

WHO Wants Clean Water! Do You? Solving Conflicts Over International Water Rights Issues

by
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Overview

WHO Wants Clean Water! Do You? is aimed at eliciting thoughtful response from high school students in history and social studies classes in regard to considering water rights on an international scale. Since 1900, the global demand for water increased 900 percent and in parts of the world, primarily in much of Africa, the Middle East, Mexico, and India, the quality of drinking water is dangerously substandard.¹ Growing population, increased consumption patterns, natural phenomena, and pollution threaten to make freshwater scarcity a global problem. Coincidentally or perhaps consequently, advocates from United Nations agencies have been promoting access to clean water as a human right. United Nations initiatives such as the World Water Forums and the recently established World Water Assessment Program (WWAP) have a philosophical basis in this concept. Historically, access to water has been defined primarily through precedence and property rights. Those with legal control of property adjoining water have been able to enjoy use of this resource to their liking. Those with property rights have been able to draw as much as they have liked and also dump what they have liked into the rivers, streams, lakes and oceans. The ascent of the industrialized world has introduced new strains on our water supply that pose not only as local, but also as global threats. Increased global initiatives aimed at protecting and managing the water supply universally are gaining momentum under the stewardship of the United Nations.

A Comparative Approach

The problem of conflict and clean water will be examined in this unit in light of a comparative approach. Students will be exposed to a survey of water related conflict from different environments and geographical locations. Claims that water will be the focus of future wars will be assessed. Students will also be confronted with an essential question as to how water rights and water quality can best be protected and more equitably shared among nations. More specifically, students will engage in reading about issues of water rights and water conflict. The critical assessment of United Nations' initiatives in regard to avoiding conflict over water, providing and maintaining access to clean water, securing equity of access, and raising awareness of water related problems will be encouraged as means of stimulating problem solving skills. In completing their work in this unit, students will have demonstrated a number of performance standards consistent with local, state, and national criteria. Specific outcomes expected from students will include participating in a water rights simulation game and presenting guided research findings to an essential question through a PowerPoint presentation, illustrated poster presentation, or overhead projector presentation. Evidence gathered for this research will predominantly be based on

secondary sources. However, analysis of primary documents from United Nations organizations will be required.

Debate Over Water and Conflict

In 1985, Boutros-Ghali who was then Egypt's minister of state for foreign affairs, (who later went on to become UN Secretary General) gave warning that

“The next war in the Middle East will be fought over water not politics”²

The unit will offer opportunity to examine evidence in regard to claims such as these. According United Nations World Water Development Report released in March 2003, there are “261 international river basins, involving 145 nations. About one third are shared by more than two countries, and 19 involve five or more.”³ In parts of Africa, the Middle East, and at the southern tip of Latin America, shared basins account for more than half of the water supply.⁴ Considering these claims, it makes sense that there is concern over water quality and quantity. With large numbers of people dependent on a shared supply, any alteration of the water supply that tilts the balance of water availability to one group or another or any potential water threat that adversely affects a nation's supply can be seen as an invitation to hostile action. Through a comparative approach, students will attempt to assess water related conflict or potential areas of water related conflict for an answer to the question: What circumstances could result in nations going to war over water?

It is unquestionable that there are global and localized threats to the world's water supply. However, it is not clear what the implications are for the future. The historical record, according to the UN, shows that water related conflict has not been a serious factor in the past. The UN World Water Development Report of March 2003 presents that of 1,831 international interactions in regard to shared water, 1,228 were cooperative. Of the 507 conflictive events reported only 37 events included violence. Twenty-one consisted of military actions. Eighteen of these acts were between Israel and its neighbors.⁵

Yet, other scholars disagree that water is not a source of international tension. In their book, *Water in the Middle East* (2000), Hussein Amery and Aaron Wolf claim that water is “the resource which will bring combatants to the battlefield in the twenty-first century”⁶ Debate over the importance of water to international relations lends itself to an engaging driving question for the unit: In a climate of world population growth, mismanagement of water supplies, and increased water pollution will conflict over water become an increasing reality?

Water Rights Cases: Difficult to Define and Manage

In addition to manmade stresses on the water supply, natural occurrences such as drought or storms, become mitigating issues. Peaceful management of water resources will need to grow from the fair and judicious brokerage of water rights. Because precedence normally governs uncertain areas of the law, careful understanding of water rights is essential to the peaceful resolution of dispute. Mechanisms for dealing with disputes within a nation's borders and in the international community differ in that while water rights can equally be the source of contestation among municipalities, states, and regions within one country as they can be among international states, the legal framework of a country such as the United States is more often than not better suited to render an enforceable judgment on water rights issues than can an international body. While the United Nations deals with cases of contestation over water, it is difficult for the UN to enact enforceable decisions. Nonetheless, the United Nations has orchestrated a campaign to promote the concept of water rights to facilitate the resolution of water rights issues. Examining the newly published “water as a human right” report could be an additional field of study in this subject area. Excerpts from the report are available on line. (see notes). The complete report is available for purchase from the United Nations.

How nations are managing problem areas of contestation is a primary area of investigation for students in this unit. In the guided research activity, students will be given a list of proposed topics to investigate. Information on one significant body of water from each of five regions of the world will be presented as an anchor set of information. Each body of water has two commonalities: first, each body of water runs

along or across international borders, second each has current water rights issues among two or more of the countries that are in contact with the body of water. Figure 1 outlines the proposed bodies of water and their location. Students will explore the nature of the international water related problems for his or her assigned body of water and present their findings to the class. As topics are presented comparison and contrast can be generated in discussion.

Figure 1: Bodies of Water to be explored.

North America	Rio Grande River, The Great Lakes, The Colorado River, Tijuana River Basin
South America	The Amazon River
Europe	The Danube River, The Rhine River
Africa	The Nile River, Lake Victoria
The Middle East	The Jordan River Basin, The Tigris and Euphrates
The Near East	The Indus River, The Ganges River
The Far East	The Yangtze River

The importance of water as a necessity for survival is instinctual. However, in the United States and in much of the developed world, the apparent abundance of clean water at least in the twentieth century has been perhaps somewhat taken for granted. Comparatively, third world or developing countries currently strain the most to provide access to clean and sufficient amounts of water to their people. Nevertheless, technological developments, environmental considerations, and population growth in the latter twentieth century have established a threat to the water supply of the developed world too.

Because water is shared across international boundaries, what ends up in water ultimately is also shared across international borders. The by-products of our industrialized society- solvents, fertilizer, metals, and human wastes- tax water supplies and consequently strain relationships among nations. Historically, water wars in some areas have been fought over scarcity. However, now conflict over water grows from water's quality as well as water's quantity. In Eritrea and Ethiopia, fighting has long existed over controlling the water supply. In other cases, this is true also, but increasingly there are cases where the quality of the water and not the quantity is the problem. In cases such as the Jordan River Basin, how much responsibility does Israel have to Jordan in regard to what Israel dumps in the Jordan River or in regard to how much water is consumed? In the Middle East, to what extent should Turkey be the broker of water that flows down the Tigris and Euphrates from Turkey? Closer to home, what rights do Americans have to clean water in the Rio Grande after companies on the Mexican side exploit more lax regulation (than in the United States) in dumping pollutants into the river? What responsibility do Americans have in managing the waters of the Colorado River, which does not even reach Mexico any longer? What rights do Egyptians and members of other riparian states have in maintaining the water quality and quantity of water in the Nile, which now only deposits 10% of its natural flow into the Mediterranean Sea?

The prospect of polluted water being shared raises serious questions of water rights. Historically, countries most directly affected by water rights issues have been the ones who have taken action. However, over the last twenty-five years initiatives led by the United Nations and non-governmental organizations have organized initiatives to raise awareness to problems that restrict access to clean water. Over time, these initiatives are coalescing into a more unified movement that shows promise for raising global awareness and bringing about direct action. Students will examine the rhetoric of these resolutions and discuss the feasibility of their effectiveness.

Ultimately, without proper management of the water supply, even the most affluent citizens in the most developed countries will be adversely affected by potentially serious threats to the water supply. Consequently what has been thought of as a third world or developing world phenomena-clean water scarcity- could become a reality for everyone. This is why it is important for young people to seriously consider the global nature of water related conflict, evaluate initiatives that are taking place, and

consequently make judgments as to whether or not their conclusions warrant considering personal behavior changes.

Historically, conflicts over access to water date back to the earliest accounts of recorded events and probably earlier. It appears well established that the earliest civilizations were established in river valleys. One can find stories of dispute and physical conflict over water in the Bible. In the modern age, disputes have continued primarily in areas affected by natural scarcity. In some parts of the world, such as in parts of the Horn of Africa and along the fringes of the Sahara, severe natural phenomena serve as sources of tension to populations who are victimized by severe climates, drought, and desertification. However, new stresses on the water supply are becoming the source of overt and covert conflict. Population growth and the associated increased consumption and sewage output and industrial waste and by products threaten to tax and pollute the water supply to the point that water is becoming an endangered resource.

WHO and WWAP: Quantifying the Problem

The World Health Organization states that over a billion people do not have access to clean water for drinking and over two billion do not have access to clean water for sanitation.⁷ More striking is the mismanagement of water resources that results in contamination of water to the point that it cannot be used safely. As predictions of population growth materialize, the threat to significant numbers of the Earth's population will only increase. A thoroughly orchestrated campaign to minimize water contamination and preserve clean water resources is necessary.

Bodies of water may be used as national boundaries, however, flowing water rarely conforms to international boundaries. This is apparent for surface water and for ground aquifers. Surface water from rivers and lakes has been the source of international attention in many areas. For instance, an international committee oversees water quality issues for the Rhine River, which is shared by numerous European states. A similar committee exists for matters concerning the Great Lakes between the United States and Canada.⁸ However, increasing attention should also be paid to ground water aquifers. The World Water Development Report states that 98% of accessible drinking supplies are held in ground aquifers that supply about half of the world's drinking supply. In comparison, the volume of water in these aquifers dwarfs the volume of river water- 23,400,000 km³ to 42,800 km³.⁹ While countries have been left to work out disagreements on their own in the past, the growing scope of water rights issues demands that a coordinated international effort be in place to monitor water related agreements and facilitate continued access to clean water. An international movement sponsored by numerous UN agencies has been coalescing in regard to water rights and water management issues. While relief efforts have dominated the history of the movement, newer initiatives are being focused on pro-active approaches that involve increasing levels of collaboration between United Nations agencies, NGO's, and local and national governments. Since the 1970's world water monitoring and reporting have become intense and comprehensive. They have also become more centralized. With the establishment of the World Water Assessment Program in 2003, the United Nations now has a centralized agency that collects data from 21 separate United Nations agencies. The World Water Development Report is the result of the WWAP's work. A timeline of the efforts at world water monitoring is included as figure 4.10

This unit presents developments in the WWAP initiative for high school level students of world history and world affairs. Students are encouraged to explore WWAP data and publications presented on the web. Additionally, students investigate the natural and manmade causes of water pollution that contribute to water-related crisis. Lastly, information to help students evaluate case studies of international conflict involving freshwater water rights issues is explored. By completing this unit, students and teachers will comparatively evaluate efforts by the United Nations to curb the water crisis in the developing and developed world.

Essential Questions

Some driving or essential questions for the unit are as follows: How can water be best protected and more equitably shared among nations to minimize potential conflict? How real is the potential for water wars? What people or organizations are best suited to monitor and enforce compliance with water rights issues?

How have United Nations sponsored organizations performed in monitoring and enforcing compliance with water rights issues?

Why is it important for 9th, 10th, and 11th grade students at Wilbur Cross High School to study international water rights issues? How can 9th grade students at Wilbur Cross High School have an impact on international water rights issues? Why conflict over water? How have disputes over water been historically played out? Who has the right to water that passes through or sits between international boundaries? Why is water more scarce in some places rather than in others? What is the difference between natural scarcity and manmade scarcity? What manmade threats to clean accessible water exist? What regulations are in place to ensure access to clean water? What diplomatic initiatives have been effective in resolving water rights issues? Why have people fought over water?

“The link between environmental degradation, water scarcity and violent conflict is a serious threat. Water is becoming a commodity that even peaceful neighbors are willing to battle over. For the sake of the region it is crucial that water scarcity and environmental degradation be dealt with in a manner that will ensure essential water demands are met sustainably. (GCI has already undertaken several actions to support this goal, and is planning more for the future.”

from Bertrand Charrier, Shlomi Dinar, and Mike Hiniker: Water, conflict resolution and environmental sustainability in the Middle East

Objectives

Objectives for the unit are designed to incorporate standards from the New Haven Public Schools' Social Studies Curriculum and the Connecticut Social Studies Content and Performance Standards (including CAPT, Connecticut Assessment and Performance Test). The performance standards of the New Haven Public Schools Social Studies Curriculum Grades 9-12 are included as Figure 2. The specific objectives for this unit are listed below as objectives A,B,C,D.

- A. Students will demonstrate understanding both orally and in writing that clean water scarcity can be attributed to natural and manmade causes. Students will be able to name three natural causes of water contamination and scarcity.
- B. Students will demonstrate understanding both orally and in writing of the principle sources of man-made contamination of water sources
- C. Students will analyze international initiatives that preserve water quality, reverse previous damage, and/or create infrastructure to better manage and encourage sustainable development of water resources.
- D. Students will select an international water rights conflict, describe the conflict orally and in writing, and evaluate steps being planned and taken to resolve it.

Objectives A and B are multifaceted objectives that are crucial to understanding the dynamics of water contamination and scarcity. Causes of scarcity and contamination have scientific, geographical, economic, political, and social dimensions. Any of these dimensions can be emphasized in adapting the subject matter to classroom use. They could be easily be modified to be the basis of interdisciplinary study as part of the earth science or chemistry curriculum. For instance, biological and chemical contaminants in water such as parasites and mercury can be presented in terms of their adverse effects on the body. In addition, these objectives can also be adapted to the geography curriculum as phenomena that can be investigated and plotted on regional maps. In either case, these objectives fit into the city performance standard number eleven from Figure 2: Describe relationships between historical subject matter and other subjects they study, current issues, and personal concerns. [SS 12:4e]

Objectives C and D link to a number of performance standards. Incorporating essential questions to these objectives reinforces this link. In analyzing the effectiveness of international initiatives such as the United Nation's World Water Assessment Program (WWAP) through reading WWAP documents and secondary

sources, students will be able to meet performance standards three, five, six, and seven. Students will gather analyze and reconcile historical information, including contradictory data, from primary and secondary sources to support or reject hypotheses. Students will also describe, explain, and analyze political, economic and social consequences that came about as the resolution of a conflict. Students will evaluate data within the historical, social, political and economic context in which it was created. They will also be explaining relationships among the events and trends studied in national and world history.

Figure 2. Performance Standards of the New Haven Public Schools Social Studies Curriculum Grades 9-12

1. Demonstrate an understanding of the ways that cultural encounters and the interaction of people of different cultures in pre-modern as well as modern times have shaped new identities and ways of life. [SS12:3c]
2. Analyze using historical and contemporary examples, the meaning and significance of the ideal of equal protection under the law for all persons. [SS12:5d]
3. Gather, Analyze, and reconcile historical information, including contradictory data, from primary and secondary sources to support or reject hypotheses. [SS12:1b]
4. Demonstrate an understanding of major events and trends in world history, United States history from all historical periods and from all regions of the world. [SS12:2a]
5. Describe, explain, and analyze political, economic and social consequences that came about as the resolution of a conflict. [12:3e]
6. Evaluate data within the historical, social, political and economic context in which it was created testing its credibility and evaluating its bias. [SS12:1d]
7. Explain relationships among the events and trends studied in national and world history. [SS12:2c]
8. Students will be able to describe and analyze, using historical data and understandings, the options which are available to parties involved in contemporary conflicts or decision making. [SS12:4b]
9. Demonstrate an understanding of the ways race, gender, ethnicity, and class issues have affected individuals and societies of the past. [SS12:3f]
10. Explain the multiple forces and developments (cultural, political, economic, and scientific) that have helped to connect peoples of the world. [SS12:3j]
11. Describe relationships between historical subject matter and other subjects they study, current issues, and personal concerns. [SS 12:4e]
12. Analyze historical and contemporary conflicts through the respective roles of state and national governments. [SS 12:5b]

Strategies

Strategies for the unit are designed to reach the unit objectives. Strategies also incorporate standards from the New Haven Public Schools: History Curriculum and the Connecticut Social Studies Content and Performance Standards (including CAPT, Connecticut Assessment and Performance Test).

Brainstorming, anticipatory guides, simulation, and guided research will be employed to reach unit objectives. Brainstorming and anticipatory guides are employed as assessment tools for checking a student's prior knowledge and as non-threatening invitations for student participation. I find the non-threatening nature of these tools- there is no really wrong answer- encourages student involvement in new units. Often students are proud to share even anecdotal evidence. Of course it is a bonus when one or two students prove to be knowledgeable in the subject area. Brainstorming and anticipatory statements can be

very beneficial for assessing the range of student understanding. Examples of brainstorming activities include:

- asking students to name countries that they think have had wars or conflict over water resources.
- asking students to name natural factors that contribute to water conflict among nations
- asking students to name political, economic, and environmental factors that may cause water conflict among nations.
- asking students to suggest solutions to specific water conflicts

Examples of written anticipatory guides include giving a constructed list of true/false statements that students will complete before beginning a reading activity. The anticipatory guide is designed to be five to seven statements long. It also serves as a useful assessment tool for prior knowledge. However it is best used as a lead to reading for specific information. Following a five to seven minute opportunity to complete the assessment, readers are then instructed to find proof to back up their answers by locating evidence in the reading and writing the page number and/or a citation on the anticipatory guide. Because students will need to defend their answers, lively discussion will hopefully follow this activity.

Examples of anticipatory statements include:

Before reading about the Unified or Johnson Plan for countries sharing the Jordan River in the Middle East students would respond true or false to the following statement:

Under a plan proposed in 1953 by Lyndon Johnson, a special envoy of the Eisenhower administration, Jordan, Syria, Lebanon, and Iraq agreed on priority use of Jordan River water and its tributaries.

Before reading about water conflict between Turkey and Middle Eastern neighbors students would respond true or false to the following statement:

In 1990, Turkey reversed its decision to construct the Ataturk Dam, which would have diverted water flow from Syria and Iraq in exchange for rights to oil in Syria and Iraq.

Following the completion of five to seven statements like those included, a hunt for the correct answers within the reading begins. Students must cite the page numbers and paragraph numbers where evidence to support their answers can be found.

A simulation will also be used to begin the unit. The simulation will lead students to experience natural, political, and economic factors that contribute to water conflicts.

A research project on an international water rights issue will be completed as the culminating activity of the unit. The final project will be done in the form of a short paper of 4-6 pages. It will be accompanied by a presentation in front of the class. Students will be encouraged to construct their presentation in PowerPoint. However alternative forms of presentation such as poster board and overhead projector transparencies will be allowed as alternatives. All presentations must meet criteria explained in the project rubric.

Preparation for the paper and assessment of the paper will contain activities aimed at facilitating student's achievement of objectives and demonstrating proficiency at state competencies. Employment of a cooperative exercise, use of technology, reading for information are incorporated to help students reach these objectives. Evaluations that make use of rubrics are also included.

Classroom Activities

Simulation Activity *Water World*:

Students will be assigned roles as players in a water rights simulation. The object of the simulation is to evaluate how the decisions and actions of others affect other players in the game.

The class will be divided into five fictional regions that border or host the Rubicross River. Tape will be used as a boundary demarcation line for the river and the regions. Players will then be given a fact sheet about their region that informs them of the quantity and quality of their resources. Each student will also get a role in his or her region. Roles will include: members of the interregional water council, the average consumer, the industrial polluter/consumer, head of state and non-affiliated observers. The point of the simulation will be for the regions to come up with a working resolution that they all agree to in regard to water consumption and discharge. The simulation is driven by a set of activity cards that informs role players of the conditions that they must operate under. For instance, card number one will announce,

Region One plans on building a reservoir to ensure a stable quantity of water. However for the plan to work, flow of the river will have to be completely stopped for 10 months to allowed the reservoir to fill. Regions two and three will be completely cut off from water from the Rubicross during this time and they protest vehemently. Region one's president is strongly in favor of the project but international opposition and the threat of conflict with region three becomes real. After each region contemplates the matter for fifteen minutes they must develop a position. The heads of state and the water council will try and broker a deal that is acceptable to all parties. If no deal is reached after the negotiations then region one will have ten minutes to decide on whether or not to unilaterally build.

Throughout the simulation observers will note the decisions that are made.

Upon conclusion, group discussion will allow participants and observers to share their observations. Students will be evaluated on four criteria: 1) Completing a KWL exercise, 2) Communicating a description of the student's personal role 3) Participating fully in each round of the simulation and 4) Demonstrating respect for others and the learning process. Student input into the evaluation process will be allowed. A rubric that describes the grading criteria, weights of each component, and allows for student input is included in Figure 3.

Figure 3: A Rubric for Waterworld Simulation:

1. Student demonstrated understanding of the activity's primary goal and objective orally and in writing by completing and discussing a What do I Know /What do I Want to Know/What Have I Learned exercise: (25%)

Student Grade:_____ Teacher Grade: _____

2. Student could name and describe his or her role in the simulation orally and in writing. (15%)

Student Grade:_____ Teacher Grade: _____

3. Student completed tasks as called for throughout the simulation orally and in writing. (35%)

Student Grade:_____ Teacher Grade: _____

4.Students demonstrated respect for others in the activity and facilitated the learning process. (25%)

Student Grade:_____ Teacher Grade: _____

Water Rights in Conflict: Guided Research Project

Write an evaluation of a freshwater rights case with international implications. Your report should thoroughly describe the short and long-term political, environmental, health, and economic implications of the problem, the initiatives that are planned or are in place to resolve the problem, and your prognosis with recommendations for the successful resolution of the problem.

One or more of the following should be included in the report:

- Maps
- Green Cross Severity Spectrum Tool
- Tables
- Graphs

Recommended steps for the water rights paper:

Choose a body of freshwater that borders or passes through international boundaries.

Name the body of water and the countries that share its use.

Name and describe the local and international political, environmental, and economic aspects of the problem.

Evaluate the severity of the problem using the Green Cross Severity Spectrum.

Describe one or two initiatives that are being planned or carried out that deal with the problem.

Speculate on the feasibility of these programs to solve the program in the short term and the long term.

Offer recommendations based on the strengths and weaknesses of the initiatives in place.

Suggested topics:

- Jordan River
- The Nile
- The Danube
- The Amazon
- The Rio Grande
- The Great Lakes

Assessment will be done by the criteria outlined in a rubric (see figure 4)

Figure 4. Rubric for the Research Project.

Student's Name: _____

Topic: _____

Date: _____

Research Question: _____

Y N

Project correctly names a body of water and the countries that border it. ___ ___

Project includes a map of the subject area: ___ ___

Content: Y N

International scope of the problem is described adequately ___ ___

Political orientation toward the problem by the established government and opposition is described ___ ___

Environmental implications of the problem are described ___ ___

Economic implications of the problem are explained ___ ___

Green Cross Severity Spectrum is used correctly to evaluate the severity of the problem ___ ___

Initiative to curb the problem are presented in detail ___ ___

Speculation on the feasibility of the problem solving initiatives - Offered ___ ___

Project adheres to form:

Project is neatly written and free from grammatical errors ___ ___

Project includes proper citation of sources including an annotated bibliography (MLA style) ___ ___

Comments (on back):

Resources

A. Bibliography for Teachers

B. Student Reading List

C. Materials for Classroom Use

A. Bibliography for Teachers

Bodies of Water Quizzes, <http://www.funtrivia.com/quizlistgold.cfm?cat=3995>

Bodies of Water: Yahoo!igans, http://www.yahoo!igans.com/school_bell/social_studies/geography/bodies_of_water/Rivers/

The CIA-World Fact book <http://www.cia.gov/cia/publications/factbook/>,

The Closed System Game: An Urban Planning Simulation (Model for Waterworld Simulation)

Global Water Supply and Sanitation Assessment 2000 Report -

http://www.who.int/water_sanitation_health/Globassessment/GlobalTOC.htm

Great Bodies of Water Web pages, http://207.177.123.1/00_01/BW/bw_intro.htm

Guidelines for Drinking Water Quality, 2nd ed. Vol.3: Surveillance and control of community supplies (1997)

http://www.who.int/water_sanitation_health/GDWQ/PDF_docs/gdw3.pdf

Message by Secretary-General Kofi Annan, March 22, 2001,

<http://www.health.fgov.be/WH13/krant/krantarch2001/kranttekstmar1/010322m03un.htm>

“The Middle East’s Water: Critical Resource” Vesilind, Preet J. National Geographic May 1993 vol 183 No. 5 p. 38

Principles of Water Resources History, Development, Management, and Policy. Thomas V. Cech. 2003 Danvers MA John Wiley and Sons Inc.

“Political and Institutional Responses to Transboundary Water Disputes in the Middle East” Miriam R. Lowri. The Woodrow Wilson Center Report. Environmental Change and Security Project Spring 1996

The Right to Water

http://www.who.int/water_sanitation_health/Documents/righttowater/righttowater.htm

Sewage Diplomacy Thomas Healy Kelly 1995 Ann Arbor MI UMI. A Dissertation from the Fletcher School of Law and Diplomacy

Water and Sanitation

http://www.who.int/water_sanitation_health/Water_quality/drinkwat.htm

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<http://ag.arizona.edu/OALS/ALN/aln44/charrier.html#facing>

“Waterworld. The World in Numbers”. P. 42-43. The Atlantic Monthly July/August 2003

WHO Guidelines for Drinking Water Quality General Considerations

2nd ed. Vol.1 Recommendations, WHO, Geneva, 1993 pp.2-4
http://www.who.int/water_sanitation_health/GDWQ/General_considerations.htm
World Atlas.com, <http://www.worldatlas.com/aatlas/infopage/watera.htm>
World Book Encyclopedia, <http://www.worldbookonline.com/>

B. Student Reading List

Bodies of Water: Yahoo!igans
http://www.yahooigans.com/school_bell/social_studies/geography/bodies_of_water/Rivers/
The CIA-World Fact book, <http://www.cia.gov/cia/publications/factbook/>
Global Water Supply and Sanitation Assessment 2000 Report
http://www.who.int/water_sanitation_health/Globassessment/GlobalTOC.htm
Great Bodies of Water Web pages
http://207.177.123.1/00_01/BW/bw_intro.htm
Guidelines for Drinking Water Quality, 2nd ed. Vol.3: Surveillance and control of community supplies (1997)
http://www.who.int/water_sanitation_health/GDWQ/PDF_docs/gdw3.pdf
Message by Secretary-General Kofi Annan, March 22, 2001
<http://www.health.fgov.be/WH13/krant/krantarch2001/kranttekstmar1/010322m03un.htm>
“The Middle East’s Water: Critical Resource” Vesilind, Preet J. National Geographic May 1993 vol 183 No. 5 p. 38
Principles of Water Resources History, Development, Management, and Policy. Thomas V. Cech. 2003 Danvers MA John Wiley and Sons Inc.
“Political and Institutional Responses to Transboundary Water Disputes in the Middle East” Miriam R. Lowri. *The Woodrow Wilson Center Report. Environmental Change and Security Project* Spring 1996
Sewage Diplomacy Thomas Healy Kelly 1995 Ann Arbor MI UMI. A Dissertation from the Fletcher School of Law and Diplomacy
“The Right to Water”
http://www.who.int/water_sanitation_health/Documents/righttowater/righttowater.htm
“Waterworld The World in Numbers”. P. 42-43. The Atlantic Monthly July/August 2003
“Water and Sanitation” http://www.who.int/water_sanitation_health/Water_quality/drinkwat.htm
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<http://ag.arizona.edu/OALS/ALN/aln44/charrier.html#facing>
WHO Guidelines for Drinking Water Quality General Considerations
2nd ed. Vol.1 Recommendations, WHO, Geneva, 1993 pp.2-4
http://www.who.int/water_sanitation_health/GDWQ/General_considerations.htm
World Atlas.com, <http://www.worldatlas.com/aatlas/infopage/watera.htm>
World Book Encyclopedia, <http://www.worldbookonline.com/>
WHO Seminar Pack for Drinking Water Quality, Session 2: The WHO guidelines for drinking water quality
http://www.who.int/water_sanitation_health/Documents/GDWQtraining/S02.pdf
WHO Guidelines for Drinking Water Quality General Considerations
2nd ed. Vol.1 Recommendations, WHO, Geneva, 1993 pp.2-4
http://www.who.int/water_sanitation_health/GDWQ/General_considerations.htm
Guidelines for Drinking Water Quality, 2nd ed. Vol.3: Surveillance and control of community supplies (1997)
http://www.who.int/water_sanitation_health/GDWQ/PDF_docs/gdw3.pdf
WHO Drinking Water Guidelines
<http://w3.who.sea.org/techinfo/water.htm>
Health and Environmental Library Module on Water Quality, Water Supply and Sanitation
<http://www.who.int/peh/gelnet/hlm97/wat.htm>
World Book Encyclopedia, <http://www.worldbookonline.com/>

“Water Conflict Chronology”. Peter Gleick September 2000

“International Freshwater Conflict: Issues and Prevention Strategies” Paul Samson and Bertrand Charrier. *Green Cross International* August 1997

C. Materials for Classroom Use

General Materials

- Poster Pads with Markers
- Wall Maps
- Globe(s)
- Map Templates for map labeling
- Rulers
- Pencils/Markers/Pens/Highlighters
- Blank Paper/Lined Paper/Construction Paper

Materials for Simulation

- Duct Tape or Wide Masking Tape
- Index Cards
- Pencils/ Markers/ Highlighters
- Blank Paper/Lined Paper
- Rulers

Materials for Guided Research

- Great Bodies of Water Web pages, http://207.177.123.1/00_01/BW/bw_intro.htm
- Green Cross Programs w/ Green Cross Severity Spectrum
- International Conflicts and Water Timeline
- “The Middle East’s Water: Critical Resource” Vesilind, Priit J. *National Geographic* May 1993 vol 183 No. 5 p. 38
- Water, conflict resolution and environmental sustainability in the Middle East
<http://ag.arizona.edu/OALS/ALN/aln44/charrier.html#facing>
- World Atlas.com, <http://www.worldatlas.com/aatlas/infopage/watera.htm>

Notes

1. “Water Wars. Chapter 13” *Principles of Water Resources History, Development, Management, and Policy*. Thomas V. Cech. 2003 Danvers MA John Wiley and Sons Inc p.405-407
2. Vesilind, Priit J. - The Middle East’s Water. Critical Resource - *National Geographic* May 1993. p. 53
3. *UN World Water Report. International Year of Freshwater*. <http://www.wateryear2003.org/ev.php?URL> p.5
4. *UN World Water Report. International Year of Freshwater*. <http://www.wateryear2003.org/ev.php?URL> p.5
5. *UN World Water Report. International Year of Freshwater*. <http://www.wateryear2003.org/ev.php?URL> p.5
6. “Water Wars. Chapter 13” *Principles of Water Resources History, Development, Management, and Policy*. Thomas V. Cech. 2003 Danvers MA John Wiley and Sons Inc p.405
- 7 Secretary General Kofi Annan, March 22, 2001
- 8 Stauffer, Julie. The Water Crisis. Constructing Solutions to Freshwater Pollution: Centre for Alternative Technology 1998. p.47-48
- 9 *UN World Water Report. International Year of Freshwater*. <http://www.wateryear2003.org/ev.php?URL> p.5
- 10 Figure 5 data from *World Health Organization Access to Clean Drinking Water Background Guide* from YMUN XXIX. January 28-February 1, 2003

Figure 5: Timeline: Actions by the United Nations and International Organizations for Clean Drinking Water

Access to clean drinking water is a fundamental human need and therefore, a basic human right. Contaminated water jeopardizes both the physical and social health of all people. It is an affront to human dignity. Yet even today, clean water is a luxury that remains out of the reach of many. Worldwide, more than a billion people have no access to improved water sources, while nearly two and a half billion live without basic sanitation. These people rank among the poorest in the world - as well as the least healthy. In fact, the absence of a safe water supply contributes to an estimated 80 per cent of disease and death in the developing world.

- Secretary General Kofi Annan, March 22, 2001

UN Conference at Mar del Plata 1977 - International Drinking Water Supply and Sanitation Decade inaugurated. Principles outlined at this conference have guided subsequent actions.

World Summit for Children - September 1990 - Heads of State called for universal access to water supply and sanitation and eradication of guinea worm disease by 1995

New Delhi Statement - 1990 - formalized the need to provide sufficient, sustainable and safe water for all and for sanitation for all.

Water Supply and Sanitation Collaborative Council (WSSCC) - March 2000- developed targets for water supply and sanitation coverage as preparation for Second World Water Forum at The Hague. These targets outlined in *VISION 21: A shared vision for hygiene, sanitation and water supply and a framework for action*.

United Nations Johannesburg Earth Summit August/September 2002. Nations committed themselves to cutting the world population without access to clean water by 2015.

The World Water Assessment Program 2003 started.

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