

# *The Future of the Chesapeake Bay*

**Your opinions are needed to inform policy decisions that affect water quality. Please return your completed survey in the postage-paid envelope provided.**

**Thank you for your help!**



The Clean Water Act authorizes collection of this information. All responses will be kept confidential to the extent permitted by law. Response to this survey is voluntary and no action will be taken against you if you choose not to take part. The public reporting burden for this form is estimated to average 18 minutes per response. Send comments regarding the burden estimate or any other aspect of this form to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the survey materials to this address.

# The Chesapeake Bay Watershed

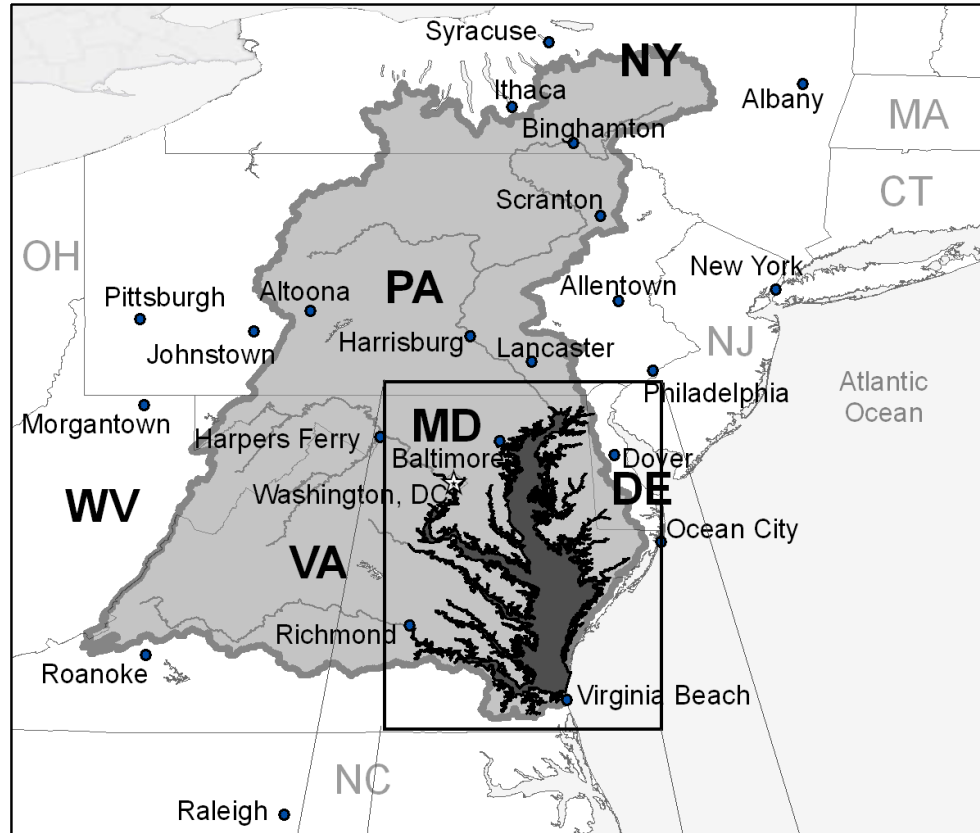
This survey asks you about two types of water bodies in the Chesapeake Bay Watershed — the Chesapeake Bay itself and Lakes in the Watershed. Each has different characteristics and potential water quality concerns.

## **The Watershed**

Is shaded in light grey on this map.

It includes about 4,200 freshwater **lakes**.

Water draining from lands in the Watershed enters rivers and streams and eventually the Chesapeake Bay.



## **The Chesapeake Bay**

Is an estuary where freshwater mixes with saltwater from the ocean. It is the largest estuary in North America and the third largest in the world.

As shown in dark grey on this map, the Bay includes portions of the 50 rivers that flow into it, for example:

- The James River up to Richmond, VA
- The Potomac River up to Washington, DC

**Please use this definition** of the Chesapeake Bay when answering questions on this survey.



**1. Before receiving this survey, had you heard of the Chesapeake Bay?**

- Yes                       No                       Don't know

**2. On average, how often do you see the following water bodies?**

*(Please check ONLY ONE box in each row.)*

	Never	Less than once a month	More than once a month	Don't Know
<b>Chesapeake Bay:</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Watershed Lakes:</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**3. In the last five years, have you participated in recreational activities  
(including swimming, boating, fishing, or viewing nature) at the...**

*(Please check ONLY ONE box in each row.)*

<b>Chesapeake Bay:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
<b>Watershed Lakes:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know

**Did you know?**

Pollutants in the Chesapeake Bay Watershed degrade the quality of the water and can affect aquatic habitat and recreational activities. Two key pollutants are nutrients and sediment.

- **Nutrients** are essential for healthy aquatic habitats, but too much can lead to algae that deprives fish of oxygen and plants of sunlight. Sources of nutrients include fertilizers, livestock manure, and household wastewater.
- **Sediment** is loose soil that settles to the bottom of water bodies. Too much sediment makes the water murky and harms aquatic plants and fish. Paved surfaces and some farming practices increase soil erosion, causing too much sediment to enter the Chesapeake Bay and Watershed Lakes.

**4. Before taking this survey, were you aware that too much nutrients or sediment can degrade water quality?**

- Yes                       No                       Don't know

# Conditions in the Chesapeake Bay

Nutrient and sediment pollution affects environmental outcomes in the Chesapeake Bay. These conditions have been consistently measured by scientists since the early 1990's.

**Bay Water Clarity**— *measures how far one can see into the water*

- Average visibility was about 4.5 to 6 feet in the early 1990's and is about 3 feet today.

**Striped Bass (or Rockfish)**— *the most popular fish for recreational fishing in the Bay*

- After historic lows, the population was about 6 million fish in 1990 and is about 24 million today.

**Blue Crab**— *symbol of the Chesapeake Bay and a popular shellfish for recreational fishing*

- The adult population was between 100 to 200 million in the early 1990's and has been about 250 million in recent years.

**Oysters** — *"filter feeders" that clean Bay waters, their shells also form reefs that provide habitat for other aquatic life.*

- Historically much larger, the population was only about 3,300 tons by 1990 and remains at this low level today.

State and local governments currently have pollution reduction programs in place to limit nutrients and sediment flowing into the Chesapeake Bay.

**But population growth and changes in how land is used within the watershed are expected to cause conditions in the Bay to decline in the future.**

Based on measurements by scientists studying the Chesapeake Bay, this table shows both the **conditions today and predicted conditions in 2040 under current programs.**

	Conditions Today	Conditions in 2040 under current programs*
<b>Bay Water Clarity</b> Average visibility	<b>3 feet</b>	<b>1.5 feet</b> (50% decrease from today)
<b>Striped Bass</b> Adult Population	<b>24 million fish</b>	<b>21 million fish</b> (13% decrease from today)
<b>Blue Crab</b> Adult Population	<b>250 million crabs</b>	<b>235 million crabs</b> (6% decrease from today)
<b>Oysters</b> Population	<b>3,300 tons</b>	<b>2,800 tons</b> (15% decrease from today)

\*Predictions for the year 2040 are based on monitoring data, the Chesapeake Bay Water Quality Models, and the Chesapeake Bay Fisheries Ecosystem Model developed by the EPA and state and federal partners.

# Conditions in the Watershed Lakes

Nutrient pollution in lakes leads to excess algae growth which changes the appearance of the water and the types of fish that live in it. Watershed Lakes fall into one of these categories:

## Watershed Lakes with low algae

- Have clear blue or brown water with 3 to 6 feet of visibility
- Conditions favor game fish like bass and trout

## Watershed Lakes with high algae

- Have green water with 2 feet of visibility or less
- Conditions favor bottom-feeding fish like carp and catfish
- Can have an unpleasant odor on warm days

Pollution reduction programs already in place to limit nutrients and sediment flowing into the Chesapeake Bay also help limit algae growth in Watershed Lakes.

**But population growth and changes in how land is used within the watershed are expected to result in fewer Watershed Lakes with low algae levels.**

The table below shows the number of Watershed Lakes that have **low algae levels today and the predicted number in 2040 under current programs.**

	Number Today	Number in 2040 under current programs*
<b>Watershed Lakes with <u>low</u> algae levels</b>	<b>2,900</b> lakes <i>out of 4,200 total</i>	<b>2,300</b> lakes <i>out of 4,200 total</i> (21% decrease from today)

*\*Predictions for the year 2040 are based on measures developed by the EPA using the SPARROW Water Quality Model.*

## 5. How do the predicted conditions for the Chesapeake Bay and the Watershed Lakes in 2040 compare with what you had expected?

- I had expected conditions in 2040 to be better than what is predicted.
- I had expected conditions in 2040 to be worse than what is predicted.
- I had expected conditions in 2040 to be about the same as what is predicted.
- Don't know

# Additional Pollution Reduction Programs for the Chesapeake Bay Watershed

Additional pollution programs being considered by federal and state agencies would further limit nutrients and sediment in the Chesapeake Bay Watershed.

These programs would be phased in over time and would be fully implemented by the year 2025. Environmental conditions would begin to improve shortly after the new programs are implemented and reach long term levels by 2040. There is always some uncertainty in predicting future environmental conditions, but the outcomes shown in this survey are based on the best scientific predictions available.

Examples of programs include changing the way farmers dispose of livestock manure and farm land to reduce runoff, paving fewer surfaces to slow stormwater runoff, and changing equipment at wastewater treatment facilities to reduce spills and pollution releases.

## What additional programs *would do*:

- Improve some of the conditions in the Chesapeake Bay and Watershed Lakes. The specific types of improvements will depend on the design of the program.

### For example:

- A pollution reduction program close to the Bay would improve water quality in the Chesapeake Bay itself, but would *not* have much affect on the Watershed Lakes.
- A program restoring oyster reefs would increase the number of oysters, but would have a smaller effect on crab populations compared to programs focused on reducing nutrients and sediment.

## What additional programs *would not do*:

- Affect lakes *outside* of the Watershed
- Affect river and stream conditions in a noticeable way because the water is constantly moving
- Affect any other parts of the environment such as forests, plants, birds, and wildlife
- Have a noticeable effect on the quality or price of the seafood you buy

## Paying for Additional Pollution Reduction Programs

Additional pollution reduction programs would result in higher costs for your household.

**Some of the basic things people spend money on would become more expensive.**

For example:

- Higher water bills or increased maintenance costs for home septic systems in the Watershed. For renters, rent or utility bills would increase.
- Higher prices for some agricultural products and other goods for households both inside and outside the Watershed, including the area where you live. This is because of higher costs for businesses inside the Watershed.

Any additional pollution reduction program, if implemented, would permanently increase the cost of living for your household beginning at the start of next year.

Paying the costs means you would have less money to spend on other things such as food, clothes, going on trips, education, and even towards resolving other environmental problems you care about.

**6. Does your household currently pay any environmentally-related taxes or fees as part of your water, electric or other utility bills?**

Yes

No

Don't know

## Deciding Future Actions

Imagine that you were given the opportunity to vote on additional pollution reduction programs. State and federal policy makers will use your votes and those from others to choose the best program to improve water quality.

### **Important instructions**

In the questions that follow, we ask your opinion about programs that have different impacts on the Chesapeake Bay and Watershed Lakes. These programs will cost your household different amounts.

You will be asked three questions. In each question you will vote for the option you like best from three different alternatives:

- OPTION A keeps all current actions but does not add new programs
- OPTION B and OPTION C include additional programs to reduce pollution

Choosing OPTION A in each question would result in no new pollution reductions or costs to your household.

OPTION B and OPTION C are different in each question, with different environmental outcomes and costs to your household.

An Example Question is on the next page to show you what the questions will look like.

Other households are also being surveyed, so please only think of the costs to your own household when deciding which program you would prefer.

Similar studies have shown that people sometimes respond differently in a survey than they would in real life, often saying they would pay more than they really would. **When voting we urge you to respond as though costs to your household would really go up if the program were implemented.**



## An Example Question

In each question, you will be asked to vote on three options. (Mark one box at the bottom of each question to indicate which option you prefer.)

**Environmental Outcomes** from each option are listed here. The percent changes compared to today are also shown in parentheses.

**Annual Cost to your household** is listed here. Notice that *higher costs do not necessarily mean that all environmental outcomes will improve more.*

<b>Conditions in 2040</b>			
(% change compared to today)			
<b>Environmental Outcomes</b>	<b>Option A</b>	<b>Option B</b>	<b>Option C</b>
<b>Bay Water Clarity</b> Average visibility	<b>1.5 feet</b> (50% decrease)	<b>4 feet</b> (33% increase)	<b>5 feet</b> (67% increase)
<b>Striped Bass</b> Adult Population	<b>21 million fish</b> (13% decrease)	<b>28 million fish</b> (17% increase)	<b>24 million fish</b> (no change)
<b>Blue Crab</b> Adult Population	<b>235 million crabs</b> (6% decrease)	<b>280 million crabs</b> (12% increase)	<b>312 million crabs</b> (25% increase)
<b>Oysters</b> Population	<b>2,800 tons</b> (15% decrease)	<b>5,250 tons</b> (59% increase)	<b>4,300 tons</b> (30% increase)
<b>Watershed Lakes</b> Lakes with <u>low</u> algae levels	<b>2,300 lakes</b> (20% decrease)	<b>2,300 lakes</b> (no change)	<b>3,300 lakes</b> (14% increase)
<b>Your Cost of Living</b> Permanent cost increase for your household starting next year	<b>\$0 every year</b>	<b>\$120 every year</b> or \$10 every month	<b>\$60 every year</b> or \$5 every month
<b>Your Vote</b> Please mark <u>one</u> of the boxes to the right	Option A <input checked="" type="checkbox"/>	Option B <input checked="" type="checkbox"/>	Option C <input checked="" type="checkbox"/>

To vote for **Option A**  
mark this box

To vote for **Option B**  
mark this box

To vote for **Option C**  
mark this box

### When you vote on the next questions, please remember...

- There will be three sets of voting questions. Consider each question separately. Imagine that the options in that question are the only ones available to choose from.
- Options in different questions should not be compared to each other.
- Do not add up effects or costs across different questions.
- The environmental outcomes in each question are based on the best scientific predictions available. Please vote as if these outcomes would actually occur in the year 2040.

**7. Please vote for one of the three options below.** (*Mark one box at the bottom to indicate which option you would prefer.*)

<p align="center"><b>Conditions in 2040</b> (% change compared to today)</p>			
<p><b>Environmental Outcomes</b></p>	<p><b>Option A</b></p>	<p><b>Option B</b></p>	<p><b>Option C</b></p>
<p><b>Bay Water Clarity</b> Average visibility</p>	<p><b>1.5 feet</b> (50% decrease)</p>	<p><b>5 feet</b> (67% increase)</p>	<p><b>6 feet</b> (100% increase)</p>
<p><b>Striped Bass</b> Adult Population</p>	<p><b>21 million fish</b> (13% decrease)</p>	<p><b>30 million fish</b> (25% increase)</p>	<p><b>30 million fish</b> (25% increase)</p>
<p><b>Blue Crab</b> Adult Population</p>	<p><b>235 million crabs</b> (6% decrease)</p>	<p><b>280 million crabs</b> (12% increase)</p>	<p><b>340 million crabs</b> (36% increase)</p>
<p><b>Oysters</b> Population</p>	<p><b>2,800 tons</b> (15% decrease)</p>	<p><b>4,300 tons</b> (30% increase)</p>	<p><b>5,250 tons</b> (59% increase)</p>
<p><b>Watershed Lakes</b> Lakes with <u>low</u> algae levels</p>	<p><b>2,300 lakes</b> (21% decrease)</p>	<p><b>3,300 lakes</b> (14% increase)</p>	<p><b>3,850 lakes</b> (33% increase)</p>
<p><b>Your Cost of Living</b> Permanent cost increase for your household starting next year</p>	<p><b>\$0 every year</b></p>	<p><b>\$180 every year</b> or \$15 every month</p>	<p><b>\$500 every year</b> or \$41.67 every month</p>
<p><b>Your Vote</b> Please mark <u>one</u> of the boxes to the right</p>	<p align="center">Option A</p> <div align="center" style="border: 1px solid black; width: 80px; height: 60px; margin: 0 auto;"></div>	<p align="center">Option B</p> <div align="center" style="border: 1px solid black; width: 80px; height: 60px; margin: 0 auto;"></div>	<p align="center">Option C</p> <div align="center" style="border: 1px solid black; width: 80px; height: 60px; margin: 0 auto;"></div>

**8. Please vote for one of the three options below.** (*Mark one box at the bottom to indicate which option you would prefer.*)

<b>Conditions in 2040</b> (% change compared to today)			
<b>Environmental Outcomes</b>	<b>Option A</b>	<b>Option B</b>	<b>Option C</b>
<b>Bay Water Clarity</b> Average visibility	<b>1.5 feet</b> (50% decrease)	<b>3 feet</b> (no change)	<b>5 feet</b> (67% increase)
<b>Striped Bass</b> Adult Population	<b>21 million fish</b> (13% decrease)	<b>28 million fish</b> (17% increase)	<b>30 million fish</b> (25% increase)
<b>Blue Crab</b> Adult Population	<b>235 million crabs</b> (6% decrease)	<b>280 million crabs</b> (12% increase)	<b>340 million crabs</b> (36% increase)
<b>Oysters</b> Population	<b>2,800 tons</b> (15% decrease)	<b>5,250 tons</b> (59% increase)	<b>5,250 tons</b> (59% increase)
<b>Watershed Lakes</b> Lakes with <u>low</u> algae levels	<b>2,300 lakes</b> (21% decrease)	<b>3,300 lakes</b> (14% increase)	<b>3,850 lakes</b> (33% increase)
<b>Your Cost of Living</b> Permanent cost increase for your household starting next year	<b>\$0 every year</b>	<b>\$180 every year</b> or \$15 every month	<b>\$500 every year</b> or \$41.67 every month
<b>Your Vote</b> Please mark <u>one</u> of the boxes to the right	Option A <input type="checkbox"/>	Option B <input type="checkbox"/>	Option C <input type="checkbox"/>

**9. Please vote for one of the three options below.** (Mark one box at the bottom to indicate which option you would prefer.)

<b>Conditions in 2040</b> (% change compared to today)			
<b>Environmental Outcomes</b>	<b>Option A</b>	<b>Option B</b>	<b>Option C</b>
<b>Bay Water Clarity</b> Average visibility	<b>1.5 feet</b> (50% decrease)	<b>5 feet</b> (67% increase)	<b>6 feet</b> (100% increase)
<b>Striped Bass</b> Adult Population	<b>21 million fish</b> (13% decrease)	<b>30 million fish</b> (25% increase)	<b>28 million fish</b> (17% increase)
<b>Blue Crab</b> Adult Population	<b>235 million crabs</b> (6% decrease)	<b>300 million crabs</b> (20% increase)	<b>300 million crabs</b> (20% increase)
<b>Oysters</b> Population	<b>2,800 tons</b> (15% decrease)	<b>5,250 tons</b> (59% increase)	<b>4,300 tons</b> (30% increase)
<b>Watershed Lakes</b> Lakes with <u>low</u> algae levels	<b>2,300 lakes</b> (21% decrease)	<b>3,300 lakes</b> (14% increase)	<b>3,850 lakes</b> (33% increase)
<b>Your Cost of Living</b> Permanent cost increase for your household starting next year	<b>\$0 every year</b>	<b>\$40 every year</b> or \$3.33 every month	<b>\$250 every year</b> or \$20.83 every month
<b>Your Vote</b> Please mark <u>one</u> of the boxes to the right	Option A <input type="checkbox"/>	Option B <input type="checkbox"/>	Option C <input type="checkbox"/>

# Thinking about how you just voted...

## 10. Please rate how much you agree or disagree with the following statements.

	Strongly Disagree			Strongly Agree			Don't Know
I voted as if my household would actually face the costs shown in the questions.	1	2	3	4	5	DK	
I voted as if the programs would actually achieve the results shown by 2040.	1	2	3	4	5	DK	
If new programs were implemented, I would expect to see some environmental improvements before 2040.	1	2	3	4	5	DK	
I would vote differently if the programs took longer to achieve the results shown.	1	2	3	4	5	DK	
It is important to improve waters in the Chesapeake Bay Watershed, no matter how high the costs.	1	2	3	4	5	DK	
I am against any more regulations and government spending.	1	2	3	4	5	DK	
My household should not have to pay any amount to improve Bay Waters and Watershed Lakes.	1	2	3	4	5	DK	
It is difficult for me to find time to take surveys.	1	2	3	4	5	DK	

## 11. How much do you agree or disagree that the following *affected your vote*?

(Please circle one number for each statement.)

	Strongly Disagree			Strongly Agree			Don't Know
Changes in the quality or price of seafood	1	2	3	4	5	DK	
Impacts on the economy and jobs	1	2	3	4	5	DK	
Improving the environment for others	1	2	3	4	5	DK	
Water quality improvements to lakes <i>outside</i> the Chesapeake Bay Watershed	1	2	3	4	5	DK	
Preserving the environment for future generations	1	2	3	4	5	DK	
Trips I may take to the Chesapeake Bay or Watershed Lakes in the future	1	2	3	4	5	DK	

**12. In the last 12 months, how many times did you visit an outdoor recreation site on the Chesapeake Bay?** *(Please circle one number.)*

0	1	2	3	4	If more than 4, write in number of trips: _____	Don't Know  <input type="checkbox"/>
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**13. If you did visit one or more sites on the Chesapeake Bay in the last 12 months, which site did you visit most often?** *(Fill in as much information as you can)*

13a. Name of site \_\_\_\_\_

13b. How long did it take you to drive there from your home?  
\_\_\_\_\_ hours and \_\_\_\_\_ minutes

13c. What state is it in? \_\_\_\_\_

13d. What is the nearest town? \_\_\_\_\_

13e. What did you do on your visit(s) to that site? *(Check all the activities you did on your visits)*

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> Fishing and/or crabbing           | <input type="checkbox"/> Swimming    |
| <input type="checkbox"/> Boating, canoeing or kayaking     | <input type="checkbox"/> Camping     |
| <input type="checkbox"/> Hunting                           | <input type="checkbox"/> Hiking      |
| <input type="checkbox"/> Bird watching or wildlife viewing | <input type="checkbox"/> Other _____ |

**14. In the last 12 months, how many times did you visit a lake, stream, or river in the Chesapeake Bay Watershed?** *(Please circle one number.)*

0	1	2	3	4	If more than 4, write in number of trips: _____	Don't Know  <input type="checkbox"/>
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**15. Many people are looking for ways to reduce their utility bills. If you were offered a device that cost \$50 and would reduce your household electricity bill by \$2 each month for the next 10 years, would you purchase the device?**

- Yes                       No                       Don't know

## Questions about you and your household

Finally, we would like to ask a few questions about you and your household. Your answers will not be saved or stored in a way that can be associated with your name or address. You will not be contacted about your responses or this survey.

- 16. What is your sex?**       Male       Female
- 17. What is your age?** \_\_\_\_\_ years old
- 18. How many children under age 18 are living in your home?** \_\_\_\_\_ children

**19. Have you or any member of your family ever worked in any of the following industries or jobs?**

- Agriculture       Tour guide for fishing
- Commercial fishing       Environmental non-profit group
- No one in my family ever worked in these industries

**20. In 2012, what was your total pre-tax household income, including all earners in your household?**

- Under \$25,000       \$100,000-\$149,999
- \$25,000-\$49,999       \$150,000-\$199,999
- \$50,000-\$74,999       \$200,000 or more
- \$75,000-\$99,000

**21. Are you of Hispanic, Latino, or Spanish origin?**       Yes       No

**22. What is your race?** *(Select one or more.)*

- American Indian or Alaska Native       Asian
- Black or African American       White
- Native Hawaiian or Other Pacific Islander

**23. What is the highest degree or level of school you have completed?**

- Elementary or high school, but no high school diploma or GED
- High school diploma, GED, or other high school completion
- Some college credit, no degree
- Associate's Degree (for example: AA, AS)
- Bachelor's Degree (for example: BA, BS)
- Master's degree, professional degree, or doctorate degree  
(for example, MA, MSW, MD, DDS, JD, PhD, EdD)

**Thank you very much for your help.**

Please mail this completed survey back to us in the postage-paid return envelope provided.



**Thanks again for completing this survey!**

**If you have any additional thoughts about any of the topics covered or the survey itself, please share them here.**

A large, empty rectangular box with a thin black border, intended for users to provide additional thoughts or feedback.

**If you have any questions please call XXX-XXX-XXXX  
or email [chesapeake-survey@abt.com](mailto:chesapeake-survey@abt.com).**