The Protection of Water Facilities under International Law

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THE PROTECTION OF WATER FACILITIES UNDER INTERNATIONAL LAW

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PROTECTION OF WATER FACILITIES UNDER INTERNATIONAL LAW

Water has often been used as a strategic target in war since at least the time of the siege of Tyre in 596 B.C. Even when water facilities are not targeted, they are often among the first casualties of the violence. At the end of the twentieth century, conflicts in Africa, the Balkans, and the Middle East caused tremendous suffering to the civilian populations after disruption of the water supply. This article focuses on the extent to which water facilities are protected under international law. It outlines principles of customary law and the existing international conventions and protocols in this area, including principles of naval warfare.

At a time of increasing world concern over the quality and availability of water, we face the prospect of disputes, sometimes violent, over limited freshwater resources. International efforts to sustain supplies have focused on management rather than conflict prevention, and international legal regimes have received too little attention. This article focuses on protection of water facilities under international law, defining such facilities in broad terms to include all retention and delivery facilities. These issues become wide-ranging, as urbanization increases the need to import water from further afield, as in the current plan to transfer water to Israel from Turkey. Moreover, the increasing complexity of delivery systems, and their relationship to power supplies, increase their vulnerability to conflict.

International law has evolved as the nature of conflict has changed, but has yet to respond to the increasing phenomenon of intra- rather than interstate conflict, or to the rise of terrorism. Little attention has been given to the implications of possible terrorist attacks on water facilities, especially in view of the development of chemical and biological threats. The article considers current problems and weaknesses in existing law, and includes discussion of a hypothetical terrorist attack on a city water supply in Turkey. It considers the present state of international law, and provides recommendations for legal regimes that will better protect the civilian population and the supply of fresh water.
1. INTRODUCTION

Water is the source of all life, the Achilles heel of life on earth, without it nothing can survive.¹ Belligerents have not overlooked this fact in times of armed conflict. Since ancient times water has been used both as a defense against invading armies and as an offensive weapon.² Throughout the ages human dependence on water for survival has been exploited by strategic decisions to attack enemy hydraulic installations, either through the physical destruction of the facilities or by making the facilities unusable through poisoning.³ Recorded examples include the siege of Tyre in 596 B.C., British attacks on German dams during the Second World War, and US attacks on dykes and dams in Korea and Vietnam. Vanquished troops and innocent civilians have suffered the destructive consequences of attacks on water facilities.

The availability and quality of freshwater resources around the world is a growing concern to the international community. A number of major water-related assessments have been conducted by non-governmental organizations and institutions.⁴ Despite a lively academic debate concerning the relationship between water and conflict, it is certain that control of the world’s limited freshwater resources will be subject to dispute, sometimes in violent ways.

As the amount of available fresh water in the world decreases in quality and quantity, protection of this critical resource becomes a matter of international security.⁵ In the Middle East and Central Asia, fresh water is likely to become more important than oil. Recent conflict in Africa, the Balkans and the Middle East has resulted in tremendous suffering for the civilian population after the disruption of the regular water supply.

International efforts to protect and sustain fresh water have focused primarily on management practices and policies, rather than prevention of the violence and conflict that impacts water supply. Little attention is paid to the international legal regimes that are designed to protect fresh water, or the effectiveness of those regimes. The focus of this article is the protection of water facilities under international law. The term "water facility" will be broadly defined to include dams, dykes, water treatment stations, pumping stations, storage reservoirs, water distribution networks, and all facilities that deliver water to the people. Some authors have used a more narrow term, "water production and treatment facilities."⁶ The term “water facility” does not usually include mobile units such as water trucks, ships, or barges that deliver water, which may be one of the reasons that these delivery systems are more difficult to classify and protect under provisions of international law. This article will include a section on that subject.

In urban areas today, public water facilities are increasingly unable to meet the needs of the population through local sources. As demands increase, water must be brought over greater distances. Israel has a plan to import water from Turkey, following several years of drought and a reduction of water supplies.⁷ In a unique arrangement, Israel may import water by tanker from the Manavgat River, near the port of Antalya.⁸ Israel recently agreed to buy 50 million cubic meters (1.75 billion cubic feet) of water from Turkey every year for the next twenty years to try to solve its water shortage and ensure the success of an arms deal with Turkey. This article will include a discussion of mobile water delivery systems, because they can be expected to become increasingly vulnerable to attack in the years ahead.

Modern water storage and delivery systems are complex and interconnected with urban electrical systems. In the absence of emergency generators, a power loss as a result of armed conflict will also eliminate water delivery to the civilian population. These factors increase the vulnerability of water delivery systems in times of armed conflict. Although this article will not deal directly with the question of electrical infrastructure, the subject cannot be ignored if water supplies are to be protected.
International law has evolved in response to the changing character of international conflict. Most conventions and treaties were designed to cover “war,” or conflicts of an international character. The concept of war is changing, and the term is used more often today in the international war against terrorism. The United Nations Charter forms the primary basis for interaction between states; the Charter was created just after the Second World War when massive destruction was recent history. But the past decade has shown that internal conflicts are now more common and just as destructive in terms of human suffering. Terrorism is playing a much greater role; water installations are likely to be targets in the future. The body of international law concerning traditional conflict between states is well developed, but this is not true for internal conflict and acts of terrorism.

Protection for the civilian population from a terrorist attack on a water facility is an issue that has been rarely discussed in the literature. The terrorist attacks in the United States of 11 September 2001 have caused a major reexamination of the threat. Terrorist attacks can be expected to increase in the years ahead, given the ease of transportation and the relative miniaturization of weapons of great destructive power. The proliferation of dangerous chemical and biological agents is also a major concern. Another disturbing factor is now present: destructive attacks occur but no group takes responsibility, and there is no clear political agenda. This article will review the current state of international law concerning terrorism, and the degree of protection afforded to water facilities. For purposes of illustration, the article will use a hypothetical terrorist attack on a city water supply in Turkey.

Although rules for protection of water facilities in times of conflict have evolved since the days of Nebuchadnezzar, the safeguards are still inadequate. The changing character of conflict, increasing use of terrorism, and a lack of clarity in the law have all contributed to a dangerous situation. An absence of international enforcement mechanisms compounds the problem. At the conclusion of this article, recommendations will be made for action to clarify the law and provide a greater degree of protection for water facilities and the humans who must rely on them.

2. EXAMINING THE RELATIONSHIP BETWEEN WATER AND CONFLICT

2.1. Water as a Cause of War, and Water as a Means of War

The past ten years have seen a renewed interest in the relationship between the environment, resource scarcity, and violent conflict. The Project on Environment, Population, and Security is located at the University of Toronto and is part of the Department of Peace and Conflict Studies. The founder of the project is Thomas Homer-Dixon, one of the first scholars on the topic. The question of transboundary water resources and water scarcity in river basins is an area of grave and increasing concern to the international community. Some experts predict that by the year 2025, chronic water scarcity will affect as many as 3 billion people in fifty-two countries.

At Oregon State University, Professor Aaron Wolf focuses on international water resources and patterns of conflict and cooperation. He coordinates the Transboundary Freshwater Dispute Database, which includes a computer database of 150 water-related treaties, negotiating notes and background material on fourteen case-studies of conflict resolution, news files on cases of acute water-related conflict, and assessments of indigenous/traditional methods of water conflict resolution.

The Pacific Institute for Studies in Development, Environment, and Security in Oakland, California, conducts ongoing research on the question of how to provide clean and safe water supplies for the world’s growing population. Their latest report, authored by Peter H. Gleick, looks at the legal, moral, and institutional implications of
recognizing a human right to water. He has developed a Water Conflict Chronology, starting in A.D. 1503 with Machiavelli’s plan to divert the Arno River away from Pisa during a conflict between Pisa and Florence. Fifty-seven incidents are described, concluding with the poisoning of wells in the recent conflict in East Timor. Incidents are categorized by seven types, and include “control of water resources, military tool, political tool, terrorism, military target, and development disputes.”

The relationship between water scarcity and conflict is complex; most scholars agree that water scarcity is only one of a complex web of factors that can contribute to conflict. Despite dire predictions, there has not been a documented case of a “water war” in modern history. But the changing nature of conflict and shortage of fresh water will certainly increase the potential for instability in the years ahead. As the potential for conflict increases, it is important to review some fundamental questions. To what extent are water facilities protected under the law, both domestic and international? Each state has its own criminal laws that make the destruction of property a crime, but international law is a different matter. The international response to terrorism presents a number of challenges, and the impact on water facilities cannot be overlooked. Finally, what lessons can be learned from recent conflict, in terms of the legal regimes that are designed to protect the supply of fresh water?

2.2. Selected Conflicts and the Impact on the Civilian Population

The International Committee of the Red Cross (ICRC) and other organizations have documented numerous cases where the destruction of a regional water supply as a result of armed conflict has resulted in widespread suffering for the local population.

SOMALIA

By the end of the 1980s the water supply system of Mogadishu, Somalia, was on the verge of collapse. Technical breakdowns, a shortage of spare parts, increasing armed conflict, and the general decline of civil society all contributed to a dangerous situation. The civil war that began in 1991 resulted in a complete failure of the water supply system by mid-1995. Loss of the public water supply led to “privatization” of water delivery, with local entrepreneurs digging wells and delivering water by donkey cart to be sold directly to customers. This in turn led to over-pumping and depletion of groundwater, and saltwater intrusion into the wells closest to the sea. An ICRC program in 1995 financed the drilling and equipment for new boreholes, in addition to the usual maintenance of hand pumps.

The lack of potable water is often a major factor in the spread of disease. In Mogadishu between 1994 and 1997 there were four major cholera epidemics affecting 55,000 people. With no wastewater evacuation network in Somalia, contamination of well water increased the incidence of waterborne disease. This demonstrates the interrelationship between water shortage, disease, public sanitation, and conflict. When public infrastructure collapses, a lack of functioning water facilities is just one component of the problem.

BOSNIA

In 1993, the inhabitants of Sarajevo were forced to run a gauntlet of both shelling and sniper fire to find water at wells or tanker trucks. In December 1993, water was available from the tap in Sarajevo households for only about three days out of thirteen; water was carried by hand and often stored in bathtubs. The end of the conflict in Bosnia in 1995 resulted in major infrastructure improvements, but the Sarajevo water supply system has not fully recovered.
IRAQ

Water shortages resulting from lack of electricity are common in modern conflicts. The interconnected nature of modern urban water supply and electrical systems guarantees this result even with the use of so-called “precision” weapons by developed western countries, and when water facilities are not intentionally targeted; the loss of water supply is a natural consequence. Surgical strikes during the Gulf War against power supply systems in Iraq resulted in a significant deterioration of drinking water supplies, and severe consequences for public health. The consequences of international sanctions on water supply present a related issue. Iraq will be covered in greater detail in Section 6 of this article.

FORMER YUGOSLAVIA

In March 1999, the NATO bombing campaign in Yugoslavia was initiated with the stated objective of preventing a humanitarian catastrophe in Kosovo. As the campaign escalated, environmental damage was the inevitable consequence. Most observers have concluded that NATO generally complied with the law of armed conflict, choosing only military targets and attempting to avoid collateral damage. For the most part, water supplies in Serbia suffered only temporary disruption. In Kosovo, however, the water delivery infrastructure was already near collapse even before the bombing began. As the level of conflict in Kosovo increased, partly in response to the bombing campaign, serious disruption followed. In May 2000, nearly one year after the beginning of the United Nations mission in Kosovo, water supply in Pristina and the major Kosovo towns was functioning only intermittently. The emergency conditions have abated, but it will be years before a reliable water supply system in Kosovo is functioning.

Recent news reports indicate that water continues to be a factor in conflict in the Former Yugoslavia. During the summer of 2001 armed Albanian groups took control of certain areas of northern Macedonia, threatening to cut off the road between the country’s two largest cities. The fighters could be viewed as insurgent freedom fighters or terrorists, depending on the perspective of the observer. In August 2001, the Macedonian government reported that fighting continued in the border village of Radusa, with both sides seeking to control the water reservoir that supplies water to Skopje, the nation’s capital.

AFGHANISTAN

Twenty years of war, and a lengthy drought, have brought misery to the population of Afghanistan. Although it does not appear that water facilities were intentionally targeted during the recent US and allied bombing campaign, the water supply infrastructure was already below standard. The damage from the bombing was predictable. Kabul’s main water system was looted by the fighters who sold off the pipes and fixtures in Pakistan. Although the United Nations and other aid groups helped to rebuild it, there is not enough power to run the pumps and generators. As a result only 30 percent of the homes in Kabul, a city of a million inhabitants, have drinkable water. The international community faces an uphill battle to restore critical infrastructure, including water facilities, to a reasonable level.

ISRAEL/WEST BANK

International-aid workers have recently been calculating the real costs of the Israeli invasion of the Palestinian areas in 2002. Initial findings in a damage assessment were made, estimating that a total of more than US$361 million worth of destruction was inflicted on Palestinian infrastructure, public institutions, and private property during Israel’s six-week offensive. In the first attempt to calculate the costs of the conflict, officials from the World Bank and the United Nations concluded that more
than US$87.9 million damage was done to basic infrastructure, such as roads, power stations, sewers, and water treatment facilities.24

A review of recent conflict leads to several conclusions.

- Conflict today is defined more by internal instability and ethno-political tension, rather than classic war between nations.
- The civilian population is becoming increasingly vulnerable to the destructive consequences of conflict, due to reliance on peacetime water delivery systems that are inadequate.
- Damage and loss of water facilities in conflict today can be considered more likely, and the consequences more severe.
- Terrorism has been a minor factor in the past, but water facilities present a vulnerable target, particularly in developed countries that have not experienced conflict.

This raises the fundamental question to be presented in this article. To what extent are water facilities protected under international law?

3. PROTECTION OF WATER FACILITIES UNDER INTERNATIONAL LAW

3.1. Prohibitions Relating to the Conduct of Hostilities: A Framework of International Law

Unlike a domestic system, where there is a centralized authority with a monopoly of force to punish wrongdoers, the international community is characterized by extreme decentralization. No international authority effectively monopolizes force to police the world, even given the current dominant position of the United States. In the international system, although no court has the power to resolve all disputes, international law has nevertheless come to play an important role in the policies of nations, and in creating legal rights and obligations. The real question is the extent to which international law contributes to order and welfare in today’s world.

International law originates in the “common will of states”: the fundamental resolve of the international community is the source from which international law is born and ultimately enforced. An examination of Article 38(1) of the Statute of the International Court of Justice (ICJ) reveals the framework of international law as derived and applied by the Court; its elements include:

International conventions . . . establishing rules expressly recognized by the contesting States, international custom, as evidence of a general practice accepted as law . . . the general principles of law recognized by civilized nations . . . judicial decisions and the teachings of the most highly qualified publicists of the various nations.25

Although the ICJ Statute is silent on the hierarchy of authority of the various sources of international law, conventions (often referred to as “treaties”) represent the best evidence of the will of states, and thus are considered the primary source of international law. Furthermore, while it is true that conventions are binding only on the signatories, conventions may become customary international law, thereby binding non-signatories, if those conventions receive consistent and widespread acceptance.

International custom is the secondary source of international law and is applicable to all nations; it is commonly referred to as “customary international law.”
When applicable conventions and customary international law do not exist, general principles of law recognized by civilized nations are traditionally used to fill these gaps. And finally, judicial decisions and the teachings of the most qualified publicists are considered persuasive in nature and provide “subsidiary means for the determination of rules of law.”

Throughout history armed conflict has played a pivotal role in human interaction, and in the rise and fall of civilizations. History records the clash of armies, ending with lavish spoils for the victors and death or uncertain futures for the vanquished. Over the years nations began to recognize that conduct during warfare should have limits, as evidenced by the development of unwritten principles that were generally followed by civilized nations to control warfare, and to protect the victims of war. Over time these unwritten principles rose to the status of customary international law.

The law of war (also referred to as “the law of armed conflict”) is a branch of public international law that governs the conduct of nations during times of armed conflict. While the codification of customary law through conventions did not begin in earnest until the 1850s, the specific rules developed in those conventions did not displace customary law. In fact, modern agreements have unequivocally stated that customary law remains significant and binding on all nations.26

The purpose of the law of war is not to protect water or water facilities, but rather the human population dependent upon them for its survival. While the law of war is designed primarily to limit destructive action affecting the environment, recent amendments have been adopted that specifically address the protection of water facilities. A more commonly accepted term today is “international humanitarian law,” which applies to a broader spectrum of conflict and is considered timelier in international affairs. The ICRC now defines international humanitarian law as law protecting the victims of armed conflict.27 These terms, as well as the “law of armed conflict,” substantially overlap and are often used interchangeably. For consistency, the term “international humanitarian law” (IHL) will be used in this article. It should be noted that the term “law of war” is sometimes used more narrowly to refer only to those laws that apply during international conflicts.

IHL concerns primarily the rules governing the actual conduct of armed conflict (jus in bello) and not the rules governing the resort to armed force (jus ad bellum). For most purposes, jus ad bellum is a separate question, such as the decision of a state to resort to force, or of an individual to act in self-defense. But there are a number of areas of overlap between jus in bello and jus ad bellum. Each contains aspects of the principle of proportionality, either in the actual conduct of hostilities, or the right of self-defense. Furthermore, serious violations of jus in bello have been used as a justification for the use of force (jus ad bellum); the March 1999 NATO bombing of Yugoslavia is a recent example. This article will focus on the rules concerning means and methods of warfare as they might affect water facilities, and not the question of lawfulness of the conflict that might threaten the facilities. Terrorism will be considered separately, since it is considered outside the scope of an armed conflict under international law.

3.1.1. International Conventions

Water facilities that supply water to human populations are afforded protection under international humanitarian law through general and particular rules developed in the Hague and Geneva Conventions. Though water facilities are not mentioned by name, a number of rules are applicable. The Hague Conventions are concerned with rules relating to the methods and means of warfare, while the Geneva Conventions are concerned with the victims of war. By their terms, the conventions apply only during time of “war or other armed conflict.”28 Virtually all states have become parties to these agreements.
3.1.1.1. **The Law of The Hague**

In response to the development of weapons capable of causing massive destruction and loss of life, a number of early conventions were convened. In 1868, the Declaration of St. Petersburg was announced at a meeting called by Tsar Nicholas II of Russia. This was a prelude to the continuing concern over the increasingly destructive warfare of the era.\(^{29}\) The declaration was short and simple, but it established the foundation for modern international humanitarian law and its continuing evolution:

> The only legitimate object which States should endeavor to accomplish during war is to weaken the military forces of the enemy.\(^{30}\)

A little over thirty years later the 1899 and 1907 Hague Conventions, initiated by Tsar Nicholas in an attempt to “humanize” war, furthered the cause of limiting armaments by providing that “the right of belligerents to adopt means of injuring the enemy is not unlimited.”\(^{31}\) Additionally, Article 23(g) of the 1907 Convention states that it is forbidden to “destroy or seize the enemy’s property, unless . . . imperatively demanded by the necessities of war.”\(^{32}\) While this provision does not expressly mention water or water facilities, they may be protected under this provision as well as other provisions relating to property. For example, rights to water resources within a country are controlled under the domestic law of the country concerned. Most jurisdictions consider water to be the property of either the state or its citizens, with private parties acquiring the right to divert or use specified quantities of water. Poisoning of a well, for example, should be covered under the applicable provisions of conventions relating to the destruction of property, as well as other provisions relating to the use of poison.\(^{33}\)

The Annex to the 1907 Hague Convention IV, Article I, sets out the basic qualification of belligerents, those individuals and groups that are subject to the “laws, rights and duties of war.” It applies to armies, militias, and volunteer corps fulfilling the following conditions:

- to be commanded by a person responsible for his subordinates
- to have a fixed distinctive emblem recognizable at a distance
- to carry arms openly; and
- to conduct their operations openly and in accordance with the laws and customs of war.

This forms a basic principle of international humanitarian law today, although some expansion was attempted later with Protocol II to the Geneva Convention. Together with the requirement for an “armed conflict,” the scope and application of international humanitarian law has been developed.

3.1.1.2. **The Law of Geneva**

In 1864, the first in a series of Geneva Conventions was convened. It addressed the treatment of the sick and wounded soldiers in time of war. Later Geneva Conventions in 1868, 1906, 1925, and 1929 focused on broader issues of humanitarian law. Although the series of Hague and Geneva Conventions reflected the international community’s growing concern over humanitarian rights, the results of these conventions were not encouraging. In response to the failure of the Hague agreements in the First World War and the atrocities committed in the Second World War, four additional Geneva Conventions were signed in 1949 by sixty-four states to provide more specific provisions to protect victims of war.\(^{34}\) It is important to note that these four conventions have received consistent and widespread acceptance by
states, more than any other agreements on international humanitarian law. While the primary purpose of the four conventions was to manifest an increased awareness of international humanitarian law as a result of the atrocities witnessed in the First and Second World Wars, they also contained the beginnings of modern concepts of environmental protection during wartime. In addition to the prohibition against “willfully causing great suffering or serious injury to body or health,” the conventions prohibit the “extensive destruction and appropriation of property not justified by military necessity and carried out unlawfully and wantonly.” Water and its associated storage and delivery facilities can be considered to come under this prohibition.

3.1.2. The 1977 Protocols to the Geneva Conventions

In 1977, Protocol I and II to the Geneva Convention of 1949 and the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD) were opened for signature. Generally, Protocol I and ENMOD apply to international armed conflicts, while Protocol II is primarily directed toward non-international (internal) armed conflicts. Protocol II and its relevant provisions will be discussed later in this article.

The purpose of Protocol I and ENMOD was to reaffirm the earlier 1949 Geneva Conventions, and to address the widespread awareness of the environmental destructiveness of the war that grew out of the Vietnam era. Previously, the international community had paid little attention to the consequences of war on the environment, as illustrated by the failure to mention the environment in the four Geneva conventions following the Second World War. While the general public had been exposed to still pictures and film footage of two World Wars and the Korean War, television coverage of the United State’s deliberate attack on Vietnam’s environment provided a world audience with unprecedented access to images of the destructiveness of war. Popular media coverage during the Vietnam War, coupled with an increasing worldwide awareness of the environment, led to the adoption of Protocol I and ENMOD. Despite growing international concern about the effect of war on the environment, neither of these agreements has been universally adopted. Even though it has yet to ratify Protocol I, the United States has taken the position that much of Protocol I is customary law and thus is binding on all states.

3.1.2.1. Protocol I

Articles 35 and 55 of Protocol I specifically address the protection of the environment during periods of armed conflict.

Article 35 begins by restating two principles developed in St Petersburg and The Hague: the right to choose means of warfare “is not unlimited” and it is prohibited to employ "methods of warfare of a nature to cause superfluous injury or unnecessary suffering." Article 35(3) further strengthens the protection of the environment by stating that “it is prohibited to employ methods of warfare which are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment.”

While Article 35(1) mentions the protection of the environment as a basic rule, Article 55 is entirely devoted to the environment and thus represents the only truly “environmental” provision in Protocol I. It states:

1. Care shall be taken in warfare to protect the natural environment against widespread, long-term, and severe damage. This protection includes a prohibition of the use of methods or means of warfare, which are intended or may be expected to cause such damage to the natural environment and thereby prejudice the health or survival of the population.
2. Attacks against the natural environment by way of reprisals are prohibited.
Although neither of these provisions mentions water directly, it can be inferred that water, an integral part of the environment, is afforded protection under these rules as well as all rules that have been established to protect the environment.

3.1.2.2. ENMOD

ENMOD was convened in response to the severe environmental damage suffered by Vietnam’s environment as a result of the United States’ use of chemicals and defoliants. It was intended to prohibit the military use of climate modification techniques that are intended or could be expected to cause “widespread, long-lasting, or severe” destruction or damage to the enemy. However, it potentially could be applied more broadly to cover water facilities. These three terms are defined in the first Understanding as follows:

1. **Widespread**: encompassing an area on the scale of several hundred square kilometers.
2. **Long-lasting**: lasting for a period of months, or approximately a season.
3. **Severe**: involving serious or significant disruption or harm to human life, natural and economic resources, or other assets.

Although the environment is an intangible concept that is difficult to define, Article II of the ENMOD Convention attempts to break down the term into its component parts. Property attributes and concepts are used to determine whether environmental damage has occurred. Article II’s definition of the phrase “environmental modification techniques” is any technique that modifies “the dynamics, composition or structure of the Earth, including its biota, lithosphere, **hydrosphere** and atmosphere, or of outer space” (emphasis added). Thus, by the inclusion of the hydrosphere it can be argued that ENMOD provides some degree of protection for water and the facilities that contain or transport it. ENMOD also uses the much broader term of “military or any other hostile use” in place of the phrase “armed conflict” and use of the word “war” throughout seems to further suggest the broadened application of the convention.

While ENMOD does not preempt the customary principle of military necessity, it does refine the balancing of environmental damage with military necessity by providing an upper limit on the acceptable level of environmental damage. ENMOD prohibits “military or any other hostile use of environmental modification techniques having widespread, long-lasting, or severe effects as the means of destruction, damage, or injury to any other State Party.” Two events in Iraq could have widespread implications: the burning of oil wells at the end of the Gulf War, and the diversion of the Euphrates with the object of drying up wetlands in the south. Both acts were intentional, part of an armed conflict, and may have long-term consequences for the environment and regional climate. Modern science is only beginning to understand the relationship between water supply and climate change.

In spite of the lack of universal adoption of ENMOD, state recognition of the need to limit the level of environmental damage during times of military or other hostile activity that could directly or indirectly affect the Earth’s water resources could have significant importance for the protection of water facilities and water in general.

3.1.2.3. Protocol II

Protocol II was drafted to develop and supplement Common Article 3 the Geneva Conventions of August 12 1949. Like Protocol I and other international instruments relating to human rights, it is intended to provide basic protection for the victims of non-international (internal) armed conflicts. Furthermore, it calls for states to recognize that “in cases not covered by the law in force, the human person remains
under the protection of the principles of humanity and the dictates of the public conscience.\textsuperscript{47} However, it does not apply to “internal disturbances and tensions” that are “isolated and sporadic acts of violence.”\textsuperscript{48} It should be further noted that Protocol I, like Protocol II, has not been universally adopted.

### 3.1.3. Customary International Law

International law is not based on treaties alone, and customary law can complement treaty law in a number of ways. States that have failed to ratify a particular treaty may still observe the law expressed in the treaty as customary, as in the case of the United States with Protocol I. Treaties or conventions may over time attain the status of customary law, and bind all states; the 1907 Hague Convention on Land Warfare is a well-recognized example. Customary law may assist in clarifying treaty provisions, when the terms of the treaty are subject to interpretation.

Customary international law, based on the practice of states, is in a constant state of evolution. Old principles are abandoned and new ones emerge. The incorporation of customary international law into modern international conventions indicates that in the absence of treaty provisions that derogate from customary international law, it is binding on all states. This is illustrated by the language of the Martens Clause of the 1907 Hague Convention, which has attained the status of customary international law through the international community’s widespread observance. The Clause states:

> Until a more complete code of the laws of war has been issued . . . the inhabitants and belligerents remain under the protection and the rule of the principles of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity, and the dictates of the public conscience.\textsuperscript{49}

Because the applicable conventions discuss the protection of water only tangentially, customary international law becomes invaluable when addressing the issue of the targeting of water facilities by state actors during armed conflicts.

### 3.2. Principles

The fundamental principles of customary international law applicable to the protection of water facilities are those of \textit{humanity}, \textit{discrimination}, \textit{proportionality}, and \textit{military necessity}.

The principle of \textit{humanity}, also known as the “principle of unnecessary suffering and destruction,” proscribes the use of means of warfare which cause unnecessary suffering not justified by legitimate military objectives.\textsuperscript{50} The poisoning of water supplies or the disastrous environmental and economic consequences of destroying a dam, such as the destruction of the Huayuankow Dam by Chinese Nationalist forces during the Japanese invasion of China, are examples of indiscriminate acts that cause unnecessary suffering. The military advantage to the Nationalist forces in destroying the dam would be far less than the magnitude of the suffering imposed on the civilian population.

The principle of \textit{discrimination} provides that the means and methods of warfare must distinguish between military and civilian targets.\textsuperscript{51} During the Second World War there were difficult choices for the allied forces when civilians were present near industrial facilities that became military objectives. In modern conflicts, such as the 1999 NATO bombing of Yugoslavia, NATO hoped that precision weapons and technology would aid in discriminating between lawful targets and innocent civilians. However, political considerations often countered the advantage of precision weapons, as NATO aircraft were ordered to bomb from high altitudes to avoid allied casualties.
These factors were considered when the International Criminal Tribunal for the Former Yugoslavia reviewed the NATO bombing campaign in a report to the Chief Prosecutor.\textsuperscript{52}

The principle of \textit{proportionality} is a fact-specific concept requiring that the force employed by the attacker not be disproportionate to the military advantage sought.\textsuperscript{53} During the Second World War the allied forces and Germany both justified the wholesale aerial bombardment of cities as retaliation for earlier unlawful attacks committed by the other side; however, it could be strongly argued that the damage caused to the civilian populations of the affected cities was disproportionate to the military objectives of the air raids.\textsuperscript{54} The main problem with the principle of proportionality is not whether it exists, but what it means and how it is to be applied.\textsuperscript{55} For example, if underground water delivery systems are in the vicinity of an otherwise legitimate military target, should the military commander refrain from attacking because of undesirable collateral effects? The answer may differ depending on the values and the background of the decision maker. But the military commander is required to weigh the relative military advantage against the potential injury to non-combatants or the damage to civilian objects. If the destruction of a water supply of an entire town or village were certain, that must be heavily weighed against the possible military advantage.

The principle of \textit{military necessity} (or military advantage) states that a combatant may use only the level of force “required for the partial or complete submission of the enemy” that incurs the least “loss of time, life, and physical resources” in the attainment of a legitimate military objective.\textsuperscript{56} While at first glance it might appear that the military necessity exception trumps all restrictions on the conduct of war, it is still subject to the limits of humanity, discrimination, and proportionality. For example, the attack on the Mohne dam in Germany by the “Dambusters” during the Second World War or the destruction of dykes by the United States during the Vietnam conflict may have been regarded at the time as legitimate under the military necessity exception. But when the consequences of these acts are considered in hindsight today, it would be difficult to argue that these acts were not indiscriminate, inhumane, or disproportionate.

The nature of modern conflict makes it particularly difficult to protect water facilities using the four principles described above. Urban areas are increasingly the venue for conflict, and water delivery systems are intertwined with other systems that may be legitimate targets. These could include roads, bridges, factories, or structures. Modern technological society has given rise to many dual-use facilities and resources. City planners rarely pay heed to the possibility of future warfare. Water facilities present within or near military objectives should, however, be taken into account in making a decision to target, in terms of proportionality. By clearly marking such facilities on publicly available maps, this information would be more likely to come to the attention of the parties in an armed conflict.

In addition to these four fundamental principles, a fifth has recently emerged providing that “nature is no longer fair game in humankind’s conflicts.”\textsuperscript{57} This can be seen in the World Charter for Nature, which provides that “nature shall be secured against degradation caused by warfare” and “military activities damaging to nature shall be avoided.”\textsuperscript{58}

On examination, these fundamental and emerging principles of international customary law are directly applicable to the protection of water facilities, including mobile delivery systems. Military personnel and civilian populations alike rely on water facilities for life-sustaining water, for domestic and export agricultural production, and for the generation of electricity to power their economies. Therefore, considering water’s importance to the maintenance of human life and economic development, the justification for attacking a water facility as a legitimate military target under a theory of military necessity is seriously eroded. The principles of discrimination, humanity,
proportionality, and damage to the environment apply to actions taken during times of armed conflict; however, these rules were designed for belligerent armed forces under an identifiable command structure. The recent increase in activity of international terrorist groups evidences the changing nature and complexity of conflict that threatens water facilities around the world. Additionally, the concept of collateral damage further complicates the picture when there are unintended consequences of an otherwise lawful attack by state actors. It can be fairly stated that the environment is always a victim of armed conflict, and the water supply is often one of the first casualties.

3.3. Prohibition on the Use of Poison

The poisoning of an enemy’s water supply is an ancient strategy that was often employed to starve an enemy into submission through the destruction of the enemy’s crops and animals. Aeneas, the ancient ruler of Troy, was once quoted as giving instructions on “how to make watering places unusable.” In response to the grave consequences of poisoning water sources in the arid regions from which Islam was born, Islamic law expressly forbids the poisoning of water. Eventually the secular world also proscribed the use of poison to harm an enemy through the development of laws and customs of war. The movement toward the codification of this customary rule is demonstrated by the introduction of the Lieber Instructions in 1863 to restrict the conduct of the armies during the US Civil War. The code stated that military necessity “does not admit the use of poison in any way.”

Article 23(a) of the Hague Convention incorporates this customary rule stating that it is especially forbidden “to employ poison or poisoned weapons.” However, of more significance is the more recent Geneva Protocol of 1925 which provides that the “use in war of asphyxiating, poisonous, or other gases, and all analogous liquid materials or devices, has been justly condemned by the general opinion of the civilized world.”

Although none of these provisions, other than Islamic law, expressly address the protection of water, these provisions are general in scope and therefore implicitly afford protection of the life-giving liquid.

3.4. Prohibition on the Destruction of Property

In its natural or confined state, water can form part of public or private property and as such is protected under international humanitarian law. The property rule is well-established and contained in Article 23(g) of the Hague Regulations, which states that it is especially forbidden “to destroy or seize the enemy’s property, unless such destruction or seizure be imperatively demanded by the necessities of war.” This rule is reaffirmed through similar language found in Article 6(b) of the Charter of the International Military Tribunal of Nuremberg and Article 53 of the Fourth Geneva Convention of 1949. However, Article 6(b) of the Charter of the International Military Tribunal of Nuremberg is the only one of these provisions to describe these actions as “war crimes,” whereas Article 23 of the Hague Regulations uses the phrase “especially forbidden,” and Article 147 of the Fourth Geneva Convention of 1949 uses the phrase “grave breach.” Although the terminology differs, they all view unjustified actions against property to be considered serious violations of international humanitarian law. Additional confirmation of Article 23(g) can be found in provisions that prohibit the confiscation of private property and pillage.

In further support of water being viewed as property for the purposes of Article 23(g), Michael Schmitt states, “there is little question that article 23(g) applies to tangible property such as land, cattle, crops, or water supplies” (emphasis added). The concept of water as tangible property is further supported by the fact that
following the Second World War the Nuremberg War Crimes commission cited Article 23(g) in charges against German administrators of Polish forests for excessively exploiting Poland’s timber resources. Although there is some question as to whether or not Article 23(g) is intended to protect all property, including private property, the view taken by the US Army and the ICRC is that all property is covered. Therefore, water and water facilities, regardless of location and ownership, are considered “property” under international humanitarian law.

3.5. Prohibition on the Destruction of Objects Indispensable to the Survival of the Civilian Population

Article 54 of Protocol I is an important development in the protection of civilian populations during armed conflict. It prohibits, “whatever the motive,” the attacking, destroying, removing, or rendering useless of “objects indispensable to the survival” of civilian populations, such as “foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies, and irrigation works (emphasis added)” This language is restated verbatim in Article 14 of Protocol II.

While Article 54’s list of indispensable objects does not include support items that may be vital to the continued operation of water facilities (that is, fuel, electricity, and parts), these too would be protected from attacks made for the “specific purpose of denying” civilian populations the “sustenance value” of water. However, the fact-specific considerations of whether an attack is “deliberate” or “collateral damage” complicate things greatly. As noted by Dr. Glen Plant of the Law Department of the London School of Economics, the advent of modern weapons has made the preconceptions of avoiding “excessive collateral damage” to civilian populations “upon which the norms of Protocol I and earlier international humanitarian law were based, increasingly outdated.” As increasingly accurate weapon systems evolve, military forces possessing these precision weapons will presumably have the means to execute surgical strikes against legitimate military targets closer and closer to civilian populations.

Will the use of accurate “smart weapons” increase or decrease the threat to civilian populations, particularly with respect to water facilities? The answer is by no means clear, but it cannot be assumed that the use of “precision” systems will result in improved degrees of protection. One problem is the interconnected nature of water infrastructure with other systems that may be military targets. During the 1999 NATO bombing in Yugoslavia, NATO justified the missile attacks on three factories in Pancevo on the basis of its belief that those factories were “dual use,” producing chemicals and parts for both military and civilian uses. The attack on Pancevo rendered the city’s water supply useless; however, it was not done to deny the water “for [its] sustenance value to the civilian population or to the adverse Party,” nor was it likely to leave the civilian population with such inadequate food or water as to cause its starvation or force its movement. After reviewing the bombing campaign, the International Tribunal for the Former Yugoslavia was unable to determine that any violations of international humanitarian law had occurred.

Article 54 of Protocol I contains specific provisions allowing an attack on “indispensable objects” in cases where the objects are used by an adverse party as “sustenance solely for members of its armed forces” or in “direct support of the military action.” However, the article further provides that in “no event shall actions against these objects be taken that may be expected to leave the civilian population with such inadequate food or water as to cause its starvation or force its movement.” It also prohibits reprisals against indispensable objects, while Protocol II, unfortunately, is silent on the subject. Furthermore, it should be noted that Article 54 allows derogations from the prohibitions of Article 54 where a party to a conflict,
faced with defending its “national territory against invasion,” is required by "imperative military necessity" to do so.\textsuperscript{81} However, the customary rules of humanity, discrimination, proportionality, and military necessity still apply.

Although it does not have the same weight as a treaty, another significant development occurred at the 1992 Rio de Janeiro Conference on Environment and Development. Principle 24 of this conference specifically provides protection for the environment during war. The principle is this:

Warfare is inherently destructive of sustainable development. . . . States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.\textsuperscript{82}

Water, as an integral part of the environment and a necessary and vital element in a country’s economic development, would be protected under this principle. However, as with other provisions discussed earlier, the language of this principle does not apply to situations outside armed conflict, including terrorism. Additionally, this principle has not gained favor with state actors that might find themselves liable for environmental damages that occurred as a result of their actions in an armed conflict with another state. The severe environmental damage done by Iraq to Kuwait during the 1991 Gulf War prompted the Security Council to impose financial liability on Iraq.\textsuperscript{83} The system of reparations and compensation continues with the “oil for food” program authorized by the Security Council, with the proceeds of oil sales placed in a fund administered by the United Nations.

\textbf{3.6. Prohibition on Attacking Works and Installations Containing Dangerous Forces}

The offensive use of water through the destruction of enemy hydraulic installations to cause major damage to agriculture, water supplies, and other infrastructure has been employed in times of armed conflicts throughout history. In 596 B.C., Nebuchadnezzar breached the aqueduct that supplied the city of Tyre in order to end a long siege. Likewise, in the second century B.C., the Achaeans obstructed the spring that supplied the Greek city of Phana. In A.D. 101, Ferghana, the capital of China, surrendered after the enemy cut off the city’s water supplies.\textsuperscript{84}

In modern conflicts the strategic vulnerabilities of dams and dykes have been successfully exploited through dam or dyke-busting military missions. In 1943, a one-night raid carried out by the famous “Dambusters” squadron of the British Air Force attacked two key dams in the Ruhr Valley in Germany, effectively realizing the Air Ministry’s objectives of depriving the Ruhr industries of electricity and industrial water and causing devastation and disruption throughout the valley.\textsuperscript{85} By one account, 125 factories and twenty-five bridges were destroyed and 1,300 Germans and an unknown number of forced labor prisoners were killed.\textsuperscript{86} During the Korean War operations against dams and dykes were considered one of the most successful campaigns carried out by the US Air Force.\textsuperscript{87} More recently, many dykes were damaged or destroyed by systematic bombing during the Vietnam War, and North Vietnam claimed a death toll of 2–3 million inhabitants due to drowning or starvation as a result of these attacks.\textsuperscript{88}

In response to the catastrophic damage or destruction endured by civilian populations as a result of attacks on dams and dykes and the threat of future attacks on such installations, especially in agricultural countries where dykes are of greater importance, Article 56 of Protocol I was adopted. Article 56 provides:
Works or installations containing dangerous forces, namely dams, dykes, and nuclear electrical generating stations, shall not be made the object of attack, even where those objects are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population.\textsuperscript{89}

Article 56 further prohibits the attack of other military objectives “located at or in the vicinity of these works or installations” due to the possibility that the dangerous forces contained by these installations may be released causing “severe losses among the civilian population.” However, with respect to dams and dykes, the special protection of these facilities may be lost if the facility is used in a manner inconsistent with “its normal function” and “in regular, significant and direct support of military operations” such that the attack of the facility is the “only feasible way to terminate” its support of military operations.\textsuperscript{90}

Although 159 states have ratified Protocol I, international unanimity has not been reached.\textsuperscript{91} The United States is the most notable opponent, primarily due to its belief that Protocol I provides unwarranted recognition and protection for terrorist or irregular groups.\textsuperscript{92} From a military operational point of view, the US Joint Chiefs of Staff concluded that Protocol I grants irregular forces a legal status at times superior to that of regular forces; that it unreasonably restricts attacks against certain objects that have traditionally been legitimate targets; and that it eliminates significant remedies where an enemy violates the Protocol.\textsuperscript{93} However, the United States has concluded that much of Protocol I is customary law and thus is binding.\textsuperscript{94}

The lack of universal ratification of Protocol I and the absence of provisions dealing with the destruction of protected facilities by terrorist groups and nonstate actors seriously detract from the effectiveness of the Protocol. These acts are considered outside the scope of sustained armed conflict, the basis for the application of international humanitarian law. Furthermore, lack of an effective international criminal court to provide an enforcement mechanism allows impunity for terrorist groups intent on destroying facilities containing dangerous forces. This topic will be covered later in this article. In so many words, there is no crime unless there is a law.\textsuperscript{95}

\subsection*{3.7. Emerging Principles in the Protection of Water Facilities Under International Humanitarian Law}

The previous analysis shows that water facilities are covered under a number of terms and provisions of international humanitarian law, either by treaty or customary law. In addition, there are trends in the development of new and emerging principles that are worthy of note. Basic issues of national sovereignty are changing, as well as the response of the international community to environmental damage as a result of armed conflict.

Harm to the environment is inherent in warfare; however, the means and methods employed to weaken the military forces of the enemy are not unlimited.\textsuperscript{96} It can be further stated that each state has a duty not to allow its territory to be used in a manner that is injurious to another state’s environment. This principle was first set forth in the decision of the International Court of Justice tribunal in the Trail Smelter case, which stated:

\begin{quote}
No State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or person therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.\textsuperscript{97}
\end{quote}
Eight years later, the Court reiterated the general principle of limited territorial sovereignty laid down in the Trail Smelter Case by incorporating it into the Corfu Channel case decision. The Court found that it is “every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.” This general principle has also been applied at the municipal court level, as seen in the Donauversinkung decision. In that case the Weimar Republic’s Staatsgerichtshof held:

Every State is bound by the principle springing from the idea of the community of nations based on international law, that it may not injure another member of the international community. Due consideration must be given to one another by the various States.

In addition to court rulings, international organizations have drafted aspirational documents that address issues of transboundary environmental harm. While these documents have no legally binding effect, they do show an emerging doctrine in the development of the “general principles of law recognized by civilized nations” with regard to the environment and, more specifically, water.

Principle 21 of the United Nations Stockholm Declaration on the Human Environment incorporates the Corfu Channel standard by providing that states have the “responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States.” The World Charter for Nature, in language similar to that used in the Stockholm Declaration and Rio Declaration, provides that states shall “ensure that activities within their jurisdictions or control do not cause damage to the natural systems located within other States.” Like the later Rio Declaration’s Principle 24, The World Charter for Nature specifically addresses the protection of the environment by declaring that “nature shall be secured against degradation caused by warfare or other hostile activities.”

Principle 2 of the Rio Declaration reaffirms the international community’s growing concern over transboundary environmental damage. It contains language identical to that used in Principle 21 of the Stockholm declaration. Further advancing the protection of the environment, the Rio Declaration requires an environmental impact assessment and “prior and timely notification . . . to affected States.” Additionally, although perhaps purely aspirational, Principle 16 of the Rio Declaration provides that “national authorities should endeavor to promote the internalization of environmental costs . . . the polluter should, in principle, bear the cost of pollution.”

The principles developed in the cases dealing with transboundary environmental harm and the aspirational provisions of the Stockholm Declaration, the World Charter for Nature, and the Rio Declaration do not provide express guidance on the protection of water and water facilities. However, within the provisions of these developments in environmental protection lies the implicit understanding of the interconnected and vital nature of water to the survival of the human race. They also may provide precedent for a new international declaration that expands and clarifies the protection of water and water facilities under international humanitarian law in times of armed conflict and in cases of terrorist acts against the civilian population. The 2003 Third World Water Forum in Kyoto could provide the impetus for a new and significant declaration.

4. INTERNATIONAL ACCOUNTABILITY

4.1. Accountability Mechanisms

If international law is to provide some degree of protection for water facilities, and the public who rely on them, there must be effective enforcement mechanisms.
International law was originally directed at state action; historically states have been
the principal players on the international stage. But in recent years there has been
increasing emphasis on individual (criminal) responsibility. The question now turns to
the most effective methods of providing protection to water facilities and the public
who rely on them.

It can be argued that the most effective protective mechanism would be the
elimination of conditions that cause instability and armed conflict in the first instance.
An alternative method would be the provision of physical security for water facilities.
Finally, a system of laws and enforcement mechanisms could provide a degree of
protection, by holding guilty parties accountable, and deterring future attacks on
water facilities. The remaining parts of this article will review the accountability
mechanisms and the current state of the law in this area.

During the twentieth century the world witnessed hundreds of conflicts of various
types, resulting in massive victimization of innocent people. Much of the conduct in
these conflicts could be described as a clear violation of international humanitarian
law. But in most cases the perpetrators of these crimes have not been held
accountable for their actions. Following the Second World War tribunals were
conducted by the victorious powers, and in the past ten years ad hoc tribunals have
been established by the United Nations for the Former Yugoslavia and Rwanda. But
there is not yet an effective international criminal court of universal jurisdiction with
the power to bring violators to justice. Without an accountability mechanism, the law
will not be enforced.

In practice the most effective mechanism for dealing with criminal violations is
the domestic law of the state in which the offense has been committed. Under basic
principles of sovereignty, a state has the power to adjudicate all offenses committed
inside its territory. But the recent history of world conflict has shown that states are
often unable or unwilling to bring perpetrators to justice. And for offenses committed
in international airspace or waters, the reach of domestic (national) criminal courts
may be lacking. In these situations, international tribunals may provide the only
reasonable alternative.

4.2. International Criminal Tribunals

In the summer of 1998, representatives of 120 nations signed a treaty in Rome that is
designed to have a major impact on international accountability. The Rome Statute
undertakes to establish a permanent International Criminal Court (ICC) to adjudicate
war crimes, crimes against humanity, and serious violations of international
humanitarian law. There is special coverage based on the principle of Protocol I of
the Geneva Conventions, see Section 3.1.1.2 above. Article 8(2)(b)(iv) of the ICC
Statute prohibits:

Intentionally launching an attack in the knowledge that such attack will
cause incidental loss of life or injury to civilians or damage to civilian objects
or widespread, long-term, and severe damage to the natural environment
which would be clearly excessive in relation to the concrete and direct
overall military advantage anticipated.

As to the "core crimes," the definitions are drawn from customary law and are for the
most part uncontroversial. The definition of crimes against humanity goes beyond
Nuremberg and other previous definitions: not only mass murder, but also systematic
torture, rape, and forced disappearances constitute crimes against humanity. The
definitions of war crimes contained in Article 8 are largely drawn from the Hague
Rules, the Geneva Conventions, and the Geneva Protocol II, but with controversial
additions like the one advocated by opponents of Israel, prohibiting an occupying
power from transferring its own people into an occupied territory. The ICC provides perhaps the best hope yet for a uniform system of international accountability.\textsuperscript{110} The statute of the court is the most complete compilation of international criminal law to date; it incorporates a significant body of treaty and customary international law.

A separate resolution adopted at the end of the Rome Conference, and opposed by the United States, included a proposal that a future Review Conference add terrorism and drug trafficking to the Court’s jurisdiction.\textsuperscript{111} Seven years after the Statute comes into force, parties will be given the opportunity to include these subjects. And even if “aggression” or other crimes are added to the Statute, state parties will be able to refuse to accept those amendments as to crimes committed on their own territory and by their own nationals.

On May 6 2002, the United States government delivered a letter to the Secretary-General of the United Nations giving formal notice that the United States has no intention of becoming a party to the Rome Statute of the International Criminal Court. The letter also requested that the US declaration be reflected in the Rome treaty’s official status list, effectively canceling out the US signature to the treaty that was entered by the Clinton administration on December 31 2001. This development is unfortunate, given that the United States has been a long-term supporter of the court, contributing much to the Rome Statute and the development of international humanitarian law. By “un-signing” the treaty, the United States gives up the right to participate and influence the development of the Court. In a thoughtful article, David Scheffer, the former US ambassador for war crimes presents a course of action that would allow the United States to “live with the treaty.”\textsuperscript{112} It remains to be seen whether the ICC can become a truly effective body without the support of the United States.

In 1993, Security Council Resolution 808 created the International Criminal Tribunal for the Former Yugoslavia (ICTY) to deal with serious violations of international humanitarian law.\textsuperscript{113} It refers to “obligations under international humanitarian law and in particular the Geneva Conventions of 12 August 1949.” Thus, the Tribunal’s jurisdiction could be extended to cover environmental war crimes, although the Statute of the ICTY, unlike the Rome Statute, does not specifically mention such crimes.

The ICTY has made major contributions to the development of international criminal law in its short lifetime. In its first major decision, the Tadic case, the competence of the International Tribunal to prosecute persons responsible for serious violations of international humanitarian law in the territory of the former Yugoslavia under the Statute was questioned.\textsuperscript{114} The Tribunal found that Articles 3 and 5 of the Statute, among others, specify the crimes under international law over which the Tribunal has jurisdiction, either by the terms of the Statute or the customary rules that it imports, and proscribes certain acts when committed “within the context of” an “armed conflict.”\textsuperscript{115}

According to the test applied by the Appeals Chamber, an armed conflict exists when there is a “resort to armed force between States or protracted armed violence between governmental authorities and organized armed groups or between such groups within a State.”\textsuperscript{116} However, Common Article 3 of the Geneva Convention requires that the intensity of the conflict and the organization of the parties to the conflict be considered in situations where the armed conflict is not of an international character. In situations of mixed or internal conflict these additional considerations were provided in order to distinguish an armed conflict from “banditry, unorganized or short-lived insurrections, or terrorist activities, which are not subject to international humanitarian law.”\textsuperscript{117}

Article 5 of the Statute lists crimes against humanity proscribed by customary international law. The decision of the Appeal Chamber that “it is by now a settled rule of customary international law that crimes against humanity do not require a
connection to *international armed conflict*’(emphasis added) appears to follow the seldom questioned, longstanding customary status of the prohibition against crimes against humanity and individual criminal responsibility for their commission established with the Nuremberg Charter. As such, the commission of crimes against humanity is a violation of international customary law and of Article 5, which is largely reflective of international customary law.

The Tadic case’s detailed jurisdictional analysis of the power of the International Tribunal to prosecute for grave breaches of the Geneva Conventions begs the question. Would a court, such as the ICC, have jurisdiction over an attack on a water facility by a previously unknown terrorist group, or individual, given the Appeal Chamber’s application of the definition of “armed conflict”? The answer would appear to be in the negative.

In terms of international humanitarian law, there is a jurisdictional gap that permits terrorist activity to escape coverage. Terrorism has traditionally been viewed as criminal activity outside the scope of IHL. There might be a lack of jurisdiction even though the terrorist attacked a water facility vital to the survival of the civilian population, or caused widespread and severe environmental harm. Although the perpetrators may be subject to the domestic law of the jurisdiction of the state on whose territory the act is committed, the ambiguity of international law could have at least two negative consequences. The advantages of universal criminal jurisdiction and international arrest warrants would be lost, and acts committed on the high seas or in international airspace might escape prosecution.

## 5. MOBILE WATER DELIVERY SYSTEMS: VULNERABILITY OF MERCHANT WATER TANKERS

As the worldwide shortage of fresh water increases, countries short of water will be forced to transport water over greater distances. Turkey has proposed that water be delivered by tanker ship from the north of Turkey to Israel, and has recently entered into a contract with Israel to sell water. Commerce in water tankers presents a number of unresolved questions under international law. In the event of an armed conflict, what protection is offered to water tankers and their crew? A single water tanker delivery could be indispensable to the survival of the civilian population, particularly during periods of armed conflict. This section will first discuss the rules applicable to water tankers during periods of armed conflict. Later there will be a discussion of a possible act of terrorism against a water tanker.

### 5.1. International Law of Naval Warfare

Land and sea warfare were at one time based on different rules; land warfare was generally a struggle for territory, while battles at sea primarily concerned economic advantage. Historians who relate the Battle of Trafalgar describe the valiant efforts of the victors to save the crews of the vanquished, even after they had been ordered to abandon their captured ships. This “fellowship of the sea” was common during naval engagements of that era; crews and passengers were placed under the protection of their captors with some expectation that their safety would be assured. During the Second World War, surface raiders were able to follow these traditional values of chivalry, largely because the design of their ships permitted them to do so. They had adequate space for captured crewmembers, could easily disembark their detainees, and they had armaments to engage in offensive and defensive warfare.

Traditional international law viewed enemy merchantmen as subject to seizure during a war. But the increasing use of aircraft and submarines during the twentieth century made it impossible to visit, search, and seize, making it much more difficult to
protect the victims of the conflict. During the Second World War, practice by France, Great Britain, Italy, and the United States permitted destruction of enemy merchant vessels in cases of military necessity when the merchant vessel could not be captured and sent or escorted to port for adjudication.\textsuperscript{120}

Most analysts agree that non-belligerent or “neutral” ships carrying contraband become valid targets during wartime.\textsuperscript{121} The same result obtains when neutral ships are integrated into the enemy war effort. But third party or neutral shipping not engaged in delivering contraband or supplies to the belligerent should be protected under international law. And the principle of freedom of the high seas has long been recognized as providing free transit in international waters, straits, and waterways.

One treaty that clearly protected merchantmen is of questionable validity today. The London Protocol of 1936 provides:

\begin{quote}
In particular, except in the case of persistent refusal to stop on being duly summoned, or of active resistance to visit and search, a warship, whether surface vessel or submarine, may not sink or render incapable of navigation a merchant vessel without first having first placed its passengers, crew, and ships papers in a place of safety.
\end{quote}

At the beginning of the Second World War the parties made an attempt to comply with the London Protocol, but as the war progressed merchantmen were widely regarded as legitimate military targets, subject to being sunk on sight. There were some exceptions for protected vessels such as hospital ships and small coastal fishing boats. This policy was due to the fact that merchantmen were regularly armed, made part of an escorted convoy, and were otherwise incorporated directly into the enemy’s war effort. Some authors believe that modern methods of warfare have effectively rendered long cherished principles of humanitarian law obsolete.\textsuperscript{122} But the war-of-attrition rules do not apply to the mixed and ambiguous conflicts of the modern era, nor do they have any application to terrorism or criminal activity at sea.

The war crimes trials at the end of the Second World War provide a good historical view of accountability and the applicable law, at least in 1945. The International Military Tribunal at Nuremberg addressed the question of the law of naval warfare in the trial of Admiral Doenitz. He was charged with war crimes including “waging unrestricted submarine warfare contrary to the Naval (London) Protocol of 1936.” Although the tribunal did not find Doenitz guilty of waging warfare against armed merchant ships, it found a violation of the Protocol for ordering attacks on “neutral merchant vessels” found within operational zones declared by the German Navy. However the ten-year sentence imposed on Doenitz was not based on this violation, because the US Navy had also conducted unrestricted submarine warfare in the Pacific. After a thorough analysis of state practice and the prosecution of war crimes during the Second World War, it can be argued that the main principle of the London Protocol still survives. Even though merchant ships “participating” in an armed conflict may be sunk without warning, an absolute standard of immunity from attack for the survivors is required under international law.\textsuperscript{123}


Israel has been involved in a number of armed conflicts with its Arab neighbors since the establishment of the Jewish state. In 1950, Egypt adopted oil tanker regulations requiring each merchant ship passing through the Suez to certify it was heading towards a neutral port and to obtain an Egyptian certificate that the cargo was for consumption in the neutral port. The United States protested the regulations, and the situation deteriorated until a UK merchant ship was stopped, plundered, and damaged by an Egyptian warship attempting to enforce a blockade of Israel. From February to
April 1957, US destroyers patrolled the Straights of Tiran; they successfully prevented Egyptian interference with US merchant ships bound for Israel.

All parties to the conflict committed violations of the laws of armed conflict. In the 1967 Six Day War, Egyptian submarines sank two innocent Greek freighters in the Mediterranean, one off Alexandria, and the other further west. In addition, Israel had declared a very imprecise exclusion zone, warning all ships to keep away from “the coast of Israel during darkness.” This was considered by most observers as illegitimate because it was too vague and may have impacted free transit in the area. Soon after this event, the UN Security Council passed a resolution, which “affirmed further . . . the necessity for guaranteeing freedom of navigation through international waterways.”

The Arab-Israeli conflicts saw the declaration of traditional close-in blockades, with the typical problems of visit, search, and capture. During the 1973 war Egypt declared a blockade in the Red Sea and attacked but missed an Israel-bound tanker. A number of high-seas attacks by Egypt on neutral freighters were clearly unlawful under international law, as was the Israeli attack on the US Navy vessel Liberty, clearly marked as such. Despite the illegality, attacks on neutral merchant vessels would become even more common in the Persian Gulf in the following decade.

The Arab-Israeli naval war had no decisive influence on the outcome of the 1973 war, and the 1979 Egypt–Israel peace treaty included a provision that cargoes coming to or from Israel enjoyed free rights of passage through the Suez Canal and its approaches. The peace treaty merely reaffirmed Israel’s right to use the Suez Canal, and internationalized part of an earlier treaty that gave all nations the right of free passage.

5.3. The Persian Gulf War between Iran and Iraq

Between 1980 and 1988 a senseless and destructive conflict between Iran and Iraq was conducted in which the belligerents often refused to draw distinctions between combatants and non-combatants. There were more than a million casualties, mostly in the land campaigns. A notable aspect of the conflict was the tanker war and the targeting of merchant vessels, mostly by Iraq. More than 400 commercial vessels were attacked; almost all were neutral state ships from over thirty nations. Over 200 merchant seamen lost their lives, with 108 killed in 1987 alone. Thirty-one of the attacked merchant vessels were sunk and another fifty were declared total losses.

For the first time since the Second World War, deliberate and sustained operations were carried out against merchant ships during the Iran–Iraq war. The conflict took on many aspects of total war, with a general disregard for the law of armed conflict by both sides. An analysis of the conflict is helpful in understanding the degree of protection that may be afforded to water tankers in a similar scenario today, and the US Naval War College recently published a book devoted to the war, including its legal and policy implications.

Nations engaged in an armed conflict may be classified as belligerents, but they are still required to comply with international humanitarian law. Targets may be attacked only when there is an identifiable military advantage. During the Iran–Iraq war, the oil tankers were attacked, presumably, on the grounds that they constitute military targets.

Most legal experts concluded that Iraq was justified in attacking enemy (Iranian) merchant ships when they carried Iranian petroleum that would be used to support the war effort. Neutral-flag tankers carrying belligerent’s petroleum, the sale of which would support the war effort, were also subject to attack when escorted by Iranian warships. But neutral ships carrying neutral goods were not lawful targets, and the targeting of these ships led to international condemnation of both parties to the war. Neutral ships could respond proportionally in self-defense to the threat, and
convoying warships had the right to defend the vessels. Oil tankers from Kuwait were "reflagged" to the United States so that necessary military protection could be provided.

The experience of the Iran–Iraq war underscores the need for thorough international fact-finding and a program for publication of violations of international law. There was a high degree of frustration in the international community during the conflict because the belligerents failed to respect their clear legal obligations. This raises an important question. Was this a failure of the law, or a failure of the nations and military forces that fought the war? Most analysts concluded that it was the latter, and that more detailed treaty or other legal obligations would not have prevented the situation. It can be safely concluded that the nations and militaries of the world need to be educated in the fundamentals of international humanitarian law.

5.4. Current Rules for Merchant Shipping

The law of the sea and naval warfare stand on the same footing as the law of land warfare and the UN Charter. This is consistent with the language contained in the UN Convention on the Law of the Sea (UNCLOS), signed in 1982, which provides that the high seas should only be used for peaceful purposes. Although UNCLOS does not apply to situations of armed conflict, some UNCLOS concepts may be urged as naval warfare rules. Many provisions of UNCLOS are now considered as customary norms, and binding on all states, including the United States, which has not ratified UNCLOS.

The 1994 San Remo Manual on International Law Applicable to Armed Conflicts at Sea was prepared by lawyers and experts convened by the International Institute of Humanitarian Law in San Remo, Italy. Although not legally binding, it is a restatement of the law together with some progressive development. The Manual provides that enemy merchant vessels may only be attacked if they meet the definition of "military objective" as defined in the Manual. That term is "limited to those objects which by their nature, location, purpose or use make an effective contribution to military action." The Manual offers a presumption that merchant ships are to be considered civilian objects unless determined to be military objectives.

Seven activities are listed that could make merchant shipping vulnerable to attack, such as sailing under a convoy of enemy warships. The Manual has a separate provision for neutral merchant vessels, and provides that they may not be attacked unless they are believed to be carrying contraband, breaching a blockade, or engaging in other activity that would violate their neutral status.

The provisions of the Second Geneva Convention protect survivors of armed forces at sea, including merchant crews and the crews of civil aircraft of the parties to the armed conflict. But this provision would provide little protection for the crew of merchant vessels in situations similar to the Iraq–Iran and Arab-Israeli conflicts, where the attacker lacks sufficient naval forces to conduct a rescue.

There are three general situations in which merchant vessels could become the object of attack.

DURING AN ARMED CONFLICT

An armed conflict is said to exist when there is a resort to armed force between states or protracted armed violence between government authorities and organized armed groups, or among such groups. Under the IHL, merchant ships may only be attacked if they may lawfully be considered a military objective, as outlined in the San Remo Manual. This means that by their nature, location, purpose, or use they make an effective contribution to military action and their destruction, capture, or neutralization offers a definite military advantage. There are somewhat different rules for merchant shipping from countries engaged in hostilities, and those from neutral countries, as outlined in the San Remo Manual.
At least one prominent author has taken a more narrow view of when a merchant vessel becomes a valid military objective. Professor Kalshoven of the Netherlands is critical of the concept, contained in the US *Commanders Handbook*, that “contribution to the war effort” is sufficient ground to target a merchant vessel. He points out that this issue is of major importance when considering aerial bombardment of industrial or other targets in the enemy hinterland. Eliminating the enemy labor force could be justified under this approach because it makes some general contribution to the war effort. In his view there is a danger in the *Commanders Handbook* of giving too much in favor of the security of the attacker (and mission accomplishment) and not enough to humanitarian considerations.

**DURING AN AMBIGUOUS CONFLICT**

Conditions may arise where an attack on a merchant vessel occurs but the conflict is new or the parties responsible are still unknown. During the Spanish Civil War in 1937, both sides sought to employ naval power on the high seas against ships supplying their opponents. Planes and submarines of unknown identity attacked merchant ships of various nationalities. The insurgent forces under General Franco had not been recognized as belligerents by any state, so the traditional law of armed conflict would not apply, at least under the rules then applicable. Following these attacks, there were renewed demands to outlaw this type of warfare. Some argued that the acts should be considered piracy, essentially a criminal act outside the law of war. During an ambiguous conflict there would be little incentive for the parties to comply with standards of international law. In due course the ambiguous conflict should terminate, or develop into a clearly defined armed conflict in which the standards of international humanitarian law apply.

**AS A RESULT OF TERRORISM**

If a merchant vessel is attacked by a terrorist, outside a war zone and by a group that is not engaged in an ongoing armed conflict, special considerations apply, which will be discussed in more detail in the next section. The law of armed conflict is inapplicable, and there is likely to be no international criminal court with jurisdiction. If the attack occurred in national waters the law of the host state would apply. If a vessel is in international waters a number of treaties and conventions may apply, as well as the national laws of the state whose vessel or crewmembers are at risk. But only nations with powerful military response capability have been able to effectively deal with this type of attack. The United States responded to a hijacking at sea of a cruise ship, and the murder of an American passenger, by capturing the fugitive in international airspace, and returning him to the United States for trial. US laws provide extraterritorial jurisdiction over those who damage an aircraft or endanger crew or those who take a US citizen hostage anywhere in the world. If a merchant tanker flying the Panamanian flag and chartered by Israel, for example, was attacked by a terrorist in international waters, it would be necessary to rely on the national laws of the states concerned (Panama and Israel) to deal with questions of enforcement and accountability.

**5.5. Water Tankers**

Because the proposal for sea delivery of water by tanker is relatively new, there is no specialized rule of international law that applies. There are some parallels, however, between water delivery and oil delivery systems: in both cases the vessel would normally be considered a merchant ship and would typically carry a civilian crew. But the situation for water tankers should be distinguished from oil tankers because oil has inherent strategic and military value. Water is indispensable to the survival of the civilian population, covered under the provisions of international humanitarian law.
discussed in Section 3 of this article. By its very nature, water should be considered to have only indirect military significance.

Consider a possible scenario: Turkey as a neutral country is delivering water to Israel during an armed conflict between Syria, Egypt, and Israel. During an armed conflict an oil tanker, or water tanker, could only be the subject of attack if determined to be a legitimate military target. This poses distinct problems under the humanitarian law principles of discrimination and identification. It would be necessary to visit and search a challenged tanker to determine the contents (it can be assumed that there would be no externally visible difference between a water tanker and an oil tanker). Based upon modern experience in the Persian Gulf, the belligerents are often incapable of visiting and searching before making a decision to target a vessel. For example, in a conflict between Israel and its Arab neighbors, the Arab countries will be unlikely to possess the control of the seas necessary to conduct a search. This fact may not be enough to deter an attack on a merchant vessel bound for Israel, if the belligerents possess the necessary armaments to make an attack, such as a sea-skimming anti-ship missile. Nor would the attacking state have the capability to conduct a rescue of the survivors as required by international law.

It can be argued that water delivery systems are indispensable to the survival of the civilian population, even more so than oil. Although an attack on a water tanker would presumably be less harmful to the environment than an attack on an oil tanker, the principle would be the same. International law provides no special protection for mobile water delivery systems, although the fundamental principles still apply. Water should be considered less of a strategic resource than oil, thereby failing to qualify as a valid military objective. In the case of terrorism, an attack on a water tanker in international waters could prove particularly difficult to prosecute.

6. EMBARGOES AND THE IMPACT ON WATER FACILITIES: IRAQ

6.1. Background

Following the Iraqi invasion and illegal occupation of Kuwait in August of 1990, the UN Security Council imposed comprehensive sanctions on Iraq.\textsuperscript{142} One purpose was to secure Iraqi compliance with an inspection regime that would eliminate Iraq’s suspected program of chemical and biological warfare. Over the next six months, Iraq made a number of conditional offers to comply, but continued to act in violation of the UN Resolution. In January of 1991, with the authorization of a UN Security Council Resolution, a US-led coalition launched an air war against Iraq. Three months later, Iraq accepted the terms of a UN cease-fire resolution, which set the conditions for lifting the sanctions.\textsuperscript{143}

One of the requirements of the cease-fire resolution was Iraq’s acceptance of the inspections of the UN Special Commission (UNSCOM) that would be responsible for the on-site inspection and destruction of Iraq’s biological, chemical, and missile capabilities. Despite numerous opportunities to comply, in December 1998, Iraq continued to defy the inspection regime, and refused to open sites at the request of the UNSCOM inspectors.\textsuperscript{144} A military strike by the United States ended the role of the inspection teams, but the sanctions regime persists, with little success in achieving its original objectives. In 1995, the UN adopted a limited “oil for food” program that was intended to allow a reasonable sale of Iraqi oil in return for food, with a guarantee that a portion of the proceeds to be assigned to a UN account that pays claims against Iraq from the Gulf War.
6.2. The Sanctions

The oil for food program has met with limited success, and there are still shortages of critical supplies for the civilian population. Turkey and Jordan continue to allow trade across land borders in oil that is not subject to the sanctions regime. Although the sanctions regime exempted certain foodstuffs and supplies essential for civilian needs, "dual use" materials that might be used for military purposes were prohibited. Chlorine for drinking water is one such item, and the shortage has contributed to a humanitarian crisis in Iraq. Clean water is difficult to obtain, and the disease rate for water-borne illness is unacceptably high. Food and medical supplies are in critically low supply, and the state of health of the Iraqi population continues to deteriorate. The sanctions regime has been widely criticized, and an argument can be made that the maintenance of the sanctions regime is a violation of the human rights of Iraqi citizens.145 It is not easy to determine the number of civilian casualties, and political agendas often shape the arguments.146 Some have even suggested that the sanctions amount to genocide, and have called for action to challenge the sanctions before the world court.147

The Iraq sanctions regime has had significant humanitarian consequence for the people of Iraq. There is much controversy as to whether the United States violated international law through the bombing campaign, and whether the continued imposition of sanctions is a violation of international human rights. No one disputes the devastating impact of the sanctions on the civilian population. The underlying issue is whether the fault lies primarily with the international community, or with the Iraqi leadership.

Early in the current Bush Administration the United States stated its intention to modify the sanctions regime against Iraq, with a goal of returning international inspectors to the country.148 On May 14 2002, the UN Security Council approved a plan revamping the sanctions regime.149 It is designed to tighten controls on Iraqi imports of military items, but ease the delivery of civilian goods. The sanctions, imposed after Iraq’s 1990 invasion of Kuwait, are due to be lifted when Iraq allows UN weapons inspectors to return and certify that it is free of weapons of mass destruction. The new plan, dubbed “smart sanctions,” modifies the existing 1996 UN "oil-for-food” program. Under that program, a UN committee checked nearly all the goods Iraq purchased with oil proceeds to determine whether they were intended for military use.150

Iraq presents one of the most difficult foreign policy questions for the United States, and a major challenge for the international community. There are lessons to be learned here, particularly since the use of sanctions seems to be increasing as an enforcement tool of the international community. Special consideration of sanctions that affect the civilian water infrastructure can help to ensure that water supply is not adversely affected.

7. TERRORISM AND THE THREAT AGAINST WATER FACILITIES

7.1. Definitions

The United States defines terrorism as “premeditated, politically motivated violence perpetrated against non-combatant targets by sub-national groups or clandestine agents, usually intended to influence an audience.”151 Although the threat of international terrorism has dramatically increased over the past ten years, a common international definition has been notoriously difficult to achieve.152 Even after the events of September 11 2001, the reaction is not uniform. Attacks against civilians are viewed differently in many parts of the world, including the Middle East. For
example, some Muslim leaders who denounced the attacks on the United States have long refused to condemn terrorism directed at Israel. Some believe that the prohibition of killing noncombatants does not apply to Israel, where settlers have attacked Palestinians and taken their land.¹⁵³

Given the ease and rapidity of international transportation and the proliferation of weapons and agents of great destructive power, the opportunities for terrorism have increased greatly in recent years. Recent world events have shown that large numbers of innocent people can be put at risk by relatively unsophisticated methods. The international community condemns conduct that can be described as terrorism, and a number of international conventions have addressed the issue.¹⁵⁴ Each state or jurisdiction proscribes certain conduct under its criminal or penal code. States have defined terrorism generically as a crime, thus supplementing specific statutes covering selected criminal conduct that can also be identified as terrorism.¹⁵⁵ For example, a terrorist bomber would be guilty of multiple counts of murder under state domestic law in addition to an act of terrorism. While both the United Nations General Assembly and the Security Council repeatedly affirmed their determination to combat terrorism in all its forms “irrespective of motive, wherever and by whomever committed,” the world body has been reluctant for political reasons to define precisely the nature of the terrorism challenge.

A major effort by the United Nations to craft a definition occurred in December 1999 when the General Assembly adopted by consensus the text of a draft International Convention for the Suppression of the Financing of Terrorism. It states that:

Criminal acts intended or calculated to provoke a state of terror in the general public, a group of persons or particular persons for political purposes are in any circumstances unjustifiable, whatever the considerations of a political, philosophical, ideological, racial, ethnic, religious, or other nature, that may be invoked to justify them.¹⁵⁶

With a new international impetus on the suppression of terrorism, this implicit definition could form the basis of a comprehensive international treaty.

Even with a new definition, a serious weakness with respect to the international law of terrorism will remain. The problem is that terrorism is considered a criminal act essentially outside the coverage of the laws of war. By their terms, the existing terrorism conventions do not generally apply to “situations of internal disturbances and tensions such as riots and isolated and sporadic acts of violence.”¹⁵⁷ The customary law of armed conflict and the Geneva Conventions apply only in times of war or armed conflict.¹⁵⁸ But terrorist activity will not be limited to ongoing conflicts in or near war zones. The events of September 11 have brought this point home, demonstrating that highly organized groups can strike remote civilian targets with no warning during peacetime. Small groups may operate with little or no centralized structure, and this can make apprehension and prosecution more difficult.

The peacetime regime for dealing with terrorism includes protection for diplomats and public officials, but not ordinary citizens. Although attacks against airplanes or ocean liners are covered, attacks or sabotage by means other than explosives on water or electric power plants are not. Defining terrorist acts as the peacetime equivalent of war crimes would cover most of the gaps, but there are dangers in this approach. By including terrorism as a war crime, terrorists could be immune from prosecution for common crimes, and might even be entitled to protection as prisoners of war.¹⁵⁹
7.2. Weakness in the Existing Law

The increasing importance and vulnerability of water facilities will combine to make them prime targets of terrorism in the new millennium. But the international legal regime concerning terrorism has a number of flaws. Political questions often play a major role in the decision to deal with a particular incident that can be defined as terrorism. States have disparate views on the subject, and will often refuse the request unless a treaty binds the two states. Even with a valid statute, a state may refuse to extradite an alleged terrorist because the offense is viewed as a political matter. In cases of terrorism, there have been attempts to avoid this problem, and the European Convention on the Suppression of Terrorism provides that assistance may not be refused on the sole ground that the offense was inspired by political motives. Recent proposals before the United Nations General Assembly have mentioned a comprehensive convention on terrorism that would essentially remove the political exception to the extradition of terrorists. But politics still play a prominent role in the process, and powerful countries like the United States can be expected to use military force as an option, particularly in dealing with matters of homeland defense.

International courts have limited utility in dealing with terrorism. There exists no “normative fabric to international law,” just bits and pieces of overlapping norms with significant gaps in coverage with respect to terrorism. The International Court of Justice (World Court) can hear only matters between states (nations), it has no criminal jurisdiction, and the International Criminal Court (ICC) is years away from effective operation. The ICC came into existence in July 2002, but without the support of the United States. Mary Robinson, the UN High Commissioner for Human Rights, has called the September 11 2001 attacks crimes against humanity. Her comments could be a positive step in ensuring that the ICC statute eventually covers large-scale terrorist acts. This would also help ensure that they are treated as universal crimes, and subject to trial in any state where the perpetrators are found.

The principle of “extradite or adjudicate” is the basis of many of the international conventions relating to terrorism. This obligates a nation that is a signatory to an extradition treaty to either extradite a perpetrator of an international crime to the jurisdiction of the requesting party, or to prosecute the suspect under its own jurisdiction. Under ideal conditions, this approach towards international criminal matters may be effective, but a number of practical obstacles exist. Some states have taken the position that their own citizens are not subject to extradition under any circumstances. The Yugoslav Constitution includes such a provision, and it was briefly used to justify the refusal of Yugoslavia to extradite former President Milosovic to the International Tribunal in The Hague. And the government of Afghanistan repeatedly refused to extradite Osama Bin Laden, widely believed to be responsible for a number of serious terrorist attacks against US targets. Even after an extensive military campaign in Afghanistan against Bin Laden and his terrorist network, at the time of writing his whereabouts are unknown.

Special jurisdiction courts can occasionally provide a forum to deal with terrorists. After years of negotiation and economic sanctions, Libya finally agreed to extradite two Libyan nationals accused of an aircraft bombing to a special Scottish court operating in the Netherlands. A specially convened international court met in the Netherlands and applied Scottish law. The court had no precedent, but was ultimately successful in holding a trial in which one individual was found guilty. This case may provide an example of the extraordinary length that the international community must go to seek accountability in alleged acts of terrorism. Only a small number of those who commit terrorist acts are brought to justice before courts, and terrorism often creates a cycle of violence that inflames the population and reduces the chance for peaceful resolution of conflict.
One of the fundamental objectives of criminal justice is to deter further violations. In dealing with modern terrorism, one question is how to deter individuals whose greatest honor is to die for a cause. To underestimate the will and capability of a few determined, well-trained, individuals is a mistake. If deterrence is not possible, direct action against the source of the terror may be the only alternative. Of course there are rules for an armed response. Military force must be proportionate and discriminate, with the object of avoiding innocent civilian casualties. The World Trade Center attacks were directed at civilians, and they clearly fall within the existing international definition of terrorism. Hostages were taken and airliners were used as weapons, all in violation of international treaties. But terrorist attacks on water facilities present another problem, since there is no clearly applicable treaty, and universal jurisdiction may be lacking. The failure of the international legal system to deal with the problem of terrorism tends to encourage unilateral action, particularly by the more powerful countries. Had there been an effective international legal regime for dealing with the individuals responsible for the September 11 attacks in the United States, the military campaign in Afghanistan might have been unnecessary.

7.3. Protection of Critical Water Infrastructure

A number of recent criminal or terrorist attacks have been directed at water facilities, including the dumping of chemicals into the Meuse River in France, the placing of a bomb in a water reservoir in South Africa, and the destruction of water pipes in the Israeli settlement of Yitzhar. On the international level there is little coordination of effort to protect critical water infrastructure, with the notable exception of the International Committee of the Red Cross (ICRC). But the work of the ICRC is focused on the protection of victims of armed conflict, and limited by the fact that terrorism is often viewed as a criminal act outside the scope of international humanitarian law.

The September 11 2001 attacks have drawn attention to the security of a wide range of facilities in the United States, including water supply and treatment infrastructure. There has been an awareness of the potential threat for some time. During the Second World War the FBI recognized that:

Water supply facilities offer a particularly vulnerable point of attack to the foreign agent, due to the strategic position they occupy in keeping the wheels of industry turning and in preserving the health and morale of the American populace.

In the United States, water infrastructure includes 75,000 dams and reservoirs, thousands of miles of pipes and aqueducts, about 16,000 publicly owned wastewater treatment facilities, and 168,000 public drinking water facilities. About 15 percent of the drinking water systems provide water services to 75 percent of the population of the United States, and these large systems may present the greatest vulnerability to terrorist attack. A successful attack would be likely to cause widespread panic and a loss of public confidence in water supply systems.

Water supply was one of eight critical infrastructure systems identified in President Clinton’s 1998 Presidential Decision Directive. The US Environmental Protection Agency was designated as the lead federal agency for liaison with the water supply sector. Programs to conduct vulnerability assessments are underway, and the EPA plans to host workshops for cities on counter-terrorism methods; US$1.8 million was designated for this purpose in fiscal year 2002. The Department of the Army is conducting research in the area of detection and treatment of various chemical agents. In the light of recent US experience with anthrax in the mail system, there are many uncertainties in dealing with a potential attack on the US water facilities.
Questions of detection, the nature of the response, and coordination of state and federal efforts are just a few of the issues.

The United States is looking at a number of policy options in dealing with terrorist threats to water infrastructure, including enhanced physical security, communication and coordination, and research. Actions to improve physical security raise concerns about the traditional freedom of access that Americans enjoy. For example, New York City closed its reservoirs indefinitely in September 2001 to all fishing, hiking, and boating, and blocked some roads. Authority is still decentralized, and the EPA does not have a mandate to require utilities to take specific actions.

There may be some lessons for the international system from recent U.S. experience. Improved coordination between states, with appropriate funding, can reduce the threat to water facilities around the globe. The United Nations could provide the necessary framework, based on a comprehensive legal regime.

7.4. Scenario

In conclusion, the following fictional account can serve as a catalyst for further discussion. In the year 2003, a previously unknown Kurdish terrorist organization based in Syria obtains a dangerous biological agent and inserts it into the Ankara, Turkey, city water supply. There are hundreds of civilian deaths and the perpetrators have escaped from Turkey. This scenario raises important questions relating to the protection of water facilities. Has there been a violation of international law? What crimes have been committed? If the suspects were apprehended in a West European country the following year, would they be subject to the jurisdiction of a domestic or international court outside Turkey? Would they probably be extradited to Turkey if that were requested?

8. CONCLUSIONS AND RECOMMENDATIONS

Consider the hypothetical scenario of a terrorist attack in Turkey. Although there would clearly be a violation of Turkish domestic law, finding a violation of international law is much less certain. The body of international law concerning terrorism is primarily concerned with crimes involving aircraft, the use of bombs, and hostage taking. Water facilities may be protected under certain provisions of international humanitarian law (IHL), but terrorist activities are generally considered criminal acts outside the scope of IHL. Without the existence of an “armed conflict” there are no clearly applicable international crimes.

If the suspects were apprehended in a West European country the following year, would they be subject to the jurisdiction of a domestic or international court outside Turkey? What about extradition to Turkey? Turkey could be expected to immediately seek extradition in order to try the offenders under its own law. In 1999, Turkey sought the extradition from Italy of Abdullah Ocalan to stand trial in Turkey for murder and terrorism. Italy refused the request, primarily because Ocalan was subject to the death penalty, and Italian law prohibited the extradition. It could be expected that Turkey would seek the death penalty for an alleged terrorist who killed hundreds of innocent civilians. It would be unlikely that a West European country would extradite him and, as in the case of Ocalan, the terrorist could be freed.

There is currently no accepted international definition of terrorism that would apply to the hypothetical attack on the Ankara water supply. The Statute of the International Criminal Court (ICC) may eventually include such a definition, but the ICC is years away from operation. A terrorist attack on a water facility may go unpunished, despite the fact that there would be a major destructive impact on the civilian population.
8.1. Does the Existing Law Provide an Adequate Degree of Protection?

It can be said that an attack on a water facility or water delivery system could occur in the context of one of three basic conditions under international law. The first is the classic wartime situation, which is subject to the law of war, and the definition of war crime. The second is the context of internal (non-international) armed conflict; we have seen from the decisions of the ICTY that essentially the same rules apply. Certain crimes may require the existence of an international armed conflict, but there would certainly be other serious violations of international humanitarian law. The third situation would be terrorist activity, short-lived insurrection, or criminal activity. Nations can be expected use their domestic law to prosecute a terrorist attack on a water facility, but the suspects are likely to flee the country soon after committing the act. The apprehension and return of the suspects to the state in which the crime occurred would be uncertain. Where the incident occurs in international waters there is even less certainty that the perpetrators would be brought to justice.

This report has identified a number of deficiencies with respect to international law and the protection of water facilities.

1. Terrorist acts are increasingly becoming the choice of groups unable to directly challenge world militaries. The term “armed conflict” does not include isolated attacks on water installations from terrorist groups. International humanitarian law was not designed to cover terrorism or short-term criminal activity. Coverage under the Statute of the International Criminal Court (ICC) is problematic, even if that court begins to function effectively. Drafting and agreeing upon a comprehensive definition of terrorism has eluded the participants in all the previous meetings of the ICC committees.

2. The principal conventions and treaties of international humanitarian law apply to water facilities only indirectly. There is a lack of clarity in the text, and principles of proportionality and military necessity could be used to justify an attack on a water facility even when there is substantial harm to the civilian population.

3. The problems in identifying law in its customary form, and in determining the legality of a particular act, are made more difficult by the aspirational nature of many conventions and resolutions. But these aspirational documents, like the Stockholm declaration, serve an important function in the development of international humanitarian law. Parties who are now unable to accept a particular formulation as law are given the time to make the necessary political changes to accept the law in the future. Perhaps more important, public perception of the law, or what it should be, may be a factor for positive change when public support is necessary for the conduct of the conflict.

4. Dissemination issues may exist. Belligerents are either unaware of the provisions of international humanitarian law, or they choose to disregard them. There is a general lack of understanding of the rules, and how they apply to water facilities and mobile delivery systems. The results can be seen in the recent conflicts described earlier in this article.

5. Enforcement mechanisms may be lacking. It can be fairly stated that impunity is the rule for those responsible for attacks against water facilities and related infrastructure. The UN Center for International Crime Prevention has been under funded and powerless, and INTERPOL has been only marginally useful. Enforcement mechanisms may be lacking. It can be fairly stated that impunity is the rule for those responsible for attacks against water facilities and related infrastructure. The UN Center for International Crime Prevention has been under funded and powerless, and INTERPOL has been only marginally useful. No effective international criminal court exists, and domestic legal systems are often unavailable as a result of the same conflict that results in damage to water facilities. International crime-fighting institutions have been historically ineffective.
The above deficiencies are aggravated by a number of practical problems. Armed conflicts are shifting to urban areas as more and more people migrate from the countryside. Greater portions of the world populations are now vulnerable to a loss or destruction of water supply. As water becomes ever scarcer, urban water systems and mobile water delivery systems may become attractive targets, both during armed conflict and for terrorist groups. Finally, the interconnected nature of water facilities with infrastructure such as electrical systems and bridges makes them highly vulnerable to disruption during times of armed conflict.

The underlying question to be addressed in this report is this: Does the international community need new law, or is it matter of clarifying and enforcing existing law?

There may be some answers to this question in the general call for environmental protection following the 1991 Gulf War. At that time there was reawakened concern about the environmental effects of war. Before and during the war there were many warnings, including those from the ICRC that violations of international humanitarian law were occurring. In January 1991, Iraqi personnel pumped oil from installations in Kuwait and from tankers into the waters of the Persian Gulf, causing large oil slicks and damage to marshlands, wildlife, fishing, desalination plants, and offshore oil operations. During February 21–28 1991 they systematically destroyed Kuwaiti oil installations, setting 613 wells on fire and leaving 175 others gushing or damaged, causing a pall of smoke across the country and pollution of large areas of land. After the war, extensive action had to be taken in Kuwait to extinguish the fires and clean up oil-damaged environments.

In the aftermath of the war there was considerable interest in the possibilities of using international law to discourage acts of environmental degradation. In June–December 1991, international conferences of experts held in London, Ottawa, and Munich discussed whether international law governing armed conflict needed to be further developed, or alternatively whether the existing law needed to be more fully clarified, ratified, and implemented. On December 9 1991 the UN General Assembly adopted Decision 46/417 requesting the Secretary-General to report on activities undertaken by the ICRC regarding environmental aspects of war.

In April 1992 the ICRC convened a group of experts from governments, the UN, non-governmental organizations and the academic community “(1) to define the content of existing law; (2) to identify the main problems involved in implementing this law; (3) to identify any gaps in existing law; and (4) to determine what should now be done in this area.” During this period, a number of commentators reviewed the same questions, many concluded that violations of international law during the 1991 Gulf War should not be attributed to an inadequacy of law, but rather to an enforcement regime not fully implemented by the Member States of the United Nations.\(^\text{176}\)

The group of experts concluded that the law was in need of further interpretation and clarification, and the ICRC indicated its willingness to work on model guidelines for military manuals, an approach approved by the UN General Assembly in November 1992. The ICRC/UNGA Guidelines were issued in 1994.\(^\text{177}\) They are based on customary international law and on a wide range of provisions from a number of treaties concerning the laws of war. The primary reason for this approach was that, both during and after the 1991 Gulf War, there had been a widely held view that environmental protection was based primarily on the 1976 ENMOD Convention and on Articles 35(3) and 55 of 1977 Geneva Protocol I. These were the only laws of war treaty provisions that mentioned the words “environment” or “environmental.” This was a narrow view that failed to consider the full scope of international humanitarian law. ENMOD and Protocol I had not been formally in force in the 1991 Gulf War nor in certain other wars (including the Iran–Iraq War of 1980–8), as several major belligerents were not parties; the specific environmental provisions of these
agreements only prohibit destruction that is widespread, long-lasting, and/or severe, raising difficult questions of legal interpretation and scientific evaluation. The Guidelines, therefore, rely on other treaties, including the 1907 Hague Regulations, the 1949 Geneva Convention IV, and the 1980 UN Convention on certain conventional weapons. They also consider other parts of the 1977 Geneva Protocol I, not only the two articles that mention the environment. Most of the cited treaty articles do not contain the word “environment” at all, but use more general principles of law.

The ICRC/UNGA Guidelines raise, in paragraph 5, the question of the extent to which general international agreements on the environment, not constituting part of the laws of war, may continue to be applicable in armed conflict. The Guidelines take the position that these agreements, as well as customary law, may continue to be applicable as long as they are not inconsistent with the law of armed conflict. In paragraph 6, and in subsequent references to the 1977 Geneva Protocol II, they address the issue of protection of the environment in non-international armed conflict. The Guidelines urge that the same rules should apply in both situations. The overall approach of the Guidelines could provide a model for a similar document relating to the protection of water facilities under international law.

Finally, the public relations and political value of the law should not be overlooked. Adversaries who are able to take advantage of mass media frequently depict military action against them as a violation of some legal or moral standard, thereby downplaying their own action. This can be a powerful means of generating domestic or international support. After the recent incident in which a US reconnaissance plane was forced to land in China, the Chinese government stated that the aircraft had violated international law and Chinese sovereignty. This assertion was made without mention that a Chinese pilot may have caused the accident and that it occurred in international airspace. The media plays an important role in international affairs, and the public perception that an event is “unlawful” can play a major role in public opposition or support for government policy.

In conclusion, there is no need for a new treaty or protocol to provide protection for water facilities under international law. However, there should be concerted efforts to clarify the existing law, provide coverage for acts of terrorism, disseminate the law, and provide effective enforcement mechanisms.

8.2. Recommendations

This article has identified two general areas in which water facilities and water transport systems need a greater degree of protection. The first is the protection afforded under international humanitarian law during times of armed conflict, and the second is protection from terrorist attack.

Even without a new treaty or convention that formally establishes new law concerning the protection of water facilities, much can be done to move in that direction. The United Nations General Assembly, in Resolution 55/196, proclaimed the year 2003 as the International Year of Freshwater. The resolution, adopted on December 20, 2000, was initiated by the Government of Tajikistan and supported by 148 other countries. It encourages governments, the United Nations system, and all other actors to take advantage of the Year to increase awareness of the importance of sustainable freshwater use, management, and protection. This will provide a unique opportunity to raise the issue of legal protection to the highest level.

The following actions should be initiated, in cooperation with the International Committee of the Red Cross.

THIRD WORLD WATER FORUM

Concerned states should use the Third Water Forum in Kyoto, in March 2003, as a means to clarify and implement applicable provisions of international humanitarian
law. This could help extend legal protection to a wide range of water facilities and persons not clearly covered under existing law. The Water Forum should issue a declaration that calls on all belligerents to abstain from attacking water treatment plants and distribution systems for civilian use and the staff engaged in repairing and maintaining them. International law supports such a declaration, and the legal basis should be clearly stated in the document. Special provisions should be included for mobile water delivery systems that will become more common in the years ahead. The challenge of terrorism against water facilities must be addressed, and creative measures developed to protect water infrastructure. The United Nations has a number of projects related to the international response to terrorism, and this would provide an additional means to coordinate efforts.

DEVELOP NEW STANDARDS FOR THE PROTECTION OF WATER FACILITIES

Aspirational documents like the Rio and Stockholm declarations serve an important function in the development of international humanitarian law. Parties who are now unable to accept a particular formulation as law are given the time to make the necessary political changes to accept the law in the future. Perhaps more important, public perception of the law, or what it should be, may be a factor for positive change when public support is necessary for the continuation of conflict. Development of new standards for the protection of water facilities would serve the same purpose. The World Water Forum should adopt such a declaration designed to improve the protection of water facilities and the human population that relies on them.

LIMIT THE DAMAGE OF EMBARGOES

In the Middle East, mobile water delivery systems will likely become a critical factor in the years ahead, and could be subject to the negative effects of embargoes. The Water Forum should draw the attention of the international community to the dire effects for civilians of wide-ranging embargoes imposed for extended periods. It should call on the international community to take these effects into account when formulating new law and policies that cover the delivery of water. Lessons can be learned from the international experience in Iraq, and embargoes should be tailored to avoid a negative impact on water infrastructure and the civilian population.

DEVELOP GUIDELINES FOR MILITARY MANUALS AND INSTRUCTIONS ON THE PROTECTION OF WATER FACILITIES IN TIMES OF ARMED CONFLICT

With the support of the ICRC and the UN General Assembly, guidelines for the protection of water facilities should be developed. The objective would be to promote an active interest in, and concern for, the protection of water facilities during times of armed conflict. It should be noted that this type of document would be of use only for organized military forces that make some attempt to comply with international humanitarian law. Terrorist organizations present another set of challenges. A draft set of guidelines is attached; the author welcomes comments on this or any other part of this report.

SUPPORT A UNITED NATIONS GENERAL ASSEMBLY RESOLUTION

Resolutions of the General Assembly can be an important tool in establishing norms that advance the standards of international humanitarian law. State participants in the Water Forum should seek a resolution that could be a basis for a rule of customary international law. Although the initial resolution would be purely aspirational, this can lead to the development of conventional and customary international law. The Secretary-General’s report of August 19, 1994 to the General Assembly referred to the “Guidelines” for Environmental Protection discussed above, and could be used as a model for a resolution concerning the protection of water facilities. It was stated in
paragraph 11 of Resolution 49/50 (on the UN Decade of International Law) of December 9 1994, that the General Assembly:

Invites all States to disseminate widely the revised guidelines for military manuals and instructions on the protection of the environment in times of armed conflict received from the International Committee of the Red Cross and to give due consideration to the possibility of incorporating them into their military manuals and other instructions addressed to their military personnel.

SUPPORT THE INTERNATIONAL CRIMINAL COURT

State participants to the Water Forum should work to support the International Criminal Court. Although the court began to function in July 2002, it will be years before it can operate effectively. Provisions of the ICC Statute should be expanded and clarified to cover specifically attacks on water installations and mobile delivery systems. This will make the existing provisions concerning environmental damage more effective. Potential gaps in coverage should be eliminated, to reflect an ICC statute that clearly includes terrorism and major attacks on water facilities during peacetime. Large-scale terrorist attacks should be formally designated as crimes against humanity.

PUBLICIZE THE NATURE OF THE PROBLEM

The Water Forum should specifically mention the duty of all states to make known the existing legal provisions that protect water facilities and staff working in them. As part of the UNESCO World Water Development Report, particular attention should be directed to the protection of water facilities during armed conflict, and from terrorist attack.179 The subject should be clearly listed as a “critical problem” under the Report. In addition, the International Water Academy, in cooperation with the International Committee of the Red Cross, should undertake a major program to spread knowledge of these provisions and to emphasize the importance of protecting water in time of conflict, and from terrorist attack. Part of this program should include dissemination of the “Guidelines for Military Manuals” mentioned as part of these recommendations. Two organizations need to be mentioned at this time:

THE INTERNATIONAL WATER ACADEMY (TIWA)

This is based in Oslo, Norway and was founded in 1998. Today it has more than 150 members representing the world’s five continents.180 TIWA is a non-profit foundation with the vision to foster the existence of a community of experts with the purpose of aiding in the management and use of water for the benefit of all and preventing conflicts over water management. TIWA has a unique perspective on the protection of water facilities, and its members can be influential in developing new policies and programs. TIWA should be involved in any program to clarify and implement international law in this field.

THE ICRC

This is an impartial and independent organization whose mission includes the protection of water resources under international humanitarian law. The ICRC produces a number of valuable publications, such as Forum: War and Water, cited earlier in this report. The ICRC Water and Habitat Unit should be directly involved in the coordination of efforts related to the protection of water facilities.

In conclusion, a new international treaty designed to protect water facilities is unnecessary. By taking the action recommended in this article, existing international legal obligations and state practice can be clarified and strengthened. This will promote an active interest in, and concern for, the protection of water facilities by the
armed forces of all states. Declarations of new standards and promulgation of guidelines, though not legally binding, could achieve many of the same objectives. By placing increased emphasis on the international law of terrorism, we can hope to increase the prospects that those who attack water facilities will be brought to justice, and further acts of terrorism will be deterred. Finally, support for the International Criminal Court will improve the climate of accountability and enforcement of international law. These actions will contribute to a more stable and prosperous world, where citizens will have safe and reliable water supplies.
I. Preliminary Remarks

1. The present Guidelines are drawn from existing international legal obligations and from state practice concerning the protection of water facilities against the effects of armed conflict. They have been compiled to promote an active interest in, and concern for, the protection of water facilities by the armed forces of all states.

2. Fresh water is an essential human need, and the facilities that deliver water to the people are increasingly at risk during periods of armed conflict. Domestic legislation and other measures taken at the national level are essential means of ensuring that international law protecting water facilities in times of armed conflict is put into practice.

3. To the extent that the Guidelines are the expression of international customary law or of treaty law binding a particular state, they must be included in military manuals and instructions on the laws of war. Where they reflect national policy, it is suggested that they be included in such documents.

4. The term “water facilities” includes, but is not limited to, dams, dykes, water treatment stations, production facilities, pumping stations, storage reservoirs, water distribution networks, and all associated facilities that deliver water to humans, as well as mobile units such as water trucks, ships, and barges that deliver water.

5. These Guidelines are intended to supplement the Guidelines for Military Manuals and Instructions on the Protection of The Environment in Times of Armed Conflict issued as UN General Assembly document A/49/323 dated August 1994.

II. General Principles of International Law

1. In addition to the specific rules set out below, the general principles of international law applicable in armed conflict – such as the principle of distinction and the principle of proportionality – provide protection to water facilities. In particular, only military objectives may be attacked and no methods or means of warfare that cause excessive damage shall be employed. Precautions shall be taken in military operations as required by international law.

2. International environmental agreements and relevant rules of customary law may continue to be applicable in times of armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict. Obligations relating to the protection of water facilities towards states not party to an armed conflict (for example, neighboring states) and in relation to areas beyond the limits of national jurisdiction (for example, the High Seas) are not affected by the existence of the armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict.

3. Parties to a non-international armed conflict are encouraged to apply the same rules that provide protection to water facilities as those which prevail in international armed conflict and, accordingly, states are urged to incorporate such rules in their military manuals and instructions on the laws of war in a way that does not discriminate on the basis of how the conflict is characterized.
4. In cases not covered by rules of international agreements, water facilities remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity, and from the dictates of public conscience.

H.IV preamble, G.P.I Art. 1.2, G.P. II preamble

III. Specific Rules on the Protection Water Facilities

1. Destruction of water facilities not justified by military necessity violates international humanitarian law. Under certain circumstances, such destruction is punishable as a grave breach of international humanitarian law.

H.IVR Art. 23(g), G.IV Arts. 53 and 147, GTI Arts. 35.3 and 55

2. The general prohibition to destroy civilian objects, unless such destruction is justified by military necessity, also protects water facilities.

H.IVR Art. 23(g), G.IV Art. 53, GTI Art. 52, GTII Art. 14

3. In particular, states should take all measures required by international law to avoid:
   a. Attacks on objects indispensable to the survival of the civilian population, including dams, dykes, water treatment stations, production facilities, pumping stations, storage reservoirs, water distribution networks, and all associated facilities that deliver water to humans, as well as mobile units such as water trucks, ships, and barges that deliver water.

G.P. I Art. 54, G.P. II Art. 14

b. Attacks on works or installations containing dangerous forces, namely dams, dykes, and nuclear electrical generating stations, even where those objects are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population and as long as such works or installations are entitled to special protection under Protocol I additional to the Geneva Conventions.

G.P. I Art. 56, G.P II Art. 15

4. Care shall be taken in warfare to protect and preserve the natural environment. It is prohibited to employ methods or means of warfare that are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment and thereby prejudice the health or survival of the population.

G.P.I Arts. 35.3 and 55

5. The military or any other hostile use of environmental modification techniques having widespread, long-lasting, or severe effects as the means of destruction, damage, or injury to any other state party is prohibited. The term “environmental modification techniques” refers to any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition, or structure of the Earth, including its biota, lithosphere, hydrosphere, and atmosphere, or of outer space.

ENMOD Arts. I and II

6. Attacks against water facilities or the natural environment by way of reprisals are prohibited for states party to Protocol I additional to the Geneva Conventions.

G.P. I Art. 55.2

7. States are urged to enter into further agreements providing additional protection to water facilities in times of armed conflict.

G.P. I Art. 56.6

8. Works or installations containing dangerous forces, and water facilities shall be clearly marked and identified, in accordance with applicable international rules. Parties to an armed conflict are encouraged to mark and identify also works or
installations where hazardous activities are being carried out, as well as water facilities that are essential to human health or the environment.

For example, G.P. I Art. 56.7, H.CP. Art. 6

IV. Implementation and Dissemination

1. States shall respect and ensure respect for the obligations under international law applicable in armed conflict, including the rules providing protection of water facilities in times of armed conflict.
   G. IV Art. 1, G.P. I Art. 1.1

2. States shall disseminate these rules and make them known as widely as possible in their respective countries and include them in their programs of military and civil instruction.

3. In the study, development, acquisition, or adoption of a new weapon, means, or method of warfare, states are under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by applicable rules of international law, including those providing protection to water facilities in times of armed conflict.
   G.P.I Art. 36

4. In the event of armed conflict, parties to such a conflict are encouraged to facilitate and protect the work of impartial organizations contributing to prevent or repair damage to water facilities, pursuant to special agreements between the parties concerned. Such work should be performed with due regard to the security interests of the parties concerned.
   For example, G.IV Art. 63.2, G.P. I Arts 61–67

5. In the event of breaches of international humanitarian law protecting water facilities, measures shall be taken to stop any such violation and to prevent further breaches. Military commanders are required to prevent, and where necessary, to suppress and report to competent authorities breaches of these rules. In serious cases, offenders shall be brought to justice.
   G.IV Arts. 146 and 147, G.P. I Arts 86 and 87

Sources of International Obligations Concerning the Protection of Water Facilities In Times of Armed Conflict

1. General principles of law and international customary law.
2. International conventions.

Main International Treaties with Rules on the Protection of Water Facilities in Times of Armed Conflict

- Hague Convention (IV) respecting the Laws and Customs of War on Land, of 1907 (H.IV)
- Hague Regulations Respecting the Laws and Customs of War on Land (H. IV. R)
- Geneva Convention relative to the Protection of Civilian Persons in Time of War, of 1949 (GC. IV)
- Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, of 1976 (ENMOD)
- Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 1977 (G.P.I)
- Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), of 1977 (G.P.II)
• Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, of 1980 (CW), with:
  • Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices (CW.P.II)
  • Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (CW.P.III)
NOTES

9. For additional information, see the University of Toronto's web site at http://www.library.utoronto.ca/pcs/eps.htm (Aug. 9 2001).
14. Ibid. p. 84.
16. Ibid. p. 58.
21. The author, F.M. Lorenz, served as a United Nations legal advisor in Kosovo during the first five months of the year 2000, and had an opportunity to observe the environmental damage and lack of infrastructure first hand.
27. The ICRC has been mandated by the international community, via the Geneva Conventions of 1949 and the two Additional Protocols of 1977, to monitor the conformity of parties in conflict to international humanitarian law. For more information, see Statutes of the International Committee of the Red Cross, http://www.icrc.org/icrceng.nsf/ (last modified July 20 1998).
30. 1868 St. Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, December 11 1868; reprinted in Laws of War (supra, note 26), p. 54 [hereinafter St. Petersburg Declaration].
32. Ibid. art 23(g).
38. Protocol I (supra, note 28), arts. 35(1), 35(2).
39. Ibid. art. 35(3).
40. Ibid. art. 55.
42. Ibid. Understanding Relating to Article, p. 407.
44. Ibid. p. 19.
45. See Laws of War (supra, note 26), p. 408.
46. ENMOD (supra, note 41), art. 1(1).
47. Protocol II (supra, note 28), pmbl.
48. Ibid. art. 1(2).
49. 1907 Hague Convention No. IV (supra, note 31), pmbl.
52. ICTY Report (supra, note 20).
54. Kalshoven (supra, note 50), p. 36.
55. ICTY Report (supra, note 20), ¶ 48.
56. Commander's Handbook (supra, note 37), ¶ 5.2.
60. Ibid. at 76 n.8.
61. Instructions for the Government of Armies of the United States in the Field, Apr. 24, 1863, General Orders No. 100, art. 16 (referred to as the Lieber Instructions), reprinted in Dietrich Schindler and Jiri Toman, The Laws of Armed Conflict, p. 6 (1988) [hereinafter Laws of Armed Conflict]. See also The Brussels Declaration of 1874, art. 13(a), reprinted in Laws of Armed Conflict (supra), p. 29; The
Oxford Manual, art. 8(a), reprinted in Laws of Armed Conflict (supra), p. 38 (the Brussels Declaration and the Oxford Manual both contain the same rule as the Lieber Instructions).

62. 1907 Hague Convention No. IV (supra, note 31), art. 23(a).


64. Zemmali (supra, note 3), p. 76; Schmitt (supra, note 36), p. 64; Schwabach (supra, note 19), at 124; But see Low and Hodgkinson (supra, note 33), p. 438–39.

65. 1907 Hague Convention No. IV (supra, note 31), art. 23(g).

66. Charter of the International Military Tribunal, Aug. 8, 1945, art. 6(b), reprinted in Laws of War (supra, note 26), p. 177, and Geneva Convention IV (supra, note 35), art. 53.

67. Geneva Convention IV (supra, note 35), art. 147.

68. On private property, see 1907 Hague Convention No. IV (supra, note 31), art. 46. On pillage see 1907 Hague Convention No. IV arts. 28, 47; also Geneva Convention IV (supra, note 35), art. 33.

69. Schmitt (supra, note 36), at 64.


71. Protocol I (supra, note 28), art. 54(2).

72. Ibid. art. 54(2).

73. Ibid. art. 54(2).

74. Ibid. art. 54(2).


77. Protocol I (supra, note 28), art. 54(2), and art. 54(3)(b).

78. ICTY Report (supra, note 20), § V.

79. Protocol I (supra, note 28), art. 54(3)(a), and art. 54(3)(b).

80. Protocol I (supra, note 28), art. 54(4).

81. Ibid. art. 54(5).


84. Zemmali (supra, note 3), p. 73.


89. Protocol I (supra, note 28), art. 56(1).

90. Ibid. art. 56(2)(a).


93. Ibid. at 785.


96. St. Petersburg Declaration (supra, note 30), p. 54; 1907 Hague Convention No. IV (supra, note 31), art. 22.
100. ICJ Statute (supra, note 25), art. 38(1).
102. World Charter for Nature (supra, note 58), princ. 21(d).
103. Ibid. princ. 5.
104. Rio Declaration (supra, note 82), princ. 2.
105. Ibid. princ. 17 and princ. 19
106. Ibid. princ. 16.
109. Ibid. art. 8(2)(b)(iv).
110. Bassiouni (supra, note 107), at 412.
111. See Rome Statute (supra, note 108), Annex I, Resolution E.
116. Tadic (supra, note 114), p. 561 (citing the Appeals Chamber Decision, ¶ 70).
118. For the Appeal Chamber's decision, see Ibid. ¶ 623.
125. Ibid. at 138.
129. Walker (supra, note 124), p. 188
133. Ibid. ¶ 40 at 582.
134. Ibid. ¶ 41 at 583.
135. Ibid. ¶ 67 at 588.
136. Geneva Convention II (supra, note 35), art. 18(1).
137. Tadic (supra, note 114), ¶ 561.
141. For aircraft, see Destruction of Aircraft or Aircraft Facilities Act, 18 U.SC § 32 (1994). For hostage taking, see Hostage Taking Act, 18 USC § 1203 (1994).
148. Edward Walker, Assistant Secretary of State for Near Eastern Affairs, Interview by BBC News (Apr. 19 2001), (Stating “[o]ur objective is to do away with the sanctions regime and replace it with controls over military items and weapons of mass destruction.”).
149. Neuffer, E. 2002. UN Security Council OK’s Easing of Sanctions on Iraq. *Boston Globe,* May 15, p. A9. (Secretary of State Colin L. Powell issued a statement hailing the vote. “This significant step will improve the Iraqi regime’s ability to meet the needs of its people,” he said. But Powell warned that Hussein’s regime still represents “a threat to its own people, its region, and the international community.”)
150. Under the new sanctions, only items on a 300-page “dual use” list approved by the council are reviewed by the UN committee. The committee must evaluate purchases of those items, which could be used for civilian or military purposes, within 30 days.
165. See supra, Part IV.B. and Rome Statute (supra, note 108), art. 5.
170. See: supra, notes 2, 3, and 6.

171. Sieff, M. 2002. United Press International, Jan. 30. (Quoting President Bush. “We have found diagrams of American nuclear power plants and public water facilities, detailed instructions for making chemical weapons, surveillance maps of American cities and thorough descriptions of landmarks in America and throughout the world.” The president celebrated the dramatic US success in toppling the Taliban government in Afghanistan and destroying the al Qaida terror infrastructure there. But he then warned that “thousands of trained killers, schooled in the methods of murder, often supported by outlaw regimes, are now spread throughout the world like ticking time bombs set to go off without warning.”)


173. Ibid. at 3.


175. See Terrorism (supra, note 158), p. 93.


178. See http://www.un.org

179. See http://www.thewateracademy.org/index_main.html.

180. The ICRC website has a number of useful sources, including the report of a recent symposium, “The Law of War in the Age of Terror” held at the London School of Economics in May, 2002. For more information, see http://www.icrc.org/eng.

**Index entries:** water as a cause of war, water as a means of war, conflict in Bosnia, conflict in Somalia, conflict in the Former Yugoslavia, conflict in Afghanistan, conflict in Israel/West Bank, protection of water facilities under international law, conduct of hostilities, international law, international conventions, The Law of the Hague, The Law of Geneva, Geneva Conventions, customary international law, international humanitarian law, prohibition on the use of poison, prohibition on the destruction of property, prohibition on the destruction of objects indispensable to the survival of the civilian population, prohibition on attacking works and installations containing dangerous forces, emerging principles of international humanitarian law, International Court of Justice, Stockholm Declaration on the Human Environment, Rio de Janeiro Conference on Environment and Development, international criminal law, accountability mechanisms, international criminal tribunals, International Criminal Court, mobile water delivery systems, international law of naval warfare, Arab-Israeli conflict, war between Iran and Iraq, merchant shipping, water tankers, embargoes, Iraq, sanctions, terrorism, critical water infrastructure, Draft Guidelines for Military Manuals and Instructions on the Protection of Water Facilities in Times of Armed Conflict, law of war, terrorism against water facilities, Protocols to the Geneva Conventions, protection of civilian population, humanity, discrimination, proportionality, military necessity, poisons
Constitution of UNESCO (excerpt)
London, 16 November 1945

The Governments of the States Parties to this Constitution on behalf of their peoples declare:

That since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed;

That ignorance of each other’s ways and lives has been a common cause, throughout the history of mankind, of that suspicion and mistrust between the peoples of the world through which their differences have all too often broken into war;

That the great and terrible war which has now ended was a war made possible by the denial of the democratic principles of the dignity, equality and mutual respect of men, and by the propagation, in their place, through ignorance and prejudice, of the doctrine of the inequality of men and races;

That the wide diffusion of culture, and the education of humanity for justice and liberty and peace are indispensable to the dignity of man and constitute a sacred duty which all the nations must fulfil in a spirit of mutual assistance and concern;

That a peace based exclusively upon the political and economic arrangements of governments would not be a peace which could secure the unanimous, lasting and sincere support of the peoples of the world, and that the peace must therefore be founded, if it is not to fail, upon the Intellectual and moral solidarity of mankind...