

# Water Conflict Chronology

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The full Pacific Institute Water Conflict Chronology, updated for 2010–2012, appears below. A summary of recent events is provided in Water Brief 3 in this volume. As noted in volume 7 of *The World's Water*, a detailed, interactive online database now provides integrated Google Maps and filters to permit readers and researchers to view entries filtered by time period, location, and subject. It also includes a separate searchable bibliography.

The Water Conflict Chronology has appeared in every volume of *The World's Water* since 1998. It continues to be one of the most popular features of this report, and we continue to seek out and include additions sent by readers and researchers around the world. The chronology is increasingly being used by media and academics, and in 2013 it was cited by Fareed Zakaria (2013) of CNN.

The current categories or types of conflicts include the following:

*Military tool* (state actors): water resources, or water systems themselves, are used by a nation or state as a weapon during a military action.

*Military target* (state actors): water resources or water systems are targets of military actions by nations or states.

*Terrorism or domestic violence, including cyberterrorism* (nonstate actors): water resources or water systems are the targets or tools of violence or coercion by nonstate actors. A distinction is drawn between environmental terrorism and ecoterrorism (see Gleick 2006).

*Development disputes* (state and nonstate actors): water resources or water systems are a major source of contention and dispute in the context of economic and social development.

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Date	Parties Involved	Basis of Conflict	Violent or in Violent		Description	Sources
			Context?	Context?		
3000 BC	Ea, Noah	Religious account	No	Threat	Ancient Sumerian legend recounts the deeds of the deity Ea, who punished humanity for its sins by inflicting the earth with a six-day storm. The Sumerian myth parallels the biblical account of Noah and the deluge, although some details differ.	Hatami and Gleick (1994)
2500 BC	Lagash, Umma	Military tool	Yes		The dispute over the "Gu'edena" (edge of paradise) region begins. Urlama, King of Lagash from 2450 to 2400 BC, diverts water from this region to boundary canals, drying up boundary ditches to deprive Umma of water. His son Il cuts off the water supply to Girsu, a city in Umma.	Hatami and Gleick (1994)
1790 BC	Hammurabi	Development dispute	No		The Code of Hammurabi for the State of Sumer lists several laws pertaining to irrigation that address negligence of irrigation systems and water theft.	Hatami and Gleick (1994)
1720-1684 BC	Abi-Eshuh, Iluma-Ilum	Military tool	Yes		A grandson of Hammurabi, Abish or Abi-Eshuh, dams the Tigris to prevent the retreat of rebels led by Iluma-Ilum, who declared the independence of Babylon. This failed attempt marks the decline of the Sumerians, who had reached their apex under Hammurabi.	Hatami and Gleick (1994)
circa 1300 BC	Sisera, Barak, God	Religious account; Military tool	Yes		The Old Testament gives an account of the defeat of Sisera and his "nine hundred chariots of iron" by the unmounted army of Barak on the fabled Plains of Esdraelon. God sends heavy rainfall in the mountains, and the Kishon River overflows the plain and immobilizes or destroys Sisera's technologically superior forces ("... the earth trembled, and the heavens dropped, and the clouds also dropped water," Judges 5:4; "... The river of Kishon swept them away, that ancient river, the river Kishon," Judges 5:21).	Scofield (1967)
1200 BC	Moses, Egypt	Military tool; Religious account	Yes		When Moses and the retreating Jews find themselves trapped between the Pharaoh's army and the Red Sea, Moses miraculously parts the waters of the Red Sea, allowing his followers to escape. The waters close behind them and cut off the Egyptians.	Hatami and Gleick (1994)
720-705 BC	Assyria, Armenia	Military tool	Yes		After a successful campaign against the Haldians of Armenia, Sargon II of Assyria destroys their intricate irrigation network and floods their land.	Hatami and Gleick (1994)

705–682 BC	Sennacherib, Babylon	Military tool; Military target	Yes	In quelling rebellious Assyrians in 695 BC, Sennacherib razes Babylon and diverts one of the principal irrigation canals so that its waters wash over the ruins.	Hatami and Gleick (1994)
701 BC	Israel (Judah), Assyria	Military tool; Military maneuvers	Yes	When King Hezekiah of Judah sees that Sennacherib of Assyria is coming in war, he has springs and a brook outside Jerusalem stopped to keep water from the Assyrians. (“So there was gathered much people together, who stopped all the fountains, and the brook that ran through the midst of the land, saying, Why should the kings of Assyria come, and find much water?,” 2 Chronicles 32:1–4).	Scotfield (1967)
681–699 BC	Assyria, Tyre	Military tool; Religious account	Yes	Esarhaddon, an Assyrian, refers to an earlier period when gods, angered by insolent mortals, created destructive floods. According to inscriptions recorded during his reign, Esarhaddon besieges Tyre, cutting off food and water.	Hatami and Gleick (1994)
669–626 BC	Assyria, Arabia, Elam	Military tool; Military target	Yes	Assurbanipal’s inscriptions also refer to a siege against Tyre, although scholars attribute it to Esarhaddon. In campaigns against both Arabia and Elam in 645 BC, Assurbanipal, son of Esarhaddon, dries up wells to deprive Elamite troops. He also guards wells from Arabian fugitives in an earlier Arabian war. On his return from victorious battle against Elam, Assurbanipal floods the city of Sapihel, an ally of Elam. According to inscriptions, he dams the Ulai River with the bodies of dead Elamite soldiers and deprives dead Elamite kings of their food and water offerings.	Hatami and Gleick (1994)
612 BC	Egypt, Persia, Babylon, Assyria	Military tool	Yes	A coalition of Egyptian, Median (Persian), and Babylonian forces attacks and destroys Nineveh, the capital of Assyria. Nebuchadnezzar’s father, Nebopolassar, leads the Babylonians. The converging armies divert the Khosr River to create a flood, which allows them to elevate their siege engines on rafts.	Hatami and Gleick (1994)
605–562 BC	Babylon	Military tool	No	Nebuchadnezzar builds immense walls around Babylon, using the Euphrates and canals as defensive moats surrounding the inner castle.	Hatami and Gleick (1994); Drower (1954)
6th century BC	Assyria	Military target; Military tool	Yes	Assyrians poison the wells of their enemies with rye ergot.	Eitzen and Takafuji (1997)
590–600 BC	Cirrh, Delphi	Military tool	Yes	Athenian legislator Solon reportedly has roots of <i>Hellesborus</i> thrown into a small river or aqueduct leading from the Pleistrus River to Cirrha during a siege of this city. The enemy forces become violently ill and are defeated as a result. Some accounts have Solon building a dam across the Plesitus River, cutting off the city’s water supply. Such practices were widespread.	Absolute Astronomy (2006)

## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Yes	No		
558–528 BC	Babylon	Military tool	Yes		On his way from Sardis to defeat Nabonidus at Babylon, Cyrus faces a powerful tributary of the Tigris, probably the Diyalah. According to Herodotus's account, the river drowns his royal white horse and presents a formidable obstacle to his march. Cyrus, angered by the "insolence" of the river, halts his army and orders them to cut 360 canals to divert the river's flow. Other historians argue that Cyrus needed the water to maintain his troops on their southward journey, while another asserts that the construction was an attempt to win the confidence of the locals.	Hatami and Gleick (1994)
539 BC	Babylon	Military tool	Yes		According to Herodotus, Cyrus invades Babylon by diverting the Euphrates above the city and marching troops along the dry riverbed. This popular account describes a midnight attack that coincided with a Babylonian feast.	Hatami and Gleick (1994)
430 BC	Athens	Military tool	Yes		During the second year of the Peloponnesian War, a plague breaks out in Athens. The Spartans are accused of poisoning the cisterns of the Piraeus, the source of most of Athens's water.	Strategy Page (2006)
355–323 BC	Babylon	Military tool	Yes		Returning from the razing of Persepolis, Alexander proceeds to India. After the Indian campaigns, he heads back to Babylon via the Persian Gulf and the Tigris, where he tears down defensive weirs that the Persians had constructed along the river. Arrian describes Alexander's disdain for the Persians' attempt to block navigation, which he saw as "unbecoming to men who are victorious in battle."	Hatami and Gleick (1994)
210–209 BC	Rome and Carthage	Military tool	Yes		In 210 BC, Scipio crosses the Ebro to attack New Carthage. During a short siege, Scipio leads a breaching column through a supposedly impregnable lagoon located on the landward side of the city; a strong northerly wind combined with the natural ebb of the tide leaves the lagoon shallow enough for the Roman infantry to wade through. New Carthage is quickly taken.	Fonner (1996); Gowan (2004)
52 BC	Rome, Gaul	Military tool	Yes		Caesar constructs water-filled ditches as a blockade during the Siege of Alesia in Gaul, site of modern-day Alise-Sainte-Reine in Côte d'Or, near Dijon, France.	<i>Wikipedia</i> (2011a)

51 BC	Rome, Gaul	Military target	Yes	Caesar attacks water supplies during the siege of Uxellodunum by undermining one of the local springs and placing attackers near the other. Shortage of water leads to the surrender of the Gauls.	History of War Online (2011)
49 BC	France, Rome	Military tool	Yes	During the first year of the Great Roman Civil War, Julius Caesar's troops lay siege to the walled city of Massilia (modern-day Marseille) using siege towers and battering rams and by digging "mines" or tunnels to undermine the city walls. Massilians defend their city with "dogged determination"; tactics include directing water through pipes to wash down on attackers, which the Romans counter by covering siege buildings with bricks and "several coatings of stucco." Defenders also excavate a large basin inside the walls, filling it with water. As the Roman miners reach the walls, the tunnels are flooded with water and collapse. Massilia ultimately surrenders after a five-month siege.	Illustrated History of the Roman Empire (2011); Caesar (1906); <i>Wikipedia</i> (2013a)
AD 30	Roman Empire (Pontius Pilate), Jews	Development dispute	Yes	Roman Procurator Pontius Pilate uses sacred money to divert a stream to Jerusalem. The Jews are angered by the diversion, and tens of thousands gather to protest. Pilate's soldiers mingle among the crowd and, with daggers hidden in their garments, attack the protesters. "A great number" are slain and wounded and the "sedition" is ended.	Josephus (AD 90)
537	Goths and Rome	Military tool; Military target	Yes	In the sixth century AD, as the Roman Empire begins to decline, the Goths besiege Rome and cut almost all of the aqueducts leading into the city. In AD 537, this siege succeeds. The only aqueduct that continues to function is the Aqua Virgo, which runs almost entirely underground.	Rome Guide (2004); InfoRoma (2004)
1187	Saladin and the Crusaders	Military tool	Yes	Saladin is able to defeat the Crusaders at the Horns of Hattin in 1187 by denying them access to water. In some reports, Saladin fills all the wells along the way with sand and destroys the villages of the Maronite Christians, who would supply the Christian army with water.	Lockwood (2006); Priscoli (1998)
1503	Florence and Pisa	Military tool	No: Plan only	Leonardo da Vinci and Machiavelli plan to divert the Arno River away from Pisa during a conflict between Pisa and Florence.	Honan (1996)
1573–1574	Holland and Spain	Military tool	Yes	In 1573, at the beginning of the Eighty Years' War against Spain, the Dutch flood the land to break the siege of Spanish troops on the town Alkmaar. The same defense is used to protect Leiden in 1574. This strategy becomes known as the Dutch Water Line and is used frequently for defense in later years.	Dutch Water Line (2002)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			No	Yes		
1626–1629	Spain, Dutch Republic	Development dispute; Military tool	No		The Spanish Habsburgs attempt to prevent ship traffic on the River Rhine from reaching the Dutch Republic in order to damage the Dutch economy. Plans are also made to divert water from the Rhine to lands under Spanish control, to dry up downstream cities in Holland. The first stage is a canal between the Rhine and Meuse Rivers, between the cities of Rheinberg and Venlo. Plans for a later stage call for a connection between the Meuse and the Scheldt to circumvent the Scheldt Estuary, controlled by the Dutch. Although some 60 kilometers of canal are constructed, the plan fails because of changed military conditions and lack of funding. Parts of the canal are still visible in present-day Germany.	Israel (1997); Bachienne (1791)
1642	China; Ming Dynasty	Military tool	Yes		The Huang He's dikes are breached for military purposes. In 1642, "toward the end of the Ming dynasty (1368–1644), General Gao Mingheng used the tactic near Kaifeng in an attempt to suppress a peasant uprising."	Hillel (1991)
1672	French, Dutch	Military tool	Yes		Louis XIV starts the third of the Dutch Wars in 1672, in which the French overrun the Netherlands. In defense, the Dutch open their dikes and flood the country, creating a watery barrier that is virtually impenetrable.	<i>Columbia Encyclopedia</i> (2000a)
1748	United States	Development dispute; Terrorism	Yes		Ferry house on Brooklyn shore of East River burns down. New Yorkers accuse Brooklynites of having set the fire as revenge for unfair East River water rights.	MCNY (n.d.)
1777	United States	Military tool	Yes		British and Hessians attack the water system of New York. "The enemy wantonly destroyed the New York water works" during the War for Independence.	Thatcher (1827)
1804	France, Holland	Development dispute; Military tool	No		Napoleon orders the construction of a canal between Neuss and Venlo to connect the Rhine and Meuse Rivers, in order to divert trade from the Batavia Republic to the Southern Netherlands, then under French control. Three-quarters of the canal is completed, but work stops because of lack of funds.	Israel (1997)
1841	Canada	Development dispute; Terrorism	Yes		A reservoir in Ops Township, Upper Canada (now Ontario), is destroyed by neighbors who consider it a hazard to health.	Forkey (1998)



1844	United States	Development dispute; Terrorism	Yes	A reservoir in Mercer County, Ohio, is destroyed by a mob that considers it a health hazard.	Scheiber (1969)
1850s	United States	Development dispute; Terrorism	Yes	A New Hampshire dam that had impounded water for factories downstream is attacked by local residents unhappy about its effect on water levels.	Steinberg (1990)
1853–1861	United States	Development dispute; Terrorism	Yes	The banks and reservoirs of the Wabash and Erie Canal in southern Indiana are repeatedly destroyed by mobs regarding it as a health hazard.	Fatout (1972); Fickle (1983)
1860–1865	United States	Military tool; Military target	Yes	General William T. Sherman's memoirs contain an account of Confederate soldiers poisoning ponds by dumping the carcasses of dead animals into them. Other accounts suggest this tactic was used by both sides.	Eitzen and Takafuji (1997)
1862	United States Union and Confederate armies	Military tool	Yes	During the US Civil War, Confederate forces near Yorktown use dams to flood the Warwick River and cut off Union troops. "The enemy is pushed behind a . . . branch of the Warwick river in which they control the depths of water by dams. McClellan did not intend to pass that stream at that time, or at that point where the skirmish took place. But the troops, finding the stream fordable went over (under whose immediate orders does not appear) and the water was then deepened so that they were measurably cut off."	Hitchcock (1862)
1863	United States	Military tool	Yes	General Ulysses S. Grant, during the Civil War campaign against Vicksburg, cuts levees in the battle against the Confederates.	Grant (1885); Barry (1997)
1870s	China	Development dispute	No	An unauthorized dam in Hubei, China, is constructed by locals and removed by government (twice).	Rowe (1988)
1870s–1881	United States	Development dispute	Yes	Recurrent friction and eventual violent conflict over water rights in the vicinity of Tularosa, New Mexico, involves villagers, ranchers, and farmers.	Rasch (1968)
1887	United States	Development dispute; Terrorism	Yes	A canal reservoir in Paulding County, Ohio, is dynamited by a mob regarding it as a health hazard. State militia are called out to restore order.	Walters (1948)
1890	Canada	Development dispute; Terrorism	Yes	A partly successful attempt is made to destroy a lock on the Welland Canal in Ontario, Canada, either by Fenians protesting English policy in Ireland or by agents of Buffalo, New York, grain handlers unhappy about the diversion of trade through the canal.	Styran and Taylor (2001)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Violence?			
1898	Egypt, France, Britain	Military tool; Political tool	Military	Yes	Military conflict nearly ensues between Britain and France when a French expedition attempts to gain control of the headwaters of the White Nile. While the parties ultimately negotiate a settlement of the dispute, the incident has been characterized as having “dramatized Egypt’s vulnerable dependence on the Nile, and fixed the attitude of Egyptian policy-makers ever since.”	Moorehead (1960)
1907–1913	Owens Valley, Los Angeles, California	Terrorism; Development dispute	Military	Yes	The Los Angeles Valley aqueduct/pipeline suffers repeated bombings in an effort to prevent diversions of water from the Owens Valley to Los Angeles.	Reisner 1993
1908–1909	United States	Development dispute	Military	Yes	Violence, including a murder, is directed against agents of a land company that had claimed title to Reelfoot Lake in northwestern Tennessee; the agents had attempted to levy charges for fish taken and threatened to drain the lake for agriculture.	Vanderwood (1969)
1915	German Southwest Africa	Military tool	Military	Yes	Union of South African troops capture Windhoek, capital of German Southwest Africa, in May. Retreating German troops poison wells—“a violation of the Hague convention.”	Daniel (1995)
1935	California, Arizona	Development dispute	Military	Yes	Arizona calls out the National Guard and militia units to its border with California to protest the construction of Parker Dam and diversions from the Colorado River; the dispute ultimately is settled in court. The militia mount machine guns on commandeered ferries and patrol the river, earning the nickname the “Arizona Navy.”	Reisner (1986/1993)
1937	Republican government of Spain, Spanish Nationalists	Military target	Military	Yes	During the Spanish Civil War, two concrete gravity dams, at Burguillos and Ordunte, are attacked by the Nationalist army, with a two-and-one-half-ton charge placed in an inspection gallery at Ordunte. There is some limited damage, which is repaired in 1938–1939.	Pagan (2005)



1938	China and Japan	Military tool; Military target	Yes	Chiang Kai-shek orders the destruction of flood control dikes of the Huayuankou section of the Huang He (Yellow) River, in order to flood areas threatened by the Japanese army. West of Kaifeng, dikes are destroyed with dynamite, spilling water across the flat plain. Even though the flood destroys part of the invading army and mires its equipment in mud, Wuhan, headquarters of the Nationalist government, is taken by the Japanese in October. Floodwaters cover an area variously estimated as between 3,000 and 50,000 square kilometers, killing Chinese estimated in numbers between “tens of thousands” and “one million.”	Hillel (1991); Yang Lang (1989/1994)
1939–1940	Netherlands, Germany	Military tool	Yes	During the mobilization of the Dutch at the beginning of World War II, 1939–1940, the Dutch attempt to flood the Gelderse Vallei with the New Dutch Water Defence Line, which had been completed in 1885. During the German invasion in May 1940, large areas are inundated.	IDG (1996)
1939–1942	Japan, China	Military target; Military tool	Yes	Japanese chemical and biological weapons activities reportedly include tests by “Unit 731” against military and civilian targets in which water wells and reservoirs are laced with typhoid and other pathogens.	Harris (1994)
1940	Finland, Soviet Union	Military tool	Yes	Partisan Finns manipulate the waters of the Saimaan Canal (Finland) in order to flood surrounding land and hinder Soviet troop movements during the Soviet-Finnish conflict.	Malik (2005)
1940–1945	Multiple parties	Military target	Yes	Hydroelectric dams are routinely bombed as strategic targets during World War II.	Gleick (1993)
1941	USSR and Germany	Military target	Yes	The strategically important Dnieper hydropower plant in the Ukraine is targeted by both Soviet and German troops during World War II. On August 18, 1941, the dam and power plant are dynamited by Soviet troops retreating before advancing German forces. The facility is bombed again in 1943 by retreating German troops.	Pagan (2005); <i>New York Times</i> (1941); Makarov (2005); AHF (2004)
1941	Germany, Soviet Union	Military tool	Yes	In November, Soviet troops flood the area south of the Istra Reservoir near Moscow in an effort to slow the German advance. Just a few weeks later, German troops used the same tactic to create a water barrier to halt advances by the Soviet 16th Army.	Malik (2005)
1941–1943	Germany, USSR	Military target	Yes	World War II inflicts enormous harm to hydroelectric systems in the Soviet Union. Over two-thirds of the hydroelectric power stations are lost.	Malik (2005)

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## Water Conflict Chronology *continued*

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			Yes	No		
1943	Britain, Germany	Military target	Yes		The British Royal Air Force bombs dams on the Möhne, Sorpe, and Eder Rivers in Germany (May 16 and 17). A Möhne Dam breach kills 1,200 and destroys all downstream dams for fifty kilometers. The flood that occurs after the breaching of the Eder Dam reaches a peak discharge of 8,500 cubic meters per second, nine times higher than the highest flood observed. Many houses and bridges are destroyed, and sixty-eight are killed.	Kirschner (1949); Semann (1950)
1944	Germany, Italy, Britain, United States	Military tool	Yes		German forces use waters from the Isoletta Dam (Liri River) in January and February to successfully destroy British assault forces crossing the Garigliano River (downstream of the Liri River). The German army then dams the Rapido River, flooding a valley occupied by the American army.	US ACE (1953)
1944	Germany, Italy, Britain, United States	Military tool	Yes		The German army floods the Pontine Marshes, on the coast of Italy southeast of Rome, by stopping pumps and opening dikes, in order to disrupt Allied forces who had established a beachhead at Anzio. Allied forces are surrounded by German artillery and pinned down for months by heavy shelling. The purpose of the flooding is to bring mosquitoes and malaria, "deliberately introduced as an act of biological warfare." This has a limited military impact but devastates the local population, which the Third Reich wished to punish for disloyalty.	US ACE (1953); Evans (2008)
1944	Germany, Allied forces	Military tool	Yes		Germans flood the Ay River in France in July, creating a lake two meters deep and several kilometers wide, slowing an advance on Saint Lô, a German communications center in Normandy.	US ACE (1953)
1944	Germany, Allied forces	Military tool	Yes		Germans flood the Ill River Valley during the Battle of the Bulge (winter 1944–1945), creating a lake sixteen kilometers long, three to six kilometers wide, and one to two meters deep, greatly delaying the American army's advance toward the Rhine.	US ACE (1953)
1944	United States, Japan	Military target	Yes		The US bombardment of a Japanese-occupied island in June targets water supply points, resulting in severe shortages.	Stewart (n.d.)
1944	Finland, USSR	Military target	Yes		In June, the Soviet air force attacks the Svir River Dam, near Leningrad, then under the control of the Finnish military.	Orlenko (1981); AHF (2004)

1945	Romania, Germany	Military target	Yes	In one of the few verified German tactical uses of biological warfare, German forces pollute a large reservoir in northwestern Bohemia, Czechoslovakia, with sewage. See also the entry for the Pontine Marshes in 1944.	SIPRI (1971)
1947 onward	Bangladesh, India	Development dispute	No	A partition divides the Ganges River between Bangladesh and India; construction of the Farakka barrage by India, beginning in 1962, increases tension; short-term agreements settle disputes in 1977–1982, 1982–1984, and 1985–1988; and a thirty-year treaty is signed in 1996.	Butts (1997); Samson and Charrier (1997)
1947–1960s	India, Pakistan	Development dispute	No	A partition leaves the Indus River basin divided between India and Pakistan; disputes over irrigation water ensue, during which India stems the flow of water into irrigation canals in Pakistan. The Indus Waters Agreement is reached in 1960, after twelve years of World Bank–led negotiations.	Bingham et al. (1994)
1948	Arabs, Israelis	Military tool	Yes	Arab forces cut off West Jerusalem's water supply in the first Arab-Israeli war.	Wolf (1995); Wolf (1997)
1948	Arabs, Israelis	Military tool	Yes	Water and food supplies are cut off during an Arab siege of Jerusalem from December 1, 1947, to July 10, 1948. Arab forces block the road to Jerusalem in an attempt to defeat Jewish Jerusalem. Shortages cause Israelis to begin rationing water on May 12, limiting each person to two gallons (eight liters) per day, of which four pints (two liters) are for drinking.	Collins and LaPierre (1972); Joseph (1960); <i>Wikipedia</i> (2011b)
1950s	Korea, United States, others	Military target	Yes	Centralized dams on the Yalu (Amnok) River serving North Korea and China are attacked during the Korean War.	Gleick (1993)
1951	Korea, United Nations	Military tool; Military target	Yes	North Korea releases flood waves from the Hwachon Dam, damaging floating bridges operated by UN troops in the Pukhan Valley. The US Navy then sends planes to destroy the spillway crest gates.	US ACE (1953)
1951	Israel, Jordan, Syria	Military tool; Development dispute	Yes	Jordan makes public its plans to irrigate the Jordan Valley by tapping the Yarmouk River. Israel responds by commencing drainage of the Huleh swamps, located in the demilitarized zone between Israel and Syria; border skirmishes ensue between Israel and Syria.	Wolf (1997); Samson and Charrier (1997)
1951	United States, Korea	Military target	Yes	The Hwachon Dam in Korea, completed in 1944, becomes both a target and a tool of opposing forces during the Korean War. In 1951, North Korea opens the dam to flood downstream areas and slow advancing UN forces. In response, the US Navy sends aircraft to bomb the dam, in the last known American use of aerial torpedoes in war.	Calcagno (2004)

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## Water Conflict Chronology *continued*

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1953	Israel, Jordan, Syria	Development dispute; Military target	Yes		Israel begins construction of its National Water Carrier to transfer water from the north of the Sea of Galilee out of the Jordan River basin to the Negev Desert for irrigation. Syrian military actions along the border and international disapproval lead Israel to move its intake to the Sea of Galilee.	Naff and Matson (1984); Samson and Charrier (1997)
1958	Egypt, Sudan	Military tool; Development dispute	Yes		Egypt sends an unsuccessful military expedition into disputed territory amid pending negotiations over Nile waters, Sudanese general elections, and an Egyptian vote on Sudan-Egypt unification; the Nile Water Treaty is signed when a pro-Egyptian government is elected in Sudan.	Wolf (1997)
1960s	North Vietnam, United States	Military target	Yes		Irrigation water supply systems in North Vietnam are bombed during the Vietnam War. An estimated 661 sections of dikes are damaged or destroyed.	IWCT (1967); Gleick (1993); Zemmali (1995)
1962	Israel, Syria	Development dispute; Military target	Yes		Israel destroys irrigation ditches in the lower Tarfiq in the demilitarized zone. Syria complains.	Naff and Matson (1984)
1962–1967	Brazil, Paraguay	Military tool; Development dispute	Military maneuvers		Negotiations between Brazil and Paraguay over development of the Paraná River are interrupted in 1962 by a unilateral show of military force by Brazil, which invades the area and claims control over the Guaira Falls site. Military forces are withdrawn in 1967 following an agreement for a joint commission to examine development in the region.	Murphy and Sabadell (1986)
1963–1964	Ethiopia, Somalia	Development dispute; Military tool	Yes		Creation of boundaries in 1948 leaves Somali nomads under Ethiopian rule; border skirmishes occur over disputed territory in the Ogaden Desert, where critical water and oil resources are located. A cease-fire is negotiated only after several hundred are killed.	Wolf (1997)
1964	Cuba, United States	Military tool	No		On February 6, the Cuban government cuts off the normal water supply to the US Naval Base at Guantanamo Bay in retaliation for the US seizure of four Cuban fishing boats days earlier near Florida.	<i>Guantanamo Bay Gazette</i> (1964)
1964	Israel, Syria	Military target	Yes		Headwaters of the Dan River on the Jordan River are bombed at Tell El-Qadi in a dispute about sovereignty over the source of the Dan.	Naff and Matson (1984)

1965	Zambia, Rhodesia, Great Britain	Military target	No	President Kenneth Kaunda calls on the British government to send troops to Kariba Dam to protect it from possible saboteurs from the Rhodesian government.	Chenje (2001)
1965	Israel, Palestinians	Terrorism	Yes	The first attack ever by the Palestinian National Liberation Movement Al-Fatah is made on the diversion pumps for the Israeli National Water Carrier. The attack fails.	Naff and Matson (1984); Dolatyar (1995)
1965–1966	Israel, Syria	Military tool; Development dispute	Yes	Fire is exchanged over an “all-Arab” plan to divert the Jordan River headwaters (Hasbani and Banias) and presumably preempt the Israeli National Water Carrier; Syria halts construction of its diversion in July 1966.	Wolf (1995); Wolf (1997)
1967	Israel, Syria	Military target; Military tool	Yes	Israel destroys the Arab diversion works on the Jordan River headwaters. During the Arab-Israeli War, Israel occupies Golan Heights, with the Banias tributary to the Jordan; Israel occupies the West Bank.	Gleick (1993); Wolf (1995); Wolf (1997); Wallenstein and Swain (1997)
1967–1972	Vietnam, United States	Military tool	Yes	The US military, in “Operation Popeye,” uses silver iodide for cloud seeding over Indochina (Vietnam) in an attempt to extend the monsoon season and stop the flow of materiel along Ho Chi Minh Trail. “Continuous rainfall was intended to slow down the truck traffic and was relatively successful.”	Plant (1995); Troung and Cooper (2003)
1969	Israel, Jordan	Military target; Military tool	Yes	Israel, suspicious that Jordan is overdiverting the Yarmouk, leads two raids to destroy the newly built East Ghor Canal. Secret negotiations, mediated by the United States, lead to an agreement in 1970.	Samson and Charrier (1997)
1970	United States	Terrorism	No: Threat	The Weathermen, a group opposed to American imperialism and the Vietnam War, allegedly attempt to obtain biological agents to contaminate the water supply systems of US urban centers.	Kupperman and Trent (1979); Eitzen and Takafuji (1997); Purver (1995)
1970	Chinese citizens	Development dispute	Yes	Conflicts over excessive water withdrawals from, and subsequent water shortages in, China’s Zhang River had been worsening for over three decades between villages in Shenxian and Linzhou counties. In the 1970s, militias from competing villages fight over withdrawals. (See also entries for 1976, 1991, 1992, and 1999.)	<i>China Water Resources Daily</i> (2002)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			No	Yes		
1970s	Argentina, Brazil, Paraguay	Development dispute	No		Brazil and Paraguay announce plans to construct a dam at Itaipu on the Paraná River, causing concern in Argentina about downstream environmental repercussions and the efficacy of Argentina's own planned dam project downstream. Argentina demands to be consulted during the planning of Itaipu, but Brazil refuses. An agreement is reached in 1979 that provides for the construction of both Brazil's and Paraguay's dams at Itaipu and Argentina's Yacyreta Dam.	Wallenstein and Swain (1997)
1972	United States	Terrorism	No: Threat		Two members of the right-wing "Order of the Rising Sun" are arrested in Chicago with thirty to forty kilograms of typhoid cultures, with which they allegedly planned to poison the water supply in Chicago, St. Louis, and other cities. Experts say the plan would have been unlikely to cause health problems, given that the water is chlorinated.	Eitzen and Takafuji (1997)
1972	United States	Terrorism	No: Threat		There is a reported threat to contaminate the water supply of New York City with nerve gas.	Purver (1995)
1972	North Vietnam	Military target	Yes		The United States bombs dikes in the Red River delta, rivers, and canals during a massive bombing campaign.	<i>Columbia Encyclopedia</i> (2000b)
1973	Germany	Terrorism	No: Threat		A German biologist threatens to contaminate water supplies with anthrax bacilli and botulinum toxin unless he is paid \$8.5 million.	Jenkins and Rubin (1978); Kupperman and Trent (1979)
1974	Iraq, Syria	Military target; Military tool; Development dispute	Military maneuvers		Iraq threatens to bomb the al-Thawra (Tabaqah) Dam in Syria and masses troops along the border, alleging that the dam has reduced the flow of Euphrates River water to Iraq.	Gleick (1994)



1975	Iraq, Syria	Development dispute; Military tool	Military maneuvers	As upstream dams are filled during a low-flow year on the Euphrates, Iraqis claim that flow reaching its territory is "intolerable" and ask the Arab League to intervene. Syrians claim they are receiving less than half the river's normal flow and pull out of an Arab League technical committee formed to mediate the conflict. In May, Syria closes its airspace to Iraqi flights and both Syria and Iraq reportedly transfer troops to their mutual border. Saudi Arabia successfully mediates the conflict.	Gleick (1993); Gleick (1994); Wolf (1997)
1975	Angola, South Africa	Military goal; Military target	Yes	South African troops move into Angola to occupy and defend the Ruacana hydropower complex, including the Gové Dam on the Kunene River. The goal is to take possession of and defend the water resources of southwestern Africa and Namibia.	Meissner (2000)
1976	China	Development dispute	Yes	A local militia chief is shot to death in a clash over the damming of the Zhang River. Conflicts over excessive water withdrawals and subsequent water shortages from China's Zhang River had been worsening for over three decades. (See also entries for 1970, 1991, 1992, 1999.)	<i>China Water Resources Daily</i> (2002)
1977	United States	Terrorism	Yes	A North Carolina reservoir is contaminated with unknown materials. According to Clark, "Safety caps and valves were removed, and poison chemicals were sent into the reservoir. . . . Water had to be brought in."	Clark (1980); Purver (1995)
1978 onward	Egypt, Ethiopia	Development dispute; Political tool	No	There are long-standing tensions over the Nile, especially the Blue Nile, originating in Ethiopia. Ethiopia's proposed construction of dams on the headwaters of the Blue Nile leads Egypt to repeatedly declare the vital importance of water. "The only matter that could take Egypt to war again is water" (Anwar Sadat, 1979). "The next war in our region will be over the waters of the Nile, not politics" (Boutros Boutros-Ghali, 1988).	Gleick (1991); Gleick (1994)
1978–1984	Sudan	Development dispute; Military target; Terrorism	Yes	Demonstrations in Juba, Sudan, in 1978 opposing the construction of the Jonglei Canal lead to the deaths of two students. Construction of the canal is suspended in 1984 following a series of attacks on the construction site.	Suliman (1998); Keluel-Jang (1997)
1980s	Mozambique, Rhodesia/ Zimbabwe, South Africa	Military target; Terrorism	Yes	Power lines from Cahora Bassa Dam are repeatedly destroyed during a fight for independence in the region. The dam is targeted by RENAMO (the Mozambican National Resistance).	Chenje (2001)
1980–1988	Iran, Iraq	Military tool	Yes	Iran diverts water to flood Iraqi defense positions.	Plant (1995)
1981	Iran, Iraq	Military target; Military tool	Yes	Iran claims to have bombed a hydroelectric facility in Kurdistan, thereby blacking out large portions of Iraq, during the Iran-Iraq War.	Gleick (1993)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Violence?	Violence?		
1981–1982	Angola, Namibia	Military target; Military tool	Yes		Water infrastructure, including dams and the major Cunene-Cuvelai pipeline, is targeted during the conflicts in Namibia and Angola in the 1980s.	Turton (2005)
1982	United States	Terrorism	No	Threat	Los Angeles police and the FBI arrest a man who is preparing to poison the city's water supply with a biological agent.	Livingston (1982); Eitzen and Takafuji (1997)
1982	Israel, Lebanon, Syria	Military tool	Yes		Israel cuts off the water supply to Beirut during a siege.	Wolf (1997)
1982	Guatemala	Development dispute	Yes		In Río Negro, 177 civilians are killed over opposition to the Chixoy hydroelectric dam.	Levy (2000)
1983	Lebanon	Terrorism	Yes		An explosives-laden truck disguised as a water delivery vehicle destroys a barracks in a US military compound, killing more than 300 people. The attack is blamed on Hezbollah, with the support of the Iranian government.	BBC (2007)
1983	Israel	Terrorism	No		The Israeli government reports that it has uncovered a plot by Israeli Arabs to poison the water in Galilee with "an unidentified powder."	Douglass and Livingstone (1987)
1984	United States	Terrorism	Yes		Members of the Rajneeshee religious cult contaminate a city water supply tank in The Dalles, Oregon, using salmonella bacteria. A community outbreak of over 750 cases occurs in a county that normally reports fewer than 5 cases per year.	Clark and Deiningner (2000)
1985	United States	Terrorism	No		Law enforcement authorities discover that a small survivalist group in the Ozark Mountains of Arkansas known as The Covenant, the Sword, and the Arm of the Lord (CSA) has acquired a drum containing thirty gallons of potassium cyanide, with the apparent intent to poison water supplies in New York, Chicago, and Washington, DC. CSA members believe that such attacks would make the Messiah return more quickly by punishing unrepentant sinners. The objective appears to be mass murder in the name of a divine mission rather than a change in governmental policy.	Tucker (2000); NTI (2005)

1986	North Korea, South Korea	Military tool	No	North Korea's announcement of its plans to build the Kumgansan hydroelectric dam on a tributary of the Han River upstream of Seoul raises concerns in South Korea that the dam could be used as a tool for ecological destruction or war.	Gleick (1993)
1986	Lesotho, South Africa	Development dispute; Military goal	Yes	South Africa supports a bloodless coup by Lesotho's defense forces. Immediately afterward, the two countries agree to share water from the Highlands of Lesotho, following thirty years of unsuccessful negotiations. There is disagreement over the degree to which water is a motivating factor for either party.	Mohamed (2001)
1986	Lesotho, South Africa	Military goal; Development dispute	Yes	South Africa supports a coup in Lesotho over support for the African National Congress, opposition to apartheid, and water. The new government in Lesotho quickly signs the Lesotho Highlands water agreement.	American University (2000b)
1988	Angola, South Africa, Cuba	Military goal; Military target	Yes	Cuban and Angolan forces launch an attack on Calueque Dam via land and then air. Considerable damage is inflicted on the dam's wall, and the power supply to the dam is cut. The water pipeline to Owamboland is cut and destroyed.	Meissner (2000)
1990	South Africa	Development dispute	No	A pro-apartheid council cuts off water to the Wesselton township of 50,000 blacks following protests over miserable sanitation and living conditions.	Gleick (1993)
1990	Iraq, Syria, Turkey	Development dispute; Military tool	No	The flow of the Euphrates is interrupted for a month as Turkey finishes construction of the Ataturk Dam, part of the Grand Anatolia Project. Syria and Iraq protest that Turkey now has a weapon of war. In mid-1990, Turkish president Turgut Ozal threatens to restrict water flow to Syria to force it to withdraw support for Kurdish rebels operating in southern Turkey.	Gleick (1993); Gleick (1995)
1991	Iraq, Kuwait, United States	Military target	Yes	During the Gulf War, Iraq destroys much of Kuwait's desalination capacity during its retreat.	Gleick (1993)
1991	Canada	Terrorism	No: Threat	A threat is made via an anonymous letter to contaminate the water supply of the city of Kelowna, British Columbia, with "biological contaminants." The motive is apparently "associated with the Gulf War." The security of the water supply is increased in response, and no group is identified as the perpetrator.	Purver (1995)
1991	Iraq, Turkey, United Nations	Military tool	No: Threat	The United Nations discusses use of the Ataturk Dam in Turkey to cut off flows of the Euphrates to Iraq.	Gleick (1993)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Yes	No		
1991	Iraq, Kuwait, United States	Military target	Yes		During the Persian Gulf War, Allied Coalition forces damage Baghdad's modern water supply and sanitation system—intentionally and unintentionally. “Four of seven major pumping stations were destroyed, as were 31 municipal water and sewerage facilities—20 in Baghdad—resulting in sewage pouring into the Tigris. Water purification plants were incapacitated throughout Iraq” (Arbuthnot 2000). Following the damage, the <i>New England Journal of Medicine</i> reports that during the first eight months of 1991, childhood deaths in Iraq increase by 47,000 and the country's infant mortality rate doubles, to 92.7 per 1,000 live births.	Gleick (1993); Arbuthnot (2000); Barrett (2003)
1991	China	Development dispute	Yes		In December 1991, Huanglongkou village and Qianyu village exchange mortar fire over the construction of new water diversion facilities. Conflicts over excessive water withdrawals and subsequent water shortages from China's Zhang River had been worsening for over three decades. (See also entries for 1970, 1976, 1992, and 1999.)	<i>China Water Resources Daily</i> (2002)
1991–2001	United States, Iraq	Military target; Military tool	No		The United States deliberately pursues a policy of destroying Iraq's water systems through sanctions and withholding contracts.	Nagy (2001)
1991–2007	Karnataka, India	Development dispute	Yes		Violence erupts when Karnataka rejects an interim order handed down by the Cauvery Waters Tribunal, set up by the Supreme Court of India. The tribunal had been established in 1990 to settle two decades of dispute between Karnataka and Tamil Nadu over irrigation rights to the Cauvery River.	Gleick (1993); Butts (1997); American University (2000a)
1992		Political tool; Development dispute	Military maneuvers		Citing environmental concerns, Hungary abrogates a 1977 treaty with Czechoslovakia concerning construction of the Gabčíkovo/Nagymaros project. Slovakia continues construction unilaterally, completes the dam, and diverts the Danube into a canal inside the Slovak Republic. Massive public protest and movement of military to the border ensue; the issue is taken to the International Court of Justice.	Gleick (1993)
1992	Turkey	Terrorism	Yes		Lethal concentrations of potassium cyanide are reportedly discovered in the water tanks of a Turkish Air Force compound in Istanbul. The Kurdish Workers' Party (PKK) claims credit.	Chelyshev (1992)

1992	Bosnia, Bosnian Serbs	Military tool	Yes	The Serbian siege of Sarajevo, Bosnia and Herzegovina, includes a cutoff of all electrical power and the water feeding the city from the surrounding mountains. The lack of power cuts the two main pumping stations inside the city, despite pledges from Serbian nationalist leaders to United Nations officials that they would not use their control of Sarajevo's utilities as a weapon. Bosnian Serbs take control of water valves regulating flow from wells that provide more than 80 percent of water to Sarajevo; the reduced water flow to the city is used to "smoke out" Bosnians.	Burns (1992); Husarska (1995)
1992	China	Development dispute	Yes	In August 1992, bombs are set off along a Zhang River distribution canal, collapsing part of the canal and causing flooding and economic losses. Violence continues in the late 1990s with confrontations, mortar attacks, and bombings. Conflicts over excessive water withdrawals and subsequent water shortages from China's Zhang River had been worsening for over three decades. (See also entries for 1970, 1976, 1991, and 1999.)	<i>China Water Resources Daily</i> (2002)
1992	Moldova, Russia	Military target	Yes	In June, hostilities between Moldova and Russia in a short but intense conflict include a rocket-artillery attack on the hydroelectric turbines at the Dubossary power station on the Nistru (or Dniester) River.	Malik (2005); Belitser et al. (2009)
1993	Iran	Terrorism	No	A report suggests that proposals were made at a meeting of fundamentalist groups in Tehran, under the auspices of the Iranian Foreign Ministry, to poison water supplies of major cities in the West "as a possible response to Western offensives against Islamic organizations and states."	Haeri (1993)
1993	Yugoslavia	Military target; Military tool	Yes	The sixty-five-meter-high Peru a Dam on the Cetina River was Yugoslavia's second-largest hydroelectric facility before the country's breakup with the Croatian War beginning in 1991. On January 28, 1993, Serbian/Yugoslav army forces detonate explosives at the dam in an attempt to wipe out Croatian villages and the port city of Omiš. A successful Croatian counterattack allows military engineers to reach the dam and release water in time to prevent it from bursting, saving an estimated twenty to thirty thousand civilians. Credit for preventing a dam burst is also given to British Marine Captain Mark Gray, a UN observer, for opening gates to reduce water levels prior to the attack.	Gleick (1993); Rathfelder (2007)

## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			No	Yes		
1993–2003	Iraq	Military tool	No		To quell opposition to his government, Saddam Hussein reportedly poisons and drains the water supplies of southern Shiite Muslims, the Ma'dan. The marshes of southern Iraq are intentionally targeted. The European Parliament and UN Human Rights Commission deplore the use of water as a weapon in the region.	Gleick (1993); American University (2000c); National Geographic News (2001)
1994	Moldova, Russia	Terrorism	No: Threat		Moldavian general Nikolay Matveyev reportedly threatens to contaminate the water supply of the Russian 14th Army in Tiraspol, Moldova, with mercury.	Purver (1995)
1998/1994	United States	Cyberterrorism	No		The <i>Washington Post</i> reports that a twelve-year-old computer hacker has broken into the SCADA computer system that runs Arizona's Roosevelt Dam, gaining complete control of the dam's massive floodgates. The cities of Mesa, Tempe, and Phoenix, Arizona, are downstream of this dam. This report turns out to be incorrect. A hacker did break into the computers of an Arizona water facility, the Salt River Project in the Phoenix area. But he was twenty-seven, not twelve, and the incident occurred in 1994, not 1998. And while clearly trespassing in critical areas, the hacker never could have had control of any dams, leading investigators to conclude that no lives or property were ever threatened.	Gellman (2002); Lemos (2002)
1995	Ecuador, Peru	Military tool; Political tool	Yes		Armed skirmishes arise in part because of disagreement over the control of the headwaters of the Cenepa River. Wolf argues that this is primarily a border dispute simply coinciding with the location of a water resource.	Samson and Charrier (1997); Wolf (1997)
1997	Singapore, Malaysia	Political tool	No		Malaysia, which supplies about half of Singapore's water, threatens to cut off that supply in retribution for criticisms by Singapore of policy in Malaysia.	Zachary (1997)
1998	Tajikistan	Terrorism; Political tool	No: Threat		Tajik guerrilla commander Makhmud Khudoberdiyev threatens to blow up a dam on the Kairakkhum channel if his political demands are not met.	<i>WRR</i> (1998)
1998	Angola	Military tool; Political tool	Yes		In September, fierce fighting between UNITA and Angolan governmental forces breaks out at Gove Dam on the Kunene River for control of the installation.	Meissner (2001)

1998	Democratic Republic of Congo	Military target; Terrorism	Yes	Attacks are made on Inga Dam during efforts to topple President Kabila. Electricity supplies from Inga Dam and water supplies to Kinshasa are disrupted.	Chenje (2001); Human Rights Watch (1998)
1998–1999	Kosovo	Terrorism; Political tool	Yes	Water supplies and wells are contaminated by Serbs disposing of the bodies of Kosovo Albanians. There are also reports of Yugoslav federal forces poisoning wells with carcasses and hazardous materials.	CNN (1999); Hickman (1999)
1998–2000	Eritrea and Ethiopia	Military target	Yes	Water-pumping plants and pipelines in the border town of Adi Quala are destroyed during the civil war between Eritrea and Ethiopia.	ICRC (2003)
1999	Lusaka, Zambia	Terrorism; Political tool	Yes	A bomb blast destroys Lusaka's main water pipeline, cutting off water for the city, population 3 million.	<i>FTGWR</i> (1999)
1999	Yugoslavia	Military target	Yes	Belgrade reports that NATO planes have targeted a hydroelectric plant during the Kosovo campaign.	Reuters (1999c)
1999	Bangladesh	Development dispute; Political tool	Yes	Fifty people are hurt during strikes called to protest power and water shortages. Protests are led by former prime minister Begum Khaleda Zia over a decrease in public services and deterioration of law and order.	Ahmed (1999)
1999	Yugoslavia	Military target	Yes	NATO targets utilities and shuts down water supplies in Belgrade. NATO bombs bridges on Danube, disrupting navigation.	Reuters (1999b)
1999	Yugoslavia	Political tool	Yes	Yugoslavia refuses to clear war debris (downed bridges) on the Danube unless financial aid for reconstruction is provided; European countries on the Danube fear that flooding due to winter ice dams will result. Diplomats decry environmental blackmail.	Simons (1999)
1999	Kosovo	Political tool	Yes	Serbian engineers shut down the water system in Pristina prior to occupation by NATO.	Reuters (1999a)
1999	South Africa	Terrorism	Yes	A homemade bomb is discovered at a water reservoir at Wallmansthal, near Pretoria. It is thought to have been meant to sabotage water supplies to farmers.	<i>Pretoria Dispatch</i> (1999)
1999	Angola	Terrorism; Political tool	Yes	One hundred bodies are found in four drinking water wells in central Angola.	<i>International Herald Tribune</i> (1999)
1999	Puerto Rico, United States	Political tool	No	Protesters block water intake to Roosevelt Roads Navy Base in opposition to US military presence and the navy's use of the Blanco River, following chronic water shortages in neighboring towns.	<i>New York Times</i> (1999)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Violence?	Violence?		
1999	China	Development dispute; Terrorism	Yes		Around the Chinese New Year, farmers from Hebei and Henan Provinces fight over limited water resources. Heavy weapons, including mortars and bombs, are used and nearly one hundred villagers are injured. Houses and facilities are damaged, and the total loss reaches US\$1 million.	<i>China Water Resources Daily</i> (2002)
1999	East Timor	Military tool; Terrorism	Yes		Militia opposing East Timor independence kills pro-independence supporters and throws their bodies in a water well.	BBC (1999)
1999	Yemen	Development dispute	Yes		Yemen sends 700 soldiers to quell fighting that claimed six lives and injured sixty in clashes that erupted between two villages fighting over a local spring near Ta'iz. The village of Al-Marzuh believed it was entitled to exclusive use of a spring because the spring was located on its land; the neighboring village of Quradah believed its right to the water had been affirmed in a fifty-year-old court verdict. The dispute erupted in violence. President Ali Abdullah Saleh intervenes by summoning the sheikhs of the two villages to the capital and sorts out the problem by dividing the water into halves.	Al-Qadhi (2003)
1999–2000	Namibia, Botswana, Zambia	Military goal; Development dispute	No		On Sedudu/Kasikili Island, in the Zambezi/Chobe River, a dispute arises about the border and access to water. The conflict is presented to the International Court of Justice.	ICJ (1999)
2000	Ethiopia	Development dispute	Yes		A man is stabbed to death during a fight over clean water during the famine in Ethiopia.	Sandrasagra (2000)
2000	Central Asia: Kyrgyzstan, Kazakhstan, Uzbekistan	Development dispute	No		Kyrgyzstan cuts off water to Kazakhstan until coal is delivered; Uzbekistan cuts off water to Kazakhstan for nonpayment of debt.	Pannier (2000)
2000	France, Belgium, Netherlands	Terrorism	Yes		In July, workers at the Cellatex chemical plant in northern France dump 5,000 liters of sulfuric acid into a tributary of the Meuse River after they are denied workers' benefits. A French analyst points out that this is the first time "the environment and public health were made hostage in order to exert pressure, an unheard-of situation until now."	<i>Christian Science Monitor</i> (2000)



2000	Hazarajat, Afghanistan	Development dispute	Yes	Violent conflicts break out over water resources in the villages of Burma Legan and Taina Legan, and in other parts of the region, as drought depletes local resources.	Cooperation Center for Afghanistan (2000) <i>FTGWR</i> (2000)
2000	India: Gujarat	Development dispute	Yes	Water riots are reported in some areas of Gujarat in protest of authority's failure to arrange an adequate supply of tanker water. Police are reported to have shot into a crowd at Falla village near Jamnagar, resulting in the deaths of three and injuries to twenty following protests against the diversion of water from the Kankavati Dam to Jamnagar town.	
2000	Bolivia	Development dispute	Yes	Massive protests, riots, and violence result from efforts to privatize the water system of Cochabamba, Bolivia.	Shultz and Draper (2009)
2000	United States	Terrorism	No	A drill simulating a terrorist attack on the Nacimiento Dam in Monterey County, California, gets out of hand when two radio stations report it as a real attack.	Gaura (2000)
2000	Kenya	Development dispute	Yes	A clash between villagers and thirsty monkeys leaves eight monkeys dead and ten villagers wounded. The duel started after water tankers brought water to a drought-stricken area and the monkeys, desperate for water, attacked the villagers.	BBC (2000); Okoko (2000)
2000	Australia	Cyberterrorism	Yes	In Queensland, Australia, police arrest a man for using a computer and radio transmitter to take control of the Maroochy Shire wastewater system and release sewage into parks, rivers, and property.	Gellman (2002)
2000	China	Development dispute	Yes	Civil unrest erupts over the use and allocation of water from Baiyangdian Lake, the largest natural lake in northern China. Several people die in riots by villagers in July in Shandong after officials cut off water supplies. In August, six die when officials in the southern province of Guangdong blow up a water channel to prevent a neighboring county from diverting water.	Pottinger (2000)
2001	Israel, Palestine	Terrorism; Military target	Yes	Palestinians destroy water supply pipelines to the West Bank settlement of Yitzhar and to Kibbutz Kisufim. The Agbat Jabar refugee camp near Jericho disconnects from its water supply after Palestinians loot and damage local water pumps. Palestinians accuse Israel of destroying a water cistern, blocking water tanker deliveries, and attacking materials for a wastewater treatment project.	<i>Israel Line</i> (2001a); <i>Israel Line</i> (2001b); ENS (2001)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Yes	No		
2001	Pakistan	Development dispute; Terrorism	Yes		Civil unrest erupts over severe water shortages caused by the long-term drought. Protests begin in March and April and continue into summer, involving riots, four bombs in Karachi (June 13), one death, twelve injuries, and thirty arrests. Ethnic conflicts arise as some groups "accuse the government of favoring the populous Punjab province [over Sindh Province] in water distribution."	Nadeem (2001); Solomon (2001)
2001	Macedonia	Terrorism; Military target	Yes		Water flow to Kumanovo (population 100,000) is cut off for twelve days in a conflict between ethnic Albanians and Macedonian forces. Valves of Glaznja and Lipkovo Lakes are damaged.	AFP (2001); Macedonia Information Agency (2001)
2001	China	Development dispute	Yes		In an act to protest the destruction of fisheries by uncontrolled water pollution, fishermen in northern Jiaying City, Zhejiang Province, dam a large industrial wastewater canal for twenty-three days. The wastewater discharges into the neighboring Shengze Town, Jiangsu Province, killing fish and threatening public health.	China Ministry of Water Resources (2001)
2001	Philippines	Terrorism	No		The militant Islamist separatist group Abu Sayyaf threatens to poison the water supply in Isabela, a mainly Christian town on Basilan Island in the country's south. In October, residents in six nearby villages suspect contamination because the water smells like gasoline. Local officials respond by closing pipelines and bringing in drinking water by truck. In the months following the 9/11 attacks on New York, numerous false alarms of terrorist activity are reported around the world.	World Environment News (2001); Fenton et al. (2001)
2001	Afghanistan	Military target	Yes		American forces bomb the hydroelectric facility at Kajaki Dam in Helmand Province, cutting off electricity for the city of Kandahar. The dam itself is not targeted.	BBC (2001); Parry (2001)
2001	Pokomo farmers and Orma cattle herders	Development dispute	Yes		At least 130 people are killed in a string of clashes between Pokomo farmers and Orma people, seminomadic cattle herders, over access to land and river water.	AFP (2012)

2002	Nepal	Terrorism; Political tool	Yes	The Khumbuwan Liberation Front (KLF) blows up a 250-kilowatt hydroelectric powerhouse in Nepal's Bhojpur District, cutting off power to Bhojpur and surrounding areas. The damage takes six months to repair and costs 10 million Rs (US\$120,000). During 2002, Maoist rebels destroy more than seven micro-hydro projects, a water supply intake, and supply pipelines to Khalanga, in western Nepal.	<i>Kathmandu Post</i> (2002); <i>FTGWR</i> (2002)
2002	Rome, Italy	Terrorism	No: Threat	Italian police arrest four Moroccans allegedly planning to contaminate the water supply system in Rome with a cyanide-based chemical, targeting buildings that include the United States embassy. Ties to Al-Qaeda are suggested.	BBC (2002)
2002	Kashmir, India	Development dispute	Yes	Two people are killed and twenty-five others are injured in Kashmir when police fire at a group of villagers clashing over water sharing. The incident takes place in Garend village in a dispute over sharing water from an irrigation stream.	<i>Japan Times</i> (2002)
2002	United States	Terrorism	No: Threat	Papers seized during the arrest of a Lebanese imam at a mosque in Seattle include "instructions on poisoning water sources" from a London-based Al-Qaeda recruiter. The FBI issues a bulletin to computer security experts around the country indicating that Al-Qaeda terrorists may have been studying American dams and water supply systems in preparation for new attacks. "U.S. law enforcement and intelligence agencies have received indications that al-Qaeda members have sought information on Supervisory Control And Data Acquisition (SCADA) systems available on multiple SCADA-related Web sites," reads the bulletin, according to SecurityFocus. "They specifically sought information on water supply and wastewater management practices in the U.S. and abroad."	McDonnell and Meyer (2002); MSNBC (2002)
2002	Colombia	Terrorism	Yes	Colombian rebels in January damage a gate valve in the dam that supplies most of Bogotá's drinking water. The Revolutionary Armed Forces of Colombia (FARC) detonates an explosive device planted on a German-made gate valve located inside a tunnel in the Chingaza Dam.	<i>WaterWeek</i> (2002)
2002	Karnataka, Tamil Nadu, India	Development dispute	Yes	There is continuing violence over allocation of water from the Cauvery (Kaveri) River between Karnataka and Tamil Nadu, with riots, property destruction, more than thirty injuries, and arrests through September and October.	<i>The Hindu</i> (2002a); <i>The Hindu</i> (2002b); <i>Times of India</i> (2002)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			No: Threat	Yes		
2002	United States	Terrorism	No: Threat		The Earth Liberation Front threatens the water supply for the town of Winter Park, Co. Previously, this group claimed responsibility for the destruction of a ski lodge in Vail, Colorado, that threatened lynx habitat.	Crecente (2002); AP (2002)
2002	Botswana, Bushmen	Development dispute	Yes		Botswana's president, Festus Mogae, sends troops to the Kalahari Desert to destroy wells and empty water sources of indigenous Khoisan people (also known as Bushmen), ostensibly in an effort to remove them from their ancestral lands and assimilate them into modern society. Critics accuse the government of taking away water rights in favor of mining interests and label the government's actions a "siege"; Botswana is condemned by international observers. Against expectations, a band of Bushmen retreat into the desert and survive for years with little outside assistance.	Workman (2009)
2002	Bolivian irrigators, townsmen	Development dispute	Yes		Violence erupts between irrigators and the townsmen of Tarata over the use of water from the Laka Laka Dam. After local authorities begin diverting some water to cultivate gardens in the town, irrigators in the downstream area of Arbieta protest that their water rights are being violated. Irrigators destroy a portion of the town's pipeline, and townsmen retaliate by vandalizing part of an irrigation canal.	Bustamante et al. (2004)
2003	United States	Terrorism	No: Threat		Al-Qaeda threatens US water systems via a call to a Saudi Arabian magazine. Al-Qaeda does not "rule out . . . the poisoning of drinking water in American and Western cities."	AP (2003b); Waterman (2003); NewsMax (2003); <i>US Water News</i> (2003)
2003	United States	Terrorism	Yes		Four incendiary devices are found in the pumping station of a Michigan water-bottling plant. The Earth Liberation Front claims responsibility, accusing Ice Mountain Water Company of "stealing" water for profit. Ice Mountain is a subsidiary of Nestle Waters.	AP (2003a)
2003	Colombia	Terrorism; Development dispute	Yes		A bomb blast at the Cali Drinking Water Treatment Plant kills three workers on May 8. The workers were members of a trade union involved in intense negotiations over privatization of the water system.	PSI (2003)

2003	Jordan	Terrorism	No: Threat	Jordanian authorities arrest Iraqi agents in connection with a botched plot to poison the water supply that serves American troops in the eastern Jordanian desert near the border with Iraq. The scheme involves the poisoning of a water tank that supplies American soldiers at a military base in Khao, which lies in an arid region of the eastern frontier near the industrial town of Zarqa.	MJS (2003)
2003	Iraq, United States, others	Military target	Yes	During the US-led invasion of Iraq, water systems are reportedly damaged and destroyed by different parties, and major dams are military objectives of the US forces. Damage directly attributable to the war includes vast segments of the water distribution system and the Baghdad water system, damaged by a missile.	UNICEF (2003); ARC (2003)
2003	Iraq	Terrorism	Yes	Insurgents bomb a main water pipeline in Baghdad. City engineers say this is the first strike against Baghdad's water system during the Iraq War, which began in March 2003. The bombing occurs when an explosive is fired at the six-foot-wide water main in the northern part of Baghdad, says Hayder Muhammad, chief engineer for the city's water treatment plants.	Tierney and Worth (2003)
2003–2007	Sudan, Darfur	Military tool; Military target; Terrorism	Yes	The ongoing civil war in Sudan includes violence against water resources. In 2003, villagers from around Tina say that bombings have destroyed water wells. In Khasan Basao, they allege that water wells have been poisoned. In 2004, wells in Darfur are intentionally contaminated as part of a strategy of harassment against displaced populations.	Amnesty International (2004); Reuters (2004b)
2004	Mexico	Development dispute	Yes	Two Mexican farmers had argued for years over water rights to a small spring used to irrigate a small corn plot near the town of Pihuamo. In March, these farmers shoot and kill each other.	Guardian (2004)
2004	Pakistan	Terrorism	Yes	In military action aimed at Islamic terrorists, including Al-Qaeda and the Islamic Movement of Uzbekistan, homes, schools, and water wells are damaged and destroyed.	Reuters (2004a)
2004	India, Kashmir	Terrorism	Yes	Twelve Indian security forces are killed by an improvised explosive device planted in an underground water pipe during a "counter-insurgency operation in Khanabal area in Anantnag district."	TNN (2004)
2004	China	Development dispute	Yes	Tens of thousands of farmers stage a sit-in against the construction of the Pubugou Dam on the Dadu River in Sichuan Province. Riot police are deployed to quell the unrest, and one person is killed. Witnesses also report the deaths of a number of residents. (See China, 2006, for a follow-up.)	BBC (2004a); VOA (2004)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			No	Yes		
2004	China, United States	Military target	No		A 2004 Pentagon report on China's military capacity raises the concept of Taipei adopting military systems capable of being used as a tool for deterring Chinese military coercion by "presenting credible threats to China's urban population or high-value targets, such as the Three Gorges Dam." China promptly denounces "a U.S. suggestion" that Taiwan's military target the Three Gorges Dam, leading the United States to deny that it had so urged.	<i>China Daily</i> (2004); US DOD (2004)
2004	South Africa	Development dispute	Yes		Poor delivery of water and sanitation services in Phumelela Township leads to several months of protests. No one is killed during the protests, but a few people are seriously injured, and municipal property is damaged.	CDE (2007)
2004	Gaza Strip	Terrorism; Development dispute	Yes		The United States halts two water development projects as punishment to the Palestinian Authority for its failure to find those responsible for a deadly attack on a US diplomatic convoy in October 2003.	AP (2004)
2004	India	Development dispute	Yes		Four people are killed in October and more than thirty are injured in November in ongoing protests by farmers over allocations of water from the Indira Gandhi Irrigation Canal in Sriganganagar District, which borders Pakistan. Authorities impose curfews on the towns of Gharsana, Raola, and Anoopgarh.	Indo-Asian News Service (2004)
2004–2006	Ethiopia	Development dispute	Yes		At least 250 people are killed and many more are injured in clashes over water wells and pastoral lands. Villagers call the clashes the "War of the Well" and describe "well warlords, well widows, and well warriors." A three-year drought has led to extensive violence over limited water resources, worsened by the lack of effective governmental and central planning.	BBC (2004b); AP (2005); Wax (2006)
2005	Kenya	Development dispute	Yes		Police are sent to the northwestern part of Kenya to control a major violent dispute between Kikuyu and Maasai groups over water. More than twenty people are killed in fighting in January. By July, the death toll exceeds ninety, principally in the rural center of Turbi. The tensions arose over grazing and water. Maasai herdsmen accused a local Kikuyu politician of diverting a river to irrigate his farm, depriving downstream livestock. Fighting displaces more than 2,000 villagers, reflecting tensions between nomadic and settled communities.	BBC (2005); Ryu (2005); Lane (2005)



2005	Ukraine	Terrorism	Yes	On April 13, the Kiev Hydropower Station on the Dnieper River receives a threat that forty rail cars filled with explosives have been placed on a portion of levees holding back the reservoir.	Levitsky (2005)
2006	Yemen	Development dispute	Yes	Local media report a struggle between the Hajja and Amran tribes over a well located between the two governorates in Yemen. According to news reports, armed clashes between the two sides force many families to leave their homes and migrate. News reports confirm that authorities have arrested twenty people in an attempt to stop the fighting.	Al-Ariqi (2006)
2006	China	Development dispute	Yes	Chinese authorities execute a man who took part in protests against the Pubugou Dam in Sichuan Province in 2004 (see the 2004 China entry). Chen Tao was convicted of killing a policeman but is executed before legal appeals are completed.	BBC (2006a); Coonan (2006)
2006	Ethiopia	Development dispute	Yes	At least twelve people die and over twenty are wounded in clashes over water and pasture in the Somali border region.	BBC (2006b)
2006	Ethiopia and Kenya	Development dispute	Yes	At least forty people die in Kenya and Ethiopia in continuing clashes over water, livestock, and grazing land. Fighting takes place in southern Ethiopia in the region of Oromo and in the northern Kenya Marsabit District.	Reuters (2006)
2006	Sri Lanka	Military tool; Military target; Terrorism	Yes	Tamil Tiger rebels cut the water supply to government-held villages in northeastern Sri Lanka. Sri Lankan governmental forces then launch attacks on the reservoir, declaring the Tamil actions to be terrorism. As of August, conflict around the water blockade had claimed over 425 lives.	BBC (2006c); BBC (2006d); Gutierrez (2006)
2006	Israel, Lebanon	Military target; Terrorism	Yes	Hezbollah rockets damage a wastewater plant in Israel. Israeli counterattacks damage water systems throughout southern Lebanon, including tanks, pipes, pumping stations, and facilities along the Litani River.	<i>Science</i> (2006); Amnesty International (2006); Murphy (2006)
2006	Sudan	Development dispute	Yes	Militia of the Merowe Dam Militia Implementation Unit in Sudan attack a gathering of villagers concerned about the community impacts of the dam at a school in Amri village, killing three farmers and injuring more than fifty others.	Bosshard (2009)
2007	India	Development dispute	Yes	Thousands of farmers breach security and storm the area of Hirakud Dam to protest allocation of water to industry. Minor injuries are reported during the conflict between the farmers and police.	Statesman News Service (2007)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Violent Conflict	Context of Violence?		
2007	Afghanistan	Military target; Terrorism	Yes		The Kajaki Dam is the scene of major fighting between Taliban and NATO forces, mainly British and Dutch. The Taliban is attempting to make it impossible to work on reconstruction of the dam and power lines to boost output.	Friel (2007)
2007	Canada	Terrorism	No		A Toronto man previously accused of attempted murder and illegal possession of explosives is charged with eight more counts of attempted murder after allegedly tampering with bottled water, which he injected with an unspecified liquid.	<i>Toronto Star</i> (2007)
2007	Burkina Faso, Ghana, Côte d'Ivoire	Development dispute	Yes		Declining rainfall has led to growing fights between animal herders and farmers with competing needs. In August, 2007 people are forced to flee their homes by fighting in Zounweogo Province.	UN OCHA (2007)
2007	Israel, Palestine	Development dispute	No		Israel's sanctions against Gaza cause water shortages and a growing public health risk. In particular, restrictions on fuel, spare parts, and maintenance equipment threaten the functioning of Gaza's already limited water and sanitation system.	Oxfam (2007)
2007	Sydney residents	Development dispute	Yes		A thirty-six-year-old Australian is charged with murder after killing a man during a fight over water restrictions in Sydney. A number of incidents have been reported following ten years of drought and water restrictions, leading scholars to suggest a "link between persistent urban water restrictions and civil unrest."	ABC News (2007); Crase (2009)
2007	Sudan	Development dispute	Yes		Angry villagers in Sudan stage protests against Kajbar Dam; four villagers are killed by governmental militia.	Bosshard (2009)
2008	Nigeria	Development dispute	Yes		A protest over the price of water in Nyanya, Abuja, Nigeria, results in violence, including the beating of water vendors.	Yakubu (2008)
2008	China, Tibet	Military target; Development dispute	Yes		China launches a political crackdown in Tibet. At least some observers note the importance of Tibet for the water resources of China, though the political complications between Tibet and China extend far beyond water. As noted: "Tibet is referred to in some circles as the 'world's water tower'; the Tibetan plateau is home to vast reserves of glaciated water, the sources of 10 of the largest rivers in Asia, including the Yellow, Yangtze, Mekong, Brahmaputra, Salween, Hindus and Sutlej among others. By some estimates, the Tibetan plateau is the source of fresh water for fully a quarter of the world's population."	Sharife (2008)

2008	Pakistan	Terrorism	Yes	In October, the Taliban threatens to blow up Warsak Dam, the main water supply for Peshawar, during a governmental offensive in the region.	Perlez and Shah (2008)
2008	Murulle, Garre clans	Development dispute	Yes	Fighting over boreholes in arid northern Kenya kills at least four people as competition for resources grows in the drought-hit region between the Murulle and Garre clans in Elwak, Mandera District.	Reuters (2008)
2009	China, India	Development dispute; Military tool	No	China claims a part of historical Tibet that is now under Indian control as part of the state of Arunachal Pradesh. To influence this territorial dispute, China tries to block a \$2.9 billion Asian Development Bank loan to India because it would help finance Indian water projects in the disputed area.	Wong (2009)
2009	Ethiopian Oromia, Somali regions	Development dispute	Yes	Ethiopian Somalis attack a Borana community in the Oromia region over ownership of a new borehole being drilled on the disputed border between them. Three people from the Oromia village of Kafa are killed and seven are injured, and the entire community is driven from their homes. The drilling rig is destroyed.	BBC (2009)
2009	Indian citizens	Development dispute	Yes	A family in Madhya Pradesh State in India is killed by a small mob for illegally drawing water from a municipal pipe. Others run to collect water for themselves before the water in the pipe runs out. Drought and inequality in water distribution lead to increasing conflict in the region. Indian media report more than fifty violent clashes in the state capital, Bhopal, during May alone. Since January, twelve people have been killed and even more have been injured.	Singh (2009)
2009	Mumbai residents, police	Development dispute	Yes	Police clash with hundreds of Mumbai residents protesting water cuts. One man is killed, and a dozen others are injured. Mumbai authorities are forced to ration supplies after the worst monsoon season in decades.	Chandran (2009)
2009	North Korea, South Korea	Political tool	Yes	Without previous warning, North Korea releases 40 million cubic meters of water from the Hwanggag Dam, causing a flash flood on the Imjin River. In South Korea, at least six fishermen and campers drown. North Korea claims that the water had to be urgently released and promises to warn the South of future releases. South Korea fears that North Korea could use the water of the dam as a weapon during a violent conflict.	Choe (2009)
2010	Pakistani tribes	Development dispute; Military tool	Yes	More than one hundred are dead and scores are injured following two weeks of tribal fighting in Parachinar, in the Kurram region of Pakistan near the Afghanistan border. The conflict over irrigation water began as the Shalozan Tangi tribe cut off supplies to the Shalozan tribe. Some report that Al-Qaeda may be involved; others claim that sectarian violence is to blame, as one group is Sunni Muslim and the other Shiite.	<i>Express Tribune</i> (2010); AP (2010)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Yes	No		
2010	Afghanistan	Terrorism	Yes		A remote-controlled bomb hidden in a water truck kills three people, including two children, in the eastern Afghan province of Khost, which borders Pakistan.	AP (2009)
2010	Pakistani Mangal, Tori tribes	Development dispute	Yes		A water dispute in Pakistan's tribal region leads to 116 deaths. In early September, the Mangal tribe cuts off the supply of irrigation water to lands used by the neighboring Tori tribe, leading to fighting.	CNN (2010)
2010	India	Development dispute	Yes		A protest over water shortages in the National Capital Territory of Delhi in India leads to violence. Erratic water supply and cutoffs in the Kondli area of Mayur Vihar in East Delhi cause a violent protest and several injuries.	Gosh (2010)
2010	Guatemala	Development dispute	Yes		Two unidentified gunmen on a motorbike shoot an activist protesting the impacts of mining on water quality and local water rights.	Amnesty International (2012)
2010	Protestors, authorities in India	Development dispute	Yes		At least three deaths and dozens of injuries are reported during protests over land and water given away for a power plant in Sompeta, in Srikakulam District in Andhra Pradesh, India.	<i>The Hindu</i> (2010)
2011	Yemen	Military target	Yes		Violence in Yemen's capital, Sana'a, leads to "acute water and power shortages, forcing residents to rely on power generators and buy water extracted from wells and sold on a thriving black market." The violence arises during the Yemeni uprising during the Arab Spring protests across the Middle East. During the violence, governmental soldiers shell neighborhoods and destroy many rooftop water tanks.	Shah (2012)
2011	Solomon Islands	Development dispute	Yes		Amnesty International reports that women in the slums of the Solomon Islands must walk more than a kilometer to fetch clean water and are "continually harassed, attacked, and raped." A survey shows that 92 percent of households do not have a tap in their home and that local water sources are often polluted, forcing women to walk through unsafe areas.	Amnesty International (2011)
2011	Israel, Palestinians	Development dispute; Military target	Yes		Israel's military destroys nine water tanks in the Bedouin village of Amniyr in the South Hebron Hills in the West Bank, Palestine. Later, soldiers destroy pumps and wells in the Jordan Valley villages of Al-Nasaryah, Al-Akrabanyah, and Beit Hassan.	Aburawa (2011)
2011	Israel, Palestine	Development dispute; Military target	Yes		Israelis from nearby settlements attack Qasra, a West Bank village of 6,000, destroying crops and a water well. Attackers previously burned down a mosque and damaged hundreds of olive trees.	Bsharat and Ramadan (2011)

2011–2012	Syria	Development dispute; Military goal	Yes	Severe political conflict in Syria has been aggravated by the multiyear drought gripping the region. More than 1.5 million people—mostly farmers and their families—have moved to cities and their outskirts. In 2008, US diplomats in Syria warned that the influx of rural people to cities “could act as a multiplier on social and economic pressures already at play and undermine stability in Syria.” Political unrest begins in March 2011 in Dara’a and soon escalates into civil war as ousters seek to overturn the regime of President Bashar al-Assad and the ruling Ba’ath Party.	Mohjadi (2012); Worth (2010); Femia and Werrell (2012)
2012	Libya	Military tool	Yes	During the 2011 Libyan Civil War, forces loyal to dictator Muammar Gaddafi gain control of a water operations center and cut off water supply to the capital. The system controls Libya’s “Great Manmade River”—a system of pumps, pipes, and canals that brings water from distant aquifers to Tripoli and other cities. Half the country is left without running water, prompting the United Nations and neighboring countries to mobilize tanker ships to deliver water to coastal cities.	Circle of Blue (2011); UPI (2011)
2012	Afghanistan	Terrorism	Yes	Up to 150 schoolgirls are reported sickened by poison in a school water supply in an intentional attack thought to have been carried out by religious conservatives opposed to the education of women.	Hamid (2012)
2012	Afghanistan	Terrorism	Yes	Seven children are killed by a bomb thought to have been intended for Afghan police and planted at a freshwater spring in Ghor Province.	Shah (2012)
2012	Afghanistan	Military target; Terrorism	Yes	Islamist militants execute militia members defending the Machaigho Dam in eastern Afghanistan. The dam is being developed for irrigation and local power supply. This dispute is one of several surrounding the international waters of Afghanistan, Iran, and Pakistan, which share several rivers.	Mashal (2012)
2012	India	Development dispute	Yes	Thousands of farmers in Karnataka try to prevent the release of water from two dams (Krishna Raja Sagar and Kabini) on the Cauvery River. Injuries to protestors and police are reported. The water releases were ordered by the Supreme Court of India, which required Karnataka to deliver water to the downstream state of Tamil Nadu despite severe drought. The dispute continues later in the year when Karnataka again halts releases.	Circle of Blue (2012); <i>Indian Express</i> (2012)
2012	India	Development dispute	Yes	Scuffles and protests break out around New Delhi during the summer as residents surround water delivery trucks and fight over water. The summer is the hottest in thirty-three years, leading to extensive energy and water shortages.	Reuters (2012a)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Yes	No		
2012	India, Pakistan	Development dispute; Military target	Yes		Violence erupts in the latest event in the dispute between Pakistan and India over the waters of the Indus River basin. Pakistani militants attack and sabotage water systems, flood protection works, and dams in the Wullar Lake region of northern Kashmir. They attack engineers and workers and detonate explosives at the unfinished Tulbul Navigation Lock/Wullar Dam. Pakistan claims the new dam violates the Indus Water Treaty by cutting flows to Pakistan.	UI Hassan (2012)
2012	Brazil	Development dispute	Yes		Brazil's federal police respond to reports that water used by the indigenous Guarani-Kaiowa tribe has been poisoned by nearby landowners attempting to gain control over disputed land. Since 2009, the dispute has led to the deaths of three tribesmen; tribesmen say the water runs through sacred land.	AP (2012)
2012	Brazil	Development dispute	Property damage		Work on the controversial \$13 billion Belo Monte Dam is halted after protesters burn buildings at three dam sites.	Phys.org (2012)
2012	Brazil	Development dispute	Yes		Northeastern Brazil sees growing conflicts after severe drought reduces water availability. News agencies report that one person a day is being killed in "water wars" that involve locals fighting over scarce supplies.	Catholic Online (2012)
2012	Peru	Development dispute	Yes		Several incidents of protests, injuries, and deaths are reported in regions of Peru where residents oppose large mines because of concerns over water quality and water rights. Police kill four protestors in clashes over the proposed Canadian-operated \$5 billion Minas Conga gold mine.	Reuters (2012b); Yeager (2012)
2012	Peru	Development dispute	Yes		Protests because of concerns over water quality and water rights around the Xstrata Tintaya copper mine lead to two deaths and fifty injuries.	Reuters (2012c)
2012	Egypt	Development dispute	Yes		Farmers from the Abu Simbel region in Egypt hold over 200 tourists hostage to protest inadequate irrigation water. The farmers had captured the tourists after they visited nearby monuments. They release them after officials agree to a temporary release of water.	<i>Egypt Independent</i> (2012)
2012	Egypt	Development dispute	Yes		Public protests over drinking and irrigation water shortages take place across Egypt. Several protests turn violent: in Beni Suef, one person is killed and many are injured during a conflict over irrigation water; in Minya, villagers clash with officials over water shortages and water pollution; in Fayyoom, hundreds of people protesting water shortages block a highway and set fires.	Ooska News (2012)

2012	Somalia, Kenya	Military target	Yes	Somali Al-Shabaab insurgents poison a well and damage water infrastructure near the port city of Kismayo, Somalia. Insurgents are fighting Kenyan peacekeeping troops participating in the African Union mission in Somalia.	Wabala (2012)
2012	Kenya	Development dispute	Yes	Violence, including several deaths, occurs during disputes over access to water in the poorest slums around Nairobi, Kenya.	Njeru (2012)
2012	Tajikistan, Uzbekistan	Development dispute	Yes	Uzbekistan cuts natural gas deliveries to Tajikistan in retaliation over a Tajik hydroelectric dam that Uzbeks say will disrupt water supplies. Gas flows resume after a new contract is signed.	Kozhevnikov (2012)
2012	Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, Kazakhstan	Development dispute	No	Tensions escalate over two proposed dams in central Asia: Kambarata-1 in Kyrgyzstan and the Rogun Dam in Tajikistan. These dams could affect water supplies in the downstream nations of Uzbekistan, Turkmenistan, and Kazakhstan. Uzbekistan's president, Islam Karimov, says the dams could cause "not just serious confrontation, but even wars."	<i>The Economist</i> (2012)
2012	Sudan, South Sudan	Development dispute	Yes	Violence breaks out at water points in the Jamam refugee camp in South Sudan. Médecins Sans Frontières reports that as many as ten refugees die every day because of water shortages at refugee camps in South Sudan.	McNeish (2012); Ferrie (2012)
2012	Egypt, Ethiopia, Sudan	Development dispute; Military target	Yes	Information is leaked about an alleged secret agreement that would allow Egypt to build an air base in Sudan to attack the Grand Ethiopian Renaissance Dam (GERD). Egypt is concerned that the dam, under construction in Ethiopia just upstream of Sudan on the Blue Nile, would reduce flows into its territory. The news reports, strongly denied by Egypt, claim that Sudan would allow Egypt to launch attacks if diplomatic efforts fail to resolve water-sharing disputes between Egypt and Ethiopia. The allegations are based on an internal 2010 e-mail made available by WikiLeaks.	<i>Sudan Tribune</i> (2012); Al Arabiya News (2012)
2012	Mali, Burkina Faso	Development dispute	Yes	A clash along the border between Dogon villagers from Mali and nomadic Fulani herders from Burkina Faso kills at least thirty people after an earlier agreement to share water and pastureland is revoked. Chaos following a military coup in March is partly responsible for the breakdown in law and order in Mali.	Xinhua News (2012b)
2012	Mali, Mauritania	Development dispute	Yes	Protests and violence over water shortages erupt in the capital of Mauritania, Nouakchott. By July, over 70,000 Malian refugees are seeking asylum in Mauritania, putting pressure on scarce food and water supplies.	Taba (2012)

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## Water Conflict Chronology *continued*

Date	Parties Involved	Basis of Conflict	Violent Conflict or in the Context of Violence?		Description	Sources
			Yes	No		
2012	Somalia	Development dispute	Yes		In August, fighting between two clans in the Lower Jubba region of south Somalia kills at least three people and wounds five. Reports from the village of Waraq (near the border with Kenya) indicate that the dispute began over the ownership of new water wells.	Shabelle Media Network (2012)
2012	Uganda, Kenya	Development dispute	Yes		Tensions lead to violence between Uganda and Kenya after Kenyan Pokot herdsmen cross the border seeking water and pasture. In October, the Ugandan government sends 5,000 soldiers to control violence among pastoralists from the two countries.	Bii (2012)
2012	Tanzania	Development dispute	Yes		Violence between farmers and pastoralists expands in Tanzania's southeastern Rufiji Valley, a region hit by drought. A farmer is killed in a conflict with a herdsman over access to water in the southern regions of Lindi and Mtwara. Five more people die and many more are injured in subsequent violence. According to local sources, violence has worsened during the prolonged drought.	Makoye (2012)
2012	South Africa	Development dispute	Yes		Protesters in poor communities of Cape Town, South Africa, riot over inadequate water and power. Hundreds burn tires, destroy cars, and throw rocks at police in anger over the lack of basic services.	Xinhua News (2012a)
2012	Syria	Military target	Yes		During the Syrian Civil War, the major pipeline delivering water to the city of Aleppo is badly damaged. The city of 3 million suffers severe shortages of drinking water.	BBC (2012a)
2012	Syria	Military target	Yes		In November, Syrian rebels fighting the government of President Bashar al-Assad overrun governmental forces and capture the Tishrin hydroelectric dam on the Euphrates River, after days of heavy clashes. The dam supplies electricity to part of Syria and is considered strategically important to the Syrian regime.	Mroue (2012)
2012	Indonesia	Development dispute	Yes		Violence breaks out over access to a water source in Maluku, Indonesia. Rival mobs from two villages attack each other "with sharp weapons, guns and explosives," causing several deaths and injuries.	Antara (2012)
2012–2013	Kenya	Development dispute	Yes		Extensive violence over water is reported in Kenya, with more than one hundred deaths in clashes between farmers and cattle herders. The conflict is part of a long-running dispute between Pokomo farmers and Orma people, seminomadic cattle herders, over land and water. The current conflict is exacerbated by Kenyan and foreign investment in vast tracts of land for food and biofuel cultivation, putting pressure on local resources. (See also the entry in 2001.)	AFP (2012); <i>Wikipedia</i> (2013b)



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