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Natural Resources under Occupation: The Status of Palestinian Water under International Law

Gamal Abouali

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NATURAL RESOURCES UNDER OCCUPATION: THE STATUS OF PALESTINIAN WATER UNDER INTERNATIONAL LAW

Gamal Abouali†

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I. INTRODUCTION

The water crisis in Palestine is not one that appears often in the headlines outside the Middle East.¹ The killing and wounding of unarmed demonstrators and the demolition of homes by Israeli (and now Palestinian) authorities are dramatic and visibly outrageous violations of Palestinian human rights. In contrast, a dried up well, an open sewage canal, or the lack of a system of piped clean water cannot compete for a spot on the nightly news. We can quickly forget the misappropriation or misuse of groundwater, precisely because it involves a subterranean resource which easily escapes even our initial notice.² This disregard is unfortunate; historic Palestine is one of the world's most water-stressed regions and the deteriorating quality and limited capacity of the region's water resources are of paramount importance to all residents of the area.

¹ One exception to this general rule is the coverage of the September 1995 Taba accords between the Palestine Liberation Organization and Israel. *See, e.g., Israel Says Reached Water Breakthrough with PLO*, REUTERS (BC CYCLE), Aug. 25, 1995 (announcing "breakthrough" consisting of recognition of Palestinians' water rights and increase in water allocation). This coverage, which repeated uncritically the negotiators' claims about the advances made in the water sector, significantly overstated the extent of the improvements. First, the recognition of future Palestinian needs amounting to 70-80 mcm/yr, even if realized, would only bring per capita Palestinian consumption to around one-third the Israeli level, from a current level of approximately one-fourth. Of this amount, fully 58-68 mcm/yr is to come from the Mountain Aquifer's Eastern basin, which is an endogenous water source and therefore not properly the subject of an international agreement. *See Israeli-Palestinian Interim Agreement on the West Bank and Gaza Strip*, Sept. 28, 1995, ann. 3, art. 40, ¶¶ 6-7 (Israeli Ministry of Foreign Affairs edition) [hereinafter *Interim Agreement*]. The Accord raised Palestinian consumption of shared waters by at most by 11.6 mcm/yr, an increase of around 20% from the present Palestinian share. However, since this share is so small to begin with, the Palestinian portion of common Palestinian-Israeli water resources that results from this reallocation is in the neighborhood of 12% of the annual recharge. Furthermore, this excess capacity, even if it exists, is of lower quality than the water that is currently produced. Second, the "recognition" of Palestinian rights to water by the Israelis is somewhat disingenuous and in reality a nonevent, given the manifold bases for a Palestinian right to the natural resources in its territory. *See AISLING BYRNE, WATER: THE RED LINE* 13-25 (1994) (reproducing authority under international humanitarian law, United Nations General Assembly resolutions, and international water law supporting right of Palestinians to their natural resources, including water). Furthermore, this recognition is not even complete, since the Agreement does not mention the Jordan River, to which Palestine is a riparian.

² *See, e.g., RAJA SHEHADEH, OCCUPIER'S LAW: ISRAEL AND THE WEST BANK* 15-61, 153-54 (rev. ed. 1988) (dedicating 45 pages to Israeli expropriation of West Bank land and only one page to water expropriation).

Israeli policies affecting Palestinian water have become a major area of focus within the Palestinian community, though this attention has come relatively recently.³ Importantly, the parties to the conflict recognized the importance of the issue by the inclusion, within the framework of the multilateral and bilateral talks that followed the Madrid Middle East Peace Conference, of a working group that dealt exclusively with the question of water and the environment in the Middle East.⁴ Water has been a subject of the Israel-Palestine Liberation Organization Declaration of Principles, the Gaza-Jericho Accord, and the Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip. However, while water cutoffs and shortages have impacted the lives of practically all residents of the West Bank and Gaza, many Palestinians are unaware of the parameters of the water problem, the quantities at stake, and the long term impacts of the water crisis on Palestinian health, agriculture, and ultimately independence.⁵ An adequate reso-

³ Many Palestinian professionals and non-governmental organizations (NGO's), both inside and outside Palestine, have dedicated themselves to study and advocacy in the area of Palestinian water rights. Some of the Palestinian NGO's specializing in this area include the Land and Water Institute, the Palestinian Hydrology Group, the Palestinian Agricultural Relief Committees, the Applied Research Institute/Jerusalem, and the Agricultural Engineers Association. See POLICY RESEARCH INC., *WATER AND SANITATION* 15 (1992). A bibliography of predominantly Palestinian works in this area show that almost no Palestinian academic or scholarly attention predates 1980. See PALESTINIAN ACADEMIC SOCIETY FOR THE STUDY OF INTERNATIONAL AFFAIRS, *THE PALESTINIAN ECONOMY: A BIBLIOGRAPHY* 168-80 (1994).

⁴ The working group first met in May 1992, and includes delegations from countries throughout the Middle East region (including Palestine and Israel), as well as the United States, Europe, and Japan. For a more detailed presentation of the progress of water negotiations in the multilateral and bilateral talks, see Aaron T. Wolf, *International Water Dispute Resolution: The Middle East Multilateral Working Group on Water Resources*, *WATER INT'L*, September 1995, at 141. The aim of the multilateral group was "to promote regional cooperation in joint management, conservation, and enhancing supply and data availability." See SHARIF S. ELMUSA, *THE WATER ISSUE AND THE PALESTINIAN-ISRAELI CONFLICT* 1 (1993).

⁵ For example, when the Gaza-Jericho Accord, which led to the *de jure* recognition by the Palestine Liberation Organization's (PLO's) of Israel's right to continue its present water policies in Gaza (at least during the interim period envisaged by the Accord) effectively ended the possibilities for improvement in this area until the end of this decade, very few people protested or reacted to the problem. Given the active movement that grew up around the campaign to free Palestinian detainees when the Accord failed to liberate detainees, the lack of a similar movement around the question of water indicates the relatively low priority that

lution of the division of the shared water resources is of concern to Israelis as well, since the bulk of the water used by that state comes from resources shared with Palestinians.⁶ Even within the context of a negotiated political settlement, an unstable or inequitable regional water management system could lead to a reappearance of the water-related conflicts that has marked the Middle East conflict in the past.⁷

Under the terms of the Declaration of Principles, the two sides negotiated at the Permanent Status Negotiations,⁸ which took place during the Wye River Talks. However, the water issue⁹ remained unresolved at the conclusion of negotiations. In any case, it is critical that the resolution of this problem be on the basis of international legal norms and not on the basis of one side's dominant bargaining power. Only a solution that is just and equitable will serve the long-term interests of both parties to this conflict. This Article attempts to provide a legal analysis that will help the two sides come to a more complete understanding of Palestine's rights to regional water resources. The reason behind the focus on Palestine is two-fold. First, Palestine, having endured decades of occupation, has experienced infringements on its water that were sustained and considerable. For it to be a viable country in the future, Palestine must, at least in the short-term, have access to its rightful share of water resources for its agricultural sector. In addition, in order to make amends for past infractions, Palestine must seek compensation for past misappropriation of its water resources. Fi-

the average Palestinian gives to creating a political solution to the water crisis in that arid region.

⁶ See Eyal Benvenisti & Haim Gvirtzman, *Harnessing International Law to Determine Israeli-Palestinian Water Rights: The Mountain Aquifer*, 33 NAT. RES. J. 543, 543 (1993). Approximately two-thirds of Israel's freshwater needs come from the Jordan River (shared with Palestine, Jordan, Syria, and Lebanon) and the Mountain Aquifer (shared with Palestine).

⁷ For a general discussion of the role that disputes over water has played in the Middle East conflict, see Aaron Wolf, *The Impact of Scarce Water Resources on the Arab-Israeli Conflict*, 32 NAT. RES. J. 919 (1992). See also ELMUSA, *supra* note 4, at 1-2 ("[i]n the Israeli-Palestinian context, water is a central ingredient, perhaps only second to land, of the wider conflict between the two sides").

⁸ Declaration of Principles on Interim Self-Government Arrangements, Sept. 13, 1993, art. 5, reprinted in AL-HAQ, A HUMAN RIGHTS ASSESSMENT OF THE DECLARATION OF PRINCIPLES ON INTERIM SELF-GOVERNMENT PRINCIPLES (Al Haq, Ramallah 1993) [hereinafter Declaration of Principles].

⁹ See Interim Agreement, *supra* note 1, at ann. 3, art. 40, ¶ 1.

nally, the legal resources available to the Palestinian nation are still quite limited, thus, this Article was written with the hope that the research and conclusions it contains will be of use to Palestinian negotiators in future negotiations.

This Article begins with a brief description of the physical background of the water systems of the region and of the patterns of human use and consumption, since a basic understanding is critical to an analysis of the international legal issues. Part III addresses, through a historical analysis, the attempts by the area's governments to regulate water use through law. Part IV analyzes the international legal status of Palestinian water from within the framework of the law of belligerent occupation. As an area under occupation by Israel, it is natural to look to this body of law first. Two substantive areas regulated by the Hague Regulations, the protection for movable and immovable private and public property of the occupied country, and the duty to preserve local law, have the most significance for the analysis of Israeli policies. Israeli policies have defeated the original regime of private rights to water, abolished preexisting Jordanian institutions, incorporated Palestinian water into Israel's national pool, and excluded any Palestinian role in the management of water resources at a regional or national level. It is shown by these actions that Israel has not only illegally infringed upon Palestinian private property rights protected by international humanitarian law, but also radically altered the laws and institutions of the preexisting water regime.

After the international humanitarian law analysis, this Article identifies areas where this corpus fails to supply a complete answer to some of its own imperatives. Article 43 of the Hague Regulations commands the occupant to restore and ensure public order and civil life. To determine the meaning of this provision in the context of prolonged military occupation, many international jurists and the Israeli Supreme Court have looked to the so-called Martens clause. This clause, located in the preamble of the Fourth Hague Convention of 1907 calls on parties to provide to civilians the protection of "the rule of the principles of the law of nations" to fill in the gaps in the Conven-

tion and Regulations.¹⁰ In particular, in the context of the growing involvement of most states in the provision of services and benefits to their citizens, many have seen the combination of the Martens clause and Article 43 as requiring that long-term occupants take into account the developing social and economic needs of the occupied population.

Part V of this article outlines the principles that underlie the rule of law by analysis, in particular, International Covenant on Economic, Social and Cultural Rights (ICESCR), to which Israel was either a signatory (since 1966) or a party (since 1991) throughout the period of its occupation of the West Bank and Gaza. Israel was, therefore, under an obligation first *not to undermine*, and later *to promote*, the rights included in the Covenant. These rights include the right of peoples to control their natural resources; the right to equal protection of the Covenant; the right to earn a living; the right to an adequate standard of living, including adequate housing; and the right to health. This obligation, as argued by the author, extended to Palestinians in the Occupied Palestinian Territories (OPTs) during the period preceding the recent accords, and may well apply even during the present transitional period.

This Article will show that: (i) Israel's monopolization of control over Palestinian water deprived Palestinians of their right to control their natural resources; (ii) that the wide and institutionalized differences between Palestinian and Israeli access to water and to water-related services and infrastructure have given rise to a violation of Palestinians' equal protection rights; (iii) their severe restrictions on Palestinian use of water in agriculture contributed to the underdevelopment of that sector and therefore led to the violation of the right to earn a living; and (iv) their neglect of Palestinian water-related infrastructure (drinking water networks, sewage systems, and waste water treatment plants) has led to a violation of Palestinians' right to an adequate standard of living and physical health.

The implications of this Part of the Article extend beyond the context of the Palestine-Israel conflict. As a whole, the literature around economic, social, and cultural (ESC) rights is un-

¹⁰ Regulations Annexed to the Convention (IV) Respecting the Laws and Customs of War on Land, Oct. 18, 1907, 36 Stat. 2295, T.I.A.S. No. 539, pmb. [hereinafter Hague Regulations].

derdeveloped and the ICESCR has not received anything resembling the attention given to the International Covenant on Civil and Political Rights (ICCPR). This is despite the fact that the post-war international human rights initiative of the United Nations envisaged these two sets of rights "civil and political on the one hand and economic, social, and cultural on the other" as indivisible and interdependent. Unfortunately, few human rights organizations currently monitor states' fulfillment of the ESC rights they guarantee to persons under their jurisdiction. In addition, few published works have attempted to develop the meaning of the words "progressively take steps" or "to the maximum of their available resources" or to define what standards apply to various countries in measuring their provision of ESC rights. Finally, almost no one has attempted to define remedies for violations of these rights, or to develop strategies for how to go about obtaining them beyond the political realm. Thus, while this Article is a contribution to the debate surrounding the Palestine question and attempts to address the international legal norms implicated in this conflict, it is also intended to serve as a contribution to the emerging international movement to develop the understanding and the interpretation and elaboration of ESC rights.

International humanitarian law is also indeterminate in the partition of regional transboundary water resources. As mentioned above, the Hague Regulations protect Palestinian private immovable property. In the water sector, this is primarily the Mountain Aquifer, a relatively large source of water underlying the West Bank, and the Jordan Valley, two large natural formations which Palestinians held communally under Ottoman and later Jordanian law. The analysis is quickly complicated by the fact that these are transboundary sources. Israel and Palestine share the Mountain Aquifer; in the case of the Jordan River, the riparians are Israel, Palestine, Jordan, Syria, and Lebanon. The Jordan River is subject to a customary division of its waters dating from an American-led diplomatic mission of the mid-1950's (the so-called Johnston Mission). Determining which parts of the River's waters the mission suggested should go to the West Bank would provide the basis for assessing the extent of Palestinian communal property expropriated by Israel. The Mountain Aquifer, on the other hand, is

subject to no such agreement. To fill the void, this Article looks to an emerging body of international law: the law of the non-navigational uses of international watercourses. Up until the late 1960's, international jurists were the prime promoters and developers of this body of law; since then, the United Nations International Law Commission has haltingly yet steadily engaged in the codification of principles governing the use of these basins. This Article discusses the implications of this body of law for the Israeli-imposed partition of the Mountain Aquifer. This Article concludes with an assessment of the results and a message to the negotiators who will resolve the question of water between Palestinians and Israelis.

II. HYDROLOGY, GEOGRAPHY, AND HUMAN USES

The West Bank and the Gaza Strip's three main water sources are the Jordan River, the Mountain Aquifer (a major geological formation underlying the West Bank and central Israel), and the Gaza Aquifer. The Jordan River is an international river system in whose basin lie five countries: Lebanon, Syria, Israel, Jordan, and Palestine. Two of the Mountain Aquifer's three basins are international, while the third is endogenous to Palestine. As these are the main water resources upon which Palestinians may legitimately draw, and since in any case they constitute the majority of the region's water resources and are the main subject of contention between Palestinians and Israelis, this Article focuses exclusively on these sources.¹¹

In the case of both Israel and Palestine, the bulk of the water resources consumed come from sources that are shared. In a region that is scarce in water and characterized by a variety of conflicts stemming from a number of factors, the sharing of water sources has served to exacerbate tensions and sometimes has even led to outbreaks of hostilities. As will be shown below, Israel has exerted considerable military and political effort in order to capture the waters of surrounding countries and Palestinians have seen their access to their own water severely curtailed as a result.

¹¹ By doing so, I ignore the Coastal Aquifer which, according to Israeli data, is a domestic Israeli water resource. It contributes around 400 mcm/yr to Israel's consumption needs (i.e., 25 percent of its total freshwater consumption). Other sources, such as rainwater and surface runoff, are for the most part potential only.

Human water use is commonly classified into three major categories: agricultural, domestic, and industrial. Of these three, Palestine and Israel make heaviest use of their water in their respective agricultural sectors. This category accounts for approximately seventy-five percent of the total national consumption in these two countries. In an arid climate, water for irrigation is a critical factor of production. Data on aggregate consumption levels is summarized in Table 1:

TABLE 1. AGGREGATE ISRAELI AND PALESTINIAN WATER USE-ALL WATER SOURCES (MCM/YR)

	AGRICULTURE	DOMESTIC	INDUSTRIAL	TOTAL
West Bank Palestinian ¹²	95-100	20-30		120-130
Gaza Palestinian ¹³	70	30		100
Total Palestinian	165-170	50-60		215-30
Israel ¹⁴	1327	96	367	1790
West Bank Settlers ¹⁵	53	12		65 ¹⁶
Gaza Settlers ¹⁷	12.5	2.5		12.5-17.5
Total Settlers	65.5	14.5		77.5-82.5
Total Israel and Settlers	1392.5	110.5	367	1,870

¹² The figures for West Bank Palestinians include the Palestinians resident in East Jerusalem.

¹³ See POLICY RESEARCH, INC., *supra* note 3, at 10.

¹⁴ Uri Davis, *Arab Water Resources and Israeli Water Policies*, in ISRAEL AND ARAB WATERS 16, 16-17 (Abdel Majid Farid & Hussein Sirriyeh, eds. 1985).

¹⁵ See ABDEL RAHMAN TAMIMI, *WATER: A FACTOR FOR CONFLICT OR COOPERATION IN THE MIDDLE EAST?* 7 (Arab Studies Society & Truman Research for the Advancement of Peace, Jerusalem 1991).

¹⁶ Shuval states that Palestinian estimates range between 65 and 100 mcm/yr. See Hillel Shuval, *An Inventory of the Water Resources of the Area of Israel and the Occupied Territories: Estimated Water Potential and Current Utilization*, in *A PROPOSAL FOR THE DEVELOPMENT OF A REGIONAL MASTER WATER PLAN* 73, 91-92 (Karen Assaf et al. eds., 1993). A mid-1980s study estimated that the consumption by West Bank settlers amounted to 40-50 mcm/yr, MERON BENVENISTI & S. KHAYAT, *THE WEST BANK AND GAZA ATLAS* (1986), though this estimate was based on the much lower settler population of a decade ago.

¹⁷ The figures for total settler consumption are from ELMUSA, *supra* note 4, at 6. As the consumption of Gaza settlers is little known, I could not find break out for agricultural versus nonagricultural consumption. Therefore, I split out the midpoint for Gaza consumption between the two categories in the same proportion as for West Bank settlements.

In general, the water sector in Palestine and Israel is in a state of crisis. This situation is characterized by the overexploitation of damageable water sources, the exhaustion of long-term storage, the deterioration in water quality, and increasing levels of demand driven by high population growth.¹⁸ However, Palestinians are forced to bear a disproportionate share of the burden, even though they have little institutional control over the development or the solution of this crisis.

The figures and information in this Part are subject to several caveats. First, estimates of water use may differ depending on the source. The data on water supply and use, while in many cases presented without a time dimension, fluctuate from year to year. For example, a year with low rainfall would normally give rise to higher-than-average demand figures (especially from the agricultural sector) and lower-than-average supply figures (since there is less rainwater to replenish groundwater sources). Measurements of use by millions of consumers and production by large and sometimes subterranean sources present many technical difficulties. Further, the political nature of this problem detracts from the objectivity of scientific "data" and "facts."¹⁹ The Israeli near-monopoly on the production and distribution of water shared with Palestinians²⁰ also contributes to a large information imbalance in Israel's favor.

A. *Mountain Aquifer*

Physical Structure. The Mountain Aquifer lies underneath almost all of the West Bank and most of central Israel.²¹ Not

¹⁸ See Jehoshua Schwarz, *Israeli Water Sector Review: Past Achievements, Current Problems, and Future Options*, in COUNTRY EXPERIENCES IN WATER RESOURCE MANAGEMENT 129, 133 (Guy Le Moigne et al., eds. 1992) (World Bank Technical Paper No. 175).

¹⁹ See POLICY RESEARCH, INC., *supra* note 3, at 5-6 ("[i]n the Occupied Territories, the intrusion of politics into discussions of water supply and demand affect data collection, analysis and presentations, making it extremely difficult to determine what data are sufficiently accurate to use as the basis for discussion"). For a systematic comparison of many of the estimates of water capacity from the various sources, see *id.* at 8, 10. See also SARA ROY, *THE GAZA STRIP SURVEY* preface (1986) (discussing difficulties in obtaining information on the Gaza Strip from official Israeli sources and complaining of "specific military restrictions placed on Palestinians prohibiting any form of research, survey, study or plan to be conducted on the Gaza Strip").

²⁰ See *infra* Part V.C.1.

²¹ See Benvenisti & Gvirtzman, *supra* note 6, at 550-52.

only is it one of the largest water sources in the region, it also provides the highest quality water.²² This aquifer is fed primarily by rainwater falling over the West Bank's mountainous spine, which extends from the Jenin area in the north to the Hebron area in the south.²³ This series of mountainous peaks averages about 700 millimeters of precipitation annually.²⁴ The rain that falls in this area and that avoids evaporation (ultimately only twenty-five to thirty percent of the precipitation) seeps downward through an area of permeable layers of soil and rock (the recharge area) until it reaches an impermeable formation, and rests in a huge receptacle known as the Mountain Aquifer.²⁵

The "storage area" is where the water entering through the recharge area comes to rest. It is a huge box-shaped formation with impermeable formations on all sides except for the "lid" (the recharge area in the spine of the West Bank mountains). The direction that the underground water takes once it enters the soil is determined by the gradient of the underlying impermeable formation. This box contains three basins, delimited by the ridges of the impermeable formation lying underneath the aquifers. The three basins are: the Western Basin,²⁶ lying in the western part of the West Bank as well as in central Israel; the Northeastern Basin,²⁷ lying mostly under the north-central West Bank; and the Eastern Basin lying in the eastern West Bank and extending southward into Israel.²⁸

²² See *id.*

²³ See *id.*

²⁴ See *id.*

²⁵ See *id.*

²⁶ This basin is also known in the English and Hebrew literature as the Yarqon-Tanninim Basin. The Arabic name is the El-Ouja-Al-Timsah Basin. See HISHAM AWARTANI, AL-'ABAR AL-ARTUWAZIYYAH FI AL-MANATIQ AL-FILASTINIYYAH AL-MUHTALLAH [ARTESIAN WELLS IN THE OCCUPIED PALESTINIAN TERRITORIES] 14 (1992). I will use the less unwieldy name Western Basin.

²⁷ Also called the Nablus-Gilboa or the Harod-Beisan Basin.

²⁸ For schematic cross-sections of the underground formations and for a map of the recharge area, storage area, and flow directions of underground water, see Benvenisti & Gvirtzman, *supra* note 6, at 553-54, figs. 2-3.

TABLE 2. CHARACTERISTICS OF THE MOUNTAIN
AQUIFER BASINS²⁹

	WESTERN BASIN	NORTHEASTERN BASIN	EASTERN BASIN
Recharge Area (km ²)			
Palestine*	1,400	650	2,150
Israel	400	50	50
Storage Area (km ²)			
Palestine*	50	650	1,950
Israel**	340	115	0
Present Consumption (mcm/yr) ³⁰			
Palestine*	25***	25	61
Israel** ³¹	335***	115	39
Present Uses			

²⁹ *But see* ELMUSA, *supra* note 4, at 2 (“[s]ince 1967, Israel maintained and actually increased its disproportionate exploitation of the water resources common to it and the Palestinians . . .”). This contradicts Benvenisti and Gvirtzman’s assertions that Israel’s use of the shared basins of the Mountain Aquifer did not change since occupation of the West Bank. *See* Benvenisti & Gvirtzman, *supra* note 6, at 558-59. *See also* ASSAF ET AL., *supra* note 16, at 28 (quoting Israel Ministry of Agriculture’s goal, as stated in its Master Plan for the Development of the Occupied Territories, of supplying 90 mcm/yr to the settlements by 1990).

³⁰ Practically all estimates for Palestinian consumption of West Bank groundwaters, whether Palestinian or Israeli, agree on a West Bank Palestinian consumption level of around 120-30 mcm/yr. What the sources disagree about to a larger degree is total Mountain Aquifer production. One Palestinian expert estimates, on the basis of West Bank rainfall data, a total annual recharge of 724 mcm/yr. *See* TAMIMI, *supra* note 15, at 6. Several authorities seem to agree on figures in the range of 635 mcm/yr, of which some is saline and not readily usable in agriculture or domestic uses. Benvenisti & Gvirtzman, *supra* note 6, at 555-60, and ELMUSA, *supra* note 4, at 6.

Given the fact that Palestinian consumption is relatively well known, the higher one’s estimate of total recharge, the higher Israeli consumption is, and the more lop-sided the distribution of water. The figures I have chosen here are near the low end of the range, and thus put Israeli practices in a relatively positive light.

³¹ Benvenisti & Gvirtzman, *supra* note 6, at 555-59. The authors rely almost exclusively on Israeli sources. *See id.* at 555-56 nn.38-41, 558-59 nn.52-63. Where numbers for recharge were not precisely specified, I made approximations based upon Benvenisti and Gvirtzman’s map. *Id.* at 554 fig. 3, and double-checked the resulting numbers by duplicating the calculation the authors made concerning the relative sizes of feeding and storage area. *Id.* at 557 n.47.

	WESTERN BASIN	NORTHEASTERN BASIN	EASTERN BASIN
Palestine*	-Irrigation in Qalqilya and Tulkarm -Domestic needs for western West Bank Palestinian towns and villages (via Israel)	-Irrigation in north central West Bank	Irrigation in Jordan Valley region -Domestic needs for eastern West Bank Palestinian Towns and villages.
Israel**	-Drinking water for most of Israel's large towns -General consumption for settlements in central West Bank region	-Irrigation in Beisan and Gilboa regions	-Irrigation for settlements in Jordan Valley region -Domestic needs for settlements in Jordan Valley region

For purposes of this table, Palestine effectively means the West Bank.

** "Israeli use" includes use by Israeli settlers and settlements on the West Bank.

*** When splitting up the quantities between Palestine and Israel, Benvenisti and Gvirtzman used the quantities pumped, and not consumed. The author arrived at the 25 mcm/yr figure by subtracting the figures from 125 mcm/yr (the number generally recognized as total West Bank consumption) the quantities pumped within the West Bank for the Northeastern and Eastern Basins, as well as an estimate for waters obtained from the use of cisterns and surface flow. This is because some of the water pumped from the Western Basin by Israel is then pumped back to Palestinian towns, including East Jerusalem, so Palestinian consumption would show up in Benvenisti & Gvirtzman's breakdown as Israeli "use."

Drainage. The three basins were once mainly drained by springs, although now water leaves mainly via pumping wells. Water from the Western Basin is pumped mainly in the storage area, which lies in central Israel.³² At present, approximately 300 wells located to the west of the Green Line exploit most of the capacity of the Western Basin.³³ This is apparently the most efficient place to drill these wells, as they can be shallower and higher yielding than if they had been drilled in the moun-

³² See Shual, *supra* note 16, at 82.

³³ See *id.*

tainous areas of the West Bank.³⁴ The Israeli pumps, which drain the Northeastern Basin, also lie within Israel.³⁵

The Eastern Basin is the only one drained primarily by springs.³⁶ It is also the one that saw the greatest increase in exploitation following the Israeli occupation.³⁷ For example, Israel has dug, after its invasion, a series of deep bore wells, some reaching 700 meters in depth, in the lower Cenomanian Basin of the Eastern Basin in the West Bank.³⁸ From these wells, they have pumped 18 mcm/yr of an estimated annual capacity of 25 mcm/yr of fresh water to supply to Jewish settlements in the Jordan Valley.³⁹ Furthermore, this fresh water used to come out of the ground through springs in the Jordan Valley; before its emergence it mixed with the brackish water of deeper ground water strata.⁴⁰ Thus, these new deep wells not only take three-quarters of the Basin's water, but take it from upstream, leaving the residue much more saline. Indeed, concurrent with the use of these deep wells, Palestinian wells in the vicinity have gone dry or have experienced a reduction in flow, while wells in the upper Cenomanian Basin have exper-

³⁴ See *id.*

³⁵ See Benvenisti & Gvirtzman, *supra* note 6, at 558-59. The Western Basin was once drained by the Yarqon springs near Petah Tikvah (discharge originally 235 mcm/yr) and the more northerly Tanninim springs (discharge originally 100 mcm/yr). Owing to the mining of the Western Basin, however, the water level has dropped significantly, and most of the water that issues must now be pumped. Currently, the waters of the Western Basin are for the most part pumped from Israeli wells located in the Lod plain south of Petah Tikvah in central Israel and as far as Beersheba in the south. The Tanninim waters are pumped from the Sharon plain, also near the coast. The Northeastern Basin was once drained mainly by springs in the Beisan (Bet She'an) Valley, the Gilboa springs along the margin of the Beisan (Bet She'an) Valley, and from the Wadi Fariah springs near Nablus. With the drop in the water level in this basin, the springs in the Beisan Valley have experienced a sharp drop in flow, and this drop has been made up by the pumping of wells in the Beisan and Gilboa areas north of the Green Line. See J. Schwarz, *Water Resources in Judea, Samaria, and the Gaza Strip*, in *JUDEA, SAMARIA, AND GAZA: VIEWS ON THE PRESENT AND FUTURE* 81, 89-91 (Daniel J. Eleazar ed., 1982).

³⁶ See Schwarz, *supra* note 35, at 89-91. The Eastern Basin is largely drained by a number of smaller springs near the shores of the Dead Sea and in the Jordan Valley, as well as further up the western bank of the valley. *Id.*

³⁷ See Shuval, *supra* note 16, at 84-86.

³⁸ See *id.*

³⁹ See *id.*

⁴⁰ See *id.*

enced an increase in salinity.⁴¹ In 1980, water consumption “within Judea and Samaria”⁴² was derived from pumping from the Jordan River (10 mcm/yr), wells (50 mcm/yr), and springs (50 mcm/yr).⁴³

Water Quality. On the whole, the Mountain Aquifer’s water is much less saline and of much higher quality than that of the Gaza Strip.⁴⁴ Chloride concentrations near the replenishment areas, where the water would probably be at its least chlorine levels, averaged 25-40 parts per million in Jerusalem and the northern West Bank and 60-80 ppm in Hebron in 1980.⁴⁵ At the outlets, which issue the water, the chlorine concentrations were somewhat higher but for the most part well below the standard set by the World Health Organization of 1,500 mg/l chlorides for drinking water.⁴⁶ While the level of salinity is lower than Gaza’s, the West Bank’s water is becoming more saline.⁴⁷

History. The Western Basin’s waters flow westward across the Green Line, ultimately finding their way to the Mediterranean.⁴⁸ Its two principal outlets have been the Ras el Ein (Rosh Ha’ayin) Springs, which fed the El Ouja (Yarkon) River near Jaffa/Tel Aviv, and the Timsah (Tanninim) Springs and River in

⁴¹ See *id.* Israelis have denied any causal link between these two occurrences. One Israeli commentator stated that “in a number of cases,” the Israeli authorities admitted the impact of their wells on adjacent Palestinian wells, though they offered replacement water from Mekorot. By doing so, they turned Palestinians from owners to renters of their natural resources. As for the claim regarding the upper Cenomanian Basins, some hydrologists state that an impervious strata between the two sub-basins does not allow for the salinity of one sub-basin to affect the other, while others counter that the potential existence of fissures in this strata could create interdependence. See Shuval, *supra* note 16, at 84-86.

⁴² Given the estimate of this figure (113 mcm/yr) and the political ban on the use of the word “Palestinian” in official Israeli circles in the early 1980s, this is probably a reference to Palestinian consumption, although the author does not explicitly say this.

⁴³ See Schwarz, *supra* note 35, at 91.

⁴⁴ See *id.* at 89-90.

⁴⁵ See *id.*

⁴⁶ See *id.* These exceptions are the Feshkha springs, located near the Dead Sea and draining the Eastern Basin, with a salinity of 1000-5000 ppm chlorides; the Tanninim springs in central Israel and draining the Western Basin, with a salinity of 600-1000 ppm chlorides; and the wells in the Gilboa-Bet She’an areas draining the Northeast Basin, with a salinity of 80-800 ppm chlorides. *Id.*

⁴⁷ See *infra* Part II.C.

⁴⁸ See Shuval, *supra* note 35, at 80.

the North.⁴⁹ Historically, Palestinians have made very little use of these waters for agricultural or commercial purposes, and most of the waters ultimately fed swamps in the areas adjacent to the springs.⁵⁰

Intensive use of these waters began in the 1920s and 1930s with large-scale Jewish immigration to Palestine.⁵¹ These settlers pumped water from the Yarkon River, and dug wells between Petah Tikva and Hadera to irrigate orange groves in the area between Tel Aviv and Petah Tikva.⁵² A Jewish immigrant, Dr. Pinchas Ruttenberg, was granted an exclusive concession to use the El Ouja (Yarkon) River for the generation of hydroelectric power and for irrigation by the British Mandatory Government in 1920.⁵³ This license was later expanded to include the exploitation of the Jordan and Yarmouk Rivers on March 5, 1926.⁵⁴ The Mandatory Government also tapped the Ras el Ein (Rosh Ha'ayin) Springs as the source of water for Jerusalem and Jewish farmers used the remainder via springs, rivers, and deep wells.⁵⁵ The main Israeli water project utilizing the aquifer is a sixty-six-inch Yarkon-Negev pipeline completed in 1954 that pumped 200 mcm/yr, effectively the flow of the Ras el Ein springs, to the Naqab desert.⁵⁶ By the time of the Six-Day War, the Israelis had fully exploited the aquifer.⁵⁷

The waters of the Northeastern Basin of the Mountain Aquifer flow naturally northward.⁵⁸ These waters also cross the Green Line and flow into the Beisan (Beit She'an) and Jezreal valleys.⁵⁹ Waters not used by Palestinian agriculturalists were

⁴⁹ See *id.* at 81.

⁵⁰ See *id.*

⁵¹ See *id.*

⁵² See *id.* at 73, 81.

⁵³ See Shuval, *supra* note 16, at 81.

⁵⁴ See *id.*

⁵⁵ See *id.* at 82.

⁵⁶ See *id.* at 81-82.

⁵⁷ See ASSAF ET AL., *supra* note 16, at 26. See also *The Water Crisis: 25 Years of Bad Management*, JERUSALEM POST, Jan. 3, 1990, at 8 (reproducing Israel State Comptroller's summary of her report on Israel's water situation and stating that "[i]n 1990, for the first time, the 'red lines' were wittingly crossed in the mountain aquifer, the main multi-year reservoir and source of drinking water for most of the large cities. . .").

⁵⁸ See ASSAF ET AL., *supra* note 16, at 26.

⁵⁹ See *id.*

used by Jewish farmers in the 1930's.⁶⁰ Like those of the Western Basin, the Northeastern Basin's waters were pumped at a rate equal to or exceeding annual replenishment.⁶¹

The Eastern Basin drains naturally towards the Jordan Valley and the Dead Sea.⁶² Before 1967, this Basin's waters were used exclusively by Palestinian agriculturalists, with the remainder flowing into marshes, the Jordan River, or the Dead Sea.⁶³ With the arrival of the Israelis, these waters were more intensively exploited as deep wells were dug to pump previously unused fresh water. Most of the water extracted from these wells is currently given to the Israeli settlers on the West Bank.⁶⁴

Israel's over-pumping of the Mountain Aquifer's Western and Northeastern Basins have caused drops in the water levels and consequently an increase in salinity.⁶⁵ These basins are surrounded by other water-containing geological formations "in both the vertical and horizontal planes" which contain saline water.⁶⁶ The decrease in the level of water in the fresh water aquifers, or a decrease in the flow of water from fresh water sources to brine sources, could in the words of one commentator disrupt the "delicate hydrodynamic balance between the fresh and saline water bodies. This balance is maintained as long as the water table remains above the so-called red line."⁶⁷ Even before the intentional crossing of the red lines during the drought in the late 1980s, the mining of the Western and Northeastern Basins led to "creeping salination"⁶⁸ averaging 1-2 ppm/yr. In the early 1960s, Israel initiated means to limit the over-pumping of these two basins, and began recharging this Basin from Lake Tiberias.⁶⁹

⁶⁰ *See id.*

⁶¹ *See id.*

⁶² *See id.*

⁶³ *See* ASSAF ET AL., *supra* note 16, at 26.

⁶⁴ *See id.*

⁶⁵ *See* Schwarz, *supra* note 35, at 93-94.

⁶⁶ *See id.*

⁶⁷ *Id.* at 93.

⁶⁸ *Id.*

⁶⁹ *See id.* at 93-94.

B. *Jordan River*

Physical Structure and Water Quality. The Jordan Valley constitutes the other major water system, which is shared by Palestine and Israel. The river originates in the Huleh Valley in Israel (the Dan River, averaging 245 mcm/yr); the Lebanon Valley in Lebanon (the Hasbani River, averaging 138 mcm/yr); and the Golan Heights in Syria (the Banias River, averaging 121 mcm/yr).⁷⁰ These three tributaries join in the Huleh Valley in northern Israel, and flow into Lake Tiberias,⁷¹ enclosed within Israeli-controlled territory.⁷² The flow of springs and wadis in the valley add to the waters of the upper Jordan River, bringing the total annual rechargeable volume to around 650 mcm/yr.⁷³ The Jordan River continues southward from Lake Tiberias inside Israeli territory until it reaches the Yarmouk River, whose annual recharge averages has been estimated at between 400 and 500 mcm/yr.⁷⁴ These waters of the Lake Jordan headwaters are of high quality and low salinity and are, therefore, useful for agricultural and domestic uses. However, Lake Tiberias, fed with saline subterranean springs, has considerably higher salinity (varying between 250-340 ppm as one moves southward).⁷⁵

The Yarmouk River is the Jordan River's main tributary, with a catchment area of 7,252 km² (eighty percent of which is in Syria and the Golan Heights), and flows between Jordan and Syria for 40 km before entering the Jordan River below Lake Tiberias.⁷⁶ The Yarmouk River serves as the natural boundary between Syria and Jordan.⁷⁷ The waters of the Yarmouk River are also low in salinity.⁷⁸ The portion of the Jordan River south of its connection with the Yarmouk River serves as the natural border between Israel and Jordan, and further downstream be-

⁷⁰ See WATER IN THE MIDDLE EAST: CONFLICT OR COOPERATION? 17-19 (Thomas Naff & Ruth C. Matson eds., 1984).

⁷¹ Alternatively, the Sea of Galilee in English, or Lake Kinneret in Hebrew.

⁷² See Naff & Matson, *supra* note 70, at 17-19.

⁷³ See *id.*

⁷⁴ See MIRIAM LOWI, Water and Power: The Politics of a Scarce Resource in the Jordan River Valley 28 (1993); Naff & Matson, *supra* note 70, at 25.

⁷⁵ See Naff & Matson, *supra* note 70, at 22-23.

⁷⁶ See *id.* at 21-22.

⁷⁷ See *id.*

⁷⁸ See *id.*

tween Jordan and the West Bank.⁷⁹ Its terminus is the Dead Sea. The water in the lower Jordan is quite brackish,⁸⁰ coming as it does from return irrigation flows and saline springs, though one report estimates that approximately 100 mcm/yr of this water could be rendered suitable for "development" purposes through the use of the relatively inexpensive reverse-osmosis method.⁸¹

TABLE 3. CHARACTERISTICS OF THE JORDAN RIVER BASIN⁸²

	YARMOUK RIVER	UPPER JORDAN RIVER AND LAKE TIBERIAS	LOWER JORDAN RIVER AND DEAD SEA
Length (km)	40	25	315
Drainage Basin (km ²)	7,252	1,000 ⁸³	17,300 ⁸⁴
Egypt	0	0	500
Israel	0	330	2,800
Jordan	1,450	330	12,000
Lebanon	0	330	0
Palestine*	0	0	2,000
Syria	5,802	0	0
Flow (mcm/yr)	400	650 ⁸⁵	250-300 ⁸⁶
Present Consumption (mcm/yr)			

⁷⁹ See *id.* at 22.

⁸⁰ *But see* Shuval, *supra* note 16, at 90 ("[t]he winter flows [of the Jordan River] are of better quality and can be used in the Jordan Valley since there is agricultural production there year round. . .").

⁸¹ See ASSAF ET AL., *supra* note 16, at 33-35.

⁸² All figures relating to Upper Jordan River and Lake Tiberias basin are based on the map of the Jordan River basin. See Lowi, *supra* note 74, at map 2.1.

⁸³ Professor Lowi states the size of the Jordan River basin as 18,300 km². See *id.* at 20. This figure is obtained by subtracting the size of the upper Jordan River basin. All figures related to the size of the lower Jordan River are based on map of the Jordan River basin. See *id.* at map 2.1.

⁸⁴ The sources of this water are as follows: Hasbani River (headwaters in Lebanon): 138 mcm/yr; Baniyas River (headwaters in Syria): 121 mcm/yr; Dan River (headwaters in Israel): 245 mcm/yr; Upper Jordan basin (Israel and Syria): 150 mcm/yr. See Naff & Matson, *supra* note 70, at 17-20.

⁸⁵ As this water is for the most part quite brackish, and since the Palestinian side of the border was made a Closed Military Area by Israel, the actual use of these waters is quite low, though some commentators believe that up to 100 mcm/yr is recoverable from this source through a reverse osmosis process. See Shuval, *supra* note 16, at 107.

⁸⁶ This estimate depends on whether one accepts Israel's claim that it drains 40 mcm/yr into the lower Jordan, or the Arab claim that Israel draws all the available capacity for its own purposes.

	YARMOUK RIVER	UPPER JORDAN RIVER AND LAKE TIBERIAS	LOWER JORDAN RIVER AND DEAD SEA
Israel	70	610-650 ⁸⁷	10? ⁸⁸
Jordan	110-150 ⁸⁹	0	0
Palestine (West Bank)	0	0	10? ⁹⁰
Syria	170	0	0
Revised Unified Johnston Plan (mcmM/yr) ⁹¹			
Israel	25	400	C
Jordan (East Bank)	250-330	100	C
Lebanon		35	C
Palestine (West Bank)	70-150		C
Syria	90	42	C
Present Uses	-Syrian Agriculture -Transported via East Ghor Canal to Jordanian agriculturalists on East Bank of lower Jordan -Israeli agriculture on bank of Yarmouk -Diversion to Lake Tiberias	-380 mcm/yr pumped by Israel to south via National Water Carrier -Israeli consumers in vicinity of lake -Domestic and agricultural use northeast of Israel	-Palestinian Ghor agriculture? -Israeli settlers?

Human Uses. Almost all of the flow of the upper Jordan River and Lake Tiberias is used by Israel.⁹² Israel's complete usage is confirmed by both Israeli and Jordanian sources, though these sources disagree on the amount of water that this

⁸⁷ See Shuval, *supra* note 16 and accompanying text.

⁸⁸ For conflicting estimates for this figure, see Shuval, *supra* note 16, at 104-05 (contrasting United States Army Corps of Engineers estimate with that of Jordanian academic).

⁸⁹ See Schwarz, *supra* note 35, at 91 and accompanying text.

⁹⁰ See Lowi, *supra* note 74, at 97-98, tbl. 4.4.

⁹¹ See *id.* at 25-28; Shuval, *supra* note 16, at 101-07. Like Benvenisti & Gvirtzman, *supra* note 6, this author, where relevant, gives preference to Israeli sources. See, e.g., Shuval, *supra* note 16, at 101 (relying on Tahal Consulting estimate of Israeli withdrawals from Upper Jordan and Lake Tiberias to exclusion of Jordanian Prof. E. Salameh). In some cases, where the texts were not explicit, I made approximations; these are explicitly flagged.

⁹² See ASSAF ET AL., *supra* note 16, at 33.

use represents.⁹³ Much of this water is fed into Israel's National Water Carrier, which transports it to the Naqab desert for irrigation purposes.⁹⁴ Most of the Yarmouk River's estimated annual yield is diverted or planned for diversion for irrigation and hydro-electric power for Jordan and Syria.⁹⁵ Syria reportedly withdraws approximately 170 mcm/yr to irrigate agricultural lands in the vicinity of the Yarmouk River.⁹⁶ Jordan withdraws 100 to 150 mcm/yr (depending on that year's climatic conditions) to irrigate 12,000 hectares of agricultural lands along the banks of the lower Jordan River and to supply some drinking water to Amman.⁹⁷ Israel pumps 25 mcm/yr from the Yarmouk for use by Israeli farmers on the banks of the River, and in addition some 45 mcm/yr is diverted to Lake Tiberias during the winter months.⁹⁸ In any case, very little water is left to flow into the lower Jordan. The lower Jordan River has a flow of some 250-300 mcm/yr, which ultimately ends up in the Dead Sea.⁹⁹ It is estimated that up to 10 mcm/yr of Jordan River water is used to supply Palestinian agriculture in the Jordan Valley.¹⁰⁰ If this is the case, the water is probably obtained from Mekorot Water Company installations in the valley, perhaps from the two sites that Palestinians claim are used to pump water for Jewish settlements in the Jordan Valley.¹⁰¹

History. Under the Ottoman Empire, the waters of the Jordan were used for small-scale irrigation projects.¹⁰² In 1913,

⁹³ See *id.* at 32 (reproducing Jordanian estimate of 650 mcm/yr and Israeli estimate of 570 mcm/yr) (quoting E. Salameh, *The Jordan River System, in JORDAN'S WATER RESOURCES AND THEIR FUTURE POTENTIAL* (A. Graber & E. Salameh, eds. 1992)); Schwarz, *supra* note 18.

⁹⁴ See ASSAF ET AL., *supra* note 16, at 33.

⁹⁵ See *id.*

⁹⁶ See *id.* at 34. This water is extracted through the use of earthen dams in the Yarmouk's tributaries and wells in the Yarmouk groundwater basin. See *id.* (quoting G. GRUEN, *THE WATER CRISIS: THE NEXT MIDDLE EAST CONFLICT* (1992)). This source reports that there is significant disagreement about the exact quantities withdrawn by Syria. While a 1987 Syrian-Jordanian pact allocated 170 mcm/yr, there are reports of an official Syrian document claiming that Syria withdrew 244 mcm/yr from the Yarmouk River in 1991, and planned to withdraw 366 mcm/yr by the year 2010. See ASSAF ET AL., *supra* note 16, at 34.

⁹⁷ See ASSAF ET AL., *supra* note 16, at 35.

⁹⁸ See *id.*

⁹⁹ See *id.*

¹⁰⁰ See Schwarz, *supra* note 35, at 91.

¹⁰¹ See Shuval, *supra* note 16, at 89.

¹⁰² See Naff & Matson, *supra* note 70, at 30-33.

the Director of Public Works in Palestine, Georges Franghia, first proposed a regional development program to use the river for hydroelectricity production and for irrigation.¹⁰³ The coming of the British Mandate ended the possibility of this plan's implementation.¹⁰⁴ Control over Palestine's water fell into the hands of the British. In the uncertain climate and the tense atmosphere provoked by large-scale Jewish immigration and their demands for water, the British did not engage in any major developments.¹⁰⁵ However, in 1926, it did award a seventy-year concession to a Jewish engineer, Pinhas Rutenberg, to use the Yarmouk and the Jordan to produce hydroelectric power, after turning down a similar request by a Christian Arab.¹⁰⁶ During the 1920's and 1930's, several regional water development reports appeared, and they quickly began to take on political overtones as they alternatively demonstrated or disproved the feasibility of large-scale Jewish immigration to Palestine.¹⁰⁷ The United Nations Partition Plan for Palestine specified borders without regard to the region's water resources.¹⁰⁸

In the period following the establishment of the State of Israel, both Israel and Jordan felt the need for a larger agricultural sector.¹⁰⁹ Israel, for a variety of political, strategic, and ideological reasons,¹¹⁰ decided that it had to expand greatly the agricultural sector as the only means of settling new, largely unskilled immigrants and of establishing its own military and political presence.¹¹¹ Jordan, burdened with the sudden influx of hundreds of thousands of Palestinian refugees and limited by its preexisting poverty and lack of economic development, also felt that it required agriculture to settle and employ its greatly expanded population.¹¹² However, Israel was far quicker to develop the Valley. Very early on, its water developments involved violations of the armistices, which it had signed with its neighbor states, as it engaged in operations in demilitarized

¹⁰³ *See id.*

¹⁰⁴ *See id.*

¹⁰⁵ *See id.*

¹⁰⁶ *See id.*

¹⁰⁷ *See Naff & Matson, supra note 70, at 30-33.*

¹⁰⁸ *See id.* at 33.

¹⁰⁹ *See id.*

¹¹⁰ *See infra* Part III.D.

¹¹¹ *See Naff & Matson, supra note 70, at 33.*

¹¹² *See id.* at 34.

zones and uprooted and displaced Palestinians from certain areas.¹¹³ These developments provoked military exchanges and diplomatic incidents between Israel and Syria.¹¹⁴ Ultimately, because of Israel's military superiority, it was able to engage in unilateral development projects, such as the draining of the Huleh swamp above Lake Tiberias.¹¹⁵

In October 1953, United States President Dwight D. Eisenhower appointed Eric Johnston as special ambassador to mediate a comprehensive plan for regional development of the Jordan River Basin.¹¹⁶ The base plan included provisions for the damming of several of the tributaries and headwaters of the Jordan River to increase water capture; the generation of hydroelectric power; the construction of canals on the east and west sides of the Jordan Valley, south of the Yarmouk for irrigation purposes; and the construction of canal works in the valley to take advantage of stream and precipitation flow in the valley.¹¹⁷ For the next two years, Johnston shuttled back and forth between the Arab states and Israel to attempt to come to an agreement.¹¹⁸ Finally, a Revised Unified Johnston Plan ("Johnston Plan") was developed.¹¹⁹ While the details have not been released, we do know that the plan provided for supervision by a Neutral Engineering Board.¹²⁰ The quotas allocated to each country are not known precisely, but the various sources come close to one another in their estimates.¹²¹ Technical committees of Israel and the Arab League approved the plan, though in the last instance the Arab League Council decided not to ratify the plan on October 11, 1955 as the difficult political situation in the region did not allow these countries to enter into an open political agreement with Israel.¹²² By 1956, American diplomats had abandoned efforts to reverse this Arab rejection, and

¹¹³ *See id.* at 35.

¹¹⁴ *See id.*

¹¹⁵ *See id.* at 33-39.

¹¹⁶ *See* LOWI, *supra* note 74, at 79-114.

¹¹⁷ *See id.*

¹¹⁸ *See id.*

¹¹⁹ *See id.*

¹²⁰ *See id.*

¹²¹ *See* LOWI, *supra* note 74, at 79-114.

¹²² *See id.*

by the time of the 1956 Suez War all talk of a regional development plan ended.¹²³

In spite of this official rejection, however, the Arab states "were determined to adhere to the technical details."¹²⁴ This is because the Arab riparian landowners, while unable to formally recognize or enter into diplomatic relationships with Israel, were nonetheless eager for a situation of tacit agreement which would allow them to develop the Jordan Valley's waters without threat of Israeli strikes.¹²⁵ Thus, unilateral development of the Jordan River ensued, most notably in construction of the National Water Carrier system in Israel and in the initiation of the Greater Yarmouk project in Jordan.¹²⁶ The first part of the latter project was the construction of the East Ghor Canal, which by 1966 had been extended down to Wadi Zarqa.¹²⁷ The Israeli National Water Carrier was designed to pump water from the relatively water-rich north (in particular, from Lake Tiberias) to the Naqab desert.¹²⁸ The Arab League attempted to thwart this planned extra-basin transfer by attempting to divert some of the water of the headwaters (in particular, from the Hasbani and the Banias rivers) to the Yarmouk river, and to store this new flow behind a new dam to be built at Mukheiba.¹²⁹ After the Arab states began construction of the diversion works, Israel protested that such a diversion would infringe upon Israeli rights.¹³⁰ In a series of military strikes, Israel hit the diversion works, and in April 1967 carried out air strikes deep into Syria.¹³¹ This hostility was an important factor in the build-up to the Six-Day War.¹³²

The Six-Day War provided tremendous hydrological benefits to Israel. It occupied the Golan Heights and thus the Banias headwaters of the Jordan River.¹³³ This position also allowed it

¹²³ See *id.*; Naff & Matson, *supra* note 70, at 39-42; See *supra* tbl.3.

¹²⁴ Naff & Matson, *supra* note 70, at 41.

¹²⁵ See *id.* at 43-44; See Lowi, *supra* note 74, at 115-144.

¹²⁶ See Lowi, *supra* note 74, at 115-144.

¹²⁷ See *id.*

¹²⁸ See *id.*

¹²⁹ See *id.*

¹³⁰ See *id.*

¹³¹ See Lowi, *supra* note 74, at 115-144.

¹³² See *id.*; Naff & Matson, *supra* note 70, at 43-44.

¹³³ See Sharif S. Elmusa, *The Jordan-Israel Water Agreement: A Model or an Exception?*, 24 J. PALESTINE STUD. 63, 71 (1995).

to prevent any diversion of water from these headwaters to the Yarmouk River.¹³⁴ It completely surrounded Lake Tiberias. It also occupied about half of the length of the Yarmouk River, as opposed to only 10 km.¹³⁵ This position forced Jordan to abandon the bulk of its Greater Yarmouk project, including the Mukheiba and Maqarin Dams and the West Ghor Canal.¹³⁶ Israel, by declaring the West Bank side of the Jordan River a Closed Military Area, shut down Palestinian consumption of Jordan River water, thereby destroying 140 pumps in the process.¹³⁷ Furthermore, in June and August 1969 Israel attacked and put out of commission all of the East Ghor Canal in order to pressure the Jordanian government to crush the Palestinian guerilla movement in Jordan. However, in the 1970's, the Jordan Valley Commission embarked on a seven-year Ghor development program which saw the planning of the Maqarin and King Talal Dams, smaller projects to capture water in the wadis, and the construction of subsurface drainage water.¹³⁸ Once again, the Maqarin Dam plans had to be abandoned after Israeli opposition caused funding to dry up. Similarly, in 1987, when Jordan attempted to arrange financing for the al-Wihdah (Unity) Dam on the Yarmouk River, a smaller version of the aborted Maqarin Dam, the World Bank conditioned financing on the agreement to the project of all riparians.¹³⁹ United States low-level intervention on Jordan's behalf continued for around one year before the Gulf War ended any hopes for a basin-wide agreement.¹⁴⁰

Meanwhile, Israel's occupation of the bank of the Yarmouk opposite the intake point for the East Ghor Canal had allowed it to stop efforts by Jordan to clear the silt and the rocks that had accumulated at the mouth of the Canal.¹⁴¹ Jordan sought American mediation in order to allow it to clear the build-up, which was greatly decreasing flow into the Canal, but was not

¹³⁴ See *id.*

¹³⁵ See *id.*

¹³⁶ See *id.*

¹³⁷ See *id.*

¹³⁸ See Lowi, *supra* note 74, at 180-81.

¹³⁹ See *id.*

¹⁴⁰ See *id.*

¹⁴¹ See Naff & Matson, *supra* note 70, at 44-53.

successful.¹⁴² In the meantime, Israel has increased its consumption of Yarmouk River water, so that it reached approximately 75 mcm/yr, in other words, multiples of its allocation under the Johnston Plan.¹⁴³ Jordan's consumption is far below its quota under the Plan.¹⁴⁴ This is made possible by Israel's military and political intervention to thwart Jordanian water development.¹⁴⁵

While efforts at an overt regional settlement ultimately failed, many have claimed that the final proposal for the partition of the waters "the so-called Johnston Plan" has come to be recognized as the *de facto* guideline for the division of the River's waters.¹⁴⁶ According to scholars of that period, the West Bank "then under Jordanian control" received its own allocation under the agreement. Israel's present consumption of Jordan River water indicates that it consumes this West Bank allocation for its own purposes.¹⁴⁷ Present Israeli consumption of Jordan River waters is currently around 690-730 mcm/yr, whereas under the Johnston Plan its average annual take was around 425 mcm/yr.¹⁴⁸ Israel is effectively consuming part or all of the quotas allocated to Lebanon, Jordan and the West Bank, since the consumption of these countries is less than their quota under the Plan.¹⁴⁹ As explained above, this has almost always been the direct result of Israeli military interventions designed to thwart water consumption.¹⁵⁰

The recent Jordan-Israeli peace treaty is the first formal agreement between Israel and an Arab state on the mutual use of the Jordan River's waters.¹⁵¹ The accord promises to Jordan significantly more water than it currently receives from joint Is-

¹⁴² See *id.*

¹⁴³ See *id.*

¹⁴⁴ See *id.*

¹⁴⁵ See Lowi, *supra* note 74, at 171-91; Naff & Matson, *supra* note 70, at 44-53.

¹⁴⁶ See Lowi, *supra* note 74, at 105 ("[t]he Johnston Plan became the *de facto* discussion point and measuring rod for all subsequent efforts at developing the Jordan waters").

¹⁴⁷ See *id.*

¹⁴⁸ See *id.*

¹⁴⁹ See *supra* tbl. 3.

¹⁵⁰ See Lowi, *supra* note 74, at 171-91. See also Naff & Matson, *supra* note 70, at 44-53.

¹⁵¹ See Treaty of Peace between the Hashemite Kingdom of Jordan and the State of Israel, art. 6, ann. II, reprinted in JORDAN TIMES, Oct. 26, 1994, at 8.

raeli-Jordanian water resources, though the amount promised is still less than its quota under the Johnston Plan.¹⁵² It is important to note that none of this increased amount comes from a redistribution of the waters of the Jordan River among the two riparian landowner's, but rather from the development of new sources of water (such as increased use of the King 'abdallah Canal and an impounding of the side wadis of the Jordan Valley).¹⁵³ Fully 23% of the new allocation comes from sources yet to be determined.¹⁵⁴ Finally, the plan makes no mention of the other riparian landowner's, especially the Palestinians, who currently get none of the Jordan River waters and have the unfortunate situation of being not only the weakest party in the basin but also the downstream riparian.¹⁵⁵

C. Gaza Aquifer

The aquifer in Gaza consists of three stacked sub-aquifers lying for the most part near the coast and sloping downwards in a westerly direction.¹⁵⁶ These start a few meters below sea level and can reach almost 100 meters in depth.¹⁵⁷ In addition, a permeable layer exists under Gaza at a depth of 200-300 meters, though this layer contains water that is too saline for human consumption.¹⁵⁸

It is estimated that the annual recharge to the aquifer from rainfall to be on the order of 25 mcm/yr.¹⁵⁹ However, this is on the low end of the spectrum. Other estimates tend to cluster around the 60 mcm/yr level.¹⁶⁰ Similarly, estimates for the an-

¹⁵² See Elmusa, *supra* note 133, at 64, 69.

¹⁵³ See *id.* at 67-68, 70-71.

¹⁵⁴ See *id.*

¹⁵⁵ See *id.*

¹⁵⁶ See H.J. BRUINS & IR. A. TUINHOF, WATER IN THE GAZA STRIP: HYDROLOGY STUDY PHASE I at 9-10 (1991).

¹⁵⁷ See *id.*

¹⁵⁸ See *id.* The study states that the salinity of the water in this aquifer decreases to 2000 mg/l outside of the Gaza Strip. The World Health Organization (WHO) recommended upper limit for drinking water salinity is 600 mg/l. See *id.* at 13.

¹⁵⁹ This estimate is from the Bruins & Tuinhof study. See *id.* at 11. The figure is based on an estimate of 100 mcm/yr of rainfall on the Gaza Strip and a 25% rainfall-to-recharge rate for semi-arid regions. *Id.* The authors of this study question the validity of other sources' estimate of an annual replenishment of 40-80 mcm/yr, stating that they "provide no background to these figures." *Id.*

¹⁶⁰ See, e.g., ELMUSA, *supra* note 4, at 6.

nual water supply for Gaza vary widely. This is due to different assumptions experts make about the availability and quantity of four sources: aquifer replenishment from rainfall, groundwater draining from the east, the infiltration of Gazan irrigation run-off, and the infiltration of Gazan wastewater.¹⁶¹

Whatever the replenishment rate, it is clear that at pumping levels of 115 mcm/yr, this aquifer is being severely overexploited. This chronic over-pumping has implications for the aquifer's water quality and for the likelihood of long-term structural damage.

Drainage. In 1986, the natural groundwater aquifers of the Gaza Strip were tapped by an estimated 2,195 boreholes,¹⁶² of which 2,150 were used for agricultural purposes.¹⁶³ Three hundred and fifty of these are located in the western part of the Strip, are relatively shallow (4-20 m), and yield good quality, non-saline water.¹⁶⁴ The eastern part of the Gaza Strip contains the great majority of the boreholes, which tend to be deeper (25-90 m) and yield lower quality water (250-1,500 mg/l of chlorides).¹⁶⁵

Israel has dug a number of new wells on the Israeli side of the border with the Gaza Strip, which Palestinians claim has reduced the groundwater flow to the Gaza Strip.¹⁶⁶ Israeli hydrologists have countered that these deep wells pump from deeper strata which end up feeding the brackish aquifer under the Gaza Strip; therefore, this pumping, while depriving Gaza

¹⁶¹ See POLICY RESEARCH INC., *supra* note 3, at 12. Experts disagree as to the amount of water that avoids evaporation and actually recharges the aquifer. Differences regarding the last three sources relate more to the desirability of its inclusion. Groundwater draining westward into Gaza originated mostly from the chemical-intensive agricultural sector in the Naqab desert. Runoff from Gazan agriculture is high in pesticide, herbicide, and fertilizer residues. Untreated Gazan human wastewater can introduce organic pathogens to groundwater. Therefore, the inclusion of at least the last two should imply the construction of wastewater treatment facilities that would make consumption of this water safe. *Id.* Groundwater draining from the East is estimated to provide 5-10 mcm/yr; Gazan runoff and wastewater are estimated to provide 10-20 mcm/yr. *Id.* Another expert quantifies the amount properly treated Gazan wastewater effluent could contribute at 25-30 mcm/yr. *Id.*

¹⁶² Schwarz estimated 1600 wells in 1980. See Schwarz, *supra* note 35, at 99.

¹⁶³ See BRUINS & TUINHOF, *supra* note 155, at 22-23.

¹⁶⁴ See *id.*

¹⁶⁵ See *id.*

¹⁶⁶ See Shuval, *supra* note 16, at 98.

of a "few" mcm/yr, would also contribute to a drop in the salinity of the aquifer.¹⁶⁷ However, given the interlocking and interconnected nature of the various aquifers in and around the Gaza Strip, there is a high likelihood that a reduction in any inflow of water would contribute to an increase in the salinity of the aquifer from which Gazans draw their water.¹⁶⁸

Israel also has built dams and diversion wells in the Wadi Gaza drainage basin that have reduced the flood water flow entering the Gaza Strip area that otherwise would be used by Palestinian farmers or contribute to the recharge of the aquifer.¹⁶⁹ One commentator has identified these dams as one of the major causes of Gaza's water problems.¹⁷⁰ Israeli commentators point out that the impervious clay strata under most of Wadi Gaza would largely prevent the water from recharging the aquifer.¹⁷¹ Furthermore, they state that Israel takes only 2 mcm/yr from this source, leaving most of the water to flow into Gaza.¹⁷²

Quality. Due to extensive over-pumping, the Gaza Aquifer is threatened with salinification and long-term structural damage. As the water level drops, saline seawater intrudes from the Mediterranean and brackish water from the aquifer lying below the freshwater aquifer seeps in as well. In addition, the intense pumping of the aquifer, combined with the recharge of the aquifer by irrigation and domestic water and the lack of any flushing of water out to sea, has created a "semi-closed system" that has seen a build-up of salts and nitrates. A damaged aquifer is exceedingly difficult to repair.

As a result of this process, many of Gaza's artesian wells have had to be closed because of an excessively high saline content. In total, about eighty-five percent of Gazan well water is unfit for human consumption, according to WHO standards.¹⁷³ The United Nations Relief and Works Agency (UNRWA), the agency charged with the administration of the refugee camps that house a third of Gaza's population, has conducted tests that show that the wells in Breij, Nuseirat and Deir el-Balah

¹⁶⁷ *See id.*

¹⁶⁸ *See id.*

¹⁶⁹ *See TAMIMI, supra* note 15, at 7-9.

¹⁷⁰ *See id.*

¹⁷¹ *See id.*

¹⁷² *See id.*

¹⁷³ *See POLICY RESEARCH INC., supra* note 3, at 13.

refugee camps, located in the central part of Gaza, as well as Rafah refugee camp, located in the southern end of the Strip along the Egyptian border, have salinity levels that exceed the WHO guideline maximum, in some cases by around 100%.¹⁷⁴

Salinity levels in the aquifer, already bad, are increasing at a perceptible and rapid rate.¹⁷⁵ A study reported in 1980 indicated that the salinity levels increased by 20 to 200 mg/l of chlorides over a five-year period and that the salinity could go on increasing at those rates if levels of over-pumping are maintained.¹⁷⁶

The levels of nitrates (NO³⁻) in Gaza's groundwater are also dangerously high.¹⁷⁷ A 1988 UNRWA study has estimated that the nitrates levels equal or substantially exceed the WHO-recommended maximum in several of Gaza's refugee camps.¹⁷⁸ One study attributed these levels to "domestic pollution,"¹⁷⁹ probably a reference to the lack of human waste treatment facilities in many of Gaza's refugee camps.

History. Interestingly, Gaza's status as the most water-stressed region in Palestine is a historical novelty. In fact, Gaza was until this century known for its relatively *abundant* water supply, attracting travelers, traders, and armies on their way to, or coming from, the Sinai desert.¹⁸⁰ This abundance only had meaning in relation to the needs of the local population, which until this century numbered in the few tens of thousands. With the huge influx of refugees in 1948 and the explosive population growth rate, the population in the Gaza Strip had risen to approximately 750,000 in 1990 and is projected to reach 1,000,000 in the year 2000.¹⁸¹

¹⁷⁴ See BRUINS & TUINHOF, *supra* note 155, at 13. Particularly badly off are the Deir el-Balah and Nuseirat refugee camps, with salinity levels around double the WHO-recommended maximum. *Id.* at 12. Some of the UNRWA study samples report significant ion imbalances, and thus may overstate the degree of anions such as chlorides and nitrates. *Id.* at 11.

¹⁷⁵ See Schwarz, *supra* note 35, at 93-94.

¹⁷⁶ See *id.* (estimating increase in water salinity in Western Basin as 1-2 ppm/yr on average and as 10 ppm/yr in worst-hit areas).

¹⁷⁷ See BRUINS & TUINHOF, *supra* note 155, at 12.

¹⁷⁸ See *id.* For a caveat to the reliability of these figures, see *supra* note 173.

¹⁷⁹ BRUINS & TUINHOF, *supra* note 155, at 13.

¹⁸⁰ See *id.* at 1.

¹⁸¹ See *id.* at 20.

The water situation in the Gaza Strip began deteriorating before the onset of Israeli occupation, as the pressure of an ever-increasing population quickly exhausted the Strip's limited water resources.¹⁸² As a result of the over-pumping, the water table has dropped throughout the aquifer, leading to seawater intrusion.¹⁸³ This acceleration in the use of the groundwater ended in the mid-1970s, as military authorities restricted the drilling of new wells for agricultural purposes.¹⁸⁴

Whatever problems existed in the past with regard to the region's water resources, will only worsen in the future. "There is no solution in sight for the water deficiency problem from the natural water resources of the area Closing the gap between limited water resources and growing needs will, therefore, require large-scale development and huge investments of capital and know-how."¹⁸⁵ The Gaza Strip, due to accidents of location and because of its population, is experiencing the most critical water problem in Palestine. It will undoubtedly serve as the test case of the current political settlement's ability to resolve local water allocation problems.

Now that a basic understanding of the physical aspects of the problem has been provided, the remaining sections will present the legal analysis.

III. LOCAL WATER LAW

For natural resources with economic, political, or strategic importance, the legal regime of ownership and control rights can be as important to an understanding of the resource's development as its physical characteristics. As shown in Part IV.A below, an understanding of local law permits the classification of Palestinian water within the property typology of the Hague

¹⁸² See ASSAF ET AL., *supra* note 16, at 32 (estimating that during Egyptian occupation water was pumped at a rate of 120 mcm/yr, as compared to an annual recharge rate of approximately 60-65 mcm/yr); see also Isam R. Shawwa, *The Water Situation in the Gaza Strip*, in WATER: CONFLICT OR COOPERATION? (G. Baskin ed., 1992) (stating that between 1948 and 1967, "there was an inadequate control in the provision of permits for water drilling. As a result the number of bore holes increased markedly. Farmers drilled and used as much water as they wanted").

¹⁸³ See ASSAF ET AL., *supra* note 16, at 32.

¹⁸⁴ See DAVID KAHAN, AGRICULTURE AND WATER RESOURCES IN THE WEST BANK AND GAZA (1967-1987) 25 (1987).

¹⁸⁵ See Schwarz, *supra* note 35, at 100.

Regulations. Once one has an understanding of the legal and institutional structure of Palestinian water law, one can better appreciate the fundamental nature of the changes that were wrought by Israel during its occupation of the OPTs, as discussed in Part IV.B below.

A. *Shari'a and Ottoman Law*

Constrained by the aridity of their environment, societies in the Middle East have long needed to regulate the use of water. Given the predominance of Islam in these areas, and its historical role in providing a comprehensive legal system to its adherents, it is not surprising that water regulation is a component of *shari'a*, or Islamic, law. The centrality and importance of water regulation to Arab society is reflected in the fact that the original meanings of *shari'a* is the "path to the water," or, at an earlier time, "the law of water."¹⁸⁶

Shari'a provided four basic principles of law:

- 1) Water is a gift of God, and belongs in principle to the community. This creates a basic right of *shafa* (drink) in the community;
- 2) Value added to water by labor in the form of retaining it in a recipient and/or through distribution or conservation works may create a qualified right of ownership. This is particularly true for irrigation (right of *shirb*), and will also permit the appropriation of water, which is carried by recipients;
- 3) Water sharing principles may vary according to local uses, but the general trend is the acknowledgment of a right of prior appropriation combined with the required distribution of surplus;
- 4) Liability attaches to withholding or misuse of water, including for polluting or degrading water.¹⁸⁷

At the turn of the twentieth century, Palestine was part of the Ottoman Empire. The Majalla, the great codification of Islamic law that the Ottoman Empire promulgated in the areas

¹⁸⁶ Chibli Mallat, *The Quest for Water Use Principles: Reflections on Shari'a and Customs in the Middle East*, in WATER IN THE MIDDLE EAST: LEGAL, POLITICAL AND CULTURAL IMPLICATIONS 127, 128 (J.A. Allan & Chibli Mallat eds., 1995) [hereinafter WATER IN THE MIDDLE EAST].

¹⁸⁷ *Id.* at 129-130.

under its rule in 1883, regulated the use of water in Articles 1234-1326.¹⁸⁸

The Majalla reproduced many of the principles of the Islamic law of water mentioned above, in particular the communal-private ownership distinction. According to this scheme, water in nature is free for use by the public.¹⁸⁹ In particular, water flowing underground is free for public consumption.¹⁹⁰ To become individually private, or *mulk*, property, the water must be captured.¹⁹¹ This can be achieved either directly, such as by pumping the water out of the ground, or indirectly, such as by placing a vessel out to catch rainwater, but in any case it must be intentional.¹⁹² Similarly, the water of rivers that do not get divided into channels is free to use, although when a river enters into channels, which are owned in shares, then that river becomes *mulk* property as well.¹⁹³ There exists a principle that anyone can make use of free property (such as water in nature), provided that that use does not cause harm to others. Similarly, a person may not interfere with another's efforts to capture a free good.¹⁹⁴ All persons have a basic right to drink, which trumps even *mulk* property rights.¹⁹⁵

The Majalla is still residual legislation in Palestine and Jordan.¹⁹⁶ Through this and the influence of civil law systems such as that of France, the general regime of water law in the modern Middle East provides that the rights of the state or community to water come first, whereas those of the individual or corporations are residual.¹⁹⁷ This communal-private distinction underlay the water rights regime in both the West Bank and Gaza at the time of the Israeli occupation in 1967.¹⁹⁸ It is critical, for purposes of the discussion of humanitarian law, to

¹⁸⁸ *Id.* at 130.

¹⁸⁹ See THE MEJELLE art. 1234 (C.R. Tyser trans., All Pakistan Legal Decisions publ., 1967) [hereinafter MAJALLA].

¹⁹⁰ See *id.* art. 1235.

¹⁹¹ See *id.* art. 1248.

¹⁹² See *id.* arts. 1248, 1250.

¹⁹³ See *id.* arts. 1234-35, 1239-39, 1248.

¹⁹⁴ See MAJALLA, *supra* note 188, at 1255.

¹⁹⁵ See *id.* art. 1267-68.

¹⁹⁶ See, e.g., Fouad B. Atalla, *Jordan*, in 1 INTERNATIONAL ENCYCLOPEDIA OF COMPARATIVE LAW at J-27, J-29 (Victor Knapp ed., 1971).

¹⁹⁷ See Mallat, *supra* note 185, at 129-31.

¹⁹⁸ See SHEHADEH, *supra* note 2, at 23.

recall that under Ottoman law, this communal right to use and capture does *not* mean that title was vested in the state or Sultan.¹⁹⁹ There existed a device for this kind of ownership; this was the same *mulk* category discussed above.²⁰⁰ Thus, while rights to free goods were communal, they were also private in the sense that they did not belong to the state.

B. *British Mandate Law*

The Ottoman Empire collapsed on October 30, 1918, and Palestine came under the control of Britain. Palestine came under the mandate system developed by the League of Nations.²⁰¹ Palestine became an "A" Mandate (i.e., one of several "communities that have reached a stage of development where their existence as independent nations can be provisionally recognized, subject to the rendering of administrative advice and assistance by a Mandatory until such time as they are able to stand alone").²⁰² The League recognized the right of these regions to sovereignty, which they would assume once it was possible to establish a national government.²⁰³ In the meantime, however, the Mandatory Power held that region's sovereignty in trust.²⁰⁴ Therefore, the Mandatory Power had the right to enact legislation.²⁰⁵

Water-related legislation enacted during the Mandate did little to change the water ownership regime that existed during the Ottoman era. Mandatory laws allowed for the continuation and initiation of drinking and irrigation water production establishments. However, these establishments remained organized at the local level, with no provision made for national planning. The major changes occurred in the creation of authority, vested in the High Commissioner and persons under his authority, to allow entry onto private land for the purposes of

¹⁹⁹ *See id.*

²⁰⁰ *See id.* (describing Sultan's title to *mulk* lands obtained by virtue of his conquest of area).

²⁰¹ *See* LEAGUE OF NATIONS COVENANT, art. 22, ¶ 1.

²⁰² *Id.* art. 22, ¶ 4.

²⁰³ *See* ALLAN GERSON, ISRAEL, THE WEST BANK AND INTERNATIONAL LAW 42 (1978).

²⁰⁴ *See id.* (quoting decisions of the International Court of Justice and *opinio juris*).

²⁰⁵ *See id.* at 43.

water exploration,²⁰⁶ to restrict pumping in areas used by projects engaged in the production of water for domestic use,²⁰⁷ to undertake irrigation and other water-related development schemes,²⁰⁸ and to prevent flooding and erosion.²⁰⁹ While these laws differ in their effect, they all contain provisions that require the High Commissioner to provide notice to affected landowners and water consumers of any projects or actions undertaken by the High Commissioner, and also to compensate them for any harm they suffer. Also, should an affected property owner wish to dispute the adequacy of compensation, the laws make provisions for appeal to the High Commissioner.

C. *Jordanian and Gaza Law*

As Jewish immigration to Palestine increased, and as Palestinians increasingly resisted overt Zionist ambitions in Palestine, Britain became increasingly unwilling to administer the country. Therefore, on February 14, 1947, Britain announced its intention to terminate its mandate over Palestine, and referred the question to the newly formed United Nations. On November 29, 1947, the General Assembly voted in favor of the Palestine Partition Plan, which divided the country into Arab and Jewish states.²¹⁰ Arab states, as well as Palestinians, widely disputed the legitimacy of this plan, and fighting in the area soon followed the General Assembly action. Arab irregulars, and in 1948 regular armies, intervened (though none went beyond the U.N. Partition Plan lines). On May 15, 1948, the date of the completion of the British Mandate, Israel declared its independence. By 1949, Israel and the surrounding Arab states agreed on Armistice Lines that remained the *de facto* borders between Israel and the surrounding states until 1967. Jordan annexed the West Bank, and Egypt incorporated the Gaza

²⁰⁶ See Law No. 2 of 1938, Law for the Exploration of Water Resources, 757 PALESTINE GAZETTE (Supp. 1), Feb. 10, 1938.

²⁰⁷ See Law No. 17 of 1937, Law for the Protection of Public Water Works, 711 PALESTINE GAZETTE (Supp. 1), Aug. 19, 1937.

²⁰⁸ See Law No. 15 of 1942, (Surface) Water Distribution Law, 1204 (Supp. 1) PALESTINE GAZETTE, June 24, 1942.

²⁰⁹ See Law No. 12 of 1941, Flooding and Erosion (Prevention) Law, PALESTINE GAZETTE (Extraordinary Issue of May 1, 1941 Supp. 1), Mar. 10, 1941.

²¹⁰ G.A. Res. 181, U.N. GAOR, 2d Sess., 131-50, U.N. Doc. A/181 (1947).

Strip as a separate administrative unit separate from the Egyptian state's structures.

The question of whether Jordanian laws have legitimacy in the West Bank is, therefore, not readily apparent from a theoretical perspective; nonetheless, many Palestinians accept the legitimacy and applicability of at least some Jordanian *laws* (if not the entirety of the Jordanian legal regime) in the West Bank without controversy.²¹¹ There are two possible explanations for the legitimacy of Jordanian law. The first is that the nature of Jordan's administration of the West Bank rendered it something more than a mere belligerent occupant, and therefore gave it some power to enact changes to the local law regime. This first explanation is fraught with theoretical and political difficulty. Another, more palatable explanation is that Jordan, as a belligerent occupant within the traditional meaning of the term, had the power to change the regime of local laws if in doing so it served public order and the civil life of the local population.²¹² Given the procedural background of the administration of the Jordanian state as a whole and of the enactment of legislation in particular, the *laws* that Jordan enacted during the period of its occupation are of greater legitimacy than those enacted in most other periods of occupation.

The process of Jordan's annexation of the West Bank, and of its subsequent conduct of affairs, at least formally, has the appearance of basic legitimacy.²¹³ As mentioned above, Jordan's forces crossed into the West Bank on May 18, 1948. The western border of the Hashemite Kingdom of Jordan, as delimited in the 1946 action by the Council of the League of Nations

²¹¹ For example, in his classic treatment of Israeli legal practices under occupation, Raja Shehadeh, a leading Palestinian lawyer, accepts the applicability of Jordanian law in the areas of land and water (among others) without question. See SHEHADEH, *supra* note 2, at 64. "The law that applied to the West Bank when Israel occupied it in 1967 was Jordanian law. The Jordanian courts had sole jurisdiction over all residents of the West Bank in civil and criminal matters." *Id.*

²¹² These are the powers of a belligerent occupant delineated under Article 43 of the Regulations Annexed to the 1907 Fourth Hague Convention. See *infra* Part IV.B.

²¹³ For a brief overview of the process of the incorporation of the West Bank into Jordan and the gradual process of replacement of Mandate law with Jordanian law, see Walid al-'asali, *The Legal System in the West Bank: 1948-67*, in AYY NITHAM QANOONI LI-FILASTIN? [WHICH LEGAL SYSTEM FOR PALESTINE?] at 11, 11-12 (Birzeit University Law Center eds., 1995).

to grant independence to Trans-Jordan, was the Jordan River; therefore, Jordan did not have sovereignty over the West Bank.²¹⁴ The next day, however, the forces declared their authority in the West Bank pursuant to the Jordanian Defense Law of 1935. On October 1, 1948, a conference of 5,000 West Bank notables,²¹⁵ held in the West Bank town of Jericho, acclaimed Jordan's King 'abdallah as the sovereign of Arab Palestine. King 'abdallah welcomed the proclamation, stating that the Jericho Conference's statement was an expression of the will of "the majority of the people in Palestine to unite the two sister countries."²¹⁶ Military rule continued until November 2, 1949, at which point the King assumed the powers of the British King and Mandate's High Commissioner. In 1950, general elections conducted on both sides of the Jordan River sent delegates to the Jordanian Parliament.²¹⁷ This Parliament, with representatives from both the West and East Banks, passed a resolution endorsing the union, and on January 1, 1952, a Constitution incorporating the two banks of the Jordan River was passed.²¹⁸ According to a citizenship law passed soon thereafter, persons from both the East and West Banks were to be citizens of the kingdom.²¹⁹ Many of the Justice Ministers under Jordanian rule were Palestinian.²²⁰

There are many reasons to dispute Jordan's claim to title over the West Bank under these circumstances. When a power can station its army on the land of another and produce some of the formal requirements for a transfer of sovereignty, and then actually become the territory's sovereign, widespread abuse by expansionist states will result. These fears are borne out by the

²¹⁴ See GERSON, *supra* note 202, at 40-76.

²¹⁵ The population of the West Bank at the time was around 465,000. See MERON BENVENISTI, *THE WEST BANK DATA PROJECT: A SURVEY OF ISRAEL'S POLICIES 2* (1984).

²¹⁶ See GERSON, *supra* note 202, at 77 (quoting Policy Statement of the Government of Trans-Jordan adopted by the Council of Ministers, Dec. 7, 1948, *aff'd*, Trans-Jordan's Parliament, Dec. 13, 1948).

²¹⁷ See *id.* at 79.

²¹⁸ See *id.* at 76-78; al-'asali, *supra* note 212, at 1-2.

²¹⁹ Jordanian Citizenship Law of 1954, 1171 *Al-Jaridah al-Rasmiyyah lil-Mamlakah al-Urduniyyah al-Hashimiyyah* [Jordanian Official Gazette], Feb. 16, 1954.

²²⁰ Telephone interview with Dr. Ghassan Faramand, Associate Director, Birzeit University Law Center, April 9, 1996.

events leading to Jordan's annexation. For example, many dispute the authenticity of the vote of support at the Jericho Conference, seeing it rather as the outcome of coercion by Jordanian forces. Additionally, even if one were to accept the genuineness of this expression, it is unclear that 5,000 notables could decide the fate of the West Bank, since post-World War II practice has traditionally been to resolve questions of such import through the use of countrywide referenda. Moreover, one can also dispute the exact nature of the expression at the Conference. For example, Gerson has argued that, in light of Arab League positions on the intervention in Palestine, the Conference's declaration was probably not an expression of a desire to transfer sovereignty wholly and permanently. "What seems more probable is that the intent was to cede sovereignty temporarily to Jordan until such time as the indigenous population might find it opportune to reassert control."²²¹

It would perhaps be more prudent, both doctrinally and politically, to consider Jordan's assertion of sovereignty over the West Bank void *ab initio*, and to characterize its presence in the West Bank as that of a belligerent occupation. Nevertheless, under a Hague Regulations Article 43 analysis, it appears that the changes that it had enacted to Palestinian water law can be justified. Under that provision, Jordan has the duty to restore and ensure, as far as possible, public order and civil life, while respecting, to the extent possible, existing law. It has the right to change local laws if such change furthers these goals.²²² Jordanian water laws of the pre-1967 era, on their face, display none of the features that would render them suspect under an Article 43 analysis. In fact, its early water right registration law of 1952 sought to provide a central registry (and thus protection under Jordanian law) for water rights that predated Jordanian rule. Its 1966 law, which established the Natural Resources Authority, enacted provisions that were also consistent with the material well being of the Palestinian population. It created a permit system for the digging of new wells, which was essential for the protection of the quality of underground aquifers. It created a Natural Resources Authority, which was meant to assist municipalities in the provision of drinking and

²²¹ GERSON, *supra* note 202 at 79.

²²² See *infra* Part IV.B.

irrigation water. Water production and distribution was to be decentralized, with municipal utilities playing a major role at the local level. Finally, provisions that barred out-of-basin water transfers did not permit exploitation of the West Bank by East Bank agriculturalists. On their face, at least, 1967-era Jordanian water laws were consistent with the needs of the local population of the time and with the need to provide some sort of regulation of ever-expanding use of the region's underground resources.

In addition to their substantive acceptability, Jordanian laws passed during the time preceding Israeli occupation enjoy a procedural pedigree that laws from few other belligerent occupations can match. While no one can claim that Jordan, at the time, was a liberal democracy, it is undeniable that Palestinians gained citizenship in vast numbers and participated in Jordanian non-royal government at the highest levels, such as the position of Justice Minister. During the time of Jordanian rule, "Jordan administered the West Bank peacefully, without interruption and without protest, as an integral part of its kingdom."²²³ According to one political scientist, Palestinians extended Jordanians a "conditional legitimacy" and skilled manpower in return for which the central authorities in Amman tended to place Palestinians in senior posts directly related to West Bank problems and allowed Palestinians some opportunities for movement and advancement in the economic and political spheres.²²⁴ The resultant input from the governed gives Jordanian law some measure of legitimacy that no Israeli military order, for example, can claim.²²⁵ The procedural history of the unification of the two banks; the participation of Palestinians in government; and the general application of Jordanian laws to both sides of the Jordan River,²²⁶ while individually not enough to legitimate the application of Jordanian

²²³ See GERSON, *supra* note 202, at 78.

²²⁴ See SHAUL MISHAL, *EAST BANK/WEST BANK: THE PALESTINIANS IN JORDAN*, 1949B67, at 8, 16, 22 (1978).

²²⁵ See *id.* at 22.

²²⁶ It is instructive to compare these facts with the West Bank's relationship with its subsequent occupier. Israel never annexed the West Bank. Its rule was, by Israel's own terms, military. Palestinians in the West Bank do not vote in Israeli elections, and the military orders that Israel promulgates in the West Bank are not applied in Israel.

laws, culminate in a general acceptance of the legitimacy of Jordanian legal regime in the West Bank.²²⁷ As a result, prominent West Bank Palestinian lawyers, legal academics, and human rights activists respect them as the law of the land uncritically and uncontroversially.²²⁸

Now that I have shown the legitimacy of Jordanian law, or at least Jordanian water laws, I will proceed with an analysis of the changes that Jordanian law brought to the West Bank legal regime. The story of Jordan's regulation of water and water rights is one of a transition from a regime in which water rights were private and regulation was decentralized to one where water rights were state-owned and management was centralized. In 1952, at the time of the passing of Law for the Settlement of Titles to Land and Water,²²⁹ rights to water flowing from wells or springs were considered attached to the land and can be registered in a national register. At that time, there existed no centralized authority to manage Jordan's water resources. By 1983, however, the Water Authority Law²³⁰ nationalized all water in Jordan, whether surface or subterranean, and established a national and centralized water management authority. At the time of the occupation, Jordanian law was still undergoing this transition. It is, therefore, important for purposes of ascertaining local law, to know the nature of water law and water-related institutions on June 7, 1967.

Prior to the Israeli occupation, water on a piece of land or extractable through a spring or well located on that land was the private property of that land's owner. This was simply the law of the Majalla, which the Hashemite Kingdom continued to

²²⁷ See MISHAL, *supra* note 223, at 22.

²²⁸ See SHEHADEH, *supra* note 2, at 64; al-'asali, *supra* note 212, at 1-2; Faramand, *supra* note 219; Mona Rishmawi, *The Administration of the West Bank, in INTERNATIONAL LAW AND THE ADMINISTRATION OF THE OCCUPIED TERRITORIES* 267, 270 (Emma Playfair ed., 1992). Raja Shehadeh is a prominent Ramallah lawyer, and one of the founders of Al-Haq/Law in the Service of Man, a leading West Bank human rights organization that has long advocated for the rights of Palestinians. Walid al-'asali is a former chief of the bureau of West Bank lawyers. Dr. Ghassan Faramand is Associate Director of the Law Center of Birzeit University. Mona Rishmawi is a human rights activist and former executive director of Al-Haq.

²²⁹ Qanun Taswiyat al-Aradi wal-Miyah [Law for the Settlement of Titles to Land and Water], Law No. 40 of 1952, 1113 JORDANIAN OFFICIAL GAZETTE 279, June 16, 1952.

²³⁰ Qanun Sultat al-Miyah [Water Authority Law], Law No. 34 of 1983, 3194 JORDANIAN OFFICIAL GAZETTE, Dec. 15, 1983.

enforce at the time of its independence. In 1952, Jordan launched an attempt to create a centralized registry where title-holders could register all rights to land and water in the Kingdom.²³¹ This law directly recognized that there was a private right to water that was captured on land and that these rights came with the land.²³² Water that was subject to registration included:

rivers, streams, channels, pools, springs, lakes, springs, wells, waterfalls, dams, or storage tanks, or any canal, ditch, drainage channel, dry water bed, bank, bridge, or passage, any building to control or divert water, well or other means to extract, lift, or pump water, or auxiliary works of any kind employed to obtain, lift, pump, and use water *primarily for purposes of irrigation or drainage*.²³³

Persons who owned irrigated land near a river had the right to a part of the river's waters in proportion to the size of his or her land. If, however, the portion that resulted exceeded that landowner's needs, then the surplus was distributed to the other riparian's with the owner receiving compensation.²³⁴ We see quite clearly the Ottoman principles of ownership by capture; the duty to release surplus water; and the non-ownership of free water. Despite the efforts to register land and water rights, by 1967 only one-third of all land in the West Bank had been registered, and therefore approximately one-third of Palestinian water *use* (which as we saw above constituted only a fraction of total water flow from the Mountain Aquifer and the Jordan River) had been claimed.²³⁵

In the 1950s and 1960s, there were attempts to increase regulation of the use of water. Law No. 31 of 1953 regulated the initiation of irrigation schemes and required developers of such schemes to obtain the permission of the manager of the Department of Irrigation and Water. The Department routinely granted such permission, except in cases where the use of water for irrigation would cause damage to adjacent public or private

²³¹ See Law for the Settlement of Titles to Land and Water, *supra* note 228.

²³² See *id.* art. 17(1) (prohibiting separation of ownership interest in water on land from ownership interest in land itself).

²³³ *Id.* art. 2. (emphasis added).

²³⁴ *Id.* art. 8(5).

²³⁵ See SHEHADEH, *supra* note 2, at 23.

property. Law No. 51 of 1959 repealed all water legislation and created the Central Water Authority.²³⁶ Law No. 11 of 1965 established the Regional Jordanian Authority to Exploit the Waters of the Jordan River.

The 1960s saw the promulgation of laws reflecting the growing awareness of the need for regional and national management of water resources. In 1966, the Jordanian government again replaced the jurisdiction of the Central Water Authority with that of the Natural Resources Authority. This law charged the Authority with the design and operation of irrigation and drinking water projects (except in areas covered by the Jordan River Authority), as well as the elaboration of a national water policy for consideration by the cabinet. The law establishing this authority also declared natural resources to be public property. However, the provision enacting this nationalization failed to mention water in the list of resources that was to be nationalized.²³⁷ Order No. 88 of 1966, issued pursuant to authority granted in the Natural Resources Law of 1966, maintained private rights to water pumped from an aquifer underlying private land and regulated the procedure for obtaining a license for drilling a new well, thus enlarging the scope of the regulatory powers of the state. Water quotas used for irrigation ran with the land, while water quotas for other purposes were alienable. The Order gave the Deputy Chairman of the Natural Resources Authority the power to restrict the water produced from any given pump and to mandate the metering of these pumps. Additionally, the Order required that the Chairman register these restrictions.²³⁸ Many of the functions related to the management of irrigation and the provision of supplies to municipalities rested with local authorities.²³⁹

²³⁶ Law No. 51 of 1959, 1465 JORDANIAN OFFICIAL GAZETTE 4, Jan. 2, 1960.

²³⁷ Qanun Tantheem Shu'un al-Masadir al-Tabi'iyah al-Mu'qqat [Provisional Law on the Regulation of Natural Resources], Law No. 37 of 1966, arts. 3, 14(a), 30, 1931 JORDANIAN OFFICIAL GAZETTE 1113, June 16, 1966 [hereinafter Natural Resources Law of 1966]. While not declaring underground or river waters to be public property, it also did not declare them to be private property.

²³⁸ Nitham Muraqabat al-Miyah al-Jawfiyyah [Order for the Monitoring of Underground Waters], Order No. 88 of 1966, arts. 8-15, 1943 JORDANIAN OFFICIAL GAZETTE 1592 [hereinafter Order for the Supervision of Underground Water].

²³⁹ See *Permanent Sovereignty over Natural Resources in the Occupied Palestinian and Other Arab Territories: Report of the Secretary-General*, U.N. GAOR Economic and Social Council, 39th Sess., Annex, ¶ 24, U.N. Doc. A/39/326 (1984)

Thus, in 1967, the West Bank was characterized by a system of decentralized management of water resources and private ownership of water resources. It is critical to understand that whether or not Jordanian law in general, or Jordanian water laws specifically, were legitimate, this basic scheme was in conformance with the principles of Ottoman and Mandate law. In other words, whether one looks to the laws of the Hashemite regime or to its predecessors for a basis, one must endorse the *de facto* legitimacy of the operation of Jordanian law. Another critical point is the fact that the relevant distinction under Ottoman (and thus Jordanian) water law is not between private and state water, but rather between private and *mubah* water. According to the Majalla, unclaimed water in streams, rivers and underground aquifer are not the property of the Sultan or of the state (in other words, *mulk* waters) but rather are "free to be used by all."²⁴⁰ These waters were, thus, owned in common by all the members of the community. They were, nonetheless, private in the sense that the owners were private individuals and not the state.

Like the West Bank, the Gaza Strip, governed by an administrative unit of the Egyptian government, engaged in no significant changes to its water laws. In the Gaza Strip, no generalized government-administered water permit system existed.²⁴¹ Gazan customary water law conferred the right to use water upon the landowner and upon those needing it for basic necessities (personal consumption and irrigation).²⁴² Gazans could freely enter into private arrangements for the purchase or use of these water rights.²⁴³

[hereinafter *Report of the Secretary-General 1984*]. See, e.g., Natural Resources Law of 1966, *supra* note 136, 242, art. 14(f) (allocating responsibility to Jordanian Natural Resources Authority to help villages and municipalities in provision of water for domestic and municipal needs); Law for the Regulation of Drinking Water for the District of Jerusalem, Law No. 9 of 1966, art. 3, 1954 JORDANIAN OFFICIAL GAZETTE 284, Feb. 2, 1966 (establishing Jerusalem District Water Undertaking responsible for provision of water for domestic and municipal uses).

²⁴⁰ MAJALLA, *supra* note 188, arts. 1234, 1238.

²⁴¹ See Jeffrey D. Dillman, *Water Rights in the Occupied Territories*, J. PALESTINE STUD., Autumn 1989, at 46, 52.

²⁴² See *id.* See also *supra* Part II.C (stating that sudden rise in Gaza's population led to increase in well-digging and water pumping in Gaza and overuse of aquifer); *Report of the Secretary-General 1984*, *supra* note 238, at ¶ 17.

²⁴³ See *Report of the Secretary-General 1984*, *supra* note 238, at ¶ 17.

As I show below, Israel, by extending its internal water legal regime to the OPTs, in some instances radically altered this regime after the occupation.²⁴⁴ In other areas, the Israelis continued the operation of some aspects of Jordanian law, though they used these provisions not as a means of serving the needs of the local population, but rather as a means of tightly controlling Palestinian consumption of water in order to privilege the needs of Israel proper and of Jewish settlers.

D. *Israeli Law*

Israel, keenly aware of the aridity of historic Palestine, early in its history adopted a holistic view of water resource management.²⁴⁵ In 1959, Israel passed its Water Law, a com-

²⁴⁴ See *id.* (“[t]he extension of such legislation to the occupied territories also has brought an appreciable change in the legal character and economic and social value of land ownership. . .”).

²⁴⁵ Indeed, this keen attention dates to the early decades of the Zionist movement. In 1919, Chaim Weizmann, a leader of the Zionist movement, wrote to the prime minister of Britain, then the mandatory authority of Palestine, while he attended the post-World War I Paris Peace Conference. In his letter, he set forth his “requirements” for the creation of a “Jewish National Home” in Palestine:

The whole economic future of Palestine is dependent upon its water supply for irrigation and for electric power, and the water supply must be mainly be derived from the slopes of Mount Hermon, from the headwaters of the Jordan and from the Litany [sic] river [in Lebanon]. . . [W]e consider it essential that the Northern Frontier of Palestine should include the Valley of the Litany, for a distance of about 25 miles above the bend, and the Western and Southern slopes of Mount Hermon.

Dillman, *supra* note 240, at 48 (quoting Weizmann letter to Lloyd George, reprinted in *JEWISH OBSERVER AND MIDDLE EAST REV.*, Nov. 16, 1973, at 22). See also Naff & Matson, *supra* note 70, at 35 (detailing completion of “All Israel Plan” for water within three years of establishment of state).

While the Zionist movement did not obtain quite as broad an expanse of territory from the European imperial powers, they were later able to increase their access to regional water resources through military conquest. See Aaron Wolf, *The Impact of Scarce Water Resources on the Arab-Israeli Conflict*, 32 *NAT. RESOURCES J.* 919 (1992) (describing relationship between 1967 armistice lines and regional water resources). Several scholars have put forth the theory of Israel’s “hydraulic imperative” to continue occupying lands in order to satisfy Israel’s ever-expanding water needs. See generally John Cooley, *The War Over Water*, 54 *FOREIGN POLICY* 3 (1984); Joe Stork, *Water and Israel’s Occupation Strategy*, *MERIP REPORTS*, 1983, at 19; Thomas Stauffer, *The Price of Peace, the Spoils of War*, *AMERICAN-ARAB AFFAIRS*, 1982, at 43 (stating that half of Israeli water consumption consists of water either diverted or preempted from Arab sources located outside 1967 borders). For official Israeli positions on the value of the West Bank in Israel’s national water scheme, see Lea Levavi, *Eitan: “We Must Control Territories Water Sources,”* *JERUSALEM POST INT’L*, Sept. 1, 1990, at 6 (detailing proposal by Agriculture Minister

prehensive water-regulating statute.²⁴⁶ This and other laws made all surface and underground water in Israel the property of the state and expressly disassociated water rights from rights to land.²⁴⁷ The law vested ultimate policy control over Israel's water sector in the Minister of Agriculture,²⁴⁸ and created the position of Water Commissioner, to be filled by government appointment, to manage the state's water affairs.²⁴⁹ Israeli water legislation introduced

a very extensive system of central government control, whereby both surface and underground water can be abstracted and used only under a government permit and strictly for the indicated purposes in the area concerned and within the limits of the allocation envisaged. Metering of groundwater abstracted from wells and of surface water is also extensively practiced and strictly enforced.²⁵⁰

The law empowered national water administrators to make decisions regarding the physical allotment of water to various

Rafael Eitan before Israeli cabinet to maintain control over West Bank water regardless of political developments in the region); Naff & Matson, *supra* note 70, at n. 56 (stating former Israeli Prime Minister Menachem Begin's view at time of Camp David talks that one of three principles upon which autonomy for Palestine must rest is full control of West Bank water resources). However, others, while not disputing water as one of several factors in its expansion, challenges the claim that it can independently motivate the expansion. See Naff & Matson, *supra* note 70, at 57 (describing regional water as secondary but significant factor in Israel's territorial expansion, serving to exacerbate already existing tensions); Thomas Stauffer, *Arab Waters in Israeli Calculations: The Benefits of War and the Costs of Peace*, ISRAEL AND ARAB WATER 75, 78-80 (Abdel Majid Farid & Hussein Sirriyeh eds., 1985) (describing Israeli occupation of Litani River region of southern Lebanon and topological barriers to Israeli exploitation of river).

²⁴⁶ See Water Law, 13 L.S.I. 173, §§ 1-159 (1959) (Isr.) [hereinafter Water Law].

²⁴⁷ See *id.* at §§ 1-3.

²⁴⁸ See *id.* at § 21. Other ministries had relatively marginal influence in the water sector. See, e.g., *id.* at § 49 (granting Ministry of Interior consultative role in creation of regional water authority). See *id.* at § 140 (ordering Ministry of Justice to establish tribunal or tribunals for water affairs).

²⁴⁹ See Water Law at § 138.

²⁵⁰ *Report of the Secretary-General*, *supra* note 238, at ¶ 15. See also Water Law § 21 ("[t]he Minister of Agriculture may, after consultation with the Water Board, prescribe [binding] norms for the quantity, quality, price, conditions of supply and use of water within the scope of the purpose thereof . . ."); *Id.* at §§ 23-24. "A person shall not produce water from a water resource . . . and shall not supply water . . . [without] a license from the Water Commissioner A production license shall indicate the quantity of water which the holder is permitted to produce and supply per hour, per day, per season or within any other period . . ." *Id.*

regions of the country and to different use-sectors in Israel.²⁵¹ The Ministry of Agriculture could empower corporations to be the National Water Authority, charged with the operation of the National Water System, and any regional water authorities as may be required.²⁵² The Ministry of Agriculture had the power to prescribe rules for the calculation of water charges²⁵³ and of water tariffs.²⁵⁴ The law also created an Adjustment Fund to "reduce the differences between water charges in different parts of the country . . ."²⁵⁵ Levies and contributions were to be paid to the Fund from relatively privileged water users and from "other sources," while subsidies were granted to different classes of users. The Ministry of Agriculture determined the levy and subsidy rates and targets, with input from the Water Board and water consumers.²⁵⁶ Jurisdiction over disputes concerning administrative decisions lay with the Tribunal for Water Affairs.²⁵⁷

Given this public ownership regime for the Israel's water resources, it is appropriate that Israel should have fashioned a political apparatus to allow for the input, at the regional, local, and users' levels, into the management of that water.²⁵⁸ This political apparatus includes: the Water Board (including its regional, agricultural, and water supply committees),²⁵⁹ the regional water authorities,²⁶⁰ and others.

As public choice theorists would suggest, rent-seeking political actors have captured this economic power over the water sector. The farming caucus in the Israeli Knesset has tradition-

²⁵¹ See Water Law at §§ 6, 21.

²⁵² See *id.* at §§ 46, 48, 50.

²⁵³ See *id.* at § 111 ("[s]uch rules shall be based on the actual expenses of the production and supply of the water, including interest, depreciation and other expenses").

²⁵⁴ See *id.* at § 112 (allowing application of tariffs generally or to a specific area or class of consumers, and allowing variation of charges on basis of "water purposes, uses of water, other than agricultural uses, . . . and geographical, topological and other data, having regard to [system profitability and] to the financial position of the persons consuming water . . .").

²⁵⁵ *Id.* at § 116.

²⁵⁶ See *id.* at §§ 117-24.

²⁵⁷ See *id.* at § 140.

²⁵⁸ See *Report of the Secretary-General, supra* note 238, at ¶¶ 25-26.

²⁵⁹ See Water Law at § 116.

²⁶⁰ See *id.* at § 134.

ally controlled the water committee,²⁶¹ and in this capacity has set prices for water consumers in the agricultural sector. As might be imagined, this caucus has obtained great subsidies for the Israeli farming sector, leading to profligate consumption and the creation of economically unfeasible crops.²⁶² This structure is unworkable in an arid region and has, in fact, created the water crisis in Israel and Palestine.²⁶³

However, it is possible that this caucus would not have been so successful had there not been an endorsement of this policy from the Israeli state as a whole. Israel has long considered the attraction of Jewish immigrants to the country and their dispersion to settlements throughout the lands that it had occupied a key strategic goal.²⁶⁴ In this, it has been motivated by a need to establish a *de facto* Jewish presence in as much of the territory as possible in the hopes of countering historic Palestinian claims to the land. In addition, these settlements serve military and strategic goals. These settlements obviously need water for domestic consumption, although in many cases "such as those of the Naqab desert in the south" these have also been accompanied by significant agricultural undertakings. Indeed, the involvement of Jews in agriculture has assumed an almost mystical quality, as many deem it a process of re-acquaintance

²⁶¹ See *What to Do About Water*, JERUSALEM POST, Jan. 4, 1991, at 4; Kito Schwartz, *The Water Crisis: 25 Years of Bad Management*, JERUSALEM POST, Jan. 3, 1991, at 8 (summarizing report by the Israeli State Comptroller strongly criticizing Agriculture Ministry's management of Israeli water sector) [hereinafter Israeli State Comptroller Report].

²⁶² See Israeli State Comptroller Report, *supra* note 260 (criticizing water subsidies and resultant phenomenon of "exporting water at a loss").

²⁶³ See *id.* ("[t]he water crisis is not the result of natural causes; it is man-made"). There have been calls for a change in this structure, in particular getting control over water pricing out of the hands of the Agriculture Ministry or the Water Commission and into the jurisdiction of a "professional and impartial government body" which would set prices with consideration for the needs of the economy as well as for the quality of drinking water for domestic consumption. *Id.* See also *What to Do About Water*, *supra* note 260, at 4.

²⁶⁴ See Lowi, *supra* note 74, at 51-52 (describing role of policy of dispersion and its centrality in Israeli national policy). See also *Report of the Secretary-General 1984*, *supra* note 238, at ¶ 11 & n. 3 (quoting Israeli Water Commissioner as stating in 1978 that to "divert water from production to domestic consumption in an amount that is equivalent to one third of the water consumed by agriculture today will entail . . . an injury to the policy of population dispersion"); *What to Do About Water*, *supra* note 260, at 4 (quoting former Israeli Agriculture Minister Avraham Katz-Oz describing Zionist agricultural policies as a "national, political and security policy matter").

and spiritual investment in the land.²⁶⁵ All of this means a large demand for water and the need to control the limited resources that exist in the area of historic Palestine in order to divert as great a part of it as possible to these policies. These goals in particular have implications for the future of Palestinian water resources in the West Bank, since these provide about a third of total Israeli water consumption.²⁶⁶ This ideology has been subject to criticism even within Israel because of its disastrous impact on local water policy,²⁶⁷ although the Israeli public seems unaware or unconcerned about the implications for the Palestinian water sector.

E. *Administrative Structure of Water Management*

As mentioned above, Israel had a highly centralized water management system,²⁶⁸ with overall responsibility resting with the Ministry of Agriculture.²⁶⁹ The Water Commission was charged with the implementation of water law. It was responsible for the planning, management, and supervision of all water-related matters. Within the commission, different divisions were responsible for different functions such as allocation, li-

²⁶⁵ See also *What to Do About Water*, *supra* note 260, at 4 (“[t]he development of agriculture and the subsidization of farming settlements have always been sacred cows, a sine qua non of Zionism”).

²⁶⁶ In commenting on the importance of OPTs to Israel, Jehoshua Schwarz, a water resources engineer with TAHAL Consulting Engineers, wrote in May 1980: “One of the major problems in cutting these [Occupied Palestinian areas] from the other parts of the country is that of water resources.” J. Schwarz, *Water Resources in Judea, Samaria and the Gaza Strip*, in *JUDEA, SAMARIA, AND GAZA: VIEWS ON THE PRESENT AND FUTURE* 81 (Daniel J. Eleazar ed., 1982).

²⁶⁷ See *What to Do About Water*, *supra* note 260, at 4 (“[w]hile ‘redemption of the land’ and ‘dunam here and dunam there’ were constructive and vital slogans in the days of the British Mandate, they are irrelevant in a sovereign state. . . . For the taxpayer to subsidize farm products which sell for less than the cost of the water used to irrigate them is not a national duty but economic nonsense, and indeed suicide”).

²⁶⁸ For a general overview of Israeli policymaking in the water sector, see Itzhak Galnoor, *Water Policymaking in Israel*, 4 *POL’Y ANAL.* 339 (1978).

²⁶⁹ In July 1996, Binyamin Netanyahu’s government announced the formation of the Ministry of National Infrastructures with extensive authority in the water and sewage spheres. This Ministry has authority over supply of nonagricultural water, as well as the powers of the Water Commission, the Lake Kinneret Administration, and the National Sewage Administration. Authority over the conduct of negotiations with the Palestinian Authority and neighboring states also rested with that Ministry. Critically, control over the bulk of Israel’s water “that consumed in agriculture” remained with the Ministry of Agriculture.

censing, data collection and management, and efficient utilization. The National Water Council, two-thirds of which was composed of representatives of the general public and the other third from the government, advised the minister of Agriculture.²⁷⁰ Two other important bodies were the Mekorot Water Co. Ltd.²⁷¹ and the Water Planning for Israel Company (Tahal).²⁷² Mekorot was responsible for the construction of irrigation and water supply projects as well as overall construction, operation and maintenance of water systems, and Tahal for the overall planning and design of Israeli water development projects.²⁷³ They carried out these functions in the OPTs as well. These parastatal firms were owned by the Israeli state, the General Federation of Workers in Eretz Israel (Histradut), the Jewish Agency, and the Jewish National Fund.²⁷⁴ The latter two firms were commanded by their respective constitutions, however, to serve the interests of Jews, and not of Israelis or of persons under the jurisdiction of Israel.²⁷⁵ This has led to a situation where "the companies which plan, design, and construct water projects [in the OPTs] are controlled by groups which serve only [Israeli] people."²⁷⁶

IV. INTERNATIONAL HUMANITARIAN LAW

The OPTs came under Israeli occupation during the Six-Day War of June 1967. As a result, the inhabitants of these territories are entitled to the protection provided under international humanitarian law for civilian populations under occupa-

²⁷⁰ See Schwarz, *supra* note 18, at 132.

²⁷¹ See Water Law § 46 (granting the Minister of Agriculture the ability to empower a corporation to be the National Water Authority).

²⁷² See Schwarz, *supra* note 18, at 132.

²⁷³ See *id.* at 132.

²⁷⁴ See Water Law § 46 (mandating that a majority of the shares of the National Water Authority (Mekorot) be held by the State of Israel and by the World Zionist Organization).

²⁷⁵ See Dillman, *supra* note 240, at 54. One of the functions of the Jewish Agency is the promotion of agricultural colonization based on Jewish labor. The function of the Jewish National Fund is "to purchase, acquire on lease or in exchange, or receive on lease or otherwise, lands, forests, rights of possession, easements and any similar rights . . . for the purpose of settling Jews on such lands and properties." Uri Davis et al., *Israel's Water Policies*, J. PALESTINE STUD., Winter 1980, at 1, 13-14 (quoting Jewish National Fund Memorandum of Association, art. 3(a)).

²⁷⁶ Dillman, *supra* note 240, at 54.

tion.²⁷⁷ The main sources of international humanitarian laws protecting civilians in occupied territories, the Regulations Annexed to the 1907 Hague Convention (IV) Respecting the Laws and Customs of War on Land²⁷⁸ and the Geneva Convention Relative to the Protection of Civilian Persons in Time of War,²⁷⁹ endow the belligerent occupant with a limited set of rights²⁸⁰ and a well-defined set of duties. These obligations include respect for public²⁸¹ and nonpublic (including municipal)²⁸² property in occupied territories, breaches of which give rise to compensation.²⁸³ International humanitarian law also provides protection for the regime of local laws that predated the occupation.²⁸⁴ Both the protection of property and the preservation of local law have implications for the regulation of Palestinian water.

Israel admits that the Hague Regulations constitute customary international law.²⁸⁵ In addition, Israel is a party to the

²⁷⁷ Hague Regulations, *supra* note 10, pmbl.

²⁷⁸ *See id.*

²⁷⁹ Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287 [hereinafter Fourth Geneva Convention].

²⁸⁰ In particular, in relation to immovable state property, the occupant has the powers of administrator and usufruct. *See* Hague Regulations, *supra* note 10, art. 55.

²⁸¹ *See* Hague Regulations, *supra* note 10, arts. 53-56.

²⁸² *Id.* arts. 23(g), 46-53, 56; Fourth Geneva Convention, *supra* note 278, art. 53.

²⁸³ The remedy for breaches of provisions of the Hague Regulations are provided for in the Convention to which they are attached. *See* Hague Regulations, *supra* note 10, pmbl. More generally, however, it is a firmly established principle in international law that where there is a right there is a remedy. *See, e.g.*, Permanent Court of International Justice, Judgment No. 13 (Indemnity) (Sept. 13, 1928), reprinted in 1 MANLEY O. HUDSON, WORLD COURT REPORTS 664 (“[i]t is a principle of international law, and even a general conception of law, that any breach of an engagement involves an obligation to make reparations”).

²⁸⁴ *See* Hague Regulations, *supra* note 10, art. 43. *See* Fourth Geneva Convention, *supra* note 278, art. 64.

²⁸⁵ Indeed, they have been widely considered as codifying customary international law at least since the time of the Nürnberg Trials. *See The Nuremberg Trial*, 6 F.R.D. 69 (1946) (“[b]y 1939 these rules [of land warfare] laid down in the [Fourth 1907 Hague] convention were recognized by all civilized nations”). *See also* G.A. Res. 95(I), U.N. GAOR, U.N. Doc. A/64/Add. 1, at 188 (1947) (affirming “the principles of international law recognized by the Charter of the Nürnberg Tribunal and the judgment of the Tribunal”).

Fourth Geneva Convention.²⁸⁶ However, both the Israeli government and the Israeli Supreme Court dispute, in different ways, the applicability of international humanitarian law to the OPTs.

Since 1971, the government has denied the applicability of the Geneva Conventions to Occupied Palestine,²⁸⁷ adopting instead a "territory-based"²⁸⁸ approach to the Fourth Geneva Convention. Israel argues that the Convention only applies to occupations of the territories of other High Contracting Parties, and since no party to the Convention had valid legal title to the West Bank and Gaza Strip at the time of their occupation, the Fourth Geneva Convention does not apply.²⁸⁹ As for the applicability of the Hague Regulations, the non-judicial branches of

²⁸⁶ Israel ratified the four Geneva Conventions on July 6, 1951. See 1 KITVEI AMANAH [TREATY SERIES] 559 (Hebrew).

²⁸⁷ This denial began in 1971 when Meir Shamgar, then Attorney-General of Israel, declared that Israel decided to leave open the question of whether the Fourth Geneva Convention applied to the Occupied Territories. This position later changed to an outright denial of the applicability of the Convention. See ESTHER COHEN, HUMAN RIGHTS IN THE ISRAELI OCCUPIED TERRITORIES: 1967-82, at 44 (1985).

²⁸⁸ This interpretation, in addition to the contrasting, "people-oriented" view of the Convention, were first developed by Stephen M. Boyd. See Stephen M. Boyd, *The Applicability of International Law to the Occupied Territories*, 1 ISR. Y.B. INT'L L. 258, 260 (1971). Boyd himself concluded that "the Fourth Geneva Convention . . . should be interpreted as a people-oriented Convention, and not a territory-oriented Convention." *Id.*

²⁸⁹ The basis for this position is a provision of the Fourth Geneva Convention which states that: "The Convention shall also apply to all cases of partial or total occupation of the territory of a High Contracting Party." Fourth Geneva Convention, *supra* note 278, art. 2(2). For early defenses of this position, see Yehuda Blum, *The Missing Reversioner: Reflections on the Status of Judea and Samaria*, 3 ISR. L. REV. 279, 293 (1968) ("[t]his assumption of the concurrent existence in respect of the same territory of both an ousted legitimate sovereign and a belligerent occupant lies at the root of [the rules of international law governing belligerent occupation] . . ."). An early statement on this matter by the Israeli attorney general cited Blum's analysis in concluding that the Fourth Geneva Convention does not apply to the OPTs. Meir Shamgar, *The Observance of International Law in the Administered Territories*, 1 ISR. Y.B. ON HUM. RTS. 262, 266 (1971). See also Memorandum from Office of the Legal Adviser of the Israeli Foreign Ministry (Sept. 12, 1984), reprinted in ADAM ROBERTS ET AL., ACADEMIC FREEDOM UNDER ISRAELI MILITARY OCCUPATION 80 (1984) [hereinafter Foreign Ministry Legal Adviser Memorandum] (reiterating Israeli government position denying applicability of Geneva Conventions to the OPTs *de jure*). But see Memorandum from Israeli Ministry of Justice (May 24, 1994) (on file with author) (justifying administrative detention of al-Haq fieldworker Sha'wan Jabarin on basis of Article 78 of Fourth Geneva Convention).

Israeli government have taken inconsistent positions.²⁹⁰ The Israeli government has also directed a broader, theoretical attack on the applicability of humanitarian law in general to the OPTs, arguing that the long duration of the Israeli occupation undermines the applicability of provisions of humanitarian law, which had been drafted under the assumption of a relatively short period of occupation.²⁹¹

The Israeli Supreme Court has taken a slightly different view. It acknowledges the status of Israel as a belligerent occupant of the OPTs;²⁹² accordingly, it applies the provisions of the Hague Regulations to cases regarding the behavior of Israeli armed forces in the OPTs.²⁹³ It also views the Fourth Geneva Convention as applicable.²⁹⁴ However, it also considers the Geneva Conventions to be non-self-executing treaties, and would not apply its provisions to the comportment of the Israeli Military Government in the absence of implementing legislation.²⁹⁵ Interestingly, the Court often refers to the Fourth Geneva Convention to *justify* challenged actions of the Military Government's actions.²⁹⁶

In its denial of the applicability of the Fourth Geneva Convention and Hague Regulations, Israel stands in a minority of one within the international community. International organizations²⁹⁷ and all states, including Israel's strongest allies,²⁹⁸ concur that the Israeli Military Government's actions ought to

²⁹⁰ Compare Foreign Ministry Legal Adviser Memorandum, *supra* note 288, at 81 (stating Israel's *de facto* adherence to the humanitarian provisions of the Hague Regulations "without entering into the academic question of the legal applicability of [that] document") with COHEN, *supra* note 286, at 43 (quoting General Staff of the Israeli Defense Forces Order to show that "[t]he official Israeli position is that these [Hague] Regulations are applicable to the Israeli-occupied territories").

Despite its denial of the applicability of these bodies of law *de jure*, Israel claims that it applies *de facto* the humanitarian provisions of the Hague Regulations and Fourth Geneva Convention. See Shamgar, *supra* note 288, at 266 (Fourth Geneva Convention only); Foreign Ministry Legal Adviser Memorandum, *supra* note 288, at 81.

²⁹¹ See Memorandum of Law, *reprinted in* 17 I.L.M. 432-33 (1978).

²⁹² See *Dweikat v. Israel*, 34(1) P.D. 1, 13 (1979), *reprinted in* 9 ISR. Y.B. HUM. RTS. 345 (1980) (English translation).

²⁹³ See cases cited in COHEN, *supra* note 286, at 58 n. 50.

²⁹⁴ See Dan Simon, *The Demolition of Homes in the Israeli Occupied Territories*, 19 YALE J. INT'L L. 1, 21 (1994).

²⁹⁵ See *id.*

²⁹⁶ See *id.* at 20-21 & nn. 100-02 (1994).

²⁹⁷ See, e.g., G.A. Res. 58, U.N. GAOR, 43d Sess., U.N. Doc. A/43/904, Part B.

be governed by those two conventions. In the face of the often “artful” defenses of Israeli government positions,²⁹⁹ many international legal scholars have argued for the applicability of the Fourth Geneva Convention in particular, and of humanitarian law in general, in the OPTs.³⁰⁰ Given the overwhelming preponderance of the opinion and the strengths of the legal arguments, I will assume below that the Hague Regulations and the Fourth Geneva Convention applied to the OPTs.³⁰¹

²⁹⁸ See, e.g., Richard A. Falk & Burns H. Weston, *The Relevance of International Law to Palestinian Rights in the West Bank and Gaza: In Legal Defense of the Intifada*, 32 HARV. INT’L L.J. 129, 143 (1991) (“[i]t is not merely the Arab countries, the Islamic world, or even the Third World generally, but the entire United Nations—excepting Israel” that resists Israel’s arguments [for the inapplicability of international humanitarian law to the OPTs]”); UNITED STATES DEP’T OF STATE, COUNTRY REPORTS ON HUMAN RIGHTS PRACTICES FOR 1990, at 1477, 1480-81 (1991).

²⁹⁹ See Falk & Weston, *supra* note 297, at 137. Falk & Weston cite Prof. Blum’s “missing reversioner” thesis. See Blum, *supra* note 184. For Prof. Eugene Rostow’s “continuing mandate” argument, see Falk & Weston, *supra* note 297, at 139. See also Eugene V. Rostow, *Palestinian Self-Determination: Possible Futures for the Unallocated Territories of the Palestine Mandate*, 5 YALE STUDIES IN WORLD PUBLIC ORDER 147 (1979) (arguing that failure to resolve conclusively status of OPTs gives rise to continuing vitality of British Mandate over Palestine and therefore of mandatory law). For Prof. Gerson’s “trustee-occupant” theory, see Falk & Weston, *supra* note 297, at 139. See also GERSON, *supra* note 202, at 78-82 (arguing that prolonged duration of occupation gives rise to Israel’s status as a “trustee-occupant”).

³⁰⁰ See, e.g., Falk & Weston, *supra* note 297, at 140-44 (refuting Blum, Rostow, and Gerson theses and arguing that any forcible occupation of territory beyond a state’s boundaries amounts to belligerent occupation). See also Antonio Cassese, *Powers and Duties of an Occupant in Relation to Land and Natural Resources*, in INTERNATIONAL LAW AND THE ADMINISTRATION OF OCCUPIED TERRITORIES 419, 419-20 (Emma Playfair ed., 1992) (rejecting hypothesis of emergence of new law of prolonged belligerent occupation on empirical and internal grounds). See Gerhard von Glahn, *Taxation Under Belligerent Occupation*, in INTERNATIONAL LAW AND THE ADMINISTRATION OF OCCUPIED TERRITORIES, *supra* note 299, at 341, 346-47 (arguing against modification of customary rules of international humanitarian laws in cases of prolonged belligerent occupation).

³⁰¹ The question naturally arises whether, under the new, post-Oslo phase of the relationship between the Palestine Liberation Organization and Israel, Israel’s status in the territories can continue to be considered that of a belligerent occupant. While the Palestinian Authority and Israel are not only no longer engaged in hostilities, but have meetings at all official levels on a regular basis and sit on a number of joint committees regulating various areas of joint concern (including water management), many aspects of Israel’s occupation can still be characterized as belligerent. Most importantly, by keeping the status of the OPTs open until permanent status negotiations, Israel affirmatively, at least for the present time, disavows title to the land that it is occupying. This is consistent with its own past positions, which considered the OPTs as “administered territories.” See, e.g., Legal

Two aspects of international humanitarian law are relevant to Palestinian water rights. The first is the relationship between Israel, the belligerent occupant, and Palestinian property. In particular, Israel, as occupant, gains limited, tightly circumscribed, and well-defined rights to Palestinian water, while also taking on considerable responsibilities to respect the preexisting regime of property rights. As shall be seen below, these rights and duties are tightly linked. Second, as a belligerent occupant, Israel has the duty to respect, to the extent permitted by its own security and military needs, the local law in existence at the time of the occupation. This would suggest that the regimes of Jordanian and customary water rights law in force in the West Bank and Gaza Strip respectively, which were in existence at the time of the Israeli occupation, ought not be altered to facilitate the appropriation of wealth by the occupying power.

A. *The Belligerent's Right to Property in Occupied Territories and the Belligerent's Duty to Protect Public and Private Property*

1. *The State of the Law*

It was once a rule of international law that belligerents could appropriate all public and private property found in occupied territory.³⁰² This rule, which lasted until the 19th century, was firmly supplanted at the time of the drafting of the 1907 Hague Conventions. The Conventions and annexed Regulations have earned wide recognition since the time of the Nürnberg Judgment as a codification of customary international law. The new rule prescribes different rights and duties to the occupant, depending on whether the property is movable or immova-

Adviser Memorandum, *supra* note 288, at 81 (“[a]s has been stated officially, since 1967, the areas are being administered by Israel pending the final settlement of their status through a peace process between the Parties concerned”).

Furthermore, Israel and its military government still retain exclusive authority in such areas as settlements, jurisdiction over Israelis, borders and foreign relations. See Interim Agreement, *supra* note 1, art. 27(1)(a). The Israeli army does not withdraw from the OPTs, but merely re-deploys. See *id.* art. 10. Al-Haq’s position is that Israel remains a belligerent occupier of the West Bank and Gaza Strip under the Interim Agreement.

³⁰² See L. OPPENHEIM, INTERNATIONAL LAW: A TREATISE § 133 (H. Lauterpacht ed., 7th ed. 1952).

ble, public or private. In addition to regulating the modalities of the taking of title and possession of property in the occupied territory, the Regulations strictly limit the uses to which that property may be put.

In regards to *public immovable property*, the Regulations grant the occupying power the rights of a usufruct. In particular:

The occupying State shall be regarded only as administrator and usufructuary of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. It must safeguard the capital of these properties, and administer them in accordance with the rules of usufruct.³⁰³

Writing in 1952, Lauterpacht interpreted this provision as giving broad powers to the occupant.³⁰⁴ Such an occupant may “sell the crops from public land, cut and sell timber in the public forests” and make other uses of the “fruit” of local public property.³⁰⁵ Such use is limited only by the prohibition against exercising the right in a wasteful or negligent way so as to decrease the value of the stock and plant.³⁰⁶ In addition, title to these goods does not pass to the occupying power.³⁰⁷

A belligerent may take possession of (though not title to) *public movable property* only if such property can be directly or indirectly used for military operations.³⁰⁸ The kinds of property that may be taken include cash, funds, realizable securities, depots of arms, means of transport, stores and supplies.³⁰⁹ In ad-

³⁰³ See Hague Regulations, *supra* note 10, art. 55.

³⁰⁴ See OPPENHEIM, *supra* note 301, § 134.

³⁰⁵ See *id.*

³⁰⁶ See *id.*

³⁰⁷ The produce of the property of municipalities may not be appropriated, nor those of properties set aside by the state for religious, charitable, or cultural purposes. These are to be treated as private property. Hague Regulations, *supra* note 10, art. 55. See also OPPENHEIM, *supra* note 301, § 135. An occupant may also make use of the public buildings of the occupied state as the necessities of war demand. *Id.* § 136. Finally, the occupant may also seize or destroy submarine cables connecting the occupied state to a neutral country in cases of “absolute necessity.” Hague Regulations, *supra* note 10, art. 54.

³⁰⁸ Hague Regulations, *supra* note 10, art. 53.

³⁰⁹ *Id.* See also OPPENHEIM, *supra* note 301, §§ 137-39. See also Cassese, *supra* note 299, at 427-28 (arguing that contemporary, restrictive view of belligerent occupant’s powers disallow occupant seizure of property with merely “potential” military use).

dition to this protection, the Fourth Geneva Convention prohibits the destruction of public property except for reasons of military necessity.³¹⁰

Generally speaking, the belligerent's rights to *private* property are more circumscribed than its rights to public property. Under the Hague Regulations, private property "must be respected" and "cannot be confiscated." Furthermore, the Regulations prohibit pillage.³¹¹ It has been stated that the Regulations strictly forbade the appropriation of private immovable property, though they created an exception for the "temporary use of private land and buildings for all kinds of purposes demanded by the necessities of war."³¹² A belligerent occupant may seize and use movable private property that may serve as war material and all appliances which are suited for the transmission of news or for the transportation of persons and goods.³¹³ However, the occupant must restore them at the conclusion of peace, and must make compensation.³¹⁴ The occupying power may raise revenue in a fashion similar to that of the ousted state to defray the costs of administration. Above and beyond this prewar revenue raising, the occupant may levy money contributions, but only for the needs of the army or of the administration of the occupied territory, and only according to certain rules. The occupant may also request requisitions in kind and services from municipalities and inhabitants, again only for the needs of the army of occupation and according to certain rules.³¹⁵ The Fourth Geneva Convention prohibits the occupant from destroying private property for any reason other than for military necessity.³¹⁶

³¹⁰ See Fourth Geneva Convention, *supra* note 278, art. 53.

³¹¹ See Hague Regulations, *supra* note 10, art. 53.

³¹² OPPENHEIM, *supra* note 301, § 140.

³¹³ See Hague Regulations, *supra* note 10, art. 53.

³¹⁴ See *id.* See also OPPENHEIM, *supra* note 301, § 141. Furthermore, the Regulations also prohibit the seizure of works of art and science, and of historical monuments. See Hague Regulations, *supra* note 10, art. 56.

³¹⁵ See Hague Regulations, *supra* note 10, art. 48-52.

³¹⁶ See Fourth Geneva Convention, *supra* note 278, art. 53. See also COMMENTAIRE SUR (IV) LA CONVENTION DE GENEVE RELATIVE A LA PROTECTION DES PERSONNES CIVILES EN TEMPS DE GUERRE 323-25 (Jean S. Pictet ed., 1956) (detailing more limited nature of Article 53 in comparison with regime of property protection under Hague Regulations).

As concerns the *use* to which enemy property may be put, one key principle pervades the Hague Regulations: The occupant may only take enemy property, whether public or private, movable or immovable, to defray the expenses of the occupation³¹⁷ or if the property may be used against it militarily. In 1946, the International Military Tribunal at Nürnberg reemphasized this principle by stating that “under the rules of war, the economy of an occupied country can only be required to bear the expenses of the occupation, and these should not be greater than the economy of the country can reasonably bear.”³¹⁸ Furthermore, given the appearance of new factors on the international scene which differ significantly from those apparent at the time of the signing of the Hague Regulations (such as long-lasting belligerent occupations, increased state intervention in the economy, and others), it has been argued that the spirit of the protection of enemy property which pervades the Hague Regulations leads to a “*strict* approach to the rights of belligerent occupants.” In particular, this view rejects the expansive view of many international scholars as regards the rights of a belligerent occupant to the fruits of immovable public property.³¹⁹

2. *Classification of Palestinian Water*

International law provides a four-quadrant legal scheme for the protection of enemy property, with differing rules depending on whether the property is public or private, movable or immovable. From a general standpoint, the belligerent occupant’s rights are meant to be construed strictly, in light of the overall requirements that any seizure or takings of property be for military or administrative purposes only, and only insofar as the local economy can bear. The next task, of course, is to determine the quadrant, or quadrants, into which Palestinian water falls. The following analysis will focus on the two most impor-

³¹⁷ Cassese has interpreted this to include only the following: (1) meeting the occupant’s own military or security needs (i.e., the exigencies posed by the conduct of its military operations in the occupied territories); (2) defraying the expenses involved in the belligerent occupation; and (3) protecting the interests and the well-being of the inhabitants. See Cassese, *supra* note 299, at 422.

³¹⁸ *Id.* at 430.

³¹⁹ These scholars include Gerard von Glahn, Myres McDougal and F.P. Feliciano, Allan Gerson, and Yoram Dinstein. See Cassese, *supra* note 299, at 428 n.22.

tant sources of water in the OPTs: water from wells located on private and municipal property; and water in major basins (the Jordan River and the Mountain Aquifer). I show below that the former category is a form of movable private property. Israel may neither use nor interfere with the enjoyment of this water unless the water is directly useable for military purposes or is intended to help in the administration of the occupation. The latter is a form of immovable private property. Thus, Israel may temporarily seize the production of the water basins, but only for purposes demanded by the necessities of war.

I propose to determine whether property is movable or immovable by referring to the examples of immovable property listed in Article 55 of the Hague Regulations (“public buildings, real estate, forests, and agricultural estates”), the civil law concept of usufruct in immovable property, and the examples of movable property listed in Article 53 (“cash, funds, . . . means of transport, stores and supplies”). I further propose to determine whether property is public or private by referring to local law.

Public v. private. Under local law, water drawn from wells or captured from springs located on private property, or drawn from a river onto private land, is private (more specifically, *mulk*) property in the West Bank and the Gaza Strip.³²⁰ This is the scheme of the Ottoman Majalla, which codified customary water law in all of Palestine during the Ottoman era.³²¹ Subsequent lawmakers did not disrupt this rule in either Gaza or the West Bank, and it remained the law at the time of the occupation. Private production from Gaza wells exceeds the replenishment of the Gaza Aquifer; thus all Gazan groundwater constitutes private property. As for the West Bank, captured output from wells and springs has hovered around 100 mcm/yr since the time of the occupation.

The second category is the uncaptured water of the Mountain Aquifer and the Jordan River. Waters in major basins are, under the water law of the Ottoman Majalla, *mubah* property. Something is *mubah* if anyone in the community has the right to capture it, and it remains free property until individuals or

³²⁰ See MAJALLA, *supra* note 189, arts. 1234-35, 1238-39, 1248, 1250. See also *supra* Part III.A.

³²¹ See MAJALLA, *supra* note 189, arts. 1234-35, 1238-39, 1248, 1250; *supra* Part III.A.

corporations invest in capturing it.³²² Thus, communal rights to water were the primary ownership interest, whereas individual or corporate interests were merely secondary. At the time of the end of the Ottoman era, whatever water was not drawn from the Mountain Aquifer or from the Jordan River was the property of the community.³²³ Mandate law did not change this. Jordanian law, which in the 1960's was already moving in the direction of increased regulation and ultimately nationalization of all water, did not by 1967 disturb this basic communal-private distinction.

The *mubah* concept, a feature of Islamic jurisprudence, must then be translated into the private-public property classification scheme of the Hague Regulations. Of the two categories, *mubah* property is closest to the *private* property category. Under the Regulations, "public" property is property whose title is held by the State. Only property owned by the sovereign falls into the category of public property. Even the property of municipalities, in other words, of public institutions presumably chartered by the state, is to be treated as private property.³²⁴ Under the Majalla, the category of property owned by the State or by the Sultan was *mulk*, not *mubah*, property.³²⁵ While *mulk* property would probably be considered public property under the Hague Regulations, *mubah* property, which could be exer-

³²² See MAJALLA, *supra* note 189, arts. 1234-35, 1238-39, 1248, 1250; *supra* Part III.A.

³²³ The Natural Resources Regulation Law of 1966 nationalized mineral resources but failed to do so for underground water. Order No. 88, issued pursuant to this law, imposed a strict permit system for exploitation of underground water. This order excluded from its operation water captured in manmade structures designed to hold water. Any extraction of underground water had to be done with a permit from the Deputy Chairman of the Natural Resources Authority which specified, *inter alia*, the quantity of water allowed to be pumped. Permit holders held title only to the amount of underground water the permit allowed to be pumped and this allotted quantity could be curtailed or eliminated for cause. See Order for the Supervision of Underground Water, *supra* note 238, arts. 2(d), 3, 11-14. This created a system whereby a national institution controlled access to a natural resource and where private entities could obtain conditional and provisional title to the resource only by permission of the Authority. However, by refusing to nationalize the underground water resources, the state, in the creation of the license system, was merely exercising its general police powers in protecting communal water resources, an especially critical function where a "tragedy of the commons" situation may arise. See *id.*

³²⁴ See Hague Regulations, *supra* note 10, art. 56.

³²⁵ See, e.g., SHEHADEH, *supra* note 2, at 23.

cised by any individual within the community, is more akin to the Regulations' conception of private property.

Movable v. immovable. The difficulty in determining whether these two categories of water are movable or immovable lies in the fact that water itself is liquid and movable, whereas the channels and geological formations which give the watercourses form and produce the water from year to year are fixed in the ground. Article 55 of the Hague Regulations, which establishes the usufructuary and administrative rights of the occupant, lists as examples of immovable property "real estate, forests, and agricultural estates," and, therefore, does not provide a direct answer.³²⁶ Given the civil law origins of the concept of usufruct, one should look to civil law classifications of water in order to help determine whether they are movable or immovable. In this regard, many civil law countries (such as France, Belgium, and Italy) consider water usable for drinking or irrigation still in water sources (such as rivers, wells, and springs) to be immovable property, like all appurtenances to real estate.³²⁷ Contemporary interpretations of Article 55 have also determined that another liquid subterranean in occupied territory, namely oil in the Sinai and Gulf of Suez, constitutes immovable property.³²⁸

On the other hand, water that has been captured and put into irrigation canals or pipes constitutes movable property. It is a good that is no longer fixed in the ground and can be transported and sold. Thus all Palestinian water is private property, some of it movable and some immovable. As such, all of it is entitled to a high level of protection. The following section analyzes infringements on this right by Israelis.

3. *Israeli Violations of Palestinian Property Rights*

Israeli infringements on Palestinian property are of several kinds. First, it appropriated vast amounts of Palestinian water for improper uses (consumption in Israel proper and in settlements). Second, it enacted a military order, which sought to hamper the registration of private water rights, and to interfere

³²⁶ See Hague Regulations, *supra* note 10, art. 55.

³²⁷ See CODE CIVIL [C. CIV.] art. 2119 (Fr.); Cassese, *supra* note 300, at 431.

³²⁸ See United States Department of State, Memorandum of Law (Oct. 1, 1976), *reprinted in* 16 I.L.M. 733, 735 (1977).

with the proof of legal title to water. Third, it limited Palestinian access to water in various ways, both directly (through physical seizure and consumption of water or the imposition of limitations on the digging of new wells or on pumping) and indirectly (through the construction of deep bore wells for settlements which caused nearby Palestinian wells to dry up or to salinate). Fourth, Israeli overconsumption has caused damage to the actual geological structures that produce water (the Gaza Aquifer, the Mountain Aquifer, and Lake Tiberias). These violations have been substantial and sustained.³²⁹

A violation of a right gives rise to a right to a remedy. In view of the different kinds of violations, several different remedies suggest themselves. First, the quantities of water that Israel took and put to improper, nonmilitary uses ought to be compensated at the bulk price which Israel charges Palestinians for water (around U.S. \$0.50/m³). Second, Israel must allow the registration of water rights to continue. Third, Israel must immediately halt the future misappropriation of Palestinian water or enter into an agreement with the Palestinians for the purchase of this water. Fourth, Israel must make some reparations for the damage it has caused to the geological and geographic formations which produce water, and immediately begin using these resources in a manner consistent with their long-term viability.

a. Interference With Access to Water: Quantity and Quality

As is indicated in Tables 2 and 3 and in Part II.C, Israel currently consumes significant portions of the Gaza Aquifer, Jordan River, and the Western, Northeastern, and Eastern Ba-

³²⁹ In fact, they arguably amounted to "extensive destruction and appropriation of property, [of persons protected by the Fourth Geneva Convention] not justified by military necessity and carried out unlawfully and wantonly," and thus, a grave breach of the Fourth Geneva Convention. *See* Fourth Geneva Convention, *supra* note 279, art. 147. Persons such as Rafael Vardi, the military commander of the West Bank and the promulgator of the Military Order 291 (which directly interfered with the process of registration of individual Palestinian water rights), as well as persons in the Israeli government involved with the design and implementation of Israel's massive water appropriation policy in the OPTs, may be liable for violations of international criminal law. Furthermore, under the universal jurisdiction provisions of the Geneva Conventions, these persons may be tried in any national court with personal jurisdiction over them. *See id.* art. 146. A full discussion of this liability is beyond the scope of this article.

sins of the Mountain Aquifer. All of these are either endogenous Palestinian water sources (in the case of the Gaza Aquifer and the Eastern Basin) or joint water sources (in the case of the Jordan River and the Western and Northeastern Basins of the Mountain Aquifer).³³⁰ Any Israeli nonmilitary or non-administrative use of the endogenous sources is an impermissible interference with Palestinian private property.³³¹ A significant portion of Israeli consumption of the joint sources is consumption of Palestinian water. This is apparent given the highly skewed current distribution of water consumption³³² and the strong Palestinian customary and equitable claims to these water sources.³³³

Israel has enforced this inequitable distribution of water through strict controls on Palestinian pumping. It required the metering of wells, set quotas on the production, implemented constant monitoring, and imposed severe fines for overproduction. It also prevented the construction of new wells without a permit, which was rarely granted. While public powers had the power to limit the digging of new wells in both Gaza and the West Bank, Israel used its ban on Palestinian well construction

³³⁰ There are also water basins that straddle the border between Gaza and Israel. These include Wadi Gaza and parts of the Gaza aquifer. See ELMUSA, *supra* note 4, at 7. These water basins are very small in comparison to the bodies of water that flow alongside or underneath the West Bank. However, the dire water situation in Gaza render these sources of great importance to the inhabitants of Gaza. Given the extremely low per capita levels of water consumption in Gaza, the rapid deterioration in water quality, the mounting damage to the Gaza aquifer, and Palestinians' prior use of the water, it seems undeniable, under widely accepted principles of international water law, that Palestinians should continue to have sole access to these small sources. Unfortunately, Israel has dug wells upstream of the Gaza aquifer and has constructed dams and diversion wells in Wadi Gaza. While these are in Israel, they directly infringe upon Palestinian private property. They are especially problematic since Israel built many, if not all, of these structures after Israel's occupation of Gaza; in other words, at a time Palestinians, when Gazans, living under Israeli military occupation, had no formal way of controlling their water resources or objecting to infringements upon these sources. As with Palestinian water in the Jordan River, Israel should compensate for past overconsumption, compensate for the damage which it contributed to the aquifer in Gaza, and either release the water or negotiate the purchase of it with its owners.

³³¹ See *id* at 7. Furthermore, in the case of immovable private property, water is not the kind of property that has a direct military use and thus, may not be seized by the occupant.

³³² Israel consumes over 85% of joint Israeli-Palestinian water resources.

³³³ See *infra* Part VI.

not to protect the aquifer but rather to make the water available for Jewish and Israeli consumption. As for the water of the Jordan River, Israel declared the Jordan River a Closed Military Area in the aftermath of June 1967, and thereby blocked Palestinian access to that river.³³⁴ In the process, Israel destroyed 140 Palestinian pumps. The reconstruction of this lost water infrastructure will require significant investment.³³⁵ The closing of the area is probably permissible under the rubric of international humanitarian law, since it is at least in part motivated by military necessity. However, it is not clear how the water itself would be used for military purposes, thus rendering its seizure illegal. Article 46 of the Hague Regulations, which requires the occupant to respect private property, suggests that affected Palestinians ought to receive either some alternative means of access to water or compensation.³³⁶ In particular, they could receive waters from the Upper Jordan River, from which Israel consumes Palestine's quota of West Bank water. No such alternative arrangement was or has been provided.

In addition to the quantities taken, Israel is causing deterioration in the quality of water remaining for Palestinians, and in some cases is contributing to the deterioration of underground aquifers. Israel, in exploiting the Eastern Basin, dug up to forty deep-bore wells, some reaching 700 meters in depth and extracted the water with high-power pumps.³³⁷ Palestinians, in contrast, exploit the aquifer through the use primarily of naturally occurring springs in the Jordan Valley. Israel placed the wells in parts of the aquifer where the water is especially low in salinity, and have pumped at a rate far exceeding the flow of nearby Palestinian springs.³³⁸ The result has been the drying-up of nearby Palestinian springs, most notably the one near the Jericho village of Al Auja, and also at the villages of Bardala

³³⁴ As of the mid-1980's, about 25% of the West Bank was closed to Palestinians for military or security reasons. See Ibrahim Matar, *Exploitation of Land and Water Resources for Jewish Colonies in the Occupied Territories*, in INTERNATIONAL LAW AND THE ADMINISTRATION OF OCCUPIED TERRITORIES, *supra* note 228, at 443, 447.

³³⁵ See CENTER FOR ENGINEERING AND PLANNING, WATER CONSERVATION IN PALESTINE: AN INTEGRATED APPROACH TOWARDS PALESTINIAN WATER RESOURCES MANAGEMENT 36 (1994).

³³⁶ See Hague Regulations, *supra* note 10, art. 46.

³³⁷ See Matar, *supra* note 334, at 453. See also Part II.A.

³³⁸ See *id.*

and 'Ain al-Baida.³³⁹ In the case of the village of El Auja, damages to crops resulting from a sudden, Israeli-induced dry-up of the village spring amounted to approximately \$3 million in the winter of 1988 alone.³⁴⁰ In other instances, springs draining the same basin tapped by Israeli wells have experienced increases in salinity. In some limited instances Mekorot has offered to supply the villages with replacement water.³⁴¹ This situation is not a sufficient remedy, as Palestinians have been converted from owners to renters of their own natural resource.³⁴² This is precisely the scenario that the Hague Regulations prohibit.

Furthermore, Israel's excessive pumping of the other basins of the Mountain Aquifer is causing a steady increase in salinity. Israel's skimming of the least saline waters in the Upper Jordan River and the diversion of some of the most saline spring water in the Upper Jordan River Valley into the lower Jordan, have rendered Jordan River water so brackish as to be largely unusable for agriculture. In addition, during the 1990 drought, Israel for the first time allowed the water level in the Mountain Aquifer to drop below the "Red Line," the level below which the Lake suffers long-term ecological damage. In Gaza, the continuing deterioration in water quality, caused in part by the pumping of Gaza settlements,³⁴³ has led to a halt in agriculture in some areas due to high salinity levels in some wells or springs, and a general deterioration in health because of the heightened concentration of nitrates, sodium, microorganisms, and other pollutants.³⁴⁴

b. Legitimate and Illegitimate End Uses

Under the Hague Regulations, any water use by Israeli military and administrative installations, used pursuant to their reasonable military and administrative needs for example, "water consumption by soldiers at a military base in the OPTs"

³³⁹ *See id.*

³⁴⁰ *See id.* at 453-54.

³⁴¹ *See id.* at 453.

³⁴² *See Matar, supra* note 334, at 453-54.

³⁴³ Palestinian consumption alone is in excess of the annual recharge and thus, would cause a deterioration of the aquifer even without consumption by the Gaza settlements.

³⁴⁴ *See supra* Parts II.A-C; *infra* Part V.C.5.

is legitimate. However, this constitutes a very small part of the local consumption of water. As Part II details, the major Israeli uses of West Bank and Gaza water are for agriculture and domestic consumption.

An interesting legal question is presented by the Nahal settlements, which were propagated in the West Bank and Gaza up to the early 1980's. The Nahal is "[a] unit of the IDF [Israel Defense Forces] in which, as part of their military service, soldiers, mostly members of pioneering youth movements, work on kibbutzim and settlements considered sensitive from the security point of view."³⁴⁵ In the early years of the occupation, soldiers from this unit occupied remote outposts in the OPTs for purposes of preparing them for conversion into civilian settlements.³⁴⁶ These outposts often cultivated areas in the vicinity of the settlements, which not only served to provide the settlements with nourishment, but also prepared the way for more extensive agricultural development once the civilian character of the settlement came to dominate. Often, the soldiers would reside in these settlements with their families and stay there after leaving military service.

The lifetime of these settlements can be divided, for analytical purposes, into the period during which the military character predominates and that during which the civilian character predominates. The transition point is often ascertainable as the date at which the settlement changed its legal form to a *kibbutz*, *moshav*, or other legal form.

As for the military period, while some of the agricultural production and related water consumption serve military purposes, the intention of creating a civilian agricultural settlement undoubtedly pushed levels of water consumption beyond that of a purely military installation. It is clear that the placement of settlements in militarily strategic points served the Israeli Defense Force's military purposes; the cultivation of food at the locations in which soldiers were located undoubtedly provided a level of self-sufficiency that would be critical should the installation be surrounded in the course of an armed attack on the region. However, this analysis must consider the fact that

³⁴⁵ MERON BENVENISTI, *THE WEST BANK HANDBOOK: A POLITICAL LEXICON* 157 (1986).

³⁴⁶ *See id.* at 157-58.

the Allon and subsequent governments, which built these settlements, always intended to convert them into civilian settlements. Furthermore, the Nahal settlements were a small part of the larger settlement movement, which sought to assert a Jewish civilian presence in the OPTs. As with the population dispersal policy that drove Jewish population patterns inside Israel, "Labor-Zionist settlement ideology" pervaded the drive to create settlements in the OPTs and led to the creation of many agricultural settlements of nonmilitary character.³⁴⁷ Had there been no intent to convert the settlement for civilian purposes, the agricultural exploitation and water consumption would undoubtedly have been less. This "incremental consumption" of the military period of the Nahal settlements is legally suspect.

While the Nahal settlements pose an interesting legal question, they are of limited empirical importance. In October 1983, the Israeli Ministry of Defense decided to halt the use of Nahal soldiers to populate new military installations in the OPTs. At this time, there were a total of sixteen Nahal settlements in the West Bank.³⁴⁸ Even in 1982, at the height of their presence in the West Bank, these settlements accounted for 15 of the 98 settlements in the West Bank and only 75 of the 5,130 settler families. In the Jordan River Valley, a concentrated area, they accounted for 13 of the 40 settlements and 75 of the 987 families.³⁴⁹ A generous estimate of West Bank Nahal water consumption for military purposes at the peak of Nahal military settlement activity is 4 mcm/yr.³⁵⁰ Similarly, in Gaza, several

³⁴⁷ See MERON BENVENISTI, *THE WEST BANK DATA PROJECT: A SURVEY OF ISRAEL'S POLICIES* 51 (1984) (stating that Allon government established 21 civilian settlements "14 *moshavim* and 6 *kibbutzim*" and only 2 Nahal settlements in Jordan River Valley). See generally *id.* at 51-60 (detailing three phases of settlement activity in the West Bank).

³⁴⁸ See BENVENISTI, *supra* note 345, at 158.

³⁴⁹ See BENVENISTI, *supra* note 215, at 5, tbl. 13.

³⁵⁰ In 1982, Nahal settlements in the Jordan River Valley contained 75 of the 747 families living in rural semi-urban or paramilitary (i.e., Nahal) settlements. There were 13 Nahal settlements; assuming an average of around 6 families per settlement, and considering that there were 16 such settlements at the end of the Nahal settlement policy, there were 96 Nahal settlement families. Counterfactually, concentrating these in the high water-consumption Jordan River Valley, these families constituted 96 out of 750, or 13% of the families. Given that in 1987, settlement water consumption in the Jordan River Valley and North Dead sea settlement areas was 31 mcm/yr., West Bank Nahal military water consumption was

Nahal settlements started in the 1970's, though by the mid-1980s all of these had converted to *moshavim*, *kibbutzim*, and non-cooperative or non-communal settlements.³⁵¹ Also, as in the West Bank, most settlements never had a Nahal stage, starting instead as purely nonmilitary undertakings. As of 1986, the settlements that *began* as Nahals accounted for one-third of the population of Gaza.³⁵² Again, using exceedingly generous assumptions, Nahal military-related consumption at its peak was in the area of 4 mcm/yr, and has ceased since 1983.

Water consumption by Nahal settlements during their civilian period, as well as that by the far more numerous settlements of purely civilian character, is "in clear violation" of the international law of belligerent occupation.³⁵³ Not only did this water support nonmilitary activities by an alien population, it went to underwrite Israel's settlement policy, a widely condemned activity that is absolutely forbidden under humanitarian law.³⁵⁴ Presently, water consumption by settlers amounts to 65 mcm/yr in the West Bank and between 18 and 33 mcm/yr in Gaza. This water pumping must either halt immediately, or Israelis must enter into an arms-length commercial agreement with Palestine for the purchase of this property. Furthermore, this use has been ongoing at increasing levels since the beginning of settlement activity in the late 1960's, and Israelis must pay Palestinians for all such misuse.

at most 4 mcm/yr. See KAHAN, supra note 184, at 102, 105. This estimate is generous for several reasons. First, the author assumed that all the Nahal settlements were in the Jordan River Valley/North Dead Sea settlement groups, which were by far the largest consumers of water. Second, the figure the author used for aggregate water consumption is from a source published in 1987, a time during which there were more settlements than in 1982 and thus, a time during which the global consumption figures on the basis of which the author calculated per family consumption were far higher than in 1982. Finally, the author assumed that water consumption per family in a Nahal settlement is equivalent to that of a family in a civilian settlement, which is probably not the case since a Nahal settlement contains many on-duty soldiers who spend much of their time in nonagricultural military activities.

³⁵¹ See Roy, *supra* note 19, at 137-39.

³⁵² See *id.* at 139-48.

³⁵³ See Naff & Matson, *supra* note 70, at 143.

³⁵⁴ "The Occupying Power shall not deport or transfer parts of its own civilian population into the territory it occupies." Fourth Geneva Convention, *supra* note 279, art. 49(6).

Similarly, Israeli consumption in Israel of Palestinian water without compensation, is a *per se* violation of the Hague Regulations. The Palestinian share of the Jordan River is pumped into the National Water Carrier and taken to central and southern Israel for domestic and agricultural production. This use is not allowed. It is impossible to know the magnitude of Palestine's share of Jordan River water without knowing the quota allotted to the West Bank under the 1955 Johnston Plan; estimates of this amount range between 50 and 200 mcm/yr. Additionally, Israel takes water from the shared basins of the Mountain Aquifer for domestic consumption in Israeli cities. Again, it is difficult to know the magnitude of Palestine's share of the shared basins of the Mountain Aquifer since that is to be determined equitably by employing a factor analysis. However, Israeli consumption from these sources amounts to 435 mcm/yr, so the Palestinian share could easily run into the hundreds of millions of cubic meters per year.

c. Interference With Legal Title

In addition to the physical misappropriation of Palestinian water, Israel's military rule brought significant interferences with the formal aspect of individual property rights to water. By virtue of Military Order No. 291 of 1968, Israel halted the operation of a Jordanian law, which sought to register all water rights in a centralized national register. By the time of the occupation, only one-third of privately owned Palestinian lands (and presumably a similar proportion of private water rights) had been registered. This military order prevented any further registration of water rights. Thus, Israel could incorporate approximately two-thirds of individually owned Palestinian water, in addition to any waters not consumed from the aquifer by 1968, into Israel's national pool.³⁵⁵ This is because the military order effectively prevented these property right holders from earning legal recognition of their property rights. Israel must at once restrict the reach of its national water laws so as not to interfere with Palestinian title to its underground water.

³⁵⁵ See *Report of the Secretary-General 1984*, *supra* note 239, ¶ 14.

B. *The Belligerent's Duty to Preserve Local Law*

1. *The State of the Law*

An occupant must, to a great extent, respect the laws in effect at the time of the occupation. Such an occupant has the right to modify local law for certain specified reasons. However, in no case shall the occupant make the changes for reasons of its own economic advantage. Israel's appropriation through nationalization of former private property; its separation of control of water from control of the land; and its incorporation of Palestinian water resources into the national Israeli water control apparatus all created a radical shift in the property rights and economic activity of Palestinians. Far from undertaking this activity in order to ensure some sort of rough equality between Palestinians or Israelis, or to safeguard the integrity of the Mountain Aquifer, or to respond in some direct way to a military threat, Israel has appropriated Palestinian water in order to impose strict limitations on its use so as not to harm Israeli and settler water use. These restrictions would be consistent with Jordanian law, for example, were the Israeli and settler use legitimate in and of itself or in its amount. However, Israel controls Palestinian consumption and seeks to leave as much water as possible for the Israeli agricultural sector and for settlements. Therefore, this change in regimes was done in order to subjugate the Palestinian water sector to the needs of Israel. This is an impermissible interference with the local law regime.

The local law doctrine is embodied in Article 43 of the Hague Regulations:

The authority of the legitimate power having in fact passed into the hands of the occupant, the latter shall take all the measures in his power to restore and ensure, as far as possible, public order and [civil life], while respecting, unless absolutely prevented, the laws in force in the country.³⁵⁶

³⁵⁶ Hague Regulations, *supra* note 10, art. 43. The bracketed words appear in the semi-official English translation as "safety." "Safety" is the translation of the official, French term "vie publique," which literally means public life. Given its interpretation at the time of its first appearance in the Convention of Brussels, the best translation for "vie publique" is probably "civil life." See Edmund H. Schwenk, *Legislative Power of the Military Occupant Under Article 43, Hague Regulations*, 54 YALE L.J. 393, 393 n.1 (1945).

The Fourth Geneva Convention contains no analogous provision relating to civilian matters.³⁵⁷

This provision implies a number of things about the powers of the occupant. The provision insists that the legislative power has "in fact," and not in law, passed into the hands of the occupant. While this clause seems to deny the occupant the power to change local laws, the rest of the article is illogical if an occupant is absolutely disallowed from making any change whatsoever. The question then becomes, under which circumstances an occupant may bring about changes in the local legal regime.

An examination of the history of the Article may provide the answer. This was the result of the combination of two articles of the Declaration of Brussels of 1874. The first article, Article 2, commanded the occupant to "take all measures in his power to restore and ensure, as far as is possible, public order and civil life." The second article commanded the occupant to preserve the laws in force at the time of the peace, and not to modify, suspend or replace them except in the case of "necessity."³⁵⁸ One interpretation of the new, merged Article 43 of the Hague Regulations is that the occupant has a duty to ensure public order and civil life, and thus may change legislation in pursuit of this end as long as it is absolutely necessary. In addition, the occupant has the power to change legislation in other areas, although any changes in these areas are governed by a different, higher standard, possibly those posed by war usage, morals and humanity. In any case, there is "an established general principle that the local civil and criminal law should be respected by the occupant."³⁵⁹ Furthermore, there exists the principle of respecting the institutions of the occupied territory, which, in the case of the post-World War II era for example, would prevent an occupant from transforming a liberal economy into a fascist or communist one. This prohibition is qualified by the power of the occupant to change laws in cases of military necessity, for example, when these institutions constitute a permanent threat to the maintenance and safety of the military

³⁵⁷ See Fourth Geneva Convention, *supra* note 279, art. 64 (regulating penal laws).

³⁵⁸ Schwenk, *supra* note 356, at 396 (quoting HIGGINS, THE HAGUE PEACE CONFERENCE 723 (1909)).

³⁵⁹ *Id.* at 406.

forces of the occupant.³⁶⁰ In particular, the force of this prohibition extends to the extraterritorial prescriptions of law emanating from the occupant's own national institutions, such as the legislature, the government, administrative agencies, and the courts.

2. *Israeli Violations of Its Duty to Preserve the Regime of Local Law*

When Israel occupied the West Bank and Gaza, it encountered, as described above, a preexisting regime of water ownership, regulation, and distribution. In the West Bank, Jordanian law prescribed a regime of private rights to captured water inuring to the landowner, and initiated a process of centralized registration of these rights. Authority over the regulation of the Kingdom's water resources was in the hands of the Authority for Natural Resources. The digging of new wells required the permission of the Authority, and the Authority could restrict the amount of pumping from any given well. The Authority oversaw a system of communal ownership of groundwater and river water, and provisional private rights to the production of these resources. Gaza's water was regulated by customary law that was based largely on pre-existing *shari'a* law, which recognized private and alienable rights to captured water, and recognized the right to water for those needing it for basic necessities. No regional water authority existed in Gaza. In both the West Bank and Gaza, the provision of drinking and irrigation water was often handled at the local level by municipalities.³⁶¹

In the post occupation era, Israel radically altered the pre-existing legal and institutional aspects of water control. It initially preserved the powers existing in Jordanian law that allowed the central authority to restrict water use, while removing some of the formal checks on the exercise of this control. It also preserved some of the existing Jordanian governmental water institutions, though it subjugated these institutions to the authority of the Israeli Civil Administration (an arm of the military government), which itself was under the control of an Israeli inter-ministerial committee. The Civil Administration

³⁶⁰ See *id.* at 407.

³⁶¹ See *supra* Parts III.A-C.

thus became a device to project Israeli national water policies throughout the OPTs. These preexisting institutions were unresponsive instruments serving the interests of the Israeli water sector, not those of the residents of the OPTs. The facade of the continuation of preexisting institutions broke down in 1982 when Mekorot, Israel's National Water Company, was entrusted with the management of Palestinian water, while the Civilian Administration was left with administrative duties such as bill collection and the monitoring of meters. Israeli military government also led to the curtailment of preexisting private property rights to water, and to the introduction of Israeli water institutions (such as the National Water Company, Mekorot). In the final analysis, however, it is difficult to see how either military necessity, or the related requirements of the establishment of public order and civil life, could have motivated these changes in the legal regime.

The West Bank and the Gaza Strip were two distinct military areas; therefore, different orders apply to the two. I will consider the changes effected in these two areas in turn.

Within weeks of the occupation, the authority of the Jordanian Natural Resources Authority (which was within the West Bank and not in Gaza) was centralized in the hands of an "Officer in Charge" whom the Military Commander of the West Bank appointed by virtue of Military Order 92. The Officer in Charge had all the powers granted under water-related legislation in the West Bank at the date of occupation. The order annulled all rights deriving under Jordanian law, unless extended by this Officer in Charge. The Officer in Charge also had the right to order the operation of existing "Water Entities" (i.e., institutions allowed to operate by virtue of water-related laws) to cease, to allow them to continue, or to revive them after having halted their operations.³⁶² The order lacked any provision of appeal; this is in contrast to Jordanian law, which placed authority over the Natural Resources Authority in an eight-person committee and gave a three-person committee jurisdiction over compensation for infringement of land or water rights caused by

³⁶² See *Israel Defense Forces, Orders Concerning Powers for the Purpose of the Water Provisions (No. 92)*, Aug. 15, 1967, ¶¶ 2, 5-6, reprinted in 5 PAL Y.B. INT'L L. 348 (1989).

the Committee.³⁶³ This effectively centralized all powers deriving from existing Jordanian water-related institutions in the hands of the Officer in Charge; any continuation of prior rights were purely within the discretion of this Officer, and his discretion was unguided. These changes alone amounted to a radical change in the local water-related legal regime. It is difficult to see how military necessity could justify these steps, since the only concern was the regulation of an underground resource used primarily for agriculture and not military purposes. Similarly, it is unlikely that the ensuring of public order and civil life could justify these steps since they came, shortly after the beginning of the occupation, and therefore before there could have been a radical change in the needs for the regulation of underground water rights.

In case anyone doubted the power of the Officer in Charge to control the operation of new water installations, Military Order 158 gave the Officer the powers of the Minister of Public Works to approve new irrigation-related water installations. These powers came from a then-repealed Jordanian law. The military legislation also expanded these powers so that this approval power covered "any construction or building intended for the production of surface water or ground water, including drilling or the diversion of water from any water source whatsoever." This presumably also included smaller-scale wells used for domestic purposes. Again, the Officer's powers were wholly discretionary and unappealable.³⁶⁴ Whereas the Jordanian

³⁶³ See Natural Resources Law of 1966, *supra* note 237, arts. 9, 19; *Special Report: Sovereignty Over Water Resources in the West Bank and Gaza Strip*, 5 PAL. Y.B. INT'L L. 348-49 n.1 (1989). It was not until 1972 that Military Order No. 457 created the Competent Authority and vested it with the power to decide the value of land and water allocations resulting from application of the powers of the Jordanian Natural Resources Authority and to assess damages from activities of the Natural Resources Authority. In this latter power, the Competent Authority replaced a three-person Objections Committee comprised of one judge and two experts in the relevant area. The Israeli Committee, formed under Military Order No. 172 of January 22, 1968, had jurisdiction over disputes arising from decisions of this competent authority. This committee had no rules of procedure or evidence and could merely make recommendations to the Military Commander, who had final authority. See *id.* at 357 n.3.

³⁶⁴ Military Order No. 158 of 1967, ¶¶ 2, 4. This Order had the odd result of re-instituting an old Jordanian law—Jordanian law no. 31 of 1953—that a subsequent law, Law No. 51 of 1959, had abolished in order to grant the Officer powers that he presumably already had inherited by operation of the Order for the Super-

Minister of Public Works could only refuse to grant a license for reasons specified in law, the authority of the Officer in Charge was unconstrained in law and guided in fact by a policy to favor the needs of Israel and Jewish settlements. Thus, the Officer in Charge granted Palestinians few permits for new wells during the occupation.³⁶⁵ In contrast, West Bank settlers have been able to dig new wells with a combined output approaching 50% of that of all Palestinian West Bank wells.

In addition to the abrogation of Jordanian institutions, the Military Government also infringed on existing property rights. Military Order No. 291 of 1968 suspended the effectiveness of any post occupation order issued pursuant to the Law for the Settlement of Titles to Land and Water of 1952. This Law sought to settle disputes and all matters relating to rights to land and water and to create a comprehensive register for land and water rights in Jordan (which at that time included the West Bank within its territory). At the time of the occupation, only about one-third of West Bank land had been registered. Thus, the water rights connected to about two-thirds of Palestinian lands. These rights were based on Ottoman or British certificates of registration or registration in tax registers, and could not be affirmed. In addition, of the lands that were registered, the Israeli government considered lands (and thus connected water rights) that were owned in common by municipalities, as well as lands owned by the Jordanian state (the latter category alone amounting to 13% of all West Bank lands), as subject to confiscation by the state of Israel.³⁶⁶ This, and subsequent orders, resulted in a transfer of land registration responsibility from the Jordanian Natural Resources Au-

vision of Underground Water and Military Order No. 92. This reinstatement of the old law in and of itself is a clear case of unjustified tampering with old law.

³⁶⁵ According to relatively recent figures, the Military Government has granted permits for 20 new wells intended for domestic use and three new wells intended for agricultural use, in addition to permits for wells to replace three old domestic use wells and 10 agricultural wells. See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 26. The Israeli Military Government has used this as a tactic to force Palestinian bulk purchasers, such as municipalities, to purchase their water from Mekorot, the Israeli National Water Company. A system of bald price discrimination exists in the West Bank, where Palestinians pay 50% more per volume of water than do Israelis. See *id.* at 30. In other words, Palestinians were required to subsidize Israeli encroachments on Palestinian water rights.

³⁶⁶ See SHEHADEH, *supra* note 2, at 22-34.

thority to the Israeli authorities,³⁶⁷ which, given Israeli policies towards the confiscation of Palestinian lands, are, in effect, a recipe for the appropriation of water.

The Gaza Strip, unlike the West Bank, had no centralized system for the control of water resources until the Military Government imposed one. In any case, the Military Commander for the Gaza Strip promulgated military orders, which resulted in many of the same restrictions that were imposed on the West Bank. Notably, even though the water situation was already far more critical in the Gaza Strip than in the West Bank, the Gaza Strip restrictions were longer in coming. This is probably because Gaza had far less water to offer and was either disconnected from water basins within Israel or downstream from them, and therefore was of less importance than the West Bank. In 1974, the Military Commander of the Gaza Strip issued Military Order No. 498, entitled Order Concerning Water, which was motivated by the "danger of water resources in the Area running short, and for the protection of water sources."³⁶⁸ This purpose, if authentic, would be consonant with a belligerent occupant's duty to safeguard the public order and civil life of an occupied territory. Unfortunately, as in the West Bank, these military orders served to further the interests of settlers. The Order allowed the Competent Authority in charge of carrying out the order to require the installation of water measurement devices by producers, suppliers, and consumers.³⁶⁹ It also created a system whereby the Competent Authority could require a permit for the production, supply, or consumption of water. This permit could include an allowed quantity of water use, and was not allowed to be freely traded. The drilling of any new wells also required a permit. Other provisions imposed criminal sanctions and civil fines for violations of a permit or provision issued pursuant to the Order, and allowed the Competent Authority to reverse unilaterally any such permit, license, or endorsement.³⁷⁰ In Gaza, like in the West Bank, the responsibility for the recording of water rights was transferred to the

³⁶⁷ See *Report of the Secretary-General 1984*, *supra* note 239, ¶ 22.

³⁶⁸ Israel Defense Forces, Order Concerning Water (No. 498), Apr. 11, 1974, reprinted in 5 *PAL Y.B. INT'L L.* 359 (1989).

³⁶⁹ See *id.* at 360.

³⁷⁰ See *id.* arts. 13, 16, 22, 24, 30-31, 35, 40.

Israeli authorities. This power was thus taken from municipalities and other local authorities.³⁷¹

While Military Order 498, on its face, seemed consonant with a legal regime protective of the water needs of Gazans, the selective application and interpretation of the Order has led to a situation of utter inequity between Gazans and Jewish settlers in Gaza. For example, whereas during the 1980's there was a virtual freeze on the issuance of new permits for Palestinian water use in the Gaza Strip,³⁷² Jewish settlers were able to dig thirty-five to forty new wells.³⁷³ As a result of this discriminatory policy, settlers "use of water is much more than that of Gazans."³⁷⁴ As in the West Bank, restrictive water laws, which in truth are necessary in a region where water is scarce, are applied selectively by an occupying power to the subjects of the occupation.

The concentration of the power to regulate and manage water resources that fell into the hands of the Officer in Charge (in the case of the West Bank) and the Competent Authority (in the case of the Gaza Strip), however, was only part of the story. The second part involved how this military officer fit into the overall legal regime of the occupying state. Soon after its occupation, Israel put together a system of administration, which allowed for Israeli national policies to be effected in the OPTs. In prescribing policies for the OPTs, the military government and the national government interacted and coordinated their policies via the mechanism of the Staff Officers of the Area Commander. While the IDF Area Commander for an occupied area was the supreme authority in that area and held exclusive formal authority, the various civil activities in the area were conducted by the appropriate governmental offices. These ministries acted through their representatives in the area, who coordinated their activities with the Area Commander and served as his Staff Officers. The larger policies for the administration of the occupied territories were determined by a ministerial committee chaired by the Prime Minister, which enforced its decisions via the Defense Minister.

³⁷¹ See *supra* note 367 and accompanying text.

³⁷² See KAHAN, *supra* note 184, at 19.

³⁷³ See ROY, *supra* note 19, at 51.

³⁷⁴ See *id.*

In 1981, this structure was lightly modified by operation of Military Order No. 947, which reasserted the role of the Civilian Administration, the branch of the Israeli military government in the OPTs which handled civilian issues in the administration of the OPTs.³⁷⁵ In the West Bank, for example, responsibility for the management of water resources was located in the Water Office of the Interior Branch, which was one of the three administrative branches of the Civilian Administration.³⁷⁶ The powers of this office included the powers given the Jordanian Natural Resources Authority, which the Commander of the Area had vested in an Officer in Charge.³⁷⁷ Given the Israeli emphasis on national-level management of water resources, it was highly probable that the Israeli Ministry of Agriculture's water-related bureaucracy directed and controlled the work of this Water Office, making it a tool of national Israeli water policy. In 1982, Mekorot, Israel's National Water Company, was entrusted with the management of Palestinian water, while the Civilian Administration was left with administrative duties like bill collection and the monitoring of meters.³⁷⁸ This made the incorporation of Palestinian water into Israeli national planning more direct and transparent.

All of these structures produced a situation where "decisions concerning the administration of the West Bank [were] in fact in the hands of Israeli cabinet ministers and government sub-committees."³⁷⁹ Furthermore, in making these changes to the prior administrative regime, "Israel . . . effectively denied the Palestinian population any participation at the decision-

³⁷⁵ See Mona Rishmawi, *The Administration of the West Bank Under Israeli Rule*, in INTERNATIONAL LAW AND THE ADMINISTRATION OF OCCUPIED TERRITORIES, *supra* note 228, at 275-76.

³⁷⁶ See *id.* at 267, 271-75. See also Joel Singer, *The Establishment of a Civil Administration in the Areas Administered by Israel*, 12 ISR. Y.B. HUM. RTS. 259 (1982).

³⁷⁷ See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 27-28.

³⁷⁸ See Sharif S. Elmusa, *Dividing Common Water Resources According to International Water Law: The Case of the Palestinian-Israeli Waters*, 35 NAT. RES. J. 223, 225 (1995). It is these limited powers of the Civil Administration that the Palestinian Authority assumed as a result of the Interim Agreement. See Interim Agreement, *supra* note 1, Annex 3, art. 40, ¶ 4.

³⁷⁹ Rishmawi, *supra* note 375, at 267. The introduction of the new Ministry of National Infrastructures, to which several of the powers of the old Ministry of Agriculture were transferred, does not change the basic picture of generalized Israeli government control over the water resources of the OPTs.

making level while simultaneously allowing Jewish parties to participate in the governance of the West Bank."³⁸⁰ What was true of the West Bank in this case was also true of the Gaza Strip. Thus, whenever the military government created or continued a water-related institution within the OPTs, they merely added to the implementation or enforcement mechanisms of the Israeli Ministry of Agriculture. In other words, even when the military government putatively respected local law and local institutions, it merely reinforced the predatory and colonizing agenda of the Israeli water sector, and thus effectively undermined the preexisting local regime.

The manifestations of this reality were manifold. As discussed above, the combination of these laws created a regime whereby Palestinian institutions were severely restricted in the running, maintenance, management or development of water services or resources.³⁸¹ In the majority of cases, this meant that localities were not able to dig local wells to supply their own needs. To make up for the deficit, they had to turn to Mekorot, the Israeli National Water Company. Purchases by Palestinian institutions from Mekorot are 50% more expensive than purchases by Israeli entities, which meant that Israel forced Palestinians to subsidize the appropriation of their own water by Israel and by Jewish settlers.³⁸² In addition, the high cost of this water, combined with the relatively lower income level of Palestinians, meant that Palestinian water utilities had a low rate of return on revenue and on capital, and thus were not able to finance maintenance, repair, and upgrades to their water networks. Another manifestation of this control was the granting to Mekorot of the right to manage water resources in the OPTs. As already mentioned, the ownership structure and institutional role of Mekorot was to respond to the needs of Jews and Israelis, and not to Palestinians.³⁸³ Mekorot's penetration in the OPTs was such that it supplied up to 50% of Pal-

³⁸⁰ *Id.*

³⁸¹ *See supra* Part IV.

³⁸² In 1988, Benvenisti and Khayat stated that while Palestinian authorities paid NIS .70 per cubic meter of water supplied by the Mekorot and charged its consumers NIS 1-1.6 per cubic meter, Jewish settlers paid NIS .15 and .23 per cubic meter for water used in domestic and agricultural applications, respectively. *See MERON BENVENISTI & S. KHAYAT, THE WEST BANK AND GAZA ATLAS 26 (1988).*

³⁸³ *See supra* Part IV.

estinian domestic water needs by 1994.³⁸⁴ Mekorot, which managed water resources under its control without regard to the naturally occurring boundaries of watersheds, also engaged in the transfer of water from one watershed to another,³⁸⁵ and violated a provision of Jordanian law which prohibited such transfers.³⁸⁶ The potentially national-level planning capacity of the Jordanian Natural Resources Authority in the West Bank was denied to Palestinians, as the Civilian Administration did not release information and did not include Palestinian municipalities and NGOs in any comprehensive planning for the West Bank. Other manifestations of the near-total Israeli control over Palestinian water are discussed below in Part V.C.

C. *The Gaps Left by International Humanitarian Law*

1. *Thicker Protection for Civilian Populations Under Belligerent Occupation*

The so-called Martens Clause is a built-in mechanism by which the Hague Regulations may adapt to changes in international law:

Until a more complete code of the laws of war has been issued, the high contracting parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the principles of the law of nations, as they result from the uses established among civilized peoples, from the laws of humanity, and from the dictates of the public conscience.³⁸⁷

This clause emphasizes the need to reevaluate constantly the content of the rule and principles of the law of nations and to apply them to persons in occupied territories. Another clause of the preamble emphasizes that this interpretation should under-

³⁸⁴ See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 26-27.

³⁸⁵ For example, the main stem of the National Water Carrier carries water from Lake Tiberias to the Naqab desert, located in two wholly unconnected water basins.

³⁸⁶ See Natural Resources Regulation Law of 1966, *supra* note 323, art. 16(b) (“[i]t is not permitted to transfer water from one water basin to another.”); art. 17 (“[t]he [Natural Resources] Authority may not transfer water from one water area to another within a basin without permission of the Council of Ministers; and only after a study and consideration of the water needs of the area of the water source as well as the benefits to be derived from that source.”).

³⁸⁷ Hague Regulations, *supra* note 10, pmbl.

score the humanitarian orientation of the Regulations and reflect the contracting parties' desire to serve "the interests of humanity and the ever progressive needs of civilization."³⁸⁸ Any interpretation of the provisions of the Regulations, in particular Article 43, should make reference to these statements of purpose and principles of interpretation.³⁸⁹

The Israeli Supreme Court, in reviewing actions of the Military Governor as the High Court of Justice, endorsed this evolving and progressive principle specifically in the context of the interpretation of Article 43 of the Hague Regulations.³⁹⁰ Judge Barak ruled that in interpreting Article 43 of the Hague Regulations, the court ought to take account of changing international norms:

[T]he concrete content that we shall give to Article 43 of the Hague Regulations in regard to the occupant's duty to ensure public life and order will not be that of public life and order in the nineteenth century, but that of a modern and civilized State at the end of the twentieth century.³⁹¹

This statement has many implications for various aspects of Palestinian economic and social life. The judgment, however, has beneficial implications for the role of Israel in undertaking investments in infrastructure for the benefit of the local population:

Long-term fundamental investments [made by the occupant] in an occupied area [in the course of prolonged occupation] bringing

³⁸⁸ *Id.*

³⁸⁹ See Vienna Convention on the Law of Treaties, May 23, 1969, art. 31, U.N. Doc. A/CONF. 39/27, 8 I.L.M. 679 (stating that treaty's annexes and preambles should guide its interpretation). The Vienna Convention is considered to represent customary international law. See RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES, pt. 3, introductory note (1986) (stating that substantive provisions of the Vienna Convention codify international law). United States courts, for example, routinely apply the Vienna Convention in the absence of U.S. ratification thereof. See, e.g., Haitian Centers Council v. Sale, 113 S. Ct. 2549, 2569 (1993); Committee of U.S. Citizens in Nicaragua v. Reagan, 859 F.2d 929, 940 (D.C. Cir. 1988); Casa Veerkamp, S.A. de C.V., 22 F.3d 634, 638 n.9 (5th Cir. 1995); Sideman de Blake v. Argentina, 965 F.2d 699, 714 (9th Cir. 1992), *cert. den'd*, 113 S. Ct. 1812 (1993).

³⁹⁰ See *A Cooperative Society Lawfully Registered in the Judea and Saria Region v. Commander of the IDF Forces in the Judea and Sumaria Region*, reprinted in 14 ISR. Y.B. ON HUM. RTS. 301 (1984) [hereinafter *Cooperative Society*].

³⁹¹ *Id.* at 307.

about permanent changes that may last beyond the period of the military administration are permitted if required for the benefit of the local population—provided there is nothing in these investments that might introduce an essential modification in the basic institutions of the area.³⁹²

In general, the implication of these statements “in light of Israel’s long-term occupation” is that a prolonged occupation makes it increasingly necessary for an occupant to take into account the economic and social needs of the local population.³⁹³ As always, the guiding principle for alterations to the local legal regime should be the enhancement of the welfare of the inhabitants of the occupied territories.³⁹⁴

Given the importance of economic and social needs within the context of evolving international norms, it is natural to direct one’s attention to the International Covenant on Economic, Social and Cultural Rights (ICESCR).³⁹⁵ Drafted in 1966 as part of the United Nations’ efforts to give content and detail to the hortatory and general provisions of the 1948 Universal Declaration of Human Rights,³⁹⁶ this document, due to the breadth of its scope and status as an integral component of the International Bill of Rights, is the leading document regarding the du-

³⁹² *Id.* at 310.

³⁹³ See Yoram Dinstein, *The International Law of Belligerent Occupation and Human Rights*, 8 ISR. Y.B. ON HUM. RTS. 112 (1978); HC 337/71 *The Christian Society for the Holy Places v. The Minister of Defense*, reprinted in 2 ISR. Y.B. ON HUM. RTS. 354, 355 (1972).

³⁹⁴ It should be said in this regard, however, that while the Israeli High Court’s language has been quite progressive, it has in many cases referred to international humanitarian law in order to uphold actions by the Israeli military government that have involved quite severe incursions on the human rights of persons living under Israeli occupation. See Simon, *supra* note 294, at 24 n.120 (listing Israeli High Court decisions upholding two-year-long night curfew on Gaza Strip; requisitioning private lands for Israeli military and civilian settlements; restricting international telephone communications to, and from, the OPTs; suspending indefinitely elections to local councils; and others). In addition, in many areas, the actual changes to the legal regime of the OPTs have caused the local residents harm. See, e.g., EYAL BENVENISTI, LEGAL DUALISM: THE ABSORPTION OF THE OCCUPIED TERRITORIES INTO ISRAEL 33 (1989) (stating that Israel’s policy of integrating OPT’s economy into Israel’s through changes in legal regime have resulted in subordinate status for Palestinian economy).

³⁹⁵ G.A. Res. 2200A, U.N. GAOR, 21st Sess., at 49, U.N. Doc. A/6316 (1966) [hereinafter ICESCR].

³⁹⁶ G.A. Res. 217, U.N. GAOR, 3d Sess., U.N. Doc. A/810 (1948) [hereinafter Universal Declaration].

ties of states in economic and social spheres.³⁹⁷ Indeed, as discussed below, the document contains many provisions which bear directly on the various aspects of Israel's water policies in the OPTs. While it is premature to consider all of the ICESCR as a codification of customary international law, it is nonetheless relevant because Israel signed the Covenant in 1966 and ratified it in 1991.³⁹⁸ In addition, at least some of its provisions—particularly those regarding sovereignty over natural resources and equal treatment under law—represent customary international law. As discussed in Part V below, the ICESCR gives us a rich lens through which to view Israel's water policies in the West Bank, a lens which has to this point not been employed in the literature on Palestinian-Israeli water.

2. *Determination of Palestinian Rights to the Mountain Aquifer*

As already discussed, the Hague Regulations provide protection to immovable private property, and this protection extends to water in natural basins not yet captured by humans.³⁹⁹ Importantly, this means that the water of the Mountain Aquifer that lies underneath the West Bank, and the water of the Jordan River that belongs to the Palestinian people, receives the protection of these Regulations. The next question is the physical dimensions of these shares. The difficulty is the fact that these two basins are international water basins. In the case of the Mountain Aquifer, Israel and Palestine share the Western and Eastern Aquifers, with a total annual recharge of around 500 mcm/yr.⁴⁰⁰ This amounts to approximately double Palestinian water consumption, and a little less than a third of total Israeli consumption. The Jordan River and its tributaries flow through Lebanon, Syria, Jordan, Israel and Palestine.⁴⁰¹ This river also contributes to a significant part of the Israeli water consumption, though Palestinian access is severely restricted.

³⁹⁷ *See id.*

³⁹⁸ *See id.* at 39.

³⁹⁹ *See supra* Part IV.A.1.

⁴⁰⁰ *See* Joseph W. Dellapena, *Water in the Jordan Valley: The Potential and Limits of Law*, 5 *PAL. Y.B. INT'L L.* 15, 20 (1989).

⁴⁰¹ *See id.* at 19-28.

A corpus of legal principles known as international water law is increasingly recognized as a legitimate and fair means for regulating the division of water in international water basins in general, and of Palestinian-Israeli shared waters in particular. A core principle of this corpus "a principle that has earned widespread acceptance" is that all basin states have a right to the water in the basin. The question of the quantity of water that each party may use, on the other hand, is a deeply contested issue. Earlier this century, the reigning, and conflicting, principles were the integrity of the river principle (suggesting the need to govern the river as a whole), and the territorial sovereignty principle (stating that a state may do what it likes with water on its territory, even if this use has a harmful impact on downstream states).⁴⁰² These two principles have been replaced with three interrelated principles: the duty to effect equitable and reasonable use of the watercourse; the duty not to cause appreciable harm; and the general obligation to cooperate in the attainment of optimal utilization and adequate protection of international watercourses.⁴⁰³ It is through the use of these new principles of the division of international transboundary water resources that a determination of the extent of Palestine's rights to the basins must be made. After this determination, only then can the extent of Israeli violations of Palestinian private immovable property be evaluated.

V. INTERNATIONAL HUMAN RIGHTS LAW

In Part IV.C.1, I discussed how the Regulations Annexed to the Fourth Hague Convention sought to incorporate standards for the protection of civilians in times of occupation that could develop after the signing of the Convention. It did so through the so-called Martens Clause.⁴⁰⁴ I also discussed how the Israeli Supreme Court itself, in its capacity as the High Court of Justice, specifically has ruled that the Martens Clause must inform the elaboration of a military occupant's duties to the local population under Article 43 of the Hague Regulations. Specifically, that the public life and order that must be provided for is not

⁴⁰² See *id.* at 39.

⁴⁰³ See Awn Khassawneh, *The International Law Commission and Middle Eastern Waters*, in *WATER IN THE MIDDLE EAST*, *supra* note 186, at 21, 23.

⁴⁰⁴ See Hague Regulations, *supra* note 10, pmbl.

that of the nineteenth century, but rather "that of a modern and civilized State at the end of the twentieth century."⁴⁰⁵

Water is an element of central importance to human life in many of its most important aspects. It is thus no surprise that the ICESCR, perhaps the leading international human rights instrument in the field of economic, social and cultural rights, has a variety of provisions that depend directly on Palestinian access to water.⁴⁰⁶ Since the ICESCR is a particularly rich lens through which to ascertain the minimum level of public life and order to be expected in the period of the Israeli occupation of the West Bank and Gaza, it will also serve as a particularly rich lens through which to view Israel's neglect of its obligations under the humanitarian and human rights law.

A. *Applicability of the ICESCR to the West Bank and Gaza*

Israel has been a signatory to the ICESCR since 1966; it ratified it in October 1991 without reservation.⁴⁰⁷ The Covenant is silent on the question of its applicability to territories under occupation. We must therefore attempt to ascertain the Covenant's applicability to the OPTs.

In two separate works, a general framework was proposed for considering the applicability of specific human rights instruments to the OPTs. One of the works engaged in a three-part inquiry.⁴⁰⁸ First, it was determined that while international humanitarian law governed the behavior of belligerent occupations, "[i]n general it would seem that human rights documents may complement the law of occupation especially in specific issues which they treat in greater detail."⁴⁰⁹ Second, it was found that, despite international humanitarian law's preference for the preservation of the occupied territory's preexisting legal regime, "occupants [generally] would be authorized to adopt measures that conform with internationally accepted standards, measures that could only increase the well-being of the

⁴⁰⁵ Cooperative Society, *supra* note 390, at 301, 307.

⁴⁰⁶ See ICESCR, *supra* note 395.

⁴⁰⁷ Israel signed on December 19, 1966 and ratified on August 18, 1991. See Eyal Benvenisti, *The Applicability of Human Rights Conventions to Israel and to the Occupied Territories*, 26 ISR. L. REV. 24, 24 n.3 (1992).

⁴⁰⁸ See Benvenisti, *supra* note 394, at 30.

⁴⁰⁹ *Id.*

occupied community.”⁴¹⁰ It was then concluded that a treaty-specific inquiry into its territorial scope should be the last part of the inquiry into a particular instrument’s applicability.⁴¹¹ This conclusion was based on the Vienna Convention, which limits the effect of a party’s obligations under a treaty to that party’s territory.⁴¹² This work concluded that the ICESCR does not apply to the OPTs.

Using a different approach, another work put forth a taxonomy of the potential relationships between international human rights law and international humanitarian law.⁴¹³ Using the International Court of Justice’s rule for the determination of international law,⁴¹⁴ it concluded that the universal applicability relationship is the “best reasoned rule,”⁴¹⁵ relying upon state practice, as evidenced by United Nations General Assembly Resolutions and international treaties, judicial opinion from international courts, and scholarly opinion.⁴¹⁶ This work concluded that the ICESCR did apply to the OPTs.⁴¹⁷

⁴¹⁰ *Id.* at 31-32.

⁴¹¹ *See id.* at 33 & n.36. Notably, Benvenisti argues that these treaties, without executing statutes, benefit Israelis within Israel less than they do residents of the OPTs. This disparity stems from the treatment of statutes under Israeli law as ineffective unless incorporated. *See id.* at 25. Nevertheless, these conventions, “legal meaning on the plane of international law,” imply the creation of obligations to the residents of the OPTs. Benvenisti, *supra* note 394, at 27.

⁴¹² *See* Vienna Convention, *supra* note 389, art. 29.

⁴¹³ *See* LINDA BEVIS, *THE APPLICABILITY OF HUMAN RIGHTS LAW TO OCCUPIED TERRITORIES: THE CASE OF THE OCCUPIED PALESTINIAN TERRITORIES* 12-13 (1994) (listing six relationships: universal applicability of human rights; exclusive applicability of human rights in time of peace; temporary displacement of human rights law by humanitarian law in times of war; application of local law with changes to make it conform with fundamental human rights norms; construing humanitarian law in accordance with human rights provisions; and creeping applicability of human rights as occupation becomes prolonged).

⁴¹⁴ *See* Statute of the International Court of Justice, art. 38, 59 Stat. 1055, T.S. 993.

⁴¹⁵ BEVIS, *supra* note 413, at 13.

⁴¹⁶ *See id.* at 14-24.

⁴¹⁷ *See id.* at 72-74; *cf.* *Basic Principles for the Protection of Civilian Populations in Armed Conflicts*, G.A. Res. 2675(XXV), U.N. GAOR, 25th Sess., Supp. No. 28, at 76, U.N. Doc. A/8178 (1970) (“[f]undamental human rights, as accepted in international law and laid down in international instruments, continue to apply fully in situations of armed conflict”); *Respect for Human Rights in Armed Conflict: Report of the Secretary-General*, U.N. GAOR, 24th Sess., Supp. No. 61, at 12, U.N. Doc. A/7720 (1969); G.A. Res. 2727, U.N. GAOR, 25th Sess. (1969), *reprinted in* 1970 UNITED NATIONS Y.B. 526B27 (calling upon Israel to comply with Universal Declaration of Human Rights); COHEN, *supra* note 287, at 9 (international human

The Israeli government has contested the applicability of human rights conventions in general, and the ICESCR in particular, to the occupied territories. Their argument is similar to another argument denying the *de jure* applicability of the Fourth Geneva Convention to the OPTs: since no sovereign state had legitimate title to the territories occupied by it in 1967, international law that presupposes the existence of an ousted sovereign does not apply.⁴¹⁸ Also, since international human rights law regulates the relation between states and individuals, it is of no relevance to the OPTs or to other situations in which this relationship differs from that of democratic systems.⁴¹⁹ This argument misunderstands the theoretical context of international human rights law, which assumes “a difference in interest between a government and the population it controls.”⁴²⁰ Given human rights “provenance in individuals” status as humans,⁴²¹ as well as Israel’s demonstrated systematic violation of the human rights of Palestinians in the OPTs,⁴²² it seems apparent that it is precisely this lack of a democratic relation between Palestinians and the Israeli military government that militates in favor of the extension of the benefits of

rights instruments such as the International Covenant on Economic, Social and Cultural rights could “supplement the traditional law of belligerent occupation in order to ensure for the civilian population the maximum human rights protection in occupied territory during prolonged belligerent occupation.”); FRANK NEWMAN & DAVID WEISSBRODT, *INTERNATIONAL HUMAN RIGHTS: LAW, POLICY, AND PROCESS* 688 (1990) (given “inconsistencies and gaps” between human rights and humanitarian law regimes, “the individual should be entitled to the most protective provisions of applicable international, national, or local laws”).

⁴¹⁸ See, e.g., Shamgar, *supra* note 289, at 263-66.

⁴¹⁹ See Foreign Ministry Legal Adviser Memorandum, *supra* note 289, at 81.

⁴²⁰ John Quigley, *The Relation Between Human Rights Law and the Law of Belligerent Occupation: Does an Occupied Population Have a Right to Freedom of Assembly and Expression?*, 12 B.C. INT'L & COMP. L. REV. 1, 7 (1989).

⁴²¹ See ICESCR, *supra* note 395, pmbl. See also International Covenant on Civil and Political Rights, Dec. 16, 1966, pmbl., U.N. Doc. A/6316, at 52, entered into force Mar. 23, 1976 (recognizing that rights “derive from inherent dignity of the human person”) [hereinafter ICCPR].

⁴²² For classic reports on Israeli human rights practices during the intifada, see generally AL-HAQ, *PROTECTION DENIED: CONTINUING ISRAELI HUMAN RIGHTS VIOLATIONS IN THE OCCUPIED PALESTINIAN TERRITORIES*, 1990 (1991); AL-HAQ, *A NATION UNDER SIEGE: AL-HAQ ANNUAL REPORT ON HUMAN RIGHTS IN THE OCCUPIED PALESTINIAN TERRITORIES*, 1989 (1990); AL-HAQ, *PUNISHING A NATION: HUMAN RIGHTS VIOLATIONS DURING THE PALESTINIAN UPRISING, DECEMBER 1987-DECEMBER 1988* (1989).

Israeli human rights treaty obligations to Palestinians in the OPTs.

Arguments against the applicability of the ICESCR revolve mainly around the lack of any geographic definitions of the extent of the obligation arising under the ICESCR.⁴²³ Since the Palestinian residents of the OPTs are not citizens of the state party (Israel), and given the general hesitancy in the extension of the positive rights offered under the ICESCR, some have argued that the benefits of the ICESCR presumptively do not accrue to non-nationals of the state party.⁴²⁴ The ICESCR's silence on this matter is in contrast to the ICCPR, which extends the rights thereunder to persons within the state party's territory and subject to its jurisdiction,⁴²⁵ and would thus automatically apply to Palestinians in the OPTs.

The textual silence argument, however, is undercut by the very text of the ICESCR. Article 2, which applies to all the rights provided for in the language of the document, states that the "States Parties to the present Covenant [should] undertake to guarantee that the rights enunciated in the present Covenant will be exercised without discrimination of any kind as to race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status."⁴²⁶ The preamble of the ICESCR is suffused with notions of the universality of rights, and this should inform the interpretation of the clauses.⁴²⁷ The phrasing of the rights in the individual provisions repeatedly describe their intended recipients as "everyone."⁴²⁸ The only mention of non-nationals comes in Article 2,

⁴²³ The only exception to this silence is the provision on education, which requires plans of action for the provision of free and compulsory primary education in the "metropolitan territory or other territories under [the] jurisdiction" of the state party. ICESCR, *supra* note 395, art. 14.

⁴²⁴ See BEVIS, *supra* note 413, at 28-29 (arguing that international human rights instruments only protect nationals from nationals own state and do not protect populations of occupied territories (quoting Meyrowitz, *Le droit de la guerre et les droits de l'homme*, 88 REVUE DE DROIT PUBLIC ET DE LA SCIENCE POLITIQUE EN FRANCE ET A L'ETRANGER 1059, 1079-89)); Benvenisti, *supra* note 394, at 33 n.36 (stating that benefits of ICESCR do not accrue to Palestinians of OPTs).

⁴²⁵ See ICCPR, *supra* note 421, art. 2(1).

⁴²⁶ ICESCR, *supra* note 395, art. 2(2) (emphasis added).

⁴²⁷ See Vienna Convention, *supra* note 389, art. 31(2) (stating that preamble of treaty should be part of context for interpretation of treaty).

⁴²⁸ See, e.g., ICESCR, *supra* note 395, art. 6(1) ("the right of everyone to the opportunity to gain his living by work."); art. 7 ("the right of everyone to the enjoy-

which allows developing countries to determine the degree to which they would guarantee the Covenant's economic rights to non-nationals "with due regard to human rights and [the developing country's] national economy."⁴²⁹ This clause would be superfluous without a presumption that non-nationals enjoy rights provided under the Covenant.

B. *The Nature of the Obligation Under the ICESCR*

Many consider economic, social, and cultural rights to be a poor cousin of their civil and political counterparts.⁴³⁰ This perception stems in part from the nature of the guarantee of the rights contained in the ICESCR:

Each State Party to the present Covenant undertakes to take steps, individually and through international assistance and cooperation, especially economic and technical, to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures.⁴³¹

This provision leaves substantial room for parties to shirk their responsibilities.⁴³² The Covenant leaves undefined terms such as "steps," "maximum of its available resources," "achieving progressively," and "full realization of the rights." It does not specify the *levels* of material achievement to which these

ment of just and favourable conditions of work."); art. 11(1) ("the right of everyone to an adequate standard of living for himself and his family, including . . . housing."); art. 2(1) ("the right of everyone to the enjoyment of the highest attainable standard of physical and mental health."). See also *id.* art. 1(1) ("All peoples have the right of self-determination").

⁴²⁹ *Id.* art. 2(3).

⁴³⁰ See SCOTT LECKIE, FROM HOUSING NEEDS TO HOUSING RIGHTS: AN ANALYSIS OF THE RIGHT TO ADEQUATE HOUSING UNDER INTERNATIONAL LAW 8B11 (1992) (discussing perception of the "lower status" of economic, social, and cultural rights in human rights theory and practice). This is despite the official United Nations position that the two bodies of rights are integrally related and indivisible. See G.A. Res. 130, U.N. GAOR, 32d Sess. (1977) ("[a]ll human rights and fundamental freedoms are indivisible and interdependent"); UNITED NATIONS OFFICE, HUMAN RIGHTS CENTER, HUMAN RIGHTS FACT SHEET NO. 16, THE COMMITTEE ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS 8 (1991).

⁴³¹ ICESCR, *supra* note 395, art. 2(1).

⁴³² This may help explain, in part, why the ICESCR does not contain a derogation clause as does its sister document the International Covenant on Civil and Political Rights. See ICCPR, *supra* note 421, art. 4.

rights correspond.⁴³³ It leaves undetermined the *time* during which the rights enumerated within these provisions must be supplied to the beneficiaries of this Covenant. Furthermore, it does not require state parties to allocate any *minimum level of funding or of resources* to the fulfillment of these rights. All of these difficulties help explain why few countries, if any, have implemented justiciable, constitutional guarantees of such rights,⁴³⁴ why the literature and jurisprudence of these rights are so much weaker than that of the guarantees under the ICCPR,⁴³⁵ and why international human rights organizations such as Amnesty International and Human Rights Watch do not monitor compliance with the ICESCR.⁴³⁶

These factors indicate in part why a claim that Israel *violates* the ESC rights of Palestinians, as they relate to water, is a novel and inherently difficult one to make. Such a claim is possible, however, for several reasons. First of all, the Israeli state's control over Palestinians' water resources and water-related infrastructure is vast.⁴³⁷ This is in contrast to most other sectors in most other countries, where developments are often a combination of public sector and private sector initiative. This arrangement not only allocates to the Israeli state the tools to ameliorate the water-related rights of Palestinians within its jurisdiction, but also highlights its obligations under the ICESCR to manage these resources to further the ESC rights of persons within its jurisdiction.

⁴³³ See ICESCR, *supra* note 395, arts. 7(a), 7(b), 9, 11(1). For example, what constitutes "safe and healthy working conditions," "fair wages," "social security," and an "adequate standard of living?" *Id.*

⁴³⁴ See Craig Scott & Patrick Macklem, *Constitutional Ropes of Sand or Justiciable Guarantees: Social Rights in a New South African Constitution*, 141 U. PENN. L. REV. 1 (1992).

⁴³⁵ There are some exceptions to this neglect. Leckie proposes to interpret the obligations of states parties to the ICESCR to promote the right to housing as a four-part duty: the duty to recognize or to respect; the duty to promote; the duty to protect; and the duty to fulfill or ensure. See LECKIE, *supra* note 430, at 63-65. Additionally, human rights scholars and representatives of several UN bodies have developed the so-called Limburg principles to help inform the meaning of ICESCR art. 2(1). See *id.* at 28.

⁴³⁶ Indeed, Human Rights Watch ("HRW"), a leading U.S. human rights organization, has long expressly excluded economic, social and cultural rights from its mandate. HRW has since changed its position slightly, and has decided to consider ESC rights on a limited manner and on a trial basis during 1997.

⁴³⁷ For a discussion of how Israel controls the distribution, pricing, use, transportation, and monitoring of water use, see *supra* Part III.D.

Second, the extent of Israeli management of Palestinian water is a direct consequence of Israel's colonization of the OPTs. During the period of occupation, Israel's legislative, economic, and military energies were employed to *deprive* Palestinians of their fair share of the region's water resources.⁴³⁸ According to Article 2(1) of the ICESCR, legislative measures are important in the way a state party is required to pursue and promote the rights guaranteed under the ICESCR. As discussed at length in Part IV.B above, the legislative and administrative revolution that Israel wrought on Palestine's water sector served to diminish the fulfillment of their rights under the Covenant. Thus, Israel failed to meet even the basic requirement as a signatory not to undermine the objectives⁴³⁹ of the Covenant, and as such, has violated it.

Third, instead of a situation where the deterioration of Palestinians' water-related ESC rights occurred in an environment of neglect, or where the shortchanging of the water sector arose in the context of widespread poverty or budget cuts, Israel spent substantial amounts of money to build water-related infrastructure, though in almost all cases, these were for settlements. This is in violation of Article 2(1) of the ICESCR, which requires parties to promote the rights contained in the Covenant "to the maximum of [their] available resources."⁴⁴⁰ For example, in 1983, the Israeli government spent \$5.5 million for water development projects in the West Bank, and between 1974 to 1983, the Jewish National Fund invested nearly \$16 million in West Bank projects, all of which benefited Jewish settlers exclusively.⁴⁴¹ By 1987, the last year before the intifada, Jewish settlements in the West Bank spent approximately \$75-80 million in infrastructure development for 65,000 settlers.⁴⁴² Meanwhile, the Civilian Administration had allocated \$28.5 million to the West Bank development budget serving 813,000 Palestinians, of which half, at most, was actually imple-

⁴³⁸ See ICESCR, *supra* note 395, art. 5(1) ("Nothing in the present Covenant may be interpreted as implying for any State . . . any right to engage in any activity or to perform any act aimed at the destruction of any of the rights or freedoms recognized herein . . .").

⁴³⁹ See Vienna Convention, *supra* note 389, art. 18(a).

⁴⁴⁰ ICESCR, *supra* note 395, art. 2(1).

⁴⁴¹ See BENVENISTI, *supra* note 345, at 124, 134.

⁴⁴² See ICESCR, *supra* note 395, art. 2(1).

mented.⁴⁴³ "It can be concluded that the Israeli authorities have obstructed efforts to foment development in the Occupied Territories."⁴⁴⁴ Not only are these settlements illegal under international humanitarian law, but the expenditures in many cases detrimentally affected Palestinian water use, as Israeli deep bore wells caused the drying up or salinification of nearby Palestinian wells. Thus, it is clear the situation that surrounded the neglect of Palestinian infrastructure was not one of a lack of funds, but rather a problem of priorities. Israel was quite willing, throughout the period of its occupation, to spend lavishly on infrastructure in the OPTs, but it did so only to benefit Jewish settlers. These expenditures were illegal under international humanitarian law, and in some cases served to deprive Palestinians of their rights under the ICESCR.

Fourth, Israel blocked efforts by international agencies to ameliorate the water infrastructure of the OPTs, in contravention of the directive to promote ESC rights "through international assistance and cooperation."⁴⁴⁵ It was reported that in the mid-1980s the Israeli military authorities approved only 44% of proposals for U.S.-funded consumption-related public works and only 33% of proposals for such projects aimed at economic development.⁴⁴⁶ Denials of permits were due to a number of reasons: the punishment of a community for non-cooperation with the Israeli occupation authorities; the limitation of Palestinian water consumption in order to allow for consumption by nearby settlements; the encouragement of reliance on Mekorot, Israel's national water company, rather than on locally managed wells; and others.⁴⁴⁷

⁴⁴³ See MERON BENVENISTI, 1987 REPORT: DEMOGRAPHIC, ECONOMIC, LEGAL, SOCIAL AND POLITICAL DEVELOPMENTS IN THE WEST BANK 29 (1987); Hisham Jabr, *Financial Administration of the Israeli-Occupied West Bank*, in INTERNATIONAL LAW AND THE ADMINISTRATION OF THE OCCUPIED TERRITORIES, *supra* note 228, at 377, 390-91; Rishmawi, *supra* note 375, at 267, 285.

⁴⁴⁴ Jabr, *supra* note 443, at 391.

⁴⁴⁵ ICESCR, *supra* note 395, art. 2(1).

⁴⁴⁶ See MERON BENVENISTI, U.S. GOVERNMENT FUNDED PROJECTS IN THE WEST BANK AND GAZA (1977B83) 13-14 (Working Paper No. 13 Jerusalem: West Bank Data Base Project, 1984).

⁴⁴⁷ See, e.g., Turkkaya Ataöv, *The Israeli Use of Palestinian Waters*, in PALESTINIAN RIGHTS: AFFIRMATION AND DENIAL 150, 153 (Medina Press, Ibrahim Abu-Lughod ed., 1982) (reporting Israeli government's denial of an American volunteer organization's offer to provide funds to replace open irrigation ditches with pipes in Jiftlik, a Palestinian Jordan Valley-area town); POLICY RESEARCH, INC., *supra* note

Finally, the results of these policies are large differences in the quantity and quality of water and water-related infrastructure enjoyed by Israelis and settlers on the one hand, and by Palestinians on the other.⁴⁴⁸ These differences evidence that Israel is clearly capable of improvements in the water sector (at least in the area of quantities supplied for personal and agricultural consumption), and that its failures toward the Palestinian sector are a function, not of global resource or financial constraints, but rather of misplaced priorities.

The specific question of the level of Israel's obligation merits further analysis. Israel has been a party to the ICESCR only since October 1991. For approximately twenty-five years, it was merely a signatory. Therefore, its obligations under the treaty for the pre-ratification period was that it not engage in any activities that undermine the objectives of the treaty.⁴⁴⁹ In other words, while before 1991 Israel was arguably not obliged to undertake the positive steps required by the ICESCR, as a signatory, it did not take any actions that undermined the rights guaranteed in the Covenant. Of course, to the extent that any of the provisions appearing in the Covenant represented customary international law, Israel should be held to the standard for observance to which ratifying parties are held.

C. *The Water-Related Rights Under the ICESCR*

Water is a critical component of human life and society. It is thus no surprise that an analysis of Palestinian human rights that require or implicate fair and adequate access to water are so varied.⁴⁵⁰

3, app. 1, at 15B16 (reporting water-related projects halted or subverted because of efforts by Jewish settlers to appropriate benefits of investments).

⁴⁴⁸ See *infra* Parts V.C.1, 4-5.

⁴⁴⁹ "A State is obliged to refrain from acts, which would defeat the object and purpose of a treaty" when it has signed it. Vienna Convention, *supra* note 389, art. 18(a).

⁴⁵⁰ Similarly, the fulfillment of the right to housing requires that many different other human rights be addressed. See LECKIE, *supra* note 430, at 42 (linking the right to housing to the right to freedom of movement, assembly and association, an adequate standard of life, health, work, and others).

1. *ICESCR Article 1: Permanent Sovereignty Over Natural Resources*

The Covenant guarantees that “[a]ll people may, for their own ends, freely dispose of their natural wealth and resources In no case may a people be deprived of its own means of subsistence.”⁴⁵¹ It also states that “[n]othing in the present Covenant shall be interpreted as impairing the inherent right of all peoples to enjoy and utilize fully and freely their natural wealth and resources.”⁴⁵²

The first article of the Covenant is a codification of the principle of permanent sovereignty over a nation’s natural resources. This represented a customary norm of international law at the time of the Israeli occupation, and thus Israel was bound by it throughout the period of its occupation.⁴⁵³

As earlier discussed, at the start of the Israeli occupation, Palestinians already enjoyed a communal right to water resources.⁴⁵⁴ What a right to control natural resources adds is a right for the Palestinian people as a whole to be engaged in the management and development of its water resources. In other words, while a private right to common property under the Ottoman *mubah* regime involves the right to draw upon the property only to the extent that such use does not harm other users, a people’s permanent sovereignty over natural resources guarantees that people’s exclusive right to manage the resource at the national level; to create an integrated network for resource production, transportation, and storage; to channel it to specific

⁴⁵¹ ICESCR, *supra* note 395, art. 1(2). See also ICCPR, *supra* note 421, art. 1.

⁴⁵² ICESCR, *supra* note 395, art. 25. See also ICCPR, *supra* note 421, art. 47.

⁴⁵³ See G.A. Res. 7/626 of 21 Dec. 1952 (declaring that “the right of peoples freely to use and exploit their natural wealth and resources is inherent in their sovereignty and is in accordance with the Purposes and Principles of the Charter of the United Nations”); G.A. Res. 1803, 17th Sess. (1962). See also Blaine Sloane, *Study of the Implications, under International Law, of the United Nations Resolutions on Permanent Sovereignty Over Natural Resources, on the Occupied Palestinian and Other Arab Territories and on the Obligations of Israel Concerning its Conduct in These Territories*, U.N. Doc. A/38/265, E/1983/85, ¶¶ 3-12, June 21, 1983 (quoting General Assembly resolutions, international conventions, state practice, and decisions of municipal courts and arbitral tribunals for conclusion that “permanent sovereignty over natural resources is a generally accepted principle of international law”); *Id.* ¶¶ 16-18 (listing General Assembly resolutions on permanent sovereignty over natural resources in the Occupied Palestinian and other Arab territories).

⁴⁵⁴ See *supra* Part IV.A.

sectors; to enact pricing policies; to engage in or license exploration; and to export it. Israel's military government and domestic water sector suppressed all of these aspects of sovereignty over natural resources during the occupation.

In order to accomplish any of these objectives, the people utilizing the natural resource must, at a minimum, benefit from a legal regime that recognizes those people's property rights to its natural resources. Of the means the ICESCR suggests to promote ESC rights, it emphasizes the priority of "legislative measures."⁴⁵⁵ Israel passed a series of military orders applicable to the OPTs after the 1967 war.⁴⁵⁶ At the end of this legislative revolution, Israel held title (under Israeli law) to Palestine's ground and surface water; determined the allocation of water quantities to the OPTs; set the water prices; controlled the pumping and distribution of water; physically integrated Palestine's water networks into Israel's; and extended the institutional control of domestic water bodies into the OPTs.⁴⁵⁷ These actions resulted in extremely limited Palestinian control over their agricultural sector.⁴⁵⁸ They could not, for example, transfer water from the relatively water-rich West Bank to the Gaza Strip.

The effect of these changes was to deprive Palestinians completely of any form of control over their water resources, whether political, economic, or technical. Military Orders No. 291 of 1968⁴⁵⁹ and 450 and 451 of 1971 deprived Palestinians of the right to dig new wells or to buy and sell water rights without the approval of the military commander.⁴⁶⁰ The military commanders have rarely granted this permission since the issuance of the Orders.⁴⁶¹ The assertion of water rights on an individual level has been curtailed through Israeli control of the

⁴⁵⁵ ICESCR, *supra* note 395, art. 2(1).

⁴⁵⁶ *See supra* Part III.C.

⁴⁵⁷ *See supra* Part IV.B.

⁴⁵⁸ *See infra* Part V.C.3.

⁴⁵⁹ Quoted in *Special Report: Sovereignty Over Water Resources in the West Bank and Gaza Strip*, 5 PAL. Y.B. INT'L L. 346, 355-56.

⁴⁶⁰ *See id.* at 355.

⁴⁶¹ *See* SHEHADEH, *supra* note 2, at 154 (only five permits for new wells were granted in the first 16 years of military occupation; digging of deep Israeli wells led to drying up of nearby spring used by Palestinian farmers); CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 26 (20 new wells for domestic uses and three for agricultural uses). *See also Report of the Secretary-General 1984*, *supra* note

registration of water-related records. The incorporation of the OPTs into Israel's national water network has also resulted in the stripping of Palestinian municipalities' preexisting powers to levy and collect water rates and charges.⁴⁶²

Whereas prior Jordanian water legislation specifically prohibited the transfer of water from one basin to another, and even required authorization from the Jordanian Council of Ministers to transfer water from one area to another even within the same basin, Israeli law has abolished this basin-of-origin protection.⁴⁶³ Indeed, Israel's National Water Carrier,⁴⁶⁴ which is the backbone of Israel's water transportation system, spans several basins, from the Lake Tiberias/Upper Jordan basin to the north, to the coastal aquifer region in the middle of Israel, to the desert-area basin in the Naqab desert in the south.⁴⁶⁵ Because of the connection of wells extracting water from the Mountain Aquifer to Israel's National Water Carrier, Israeli control over the Mountain Aquifer has enabled Israel to transport at least some West Bank water to the various basins in that country. At the very least, Israel's water planners directed high-quality West Bank water to many of Israel's major cities for domestic consumption.⁴⁶⁶ Obviously, at least before the Interim Agreement, this extra-basin use was not with the permission of the Palestinians.

As discussed earlier, Israel unilaterally extended the jurisdiction of many of its public water-policy setting bodies, such as the Water Board and the Planning Committee, to the OPTs.⁴⁶⁷ In particular, the Civil Administration "subject to the control of the inter-ministerial Committee of the Israeli national government" was merely an extension of the Israeli Cabinet's authority into the OPTs.⁴⁶⁸ The inclusion of Palestinians from the OPTs on these bodies might have contributed somewhat to the

239, ¶¶ 19, 37 (stating that Mekorot dug 20 to 25 deep wells in Jordan Valley area to supply nearby Jewish settlements and 30 wells overall).

⁴⁶² See *Report of the Secretary-General 1984*, *supra* note 239, ¶¶ 21-22, 24.

⁴⁶³ See *id.* ¶ 23.

⁴⁶⁴ See John D. Keenan, *Technological Aspects of Water Resources Management: Euphrates and Jordan*, in COUNTRY EXPERIENCES WITH WATER RESOURCES MANAGEMENT, *supra* note 18, at 41.

⁴⁶⁵ See Lowi, *supra* note 74, at 117, map 5.1.

⁴⁶⁶ See *supra* Part II.A., tbl. 2.

⁴⁶⁷ See *supra* Part IV.B.

⁴⁶⁸ See *supra* Part IV.B.

alleviation of the Palestinians' complete lack of control over water planning. However, no such inclusion has occurred.⁴⁶⁹ In addition, no Palestinians served on the administrative or other tribunals that heard appeals against decisions by Israeli water authorities.⁴⁷⁰ It is not surprising, therefore, that the resulting policies have been extremely detrimental to the Palestinian residents of the OPTs. Even forgetting for a moment the larger context of the Palestinian-Israeli conflict, it is not hard to imagine that political bodies, engaged essentially in the allocation of a critical natural resource and subsidies to different sectors of the country, would penalize sectors not represented in these bodies.

When Israel extended its water planning apparatus into the OPTs, it encountered not an administrative vacuum but a preexisting institutional structure. Instead of destroying Palestinian institutions, Israel merely stripped them of many of their powers and subjugated them to its authority. In 1982, in the context of its creeping annexation of the West Bank, Israel transferred management of Palestine's water resources to Mekorot, Israel's national water company.⁴⁷¹ In doing so it downgraded the functions of the existing Water Department created during the Jordanian administration to low-level administrative functions consisting of water meter monitoring and bill collection.⁴⁷² All technical and planning positions, which had been held by Palestinians, were eliminated, and since the occupation, Israel has not hired a single Palestinian

⁴⁶⁹ One United Nations report summarized the effects of this political exclusion as follows:

Since it appears that the benefit of public participation, at least in the decentralized water management bodies, is not extended to local Arab populations "even in those cases in which their legitimate water rights are or might be affected" or where the water resources under consideration are located in the occupied territories, Arab water consumers or users have no say in the formulation of policies or in the decisions taken or advice given by the responsible bodies.

Report of the Secretary-General 1984, supra note 239, ¶ 26.

⁴⁷⁰ See *id.* ¶¶ 30-31. Indeed, no Palestinians are even employed in significant positions in Israeli water-related entities. See ELMUSA, *supra* note 4, at 3.

⁴⁷¹ See generally EYAL BENVENISTI, LEGAL DUALISM (1989) (describing extension of jurisdiction of Israeli national institutions to the Occupied Territories as part of process of annexation to Israel).

⁴⁷² See ELMUSA, *supra* note 4, at 2-3

hydrologist.⁴⁷³ The extension of Mekorot's control has also meant an Israeli monopoly over data, and a consistent policy of denying Palestinians access to data.⁴⁷⁴

In addition, the Palestinian water sector that remained⁴⁷⁵ has operated under extremely difficult circumstances as Israeli water institutions marginalized and weakened it. Some of the problems these institutions face are: a dearth of engineering staff; minimal in-service training programs; a lack of training in the economics of water management; absence of Occupied-Territories-wide water management schemes; minimal linkages between water authorities and small-scale, largely donor-funded water and sanitation projects; minimal linkages between these institutions and others involved in other sectors with a significant impact on water, such as agriculture, health, and industry; lack of capacity for water-quality testing; and scant resources for repair and maintenance of water distribution and treatment systems. There were only an estimated six to eight water and sanitation engineers with a B.S. degree or higher in the Occupied Territories in the early 1990s.⁴⁷⁶ There was also a lack of economic analyses of the water sector, which could have contributed to an understanding of the role of market pricing in promoting efficient allocation of water among competing users.⁴⁷⁷ Palestinian potable water and sanitation enterprises are not always able to recuperate their operating and capital costs (though Gazan municipalities fare somewhat better).⁴⁷⁸ This indicated that their services were under priced or under subsidized, or that the municipalities paid too high a price for their water, or a combination of these factors.⁴⁷⁹ "[U]nder current political conditions, opportunities for large-scale assistance in water and sanitation may appear to be limited. . . . [T]he

⁴⁷³ See *id.* at 3.

⁴⁷⁴ See *id.* at 2-3. See also CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 27-28.

⁴⁷⁵ The pre-Oslo Palestinian institutional water sector consisted of four regional utilities, municipal water departments, and village and local councils. In addition, the United Nations Relief and Works Agency supplies water to approximately 20% of Gaza's refugees. See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 27-28.

⁴⁷⁶ See POLICY RESEARCH INC., *supra* note 3, at 18.

⁴⁷⁷ See *id.*

⁴⁷⁸ See *id.*

⁴⁷⁹ See *id.* at 17-18.

system [] planning and management functions—vital to the formulation of sound water and sanitation policies—are outside the purview of Palestinian institutions and of donors which support them.”⁴⁸⁰

The kind of water authority required to bring about a substantial improvement in the present water situation is one that has the power to regulate and set prices. Such an authority would require a qualified staff. Some of the most urgent tasks would include the rehabilitation of springs and the creation of a regional master plan for water resource management. The authority would have exclusive control over Palestine's endogenous aquifers, and would cooperate with Mekorot in the utilization and preservation of the shared water resources.⁴⁸¹ Palestinian water sector professionals have also called for a radical reorganization of the Palestinian water sector at a national level.⁴⁸²

In addition to denying Palestinians access to their own natural resources, Israel may also be causing or contributing to long-term damage to the Mountain and Gaza Aquifers and to Lake Tiberias because of its overconsumption. In the case of the aquifers, overproduction of water can lead to a lowering of the water level of underground water levels, and consequently the intrusion of brackish water from other, higher-pressure formations.⁴⁸³ This sort of damage can take years to reverse. The Mountain Aquifer, which is used by Israel as its main freshwater reservoir, was in 1990 first allowed to drop below the so-called “Red Line,” or the water level below which serious damage could occur.⁴⁸⁴ Even if Israel were to end its denials of Palestinian access to, and control of, its water resources, Palestinians would still have to contend with the long-term damage caused in whole or in part by Israeli policies.⁴⁸⁵

Far from fulfilling its obligations under customary international law and as a signatory to the Covenant, Israel has actively undermined Palestinian sovereignty over its water

⁴⁸⁰ *Id.* at 1, 17-19.

⁴⁸¹ See ELMUSA, *supra* note 4, at 14.

⁴⁸² See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 39-48.

⁴⁸³ See *supra* Part II.

⁴⁸⁴ See *id.*

⁴⁸⁵ See *id.*

resources.⁴⁸⁶ Its military occupation brought about a legislative and administrative revolution to the Palestinian water sector. By the time the dust had settled, Israel had established complete control of Palestine's water and subjugated it to Israel's domestic water institutions. It also neglected the development of a domestic water development and planning infrastructure, preferring to keep all important decisions and activity regarding this vital resource exclusively in Israeli hands. This not only blocked the fulfillment of the right of sovereignty over natural resources, it also prevented the creation and maintenance of the infrastructure necessary for the fulfillment of the other water-related rights discussed below.

Ironically, Israel has used a method emphasized by the ICESCR for implementation of ESC rights, "legislative means,"⁴⁸⁷ not to promote the right of Palestinians to control their natural resources, but rather to abolish it.

2. ICESCR Article 2: Nondiscrimination

The Covenant requires parties to guarantee that "the rights enunciated in the . . . Covenant will be exercised without discrimination of any kind as to race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status."⁴⁸⁸ Nondiscrimination, or at least

⁴⁸⁶ See *supra* Part IV.

⁴⁸⁷ ICESCR, *supra* note 395, art. 2(1).

⁴⁸⁸ *Id.* art. 2(2).

equality, is not only a customary norm of international law,⁴⁸⁹ it is a critical component of the rule of law.⁴⁹⁰

Of course, it is not impermissible to treat persons differently under the law. One scholar discerned from a review of various instruments a "composite conception" of discrimination: This discrimination involves: (1) a difference in treatment; (2) which is based on certain prohibited grounds; (3) and has a certain purpose or effect; (4) in selective fields.⁴⁹¹ In American jurisprudence, for example, race as a category for discrimination is "suspect," but not forbidden, and courts will allow such discrimination if it is necessarily related to a compelling state interest.⁴⁹² In the case of the OPTs, Israel has justified its control over Palestine's water resources by the need for control in order to preserve the region's scarce water resources. If that is indeed the case, then it is difficult to understand how Israeli policies that discriminate in favor of Israelis and Jewish settlers are in

⁴⁸⁹ See, e.g., UDHR *supra* note 396, at art. 7, ("[a]ll are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination."); ICCPR, *supra* note 421, art. 26; International Covenant on the Elimination of All Forms of Racial Discrimination, G.A. Res. 2106, art. 2, 21 GAOR, Supp. 14, U.N. Doc. A/6014, at 47, *entered into force*, Jan. 4, 1969; U.S. CONST. amend. XIV ("[n]o State shall . . . deny to any person within its jurisdiction the equal protection of the laws"). Israel considers concepts such as "justice and fairness" and "prevention of discrimination" to be a part of the "basic principles of natural justice as derived from the system of law existing in Israel." Shamgar, *supra* note 289, at 266-67. According to the Israeli Attorney General at the time of the occupation, these basic principles were meant to guide Israeli legal policy in the OPTs. See *id.* See also Meir Shamgar, *Legal Concepts and Problems of the Israeli Military Government—The Initial Stage*, in *MILITARY GOVERNMENT IN THE TERRITORIES ADMINISTERED BY ISRAEL 1967B80*, at 285, 303 (Meir Shamgar ed., 1982). Thus, Israel itself seems to recognize the applicability of the principle of nondiscrimination to the OPTs.

⁴⁹⁰ See JOHN RAWLS, *A THEORY OF JUSTICE* § 38, at 237 (1973).

⁴⁹¹ See E. Schwelb, *The International Convention on the Elimination of All Forms of Racial Discrimination*, 15 INT'L & COMP. L.Q. 996, 1001 (1966). This construction found a response in the Human Rights Committee, which in its general comment on Article 2(1) of the ICCPR stated that the term discrimination "should be understood to imply any distinction, exclusion, restriction or preference which is based on any ground such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status, and which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise by all persons, on an equal footing, of all rights and freedoms." General Comment No. 18(37), U.N. Doc. A/45/40, at 174, ¶. 7, 45 U.N. GAOR, Supp. No. 40, 1990.

⁴⁹² See *Korematsu v. United States*, 323 U.S. 214, 216 (1944).

any way rationally related to this ostensibly legitimate interest. If, on the other hand, the purpose of Israel's policies is the deprivation of Palestinian domestic and agricultural consumers in order to favor their Israeli and Jewish counterparts, then these policies are illegal on their face. In both cases then, the unequal treatment violates the principle of equality and nondiscrimination.

Since the right to equality was a customary norm of international law throughout the period of Israel's occupation, Israel had an obligation to promote equality in access to water and in control over the nationalized water sector. Unfortunately, Israel took affirmative steps to achieve precisely the opposite. This is most evident in pricing levels, subsidization, quantities distributed and control over the water sector.

Pricing and subsidization. Table 5 summarizes the prices paid by consumers of water in the West Bank and Gaza as compared to their Israeli counterparts:

TABLE 5. PRICES OF WATER TO CONSUMERS IN WEST BANK AND GAZA.⁴⁹³

LOCALITY	PRICE (\$/M ³)	PRICE (ISRAEL = 100)
West Bank		
Nablus	0.68	262
Ramallah	1.13	435
Gaza Strip		
Beit Hanoun	0.22	85
Rafah	0.52	200
Gaza average	0.37	142
Israeli domestic sector average	0.26	100

As discussed above, Mekorot played (and to this day plays) a large role in the exploitation of West Bank water and the delivery of drinking water to Palestinian consumers.⁴⁹⁴ It, along with other Israeli entities such as the Jerusalem Municipality, supplied 50% of Palestinian domestic water.⁴⁹⁵ While Mekorot was (and is) responsible for the planning and operation of the

⁴⁹³ POLICY RESEARCH INC., *supra* note 3, at 16-17.

⁴⁹⁴ See *supra* Parts II-III.

⁴⁹⁵ See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 30.

water networks, the Civilian Administration was responsible for bill collection. The procedure under occupation has been for Mekorot or another Israeli bulk water supplier to issue invoices for consumption by Palestinian water authorities and hand over the invoices to the Civil Administration. The Civil Administration then added an extra 50% and presented the bill for collection.⁴⁹⁶ Palestinian bulk purchasers paid U.S. \$0.60/m³⁴⁹⁷, compared to a delivered cost of water of U.S. \$0.33/m³ (including capital costs),⁴⁹⁸ yielding a profit to Israel of almost 100%. This high price resulted in the utilities' inability to cover their operating expenses, let alone capital expenditures. Thus, municipalities were unable to make the investments necessary to reduce water wasted through leakage from underground pipes, to improve quality control, or to effect other improvements in service. This bald discrimination was especially objectionable considering the relative poverty of Palestinians as compared to Israelis.⁴⁹⁹

Of course, given the initially higher cost of water, many municipalities have passed the inflated price of water on to consumers. This high price for water causes many Palestinians to surreptitiously tap into drinking water networks and draw water from municipal networks without paying for it, which

⁴⁹⁶ See *id.* The Jerusalem Municipality (an Israeli municipality) pays Mekorot NIS 0.70/m³ and sells it to consumers for NIS 3.00/m³, a margin of 328%. By comparison, the Jerusalem Water Undertaking, a Palestinian municipality serving the Ramallah area, pays the Jerusalem municipality NIS 1.92/m³ and sells at the same average rate of NIS 3.00/m³, resulting in a margin of only 55%. See *id.* At the time of this report, the exchange rate was approximately NIS 3.00 to U.S. \$1. See *id.*

⁴⁹⁷ See *id.*

⁴⁹⁸ See *id.* This is the calculation of Tahal, an Israeli water consulting firm. Mekorot calculates the average variable cost of cubic meter of water, including costs of lifting, to be 19.5 cents/m³. See Shuval, *supra* note 16, at 73, 76. The weighted average elevation of Israel's water resources is 82 meters below the ground surfaces to which it must be delivered for irrigation and other uses, necessitating massive pumping of almost all surface and ground water involved. Israel in 1988 dedicated 12% of its total energy consumption to pumping this water. See *id.* at 75.

⁴⁹⁹ In 1984, for example, per capita Palestinian GNP was approximately one-fifth that of Israel. See KAHAN, *supra* note 184, at 68.

leads to further stress on the municipalities that are already inadequately funded.⁵⁰⁰

In addition to the price inflation, Palestinians do not benefit from the extensive subsidies, which Jewish settlers or Israeli consumers enjoy. In particular, semiofficial agencies such as the Jewish Agency and the Jewish National Fund subsidize a significant portion of Jewish settler consumption water.⁵⁰¹ In the final analysis, Palestinian farmers paid somewhere in the neighborhood of three to four times the price paid by Jewish settlers, while Israeli consumers, by operation of Israel's Water Law, benefited from cross-subsidization of water consumption.⁵⁰²

Quantities and quality. Israelis and Jewish settlers consumed far more water per capita than did Palestinians. Table 4 illustrates the large disparities between the different groups' water consumption.

TABLE 4. PER CAPITA ISRAELI AND PALESTINIAN WATER CONSUMPTION (M³/YR)⁵⁰³

	AGGREGATE	DOMESTIC
West Bank Palestinian	125-30	25-35
Gaza Palestinian	100-83	23-38
Israel	450-500	>= 100
West Bank Settlers	580-650	90-120
Gaza Settlers	>= 1400	?

This discrimination has also occurred along the dimension of quality. The placement of Gaza settlements has coincided with the locations of plentiful⁵⁰⁴ or non-saline water re-

⁵⁰⁰ These so-called "black losses" for areas serviced by the Jerusalem Water Undertaking are in the neighborhood of 10% of total water consumption. See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 31-32.

⁵⁰¹ See MERON BENVENISTI & S. KHAYAT, *THE WEST BANK AND GAZA ATLAS* 26 (1988).

⁵⁰² See *supra* Part III.B.

⁵⁰³ Sharif S. Elmusa, *Dividing Common Water Resources According to International Water Law: The Case of the Palestinian-Israeli Waters*, 35 NAT. RES. J. 223, 226, tbl. 2 (1995).

⁵⁰⁴ See ROY, *supra* note 19, at 144.

sources.⁵⁰⁵ This denied Palestinians access to their own resources. Additionally, much of the Mekorot water production in the Eastern Basin of the West Bank has been through deep bore wells that are able to extract water from deeper, less contaminated layers or from upstream parts of underground basins.⁵⁰⁶

As described in Part III.B, water, as a public resource under Israeli law, is the subject of public control through a variety of administrative bodies. This control apparatus exerted its control over the water of the OPTs via the Civil Administration and Mekorot, two Israeli institutions. Palestinians were completely excluded from representation on any Israeli public water related institution. In comparison, Jewish settlers could participate in the Civil Administration, and if they held Israeli citizenship they could participate in the Israeli government and public institutions.⁵⁰⁷

For the Israeli state to have promoted the equal treatment of Palestinians, it would have had to severely undermine the basic objects of Israeli control over Palestinian water: the favoring of Israeli uses over Palestinian uses. The promulgation of nondiscrimination guidelines to protect Palestinians from unfair allocations and pricing would have been a very cheap and effective way to promote equality, given the overwhelming public control of water in Israel. This of course never came about and is a prime example of Israel's violation of its obligations under the ICESCR.⁵⁰⁸

3. *ICESCR Article 6: The Right to Earn a Living*

The ICESCR states:

1. The States Parties to the present Covenant recognize the right to work, which includes the right of everyone to the opportunity to gain his living by work which he freely chooses or accepts, and will take appropriate steps to safeguard this right.
2. The steps to be take by a State Party to the present Covenant to achieve the full realization of this right shall include . . .

⁵⁰⁵ In particular, the northwestern and southeastern corners of the Gaza Strip have received the highest number of settlements. *See id.* at 140, tbl. 7.2 (map portraying location of Israeli settlements in Gaza Strip); BRUINS & TUINHOF, *supra* note 156, at 14 (map portraying salinity of aquifer throughout the Gaza Strip).

⁵⁰⁶ *See ROY, supra* note 19, at 144.

⁵⁰⁷ *See supra* Part III.B.

⁵⁰⁸ *See id.*

policies and techniques to achieve steady economic, social and cultural development and full and productive employment
⁵⁰⁹

This article, in conjunction with Article 2, imposes on parties the obligation to take positive steps towards creating economic conditions conducive to job creation. The directive to create "steady economic, social and cultural development" imposes an obligation upon parties to create conditions that facilitate economic development and expansion. Naturally, the precise means of achieving these goals requires a more specialized understanding of the needs and requirements of the main sectors of a state's economy. It is unlikely that the right to earn a living through work was, or is, a customary norm of international law. Therefore, the standard that should apply to Israel during the pre-ratification period is the noninterference standard; that Israel not take steps "which would defeat the object and purpose" of the ICESCR.⁵¹⁰ However, Israel failed to meet this standard and pursued actions and policies that actively stood in the way of the full development of the Palestinian agricultural sector. These actions and policies violate Palestinian rights as guaranteed by the Covenant.⁵¹¹

The pillar of the Palestinian economy was the agricultural sector. Agriculture accounted for approximately 25% of Palestinian GDP and employed about 20% of the labor force.⁵¹² The bulk of it was found in the West Bank. By contrast, agriculture in the Gaza Strip, while not as important, was a significant part of the economy, employing in the mid-80's 18% of the labor force

⁵⁰⁹ ICESCR, *supra* note 395, art. 6.

⁵¹⁰ Vienna Convention, *supra* note 377, art. 18(a).

⁵¹¹ This is especially true since these policies affected people who could not change location and work in the areas and economic sectors that benefited from Israel's water policies. Israel took water from Palestinian agriculturalists to give to Israeli agriculturalists. In a setting with free movement of labor and capital, there would have been a move of Palestinian agriculturalists to the privileged area. In the present case, long-standing Israeli curtailments on Palestinian residence and land ownership in the areas occupied in 1948, in addition to the limitations on even transitory movement between the OPTs and Israel imposed since the Gulf War, limit the possibility of Palestinians benefiting from growth in agriculture inside the Green Line.

⁵¹² See HISHAM AWARTANI, AL-'ILAQAT AL-URDUNIYYAH-AL-FILASTINIYYAH FI AL-MAJALAT AL-ZIRA 'IYYAH: AL-'AWAMIL AL-MUHADDIDAH WA AL-'AFAQ AL-MUTAHA [Palestinian-Jordanian Agricultural Relationships: Constraints and Prospects] tbl. 1 (Center for Palestinian Research and Studies 1994).

and contributing 16% of the GDP.⁵¹³ The aridity of the area meant that the availability of water for irrigation had a very large impact on the economic output of the sector. An institutional regime that limited Palestinian farmers' access to water is one that posed an important barrier to the expansion and development of the agricultural sector, one of the economy's largest employing sectors. The consequential decrease in the size of the economy deprived persons who otherwise would have been gainfully employed, the opportunity to earn a living. These barriers also meant that those who were currently engaged in the agricultural sector, as farmers or as agricultural workers, were limited in the economic value of their investments and/or work.⁵¹⁴ In the end, such controls have led to a limitation on the ability of breadwinners to provide for their families.

As discussed above, after the 1967 War, Israel declared the Jordan River Valley, a rich agricultural region, to be a Closed Military Area.⁵¹⁵ In addition, "Israeli forces destroyed many West Bank water sources, including numerous wells in Jiftlik and Jericho, and scores of Jordan River water pumps in Tubas."⁵¹⁶ The digging of new wells and the repair of existing ones both required permission of the Israeli military commander, and the owners of these wells were, in most cases, not given permission to rebuild them.⁵¹⁷

The restrictions on water use soon affected all of the OPTs. In the late 1970s, the Israeli Military Commander began asking

⁵¹³ See ROY, *supra* note 19, at 31, 38. This relatively small size is a phenomenon that accompanied the Israeli invasion. Until 1967, agriculture was "the largest single economic activity in the Gaza Strip," though with the availability of higher-paying employment in Israel combined with the economic strangulation of the agricultural sector by the Israelis, the relative importance of the Gazan agricultural sector has dropped. *Id.* at 38, 45-51.

⁵¹⁴ See AWARTANI, *supra* note 512, tbl. 1. The Palestinian agricultural sector now contributes to 19.4% of GDP, compared to 24.1% in 1972. This drop is due to the overall increase in the Palestinian GDP along with the relatively slow growth of the agricultural sector. Between 1972 and 1992, the volume output of Palestinian agriculture grew by 2.2% per year, whereas the economic value grew by 8% per year. However, the lost potential is indicated by the fact that irrigated land only increased from 9.5% to 10.9% of the land. See *id.*

⁵¹⁵ See *supra* Part III.

⁵¹⁶ RICHARD TOSHIYUKI DRURY & ROBERT C. WINN, *FLOWSHARES AND SWORDS* 59 (1992).

⁵¹⁷ See *id.*

Palestinian farmers to put meters on their wells.⁵¹⁸ Soon thereafter, this was followed by the institution of a Military Order, which limited water use by Palestinian agriculturalists to 110% of 1977 levels. In the aggregate, the level of consumption by West Bank farmers was frozen at 90B100 mcm/yr, an amount which exceeded 1967 consumption levels by only 20%.⁵¹⁹ This was despite the explosion in population in the West Bank, which has more than doubled since the occupation of the West Bank and Gaza.⁵²⁰ These limitations were enforced through the imposition of fines for "excess" pumping; fines that amounted to a per cubic meter charge of four times the base price.⁵²¹

These restrictions on quantities have meant a handicap for Palestinian agriculturalists as relative to their Israeli and Jewish settler counterparts. As Palestine is an arid region, the increased irrigation of agricultural lands led to higher output. As an indication of the missed potential in Palestinian agricultural production, only 97,350 dunums, or 6% of cultivated land in the West Bank, is irrigated, a figure that has not changed since 1966.⁵²² In Gaza, 60% (114,000 dunums) of all cultivated land is irrigated.⁵²³ The comparable figures for Israeli agricultural lands are 43.5% (2,153,000 dunums).⁵²⁴ Overall irrigated land

⁵¹⁸ See Interview with Jihad Al-Haddad, President, Jericho Agricultural Marketing Cooperative (Aug. 24, 1994).

⁵¹⁹ See DRURY & WINN, *supra* note 515, at 60. More pessimistic estimates exist. See, e.g., CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 23 (stating that Palestinian farmers are limited to 90% of the 1970-73 level of groundwater production).

⁵²⁰ I used here the estimate of 586,000 inhabitants for "Judea and Samaria" in 1967. See 15 CENTRAL BUREAU OF STATISTICS, JUDEA, SAMARIA AND GAZA STATISTICS (1985). 1,694,000 inhabitants for December 1992. See MUSTAFA BARGOUTHY & IBRAHIM DAIBES, INFRASTRUCTURE AND HEALTH SERVICES IN THE WEST BANK: GUIDELINES FOR HEALTH CARE PLANNING 17 (1993). Unfortunately, the latter number can only be tentative, as no one has taken a census in the OPTs since 1967. See *id.* at 13.

⁵²¹ See DRURY & WINN, *supra* note 516, at 60.

⁵²² See KAHAN, *supra* note 184, at 114. Benvenisti states that Israel has imposed a quota on the Palestinian agricultural sector of 100,000 irrigated dunums. See MERON BENVENISTI, 1986 REPORT: DEMOGRAPHIC, ECONOMIC, LEGAL, SOCIAL AND POLITICAL DEVELOPMENTS IN THE WEST BANK 10, 21 (1986). One dunum = .23 acres.

⁵²³ See POLICY RESEARCH INC., *supra* note 3, at 4.

⁵²⁴ See KAHAN, *supra* note 184, at 114. Israeli Palestinians are somewhere in the middle, in that Israel irrigates 22% of the total cultivated land owned by Israeli Palestinians. See Naff & Matson, *supra* note 70, at 47.

in Israel is ten times that of the OPTs, and four times in per capita terms. Settlers have benefited greatly from Israeli policies, which cap Palestinian agricultural development. They have been able to irrigate 47,000 dunums of confiscated Palestinian land, or 69% of all land cultivated, while the area of Palestinian irrigated land remained stagnant.⁵²⁵ These settlers were allocated twice as much water per dunum than the Palestinians.⁵²⁶ In 1986, Benvenisti estimated water use by thirty Israeli settlements at 60 mcm/yr, and that of 400 Palestinian villages at 100 mcm/yr.⁵²⁷ On a per capita basis, the distribution in Gaza is even more skewed.⁵²⁸

In addition to global quantity limitations, the particular implementation of the caps on Palestinian water consumption introduced barriers of different sorts to the Palestinian agricultural sector. Many Palestinian farmers, fearing that water usage below the quota allotted by the military commander would result in a decrease in the quota, would use more water than was necessary during years with higher-than-average rainfall to keep their usage as close to the allotted amount as possible.⁵²⁹ Thus, paradoxically, a system of water management that sought to limit water consumption by the Palestinian agricultural sector perversely led to water wastage. Not only could the global amount of water use not increase, but it was highly difficult to reallocate water quantities to different regions of the West Bank in order to grow certain kinds of crops that were more suitable for different areas. This was because Israeli military authorities imposed water production quotas on every well, and Israel maintained a hard policy against increasing Palestinian agricultural water consumption.

Since water use was rationed, many farmers who received their water from a common source were allowed access to the water on a periodic basis. Thus, if a farmer's scheduled water usage time fell during a curfew, then that farmer could either risk arrest (or worse) by Israeli military authorities for disobeying the curfew or forego some of his allotment.⁵³⁰

⁵²⁵ See ELMUSA, *supra* note 4, at 9; KAHAN, *supra* note 184, at 114.

⁵²⁶ See ELMUSA, *supra* note 4, at 9; KAHAN, *supra* note 184, at 114.

⁵²⁷ See BENVENISTI, *supra* note 501, at 21.

⁵²⁸ See *id.* at 22.

⁵²⁹ See Al-Haddad interview, *supra* note 518.

⁵³⁰ See *id.*

Palestinian agriculture also suffered from unfair pricing policies that forced Palestinians to pay a higher price for lower quality water than Israelis and settlers. Palestinian farmers paid more than double the price paid by Jordanian farmers.⁵³¹ Jewish settlers received subsidies from the government and the World Zionist Organization⁵³² that resulted in a total cost to the final consumer that was one-third that charged to Palestinian farmers.⁵³³ This meant that, all else being equal, Palestinian agriculture was hampered by the far higher price it paid for water, which was a critical input into that sector's production.

Israel's generous subsidies to the Israeli agricultural sector encouraged the cultivation of water-hungry crops for export which were not otherwise economically viable. This led to excessive water use, and to greater stress on water resources. The Israeli water sector made sure that in the division of waters, settlers received the highest quality water at the expense of the Palestinians. Since Israeli wells in the OPTs tended to be much deeper, wider, and equipped with more pumping power than existing Palestinian wells, Israeli wells were able to pump much higher volumes than nearby Palestinian wells. When the amount these new wells pumped was so great as to lead to significant changes in the local water table, nearby Palestinian wells dried up or salinated.⁵³⁴ Local crops that depended on water in general or on water with a certain level of salinity were in some instances damaged or lost. Salinity levels were especially high in Gaza, as already discussed.⁵³⁵ Wells in the West Bank villages of Al-Auja, Bardala, Tal-al-Baida, Bayt Dibs and Toubas have dried up or diminished in flow due to nearby Israeli pumping, while others in Jericho and Ayn-Sultan have experienced increased salinity.⁵³⁶ This increased salinity forced changes in the kinds of crops grown or in a decrease in the number of crop cycles possible per year.⁵³⁷ Often, this forced

⁵³¹ See DRURY & WINN, *supra* note 515, at 60.

⁵³² See MERON BENVENISTI, *THE WEST BANK DATA PROJECT: A SURVEY OF ISRAEL'S POLICIES* 51 (1984).

⁵³³ See ELMUSA, *supra* note 4, at 9. This differential rises to one-fifth when one considers relative income. Others estimate a greater disparity. See, e.g., BENVENISTI, *supra* note 501, at 21-22.

⁵³⁴ See DRURY & WINN, *supra* note 515, at 61.

⁵³⁵ See *supra* Part II.C.

⁵³⁶ See DRURY & WINN, *supra* note 515, at 61.

⁵³⁷ See Al-Haddad Interview, *supra* note 529.

the farmers to cultivate crops that were not as profitable.⁵³⁸ Attempts to obtain permission from the military commander to repair these damaged wells by deepening them often ended in failure.⁵³⁹ Similar effects were observed in Gaza, where thirty-five to forty new wells, dug in the mid-1980s to serve the needs of Gazan settlers, contributed to the over pumping of the aquifer and the increased salinification of the aquifer.⁵⁴⁰

Certainly, Israeli water policies placed severe obstacles in the path of the Palestinian agricultural sector. But these were only a few of many limiting policies to which Palestinian agriculture was subjected. Israel geared its agricultural policies in the OPTs to limiting the output of Palestinian agriculture to allow it to satisfy local needs that Israeli agriculture had not targeted as an export market. For example, Palestinians were long forbidden to export their produce to Israel or to the European market.⁵⁴¹ Some of the other forces were: land fragmentation; lack of capital accumulation; absence of agricultural credit agencies; lack of access to markets; and the creation of closed military areas along the Jordan River after the 1967 War.⁵⁴² Thus, while it is true that the agricultural sector saw large advances in volume output under Israeli occupation, this growth occurred in spite of a highly unfavorable regulatory environment and was less than the growth rates of Israeli agriculture. While there were other constraints, the water constraint was real and undoubtedly had an impact on agricultural growth. Further, the existence of the other constraints do not diminish Israel's liability under Article 6 of the ICESCR, since many of these (export bans, a lack of storage facilities, and a lack of

⁵³⁸ See, e.g., DRURY & WINN, *supra* note 515, at 62 (stating that Palestinian farmers whose wells have been adversely impacted by nearby Israeli superwells are often forced to cultivate tomatoes and eggplants, salinity" resistant crops which are already overabundant, or are forced away from growing more profitable, water" intensive crops such as citrus fruits, avocados, kiwis, bananas and cotton).

⁵³⁹ See, e.g., *id.* at 61-62 (quoting cases from villages of Salfit and Ein El-Bida where military authorities denied permission to alter or complete an existing well to allow it to provide for needs of local cultivators).

⁵⁴⁰ See ROY, *supra* note 19, at 50-51.

⁵⁴¹ See *id.* at 51 ("[t]he water policies implemented by the Israeli government inside the Strip . . . pose severe threats to the future of Palestinian production, especially to citrus production").

⁵⁴² See Al-Haddad interview, *supra* note 529.

credit facilities) were a result of Israeli policies that disfavored Palestinian agricultural production.

4. *ICESCR Article 11(1): The Right to an Adequate Standard of Living, Including Housing*

The right to housing is “of central importance for the enjoyment of all economic, social and cultural rights,” and the international community has frequently reaffirmed the importance of full respect for the right to adequate housing.⁵⁴³ The Committee on Economic, Social and Cultural Rights, recognizing the multifaceted nature of housing, has elaborated different aspects of this right.⁵⁴⁴ Importantly, for purposes of Palestinian water-related rights, the Committee has stated that “[a]n adequate house must contain certain facilities essential for health . . . and nutrition,” and that a beneficiary of this right “should have sustainable access to natural and common resources, potable drinking water . . . , sanitation and washing facilities . . . , refuse disposal, [and] site drainage.”⁵⁴⁵ The central importance of this right is in part reflected by the fact that the first General Comment issued by the Committee relates to the interpretation of Article 11(1) of the Covenant. The right to adequate housing, or aspects thereof, has been addressed in a variety of international instruments and at least one national constitution.⁵⁴⁶

Nonetheless, it would be difficult to maintain that the right to housing constitutes a customary norm of international law at

⁵⁴³ *General Comment No. 4 on the Right to Adequate Housing (Article 11(1) of the International Covenant on Economic, Social and Cultural Rights)*, adopted by the United Nations Committee on Economic, Social and Cultural Rights on 12 December 1991, in *CENTRE ON HOUSING RIGHTS AND EVICTIONS*, at 2, 4, ¶¶ 1, 8(b) (1991).

⁵⁴⁴ *See id.*

⁵⁴⁵ *Id.*

⁵⁴⁶ *See UDHR, supra* note 488, art. 25(1); International Covenant on the Elimination of All Forms of Racial Discrimination, art. 5(e)(iii), G.A. Res. 2106A, U.N. GAOR, 20th Sess., 660 U.N.T.S. 1950 (1965); International Covenant on the Elimination of All Forms of Discrimination Against Women, art. 14(2), G.A. Res. 180, U.N. GAOR, 34th Sess., U.N. Doc. A/RES/34/180; Declaration on Social Progress and Development, art. 10, G.A. Res. 2542, U.N. GAOR, 24th Sess. (1969); Vancouver Declaration on Human Settlements 1976, pt. 3(8), Report of Habitat: United Nations Conference on Human Settlements, U.N. Doc. A/CONF.70/15 (1976). *See also* NETH. CONST. art. 22(2).

the present time, let alone in 1967.⁵⁴⁷ Therefore, it is difficult to hold Israel to the standard set out in Article 11(1) of the ICESCR while it was merely a signatory (i.e., until 1991). However, as a treaty signatory, Israel was at least under an obligation not to impose unreasonable restrictions on the efforts of outside organizations to donate drinking water or water disposal facilities to the Palestinians, although Israel reportedly did do so. Furthermore, as a Palestinian Central Bureau of Statistics (PCBS) survey published in 1995 shows, there were still significant shortcomings in Palestinian water-related infrastructure years after Israel's ratification of the ICESCR.⁵⁴⁸

TABLE 6. NUMBER OF PALESTINIAN POPULATION CENTERS WITH WATER-RELATED INFRASTRUCTURE⁵⁴⁹

REGION (NO. OF LOCALITIES)	PIPED WATER SUPPLY	ADEQUATE DRINKING WATER	WASTEWATER COLLECTION SERVICE	PIPED WASTEWATER COLLECTION
Jenin (81)	37	33	2	2
Tulkarem (60)	33	30	1	1
Qalqilya (32)	17	22	1	1
Nablus (56)	28	27	4	4
Ramallah (95)	82	61	3	3
Jerusalem (22)	22	18	10	10
Jericho (16)	15	12	0	0
Bethlehem (50)	47	44	2	2
Hebron (97)	53	38	3	3
No Answer	2	21	2	1
West Bank (509)	334	285	26	26
Gaza (25)	23	5	9	8
No Answer	2	0	0	0
Palestine (534)	357	290	35	34

Connection to drinking water systems. As of 1990, approximately 180 West Bank villages with some 355,300 inhabitants were not connected to a central water supply system, depending instead on local wells and other sources for which protection

⁵⁴⁷ *But see* LECKIE, *supra* note 429, at 12-33 (discussing initiatives by various international legal bodies to enunciate and define rights to housing).

⁵⁴⁸ *See id.*

⁵⁴⁹ This table was compiled from the data appendices of the PALESTINE CENTRAL BUREAU OF STATISTICS, THE COMMUNITY SURVEY FOR 1994 85-150 (1995). Only those entries with answers were counted.

from contamination was difficult.⁵⁵⁰ The Gaza Strip fared somewhat better. By the early 1990s, 90% of the population in the towns, 60% of the population in the villages, and 100% of the population of the refugee camps were connected to a piped water supply.⁵⁵¹ Of Gaza households having connections, 75% had connections right to the dwelling, while another 22% drew their water from courtyard taps.⁵⁵²

At the time of Israel's occupation of the OPTs, few population centers outside of the major West Bank and Gaza Strip towns had a piped water system. By 1995, approximately 357 of the 534 population centers counted by the PCBS had a drinking water network.⁵⁵³ Many of these were in refugee camps (especially in Gaza), and thus supplied by the United Nations Relief Works Agency, the organization serving the needs of Palestinian refugees. While this is certainly an improvement, a constructive comparison can be made to the villages in Jordan. Had Israel not occupied the West Bank, it is reasonable to assume that West Bank and East Bank villages would have evolved similarly. Under Jordanian administration, nearly all Jordanian villages have received a piped water system. Per capita domestic consumption in Jordan is double that of the Palestinians, despite the fact that the OPTs are richer in water resources than is Jordan.⁵⁵⁴

In the absence of piped water, Palestinian residents of the OPTs turned to other sources of drinking water. The most common were rain-fed cisterns, local springs, and, in some Jordan River Valley villages, open-air irrigation canals.⁵⁵⁵ Of course, households without piped water also made provisions for storing water while in the home, and made use of a variety of storage methods there.⁵⁵⁶ When water is not piped, there is a higher risk of contamination by pollutants that exist in the sur-

⁵⁵⁰ See POLICY RESEARCH INC., *supra* note 3, at 11.

⁵⁵¹ See Shuval, *supra* note 16, at 97

⁵⁵² See *id.* In contrast, when asked about the sufficiency of domestic water supply, a PCBS survey revealed that only five of Gaza's 25 population communities (towns, villages, and refugee camps) reported satisfactory supply. See *id.*

⁵⁵³ See *supra* Part V.C.4, tbl. 6.

⁵⁵⁴ See ELMUSA, *supra* note 4, at 9.

⁵⁵⁵ See CHRIS SMITH, WATER SUPPLY, SANITATION AND HEALTH IN THE WEST BANK 3 (Birzeit University Communal Health Unit 1987).

⁵⁵⁶ See *id.* at 8.

rounding ground. For example, while rain-fed cisterns in the West Bank were able to provide reasonably safe drinking water, preliminary data shows that the presence of farm animals in the area of the cistern increases the presence of fecal coliforms (microorganisms causing gastrointestinal infections), as does the use of a bucket (as opposed to an electric pump) to extract the water from the cistern.⁵⁵⁷ Indeed, spot tests of various sources in the West Bank have shown that piped water supplies have the lowest concentration of organic pollutants, while open irrigation canals predictably have the worst.⁵⁵⁸ While West Bank residents benefited overall from clean water supplies and low rates of gastrointestinal infections,⁵⁵⁹ the situation in Gaza, with a more severe wastewater collection problem, was appreciably worse.⁵⁶⁰

In addition to the inherent undesirability of non-piped water supplies, the use of independent water sources prevented any benefits from economies of scale in water treatment and quality control. It is difficult to assure adequate and regular quality monitoring when the sources of water are widespread, numerous, and small-scale. Residents must rely on themselves to test their wells or other water sources for quality with small, personal kits.

Connection to wastewater collection systems. In 1995, of 507 Palestinian communities in the West Bank, only twenty-six (primarily the major towns) had piped sewage collection systems. No other community had any sort of municipal sewage collection system. Other communities had to cope with individual or communal septic tanks or with open-air sewage canals. However, even in those localities with wastewater networks, not all houses were connected. In the Jerusalem district, managed by the Israeli municipality, only 85% of homes were connected to the sewage system in 1992.⁵⁶¹ The percentage of the population in the following major West Bank towns that were connected to a network were Ramallah/El-Bireh (75%); Nablus (75%); and Hebron (65%).⁵⁶² When not connected to a waste-

⁵⁵⁷ See *id.* at 9-13.

⁵⁵⁸ See *id.*

⁵⁵⁹ See *id.* at 3.

⁵⁶⁰ See SMITH, *supra* note 555, at 17-20.

⁵⁶¹ See POLICY RESEARCH INC., *supra* note 3, at 11.

⁵⁶² See *id.*

water system, excreta collection must occur either with the use of pit, pour flush or automatic flush latrines connected to soakage pits. Also, the soakage pits may be permeable (in which case the excreta will seep into the surrounding ground) or impermeable (requiring periodic pumping).⁵⁶³

The situation in Gaza was in some ways better, and in others worse. Nine of the twenty-five localities (predominantly the refugee camps) had sanitary waste collection services,⁵⁶⁴ many of which in turn were connected to the Gaza City sewage system.⁵⁶⁵ In the absence of such services, households used boreholes and tanks for their human waste collection needs. In the refugee camps, most sinkholes overflowed because of overpopulation and lack of maintenance.⁵⁶⁶ In some cases, the wastewater from other domestic activities, such as cooking and cleaning, flowed directly to open cesspools in low-lying areas of the camps.⁵⁶⁷

The connection of households to sanitary wastewater collection services, and to piped sewage systems in particular, is an important component of the right to housing, since these services contribute greatly to the inhabitants' health⁵⁶⁸ and to the general quality of life in the homes. When wastewater is allowed to sit in a permeable underground soakage pit, pollutants in the water can seep into the surrounding ground and in turn contaminate nearby inhabitants' drinking water. Additionally, depending on the construction of the latrines and the availability of water for automatic or hand flushing, these soakage pits can be breeding places for insects carrying diseases and can give off foul odors. If the pits are overtaxed or if there is a sudden rainfall, the contents can overflow and spill into surrounding areas, thus contributing to airborne disease and a general degradation of the environment.

⁵⁶³ See SMITH, *supra* note 555, at 12-16.

⁵⁶⁴ See *supra* Part V.C.4, tbl. 6. This means that domestic wastewater either is piped from homes to the main sewage lines or is stored temporarily in nearby latrines or septic tanks and periodically collected. These methods serviced 40% of the Gaza Strip's homes. See POLICY RESEARCH INC., *supra* note 3, at 13.

⁵⁶⁵ See BRUINS & TUINHOF, *supra* note 156, at 22.

⁵⁶⁶ See *id.*

⁵⁶⁷ See *id.*

⁵⁶⁸ See *infra* Part V.C.5.

The reason for the difficult situation in Gaza was the relatively low level of investment generally by Israelis in infrastructure. In 1986, for example, the Israeli government's total development/investment budget was \$7.3 million.⁵⁶⁹ Of this amount, 0.6% went to "Planning and Infrastructure" and 19% went to "Health."⁵⁷⁰ Local governments, using funds that were largely locally raised, invested \$6.9 million in the 1984/85 fiscal year in local "establishments," though perhaps only a little over a tenth of these expenditures were water-related.⁵⁷¹ Foreign governments and private volunteer agencies had to intervene to make up for these shortcomings, with their efforts focusing specifically in the area of water conservation and sewage treatment.⁵⁷² The United Nations Relief and Works Agency has also contributed to some of this infrastructure.⁵⁷³

Not only has Israel not affirmatively provided for the water-related infrastructure needs of the Gaza Strip, it has also hampered efforts by outside parties to fulfill such needs. While a network of United States based or funded NGOs in Gaza continuously proposed projects to serve Gazans' needs, and while Palestinian sources had offered substantial amounts for economic development in the OPTs, proposed projects could not proceed without the approval of the Israeli military authorities. Approval was granted sparingly, and projects in the areas of water and sewage control, owing to their sensitivity, were especially difficult to get approved.⁵⁷⁴ Constraints on development in the water sector included "[Civil Administration] delay and disapproval of urgently required water and sanitation projects" and "lack of access on the part of Palestinians, donors, [private volunteer organizations] and others to critical information required for planning and managing water and sanitation projects"⁵⁷⁵ This lack of data was due to the fact that Israel considered much water-related data security-related and also

⁵⁶⁹ See ROY, *supra* note 19, at 75-78.

⁵⁷⁰ *Id.*

⁵⁷¹ See *id.*

⁵⁷² See *id.*

⁵⁷³ See *id.*

⁵⁷⁴ See POLICY RESEARCH, INC., *supra* note 3, at 16.

⁵⁷⁵ *Id.*

because existing Palestinian institutions were incapable of extensive independent data-gathering.⁵⁷⁶

5. ICESCR Article 12: *The Right to Health*

The right to health is a basic right that is guaranteed in a wide variety of human rights instruments.⁵⁷⁷ In particular, the ICESCR provides that:

1. The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.
2. The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for: * * *
 - (b) The improvement of all aspects of environmental and industrial hygiene;
 - (c) The prevention, treatment and control of epidemic, endemic, occupational and other diseases⁵⁷⁸

As with the right to earn a living, it is probably not the case that the right to health is customary international law. Therefore, the pre-1991 standard for Israel's adherence is noninterference. After it ratified the Convention, it took on affirmative responsibilities to safeguard public health in this area.

The water sector in the OPTs generally, and in the Gaza Strip in particular, is in a crisis situation as far as public health is concerned. The main dimensions of this crisis are the poor and deteriorating quality of water used for domestic purposes, as well as the small quantities consumed and the regularity of

⁵⁷⁶ See *id.* For a description of donor involvement and Israeli blockage in the development of sanitation projects, and a description of problems related to the execution of donor funded projects, see *id.* at 15-16.

⁵⁷⁷ See, e.g., UDHR, *supra* note 488, art. 25(1) (“[e]veryone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing and medical care and necessary social services”); American Declaration of the Rights and Duties of Man, art. XI (“[e]very person has the right to the preservation of his health through sanitary and social measures relating to food, clothing, housing and medical care, to the extent permitted by public and community resources”); European Social Charter, art. 1(11), E.T.S. 35, *entered into force* Feb. 26, 1965 (“[e]veryone has the right to benefit from any measures enabling him to enjoy the highest possible standard of health attainable”); Africa [Banjul] Charter on Human and Peoples’ Rights, art. 16(1), OAU Doc. CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982) (“[e]very individual shall have the right to enjoy the best attainable standard of physical and mental health”).

⁵⁷⁸ ICESCR, *supra* note 395, art. 12.

consumption. The two primary causes of this crisis (aside from the restrictive quantitative limitations on water consumption imposed by the Israelis) were the deterioration of the Gaza Aquifer, and the inadequate wastewater disposal and treatment facilities in the OPTs.

The *quality* of water consumed is the most obvious determinant to the health of water consumers. The World Health Organization has set several standards for the quality of water that is consumed. Drinking water must not have more than a certain level of salt, fluoride, nitrates, heavy metals, toxins from pesticides, herbicides, fertilizers, and organic micro-pollutants. Excess consumption of these substances over prolonged periods can lead to the disorders and diseases described in Table 7 below.

TABLE 7. IMPACT OF DRINKING WATER POLLUTANTS ON HUMAN HEALTH⁵⁷⁹

SUBSTANCE	IMPACT ON HEALTH
Salt	Increased probability of neurological disorders, kidney insufficiency, edema, high blood pressure, and congestive heath failure. In rare cases salt poisoning can lead to death.
Fluoride	Irritation of the lining of the stomach. Increased probability of formation of ulcers, kidney failure, soft tissue calcification, skeletal fluorosis (leading to bone brittleness and deformity), and dental fluorosis (leading to brown mottling of teeth).
Nitrates	Contributes to anemia in newborn infants (blue babies) and to spontaneous abortions in humans.
Heavy metals	Poisoning leads to liver, kidney, and brain damage.
Pesticides, herbicides and fertilizers	Skin absorption, inhaling, or swallowing pesticides containing organophosphates can lead to paralysis, heart failure, and delayed damage to the nervous system
Organic micropollutants	Suspected to cause cancer.

Gaza groundwater, the source for much of Gazans' drinking water, exceeded the limits recommended by the World Health Organization for the maximum allowable content of various substances. This is illustrated in greater detail in Table 8.

⁵⁷⁹ See Anna Bellisari, *Public Health and the Water Crisis in the Occupied Palestinian Territories*, in J. PALESTINE STUD. 55-57 (Winter 1994).

TABLE 8. POTABILITY OF GROUNDWATER IN THE GAZA STRIP⁵⁸⁰

DISSOLVED SUBSTANCES	ACCEPTABLE CONCENTRATION (PPM)	GAZA CONCENTRATION (PPM)
Total Dissolved Solids	500	1200-1300
Sodium	20	300-1100
Chloride	250	400-1500
Calcium	36	40-120
Sulfate	250	50-400
Magnesium	30	40-120
Bicarbonate	225	300-700
Potassium	4	6-10
Nitrate	45	40-140
Fluoride	1.5	0.4-2.9

As the figures in Table 8 make clear, Palestinians did not benefit from water treatment sufficient to counteract the pollution of their drinking water.⁵⁸¹

The *quantity* and *regularity* of the water supply had their effects as well, as persons living in the hot, dry climates that characterize the OPTs are especially dependent on water to replenish that lost to perspiration.⁵⁸² Insufficient replenishment of water to the body leads to a higher incidence of weakness and lethargy, neurological symptoms, kidney dysfunctions and sometimes kidney failure.⁵⁸³ In addition, insufficient bathing and a lack of personal hygiene that results from a shortage of water leads to a higher incidence of ringworm and other fungal skin infections, louse-borne fever, and trachoma.⁵⁸⁴

Palestinian domestic water consumption was a meager 20-30 m³ per person per year, equivalent to about 15-20 gallons per person per day.⁵⁸⁵ Residents of villages and refugee camps

⁵⁸⁰ See Hisham Zarour et al., *Hydrochemical Indicators of the Severe Water Crisis in the Gaza Strip*, in FINAL REPORT ON THE PROJECT WATER RESOURCES IN THE WEST BANK AND THE GAZA STRIP: CURRENT SITUATION AND FUTURE PROSPECTS (Applied Research Institute in Jerusalem 1994).

⁵⁸¹ See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 28 (“[w]ater treatment is minimal and of dubious quality”).

⁵⁸² See Bellisari, *supra* note 579, at 55.

⁵⁸³ See *id.*

⁵⁸⁴ See *id.* at 59. Some Gaza water consumers received water only for a few hours a day. See ROY, *supra* note 19, at 103.

⁵⁸⁵ See ELMUSA, *supra* note 4, at 7.

sometimes only consumed one-third of this amount.⁵⁸⁶ This was among the lowest consumption levels in the world. Israel's per capita domestic consumption, on the other hand, was three to four times as large.⁵⁸⁷ A 1995 PCBS census indicates that of 509 West Bank communities, only 285 thought that their supply of drinking water was adequate; in Gaza, that number was five out of twenty-five.⁵⁸⁸ This low number is due partly to the fact that a large number of localities received water through their piped networks only intermittently or seasonally. For example, in the summer of 1994, a water crisis in the Southern West Bank (i.e., primarily affecting the Bethlehem and Hebron regions) led to repeated cutoffs to some parts of Hebron, the Dheisha refugee camp, and other major population centers, forcing people to purchase their water from tankers at elevated prices.⁵⁸⁹

A major issue affecting the quantity of water that reached town-dwellers in the OPTs was that of leakage from existing water networks.⁵⁹⁰ Most of the systems now in existence are several decades old.⁵⁹¹ When natural deterioration occurred and combined with the general inability of the Palestinian water distribution institutions to repair these networks, and the widespread diversion of water from mains by many Palestinian residents, a large amount of water destined for domestic consumption became lost through leakage.⁵⁹²

Another major cause of the poor quality of Gaza drinking water was the inadequate *disposal* and *treatment* of wastewater. The situation was bleak, as Palestinians' institutional capacity to deal with the treatment of sewage was extremely

⁵⁸⁶ See *id.*

⁵⁸⁷ See *supra* Part V.C.2, tbl. 4.

⁵⁸⁸ See *supra* Part V.C.4, tbl. 6.

⁵⁸⁹ See MUHAMMAD JARADAT, *THE WATER CRISIS IN THE SOUTHERN WEST BANK* (Alternative Information Center, Jerusalem, 1993) (reporting repeated domestic water shortages in summer months in Bethlehem, Hebron, and surrounding villages and refugee camps).

⁵⁹⁰ See POLICY RESEARCH INC., *supra* note 3, at 1.

⁵⁹¹ See *id.*

⁵⁹² See *id.* "[I]t has been estimated that more than half of the water supply passing through the system in the West Bank is lost through leakage or waste." *Id.*

limited.⁵⁹³ Given the high population density and crowded conditions of the Gaza Strip and most of the refugee camps in the OPTs, the presence of improperly treated and/or open sewage led to various respiratory diseases and intestinal infections such as shigellosis, amoebic dysentery, brucellosis, cholera, and giardiasis.⁵⁹⁴ Open, untreated sewage also contributed to the proliferation of airborne disease.⁵⁹⁵ Much of the wastewater improperly disposed of was used by farmers for irrigation purposes, a use which created significant health hazards for farmers and consumers alike.⁵⁹⁶ The World Health Organization reported case rates for amoebic dysentery of 246 out of 100,000 and 1,072 out of 100,000 in the West Bank and Gaza, respectively.⁵⁹⁷ The figure for Gaza was more than three times that of UNRWA refugees in Jordan.⁵⁹⁸ Furthermore, the non-treatment or disposal of human waste leads to increased health risks for newborn babies.⁵⁹⁹

The West Bank had only one wastewater treatment plant, located in Ramallah.⁶⁰⁰ The plant, opened in the early 1970s, has yet to be evaluated for wastewater characteristics or management efficiency.⁶⁰¹ Other West Bank sewage collection systems merely drained their contents in places that, in the best of situations, were distant from population centers.⁶⁰² However, even in such cases, the untreated water caused health problems.⁶⁰³ A study of the water sources of eight Jordan Valley villages revealed unacceptable levels of organic micro-pollu-

⁵⁹³ "Sewage utilities have no clear responsibilities for operation and are characterized by poor funding, inadequate training of operators, lack of adequate revenue collection and enforcement, and no clear responsibility for the proper disposal of sewage." CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 28.

⁵⁹⁴ See Bellisari, *supra* note 578, at 59.

⁵⁹⁵ See *id.*

⁵⁹⁶ See POLICY RESEARCH, INC., *supra* note 3, at 11.

⁵⁹⁷ See *id.* (quoting WORLD HEALTH ORGANIZATION, HEALTH CONDITIONS FOR THE ARAB POPULATION IN THE OCCUPIED ARAB TERRITORIES, INCLUDING PALESTINE 26 (1992)).

⁵⁹⁸ See *id.* at 13.

⁵⁹⁹ See BRUINS & TUINHOF, *supra* note 156, at 13.

⁶⁰⁰ See POLICY RESEARCH INC., *supra* note 3, at 11.

⁶⁰¹ See *id.*

⁶⁰² See *id.*

⁶⁰³ See *id.*

tants in all eight sources.⁶⁰⁴ The contamination was in part the result of an open sewer from Nablus (located in the central mountainous spine of the West Bank) which fed directly into the irrigation canal from which village residents drew their water.⁶⁰⁵

As usual, while the lack of adequate wastewater treatment facilities is an OPT-wide problem, the overcrowding and poverty of the Gaza Strip rendered the impact of this shortage far worse there. The Gaza City sewage system collected the waste not only from Gaza City homes, but also from nearby localities that had connected their sewage networks to Gaza City's. Most wastewater was collected in lagoons south of the city, where it evaporated or percolated into the water table; the rest drained into the Mediterranean sea near the Al-Shati' camp.⁶⁰⁶ When this pool became especially taxed, it overflowed into surrounding agricultural lands, contributing to their contamination. Other towns without sewage systems resorted to a system of cesspits to deal with their water disposal needs, which through irregular emptying can lead to seepage into the soil, the creation of obnoxious odors, and the provision of a breeding ground for airborne diseases.⁶⁰⁷ In the past, such cesspits have caused cholera outbreaks.⁶⁰⁸ UNRWA camps fare the worst; there, twenty-five years after their construction, most do not have fully-functioning wastewater disposal systems.⁶⁰⁹ These incredibly overcrowded population centers placed an extraordinary burden on the public and private latrines used to dispose of their wastewater.⁶¹⁰ Consequently, these overflowed, creating streams and accumulations of raw, untreated wastewater right in the middle of residential areas, posing a direct threat to the local residents and seeping into the water table.⁶¹¹ It is worth noting that one-third of all Gazans, about a quarter of a million people, lived in these camps.

⁶⁰⁴ See CHRIS SMITH, BACTERIAL QUALITY OF DRINKING-WATER IN EIGHT VILLAGES IN THE JORDAN VALLEY 3 (Birzeit University Community Health Unit 1984).

⁶⁰⁵ See *id.*

⁶⁰⁶ See POLICY RESEARCH INC., *supra* note 3, at 13.

⁶⁰⁷ See ROY, *supra* note 19, at 102.

⁶⁰⁸ See *id.*

⁶⁰⁹ See POLICY RESEARCH INC., *supra* note 3, at 13.

⁶¹⁰ See *id.*

⁶¹¹ See *id.*

Aside from the improper treatment of sewage, the other main contributor to the crisis in water quality was the structural damage caused to the Gaza Aquifer.⁶¹² This damage was due to severe overpumping, which far exceeded recharge rates. This caused a drop in pressure in the freshwater layers, which caused seawater and other saline water intrusion from other formations.⁶¹³ This brought about not only high salinity levels, but also rapidly increasing salination.⁶¹⁴ A high percentage of chlorine in drinking water leads to an increased probability of neurological disorders, kidney insufficiency, edema, high blood pressure, and congestive heart failure.⁶¹⁵ In rare cases salt poisoning can lead to death.⁶¹⁶

It is difficult to characterize Israel's responsibility for the deterioration of the Gaza Aquifer, since Palestinian overpumping was the main cause of the deterioration of the quality of water. (The presence of Jewish settlers, while a contributing factor to the deteriorating quality of the Aquifer, was far less significant in absolute terms). Israel, however, was quick to engage in inter-basin transfers to benefit Israeli agriculture in the Naqab, and was loath to supply adequate quantities of water to Gaza even though Mekorot had connections to Gazan municipalities. In addition, Israel did not supply appropriate wastewater systems to Gazans, and in some cases placed hurdles before the efforts of outside private volunteer organizations to supply them. These affirmatively handicapping measures are examples where Israel has undermined the fulfillment of the objectives of the ICESCR. As for the post-1991 era, there have been no significant improvements either in the quality of the Gaza Aquifer or in the provision of wastewater disposal networks.

During Israeli occupation, a particularly pressing public health situation regarding water consumption and disposal arose in the Gaza Strip.⁶¹⁷ While not completely absent in the West Bank, the problem there remained less severe.⁶¹⁸ A lack

⁶¹² See *supra* Part II.C.

⁶¹³ See *id.*

⁶¹⁴ See *id.*

⁶¹⁵ See *supra* Part V.C.5, tbl. 7.

⁶¹⁶ See *id.*

⁶¹⁷ See *supra* Part V.C.4.

⁶¹⁸ See *id.*

of investment in infrastructure came as Israel and parastatal organizations like the World Zionist Organization spent hundreds of millions on illegal settlements, which in the case of aquifer depletion actually worsened the public health crisis in Palestine.⁶¹⁹ Furthermore, some features of Israel's occupation "complete institutional control, combined with a desire not to release information on water to Palestinians" have caused it to stand in the way and block many private volunteer organizations' offers to install some of the needed public health infrastructure.⁶²⁰ In this sense, Israel has again violated its obligations not to undermine the health-promoting goals of the ICESCR.

VI. LAW OF THE NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES

A. *The Relevance of International Water Law*

As discussed in Part IV.C.2, the law of belligerent occupation protects the public and private property of residents of an occupied territory and of an occupied people from appropriation or misuse by the occupier. In particular, as regards private immovable property, an occupant may only use such property for military purposes. In no circumstance may an occupant take title to immovable private property.⁶²¹

In the case of water, these clear imperatives are complicated by the fact that much of Palestine's water resources are in geological structures that span international borders. The main two bodies are the Mountain Aquifer, which straddles the border between the West Bank and Israel, and the Jordan River, whose system (including tributaries) flows through five countries in the region.⁶²² Of the recharge (in the case of the aquifer) and annual flow (in the case of the river), the difficult question is: how much belongs to Palestinians?

A priori, there is no obvious way to allocate a fugitive trans-boundary resource, which is partially or totally extractable from any of the contiguous states, among those states. The Jordan

⁶¹⁹ *See id.*

⁶²⁰ *See id.*

⁶²¹ *See supra* Part IV.C.2.

⁶²² *See supra* Part II.C.

River, however, is subject to a tacit multilateral understanding, which governs the allocations among the various riparians. This arrangement is based on the Johnston Plan,⁶²³ developed during the mid-1950's, and is still the basis for negotiations on water between Israel and Jordan. While never formally adopted by the riparians,⁶²⁴ it has become the putative customary law of the basin.⁶²⁵ Because the West Ghor Canal (intended for the West Bank though never actually built) was part of the development project, which Johnston proposed, many assert that the West Bank, after separation from Jordan, still should receive that share intended for that canal.⁶²⁶ However, there is disagreement on the size of Palestine's share.⁶²⁷ Of this share,

⁶²³ See *id.*

⁶²⁴ The only exception to this general rule is the Israel-Jordan peace treaty, which includes provisions as to the partition of the Jordan River between these two riparian landowners alone. See *Treaty of Peace between the Hashemite Kingdom of Jordan and the State of Israel*, art. 6, Annex 2, reprinted in *JORDAN TIMES*, Oct. 26, 1994, at 8. This treaty in effect restores to Jordan its share under the Johnston Plan.

⁶²⁵ See *supra* Part II.C; Naff & Matson, *supra* note 70, at 169.

⁶²⁶ In fact, in an interesting twist, Israel had advocated for the West Bank's share of the Jordan River's waters arising under the Johnston Plan. This advocacy came during the 1970s in response to Jordanian-Syrian plans to develop the Yarmouk River. Since Israel occupied the West Bank, Israel felt that it had the right to claim Jordan River water intended for the West Ghor Canal which would irrigate West Bank agricultural lands. See Lowi, *supra* note 74, at 172.

⁶²⁷ One commentator reports that this allocation is at least 70 mcm/yr. See *id.* Another commentator puts the West Bank share at 209 mcm/yr (181 mcm/yr from the Jordan River and about 35 mcm/yr from wadis side). See Elmusa, *supra* note 133, at 71 & n.25 (employing relative irrigated areas of East and West Bank in mid-1950s to allocate Jordanian share between them). See also Naff & Matson, *supra* note 70, at 163-64 (stating that Palestinians have "significant claims to the water of the river").

Even if there was no West Bank allocation, the customary rule of international law provides that all riparian landowners have a right to the waters of the shared water resources. It has been suggested that Palestinians should have a portion of the river's waters. See Naff & Matson, *supra* note 70, at 5. Given their non-presence in the negotiations led by Johnston, it is questionable whether the resulting agreement ought to bind the emerging Palestinian entity. According to one expert who disputes the existence of an allocation for Palestinians, the riparian landowners must enter into new negotiations in the case of Palestinian autonomy or independence. See *id.* at 169. The purpose of these negotiations would be to determine the Palestinian share and the means for transporting this share to the Palestinians from parts less saline than the lower Jordan River. See *id.*

Palestinians currently receive almost nothing.⁶²⁸ If in fact the Johnston proposal intended some water to go to the West Bank, and if Israel has indeed appropriated this water for its own purposes, then Israel has an obligation to compensate Palestinians for this historical misuse and to restore to Palestine its rightful flow.

Even if the West Bank's share was not broken out, its status as a riparian to this river system still means that it should receive a portion of its flow. Even if the other riparians had concluded an agreement to the waters of the river system, their exclusion of Palestine calls for a reconsideration of the shares taken by the different parties.⁶²⁹ The question then becomes how much water Palestine should receive. The same question applies to the Mountain Aquifer of the West Bank, for which there is no partition agreement in place. These questions are critical since the amount of water to be partitioned, at least 1600 mcm/yr, is considerable for the region.

B. *The Development of the Law of the Non-Navigational Uses of International Watercourses*

International law has developed several principles by which to manage the non-navigational uses of international water resources.⁶³⁰ Early principles such as the Harmon Doctrine (which emphasized a state's absolute right to do what it wishes with water within its territory) and early definitions (such as that of the Congress of Vienna of 1815 limiting the definition of an international river to the main stem and to the tributaries forming a boundary or crossing several states)⁶³¹ have given way to a recognition of the interconnectedness of different segments of the hydrological cycle, a broader definition of

⁶²⁸ Most experts believe that Palestinians receive none of the Jordan River's waters, though Jehoshua Schwarz claims that Palestinians consume 10 mcm/yr. See Schwarz, *supra* note 35, at 81, 91.

⁶²⁹ This is especially so because by the time the waters flow through the West Bank, all the useable flow of the Jordan River system is already consumed by Israel, Jordan, and Syria. For a discussion of the duty to include riparians in any system-wide negotiations, see 2 [1987] Y.B. INT'L L. COMM'N pt. 2, art. 5, at 30 (1987).

⁶³⁰ See generally J. BRUHACS, *THE LAW OF NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES* (M. Zehery trans., 1992).

⁶³¹ See Stephen McCaffrey, *International Organizations and the Holistic Approach to Water Problems*, 31 NAT. RES. J. 139, 143 & n.19.

water basin, and an appreciation of the need to regulate water basins or river systems as a whole without regard to political or administrative borders. As bilateral and multilateral agreements over the division of different transnational water systems (such as the Nile and the Indus Rivers and the shared Mexican-United States groundwater) have grown in number, different international institutions have attempted to codify and to develop general principles for the management of international water basins. The two most notable efforts in this regard are the work of the International Law Association (ILA) and the United Nations International Law Commission (ILC).

1. *A Bold First Step: The ILA's Helsinki Rules*

The ILA is a non-governmental organization of legal scholars; one of its functions is to conduct studies and to formulate restatements of international law. Thus, while its rules and recommendations are not legally binding on states, they enjoy a wide degree of respect and regard as products of a geographically dispersed group of preeminent legal scholars. The ILA adopted, at its 1966 Conference, the Helsinki Rules on the Uses of the Waters of International Rivers (Helsinki Rules),⁶³² representing "the first attempt by an international organization to prepare a complete codification of the law of international watercourses."⁶³³

Although the presence of the words "international rivers" in the title would suggest that the agreement has relevance to only the division of the waters of the Jordan River, the contents of the rules and their subsequent development suggest and confirm, respectively, their applicability to shared aquifers and groundwaters as well.⁶³⁴ Indeed, one of the advantages of the

⁶³² *Helsinki Rules on the Uses of the Waters of International Rivers*, in INTERNATIONAL LAW ASSOCIATION, REPORT OF THE FIFTY-SECOND CONFERENCE, HELSINKI, 1966 at 477, 484 (1967) [hereinafter *Helsinki Rules*].

⁶³³ McCaffrey, *supra* note 630, at 141.

⁶³⁴ While the International Law Association's (ILA) consideration of groundwaters in preparation for the publication of the Helsinki Rules was by its own reckoning "insufficient," the Rules arguably did cover groundwaters and aquifers. See Robert Hayton, *The Law of International Groundwater Resources*, in INTERNATIONAL LAW ASSOCIATION, REPORT OF THE SIXTY-SECOND CONFERENCE, SEOUL, 1986 at 238 (1987). Thus, when the ILA adopted its restatement of the international law of groundwaters, it began by confirming the applicability of the Helsinki Rules' definition of international drainage basin to international aquifers whether or not

Helsinki Rules over previous attempts at the restatement of international law is its more sophisticated treatment of water drainage basins. The water systems that were the subject of the rules were termed "international drainage basins."⁶³⁵ These are defined as the "geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus."⁶³⁶ It is important to note that nowhere in the definition does the word "river" appear. Also, the word "terminus" must not be interpreted to mean river alone; the commentary states that "an international drainage basin is the entire area, known as the watershed, that contributes water . . . to the principal river, stream or lake or other common terminus."⁶³⁷ If one considers an aquifer as an underground terminus of waters from precipitation and seasonal rivers or wadis, then the Helsinki Rules become applicable to underground aquifers that either span an international border or receive water from catchment areas that span an international border.

The general principle upon which the division of waters must occur under the Helsinki Rules is that of *reasonable and*

the aquifers were connected in some way to surface water bodies. See *Rules on International Groundwaters*, in REPORT OF THE SIXTY-SECOND CONFERENCE, SEOUL, 1986, *supra*, at 251. In 1986, the ILA adopted four articles which relate specifically to the regulation of international groundwaters. Article 1 extends the Helsinki Rules definition of international basin to include underground aquifers straddling an international border, whether or not the aquifer and its waters form with surface waters a hydraulic system flowing into a common terminus. See *id.* at 252. Article 2 requires that basin States consider the hydraulic interdependence of surface and groundwaters when exercising rights and fulfilling duties under international law. See *id.* at 259. Article 3 mandates that states undertake, both individually and collectively, measures to protect groundwaters from pollution and that they exchange information to this end. See *id.* at 268. Finally, Article 4 requests states to consider the integrated management of international groundwaters at the request of any of the basin States. See *id.* at 272. The last three articles were written in recognition of an international movement favoring the integrated management of national water resources that sought to discourage competitive pumping and to avoid the problems associated with the use of common property by creating administrative structures charged with managing the resource in a globally optimal manner. Interestingly, one of the countries cited as a leader in this trend is Israel, which, since the 1950's, has considered all groundwater in Israel as state property. See Hayton, *supra*, at 242-44.

⁶³⁵ *Helsinki Rules*, *supra* note 632, at 484.

⁶³⁶ *Id.* at 484-85.

⁶³⁷ *Id.* at 485.

equitable use: "Each basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin."⁶³⁸ The elaboration of these terms comes in Article V, which states:

- (1) What is a reasonable and equitable share within the meaning of Article IV is to be determined in the light of all the relevant factors in each particular case.
- (2) Relevant factors which are to be considered include, but are not limited to:
 - (a) the geography of the basin, including in particular the extent of the drainage area in the territory of each basin State;
 - (b) the hydrology of the basin, including in particular the contribution of water by each basin State;
 - (c) the climate affecting the basin;
 - (d) the past utilization of the waters of the basin, including in particular existing utilization;
 - (e) the economic and social needs of each basin State;
 - (f) the population dependent on the waters of the basin in each basin State;
 - (g) the comparative costs of alternative means of satisfying the economic and social needs of each basin State;
 - (h) the availability of other resources;
 - (i) the avoidance of unnecessary waste in the utilization of waters of the basin;
 - (j) the practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and
 - (k) the degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State;
- (3) The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable share, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.⁶³⁹

This "factor-analysis" approach is one of the major contributions of the Helsinki Rules. According to two leading scholars in the field, the duty of basin States to consider all the

⁶³⁸ *Id.* at 486.

⁶³⁹ *Id.* at 488.

relevant factors when dividing the waters of shared water basins "has become accepted virtually universally since the adoption by the ILA in 1966 of the Helsinki Rules."⁶⁴⁰ This development bars the reliance on any one factor as the sole determining criterion for the determination of shares of water. Of particular relevance to the waters that are the subject of the present Article, the ILA commentary states explicitly that "[a]n existing reasonable use is entitled to significant weight as a factor and, as indicated in Article V, consideration must be given to protecting it. However, it is but one factor."⁶⁴¹ Thus, the Helsinki rules privileged the principle of fair and equitable use over that of avoidance of appreciable harm.⁶⁴²

Other articles of particular relevance to the present common aquifers are Article VIII (restating the principle that the continuation of present reasonable use is subject to the consideration of the other factors stated in Article V,⁶⁴³ in particular, the fact that one basin State lags behind another in terms of its economic development should not mean that the underdeveloped basin State's share of the common aquifer should be diminished as a result of the other basin State's prior use);⁶⁴⁴ Article X (imposing on a basin State the obligations to prevent water pollution causing substantial injury and to take steps to diminish existing pollution where such pollution affects a co-basin State's water supply);⁶⁴⁵ Article XI (allowing for injunctive and monetary damages in case of a violation of Article X);⁶⁴⁶ Article XXVII (imposing the duty to resolve disputes by peaceful

⁶⁴⁰ Robert D. Hayton & Albert E. Utton, *Transboundary Groundwaters: The Bellagio Draft Treaty*, 29 NAT. RES. J. 663, 699 (1989).

⁶⁴¹ *Helsinki Rules*, *supra* note 632, at 490. While this particular quote bears directly upon the case study of the division of waters in a hypothetical case in the commentary, the principle it elaborates is clearly meant to be of general applicability.

⁶⁴² "Appreciable harm" means any significant interference with a riparian's existing uses of the international basin's water.

⁶⁴³ The article states in relevant part that "[a]n existing reasonable use may continue in operation unless the factors justifying its continued existence are outweighed by other factors leading to the conclusion that it be modified or terminated so as to accommodate a competing incompatible use." *Helsinki Rules*, *supra* note 631, at 493.

⁶⁴⁴ *See id.* at 492.

⁶⁴⁵ *See id.* at 496-97.

⁶⁴⁶ *See id.* at 501.

means);⁶⁴⁷ and Article XXIX (imposing on a basin State the duty to exchange information related to the waters of a drainage basin within its territory and to give notice to co-basin States of any proposed man-made alterations to the “regime of the basin” in a legally significant manner).⁶⁴⁸

In summary, the Helsinki Rules represent the modern view of international water law. It puts forth four principles that have been identified as constituting rules generally applicable to groundwater between States: the obligation not to cause appreciable harm; the duty to avoid groundwater pollution; the requirement of equitable and reasonable use; and the obligation to give prior notice and to negotiate in cases of alteration to the basin’s characteristics.⁶⁴⁹ Additionally, they consider the international water basin as the proper level at which to manage water.

2. *Hesitation and Partial Retreat: The ILC’s Draft Articles*

The International Law Commission is a United Nations body, composed of thirty-four experts serving in their personal capacity, dedicated to the codification of international law. In 1970, the General Assembly recommended that the ILC “take up the study of the law of the non-navigational uses of international watercourses with a view to its progressive development and codification.”⁶⁵⁰

Unlike the ILA, the ILC, as a UN body, had to deal with the political demands of UN member states in the formulation of its codifications, as it was ultimately to submit its product to the General Assembly. After distributing a questionnaire to member states, the ILC quickly discovered that there was substantial disagreement with the Helsinki Rules’ international water basin concept. It was not until 1980 that it was able to decide on a provisional working hypothesis of “international water-

⁶⁴⁷ See *id.* at 517.

⁶⁴⁸ *Helsinki Rules*, *supra* note 631, at 518-19.

⁶⁴⁹ See Julio Barberis, *The Development of International Law of Transboundary Groundwater*, 31 NAT. RES. J. 167 (1991).

⁶⁵⁰ *Report of the Commission to the General Assembly on the Work of its Thirty-Second Session*, 35 U.N. GAOR Supp. (No. 10), U.N. Doc. A/35/10, reprinted in 2 [1980] YEARBOOK OF THE INTERNATIONAL LAW COMMISSION pt. 2, at 104 (1980) [hereinafter 1980 ILC Report].

course system," the very subject of its analysis.⁶⁵¹ This definition mirrors in many respects the Helsinki Rules' definition of international water basin (while at the same time including language to reassure the upstream states),⁶⁵² and would include the Jordan River and Mountain Aquifer within its scope. In addition to these political problems, four personnel changes in the office of the Special Rapporteur caused considerable delay.

Finally, in 1994, the ILC submitted a complete set of articles and a declaration on transboundary confined groundwater to the General Assembly, with the recommendation that it or an international conference elaborate a convention on the basis of its draft.⁶⁵³ This draft contained a definition in Article 2 of international watercourse system: "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus." Thus, while the Jordan River would undoubtedly be included in this definition, the declaration on transboundary confined groundwater, emphasizing that aquifers unconnected to aboveground streams are not included in the definition of international watercourse system, suggests that the Mountain

⁶⁵¹ In essence, the upstream states, who wished to cede nothing to downstream states, opposed the idea of promulgating, and vice versa. See McCaffrey, *supra* note 630, at 151-53.

⁶⁵² The definition reads as follows:

A watercourse system is formed of hydrographic components such as rivers, lakes, canals, glaciers and groundwater constituting by virtue of their physical relationship a unitary whole; thus, any use affecting waters in one part of the system may affect waters in another part.

An "international watercourse system" is a watercourse system, components of which are situated in two or more States.

To the extent that parts of the waters in one State are not affected by or do not affect uses of waters in another State, they shall not be treated as being included in the international watercourse system. Thus, to the extent that the uses of the waters of the system have an effect on one another, to that extent the system is international, but only to that extent; accordingly, there is not an absolute, but a relative, international character of the watercourse.

1980 ILC Report, *supra* note 649, ¶ 90, at 108.

⁶⁵³ See Stephen C. McCaffrey, *The International Law Commission Adopts Draft Articles in International Watercourses*, 89 AM. J. INT'L L. 395 (1995); *Report of the International Law Commission on the Work of its Forty-Sixth Session*, U.N. GAOR, 49th Sess., Supp. No. 10, U.N. Doc. A/49/10, at 199 (1994) [hereinafter 1994 ILC Report].

Aquifer does not fall within the definition. However, when it sent its draft to the General Assembly, the ILC recommended that the same principles that apply to international watercourse systems also apply to confined groundwater.⁶⁵⁴

Another important feature of these draft articles is that the no-appreciable-harm principle, which in the previous 1991 draft of the articles was given primacy over the equitable-use principle, acquired a status of seeming parity with, if not inferiority to, the latter principle. Article 7 provides that States have a duty to exercise "due diligence to utilize an international watercourse in such a way as not to cause significant harm to other watercourse States."⁶⁵⁵ If despite this due diligence significant harm is caused, and if there is no agreement allowing for such harm, then consultations between the harm-causing and the harm-receiving party should ensue. These consultations should focus on the extent to which this harm is equitable and reasonable, and whether some other accommodation, including possible compensations, could be made.⁶⁵⁶ As discussed in the commentary, this article is designed to "avoid [] significant harm as much as possible while reaching an equitable result in each case."⁶⁵⁷ While giving privilege to the equitable use principle, Article 7 does not excuse a watercourse State whose equitable use causes harm to another watercourse State from the duty to compensate. At a minimum, they must consult ways to mitigate the harm.⁶⁵⁸

The factors relevant to the determination of fair and equitable use are put forth in Article 5. These factors, which in many ways are similar to the factors that the Helsinki Rules incorporate, are as follows:

- (a) geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
- (b) the social and economic needs of the watercourse States concerned;
- (c) the population dependent on the watercourse in each watercourse State;

⁶⁵⁴ See 1994 ILC Report, *supra* note 652, at 326.

⁶⁵⁵ *Id.* at 236.

⁶⁵⁶ See *id.* art. 7, at 236.

⁶⁵⁷ *Id.* cmt. 1.

⁶⁵⁸ See McCaffrey, *supra* note 652, at 400-01.

- (d) the effects of the use or uses of the watercourse in one watercourse State on other watercourse States;
- (e) existing and potential uses of the watercourse;
- (f) conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;
- (g) the availability of alternatives, of corresponding value, to a particular planned or existing use.⁶⁵⁹

These factors are not meant to be exclusive, and should be weighed in accordance with the details of a specific watercourse.⁶⁶⁰

Part II of the draft articles sets out the General Principles underlying the regime of international watercourses.⁶⁶¹ Among other things, it imposes an obligation to cooperate and to engage in a regular exchange of data and information.⁶⁶² Part III of the draft articles regulates the implementation by watercourse States of projects, which may lead to a "significant adverse effect" upon another State.⁶⁶³ Part IV, entitled "Protection, Preservation and Management" imposes, *inter alia*, an obligation to preserve and protect the ecosystems of international watercourses.⁶⁶⁴ Article 21 addresses the pollution of international watercourses and aims to prevent any "detrimental alteration in the composition or quality of the waters of an international watercourse, which results directly or indirectly from human conduct."⁶⁶⁵ Part V contains provisions related to emergency situations.⁶⁶⁶ Part VI contains Miscellaneous Provisions.⁶⁶⁷ These include Article 29, which reiterates that in armed conflicts international watercourses and related installations, facilities and other works "shall enjoy the protection accorded by the principles and rules of international law applicable in international and internal armed conflict . . ."⁶⁶⁸ Article 33 establishes a mechanism for the settlement of dis-

⁶⁵⁹ 1994 ILC Report, *supra* note 652, art. 6, at 231.

⁶⁶⁰ *See id.* art. 5, cmt. 9, at 235.

⁶⁶¹ *See id.* arts. 5-10, at 218-59.

⁶⁶² *See id.* art. 9, at 249.

⁶⁶³ *Id.* art. 12, at 260.

⁶⁶⁴ *See* 1994 ILC Report, *supra* note 652, at 280-309.

⁶⁶⁵ *Id.* art. 21(1), at 289.

⁶⁶⁶ *See id.* arts. 27-28, at 309-15.

⁶⁶⁷ *See id.* arts. 29-33, at 315-26.

⁶⁶⁸ *Id.* art. 29, at 315.

putes and calls for the creation of a fact-finding commission which will submit its report to the disputing states.⁶⁶⁹ If this report does not lead to a negotiated settlement, arbitration or judicial settlement may ensue if the parties so agree.⁶⁷⁰

As already discussed, the ILC report represents in many ways a reaffirmation (albeit with much delay) of many of the principles set forth in the Helsinki Rules. Its scope is narrower than that of the Rules (as evidenced by the relatively restrictive definition of international watercourse), and in many areas it recognizes the national interests of the General Assembly members that must vote on the draft articles.⁶⁷¹ However, it is this conservatism which emphasizes the importance of the principles that the draft articles *do* express. Indeed, the Chairman of the Sixth (Legal) Committee of the General Assembly recommended that the General Assembly call for comments on the draft articles from U.N. member states in preparation for a Working Group to meet in October 1996 in order to elaborate a framework convention on the law of non-navigational uses of international watercourses on the basis of the ILC's draft articles.⁶⁷²

C. *Application of International Water Law Principles to Shared Palestinian-Israeli Water Resources*

In the context of the Palestinian-Israeli water dispute, the law of non-navigational uses of international watercourses is of primary importance in the determination of the amount of water to which each side is entitled. This law specifies that equitable apportionment, and not the principle of no-appreciable harm, should govern the partition of shared waters.⁶⁷³ In addi-

⁶⁶⁹ See 1994 ILC Report, *supra* note 652, art. 33, at 322.

⁶⁷⁰ See *id.* art. 33(c), at 323.

⁶⁷¹ See, e.g., 1994 ILC Report, *supra* note 652, art. 31, at 318 (duty to exchange information does not cover information vital to national defense or security).

⁶⁷² See *Report of the International Law Commission on the Work of its Forty-Sixth Session: Revised Draft Resolution Proposed by the Chairman*, U.N. GAOR, 6th Comm., 49th Sess., Agenda Item 137, U.N. Doc. A/C.6/49/L.27/Rev.1.

⁶⁷³ According to the ILC draft articles, a *reasonable* new use may be legitimate even though it causes appreciable harm. In such a case, however, the new user may be required to mitigate some of the harm that results. See 1994 ILC Report, *supra* note 652, art. 7, at 236. See also Benvenisti & Gvirtzman, *supra* note 6, at 546-47 (presaging ILC's rejection of no appreciable harm rule as principal norm of water apportionment).

tion, this law prescribes other aspects of this relationship, such as the duty to negotiate, to exchange information, and to notify other watercourse states of planned significant uses of the watercourse.

Since the division of the Jordan River is governed by custom, the application of the factor analysis approach will be restricted to the Mountain Aquifer.

1. *Quantitative Division of the Mountain Aquifer*

In both the Helsinki Rules and ILC draft articles scheme, the quantitative division of waters under the equitable use principle is determined by a factor analysis test. Parties must apportion water in light of all the relevant factors, especially, but not exclusively, those listed in each of these two documents. In particular, due to the generality of the scope of the codifications, the factors have no priority amongst themselves *a priori*; rather, their relative importance must be determined in the context of the specific situation.⁶⁷⁴ As between prior uses and new uses, the ILC draft articles list both as factors to consider in determining equitable allocations⁶⁷⁵ “[t]o emphasize that neither is given priority, while recognizing that one or both factors may be relevant in a given case.”⁶⁷⁶ Similarly, the Helsinki Rules also list historic use as one of the factors determining equitable use, and states that any existing reasonable use may continue until “[t]he factors justifying its continuance are outweighed by other factors leading to the conclusion that it be modified or terminated”⁶⁷⁷ As between utter respect for prior use, and the priority to new, more efficient enterprises, the solution the Rules propose is to find a middle ground. However, such new use may have to compensate the old, displaced use.⁶⁷⁸

⁶⁷⁴ See 1994 ILC Report, *supra* note 652, art. 6, cmt. 9, at 235 (“[t]he weight to be accorded to individual factors, as well as their very relevance, will vary with the circumstances”); *Helsinki Rules*, *supra* note 631, art. 5(3), at 488 (“[t]he weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors”); *id.* art. 5, cmt., at 489 (“[n]o factor has a fixed weight”).

⁶⁷⁵ See 1994 ILC Report, *supra* note 652, art. 6, at 231.

⁶⁷⁶ *Id.* art. 6, cmt. 4, at 233.

⁶⁷⁷ *Helsinki Rules*, *supra* note 631, art. 8, at 493.

⁶⁷⁸ See *id.* arts. 5, 8 & cmt., at 488, 493-94 (“[a] modification or termination, to be consistent with equitable utilization, may, in a particular case, require compensation to the user.”). *Id.* at 494.

According to one summary, “[e]quitable apportionment calls for a balancing of the needs of the communities that share the common resource . . .” by finding “[a] proper balance between the protection of existing uses and the initiation of new uses.”⁶⁷⁹

This analysis does not produce any definite numbers on the quantity of water given to each side. This is true of almost all the discussion in the literature, which limits itself to a discussion of the factors and does not propose results.⁶⁸⁰ This is partly a function of the structure of the factor-analysis system, which serves to produce a set of factors which are considered relevant to a partition but at the same time refuses to give weight to the different factors.⁶⁸¹ Nevertheless, one observer concludes that, under a factor analysis, “Palestinians would be entitled to a much larger share than Israel, and certainly much larger than their presently imposed share.”⁶⁸²

a. Natural Attributes of the Water Sources

As part of the analysis of the application of the Helsinki Rules to Palestinian and Israeli waters, the Mountain Aquifer’s waters were divided between Palestine and Israel on the basis of physical characteristics alone.⁶⁸³ After rapidly dismissing the legitimacy and wisdom of dividing the waters on this basis, and especially on the basis of the relative sizes of the feeding

⁶⁷⁹ Benvenisti & Gvirtzman, *supra* note 6, at 546. In analyzing the equitable allocation principle, the authors remark that two basic principles emerge from the commentary surrounding it. “The first . . . is that in order to determine the equitable apportionment of the water of a basin, human conditions, that is, the actual needs of the communities that depend on the water, take precedence over the analysis of the natural properties of the basin. The second proposition is that among the human conditions, priority is given to past and existing uses, at the expense of potential uses.” *Id.* at 547-48. The author does not agree with this interpretation of the equitable use principle. *See supra* Part VI.B.2. Benvenisti and Gvirtzman are not the only Israelis who assert this preference for existing uses. One Palestinian places this insistence, which is plainly contradicted by the text of the Helsinki Rules and the ILC draft articles, within the context of Israel’s longstanding insistence on the presentation of *faits accomplis*. *See Elmusa, supra* note 4, at 10-11.

⁶⁸⁰ *But see* James Moore, *Water-Sharing Regimes in Israel and the Occupied Territories: A Technical Analysis* (Canadian Department of National Defense, Ottawa 1992).

⁶⁸¹ Elmusa goes further and specifically rejects the specification of quantities to be allocated to both sides because of the lack of shared data. *See ELMUSA, supra* note 4, at 12.

⁶⁸² *Id.*

⁶⁸³ *See* Benvenisti & Gvirtzman, *supra* note 6, at 549-50.

areas,⁶⁸⁴ the results of this type of analysis were provided for the division of the Mountain Aquifer.⁶⁸⁵ The first method was based on the combined relative sizes of the feeding and storage areas that lay within each country's territory (the feeding + storage method).⁶⁸⁶ The second was based on the relative sizes of the storage volume under each country's territory (the volume method).⁶⁸⁷ Thus the depth of each country's aquifer played a role in determining its portion. The third method, introduced and implemented on the basis of data provided by Benvenisti and Gvirtzman, is on the basis of only the feeding area.⁶⁸⁸

TABLE 9. APPORTIONMENT BASED ON
PHYSICAL CHARACTERISTICS⁶⁸⁹

	FEEDING + STORAGE AREA METHOD	VOLUME METHOD	FEEDING AREA
Palestine	345 mcm/yr	290 mcm/yr	510 mcm/yr
Israel	255 mcm/yr	310 mcm/yr	90 mcm/yr

Under any of these three methods, proposed Palestinian use far surpasses present use.

b. Social and Economic Needs

Israel's population is much larger than Palestine's. Israel's five million residents require considerably more water than do Palestine's two million residents. In terms of agricultural consumption, Israel has about ten times as much irrigated agricultural lands as do Palestinians.⁶⁹⁰ However, it is not clear how important this need is when compared to Palestinians' need for their own agricultural development. The Palestinian and Is-

⁶⁸⁴ See *id.* at 556-57.

⁶⁸⁵ See *id.*

⁶⁸⁶ See *id.* at 557.

⁶⁸⁷ See *id.*

⁶⁸⁸ See Benvenisti & Gvirtzman, *supra* note 6, at 557.

⁶⁸⁹ The figures in Table 9 are based on data from Benvenisti & Gvirtzman, *id.* at 556-57. In particular, the author used the Benvenisti and Gvirtzman assumption of an annual useable recharge for the Mountain Aquifer of 600 mcm/yr. See *id.* at 552.

⁶⁹⁰ See ELMUSA, *supra* note 4, at 9.

raeli economies are at different levels of development. Currently, the Palestinian economy is much more dependent on its agricultural sector, which accounts for approximately 25% of the GDP of the West Bank and a little under 20% of the GDP of the Gaza Strip, as opposed to less than 5% in Israel.⁶⁹¹ This is despite the fact that the Israeli agricultural sector's consumption of water is about seven and one-half times that of the Palestinian sector, and despite the fact that Israel irrigates almost all of its irrigable land—compared to only about 20-30% percent of the West Bank and 55% of Gaza.⁶⁹² Since Israel has largely passed the stage of its economic development where intensive water usage is required, accommodations should be made to allow the Palestinian economy to develop through a stage where water needs are high.⁶⁹³ Indeed, the Helsinki Rules' illustrative example of a country whose existing use is overridden by another's newer, more reasonable use, features a state whose relatively advanced economy lessened its need for continued exploitation of an irrigated agricultural installation, and compares such a state with a newer state's need for hydroelectric power from the same source.⁶⁹⁴

Alternatively, there is a basic needs approach.⁶⁹⁵ The basic needs approach specifies a minimum per capita amount for domestic and agricultural needs, and calculates a minimum national amount on the basis of population projections.⁶⁹⁶ As implemented, this method awards Palestinians approximately 74% of the water resources they share with Israel.⁶⁹⁷ This is because Israel has greater endogenous resources (notably, the Coastal Aquifer) with which it may satisfy its minimum basic

⁶⁹¹ See *id.* at 10; *supra* Part V.C.3.

⁶⁹² See Elmusa, *supra* note 502, at 226-30, tbls. 2-3.

⁶⁹³ See ELMUSA, *supra* note 4, at 11. This is especially true if one considers the present configuration of the Palestinian economy. As demonstrated by different scholars of the West Bank Data Base Project, Israel has since directed its economic policies to create a situation of incorporation into the Israeli economy, but on a lesser footing (i.e., the provision of cheap labor and an export market). See MERON BENVENISTI, *THE WEST BANK DATA PROJECT: A SURVEY OF ISRAEL'S POLICIES* (1984); ROY, *supra* note 19.

⁶⁹⁴ See *Helsinki Rules*, *supra* note 631, art. 5, cmt., at 488-89.

⁶⁹⁵ See Elmusa, *supra* note 502, at 236-37.

⁶⁹⁶ See *id.*

⁶⁹⁷ See *id.*

water needs, forcing Palestinians to resort to a greater share of the shared water.⁶⁹⁸

It is argued that any equitable apportionment should address domestic needs first.⁶⁹⁹ Agricultural needs are of second priority. An assessment of needs for this sector should involve not only the aggregate amount of arable land, but also population growth, use of agricultural technology, efficiency of irrigation, constraints on marketing, and others. Given that Palestinian per capita water consumption is one-third that of Israel's, it is suggested that equitable allocation for domestic consumption would suggest a greater allocation to Palestinians.⁷⁰⁰

c. Availability of Alternate Resources

Israel subsidizes water for agriculture, and its use of water is excessive and inefficient. The Israeli State Comptroller, in a review of Israel's water sector, complained that this subsidization leads to highly inefficient cropping patterns which in effect cause Israel to pay Europeans and other consumers of its agricultural production to consume local water (exported in the form of oranges and other water-intensive crops).⁷⁰¹ Palestinian farmers, on the other hand, pay the market price for water (if not more) and otherwise engage in agriculture that is economically viable. The normalization of water prices to Israeli agriculture would go a long way to diminishing Israel's outsized demands on the region's shared resources,⁷⁰² and would thus give rise to a significant new source of water. Palestinians can

⁶⁹⁸ See *id.*

⁶⁹⁹ See Benvenisti & Gvirtzman, *supra* note 6, at 561-62.

⁷⁰⁰ See *id.*

⁷⁰¹ In other words, water subsidies allow Israeli farmers to sell their produce on foreign markets at less than its economic cost. Subsidies are passed from the taxpayer to the government to the agriculturalist, and then to the final consumer. In the final analysis, relatively poor Israel is helping relatively affluent Europeans pay for their consumption of the region's scarce water.

⁷⁰² According to Jehoshua Schwarz of Tahal Consulting Engineers, fully 25% of high-yield and 61% of low-yield farms use water inefficiently (i.e., the productive value per unit of water used is less than the cost of the provision of that water). Even with water subsidies, 8% of high-yield and 42% of low-yield farms use water inefficiently, though they are still able to operate thanks to other subsidies accruing to the agricultural sector. The expert concludes that these figures "raise questions about the future policy of irrigation water supply." Schwarz, *supra* note 18, at 131.

undertake many measures to save water or to consume it more efficiently.⁷⁰³ Again, since these savings would be out of a small global consumption level, it is unlikely that they can undertake the same absolute level of savings as can the Israeli agricultural sector.

Furthermore, as compared to the Palestinians, Israel contains more readily useable endogenous sources with which to supply its own needs. For example, Israel has sole access to the Coastal Aquifer, whose output roughly is a little less than that of the Mountain Aquifer (around 400 mcm/yr).⁷⁰⁴ In addition, because of its dominant military power and upstream position, Israel captures a disproportionate share of the Jordan River. This, in and of itself, argues for an increased Palestinian share of other shared resources in order to make up for the shortfall in access to Jordan River water. By comparison, Palestinian endogenous resources are relatively modest: the Eastern Basin of the Mountain Aquifer (providing 100 mcm/yr), the Eastern Wadis of the West Bank, providing (30-40 mcm/yr), and the Gaza Aquifer (50-70 mcm/yr).⁷⁰⁵

Another possibility for obtaining alternative resources is desalination or the use of transborder pipelines to transfer water from states richer in water to their relatively dry neighbors.⁷⁰⁶ In both of these areas, Israel can more easily take advantage of these solutions.⁷⁰⁷ Israel exports desalination technology. Its relatively rich economy⁷⁰⁸ and long coastline make this option far more attractive to the Israelis.⁷⁰⁹ In contrast, the Palestinian economy is relatively low-tech and improv-

⁷⁰³ For a listing of possible projects which could bring water savings to the Palestinians, see POLICY RESEARCH, INC., *supra* note 3, at 19-25.

⁷⁰⁴ See Elmusa, *supra* note 502, at 226, tbl. 1.

⁷⁰⁵ See *id.*

⁷⁰⁶ See *id.* at 237-38.

⁷⁰⁷ See *id.*

⁷⁰⁸ The Israeli economy is three to four times as large per capita, and twelve times in absolute terms, than the Palestinian economy.

⁷⁰⁹ An estimate by a study group at the Jaffe Center for Strategic Studies at Tel Aviv concluded that replacing 100-200 mcm/yr of available water with desalinated water would cost Israel \$30-90 million. See Elmusa, *supra* note 502, at 240 (quoting JAFFEE CENTER FOR STRATEGIS STUDIES, THE WEST BANK AND GAZA: ISRAEL'S OPTIONS FOR PEACE 219B20 (Jerusalem Post 1989)). This translates into a cost that is around \$0.50/m³. Currently, Palestinian municipalities paid the Civilian Administration \$0.60/m³. See CENTER FOR ENGINEERING AND PLANNING, *supra* note 335, at 30.

erished, and its access to the sea is limited to Gaza's 40 km coastline. Israel also has far greater access to brackish water, which can be mixed with fresh water for use in agricultural or municipal uses.⁷¹⁰ One example is an extremely large brackish water aquifer the Israelis have found in the Sinai.⁷¹¹ Similarly, many plans have arisen to employ pipelines to bring water from other countries in the region.⁷¹² Many states have resisted this idea because it puts another nation's hand on the tap for a significant source of domestic water consumption. For this proposal to be viable, the recipient state needs to have significant military or other power with which to retaliate against any actual or threatened disruption of water flow. Naturally, this is more characteristic of Israel than of Palestine.

Another potential approach for solving the problem faced by Palestinians and Israelis is to increase the total amount of water available to these two countries by increasing their share of the waters flowing in the Jordan River system.⁷¹³ Of the five co-riparians,⁷¹⁴ Israel, Palestine, and Jordan are the most water-impooverished, and thereby should get a larger portion of these waters, especially given the availability of alternative water resources for Syria and Lebanon, the relatively water-rich co-riparians.⁷¹⁵ The recent Jordan-Israeli peace agreement seems to have put limitations on the amount of water that is available for Palestinians and imposed an added set of con-

⁷¹⁰ See Elmusa, *supra* note 502, at 238-39.

⁷¹¹ Elmusa reports that:

The Negev . . . sits on a tremendous aquifer, which, according to Israeli scientists, could satisfy the needs of that region for a hundred years, and could even be used to irrigate crops in the coastal area. The water is brackish (or somewhat saline) to saline, but it can be desalinated at prices competitive with current costs.

ELMUSA, *supra* note 4, at 12.

Palestinians could offer far less in the way of brackish water. See *id.* For a discussion of various desalination and wastewater reuse options, see Keenan, *supra* note 463, at 37, 42-47.

⁷¹² These include the proposed Peace Pipeline from Turkey and a pipeline from the Nile River in Egypt.

⁷¹³ For a description of the physical characteristics of the Jordan River system, see *supra* Part II.B.

⁷¹⁴ Lebanon, Syria, Jordan, Israel and Palestine.

⁷¹⁵ See Benvenisti & Gvirtzman, *supra* note 6, at 563.

straints on what should be a comprehensive and optimal regional division of shared water resources.⁷¹⁶

Other alternative resources include making more efficient use of the existing natural resources. Such measures could include better maintenance of the aquifers and headwaters that supply much of the region's water.⁷¹⁷ An ability to tap such resources would depend to a large degree on the finding of a peaceful settlement of the Israeli-Palestinian conflict. Not only would a regional settlement allow the creation of international water reclamation/conservation projects, but if Palestinians were given a larger share of the region's resources, they would have an added incentive to conserve the region's natural resources.⁷¹⁸

d. Historical Use and Avoidance of Appreciable Harm

As can be seen from the tables in Part II detailing the use of different water sources, Israel has long made disproportionate use of the Mountain Aquifer and Jordan River water. It has erected a significant agricultural sector (in terms of water use) on the basis of the superexploitation of regional water. This support of the agricultural sector was consonant not only with Israeli national defense policies, but also with the Zionist ideological emphasis on work with the land.⁷¹⁹ Israel has long made extensive use of the Western Aquifer and the Northeastern Aquifer through wells located on its side of the Green Line. Also, its National Water Carrier carried significant amounts of water from the Upper Jordan River and transported much of it to agricultural installations in the Naqab desert.⁷²⁰ In contrast, the Palestinian economy in 1967 was backwards and underdeveloped, and did not make extensive use of water.⁷²¹

Furthermore, the ability of Palestinians to establish uses of water resources they shared was severely limited by Israeli military occupation. Jordan's Natural Resources Regulation Law of 1966, and Order No. 88 issued thereunder, created a national

⁷¹⁶ See *supra* Part II.B. & note 151.

⁷¹⁷ See *ELMUSA, supra* note 4, at 12-13.

⁷¹⁸ See *id.*

⁷¹⁹ See *supra* Part III.D.

⁷²⁰ See *id.*

⁷²¹ See *supra* Part III.C.

authority for the development of Jordanian agriculture (which included West Bank agriculture) and groundwater resources, while at the same time imposed strict regulations on the extraction of groundwater. These indicate that West Bank agriculture, while targeted for economic development by the Jordanian state, was increasingly pushing up against limits on local water resources. Unfortunately, any attempts to increase their modest use of the Mountain Aquifer came to an abrupt halt when Palestinians lost sovereignty over their water resources at the time of the Israeli occupation.⁷²² Israel has used this power over Palestinian water to put ironclad constraints on any attempt to increase the use of water in the agricultural sector, for example, to increase the amount of irrigated farmlands. What Israeli policies have instead encouraged are macroeconomic trends or technological changes to limit Palestinian consumption of water. These include policies to harm the general economic viability of the Palestinian agricultural sector (such as by reducing export markets for its products) or to introduce water-saving irrigation techniques.

The use of water by Israeli settlements is by its very nature illegal. It would thus be illogical to allow the prior use of these waters by Jewish settlers to enjoy any sort of legitimacy or weight in the factor analysis scheme. This use potentially amounts to approximately 80 mcm/yr, a significant amount when compared to annual Palestinian consumption of around 220 mcm/yr.

2. *Allocation System Maintenance*

The variables, which underlie the allocation of water between any two co-riparians are subject to change. Long-term changes in population, the state of the agricultural sector, and the discovery of new methods of water creation (such as desalination or the mining of aquifers) will affect the factors relating to the determination of equitable apportionment and may lead to a change in the allocation of water. Short-term changes such as drought or variation in rainfall can affect not only the

⁷²² In the meantime, East Bankers have enjoyed the benefits of a government which, while poor and undemocratic, has at least some desire to serve the needs of its population. Jordanian per capita consumption of water is double that of the OPTs. See ELMUSA, *supra* note 4, at 9.

total amount of water to be allocated, but also the relative human needs of the co-riparians. In addition to a set of allocations which can serve as a guide to negotiations, co-riparians need a set of apportionment guidelines or an algorithm which is flexible enough to adapt to changes in the variables which effect the factor-based equitable use analysis.⁷²³

The dynamic allocation algorithm cannot be self-executing; it requires human agents to drive it. The creation of a joint committee to manage the joint water resources is critical to the salutary long-term management of the shared waterbasins. The duties of this joint committee would include data exchange, the regulation of the location of wells, the monitoring of water quantities pumped, the prevention of pollutants, and others.⁷²⁴

3. *The Duty to Cooperate*

Both the ILC and the ILA include, as a principle of international water law, the duty to cooperate in the resolution of water disputes. This reflects a customary norm in international law that requires peaceful resolution of disputes.

Unfortunately, peace has not characterized prior attempts to solve the question of the partition and use of the Jordan River and Mountain Aquifer. Rather, it has been marked by intense hostility and armed conflict. Due to the generalized state of the war that existed at that time, the round of negotiations that ended in the formulation of the Johnston Plan for the Jordan River occurred without face-to-face contact between Israel and the Arab states. That round of negotiations collapsed with the eruption of the 1956 Arab-Israeli war. Similarly, Syrian and Jordanian attempts to develop the Yarmouk River in the 1960's led to Israeli aggression and other tensions which ultimately resulted in the 1967 War. That war gave

⁷²³ See 1994 ILC Report, *supra* note 652, art. 6, cmt. 2, at 232 (watercourse states must take into account factors relevant to an equitable partition "in an ongoing manner"). See also Benvenisti & Gvirtzman, *supra* note 6, at 565.

⁷²⁴ See Benvenisti & Gvirtzman, *supra* note 6, at 565-66. Precedents in this area include the United States-Mexican International Boundary and Water Commission, established in 1973, which deals with the management of transboundary aquifers between the two North American states. Another North American model is the US-Canada International Joint Commission (IJC) which was established in 1977. France and Switzerland have managed the Lake Geneva Aquifer through a joint commission since 1978. See *id.*

Israel a tremendous advantage in the control of regional resources since it resulted in Israel's occupation of most of the headwaters of the Jordan River and of the feeding areas and upstream pumps of the Mountain Aquifer.⁷²⁵

The political and diplomatic process that began with the Madrid Middle East Peace Conference in 1992 included within its scope an attempt to come to some settlement of regional water issues. This was first introduced by the initiation of a Multilateral Working Group on Water and the Environment. However, because of Israel's efforts to divide the Arab countries to prevent them from combining their bargaining power, discussion of this problem was moved to the bilateral talks. At the present time, however, no real progress has been made except for the Israel-Jordan treaty. The secret back-channel negotiations between Arafat and the Israeli leadership in Oslo signaled the end of the relevance of the Madrid bilateral talks between the Palestinians and Israelis. According to Palestinians who participated in these negotiations, the agreements that resulted were disastrous, and were merely a reinstatement of the occupation-era water situation, albeit with official Palestinian approval. Israelis were able to exploit their information monopoly on water issues, their generally overwhelming bargaining power, and Arafat's unwillingness to properly delegate negotiating authority to technically sophisticated experts to dictate terms to the Palestinians. Years of hard-fought bargaining by Palestinian professionals, who have dedicated their lives to research and advocacy on behalf of Palestinian water rights, were disregarded by Arafat in last-minute deals which were conducted hastily by a leader who was eager not to miss signing ceremonies on the White House lawn.

The current inequitable interim agreement, Israel's continued unwillingness to exchange information with Palestinians, and Israel's willingness to use its bargaining power to the fullest extent do not bode well for future compliance with the duty to cooperate. In all likelihood, cooperation will either be ignored or will be implemented in hollow form by Israeli dictation of terms to a Palestinian negotiating delegation too powerless to resist.

⁷²⁵ See *supra* Part II.B.

4. *The Duty to Exchange Information*

Both the ILC draft articles and the Helsinki Rules contain provisions on the regular exchange of water-related data.⁷²⁶ Article 9 of the ILC draft calls on watercourse states “on a regular basis [to] exchange readily available data and information on the condition of the watercourse, in particular that of a hydrological, meteorological, hydrogeological and ecological nature, as well as related forecasts.”⁷²⁷ Under the view of the ILC, this kind of exchange represents the minimum necessary for the equitable and reasonable utilization of a watercourse, which requires the consideration of all relevant factors.⁷²⁸

Unfortunately, Israel has created and enforced a virtual monopoly on the creation of raw data, on the raw data itself, and on their interpretation.⁷²⁹ Under the regime of Israeli military orders, even the conducting of tests on water-related data in the OPTs requires a permit from the military authorities. Thus, it is very difficult for Palestinians to know the kinds of data relevant to determine the Israeli and Palestinian reasonable and equitable use, and also to know such basic information as the total amount of water that is subject to dispute.

A long-term solution to the partition of shared Palestinian-Israeli water will require the creation of an administrative structure that can engage in regular data-collection and sharing, and that can use that data in periodic recalculations of the equitable apportionment of the Jordan River’s waters. Many international watercourses have such an international administrative structure to carry out these and other functions, which are related to the long-term management of the watercourse.⁷³⁰

⁷²⁶ See 1994 ILC Report, *supra* note 652, art. 9, at 249-50. See also, *Helsinki Rules*, *supra* note 631, art. 29.

⁷²⁷ 1994 ILC Report, *supra* note 652, art. 9(1), at 249.

⁷²⁸ See *id.* art. 9, cmt. 1, at 250.

⁷²⁹ See ELMUSA, *supra* note 4, at 2-3. “Independent Palestinian hydrologists, researchers and practitioners are routinely denied access to data, especially raw data that can be used for verification of Israel’s published material, on their own water resources. Israeli officials deny the existence of such a practice, but there is overwhelming evidence supporting the Palestinian claim.” *Id.* at 3. According to members of the Palestinian water negotiating team, Israeli secretiveness on the question of water data continued during the negotiations and in fact constituted a major source of bargaining power for them.

⁷³⁰ See Benvenisti & Gvirtzman, *supra* note 6, at 565-66.

VII. THE INTERIM AGREEMENT: ISRAELI CONTROL IN A NEW GUISE

The Gaza-Jericho Agreement⁷³¹ and the Declaration of Principles,⁷³² the two main Israeli-Palestinian accords preceding the Interim Agreement, both have provisions relating to joint water management and use, although the Interim Agreement supersedes them both.⁷³³

The water and sewage provisions of the Interim Agreement are located in Article 40 of Appendix I to the Protocol Concerning Civil Affairs (Annex III).⁷³⁴ This article contains language which leaves the lay reader with the impression that progress had been made in Palestinian access to and control over their water resources.⁷³⁵ In the first substantive provision of the article, "Israel recognizes the Palestinian water rights in the West Bank."⁷³⁶ In paragraph 3, "both sides agree to coordinate the management of water and sewage resources and systems in the West Bank during the interim period . . ."⁷³⁷ The Palestinians assume all powers and responsibilities in the sphere of water formerly held by the military government and the Civil Administration.⁷³⁸ Finally, and seeming most important, Israel recognizes future West Bank Palestinian water needs of 70-80 mcm/yr—a significant increase on occupation-era consumption levels of around 120 mcm/yr.⁷³⁹ The Palestinians and the Israelis also

⁷³¹ Agreement on the Gaza Strip and the Jericho Area, May 4, 1994, *reprinted in* ISRAEL/PALESTINE CENTER FOR RESEARCH AND INFORMATION 1 (Israeli-Palestinian Peace Documentation Series 1994) [hereinafter Gaza-Jericho Agreement].

⁷³² Declaration of Principles on Interim Self-Government Arrangements, Sept. 13, 1993, *reprinted in* ISRAEL/PALESTINE CENTER FOR RESEARCH AND INFORMATION, *supra* note 730.

⁷³³ The Gaza-Jericho Agreement, except for Article XX (Confidence-Building Measures), the Preparatory Transfer Agreement and the Further Transfer Protocol will be superseded by this Agreement. *See* Interim Agreement, *supra* note 1, pmbl. However, the Interim Agreement incorporates verbatim the Gaza-Jericho Agreement's provisions concerning water resources and water and sewage systems of the Gaza Strip. *See id.* Annex 3, app. 1, art. 40, ¶ 25.

⁷³⁴ *See id.* Annex 3, app. 1, art. 40.

⁷³⁵ *See id.*

⁷³⁶ *Id.* ¶ 1.

⁷³⁷ Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, ¶ 3.

⁷³⁸ *See id.* ¶ 4.

⁷³⁹ *See id.* ¶ 6.

agree to cooperate in many other areas in the preservation and development of the region's water resources.⁷⁴⁰

From the standpoint of international law and the background of Israeli control of water, however, the advances made in rectifying past injustices in the water field are marginal and inadequate. The Interim Agreement still allows, through the mechanism of the Joint Water Committee, for an Israeli veto on practically all developments affecting water and sewage resources in the West Bank, including over endogenous water basins which are properly subject to sole Palestinian control.⁷⁴¹ There is no provision for a Palestinian veto over Israeli actions concerning water on its side of the Green Line, even where these actions affect joint water resources.

While the agreement estimates a need for an additional 70-80 mcm/yr for Palestinian West Bank water needs,⁷⁴² the great majority of this water (58.4-68.4 mcm/yr) is to come from the Eastern basin.⁷⁴³ Israel's recognition of Palestine's rights to water is without legal significance, since these rights derive not from Israel but from international transboundary water law.⁷⁴⁴ Customary elements of this law recognize a state's general rights to water resources within its borders. It is incongruous that use of the endogenous Eastern basin is the subject of this quasi-international agreement; the decision of what to do with this body of water is Palestine's alone. The additional 11.6 mcm/yr Israel promised Palestine from shared water resources does little to rectify the sharp imbalances in their respective uses of transboundary watercourses.⁷⁴⁵

The Interim Agreement is also notable for what it excluded. No mention is made of Palestinian rights to the Jordan River. Palestine is a watercourse state of the Jordan River system, and as such is entitled to a share of its flow. Indeed, under the Johnston Plan, the West Bank was to receive a share of the Jordan River's water through the West Ghor Canal. Relatedly, the Interim Agreement protects water consumption by settlements,

⁷⁴⁰ See *id.* ¶ 20.

⁷⁴¹ See *id.* ¶¶ 11-15.

⁷⁴² See Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, ¶ 6.

⁷⁴³ See *id.* ¶ 7(b)(6).

⁷⁴⁴ See *id.* ¶ 1.

⁷⁴⁵ See *id.* ¶ 6-10.

the continuation of which constitutes violations of international law. Finally, the provisions make no mention of compensation for past Israeli confiscation of water. During the twenty-eight years between the Six-Day War and the Interim Agreement, Israel took billions of cubic meters of Palestinian water in violation of Palestinian rights to that water under international humanitarian law. A basic norm of international law states that where a state violates another's right, it has a duty to pay damages for that violation.

The Interim Agreement does very little to ameliorate the badly skewed distribution of water from resources shared by Palestinians and Israelis. Furthermore, by granting Israel continued authority to control developments in and exploit both shared and endogenous Palestinian water resources, it reinforces the indicia of Israeli sovereignty over the West Bank. By excluding mention of the Jordan River and of compensation for past illegal Israeli water consumption, the Interim Agreement comes dangerously close to abdicating a critical Palestinian natural resource and to denigrating Palestine's water rights and its right to compensation. Taken together, these shortcomings add weight to the arguments of the critics of the Oslo process who describe it as a formalization of Palestinian subordination to Israeli rule over the West Bank and Gaza Strip.

A. *Mechanisms of Israeli Control Over the Mountain and Gaza Aquifers*

The Interim Agreement tightly circumscribes Palestinian use of and control over its water resources.⁷⁴⁶ In the case of the Gaza Aquifer, the Interim Agreement continues the Gaza-Jericho Agreement's strict limitations on the quantity consumed from this source.⁷⁴⁷ As for the Mountain Aquifer, the Interim Agreement allows for greater Palestinian use of shared and endogenous water basins while establishing a new administrative structure, complete with enforcement mechanisms that grant Israel veto power over practically all Palestinian develop-

⁷⁴⁶ See *id.* art. 40, scheds. 10-11.

⁷⁴⁷ See Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, scheds. 10-11.

ment of the endogenous and shared basins within that aquifer.⁷⁴⁸

Perhaps due to the small quantities of water at stake and because of its poor quality, the provisions regulating Palestinian access to the Gaza Aquifer are the most permissive. The Agreement adopts verbatim the provisions of the Gaza-Jericho Agreement.⁷⁴⁹ While these provisions provide the new Palestinian Council with the power to operate, manage, and develop all water and sewage systems and resources in the Gaza Strip, they also impose three important limitations.⁷⁵⁰ The Council's operation, management, and development may not cause any harm to the water resources.⁷⁵¹ The scope of the Palestinian Council's authority in the Gaza Strip does not extend to settlements or to any military installation areas that may be located there.⁷⁵² Finally, the pumping from water sources within the settlements may continue at preexisting levels, and the Council may not diminish the consumption of water in these areas.⁷⁵³ The Gaza Aquifer section also provides for the establishment of a subcommittee to deal with issues of mutual interest, such as the exchange of data relevant to the management and operation of the water resources and systems, and the mutual prevention of harm to the aquifer.⁷⁵⁴ However, this committee does not have any power to limit or prevent any actions by either of the parties within their respective spheres of power.⁷⁵⁵

Because the Gaza Aquifer has already been pumped at a rate exceeding that of its replenishment, the prohibition on the harming of the aquifer, combined with the Council's inability to diminish the consumption of water by the settlements, keeps Palestinian use boxed within its inadequate, pre-Oslo levels. While the Council does have the ability to take steps to improve the quality of the aquifer, such as building sewage treatment plants that will prevent the seepage of untreated human waste

⁷⁴⁸ *See id.*

⁷⁴⁹ *See id.* art. 40, ¶ 25.

⁷⁵⁰ *See id.* art. 40, sched. 11.

⁷⁵¹ *See id.* ¶ 1.

⁷⁵² *See* Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, sched. 11, ¶ 2.

⁷⁵³ *See id.* ¶ 3.

⁷⁵⁴ *See id.* ¶ 8.

⁷⁵⁵ *See id.*

into the water aquifer or regulating the use of water in agriculture, it may do nothing to limit the highly disproportionate water consumption by settlers in Gaza. As an endogenous source, the Gaza Aquifer is properly controlled only by Palestinian authorities. The presence of Mekorot in the settlements and its ability to act there without any control or oversight by the Palestinian Council is in contradiction to this rule.

The provisions regulating control over the West Bank's water, introduced in the Interim Agreement, provide for more Israeli control than those regulating the use of the Gaza Aquifer.⁷⁵⁶ In contrast to the powers granted to the Council in the Gaza Strip, the Palestinian side must coordinate with the Israeli side in practically all aspects of the management of the natural and man-made water and sewage systems of the West Bank.⁷⁵⁷ A Joint Water Committee (JWC) is given the power "to deal with all water and sewage related issues in the West Bank."⁷⁵⁸ These include the coordinated management of water resources and of water and sewage systems, the exchange of water-related information, oversight of the joint supervision and enforcement mechanism, and others.⁷⁵⁹ The JWC's membership includes equal numbers of Palestinian and Israeli representatives, and shall operate by consensus in all matters.⁷⁶⁰ The powers of the Civil Administration, along with the management of water and sewage systems serving only Palestinians, are the only powers transferred wholesale to the Council.⁷⁶¹ Both sides commit to "[m]aintaining existing quantities of utilization from the resources . . . ,"⁷⁶² which protects the water consumption of the settlements and the disproportionate use of water by the Israelis living inside the Green Line.

Thus, with the exception of bill collection (the principle function of the Civil Administration during the occupation) and the management of local Palestinian water and sewage systems,⁷⁶³ Israel maintains, during the interim period, a veto

⁷⁵⁶ See *id.* art. 40.

⁷⁵⁷ See Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, ¶¶ 11-15.

⁷⁵⁸ *Id.* ¶ 12.

⁷⁵⁹ See *id.*

⁷⁶⁰ See *id.* ¶¶ 11-15.

⁷⁶¹ See *id.* ¶ 4; art. 40, sched. 8, ¶ 2(a).

⁷⁶² Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, ¶ 3(a).

⁷⁶³ See *id.* art. 40, sched. 8, ¶ 2.

power over all decisions of import in the use and development of both the shared (Western and Northeastern) and the endogenous (Eastern) basins of the Mountain Aquifer.⁷⁶⁴ The acts over which Israel maintains a veto include all licensing and drilling of new wells, increased extraction from any water source, and all development of water resources and systems.⁷⁶⁵ The JWC also ascertains compliance with the Interim Agreement and with its own decisions through the use of Joint Supervision and Enforcement Teams (JSETs).⁷⁶⁶ The Agreement requires these teams to “monitor, supervise and enforce the implementation”⁷⁶⁷ of the water-related provisions of the Interim Agreement and the decisions of the JWC, especially the extraction of water, the drilling of wells, the development of new projects for water supply, and the operation and maintenance of systems for collection, treatment, disposal and reuse of domestic and industrial sewage, of urban and agricultural runoff, and of urban and agricultural drainage systems.⁷⁶⁸ These teams are entitled to unrestricted and secure access to all water and sewage facilities and systems as well as limited enforcement powers.⁷⁶⁹

The Interim Agreement’s regulation of the shared Mountain Aquifer is a reflection of Palestine’s subordinated position within the terms of Oslo.⁷⁷⁰ Israel maintains authority and use over endogenous Palestinian sources such as the Eastern basin.⁷⁷¹ No provision is made for any form of Palestinian control or access to endogenous Israeli sources. As for the shared basins, the Palestinians and Israelis have joint authority over practically all aspects of their use and management, but only in Palestinian territory.⁷⁷² Despite the fact that Israel’s actions inside its territory can seriously affect the Western and Northeastern basins, the JWC and the JSETs have no authority inside the Green Line.⁷⁷³ In other words, whereas an Israeli member of the JWC may veto any proposed Palestinian project

⁷⁶⁴ See *id.*

⁷⁶⁵ See *id.* art. 40, ¶ 4. See also *id.* art. 40, sched. 8, ¶¶ 1(a)-(b).

⁷⁶⁶ Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, sched. 9, ¶ 5.

⁷⁶⁷ *Id.* ¶ 4.

⁷⁶⁸ See *id.*

⁷⁶⁹ See *id.*

⁷⁷⁰ See *id.* art. 40, ¶ 20.

⁷⁷¹ See Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, sched. 10.

⁷⁷² See *id.* art. 40.

⁷⁷³ See *id.*

in the Eastern basin, there is no veto or other formal mechanism for Palestinians to shape developments inside the Green Line. Instead, Palestinians may only rely on vague promises of cooperation in various areas of mutual concern as a channel through which to voice their concerns about Israeli actions within its borders.⁷⁷⁴

B. *Continued Imbalances in Distribution of Water from Shared Resources*

The Interim Agreement contains a set of provisions, which permit the Palestinians to increase their use of their water resources from various connection points and wells. The section "Additional Water" announces at the outset: "Both sides have agreed that the future needs of the Palestinians in the West Bank are estimated to be between 70-80 mcm/yr."⁷⁷⁵ This amount is indeed significant in comparison to current Palestinian consumption levels.

However, viewed another way, the addition of this amount to the Palestinian water quota does little to ameliorate the wide disparities in per capita water consumption between Palestinian consumers on the one hand and Israeli and settler consumers on the other. Furthermore, because the agreement specifies that most of this additional water will come from the Eastern Aquifer, an endogenous Palestinian water source, this new allotment does little to remedy the highly unbalanced use of water sources shared by Palestine and Israel.⁷⁷⁶

Of the 70-80 mcm/yr promised by the Interim Agreement, 6.6 mcm/yr is to come from existing shared water resources,⁷⁷⁷ 5 mcm/yr from a future Israeli desalinification project,⁷⁷⁸ and 58.4-68.4 mcm/yr from "the Eastern Aquifer and other agreed sources in the West Bank."⁷⁷⁹ The sides agreed to cooperate to increase Palestine's allocation by 28.6 mcm/yr during the interim period, while the Palestinian side obtained permission to increase its utilization of the Eastern Aquifer by 41.4-51.4 mcm/

⁷⁷⁴ See *id.* ¶ 20.

⁷⁷⁵ *Id.* ¶ 6.

⁷⁷⁶ See Interim Agreement, *supra* note 1, Annex 3, app. 1, art. 40, ¶ 7.

⁷⁷⁷ See *id.* ¶¶ 7(a)(1)-(5), 7(b)(1).

⁷⁷⁸ See *id.* ¶¶ 7(a)(6), 7(b)(3).

⁷⁷⁹ *Id.* ¶¶ 7(b)(2), 7(b)(6).

yr, presumably at a pace which it will decide.⁷⁸⁰ Given that the West Bank's water sources must be managed so as to safeguard existing utilization rates and to prevent the deterioration of water resources, these "other agreed sources" must be a reference to sources not hydrologically connected to the fully exploited Western and Northeastern basins. In other words, it is a reference to endogenous Palestinian water sources other than the Eastern basin, possibly from undammed wadis and rainfall capture projects.

At current levels, Palestinian per capita consumption amounts to approximately 25% of Israeli consumption levels (and even a smaller proportion of per capita settler consumption).⁷⁸¹ With the additional water promised by the Interim Agreement, the per capita Palestinian share will rise to 35% of the Israeli level.⁷⁸² The 6.6 mcm/yr transfer of water from shared resources from the Israeli to the Palestinian side is a small portion of the volume of shared water resources in the Mountain Aquifer and an even smaller portion of the global amount of water shared by Palestine and Israel, which amounts to over 1200 mcm/yr.⁷⁸³ Of the total amount of water shared, Israel consumes 1140 mcm/yr—over 90% of the total. Even with the transfers under the Interim Agreement, this share remains above 90%.

TABLE 10. PALESTINE'S SHARE OF COMMON MOUNTAIN AQUIFER BASINS UNDER THE INTERIM AGREEMENT⁷⁸⁴

BASIN	PALESTINIAN SHARE	ISRAELI SHARE	PALESTINIAN SHARE (%)
Western	22 mcm/yr	340 mcm/yr	6%
Northeastern	42 mcm/yr	103 mcm/yr	29%
Total	64 mcm/yr	443 mcm/yr	13%

⁷⁸⁰ See *id.* ¶¶ 7, 7(b)(6).

⁷⁸¹ See *supra* Part V.C.2, tbl. 4.

⁷⁸² See tbl. 10 in this Part.

⁷⁸³ This figure is comprised of 710 mcm/yr from the Jordan River, see *supra* Part II.B, tbl. 3; 145 mcm/yr from the Northeastern basin, and 362 mcm/yr from the Western basin. See Interim Agreement, *supra* note 1, Annex 3, app. 1, sched. 10.

⁷⁸⁴ See Interim Agreement, *supra* note 1, ann. 3, app. 1, sched. 10.

C. *Non-recognition of Palestine's Rights to the Waters of the Jordan River*

As already mentioned, there are no provisions in the Interim Agreement for Palestinian control over, or access to, the waters of the Jordan River. This omission is a significant loss for Palestine. As a watercourse state, Palestine is entitled to a share of the Jordan River. The Johnston Plan of the mid-1950s, the putative customary law of the basin, included within its development scheme a West Ghor Canal flowing through the West Bank, which would receive waters from the Jordan River.⁷⁸⁵ Due to the occupation of the West Bank in the 1967 war, this canal never materialized.⁷⁸⁶ Experts have argued that in the wake of the separation of ties between Jordan and the West Bank, Palestine ought to receive this share, though there are wide disparities in the estimates of the water destined for this project.⁷⁸⁷ However, it is clear that the water lost by the omission of the Jordan River is significant when compared to present Palestinian consumption amounting to 215-30 mcm/yr.

D. *Non-declaration of Illegality of Water Use by Jewish Settlements*

The Fourth Geneva Convention prohibits occupying powers from deporting or transferring parts of its own civilian population into the territory they occupy.⁷⁸⁸ Under this rule, the Israeli settlements in the West Bank (including East Jerusalem) and the Gaza Strip are illegal.⁷⁸⁹ Consequently, the use of water by these settlements, which amounts to approximately 80 mcm/yr, is also illegal. Despite this, the Interim Agreement is silent on the legality of the settlements, and defers resolution of the issue to the permanent status negotiations.⁷⁹⁰ Furthermore, the agreement guarantees the settlements the right to consume water at the same levels at which they consumed them at the signing of the agreement, whether these settlements are

⁷⁸⁵ See *supra* Part II.B.

⁷⁸⁶ See *id.*

⁷⁸⁷ See *id.*

⁷⁸⁸ See Fourth Geneva Convention, *supra* note 279, art. 49.

⁷⁸⁹ See INTERNATIONAL COMMITTEE OF THE RED CROSS, ANNUAL REPORT 1995, at 231 (1996).

⁷⁹⁰ See Interim Agreement, *supra* note 1, art. 27.

located in the West Bank⁷⁹¹ or the Gaza Strip.⁷⁹² By the date of this writing, and at the rate of consumption that existed at the time of signing of the Interim Agreement, over 100 mcm of water went illegally to settlements.

E. *Non-compensation for Israeli Confiscation of Palestinian Water*

Another critical area in which the Interim Agreements falls short of international legal standards is in the area of compensation by Israel to Palestine for past Israeli overconsumption. Throughout the years of occupation, Israel consumed water for illegal purposes (such as for consumption by settlements), consumed water from endogenous Palestinian sources from which it was not legally entitled to consume, and/or consumed water from shared sources to which it was entitled to consume, but at a rate that exceeded its rightful share. The Hague Regulations require that Palestinian water, as a form of private property, "be respected."⁷⁹³ Palestine is legally entitled to some form of compensation for this overconsumption, which may come in the form of a financial transfer from the Israel to Palestine.

The Interim Agreement contains no mention of compensation for past overconsumption. International transboundary water law considers states to have rights to consume water from watercourses on their territory.⁷⁹⁴ By contrast, in the absence of a specific agreement to the contrary, water basins located wholly within the boundaries of one state are subject to the sole control of that one state, since no other state has rights to it.⁷⁹⁵ This is a consequence of sovereignty and territorial integrity. While Israel occupied Palestine, it was never sovereign power over Palestine, and consequently did not have all the privileges and rights that sovereignty bestows, including the

⁷⁹¹ See *id.* Annex 3, app. 1, art. 40, ¶ 3(a) ("[b]oth sides agree to coordinate the management of water and sewage resources and systems in the West Bank during the interim period, in accordance with the [principle of] [m]aintaining existing quantities of utilization from these resources . . .").

⁷⁹² See *id.* sched. 11, ¶ 3 ("[a]ll pumping from water resources in the Settlements and the Military Installation Area shall be in accordance with existing quantities of drinking water and agricultural water.").

⁷⁹³ Hague Regulations, *supra* note 10, art. 43. See also *supra* Part IV.A.

⁷⁹⁴ See *supra* Part VI.

⁷⁹⁵ See *id.*

right to control and exploit these endogenous sources.⁷⁹⁶ On the basis of these principles, whether during the occupation or before, Palestine had sole right of access to endogenous sources such as the Gaza Aquifer and the Eastern basin of the Mountain Aquifer. Consequently, in the absence of express Palestinian approval to the contrary, all Israeli consumption from endogenous Palestinian sources, except consumption for purposes of military administration of the territories under occupation, was illegal.

In addition, Palestine had rights, in conjunction with its neighbors, to consume water from sources which it shares with its neighbors: the Jordan River and the Western and Northeastern basins of the Mountain Aquifer. During the occupation, Israel consumed from the shared sources as well; part of this consumption was legitimate under international law because Israel, as a watercourse state, had a right to a part of the water from these sources. The question of the size of this share is answered by two different legal regimes. In the case of the Jordan River, the mid-century Johnston Plan, which never resulted in a formal plan but nonetheless became the customary law of the basin, allocated shares to Israel as well as to the West Bank.⁷⁹⁷ The actual plan never became public. However, at least two independent estimates of the size of the share exist, the lower of the two being 70 mcm/yr.⁷⁹⁸ The Six Day War allowed Israel to capture this Palestinian share.⁷⁹⁹ It first physically blocked Palestinian access to the river's water by destroying pumps in the Jordan River Valley and declaring the valley a Closed Military Area.⁸⁰⁰ Israel was able to increase its consumption of the Jordan River system's waters so that its effective share exceeded that granted to it under the Johnston Plan by over 250 mcm/yr.⁸⁰¹ For these reasons, Israel must compensate the Palestinian side for at least 70 mcm/yr of water since 1967.

Before the conclusion of the Interim Agreement, no treaty specified the Palestinian and Israeli shares of the Western and Northeastern basins of the Mountain Aquifer. International

⁷⁹⁶ *See id.*

⁷⁹⁷ *See supra* Part II.B.

⁷⁹⁸ *See id.*

⁷⁹⁹ *See id.*

⁸⁰⁰ *See id.*

⁸⁰¹ *See id.* tbl. 3.

watercourse law required that watercourse states cooperate to employ their waters in an equitable and reasonable manner.⁸⁰² Applications of this principle to the Mountain Aquifer by Elmusa, Benvenisti and Gvirtzman suggest that Israel consumes far more than what the factor analysis of the Helsinki Rules and the 1994 ILC Report would propose as its rightful share.⁸⁰³ In their simplified estimates of the Palestinian and Israeli shares of the aquifer's waters on the basis of the feeding areas and storage volumes located in each state, the largest share suggested by Benvenisti and Gvirtzman was 310 mcm/yr.⁸⁰⁴ This amount is significantly less than the consumption levels promised Israel under the Interim Agreement.⁸⁰⁵

Conservative estimates show that Israel's debt to Palestine for its past overconsumption runs, at the very least, into the hundreds of millions of U.S. dollars, and is probably close to U.S. \$2 billion. This is a significant sum, given that 1996 Palestinian GDP was approximately U.S. \$3.2 billion.⁸⁰⁶ These calculations point to Israel as a source of financing for much-needed Palestinian infrastructure construction and economic development.

F. *Recommended Corrective Principles for the Permanent Status Negotiations*

Despite the severe shortcomings of the Interim Agreement in the area of water, in principle, it is not yet too late for the negotiators to fashion out of the permanent status negotiations an agreement which is more faithful to the standards of international law. The agreement itself makes clear that:

Nothing in this Agreement shall prejudice or preempt the outcome of the negotiations on the permanent status to be conducted pursuant to the DOP. Neither party shall be deemed, by virtue of having entered into this Agreement, to have renounced or waived any of its existing rights, claims or positions.⁸⁰⁷

⁸⁰² See *supra* Part VI.C.

⁸⁰³ See *id.*

⁸⁰⁴ See Benvenisti & Gvirtzman, *supra* note 6, at 556-57.

⁸⁰⁵ See *supra* Part VII.B, tbl. 10.

⁸⁰⁶ See MILAN ZAVADJIL ET AL., RECENT ECONOMIC DEVELOPMENTS, PROSPECTS, AND PROGRESS IN INSTITUTION BUILDING IN THE WEST BANK AND GAZA STRIP 5 (International Monetary Fund 1997).

⁸⁰⁷ Interim Agreement, *supra* note 1, art. 31, ¶ 6.

With this in mind, Palestinian and Israeli negotiators must follow certain guidelines when formulating the water-related negotiations in order not to repeat the gross shortcomings of the Interim Agreement:

- *Sole Palestinian control of endogenous water sources.* Bodies of water like the Gaza Aquifer and the Eastern basin, which are completely within Palestine's borders, are not properly the subject of Israeli-Palestinian negotiations and must be placed under the sole control of the Palestinian side.
- *True joint management of shared resources.* Where negotiations lead to the creation of structures like the JWC and the JSETs, they must have equal authority only over shared resources and they must have authority inside Israel as well as inside Palestine.
- *Equitable allocation of waters from shared resources.* The shares allocated to Palestine from the Northeastern and Western basins of the Mountain Aquifer are significantly less than what the factor analysis of international watercourse law would suggest by several orders of magnitude. This division must be consistent with the guidelines established in the 1994 ILC Report and must narrow or close the gap between the Israeli and Palestinian per capita consumption.
- *Palestine's rights to the Jordan River.* Israel must recognize and allow Palestine's use of its share of the Jordan River as foreseen by the Johnston Plan.
- *The illegality of water consumption by settlements.* This consumption must either cease or be compensated.
- *Palestine's right to compensation for past illegal consumption.* During the years of occupation, Israel illegally took hundreds of millions of cubic meters of Palestinian water. Israel owes Palestine compensation for this illegal use and must compensate Palestine as part of a permanent status accord.

VIII. CONCLUSION

When Israel occupied the OPTs in 1967, it consolidated its control over all water sources available to Palestinians. Driven by an ever-growing and water-intensive agricultural sector, Israel immediately imposed a military legal structure that led to significant and sustained interferences with Palestinian private property rights. The legal right to well and spring water that many Palestinians enjoyed under Jordanian rule was un-

dermined in violation of Israel's treaty obligations under international humanitarian law. Israel imposed strict limitations on Palestinians' ability to consume and regulate their water. It maintained its lopsided use of shared water resources, which is inequitable under evolving norms of international transboundary water law. Israel was also able to greatly increase its consumption of endogenous Palestinian water aquifers. In addition, Israel introduced settlements in the West Bank and Gaza, which illegally drew upon scarce local groundwater. Finally, Israeli overpumping has caused, or helped cause, deterioration in the quality of the Gaza Aquifer and is threatening the Mountain Aquifer with long-term damage. Israeli overpumping in the Upper Jordan Valley renders the downstream waters very saline and unusable for agriculture.

Israel, to a degree perhaps unmatched anywhere else in the world, has maintained firm public control over all aspects of domestic water exploration, production, distribution, recycling, and treatment. It has also completely excluded Palestinian actors or even market forces from any participation in this control. This control has also been accompanied with a systematic neglect of Palestinian water-related human rights. It is thus arguable that Israel has neglected its duties under the ICESCR to Palestinians to control their natural resources; to equal protection and equal enjoyment of the rights provided for in the ICESCR; to the right to earn a living in the agricultural sector, for which water is critical; to the right to an adequate standard of living, including water-related installations in housing units; and to the right to health, which the poor public health infrastructure in Palestine threatens.

This Article has sought to present a detailed analysis of Palestinian water rights under international law. The absence of a binding implementation mechanism for the bodies of international law here under consideration, suggests that law cannot be the entire answer. The current political settlement, despite all of its imperfections, must be the method, which determines the permanent status of Palestinian and Israeli water rights. However, as in other aspects of the extremely volatile Palestine-Israel dispute, a solution that is durable and long

lasting must be one that is just and equitable.⁸⁰⁸ Unfortunately, the water provisions of the Interim Agreement are far from fair. International law provides answers for the questions of what an equitable partition of regional waters should be. The participants in the current process of negotiations should heed these prescriptions, at least in their own self-interest, if not out of an intrinsic respect for the value and force of legal norms. An arrangement in which both parties to the conflict make use of water in a manner responsive to their respective needs, and to the general situation of water scarcity, is one that is most likely to serve the goals of peace and security in the region.

⁸⁰⁸ See Naff & Matson, *supra* note 70, at 5 (discussing that in the resolution of Middle East water conflicts, law cannot provide all the answers but is nonetheless “essential” to the search for legitimate answers).