

A survey on water quality in rivers, lakes, and streams

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No personally identifiable information will be associated with your survey responses. The reports prepared from this study will summarize our findings and will not report individual responses.

This survey is being conducted by the **US Environmental Protection Agency** to collect information that may inform future decisions affecting water quality and your household expenses.

The survey will...

1. Describe the impacts of pollution in lakes, rivers, and streams in the U.S.
2. Ask you to vote for or against potential policies that would improve the quality of some rivers, lakes, and streams. If implemented, policies would also increase costs to your household.
3. Ask some additional questions about water quality and your household.

Good water quality in freshwater lakes, rivers, and streams allows for a full range of uses and can support a rich community of plants and animals.

In this survey we will ask about policies that would affect two major categories of water quality in lakes, rivers, and streams:

- **Water Recreation** – The suitability of waterbodies for boating, fishing, and swimming
- **Aquatic Biodiversity** – The ability of waterbodies to support healthy and diverse populations of naturally occurring plants and animals

The policies you will be asked to consider in this survey will not affect public drinking water or groundwater supplies and would not affect the quality of drinking water for most households.

During the past 12 months have you taken a recreation trip to a freshwater lake, river, or stream?
Activities could include swimming, fishing, boating, hiking, viewing nature, etc.

- Yes
- No

During the past 12 months have you gone fishing in freshwater?

- Yes
- No

single-day trip to a freshwater lake, river, or stream is one for which you returned home on the same day you left.

To your best recollection, during the last 12 months, how many single-day trips from your home did you take where the primary purpose was recreation in, on, or near fresh water?

If you took at least one single-day trip in the last 12 months, what was the main purpose of your MOST RECENT TRIP? Please mark only one option below.

- Swimming or any other activity in the water
- Fishing
- Boating
- Viewing nature
- Other

If you took at least one single-day trip, about how many miles from your home did you travel for your MOST RECENT TRIP? _____ miles

On the next few screens we will describe the information you will be given about the policies before you vote.

We would like you to carefully consider each of these policy features when making your decision.

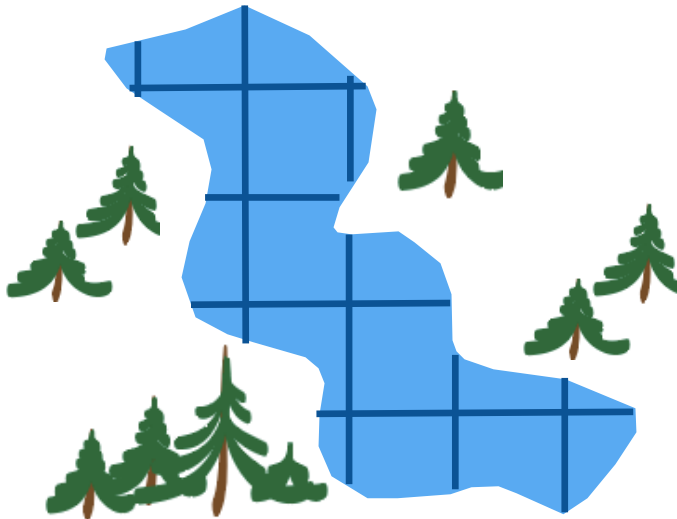
Those policy features are

1. *How much water* would be affected
2. *What improvements* in water quality you could expect
3. *Where* the policies would be implemented
4. *The cost* to your household of implementing each policy

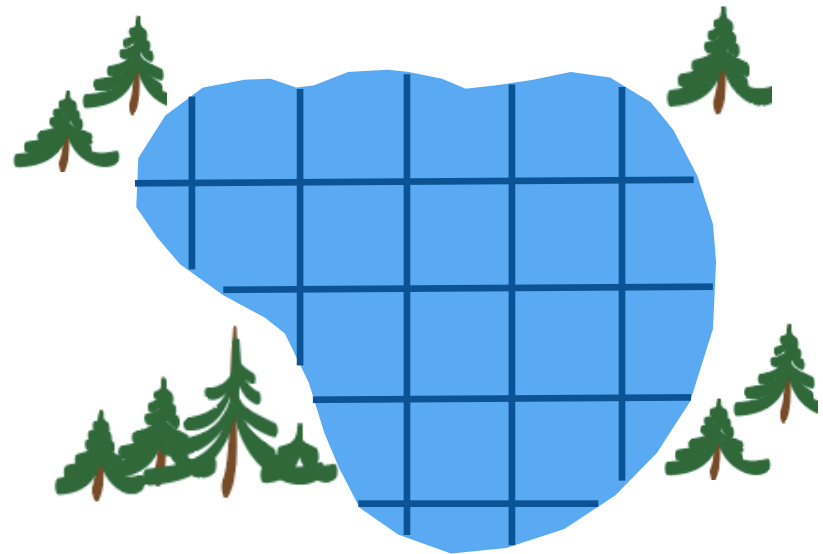
The amount of water improved by a policy is described using *surface area*. Surface area is the amount of water that can be seen from above.

When describing the policies you will vote on, we will tell you how many *square miles* of lakes, rivers, and streams would be improved.

Calculating surface area of rivers and streams



Calculating surface area of lakes



The **Water Recreation Score** is a measure of how suitable a lake, river, or stream is for different recreational activities.

As the score increases, water quality improves, and waterbodies are suitable for more types of activities. The three activities that are taken into consideration are:

- Boating
- Fishing
- Swimming

Water quality experts use a variety of scientific measurements to determine the Water Recreation Score.

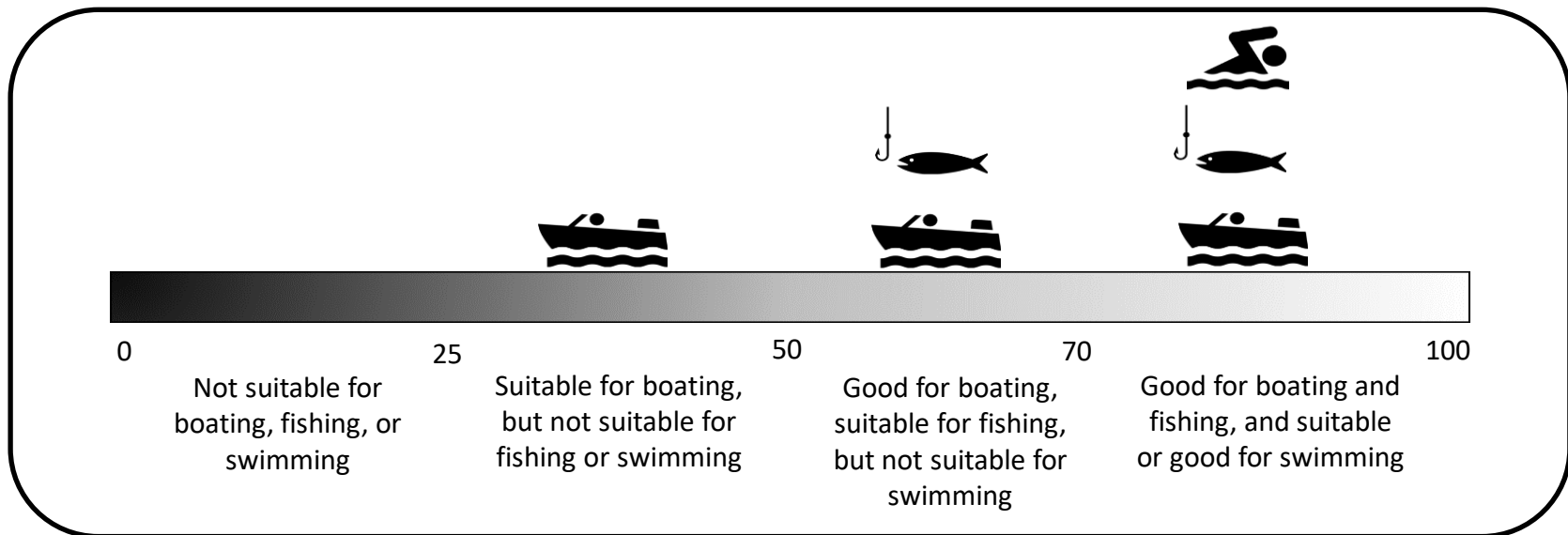
Some of the measurements they use are:

- Fecal coliform - harmful bacteria from sewage
- Dissolved oxygen - the amount of oxygen in the water for aquatic life
- Water clarity - how far below the surface we can see an object
- Nutrients - too much nitrogen and phosphorus from fertilizer and sewage leads to excessive algae growth which can be harmful to wildlife and people

The **Water Recreation Score** ranges from 1 to 100.

A waterbody can be *not suitable*, *suitable*, or *good* for a recreational activity.

- *Not Suitable* means that the minimum criteria for that activity are not met
- *Suitable* means that the waterbody meets the minimum criteria for that activity
- *Good* means that the waterbody exceeds the criteria for that activity and the experience is enhanced by good water quality



Example: A Water Recreation Score of **55** means that, on average, water quality in the region is good for boating, suitable for fishing, but not suitable for swimming. If the Water Recreation Score increased from **55** to **62** it would mean that, on average, conditions would improve for boating and fishing and but still not suitable for swimming.

Scientists use an **Aquatic Biodiversity Score** to measure the overall ecological health of a lake, river, or stream.

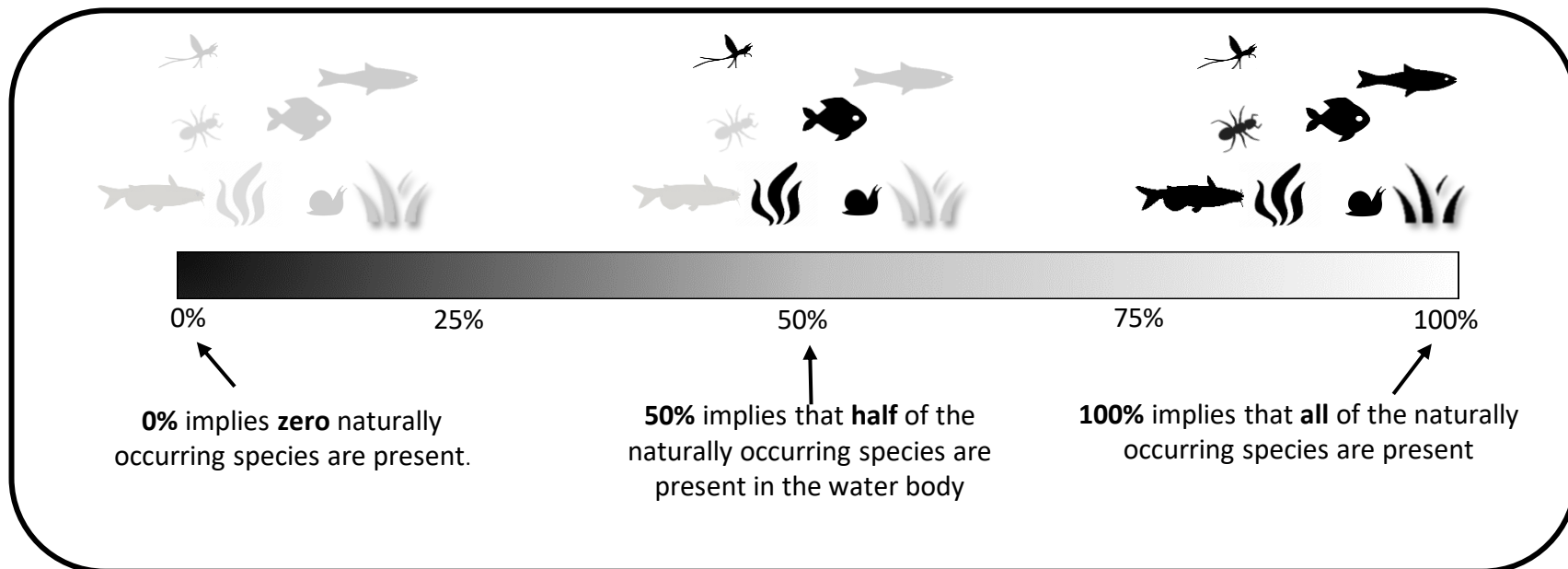
This score compares the number of different species that live in a water body to the number that would be expected to live in the same type of water body in the same region under the best possible conditions.

Scientists estimate the aquatic biodiversity score by counting the number of aquatic invertebrates that live in the water such as insects, worms, and snails.

This measure is closely related to the biodiversity of a broad range of species groups, including plants, amphibians, fish, and shellfish.



The ***Aquatic Biodiversity Score*** ranges from 0% to 100%, as shown below.



For example: If 120 different plant and animal species live in a lake, and under the best possible conditions 200 species would live in the same type of lake in the same region, then the biodiversity score would be $120 / 200 = 0.6$, or 60%.

A watershed is an area of land where all water flows into one major waterbody. This map shows the *major watersheds* of the U.S. Policies will only have a noticeable effect on lakes, rivers, and streams in the watersheds where they are implemented. We will use maps like this one to show the **Policy Regions** where the changes in water quality would occur.

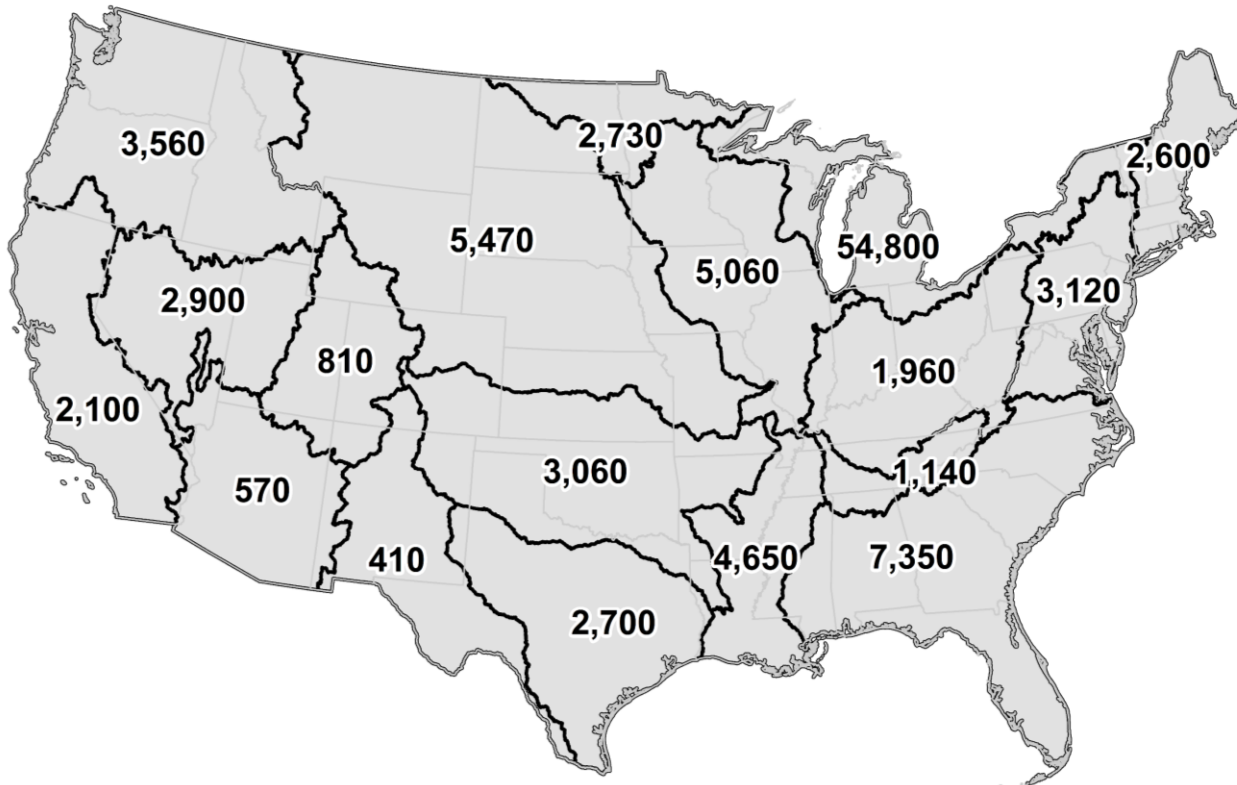
The Policy Regions could include one or more watersheds shown on the map.

The policies would not affect any coastal waters next to the shaded area or any lakes, rivers, and streams outside of the Policy Region.



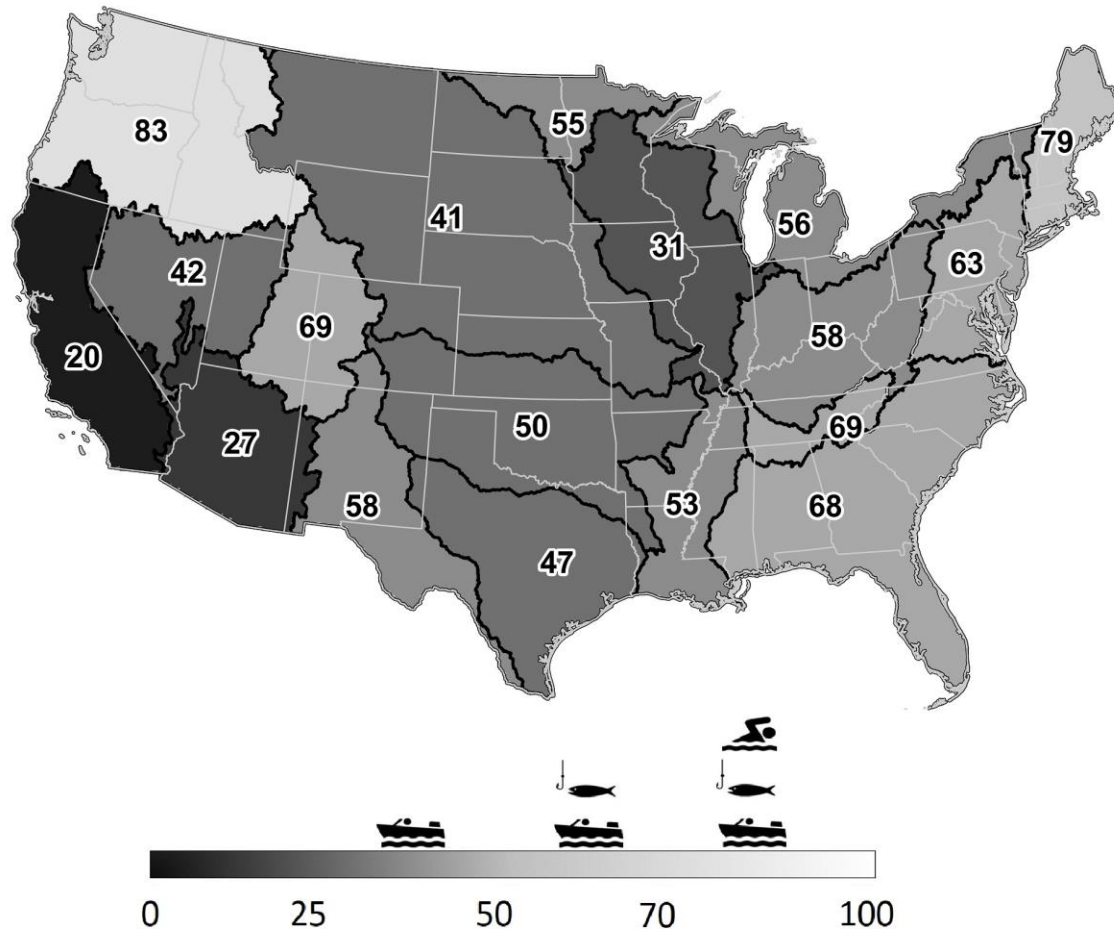
This map shows the **Surface Area** of lakes, rivers, and streams, in each watershed. The numbers on the map show the combined square miles of all lakes, rivers and streams in the watershed.

When describing policies, we will tell you the total square miles of lakes rivers and streams in the Policy Region.



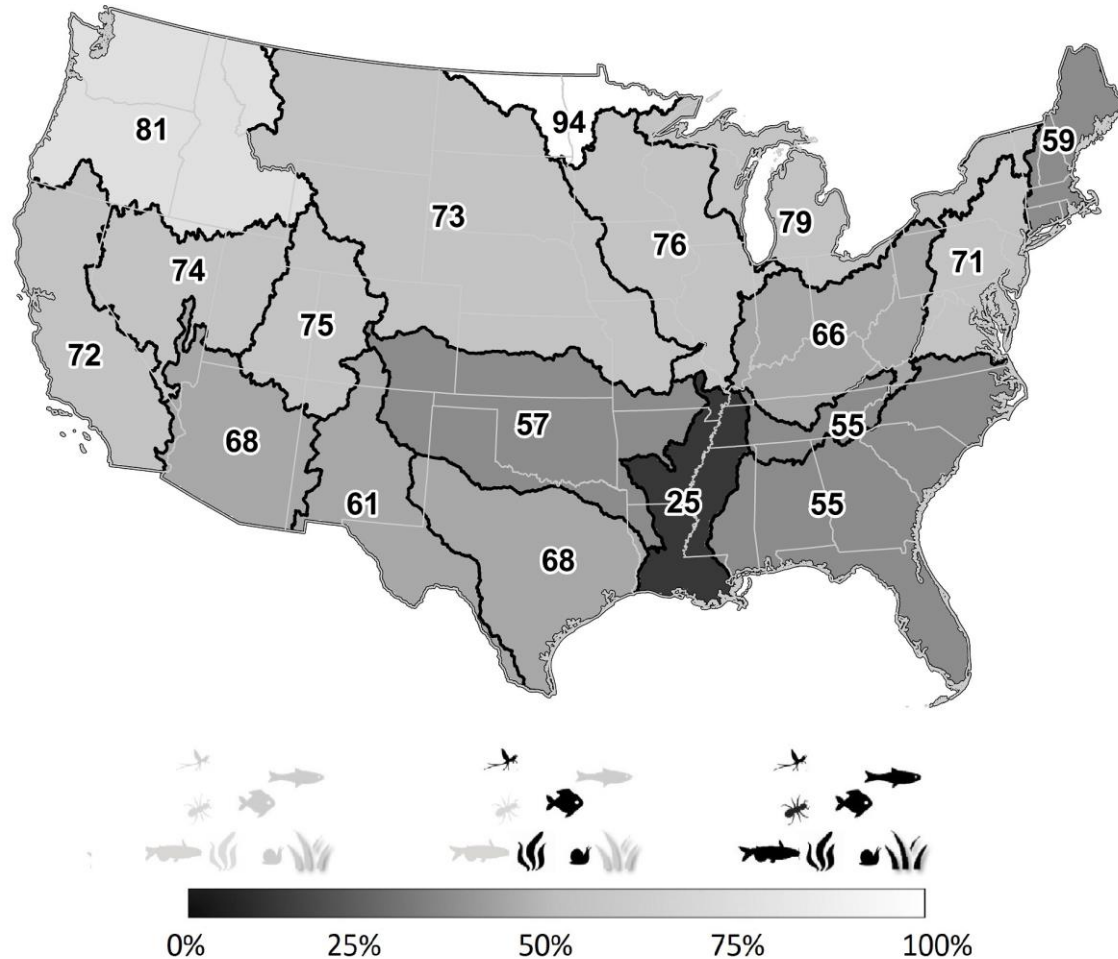
This map shows the current average **Water Recreation Score** for each watershed.

When describing the policies, we will tell you the current average score in the Policy Region and how it would change under the new policy. Individual lakes, rivers and streams may have a Water Recreation Score that is higher or lower than the average in the Policy Region.



This map shows the current average **Aquatic Biodiversity Score** for each watershed.

When describing the policies, we will tell you the current score and how it would change under the new policy. Individual lakes, rivers and streams may have an Aquatic Biodiversity Score that is higher or lower than the average in the Policy Region.



Policies to meet water quality standards typically require different sources to reduce the amount of pollution they release into lakes, rivers, and streams.

Some examples are

- More thorough treatment of wastewater (sewage) before releasing into waterways
- Changing the way rainfall is handled when the land is developed
- Reducing the amount of fertilizer, soil, and animal waste that runs off farmland
- Stricter limits on pollution that industrial sources release into waterways

On the next screen we will tell you how those changes are paid for and how the costs would be passed onto your household.

If implemented, a policy would be paid for by increases in your federal, state, and local taxes. The increases would last for **5 years** and would end after that time. The tax increase would begin in 2024 and end in 2028.

These additional tax payments would be used to

- Pay for the up-front costs of the new practices such as purchasing and installing equipment and new construction
- Pay into a fund that would be used to maintain improvements into the future even after the tax ends

These additional taxes and the fund they go into would only be used to meet the new water quality requirements and would be prohibited from being used for anything else.

The questions on the following pages will ask you to vote for or against a particular policy. Each policy will be described using policy features you have been reading about.

The table below shows how those features might differ from one policy to another.

Policy Feature	Smallest possible policy impacts	Largest possible policy impacts
Square miles of improved waters	3,100 square miles (3% of U.S. lakes, rivers, and streams)	105,000 square miles (100% U.S. lakes, rivers, and streams)
Average Recreation Score (out of 100)	1-point improvement	10-point improvement
Average Biodiversity Score (out of 100%)	1% improvement	10% improvement
Annual cost to your household <u>for 5 years</u>	\$20 per year for 5 years	\$500 per year for 5 years

Your responses to this survey may inform future policy decisions that, if implemented, will improve the quality of some lakes, rivers, and streams and increase costs to your household.

Remember, voting for a policy is just one of the many ways you can spend your money. Paying for water quality improvements will reduce the amount of money you have to spend on things like:

- Food and clothes
- Vacations
- Education
- Donations to charitable organizations
- Resolving other environmental problems you care about

Please keep these other expenses in mind when voting for or against a policy.

You will now be asked to consider potential water quality policies.



Square miles of lakes, rivers, and streams in policy region	2,594 square miles (2% of US total)	2,594 square miles (2% of US total)
Average Recreation Score	79 out of 100 (No change)	80 out of 100 (1-point improvement)
Average Biodiversity Score	59% of species found (No change)	60% of species found (1% improvement)
Increase in your annual taxes for 5 years	\$0	\$20 per year for 5 years
Please select your preferred option:	<input type="checkbox"/> NO Policy	<input type="checkbox"/> THIS Policy

The next questions asks you to vote on a different policy.

Please disregard the previous question and now imagine the next question is the only one available.

Policies in different questions should not be compared to each other.

Do not add up water quality improvements or costs across different questions.



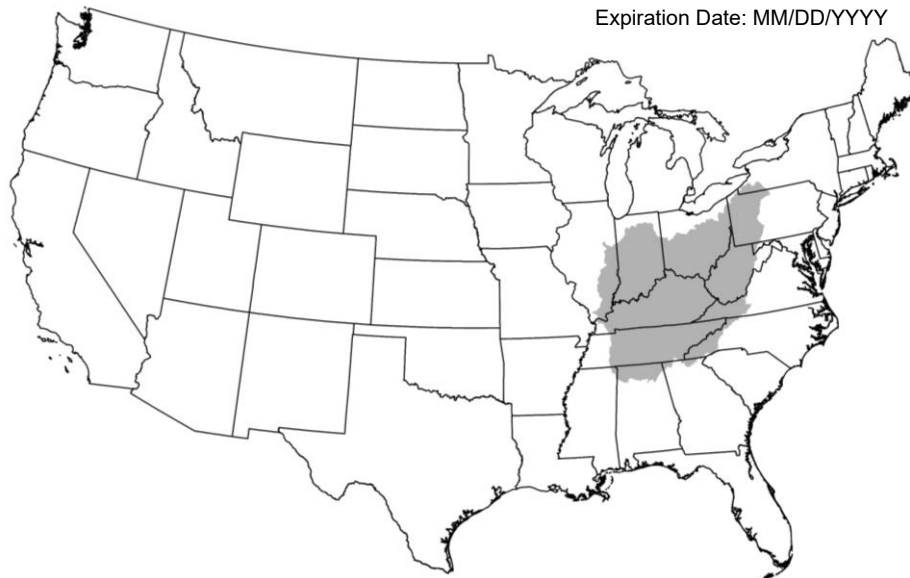
Square miles of lakes, rivers, and streams in policy region	83,400 square miles (79% of US total)	83,400 square miles (79% of US total)
Average Recreation Score	79 out of 100 (No change)	82 out of 100 (3-point improvement)
Average Biodiversity Score	71% of species found (No change)	74% of species found (3% improvement)
Increase in your annual taxes for 5 years	\$0	\$50 per year for 5 years
Please select your preferred option:	<input type="checkbox"/> NO Policy	<input type="checkbox"/> THIS Policy

The next questions asks you to vote on a different policy.

Please disregard the previous question and now imagine the next question is the only one available.

Policies in different questions should not be compared to each other.

Do not add up water quality improvements or costs across different questions.



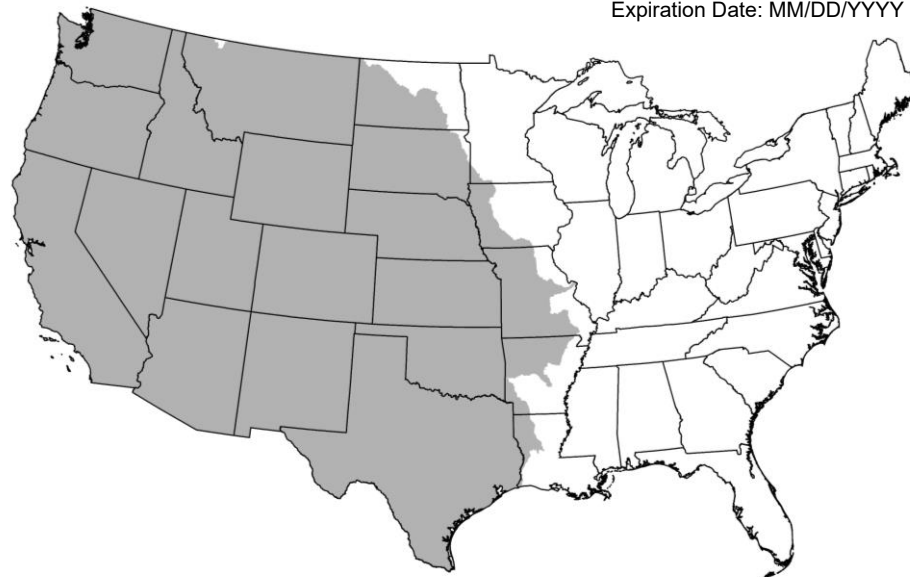
Square miles of lakes, rivers, and streams in policy region	8,160 square miles (8% of US total)	8,160 square miles (8% of US total)
Average Recreation Score	43 out of 100 (No change)	50 out of 100 (7-point improvement)
Average Biodiversity Score	70% of species found (No change)	80% of species found (10% improvement)
Increase in your annual taxes for 5 years	\$0	\$75 per year for 5 years
Please select your preferred option:	<input type="checkbox"/> NO Policy	<input type="checkbox"/> THIS Policy

The next questions asks you to vote on a different policy.

Please disregard the previous question and now imagine the next question is the only one available.

Policies in different questions should not be compared to each other.

Do not add up water quality improvements or costs across different questions.



Square miles of lakes, rivers, and streams in policy region	21,603 square miles (21% of US total)	21,603 square miles (21% of US total)
Average Recreation Score	49 out of 100 (No change)	54 out of 100 (5-point improvement)
Average Biodiversity Score	71% of species found (No change)	72% of species found (1% improvement)
Increase in your annual taxes for 5 years	\$0	\$150 per year for 5 years
Please select your preferred option:	<input type="checkbox"/> NO Policy	<input type="checkbox"/> THIS Policy

The next questions asks you to vote on a different policy.

Please disregard the previous question and now imagine the next question is the only one available.

Policies in different questions should not be compared to each other.

Do not add up water quality improvements or costs across different questions.



Square miles of lakes, rivers, and streams in policy region	105,003 square miles (100% of US total)	105,003 square miles (100% of US total)
Average Recreation Score	55 out of 100 (No change)	65 out of 100 (7-point improvement)
Average Biodiversity Score	72% of species found (No change)	82% of species found (10% improvement)
Increase in your annual taxes for 5 years	\$0	\$250 per year for 5 years
Please select your preferred option:	<input type="checkbox"/> NO Policy	<input type="checkbox"/> THIS Policy

Thinking about how you answered all the voting questions, please rate how much you agree or disagree with the following statements.

	Strongly Disagree				Strongly Agree
I am certain that I voted the same way I would if given the same choices in reality.	1	2	3	4	5
I voted as if my household would actually face the costs shown.	1	2	3	4	5
I voted as if the policies would actually achieve the improvements in water quality shown.	1	2	3	4	5
It is important to improve water quality, no matter how high the costs.	1	2	3	4	5
I am against any more regulations and government spending.	1	2	3	4	5
I want better water quality, but my household should not have to pay additional taxes to get it.	1	2	3	4	5
I don't care much about water recreation or aquatic biodiversity, but I strongly support improving the environment in general.	1	2	3	4	5
The data collected with this survey will be used to inform policy that would increase my taxes if implemented.	1	2	3	4	5

When choosing whether to vote for the policies or not, how much did each of the following *policy features* affect your votes?

	No Effect on my Vote		Some Effect on my Vote		Large Effect on my Vote
Distance of the policy region from your home	1	2	3	4	5
The square miles of lakes, rivers, and streams (or % of U.S. total) in the policy region	1	2	3	4	5
Improvements in the Recreation Score	1	2	3	4	5
Improvements in the Aquatic Biodiversity Score	1	2	3	4	5
The cost in additional taxes	1	2	3	4	5

How much did each of the following considerations affect your votes?

	No Effect on my Vote		Some Effect on my Vote		Large Effect on my Vote
The well-being of aquatic wildlife and plants.	1	2	3	4	5
Impacts on the economy and jobs.	1	2	3	4	5
Improving the environment for others.	1	2	3	4	5
Preserving the environment for future generations.	1	2	3	4	5
Trips I may take to visit lakes, rivers, or streams in the future.	1	2	3	4	5

During the PAST 12 MONTHS (52 weeks), did you work 50 or more weeks?

- Yes
- No

[if yes] How many weeks DID you work, even for a few hours, including paid vacation, paid sick leave, and military service?

- 50 to 52 weeks
- 48 to 49 weeks
- 40 to 47 weeks
- 27 to 39 weeks
- 14 to 26 weeks
- 13 weeks or less

During the PAST 12 MONTHS, in the WEEKS WORKED, how many hours did you usually work each week?

Usual hours worked each WEEK: _____

About when did you move into your current house, apartment, or mobile home?

Month: _____

Year: _____

Do you speak a language other than English at home?

- Yes
- No

[if yes] What is this language? _____

[if yes] How well do you speak English?

- Very well
- Well
- Not well
- Not at all