in Calvert County and Maryland, what land trusts currently exist in Calvert County, and who are the contacts for more information?

County Agricultural Land Preservation Easement Programs:

The County Agricultural Land Preservation Program was established in 1978. Owners of farmland voluntarily apply for an Agricultural Preservation District (APD) designation on their property to “certify” the number of development rights they have. The benefits to the property owner are to sell the “development rights” and retain the “residual or farm value” of land, which usually includes the ability to have a farm house, and up to three lots, depending on farm size. Once a development right has been sold or subdivided, the property is locked into the APD and the owner cannot opt out. The “development rights value” plus “the residual value” can meet or exceed the market value of the land. Farmland enrolled in the county’s Agricultural Preservation District receive varied degrees of legal protection against development and often offer incentives to participating landowners for dedicating land to continue in agricultural use into the future. As of 2019 there were in total 23,972 acres of agricultural land preserved in Calvert County programs.

There are four easement tools used by the county for preserving Agricultural Preservation District designated farmlands through the establishment of a “transferable development rights” (TDR) and a market for the private creation and sale of TDRs. In 2015 and 2016, the county made a series of adjustments to improve the effectiveness of the TDR program. Updates to improve program performance included removing allowances for small-lot TDRs, varying the scale of TDRs allowed in town center areas, and allowing greater flexibility in the use of Forest Conservation TDRs.

1. Transferable Development Rights (TDR) Program: Allows for private land owners in an Agricultural Preservation District to sell the development potential of their property to another party; the seller places a covenant on their land restricting development. The purchaser of a TDR can then be allowed to develop residential buildings at a higher density at a more appropriate site. The transfer of development rights is a private matter, but the county monitors the program.

2. Forest Conservation Transferable Development Rights Program: Allows property owners of Agricultural Preservation Districts to convert regular density TDRs into Forest Conservation TDRs by preserving/recording at the registry of deeds one acre of Forest Retention Area for each TDR converted. The Forest Conservation TDR can then be sold/transferred by the property owner to commercial developers for their use in meeting state and county Forest Mitigation Requirements associated with development projects.

3. Purchase and Retirement (PAR) Fund: This fund allows the Board of County Commissioners to purchase TDRs from willing owners and “retire” and remove those TDRs from the marketplace, therefore reducing the total quantity of residential buildout countywide. By selling their development rights, owners can reduce their capital gains over time.

4. Leveraging and Retirement (LAR) Fund: This program is similar to the Purchase and Retirement Fund program where TDRs may be purchased from a seller by the Board of County Commissioners and then permanently retired. Where this program differs is that it allows the owner of the TDR to sell more of those rights to the Board of County Commissioners (to retire the TDRs), and allows for the county to purchase the TDRs through an installment plan (over 10 to 20 years) where the owner receives annual tax-free interest payments and a lump sum payment constituting the principal purchase price of the TDRs.

For more information or to apply, contact Ron Marney (410-535-1600 X2336) or Ron.Marney@calvertcountymd.gov

Maryland Agricultural Land Preservation Foundation (MALPF) is a State-County partnership program.

MALPF's primary purpose is to preserve productive agricultural lands and woodlands in Maryland to provide for the continuing production of food and fiber for the citizens of Maryland. The location must be outside of a 10-year water and sewer service area and must be 50 acres or larger or, if smaller, located contiguous to already preserved property. It must also have 50% or more Class I, II, and/or III soils (USA soils classification) or Woodland Group 1 and/or 2.

The Maryland Department of Agriculture, which manages this program, notes that MALPF was one of the first and leading agricultural land preservation program of its kind nationally. This program was created 1977. As of June 2016, MALPF had preserved 300,916 acres statewide, 29 percent of the programs goal to preserve 1,030,000 acres of agricultural land by 2020. In Calvert County, 4,581 acres of farmland were preserved through MALPF as of 2019.

For more information, contact:

Maryland Agricultural Land
Preservation Foundation Program
(410-841-5860, www.malpf.info)

Maryland Environmental Trust (MET)

The Maryland Environmental Trust (MET) is a quasi-public entity created in 1967 that is administered by the Maryland Department of Natural Resources and governed by a private Board of Directors. According to the implementing statute for MET, it was established to, "conserve, improve, stimulate, and perpetuate the aesthetic, natural, health, and welfare, scenic, and cultural qualities of the environment, including, but not limited to land, water, air, wildlife, scenic qualities, and open spaces." The owner donates a perpetual conservation easement. A conservation easement is a legally-binding agreement that protects the land from changes that would adversely affect its conservation value, such as development like a new subdivision. The owner retains the land while relinquishing specific rights to make changes to it. The property may be transferred and sold freely, but subsequent owners are bound by the easement restrictions. Easements can be crafted to meet

the mutual objectives of the landowner and the land trust. A conservation easement does not in itself give public access rights to the land. One of the most important functions of a land trust is to monitor compliance with conservation easements, making sure that the terms of the easement are met by the owner and subsequent owners, by visiting the site regularly, notifying owners if there are deviations, and if necessary, enforcing the easement in court. The benefits of this program are the owner gets a tax deduction and for estate planning. There is no deadline; however, if owner wants to donate in a particular year, they must submit by September of that year. As of December 2016, MET reported preserving 134,517 acres statewide. In Calvert County, 1,106 acres of farmland were preserved through MET as of 2019. To apply, contact MET Staff.

For more information, contact: Maryland Environmental Trust, 877-514-7900,
www.dnr.state.md.us/met/

Rural Legacy: A Partnership among State, County and local land trusts:

The Rural Legacy program was launched in 1997 and is managed by the Maryland Department of Natural Resources to provide funding to preserve large, contiguous tracts of land significant for natural resource conservation, agriculture, forestry, and environmental protection, while preserving the land base needed to support sustainable natural resource-based industries. Rural Legacy functions by creating public-private partnerships with local governments and land trusts to target the preservation of ecologically valuable properties, with focus on lands that directly impact the Chesapeake Bay and water quality of local streams and rivers. As of 2016, the State had worked with local partners to conserve land in at least one Rural Legacy Area in every Maryland county, preserving a total of 920,694 acres. In Calvert County, 2,324 acres of farmland were preserved through the Rural Legacy Program as of 2019.

For more information on Maryland's Rural Legacy Program, call 410-260-8478, or click on this link (<https://dnr.maryland.gov/land/Pages/RuralLegacy/home.aspx>).

Local Land Trusts:

- The American Chestnut Land Trust (*founded 1986*) is a local not-for-profit 501(c)(3) organization promoting land conservation that provides environmentally sustainable public access to preserved properties for educational, scientific, recreational and cultural purposes. The American Chestnut Land Trust protects the natural and cultural resources of the Parkers Creek and Governors Run watersheds.

For information, contact:

American Chestnut Land Trust (ACLT)

P.O. Box 2363

Prince Frederick, MD 20678

Phone: 410-414-3400

Fax: 410-414-3402

info@actweb.org

- Battle Creek Nature Education Society (*incorporated in 1985, renamed Calvert Nature Society in 2014*) is dedicated to the protection and preservation of Calvert County's natural heritage and the creation of an environmentally literate and aware community. They provide opportunities for appreciation and understanding of our natural world through their outreach initiatives and in support of the mission of the Calvert County Natural Resources Division. The Society is a 501(c)3 organization (Copyright Calvert Nature Society).

For information, contact:

Battle Creek Nature Education Society

PO Box 122

Port Republic, MD 20676.

Email: CypressSwamp@co.cal.md.us

410-535-5327

info@calvertparks.org

<http://www.calvertparks.org/>

- Cove Point Natural Heritage Trust (*founded in 1994*) is a non-profit trust in Calvert County –of comprised of three member groups: the Sierra Club, the Maryland Conservation Council, and Dominion Cove Point LNG (one of the nation's largest liquefied natural gas (LNG) plants). The Trust's mission is to preserve and protect ecologically sensitive sites in southern Maryland through land conservation and acquisition, research, and environmental education.

For information, contact:

Cove Point Natural Heritage Trust

11785 Clifton Drive

P.O. Box 336

Lusby, MD 20657

410-394-1300

cpnht@comcast.net and www.covepoint-trust.org

- Southern Calvert Land Trust (*founded 2001*) is located in southern Calvert County and was organized and registered based on residents' concerns about the rapid pace of development in that area of the county. The Trust's mission is to acquire large or small parcels of land to preserve ecologically important open space and wetlands. As of 2017, SCLT had preserved more than 130 properties, totaling 52 acres. Most of the properties are small unbuildable lots which were donated.
- The Natural Resources Article of the Maryland Annotated Code (Section 3-203) authorizes the Trust to accept land as gifts. The deed is recorded with the Clerk of the Circuit court in the local jurisdiction where the property is located. Land donated to the Trust can never be sold, transferred, or given away, except to another land trust.

For information, contact:

Southern Calvert Land Trust, P.O. Box 1745, Lusby, MD 20657, 410-326-6669

sclt@hughes.net

- Calvert Farmland Trust (*founded 1994*) buys farmland to resell for agriculture purposes, accepts land donations for tax purposes, maintains current farmland registry to connect farms with operators, and accepts easements on property dedicated to agriculture.
- Calvert Farmland Trust has depended on selling Transferable Development Rights from a farm, then reselling the farm at the farm value to a conservation buyer

For information, contact:

Calvert Farmland Trust

P.O. Box 3448

Prince Frederick, MD 20678

(410) 414-5070

calvertfarmlandtrust@gmail.com

The answers to this question come from “Preserving Farm and Forestland in Calvert County, MD”, a power point presentation. (<http://www.co.cal.md.us/DocumentCenter/View/163/Land-Preservation-Options-in-Calvert?bidId=>) and the Calvert County Land Preservation, Parks, and Recreation Plan (<https://www.co.cal.md.us/DocumentCenter/View/19824/Calvert-County-LPPRP-Adopted-May-15-2018?bidId=>).

For more information, please contact Ron Marney (410-535-1600 X2336) or

Ron.Marney@calvertcountymd.gov

Miscellaneous

1. Have earthquakes ever occurred in Calvert County?

There is no record of an earthquake epicenter in Calvert County. However, large and major ‘mid-plate’ earthquakes have been felt here, most recently the Virginia shock (23 Aug. 2011, magnitude 5.8), the Charleston South Carolina earthquake (21 Aug. 1886, M7.9-7.3 , reported in the Calvert Gazette), and almost certainly the three great earthquakes (16 Dec. 1811, M7.5; 23 Jan. 1812, M7.3; and 7 Feb.1812 M7.5) whose epicenters were located near New Madrid, Missouri. Church bells were rung in Philadelphia and ice cracked on the Chesapeake Bay.

2. On what tectonic plate is the county located?

Calvert County is located in the middle of the North American tectonic plate.

3. Are invasive non-native (alien) species of plants and animals found in Calvert County today and which ones are the most problematic in terms of threats to native biodiversity?

Yes. All Maryland counties, including Calvert, have invasive non-native plant and animal species and many of these are species of concern (<http://www.mdinvasivesp.org/species-of-concern/>). They are of concern because they are currently regulated by a state and/or federal law or because they are widely recognized by biologists and resource managers as causing the degradation of natural ecosystems or they negatively impact native species or they are known to have significant economic impacts or they can have deleterious effects on human health. Calvert County has many plant species and their cultivars that are not native to North America (www.co.cal.md.us/DocumentCenter/View/17444). Most of these species are intentionally planted in yards, gardens, ball parks, city parks, etc. and they stay where planted. But some plant species have escaped, proliferated, and are having negative ecological impacts. Examples of escaped non-native plants in Calvert County that are also invasive are kudzu, oriental bittersweet, wisteria, English ivy, bamboo, and multiflora rose. Other plant species like Japanese stilt grass were inadvertently introduced and have spread rapidly. In 2019, a small patch of wavy leaf basket grass was discovered in the Parkers Creek watershed. Staff and volunteers with the American Chestnut Land Trust are working to remove it and prevent its spread. The most invasive non-native trees in Calvert County are the tree of heaven and Bradford pear. County residents should remove invasive non-native plants on their property when they find them and plant only native species. See these documents for a list of native plants that do well in Calvert County and are recommended (www.co.cal.md.us/documentcenter/view/2819 and <https://www.co.cal.md.us/DocumentCenter/View/251>).

Getting Involved in Calvert County's Environment

1. What environmental organizations exist in Calvert County and how can I contact them?

There are more than 30 active environmental organizations, including non-profit organization, local government sectors, and environmental educational bodies. A list of these organizations, their missions, and contact information can be found on the Calvert County Environmental Commission webpage: <http://www.co.cal.md.us/DocumentCenter/View/14434>

2. Can I join the Calvert County Environmental Commission?

The Calvert County Environmental Commission is always looking for new members when there is a vacancy. Any county resident is eligible. Interested persons should complete and submit an application form: <http://www.co.cal.md.us/DocumentCenter/View/7906> to Keisha Arthur, Appointment Secretary at 175 Main St., Prince Frederick, MD 20678.

3. What public education and outreach activities with an environmental focus occur regularly in the county?

A number of public education and outreach activities with an environmental focus occur regularly in Calvert County.

Year round:

- 1) Calvert Marine Museum
- 2) Chesapeake Biological Laboratory Visitor Center
- 3) Calvert County Parks and Recreation: <http://www.co.cal.md.us/index.aspx?nid=1190>

Regularly:

- 1) Chesapeake Biological Laboratory “Science for Citizens” Outreach Seminars
<http://www.umces.edu/cbl/science-citizens>
- 2) Calvert County Master Gardeners “Garden Smarter” program at Calvert Libraries and Community Resources Building
- 3) Calvert Nature Society/ Calvert Parks Events: <http://calvertparks.org/>

Annually:

- 1) Calvert County Green Expo (Green Living Festival) at Anne Marie Gardens (June)
- 2) Patuxent River Appreciation Day at Calvert Marine Museum (October)

Check out the websites for any of the 30+ environmental organizations in Calvert County to learn more about specific environmentally-focused events.

4. What else can I do to help protect Calvert County's environment?

Educate yourself about environmental issues, pay attention to local politics, vote for candidates who share your desire for a healthy environment, keep your eyes open for activities that threaten environmental health, report your concerns to the appropriate county and/or state agencies, and stay involved around the county!

Here are some other suggestions on how you can make a difference.

Energy Conservation:

- Replacing your fluorescent and incandescent light bulbs with more efficient LED bulbs will save you money (as much as \$600 a year) by reducing electricity consumption (be sure to recycle your fluorescent bulbs).
- Conduct an energy audit on your home.
- Insulate, air-seal, fix small leaks in your home, and consider storm windows or at least thermal curtains for south-facing windows.
- Purchase a programmable thermostat and set lower in the winter and higher in the summer.
- Replace filters in your home HVAC systems to ensure they operate at maximum efficiency.
- Consider installing solar panels and apply for the tax credit from the federal government.
- Drive a hybrid or all electric vehicle.
- Visit SMECO's and BGE's websites for other energy saving ideas—
<https://www.smeco.coop/save-energy-and-money/ways-to-save>
<https://www.bge.com/Pages/default.aspx#>
- Use EPA's carbon footprint calculator (epa.gov/carbon-footprint-calculator) to assess your impact on the planet.

Waste Reduction:

- Reduce, Reuse, Recycle.
- Purchase products made of recycled materials whenever possible.
- Compost kitchen waste and leaves.
- Use reusable shopping bags.
- Give it away, don't throw it away. There are many textile bins located throughout the county. To find one near you, go to <http://www.co.cal.md.us/index.aspx?NID=1324>

Visit Calvert County's Solid Waste Division website for more information on the county's recycling programs. <http://www.co.cal.md.us/index.aspx?nid=352>

Water Conservation/Pollution Prevention:

- Use less fertilizer on your lawn and leave grass clippings in place to return nutrients to the soil.
- If you have a large lawn, shrink the grass area and surround it with native plants that need less water.
- Water your lawn in the morning so the water will not evaporate in the heat; but, generally, limiting yard watering is the best practice to conserve water.
- Purchase and hook-up a rain barrel, capture rainfall that runs off your roof, and use it to water outdoor plants.
- Limit the washing of your vehicles and be mindful of running your hose unnecessarily.
- Install low flow, high pressure shower heads that bear the EPA's "WaterSense" label.
- Take shorter showers.

- Collect shower water in a 5-gallon bucket and use it to water your houseplants and/or outdoor plants.
- Make sure you have full loads before running your dish washer and washing machine.
- Adopt a highway and help keep the roadsides clean (410-535-1748).
- Never pour anything into a storm drain.
- Use EPA's Water Footprint Calculator (watercalculator.org) to assess your impact.
- For more information, visit <https://www.epa.gov/environmental-topics/water-topics>

Environmental Programs in Calvert County Public Schools

1. What environmental events are hosted by Calvert County schools?

Calvert County Public Schools (CCPS) host an Annual Science and Engineering EXPO at Calvert High School. This is a free family event and open to the public. The exhibits showcase CCPS science and engineering programs and are designed to be engaging to both children and adults. The EXPO includes robots, science and engineering projects, flight simulators, catapults, and much more for the entire family to enjoy and learn more about.

Huntingtown High School environmental students host an Energy Expo, open to the public, under the mentoring of Science teacher, Jamie Rowder. Ms. Rowder's students conduct research and make presentations on energy-related subjects and also talk about what Huntingtown High School students are learning in the classroom. They also invite guests from the energy industry to attend the event and answer questions. The Energy Expo is held annually in the school's cafeteria.

2. Do Calvert County Public Schools offer environmental clubs?

Yes. Most schools offer an environmental club or a green team that students can join.

3. Do Calvert County Public Schools support Next Generation Science Standards (NGSS) and E-Lit (Environmental Literacy)?

Yes. CHESPAX has developed programs and lesson plans that support NGSS and Maryland E-Lit Standards. Most of these programs involve an outdoor field experience, often at a participating program site. These programs include hands-on activities and resource materials to help the classroom teacher provide engaging lessons to support the targeted curriculum. For further information, go to hartent@calvertnet.k12.md.us

Current Programs:

Kindergarten – Creature Feature	Fourth Grade - Fossils
First Grade – Pollinator Pals	Fifth Grade - Oysters
Second Grade – Help Save the Earth	Sixth Grade - Archaeology
Third Grade – Terrapins	Seventh Grade – SAV Monitoring

Additional CHESPAX-developed and Supported Programs:

Middle School: mosquito control, osprey/ecosystem/technology, diversity of species (fall),
Go-Pro creek bed filming (summer/fall), climate change (spring)

Middle & High School: drone technology to monitor SAV (fall)

4. Are Calvert County’s public schools “green”?

Yes. All of the K-12 schools are recognized as Maryland Green Schools. The Maryland Green Schools Award Program allows schools and their communities to evaluate their efforts in environmental sustainability. Calvert County’s green schools empower students to make changes necessary to reduce environmental impacts, encourage sustainability, and foster environmental literacy.

Transportation Impacts on Human Health and the Environment

1. How many miles of roadways in Calvert County?

688 miles of county, state, and municipal roadways as of 2015.

<https://www.calvertcountymd.gov/DocumentCenter/View/15434/Fact-Sheet-on-Transportation-2017?bidId=>

2. What are the major arterial highways in the county?

MD 2/4 and MD 4 are the only major highways that run the full length of Calvert County. The other major arterials are MD 2 that extends north from Sunderland into Anne Arundel County and MD 231 that extends west from Prince Frederick over the Patuxent River and into Charles County.

3. What is the most recent information on traffic volume along MD 4 and MD 2/4?

In 2018, average traffic counts were 24,721 vehicles/day (vpd) south of Lusby; 26,671 vpd north of Lusby; 41,101 vpd in Prince Frederick; 39,091 vpd north of Huntingtown; and 31,831 vpd north of Dunkirk

https://www.roads.maryland.gov/Traffic_Volume_Maps/Traffic_Volume_Maps.pdf.

4. What's the current traffic situation along MD 231 in Calvert County?

In 2018, the count was 20,571 average vehicles/day one mile west of MD 2/4 and 11,831 average vehicles/day at the bridge over the Patuxent River

https://www.roads.maryland.gov/Traffic_Volume_Maps/Traffic_Volume_Maps.pdf.

5. How do motor vehicles adversely impact human health?

- The most obvious impacts are vehicular collisions on roadways that result in injuries and deaths to drivers and passengers, and costly damages to vehicles.
- Motor vehicle exhausts emit gases, heavy metals, hydrocarbons, and particulate matter that pollute the air and damage human health. Toxic air pollutants are associated with cancer, cardiovascular disease, respiratory ailment, and neurological damage. Carbon monoxide (CO) can be deadly. Nitrogen dioxide (NO₂) mix with volatile organic compounds to increase ground-level ozone (O₃) concentrations that can reduce lung function, affects the respiratory immune defense system, and increases the risk of other respiratory problems. Particulate emissions from vehicle exhaust and tire abrasion on roadways also degrade air quality and can cause respiratory problems, skin irritation, eye inflammation, and various allergies.
- Motor vehicles, especially where traffic volume is very high, increase background noise levels. Long-term exposure to noise levels about 75 decibels (dB) seriously damages hearing, can affect physiological and psychological well-being, and increase the risk of cardiovascular diseases. Ambient traffic-associated noise in urban areas can also decrease property values.
- High levels of traffic congestion and long-distance commuting in heavy traffic volume can have detrimental effects on mental and physical health. Stressed and frustrated

motorist stuck in traffic jams can express 'road rage', a term that originated in the U.S. in 1987.1988, and can be manifested by aggressive and unsafe driving, altercations, assaults, and collisions. Daily highway commuting in heavy traffic is associated with elevated blood pressure and cholesterol levels, heavier body weight, a higher tendency toward depression, and lower sleep quality in some motorists. The stress of sitting in traffic is also associated with higher crime rates, including domestic violence, in Los Angeles, CA.

For more information, go to:

<https://people.hofstra.edu/geotrans/eng/ch8en/conc8en/ch8c1en.html>

https://transportgeography.org/?page_id=5711

www.annualreviews.org/doi/full/10.1146/annurev-publhealth-031912-114502#_i39

<https://www.researchgate.net/publication/251671672-Comparing-stress-of-car-and-train-commuters>

<https://www.wsj.com/articles/SB10001424052970203733504577024000381790904>

<https://theconversation.com/the-stress-of-sitting-in-traffic-can-lead-to-more-crime-72323>

<http://www.gmanetwork.com/news/lifestyle/healthandwellness/536203/stress-pollution-fatigue-how-traffic-jams-affect-your-health/story/>

<http://www.tandfonline.com/doi/abs/10.1080/001401397188198>

<https://onlinelibrary.wiley.com/doi/abs/10.1002/%28SICI%291098->

[2337%281999%2925%3A6%3C409%3A%3AAID-AB2%3E3.0.CO%3B2-0](https://onlinelibrary.wiley.com/doi/abs/10.1002/%28SICI%291098-2337%281999%2925%3A6%3C409%3A%3AAID-AB2%3E3.0.CO%3B2-0)

<http://www.tandfonline.com/doi/full/10.1080/15389580490509482?scroll=top&needAccess=true/>

<http://time.com/9912/10-things-your-commute-does-to-your-body/>

https://en.wikipedia.org/wiki/Traffic_congestion

6. What are the impacts of motor vehicles on the environment?

- **Global Warming/Climate Change:** Motor vehicles release millions of tons of gases into the atmosphere every year, including carbon dioxide (CO₂) and methane (CH₄) that are responsible for global warming, climate change, and sea level rise. About 15% of global CO₂ emissions come from the transportation sector, including cars and trucks on Calvert County roadways. Nitrous oxides (NO_x) from vehicle exhausts are involved in depleting the stratospheric ozone (O₃) layer which screens the earth's surface from ultraviolet radiation. Heavy traffic volume that leads to traffic jams, increased idling, and more acceleration elevate, even further, gas emissions that contribute to the environmental problems described above.
- **Acid Rain:** Emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) from vehicle exhausts form sulfuric acid and nitric acid in the atmosphere and fall to earth as acid rain, leading to detrimental effects of surface waters, forests, and agricultural crop yields.

- Soil Quality: Soil contamination can occur from spills of toxic materials being transported in motor vehicle on roadways and from fuel, engine oil, transmission fluid, etc. leaking from vehicles and washed off roadways onto roadside soils. De-icing salts are also washed off roadways and can degrade soil quality.
- Biodiversity: Transportation also adversely impacts plants and animals. Land consumed for roadway networks and the need for construction materials to build and repair roadways can lead to deforestation. Many roadway routes require the destruction of wetlands. The need to maintain rights-of-way, roadway shoulders and median strips can restrict the growth of native plants and animals, and often lead to increased competition from invasive non-natives. Multi-lane highways built through wilderness areas can degrade the habitats of many species and hamper seasonal movements of many animals. The wash-off of toxic metals and de-icing salts can severely impact frogs, salamanders, turtles, fish, and other aquatic animals.

For more information, go to:

https://transportgeography.org/?page_id=5711
<http://pubs.acs.org/doi/abs/10.1021/es1012565>
<https://sites.psu.edu/hailstrompassions/2015/10/29/impact-of-motor-vehicles-on-the-environment/>
<https://doi.org/10.1016/j.envpol.2008.06.032>

Can I Ask a Question?

Can't find answers to other related questions you may have on topics in this list of FAQs? Ask the Environmental Commission by sending an email to Will Hager at Will.Hager@calvertcountymd.gov. Please include your name and email address along with your question(s). We will do our best to answer your question(s) in a timely manner. We may even add them to our FAQs.