

An Introduction to Michigan's Water Resources

The Institute of Water Research, Michigan State University

<http://web1.msue.msu.edu/waterqual/WQWEB/MichiganWaterResources.pdf>

Price of Great Waters (pg. 11-13)

State the main idea of this passage in one sentence. _____

Do landowners own the water? Yes No

Hydrologic Cycle (pg. 14-17)

What is groundwater? _____

How are aquifers related to lakes, streams, and other surface water? _____

Human Influence (pg. 17-19)

Who was involved in the first court case about water rights in Michigan? _____

What are the authors advocating regarding water use and regulation? _____

Groundwater (pg. 26-29)

Why is groundwater important?

- 1. _____

- 2. _____

What affects the flow of groundwater, and how much wells yield? _____

What happens when wells are placed close together? _____

Land Water and Human Activities (pg. 32-33)

If you were a drop of water, where would you like to be in this illustration? Why? _____

Multiple Uses (pg. 47-49)

What is the goal of multiple use water management? _____

What is the difference between withdrawal and in-stream water uses? _____

List the major uses of water that is withdrawn and consumed.

- 1. _____
- 2. _____
- 3. _____
- 4. _____

Key—An Introduction to Michigan’s Water Resources

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Price of Great Waters (pg. 11-13)

State the main idea of this passage in one sentence. _____

Michigan has unique freshwater resources that must and should be maintained. _____

Do landowners own the water? Yes

No

Hydrologic Cycle (pg. 14-17)

What is groundwater? _____

Groundwater is water found below the water table, filling the spaces around rocks and soil. _____

How are aquifers related to lakes, streams, and other surface water? _____

Water in an aquifer can enter a lake or stream as discharge. In some cases, surface water sometimes flows the other way and recharges an aquifer. _____

Human Influence (pg. 17-19)

Who was involved in the first court case about water rights in Michigan? _____

Logging companies who floated logs on the river and landowners with river frontage. _____

What are the authors advocating regarding water use and regulation? _____

There must be a balance among all users of water with the goal of maintaining the long-term health of water resources. _____

Groundwater (pg. 26-29)

Why is groundwater important?

- 1. Many people rely on groundwater to supply their water needs. _____
- 2. Many streams are fed by groundwater discharge during dry periods. _____

What affects the flow of groundwater, and how much wells yield? _____

The types of rocks and soil. _____

What happens when wells are placed close together? _____

The water level may drop and cause the wells to go dry. _____

Land Water and Human Activities (pg. 32-33)

If you were a drop of water, where would you like to be in this illustration? Why? _____

Award points for well-reasoned answers that relate to the sky, surface, or subsurface as shown. _____

Multiple Uses (pg. 47-49)

What is the goal of multiple use water management? _____

To balance the concerns of all users, creating an efficient system of water use. _____

What is the difference between withdrawal and in-stream water uses? _____

In-stream uses—such as shipping, hydroelectric power generation, and recreation—leave water where it is, while withdrawal uses require water to be removed from its source. _____

List the major uses of water that is withdrawn and consumed.

- 1. Irrigation _____
- 2. Thermoelectric power generation _____
- 3. Industrial self-supply _____
- 4. Public supply _____

Everything Old Is New Again

Scott D. Hubbard

Michigan Bar Journal, November 2005

<http://www.michbar.org/journal/pdf/pdf4article930.pdf>

List the focus of water regulation in the following eras:

- To the 1960s _____
- 1960s–2000 _____
- In the 21st century _____

How many gallons per day (gpd) were withdrawn by the following in 2001?

- Irrigation, self-supplied industrial, and public water suppliers _____
- Thermoelectric power generation facilities _____
- Golf courses _____
- Ice Mountain, Nestlé Waters, Mecosta County _____

What does “riparian” mean? _____

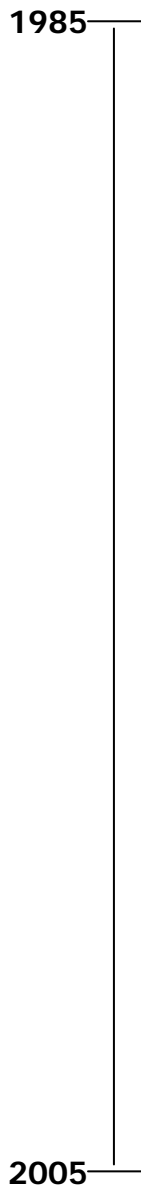
What standard does Michigan use to regulate water? _____

What doctrine protects the Great Lakes? _____

Timeline

Place the following items, which concern diversion of Great Lakes water, on the timeline. Be sure to include the year for each event.

- Great Lakes Charter
- Great Lakes Basin Sustainable Water Resources Agreement
- Federal Water Resources Development Act (WRDA)
- Part 327 of Natural Resources Protection Act (NEPRA)
- Great Lakes Basin Water Resources Compact
- Great Lakes Charter Annex



Which department in Michigan regulates water use? _____

In the case filed by the Michigan Citizens for Water Conservation against Nestlé in 2001, how did the trial court rule? _____

For what reasons?

1. _____

2. _____

Key—Everything Old Is New Again

Scott D. Hubbard

Michigan Bar Journal, November 2005

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List the focus of water regulation in the following eras:

- To the 1960s Maintaining navigability of waterways _____
- 1960s–2000 Preserving and maintaining the quality of the water _____
- In the 21st century Use or consumption of the water _____

How many gallons per day (gpd) were withdrawn by the following in 2001?

- Irrigation, self-supplied industrial, and public water suppliers 2 billion _____
- Thermoelectric power generation facilities 8 trillion _____
- Golf courses 36 million _____
- Ice Mountain, Nestlé Waters, Mecosta County 300,000 _____

What does “riparian” mean? _____

Related to the bank of a waterway, usually a river or sometimes a lake _____

What standard does Michigan use to regulate water? _____

Reasonable use _____

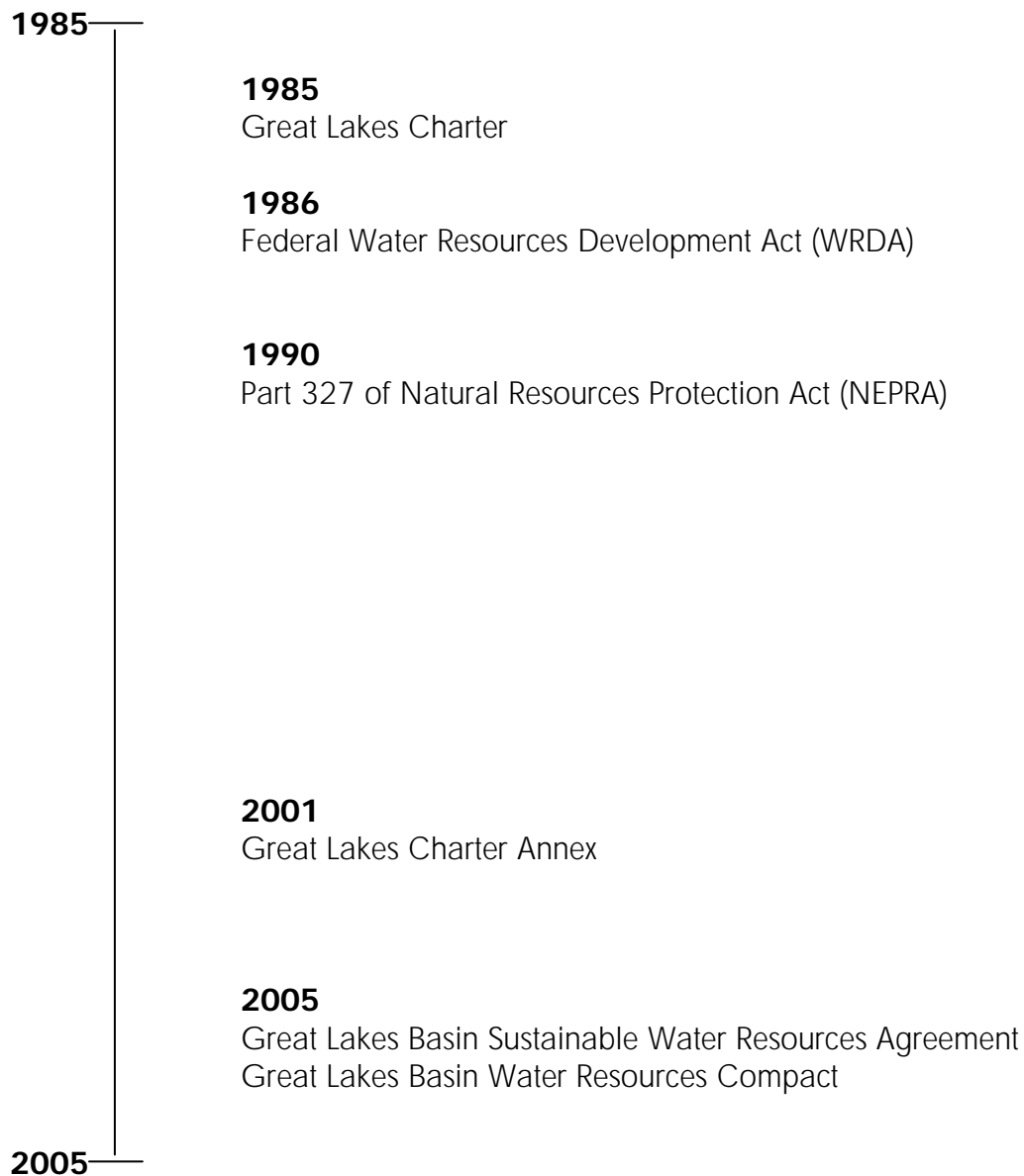
What doctrine protects the Great Lakes? _____

Public trust doctrine _____

Timeline

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Which department in Michigan regulates water use? **Department of Environmental Quality** ____

In the case filed by the Michigan Citizens for Water Conservation against Nestlé in 2001, how did the trial court rule? _____

The trial court found in favor of the MCWC, issuing an injunction against Nestlé. _____

For what reasons?

1. **Riparian rights had precedence over groundwater rights.** _____

2. **Nestlé did not have certain permits.** _____

Water Health Series: Bottled Water Basics

Environmental Protection Agency (EPA)

http://www.epa.gov/ogwdw000/faq/pdfs/fs_healthseries_bottlewater.pdf

Which federal agency regulates tap water? (pg. 3) _____

Which federal agency regulates bottled water? (pg. 3) _____

Where does most bottled water come from? (pg. 4) _____

Choose your favorite type of water from the list of bottled water terms. Why is this type your favorite? (pg. 4-5) _____

What are five treatments used with bottled water? (pg. 6-7)

1. _____
2. _____
3. _____
4. _____
5. _____

Name three organizations that certify bottled water. (pg. 7)

1. _____
2. _____
3. _____

Key—Water Health Series: Bottled Water Basics

Environmental Protection Agency (EPA)

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Which federal agency regulates tap water? (pg. 3) Environmental Protection Agency _____

Which federal agency regulates bottled water? (pg. 3) Food and Drug Administration _____

Where does most bottled water come from? (pg. 4) Ground water source _____

Choose your favorite type of water from the list of bottled water terms. Why is this type your favorite? (pg. 4-5) _____

Award points for well-reasoned answers that discuss one of the following types of water: artesian/ground/ spring/well, distilled, drinking, mineral, purified, sterile. Note that carbonated/soda/seltzer/sparking/tonic water are considered soft drinks, not bottled water. _____

What are five treatments used with bottled water? (pg. 6-7)

1. Distillation _____
2. Micron filtration _____
3. Ozonation _____
4. Reverse osmosis _____
5. Ultraviolet light _____

Name three organizations that certify bottled water. (pg. 7)

1. International Bottled Water Association _____
2. NSF International _____
3. Underwriters Laboratory, Inc. (UL) _____

Terms and Definitions

Directions: Choose the correct term for each definition.

- _____ Allows the owner of riparian land to use or access the shore, bed, or water.
- _____ The party that appealed the lower court's decision.
- _____ Water, which in its natural state, is capable of and has been used for commerce, travel, or trade.
- _____ The party that did not appeal the lower court's decision.
- _____ Permission to go to a higher court for review of a lower court's decision.
- _____ Rules and principles for government derived from custom and judicial decisions.
- _____ A test, dating from the lumbering era, that determines whether a waterway in Michigan is navigable.
- _____ A written statement containing a summary of the facts, pertinent laws, and an argument of how the law applies.
- _____ A doctrine providing that submersed or submersible lands are preserved for public use in navigation, fishing, and recreation.
- _____ Related to the bank of a waterway, such as a river or lake.
- _____ The theory providing that a riparian owner may use the water as long as it does not affect the quantity or quality of water available to other riparian owners.
- _____ A person or organization that files a brief on behalf of its own views but is not party to a case.
- _____ A court decision that serves as an example for identical or similar cases.

Appellant
Public trust doctrine
Common law
Floating log test
Riparian

Brief
Leave to appeal
Reasonable use theory
Navigable waters
Precedent

Appellee
Riparian right
Amicus curiae

Key—Terms and Definitions

Directions: Choose the correct term for each definition.

Riparian right _____	Allows the owner of riparian land to use or access the shore, bed, or water.
Appellant _____	The party that appealed the lower court’s decision.
Navigable waters _____	Water, which in its natural state, is capable of and has been used for commerce, travel, or trade.
Appellee _____	The party that did not appeal the lower court’s decision.
Leave to appeal _____	Permission to go to a higher court for review of a lower court’s decision.
Common law _____	Rules and principles for government derived from custom and judicial decisions.
Floating log test _____	A test, dating from the lumbering era, that determines whether a waterway in Michigan is navigable.
Brief _____	A written statement containing a summary of the facts, pertinent laws, and an argument of how the law applies.
Public trust doctrine _____	A doctrine providing that submersed or submersible lands are preserved for public use in navigation, fishing, and recreation.
Riparian _____	Related to the bank of a waterway, such as a river or lake.
Reasonable use _____	The theory providing that a riparian owner may use the water as long as it does not affect the quantity or quality of water available to other riparian owners.
<i>Amicus curiae</i> _____	A person or organization that files a brief on behalf of its own views but is not party to a case.
Precedent _____	A court decision that serves as an example for identical or similar cases.

Appellant
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