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HOUSE OF WATER & ENVIRONMENT

House of Water & Environment

Understanding and Analyzing the Current Israeli Wastewater Practices for Transboundary Wastewater Management from Palestinian

Final Report

Austrian Development Cooperation

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ACRONYMS AND ABBREVIATIONS

BOD	Biological Oxygen Demand
CBA	Cost Benefit Analysis
COD	Chemical Oxygen Demand
DO	Dissolved Oxygen
HWE	House of Water and Environment
JWC	Joint Water Committee's
mcm	Million Cubic Meter
mg/l	Milligram per Liter
NIS	New Israeli Shekels
PA	Palestinian Authority
pH	Hydrogen Number
PT	Palestinian Territories
PWA	Palestinian Water Authority
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
WWTP	Wastewater Treatment plant

0 Abstract

Due to the poor sanitation system inside Palestine, which is resulted from the Israeli policies towards the Palestinian wastewater sector, the collected wastewater from the urban communities in the West Bank is discharged into different Wadis without treatment. The discharged wastewater is flowing towards Israel, and the Israeli side treats the discharged wastewater on the Palestinians expense (by deducting a part from Palestinian tax money) and gets benefit from the treated wastewater. . The Palestinian side always claims that the invoices which are sent by the Israelis have no reliable figures about wastewater discharge in both quantity and quality. The aim of this study is to examine the main transboundary wastewater streams in terms of their quantity and quality to support the decision makers, planners and designers in dealing with these streams. The study targeted six main transboundary streams that convey the discharged wastewater from the West Bank towards the Israeli WWTPs inside the Green Line which are: Wadi Al-Moqatta, Wadi Al-Zomar, Wadi Al-Zuhur (Wadi Salman), Wadi Suriq (Wadi Al-Jeeb), Wadi Beit Jala and Wadi Al-Samen. The total amount of discharged wastewater in the targeted streams is 11 mcm/ year. When the discharged wastewater reaches to Israel, it is not classified as highly strength wastewater due to the natural treatment. It is better for the Palestinians to treat the wastewater instead of discharging it into the wadis to be treated in Israel in order to get benefit from the reuse of treated wastewater in the agriculture. Treating and reusing of the wastewater from the targeted streams will increase the volume of agricultural water by 12%.

1 Introduction

1.1 Project Background

This report takes a good deal of literature from the work of HWE in wadi Nar and Bet Selem report in the West Bank. This is an official acknowledgment to their work in this regard.

Due to the poor sanitation system inside Palestine, which is resulted from the Israeli policies towards the Palestinian wastewater sector, the collected wastewater from the urban communities in the West Bank is discharged into different Wadis without treatment. The discharged wastewater is flowing towards Israel, and the Israeli side treats the discharged wastewater on the Palestinians expense (by deducting a part from Palestinian tax money) and gets benefit from the treated wastewater. The Israeli side deducts the money without referring to the Palestinian side and sends invoices of the deducted money. The Palestinian side always claims that the invoices which are sent by the Israelis have no reliable figures about wastewater discharge in both quantity and quality (ToR). The aim of this study is to examine the main transboundary wastewater streams in terms of their quantity and quality to support the decision makers, planners and designers in dealing with these streams.

This study is prepared by the House of Water and Environment (HWE) and funded by the Austrian Development Cooperation through the Palestinian Water Authority (PWA).

1.2 Wastewater Sector in Palestine:

The Palestinian areas are suffering from limited water resources and poor sanitation system. A general overview on the current situation of sanitation system in the West Bank shows that only 31% of the West Bank population is connected to sewer networks, while the remaining 69% relies on cesspits (World Bank, 2009). Approximately, 70% of households in the urban cities are connected to the sewerage networks, while in the rural and semi-urban communities, which form about 60% of the total population in the West Bank, the collection systems are rarely (FEW and HWE, 2007).

Very little progress in the construction of wastewater treatment plants has taken place on the ground. There are only five WWTPs exist in the West Bank, only one large scale WWTP in the Al-Bireh municipality is operating in a proper way and achieve efficient treatment, while the other WWTP, which are constructed in early 1970s in Jenin, Tulkarem, Ramallah and Habron, achieve low treatment efficiency due to the poor design, overloading and improper operation and maintenance of the WWTPs (FEW and HWE, 2007).

Raw or partially treated wastewater is discharged into the wadis in the open environment where it is used for irrigation purposes (FEW and HWE, 2007). In Ramallah, Hebron and Jenin, effluents of poor quality from the existing WWTPs are discharged into wadis. It is estimated that there are 25 MCM of untreated sewage discharged to the environment each year at over 350 locations in the West Bank (World Bank, 2009). The discharged wastewater composes the wastewater streams that are flowing through the Palestinian community towards the Israeli side. In the Israeli side, Israel built several WWTPs to treat the discharged wastewater and Israel gets benefit from the treated wastewater by using it in irrigation and groundwater recharge.

This poor sanitation system inside Palestine refers mainly to the Israeli neglecting for the wastewater sector inside the West Bank during the Israeli Civil Administration control, where Israel built only four WWTPs inside the West Bank in early 1970s, these WWTPs are in Jenin, Tulkarem, Ramallah and Habron (Beit Selem, 2009). After Oslo agreement, the wastewater sector does not developed due to the current Israeli Polices and obstacles towards implementing of wastewater projects inside the Palestinian areas. So a very little progress in the construction of wastewater treatment plants has taken place on the ground.

1.3 The Israeli Policy:

Implementing a wastewater project inside the Palestinian areas is a complicated process; this is for both the implementation of wastewater collection systems and WWTPs. Any wastewater project must pass through several steps prior to the implementation, these steps are:

- **Joint Water Committee (JWC):**

The JWC was established according to Oslo II Interim Agreement- Article 40, and it is responsible for the management of water and wastewater inside Waste Bank and Gaza Strip. Any wastewater project inside the Palestinian areas whether in area A, B or C must be submitted to the JWC in order to get an approval for project implementation from them. The Israeli side in the JWC puts many conditions for the approval and asks for many studies and always delays the approval.

- **Israeli Civil Administration :**

In general, it is preferable to locate WWTPs in remote area away from built-up area to avoid environmental and health problems; this will lead to construct the WWTPs in area C where most of the remote areas are within area C. If the project is within area C, the project must also be approved by the Israeli Civil Administration. Getting an approval from the Israeli Civil Administration is very complicated process and takes a long time, therefore, the Palestinian prefer to avoid implementing WWTPs within area C to facilitate getting approval from the Israeli side. Currently, the conducted feasibility studies for wastewater projects inside Palestine consider this constrain as an important element for the determination of the WWTPs locations, and this constrain is included within the selection criteria for the WWTPs locations.

- **Effluent Quality Standards:**

Based on the Memory of Understanding that was signed between the Israeli and Palestinian sides on December, 2003 that includes 'guidelines and technical criteria for sewerage projects', effluent quality should not exceed the values of BOD= 20 mg/L and TSS= 30 mg/L in the first phase. And if the end use of effluent is for irrigation in areas of high hydrological sensitivity or discharging into wadis or streams, the effluent quality limit should be changed in the second phase to be BOD= 10 mg/L and TSS= 10 mg/L. Commitment to these high standards increase the capital and operational costs of the WWTPs; this reflect on the ability of citizens to pay the operational cost of the treatment and threatening the projects sustainability.

- **Connection of the Israeli Colonies:**

Based on the Palestinian Authority vision towards the illegality of Israeli colonies inside the West Bank, the Palestinian Water Authority (PWA) policy refuses to connect any wastewater coming from the Israeli colonies with the Palestinian WWTPs. PWA consider the providing of services for the Israeli colonies by treating their wastewater in the Palestinian areas means that the Palestinian recognize the right of the Israeli colonies to be exist in the Palestinian lands.

When there is a nearby Israeli colony to the proposed Palestinian WWTP location, Israel through the JWC tries to force the Palestinian to serve the wastewater of the colony which delays getting the approval from them and increase the complexity of the approval process.

1.4 Transboundary Wastewater Streams between Israel and Palestine:

There are many wastewater streams that flow through both the Palestinian and Israeli sides. Some of the streams flow from the West Bank into Israel, eventually reaching the Mediterranean Sea. Others flow eastwards to the Jordan River and the Dead Sea.

1.4.1 Effect of the Transboundary Wastewater Streams on the Palestinians:

There are many negative impacts for the transboundary wastewater streams on the environment and the Palestinian communities. These streams pollute the groundwater which is the most important sources of water for the Palestinians. The problem is even worse when raw wastewater is disposed on the outcrops of Upper aquifer of the Lower aquifer directly. The effect of that is that raw wastewater mixes with the groundwater body with a considerable strength because it travels a short distance through cavities which results in a short travel time. The overall effect is direct pollution to groundwater resources.

The wastewater streams pass through the Palestinian communities beside the residential areas which cause a great suffering to the nearby people. The wastewater streams produce bad odors, increase the spreading of insects and of course have a negative impact on the people health in those communities (Photo 1.1).

Photo (1.1): Flow of Wadi Al-Zomar in Anabta village

1.4.2 Transboundary Wastewater Streams inside Israel:

Israel built several WWTPs inside the green line to treat the wastewater that is discharged from the Palestinian side. Israel gets benefits from the treated wastewater by reuse it in agricultural projects and groundwater recharge. The Israelis deduct both capital and operational costs of these WWTPs from the Palestinian tax money that are collected by the Israelis. According to Beit Selem report, (2009), the deducted money by the Israelis is more than 200 million NIS until 2009, these money include the construction and rehabilitation costs of the WWTPs inside Israel and operational costs of these treatment.

There is no clear agreement between the Israeli and Palestinian sides about the treatment of the discharge wastewater. The Israeli side sends invoices for the Palestinian Authority about the deducted money. By reviewing some of the Israeli invoices that were gained from PWA, it is found that:

- In general, Israel sends the invoices for the Palestinian Authority to inform them about the amount of deducted money for the treatment of the discharged wastewater from a certain Wadi at certain period without clear breakdown analysis for the deducted money. Some of the invoices include the quantities of the discharged wastewater without details about the cost and how the Israeli

calculate the deducted money, while other invoices include the costs without the quantities of the treated wastewater.

- In some cases and based on the Palestinians request, Israel sends breakdown analysis for the calculation of the deducted money. For the calculation of the discharged wastewater quantity, the Israelis used estimated values in some cases and measured values in other cases. For example, the amount of wastewater from Beit Jala Wadi was calculated on the measurements that carried out on Biet Jala pipe line in 2006 by the Israelis, while the amount of wastewater that is discharged form Birnabal, Al Jeeb and Al Ram into Wadi Surik was estimated. In this example, the Israeli estimation for the daily wastewater production is 100 liter/capita, which is unreasonable.
- The Palestinian side does not participate in the measurement or estimation of the quantity and quality of the wastewater production.
- There are different tariffs for the treatment of one cubic meter of wastewater inside Israel. In 2010, the following wastewater tariffs are used to calculate the deducted money (Including addition of 16% for the Added Value Tax):
    - Beit Jala and some of Bethlehem that discharge in Wadi Beit Jala: 1.88 NIS.
    - Birnabala, Al Jeeb and Al Ram that discharge in Wadi Surik: 2.12 NIS.
    - Jenin area that discharge in Wadi Al Muqatta: 0.97 NIS.

1.5 Project Objective:

The aim of the project is to examine the main transboundary wastewater streams in terms of their quantity and quality to support the decision makers, planners and designers in dealing with these streams.

The specific objectives of the project:

- Find the quantity of wastewater discharge in the main transboundary wastewater streams that flow from West Bank toward Israel.
- Determine the wastewater characteristics of the streams.

2 Transboundary Wastewater Streams

There are 15 streams that cross the Palestinian/Israeli Green Line within Israel and the West Bank and Gaza Strip. Twelve of these are major streams that flow to the West direction toward the Mediterranean Sea and the other three flow to the East toward the Dead Sea and the Jordan River. All of them originate in watersheds located in the Palestinian Authority areas and then flow towards Israel (GZA).

This study targeted the main transboundary streams that convey the discharged wastewater from the West Bank towards the Israeli WWTPs inside the Green Line. These streams or Wadies are Wadi Al-Moqatta, Wadi Al-Zomar, Wadi Al-Zuhur (Wadi Salman), Wadi Suriq (Wadi Al-Jeeb), Wadi Beit Jala and Wadi Al-Samen. Table 2-1includes the Israeli names and locations for the streams. Figure 2-1shows the location of the targeted streams.

Table 2-1: The Main Transboundary Streams between West Bank and Israel

No.	Stream (Wadi)	Israeli Name	District
1	Wadi Al-Moqatta	Kishon Stream	North Jenin
2	Wadi Al-Zomar	Alexander Stream	Nablus and Tulkarem
3	Wadi Al-Zuhur	Yarkon Stream	Qalqilia
4	Wadi Suriq	Modein/ Suriq Stream	West Ramallah
5	Wadi Beit Jala	Suriq Stream	Bethlehem
6	Wadi Al-Samen	Hebron or Be′er Sheva Stream	South Hebron

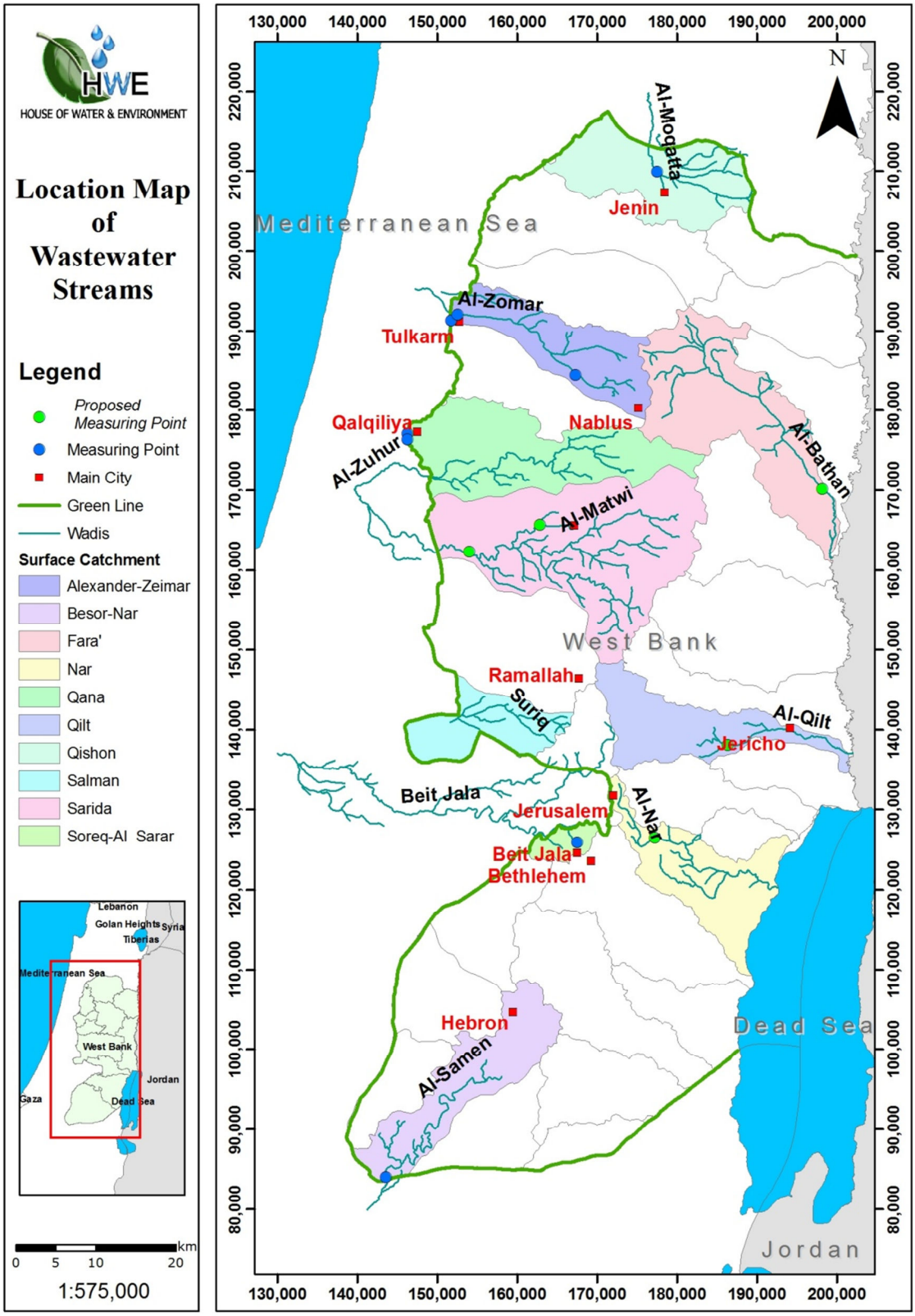

Figure 2-1: Location Map of the wastewater Streams

2.1 Description of the Targeted Streams and Measuring Points:

This section presents the sources of wastewater that are discharged into the targeted streams and the measuring points within the streams. Table 2-2 summarizes the location measuring points and source of wastewater at those points. Detailed maps for each Wadi showing the measuring points are provided in Annex (1).

1- Wadi Al-Moqatta:

Wastewater from Jenin City and Jenin Camp is collected and partially Treated in Jenin WWTP then flows by gravity through Wadi Al Moqatta towards Gilbo′ WWTP inside the Green Line. There was one measuring point within the Wadi which is after Jenin WWTP.

2- Wadi Al-Zomar:

Wastewater from West Nablus City is collected and discharged into Wadi Al-Zomar then flows by gravity towards the Green Line in Tulkerem area. The wastewater in the Wadi is collected from West Nablus, Ein Beit Alma Camp and some adjacent communities which are partially served by sewage network (Beit Iba, Deir Sharaf, Zawata, Anabta). Wastewater from Tulkarem city, Tulkarem camp and Nur Shams Camp is collected and partially treated in Tulkarem ponds then flows towards the Green Line. Wastewater from Nablus and Tulkarm areas is treating inside the Green Line in Yad Hanna WWTP.

There were three measuring point in Wadi Al-Zomar District; the first point was at the beginning of Wadi Al-Zomar near Beit Eba, the second point was at the end of Wadi Al-Zomar in the Palestinian areas at Tulkarem area and the third one was at the outlet of Tulkarem ponds.

3- Wadi Al-Zuhur:

Wastewater from Qalqilia City is collected and flows through conduits under the separation wall until reaching Wadi Al-Zuhur inside the Green Line. The collected wastewater is treated in Ner Elyaho WWTP inside the Green line.

There were two measuring points; the first point was in a manhole that collects the wastewater from the North and East parts of Qalqilia City (about 70% of the city), and the second one was in a manhole that collects the wastewater from the Western part of Qalqilia City.

4- Wadi Suriq

Wastewater from Ramallah City is collected and partially Treated in Ramallah WWTP then discharged into Wadi Suriq. Wastewater from Al-Jeeb, Bir Nabala and Al-Ram is also collected and discharged into Wadi Suriq. This discharged wastewater is flow by gravity towards the Green Line until reaching Suriq WWTP inside Israel. The measuring was at the outlet of Ramallah WWTP.

5- Wadi Beit Jala

Wastewater from Beit Jala and some parts of Bethlehem City is collected and discharged into Wadi Beit Jala then flows by gravity towards the Green Line until reaching Suriq WWTP inside Israel. The measuring point was at the last manhole at the outlet of the sewage network.

6- Wadi Al-Samen

Wastewater from Hebron City and Kiryat Arbaa Colony is collected and discharged into Wadi Al-Samen, the wastewater flows by gravity towards the Green Line until reaching Shoket WWTP inside Israel. The measuring point was at the end of Wadi Al-Samen in the Palestinian areas beside the Green Line.

Table 2-2: Measuring Points and Wastewater Flow in the Targeted Streams

No.	Stream (Wadi)	Measuring Points	Source of Wastewater Discharge	Coordinates of Measuring Points		Received Israeli WWTP
				X	Y	
1	Wadi Al-Moqatta	After Jenin WWTP through the Wadi	Jenin City & Jenin Camp	177,028	209,875	Gilbo′ WWTP
2	Wadi Al-Zomar	At the Beginning of Wadi Al-Zomar/ Beit Eba area	West Nablus	167,835	184,222	Yad Hanna WWTP
		At the End of Wadi Al-Zomar/Tulkarem	West Nablus, Ein Beit Alma Camp	153,015	192,298	

		area	and some adjacent communities			
		Outlet of Tulkarem Ponds	Tulkarem city, Tulkarem camp and Nur Shams Camp	151,832	191,326	
3	Wadi Al-Zuhur	Manhole	North and East part of Qalqilia City	146,361	177,257	Ner Elyaho WWTP
		Manhole	Western part of Qalqilia City	176,123	146,439	
4	Wadi Suriq	Outlet of Ramallah WWTP	Ramallah City	167,815	143,714	Suriq WWTP
5	Wadi Beit Jala	Outlet of the sewage network	Beit Jala and some parts of Bethlehem City	167,711	125,735	
6	Wadi Al-Samen	End of Wadi Al-Samen- beside the Green Line	Hebron City and Kiryat Arbaa Colony	143,779	084,214	Shoket WWTP

2.2 Other flowing wastewater streams and Proposed Measuring Points:

7- Wadi Al Matwi

Wastewater from Salfit City and Ariel Colony is collected and discharged into Wadi Al-Matwi which crossing Burqin Village towards the Green Line.

8- Wadi Al-Bathan (Wadi Al-Faraa)

Wastewater from East Nablus City is collected and discharged into Wadi Al-Bathan which mixes with flowing fresh water from Al-Bathan springs then flows by gravity towards the Jordan River.

9- Wadi Al-Qelt

Wadi Al-Qelt receives treated wastewater from Al-Bireh WWTP in addition to raw wastewater from east Ramallah city (Qalandia camp) and raw wastewater from Adam Colony. The discharged wastewater is flowing to the east towards the Jordan River.

10- Wadi Al-Nar

Wadi Al-Nar receives wastewater from East Jerusalem (inside the Green Line), east Bethlehem city and Biet Sahour.

Proposed Measuring Point:

Table 2-3 includes the location of the proposed measuring points in the Wadies and their coordinates. The points are shown in Figure 2-1.

Table 2-3: Proposed Measuring Points in Wastewater Streams

No.	Stream (Wadi)	Measuring Points	Coordinates of Measuring Points	
			X	Y
7	Wadi Al Matwi	At the Convergence between Salfit City wastewater and Ariel Colony wastewater	162829	165751
		At the end of Wadi	154014	162382
8	Wadi Al-Bathan	At the end of Wadi	198206	170174
9	Wadi Al-Qelt	Near Mukhmas area	186361	138155
10	Wadi Al-Nar	Near Al-Ubedeia area at the regional road	177226	126482

3 Methodology

Since the beginning of the project, HWE selected a professional team to fulfill and achieve the goals of the project. Plans and programs were putted and set to accomplish the works of the project within the required period of the project.

As mentioned before, HWE team selected 6 wadis for studying. Three of them are located in the North of the West Bank (Al- Zuhur, Al-Zomar, Al-Moqatta), two of them are located in the South of the West Bank (Al-Samen, Beit Jala) and one is in the middle of the West Bank (Wadi Suriq- Ramallah WWTP).

HWE team conducted 6 monthly field visits for each Wadi. The field visits were in different seasons, where the field visit months are June, July, October, November, January and February. The work included three main activities:

1. Flow measurements: this includes site measurements, time of measurements, equipment, methods for calculating the dimensions of the channel and Methods of calculating the amount of flow.
2. Sampling: this process includes sampling site, period, equipment used in measuring and the size of the sample
3. Monthly report

3.1 Flow Measurements

The cross section and the dimensions of each measuring point were selected according to the circumstances of the Wadi path which varied between circular, rectangular and pipe.

Table 3-1: Geometric Cross Sections for each Measuring Point at the Wadis

Name	Cross Section
Wadi Al Zuhur	Circular
Wadi Al–Moqatta	Circular
Wadi AL–Samen	Parabolic
Ramallah WWTP	Circular
Wadi Beit Jala	Circular
Wadi AL-Zomar- Nablus	Parabolic
Wadi AL-Zomar-Tulkarm	Parabolic
Tulkarem WWTP	Circular

Photo (3.1): Inlet point at Tulkarem WWTP

Photo (3.2): Flow Section in wadi Al–Zomar

The Calculation mechanism of the flow quantity was based on two dimensions which are:

1. The position of wadi path and its dimensions.
2. The Flow Meter equipment that used to measure the velocity of the wastewater flow during a specified period with specific dimensions.

Table 3-2: Sample Calculation of Wastewater Flow at Wadi Al-Zuhur (Wastewater from North and East Parts of Qalqilia City)

Equation	Values of Parameter	Results
$R = \frac{L^2}{8h} + \frac{h}{2}$	L= 33 cm h =10cm	R= 18.6 cm
$\emptyset = \left[2sin^{-1}(\frac{L}{2R})\right] \div 57.3$	L = 33 cm R = 18.6 cm	Ø=2.18
$A = \left[\frac{1}{2}R\emptyset^2\right] - \left[\frac{L}{2} \times (R-h)\right]$	Ø=2.18 R =18.6 cm	A =0.02359 m^2
$V = \frac{p}{t} =$	P =116 t =30 sec	V= 0.999 m/sec

$Q = V \times A$	$A=0.02359\ m^2$ $V=0.999\ m/s$	$Q =0.0235 m^3/sec$ $=1.41\ m^3/min$ $= 84.6\ m^3/hr$ $= 2030\ m^3/day$
Q : Discharge, V : Velocity, A: Area		

Photo (3.3): Measuring Flow of Wadi Al–Zomar

Photo (3.4): Preparing Flow Meter Device for Measuring

Regarding the time of site visits, site visits were conducted at the first of the month. The time period of measuring began at 8 am till 5 pm. Table 3.5 explains the site visit time schedule.

Table 3-3: Schedule of Monthly visits for flow measurement

Name	Field Visit Date	Field Visit Time
Wadi Al Zhour	Jun, 2010	08:00 – 11:30
Wadi AL Zomer	Jul, 2010	11:30 – 13:30
Wadi A – Moqata	Oct, 2010	13:30 – 15:30
Wadi AL –Samen	Nov, 2010	12:00 – 14:00
Ramallah WWTP	Jan, 2011	08:00 – 10:00
Wadi Beit Jala	Feb, 2011	10:00 – 12:00

3.2 Sampling

Sampling process was conducted two days per month during the period of the project. The average field visits number is six for each wadi. The northern wadis were visited in

one day and the southern and middle wadis were visited in another day. Table 3.6 shows the sampling process.

Table 3-4: Schedule of Monthly visits for Sampling

Name	First Day	Second Day	Region
Wadi Al Zhour			North West Bank
Wadi AL Zomer			North West Bank
Wadi A – Moqata			North West Bank
Wadi AL –Samen			South West Bank
Ramallah WWTP			South West Bank
Wadi Beit Jala			Middle West Bank

Regarding the size of the sample and its collecting measurements, 2 liters of Wastewater was taken and kept in a plastic bottle which printed on the bottle time of the site visit, Wadi's name and the sample symbol. The samples were collected with tool made of for the purpose of the project. It consists of a stick ends with a bowl (See Photo 3.7). The samples were delivered to Al-Najah University laboratory for testing.

Photo (3.5): The Sample Taken in the Field

Photo (3.6): The Device which are Used for Sampling

3.3 Monthly Report

By the end of the month, a monthly report was submitted to PWA and contains the following items:

1. Wadi Information.
2. Physical description of the wadi.
3. Water Quality.
4. Wadi Discharge.
5. Detailed Map for Each Wadi.
6. Flow Measurements sketch.
7. Illustration Drawing.
8. Flow Values Calculations.
9. Aerial photograph for the measuring area.
10. Pictures from the site.

4 Final Results of Quantity and Quality

4.1 Final Results of Flow Measurements

The total amount of discharged wastewater in the targeted streams is 11 mcm/ year. Table 4-1 and Table 4-2 include the final results of flow measurements, the detailed calculations are exist in Annex (2). The average daily flow is calculated based on one instantaneous measurement in the day.

Table 4-1: Final Results of Flow Measurements at the Targeted Wadies

	Q1 (m^3/day)	Q2 (m^3/day)	Q3 (m^3/day)	Q4 (m^3/day)	Q5 (m^3/day)	Q6 (m^3/day)	Q avg. (m^3/day)
Date	**(15-16)/ 06/2010**	**(20-21)/ 07/2010**	**(5-6)/ 10/2010**	**(9-10)/ 11/2010**	**(2-1)/ 01/2011**	**(1-2)/ 02/2011**	**Avg. Value**
Wadi Al-Zuhur	3031	3334	2741	2720	3170	2799	**2999**
Wadi Al -Moqatta	2039	2384	2306	2688	3840	4320	**2929**
Wadi Beit Jala	3274	3136	2773	2600	2880	3456	**3019**
Wadi AL-Samen	6670	6687	6203	5728	5184	5760	**6038**
Ramallah WWTP	1805	2134	2253	1700	2160	2004	**2009**
Wadi AL-Zomar	13642	13054	13893	12104	14005	15436	**13689**

Table 4-2: Final Results of Flow Measurements at Wadi Al-Zomar District

	Q1 (m^3/day)	Q2 (m^3/day)	Q3 (m^3/day)	Q4 (m^3/day)	Q5 (m^3/day)	Q6 (m^3/day)	Qavg. (m^3/day)
Date	**(15-16)/ 06/2010**	**(20-21)/ 07/2010**	**(5-6)/ 10/2010**	**(9-10)/ 11/2010**	**(2-1)/ 01/2011**	**(1-2)/ 02/2011**	**Avg. Value**
Beginning of Wadi Al-Zomar/ Nablus	10981	11543	11733	11880	15264	17453	**13142**
End of Wadi AL-Zomar/ Tulkarem	9322	8778	10005	8562	10368	11808	**9807**
Tulkarem WWTP	4320	4276	3888	3542	3637	3628	**3881**

Figure 4-1 shows the variation in the wastewater discharge in each Wadi during the project period.

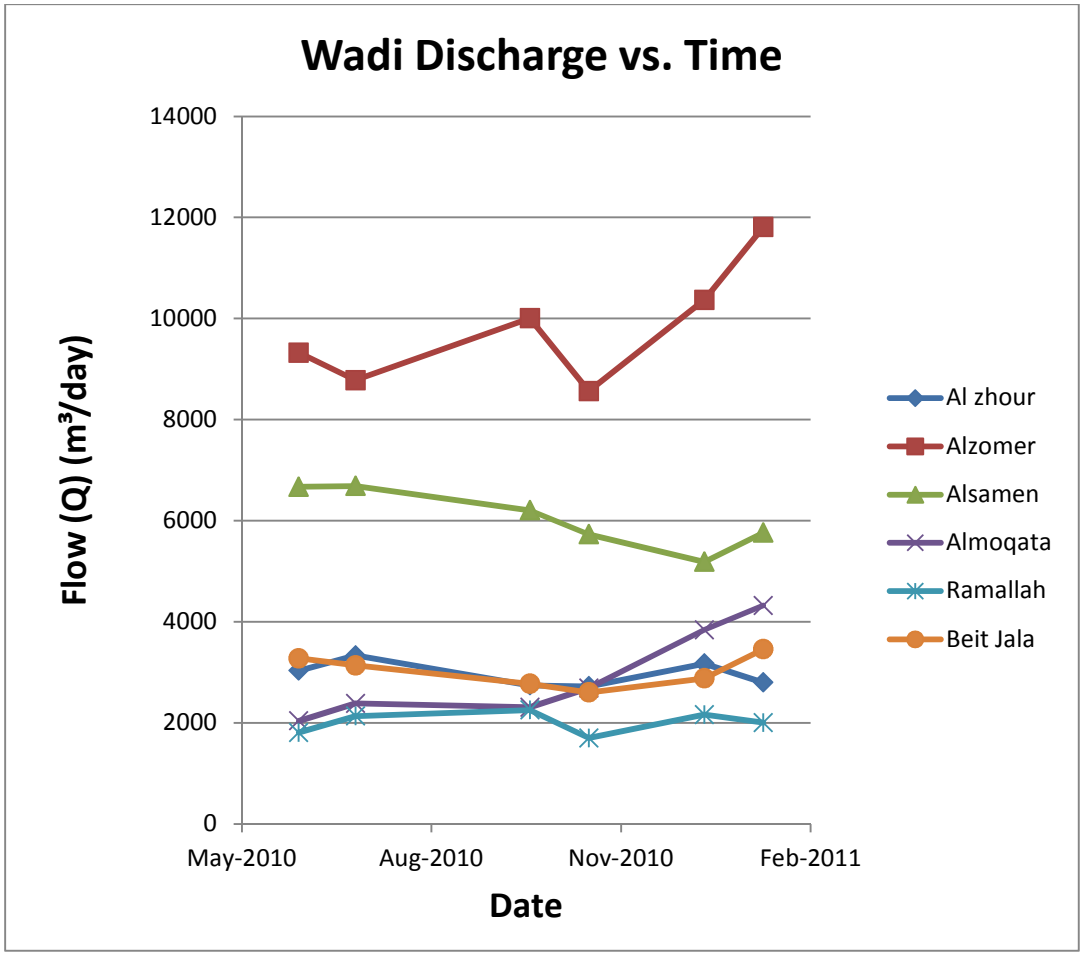

Figure 4-1: Flowing Wastewater in the Targeted Wadis during the Project Period

The variation in wastewater discharge in each Wadi is impacted by the following factors:

- **Weather Temperature:** during the hot weather, the consumption water is increased which reflect on the wastewater production and discharge, but this factor impact is restricted by the availability of supplied water. Figure 4-1 shows that the wastewater discharge in November is lower than the summer months in most of the Wadis due to the low water consumption.

- **Rain Time:** In general, the wastewater discharge is increased during the rainy time (Wet weather flow is more than dry weather flow). The increased in wastewater discharge during the rainy time in the measured points is impacted by several factors which are
    1. The intensity of rainfall and formation of storm water runoff.
    2. Location of the measured point whether at the end of a closed system (sewage network) or at an open system (within the Wadi discharge). The effect of rains on the open system is higher due to the receiving of storm water from some sub-streams.

  Figure 4-1 shows that the impact of rains on Wadi Al-Zomar and Wadi Al-Moqatta (open system) is high, while on Ramallah WWTP, Wadi Beit Jala and Wadi Al-Zuhur (closed system) is low; this is refered to the second factor. The discharge in Wadi Al-Samen during the rainy time is lower than the dry weather flow; this refers to the first factor that there is no enough rainfall intensity to form storm runoff.
- **Time of measuring:** the water consumption varies through the day hours which reflect on the wastewater generation. Since the daily average flow is calculated based on one instantaneous one measure during the day and the discharge measuring were not at the same hour during the measuring months (See Table 3-3 and Annex 2); the average daily flow is affected by this factor.

4.2 Final Result of Quality Analysis

This section includes the final results of wastewater characteristics for all the studied Wadies (Table 4.3). All of the quality data exist within Annex (3).

Table 4-3: Final Results of wastewater Characteristics at the Targeted Wadis

Location	Date of Sampling	pH	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	NH4 (mg/l)	PO_4 (mg/l)	Cl (mg/l)	B (mg/l)	TDS (mg/l)	DO (%)	Temp. C°
Wadi Al-Zuhur	Average	7.3	241.8	493.3	285.3	35.6	1.4	258.3	9.6	1013.2	1.3	20.1
	Min.	6.8	162	400	44	23	0.2	250	< 1.0	915	0.98	18.4
	Max.	7.7	389	640	462	48	4	300	11.96	1192	2.1	21.5
Wadi Al-Moqatta	Average	7.5	334.3	662.0	617.7	113.8	1.6	457.3	8.5	1364.2	1.9	16.9
	Min.	7.3	234	425	106	83	0.48	375	1.65	1204	1	2.6
	Max.	7.8	454	880	2740	168	3	575	13.07	1600	2.56	20.9
Wadi Beit Jala	Average	7.8	468.7	900.0	625.6	114.3	2.1	422.7	5.6	1437.7	1.9	20.4
	Min.	7.4	248	800	524	92	0.25	275	3.16	1104	0.89	19
	Max.	8.1	589	960	728	130	5.5	550	41.35	1980	2	21.6
Wadi Al-Samen	Average	7.6	265.2	404.3	9774.7	104.0	1.9	754.8	5.0	1839.3	1.9	20.4
	Min.	7.4	117	320	7080	83	0.25	500	< 1.0	1300	1	19
	Max.	7.7	405	560	11710	123	3.2	1325	7.44	2390	3.7	21
Ramallah WWTP	Average	7.2	103.7	260.0	104.0	68.1	2.1	347.7	3.6	1093.3	1.2	19.2
	Min.	6.9	43	120	42	47	0.3	250	1.4	854	0.87	18
	Max.	7.7	286	480	166	96	6.3	475	101.31	1660	2	20.1

Location	Date of Sampling	pH	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	NH4 (mg/l)	PO_4 (mg/l)	Cl (mg/l)	B (mg/l)	TDS (mg/l)	DO (%)	Temp. C°
Wadi Al-Zomar/ Tulkarem	Average	7.6	282.4	502.7	3566.7	81.9	1.5	774.7	6.4	1736.5	1.4	19.8
	Min.	7.0	109	240	1268	64.8	0.16	300	1.77	876	0.78	19
	Max.	7.9	470	720	9510	94	5.5	1200	68.36	2510	2.4	20.7

Some comments on the quality data from Table 4-3:

- **Classifications based on wastewater characteristics:** Table 4-4 shows the classification of wastewater in the measuring points in terms of organic concentration.

Table 4-4: Classification of Wastewater in Terms of Organic Concentration

Location	Avg. BOD (mg/l)	Avg. COD (mg/l)	Classification*
Wadi Al-Zuhur	241	493.3	Medium
Wadi Al-Moqatta	334.3	662.0	Medium to Strength
Wadi Beit Jala	468	900.0	Strength
Wadi Al-Samen	265.2	404.3	Medium
Wadi Al-Zomar-Tulkarem	282.4	502.7	Medium

*** Typical categories of raw wastewater in terms of contamination degree (according to FAO, 1992) are existed in Annex (4).**Existing data for wastewater quality in the West Bank shows BOD values ranging between 400 mg/l to 1400 mg/l with an average of about 600 mg/l (Haddad, M.). This high BOD level refers to the low per capital water consumption in Palestine compared to the developed countries (Isaaq, J.). This is compatible with the BOD value of Wadi Beit Jala where the measuring point was at the outlet of the sewer network, while the BOD values of Wadi Al-Moqatta, Wadi- Al-Samen and Wadi Al-Zomar are less than 400 mg/l and classified as medium wastewater; this is because the wastewater receives natural treatments (during its flow through the Wadies before the measuring points) by natural aeration which cause degradation of organic matter. So there is an important conclusion that the discharged wastewater is not classified as highly strength wastewater when it reaches to Israel due to the natural treatment. Wadi Al-Zuhur

wastewater is classified as medium wastewater; this is refers to high per capital water consumption in Qalqilia city.

- **BOD: COD Ratio:** This ratio reflects the biodegradability of organic matter in wastewater; this ratio is zero if organic matter is not biodegradable and one if all easily biodegradable. Typical BOD: COD ratio for municipal wastewater is 0.5 (Handbook of Environmental Engineering). Table 4-5 shows BOD: COD ratios for wastewater at the measuring points. The average values of BOD: COD ratios are around the typical ratio of municipal wastewater.

Table 4-5: BOD: COD Ratio

Location	BOD: COD Ratio		
	Average	Minimum	Maximum
Wadi Al-Zuhur	0.48	0.41	0.61
Wadi Al-Moqatta	0.45	0.36	0.52
Wadi Beit Jala	0.50	0.31	0.61
Wadi Al-Samen	0.65	0.37	0.83
Wadi Al-Zomar Tulkarem	0.53	0.44	0.78

- **Rainfall and Organic Concentration:** Mixing between wastewater and rainwater dilute the wastewater and reduce the concentration of organic matter. During the rain time, the wastewater flow increase; so there will be a negative relationship between wastewater flow and organic concentration. This correlation appears in Wadi Al-Moqatta where the wet weather flow is nearly twice the dry weather flow. In Wadi Al-Moqatta, there is a moderate negative relationship between flow and BOD (Figure 4-2).

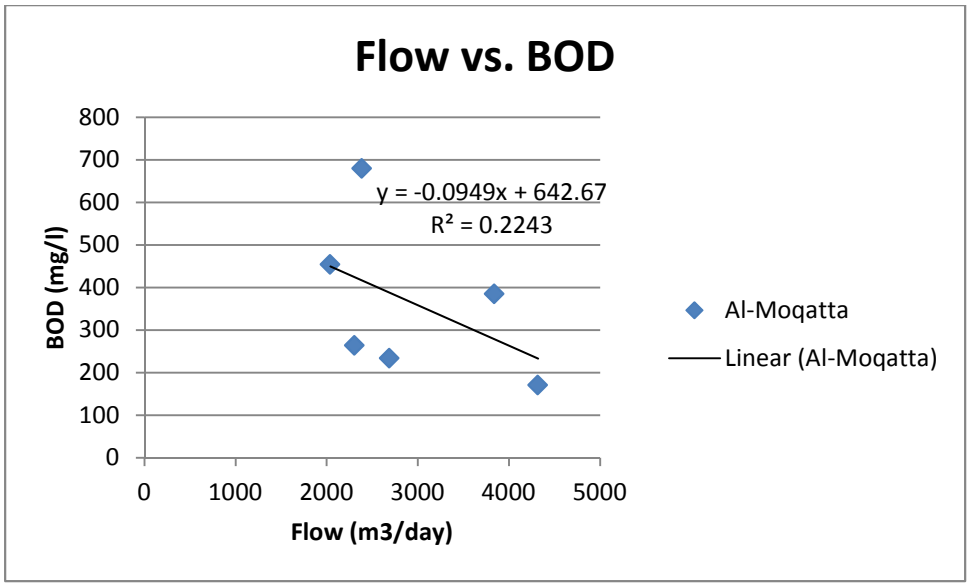

Figure 4-2: Relationship between Wastewater Flow and BOD in Wadi Al-Moqatta

- The average value of TSS is very high in Wadi Al-Samen if it is compared with the domestic wastewater; this is because of the wastewater discharge from the stone cutting industry which contains a high percentage of suspended solids.
- Ramallah WWTP does not work in an efficient way. The average values of BOD and TSS in the effluent are 103.7 mg/L and 104 mg/L respectively, according to the Palestinian Israeli Memory of Understanding, these values are exceed the standard limit of BOD and TSS which are 20 mg/l and 30 mg/l respectively.

5 Cost Benefit Analysis

5.1 Introduction

Cost-benefit analysis (CBA) is performed to assess the economic value of project proposals, and can also be used to evaluate and compare the costs and benefits of the project alternatives where CBA is a tool used either to rank projects or to choose the most appropriate option. CBA identifies, quantifies, and comparing the costs and benefits of proposed project alternatives.

A comprehensive and detailed CBA for the wastewater streams includes many scenarios about the WWTPs locations, treatment technologies, reuse options, appropriate irrigated crops… etc. And the comprehensive CBA needs specific data for each component in all the alternatives, and since there is no specific option that applies for all areas, and the wastewater system depends on the area characteristics; the comprehensive CBA should be conducted for each stream separately. A comprehensive CBA will not be conducted in this stage.

CBA can also evaluate and compare the costs and benefits of the project (Action) and the without-project (No-Action) alternatives. The aim of this part of the report is to conduct a preliminary CBA for the "No-Action" and "Action" alternatives as follow:

- No-Action Alternative: the current situation of the transboundary wastewater streams will remain the same, the wastewater continue to discharge in the streams through the Palestinian communities towards Israel, and the wastewater is treating inside Israel on the Palestinian expenses.
- Action Alternative: implementing of WWTPs inside the Palestinian areas to treat the discharged wastewater and get benefits from the treated wastewater.

5.2 Comparison between Costs and Benefits

This section makes a preliminary comparison between costs and benefits for the Action and No-Action alternatives in terms of investment costs, running costs and benefits.

5.2.1 Investment Cost

The investment cost for each wastewater project includes: transmission line convey the discharged wastewater for the WWTP location, civil works for the WWTP construction including primary and secondary treatment and disinfection system, seasonal reservoirs, conveyance lines to transport the treated wastewater to the irrigation sites and surface irrigation system.

Since the construction of the WWTPs inside Israel is on the Palestinian expense in the current situation, there will be no difference between the two alternatives in terms of investment costs, because in both alternatives the Palestinians pay for the WWTPs construction.

5.2.2 Running Costs

The running costs of the wastewater projects include the operation and maintenance costs for the centralized wastewater treatment systems. Referring to the invoices that were sent by Israel to the Palestinian Authority; there are different tariffs for the treatment of one cubic meter of wastewater inside Israel. Table 5-1 presents the available wastewater tariffs that are used to calculate the deducted money from the Palestinian Authority in 2010 (This value includes the addition of 16% for the added value tax).

Table 5-1: Cost of Wastewater Treatment inside Israel

Location	NIS/m3
Wadi Beit Jala	1.88
Wadi Surik	2.12
Wadi Al Muqatta	0.97

In Palestine; recently many of wastewater treatment plants feasibility studies have been done. For example, the western Nablus WWTP and Jericho WWTP; the cost per cubic meter of the treated wastewater was estimated as follow 1.8 NIS/m^3, 1.5 NIS/m^3, respectively. Moreover, for the existing Al-Bireh WWTP the cost of treatment is about 1.8 NIS/m^3 (Based on the communication with the municipality engineers). Based on these wastewater projects inside Palestine, it is expected that the treatment cost for constructing new WWTPs inside the Palestinian areas (Action Alternative) is within 1.5-

1.8 NIS/m^3. In the No-Action alternative the treatment cost is within 0.97-2.12 NIS/m^3 (See Section 1.4.2).

5.2.3 Benefits

The establishment of such pioneer wastewater treatment projects throughout the West Bank will have significant impact on the lives of Palestinian people as well as the environment. The main benefits gained from such projects are:

1- Groundwater Protection

Keeping the current situation of discharging raw wastewater streams in the open unprotected wadis will significantly affect the quality of groundwater basins. Therefore; groundwater quality has the potential to become significantly degraded. The establishment of wastewater conveyance lines with treatment facilities will positively impact groundwater by enhancing its protection and improving groundwater quality in the aquifer.

2- Impact on Agricultural Sector

Treated effluent is a non-conventional source of water that could be used for agriculture. This will provide farmers with sufficient and affordable source of irrigation water. It also contains many plant nutrition elements which will promote plant growth and increase yield. This can be beneficial for agriculture as it reduces the use (and so the associated cost) of chemical fertilizers.

The targeted wastewater streams produce about 11 mcm/year of raw wastewater; If the wastewater is treated, the treated effluent is nearly the same number. Reusing of the treated effluent will increase the volume of agricultural water by 12%, where the current supply of water in West Bank through irrigation is about 89 mcm/year (Adilah, O., 2010).

3- Water Management

Using treated wastewater as a new source for irrigation water will enhance the quality of conventional water resources by reducing the demand on fresh water resources. It offers an alternative water source in economical and efficient way. This will increase the share of water available for the domestic sector.

4- Health

By implementing wastewater treatment projects for the transboundary streams, the overall public health and hygiene conditions will be improved. Illnesses related to water contamination will be dramatically controlled.

5- Socio-Economic Settings

Many residents and farmers are unemployed due to restrictions and difficulties imposed by the current political situation, increasing water shortages, and difficulty in reclamation of land for agribusinesses. Providing treated wastewater for agricultural purposes will be highly beneficial because it will encourage investing in agricultural businesses, provide job opportunities, and improve the overall quality of life of the population. New job opportunities will be created to operate and maintain the WWTP site. Additional administrative and support roles will be required which will also reduce the unemployment rate.

5.3 Conclusions and Recommendations

Table 5-2 provides a summary for the comparison between leave the wastewater discharge from the West Bank towards Israel (No-Action alternative) and implementing of WWTPs inside the Palestinian areas (Action alternative).

Table 5-2: Comparison Summary between the Action and No-Action Alternatives

Item	No-Action Alternative	Action Alternative
Investment Cost	Palestinians pay the investment cost	Palestinians pay the investment cost
Running Cost	0.97-2.12 NIS/m^3	1.5-1.8 NIS/m^3
Impact on Groundwater	Groundwater quality will be degraded	Enhancing the groundwater protection and improving its quality
Impact on Agricultural Sector	The agricultural sector will remain the same	Providing of new source of water for agriculture, this will enhance the agricultural sector in Palestine
Water Management	The water system will remain the same	The share of water available for the domestic sector will be increased by reallocation of

		water shares between different sectors; domestic, agricultural and industrial; since the treated wastewater will contribute in the agricultural water share.
Health	Negative impacts on the public health	The overall public health and hygiene conditions will be improved
Socio-Economic Settings	Socio-Economic conditions will remain the same	Encourage investing in agricultural businesses, provide job opportunities, and improve the overall quality of life of the population.

Table 5-2 shows that the investment and operational costs for the wastewater systems are almost the same in the both alternatives. In the current situation (No-Action Alternative), there are no benefits for the Palestinian and there are many negative impacts, while in the Action alternative the Palestinian will get benefits from the treated wastewater and avoiding the negative impacts of the No-Action Alternative.

The following are recommended for PWA:

- It is better for the Palestinians to treat the wastewater instead of discharging it into the wadis to be treated in Israel as it will also have the benefit from the wastewater reuse in the agriculture sector.
- Treating and reusing of the wastewater from the targeted streams will increase the volume of agricultural water by 12%.
- PWA should make detailed CBA and feasibility study for each Wadi to study more alternatives and inspect the best specific solution for each Wadi in terms of WWTP location, treatment technology, reuse area and irrigated crops.

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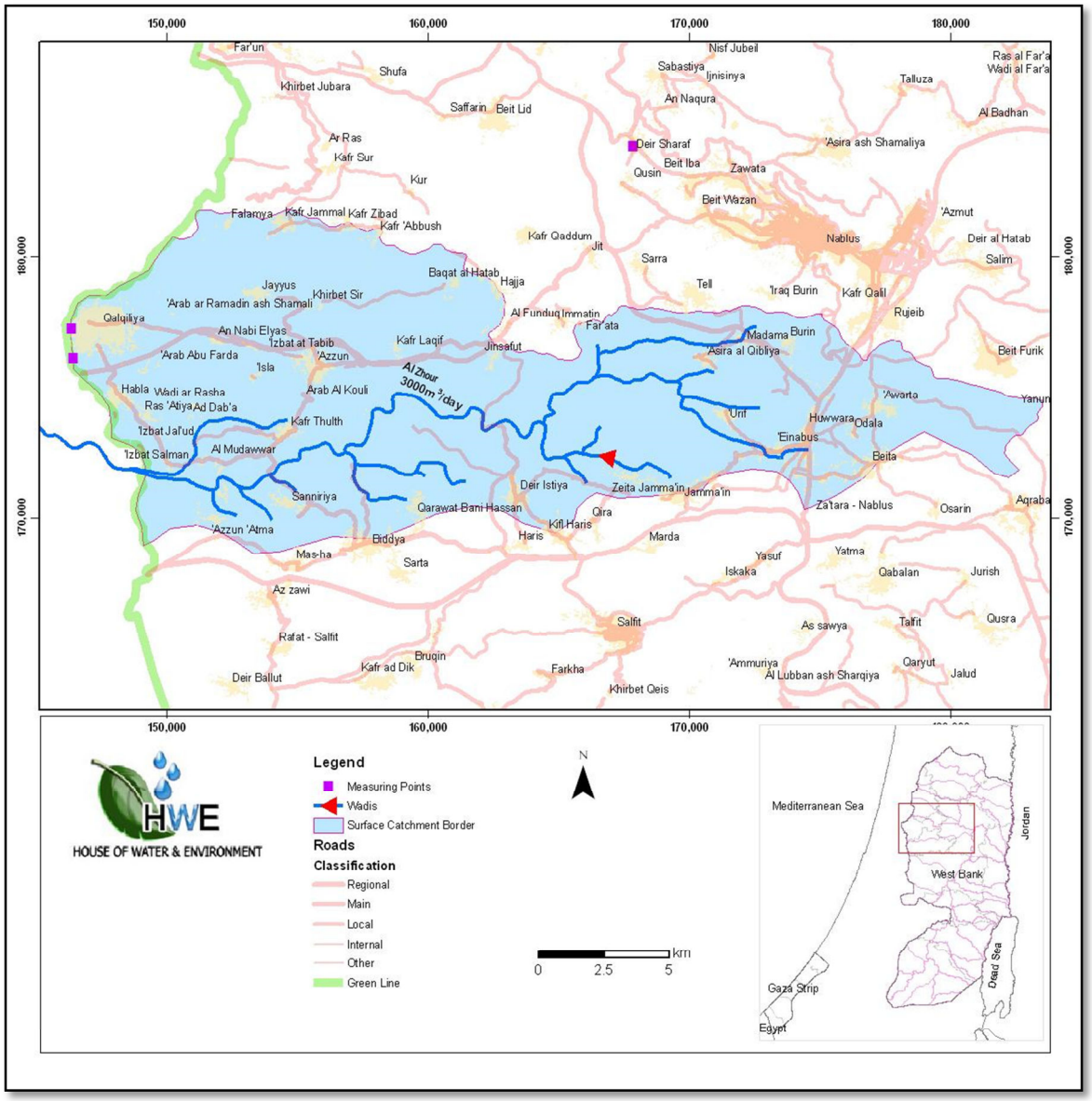
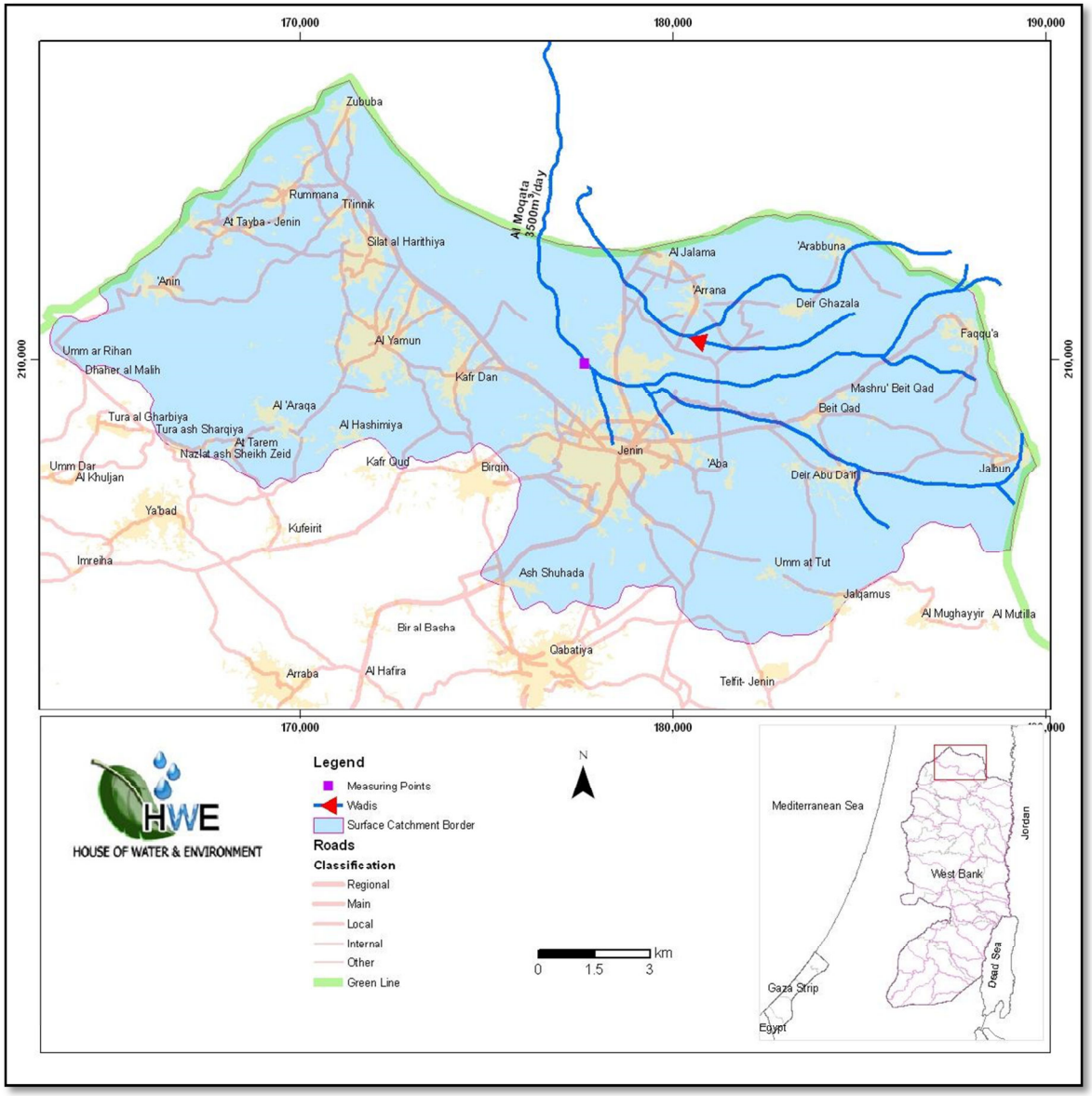
Annex (1)

Detailed Maps for the Targeted Streams

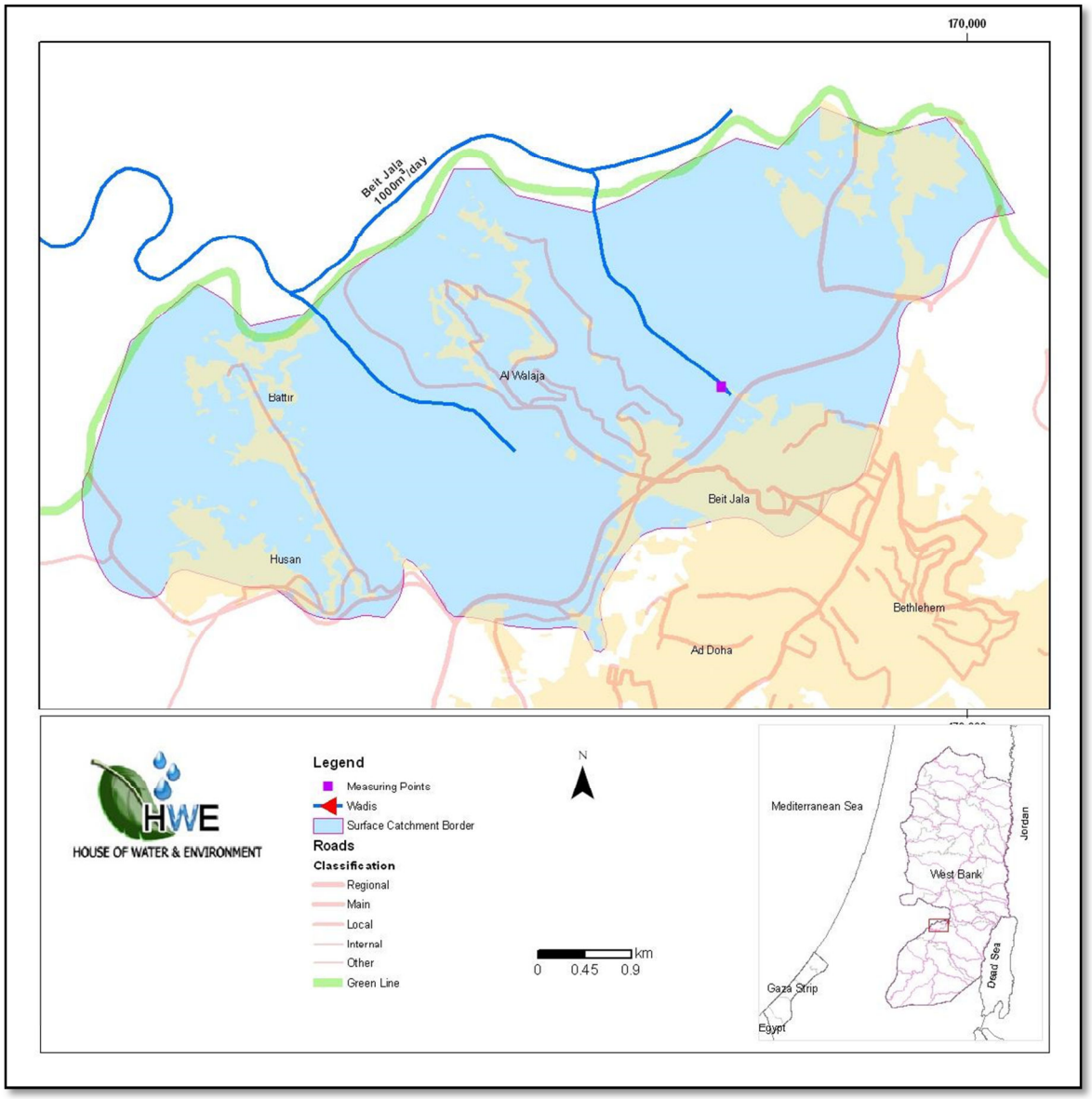
Wadi Al-Zuhur (2 points)



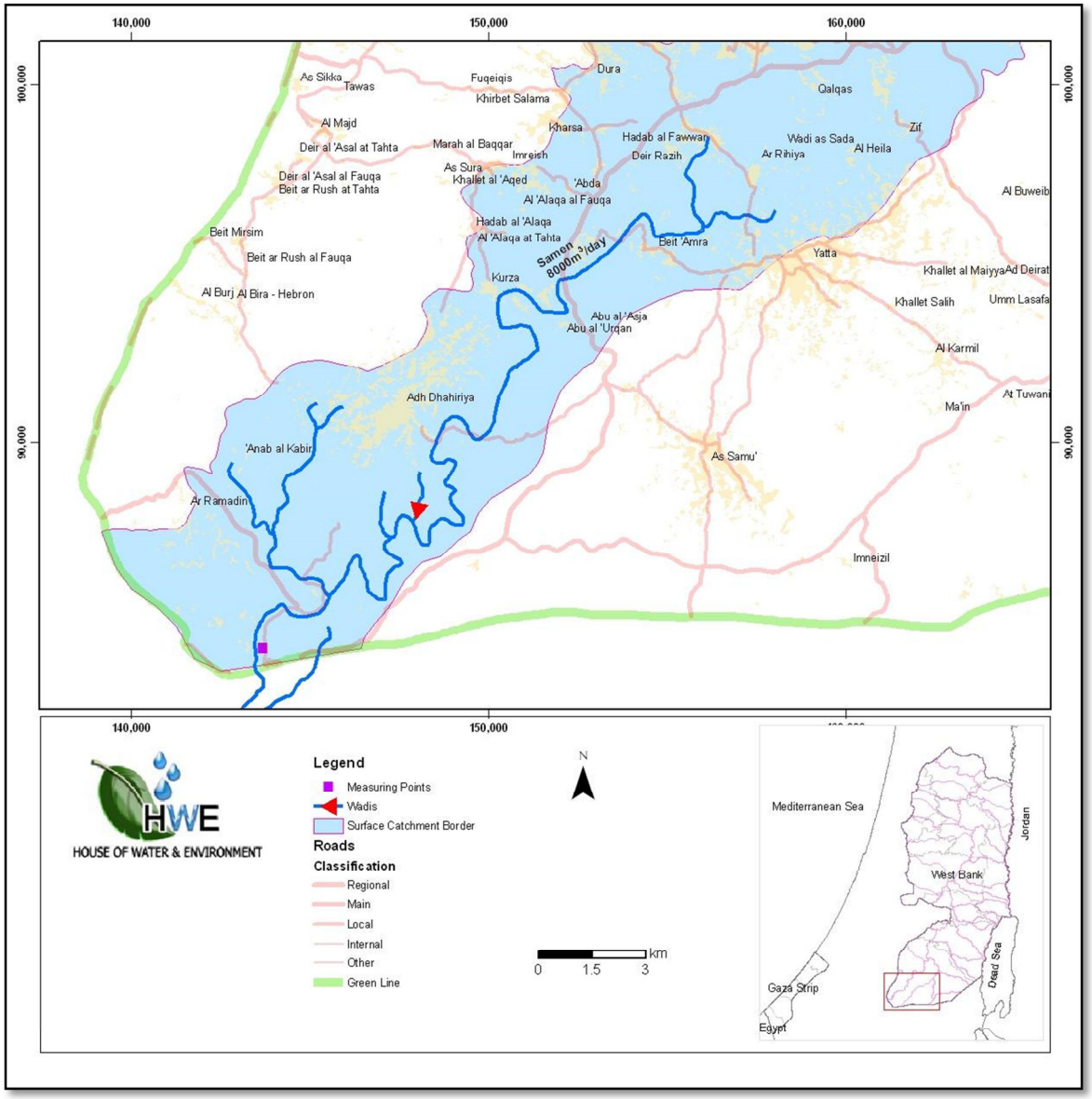
Wadi Al-Moqatta (1 point)



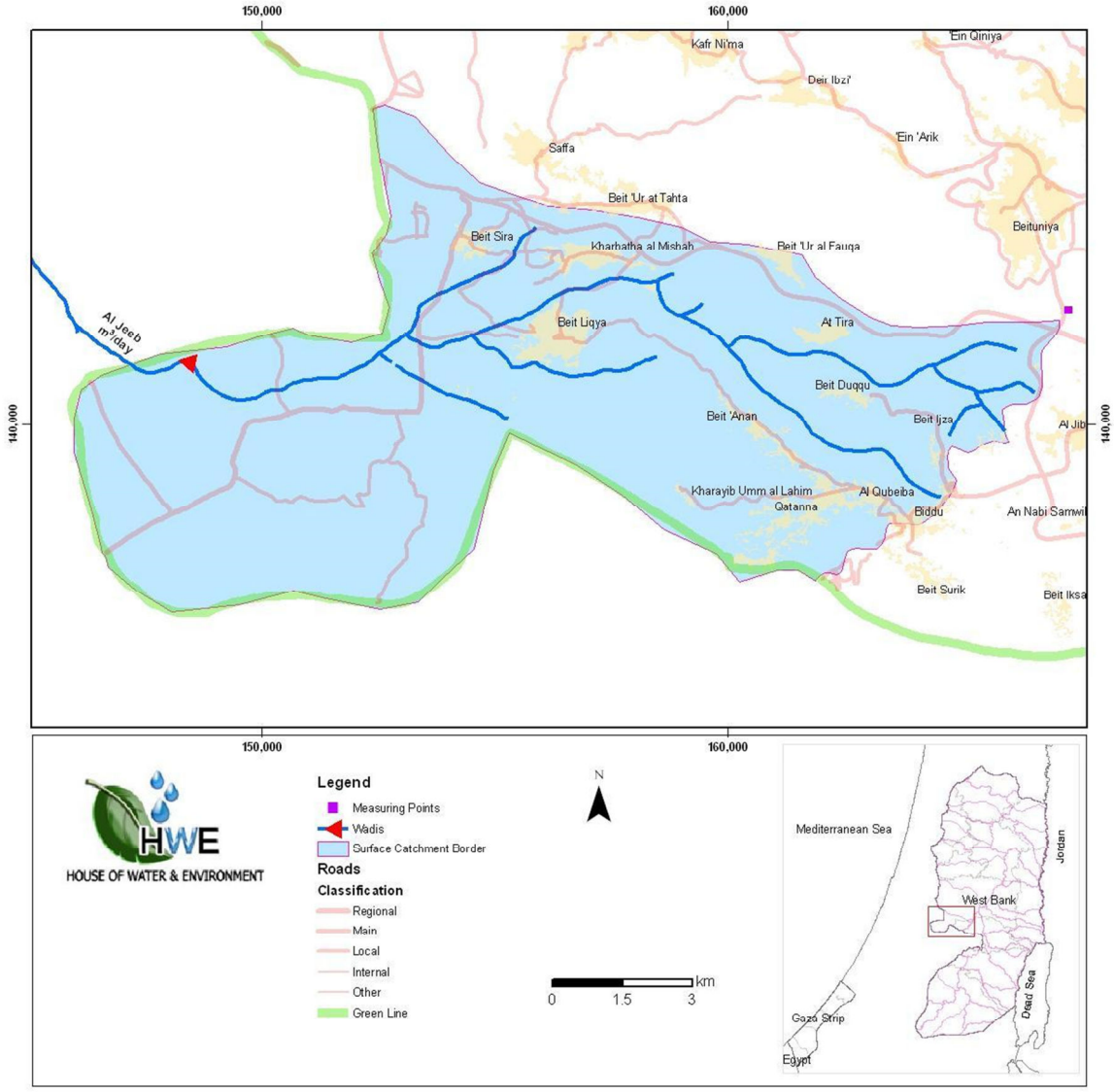
Wadi Beit Jala (1 Point)



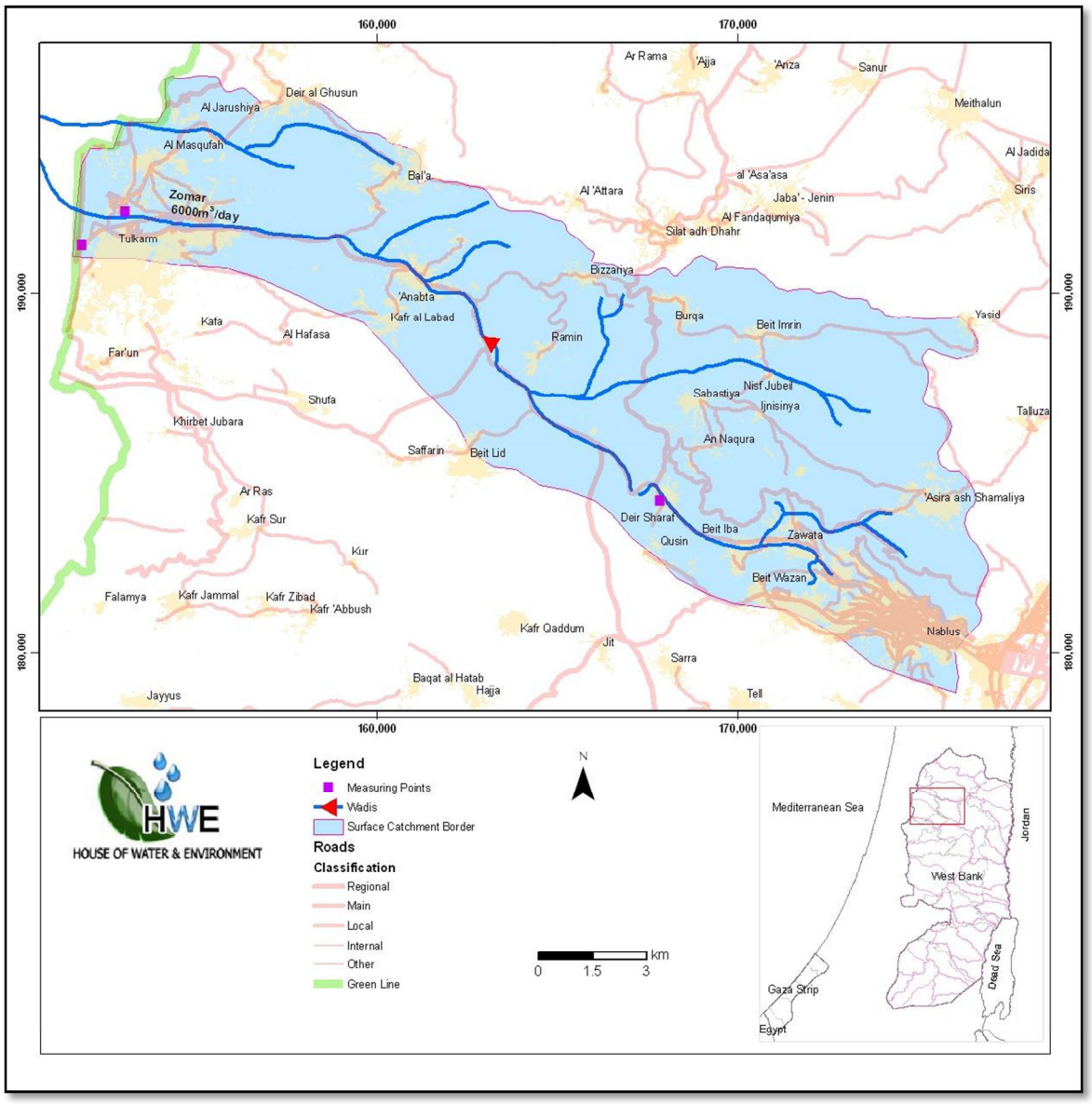
Wadi Al-Samen (1 Point)



Wadi Suriq /Wadi Al-Jeeb (1 Point)



Wadi Al-Zomar (3 points)



Annex (2)

Flow Measurements

Point	Date	Time	Weather	Measured Flow (m3/h)	Avg. Daily Flow (m3/d)
Qalqilia City-Wastewater from the North & East Parts	15/06/2010	11:30 AM	Sunny	84.60	2030
	20/07/2010	11:46 AM	Sunny	88.56	2125
	05/10/2010	10:31 AM	Sunny	75.24	1806
	09/11/2010	10:50 AM	Sunny	68.84	1652
	02/01/2011	11:10 AM	Rainy	79.92	1918
	01/02/2011	11:02 AM	Rainy	70.92	1702
Qalqilia City-Wastewater from the West Part	15/06/2010	12:40 PM	Sunny	41.72	1001
	20/07/2010	10:49 AM	Sunny	50.40	1210
	05/10/2010	09:20 AM	Sunny	39.02	936
	09/11/2010	09:45 AM	Sunny	45.36	1089
	02/01/2011	10:05 AM	Rainy	52.20	1253
	01/02/2011	10:00 AM	Rainy	45.72	1097
Wadi Al-Zuhur	15/06/2010	---	Sunny	---	3032
	20/07/2010	---	Sunny	---	3335
	05/10/2010	---	Sunny	---	2742
	09/11/2010	---	Sunny	---	2741
	02/01/2011	---	Rainy	---	3171
	01/02/2011	---	Rainy	---	2799
					2970

Point	Date	Time	Weather	Measured Flow (m3/h)	Avg. Daily Flow (m3/d)
Wadi Al-Samen	09/06/2010	3:00 PM	Sunny	277.90	6670
	21/07/2010	2:20 PM	Sunny	278.64	6687
	06/10/2010	1:14 PM	Sunny	258.48	6204
	10/11/2010	1:50 PM	Sunny	238.86	5733
	03/01/2011	2:00 PM	Rainy	216.00	5184
	02/02/2011	2:10 PM	Rainy	240.00	5760
					6040
Ramallah WWTP	09/06/2010	7:40 AM	Sunny	75.24	1806
	21/07/2010	7:40 AM	Sunny	88.92	2134
	06/10/2010	7:55 AM	Sunny	94.32	2264
	10/11/2010	7:55 AM	Sunny	70.80	1699
	03/01/2011	7:55 AM	Rainy	90.00	2160
	02/02/2011	7:45 AM	Rainy	83.52	2004
					2011
Wadi Beit Jala	09/06/2010	11:00 AM	Sunny	136.44	3275
	21/07/2010	11:00 AM	Sunny	130.68	3136
	06/10/2010	11:30 AM	Sunny	115.56	2773
	10/11/2010	10:14 AM	Sunny	108.36	2601
	03/01/2011	10:00 AM	Rainy	120.00	2880
	02/02/2011	10:14 AM	Rainy	144.00	3456
					3020
Wadi Al-Moqatta	01/06/2010	05:50 PM	Sunny	84.96	2039
	20/07/2010	03:45 PM	Sunny	99.36	2385
	05/10/2010	03:30 PM	Sunny	96.12	2307
	09/11/2010	02:44 PM	Sunny	112.00	2688
	02/01/2011	03:10 PM	Rainy	160.00	3840
	01/02/2011	03:10 PM	Rainy	180.00	4320
					2930

Point	Date	Time	Weather	Measured Flow (m3/h)	Avg. Daily Flow (m3/d)
Wadi Al-Zomar-Nablus (Beit Eba)	22/06/2010	2:45 PM	Sunny	457.56	10981
	20/07/2010	5:50 PM	Sunny	480.96	11543
	05/10/2010	5:50 PM	Sunny	488.88	11733
	09/11/2010	5:25 PM	Sunny	495.00	11880
	02/1/2011	2:10 PM	Rainy	636.00	15264
	01/2/2011	2:15 PM	Rainy	727.20	17453
					13142
Wadi Al-Zomar-Tulkarem	01/06/2010	2:45 PM	Sunny	388.44	9323
	20/07/2010	2:10 PM	Sunny	365.76	8778
	05/10/2010	12:44	Sunny	416.88	10005
	09/11/2010	1:00 PM	Sunny	356.76	8562
	02/1/2011	1:15 PM	Rainy	432.00	10368
	01/2/2011	1:05 PM	Rainy	492.00	11808
					9807
Tulkarem WWTP	01/06/2010	12:40 PM	Sunny	151.20	3629
	20/07/2010	1:15 PM	Sunny	151.56	3637
	05/10/2010	12:19 PM	Sunny	147.60	3542
	09/11/2010	11:55 AM	Sunny	162.00	3888
	02/1/2011	12:00 PM	Rainy	178.20	4277
	01/2/2011	12:00 PM	Rainy	180.00	4320
					3882

Annex (3)

Wastewater Characteristics Data

Sample No.	Location	Date of Sampling	pH	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	NH4 (mg/l)	PO_4 (mg/l)	Cl (mg/l)	B (mg/l)	TDS (mg/l)	DO (%)	Temp. C°
1	Wadi Beit Jala	24/11/2010	7.36	589	960	728	121	2.3	500	3.16	1,186	0.89	21
2	Wadi As-Samin	24/11/2010	7.68	117	320	7720	123	1.5	1,325	3.79	2,070	1	21
3	Ramallah station	24/11/2010	7.23	286	480	166	66.7	2.2	475	3.19	880	1.3	20
4	Wadi As-Salman	25/11/2010	7.34	259	560	296	48	0.63	250	11.96	952	1.36	21.5
5	Wadi Az-Zumar	25/11/2010	7.70	335	720	1,640	84	0.16	1,200	1.77	2,158	1.66	20.7
6	Wadi Al Muqata'	25/11/2010	7.63	454	880	2,740	168	3.0	575	1.65	1,600	2.41	20.9
7	Wadi Beit Jala	08/12/2010	7.57	540	960	524	119	1.1	462	5.72	1,368	1.89	21
8	Wadi As-Samin	08/12/2010	7.38	281	360	9,390	101	0.25	650	7.44	1,300	2	21
9	Ramallah station	08/12/2010	7.10	97	320	94	61	0.36	450	6.29	1,230	1.11	20.1
10	Wadi As-Salman	09/12/2010	7.25	389	640	462	39.8	0.55	250	10.41	958	1.2	21
11	Wadi Az-Zumar	09/12/2010	7.55	800*	416	1,832	68.8	0.7	874	9.50	1,824	1	20.5
12	Wadi Al Muqata'	09/12/2010	7.52	680*	378*	226	110	0.99	500	13.07	1,308	1	20
13	Wadi Beit Jala	22/12/2010	7.68	484	920	712	116	2.5	374	8.02	1,388	1.2	21.6
14	Wadi As-Samin	22/12/2010	7.44	405	560	7,080	107	2.0	500	3.91	1,300	1.33	21
15	Ramallah station	22/12/2010	7.22	53	160	132	77	2.1	312	1.40	966	1	19.55
16	Wadi As-Salman	23/12/2010	7.33	243	480	388	35	2.4	300	6.34	1,192	1	20.3
17	Wadi Az-Zumar	23/12/2010	7.53	470	600	9,510	90	1.7	974	7.85	2,110	0.78	20
18	Wadi Al Muqata'	23/12/2010	7.56	264	560	106	83	2.5	375	10.86	1,204	2.1	19.86
19	Wadi Beit Jala	05/01/2011	8.1	362	800	584	92	1.2	375	8.83	1,104	1.2	20

Sample No.	Location	Date of Sampling	pH	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	NH4 (mg/l)	PO_4 (mg/l)	Cl (mg/l)	B (mg/l)	TDS (mg/l)	DO (%)	Temp. C°
20	Wadi As-Samin	05/01/2011	7.66	264	320	11,270	112	3.2	875	6.72	2,390	1.7	20.7
21	Ramallah station	05/01/2011	7.7	43	120	42	96	0.3	312	101.31	970	0.87	19.2
22	Wadi As-Salman	06/01/2011	7.66	217	480	44	31.6	0.2	250	<1.0	930	0.98	20.4
23	Wadi Az-Zumar	06/01/2011	7.9	142	320	1,268	64.8	0.25	300	35.96	941	1.8	19.5
24	Wadi Al Muqata'	06/01/2011	7.8	234	645	172	102	1.5	407	8.26	1321	2.56	2.6
25	Wadi Beit Jala	19/01/2011	7.7	248	800	39,140**	108	0.25	275	40.96	1,600	1.8	19
26	Wadi As-Samin	19/01/2011	7.5	264	480	11,710	83	1.8	525	<1.0	1,908	3.7	19.4
27	Ramallah station	19/01/2011	7.2	57	280	136	61	1.5	287	99.67	1,660	2	18
28	Wadi As-Salman	20/01/2011	6.8	181	400	246	23	0.5	250	<1.0	ال915	1.3	18.4
29	Wadi Az-Zumar	20/01/2011	7.02	356	720	5,470	90	0.4	1,000	19	2,510	1	19
30	Wadi Al Muqata'	20/01/2011	7.4	385	800	274	127	0.48	450	<1.0	1,480	2.5	18.9
31	Wadi Beit Jala	09/02/2011	8.13	589	960	580	130	5.5	550	41.35	1,980	2	19
32	Wadi As-Samin	09/02/2011	7.7	260	386	11478	98	2.8	654	5.33	2068	1.4	19
33	Ramallah station	09/02/2011	6.9	86	200	54	47	6.3	250	13.51	854	0.99	18.2
34	Wadi As-Salman	10/02/2011	7.56	162	400	276	36	4.0	250	<1.0	1,132	2.1	19
35	Wadi Az-Zumar	10/02/2011	7.8	109	240	1,680	94	5.5	300	68.36	876	2.4	19
36	Wadi Al Muqata'	10/02/2011	7.3	171	425	188	93	1.4	437	6.34	1272	1	19.1

* Cancelled Value because the BOD value is more than COD which is unreasonable, **Up-Normal Value

Annex (4)

Typical Categories of Raw Wastewater in Terms of Contamination Degree

Constituents	Concentration mg/l		
	Strong	Medium	Weak
Total Solids	1200	700	350
Total Dissolved Solids	850	500	250
Total Suspended Solids	350	200	100
Biological Oxygen Demand	300	200	100
Chemical Oxygen Demand	1000	500	250

Source: (FAO, 1992)

Annex (5)

Field Survey Sheet

Wadi Information					
	Location		**District**		**Name**
	Time of visit		**Day**		**Date of visit**

		Communities dumping its wastewater in the wadi		**Coordinates**
		Facilities		**Elevation**
other	**intermittent** ☐	**Slow** ☐	**Rapid** ☐	**Run off**
other	**Small stones** ☐	**mud,sund,concrete** ☐	**Big gravel boulder** ☐	**Wadi Bed**
other	**Windy** ☐	**Sunny** ☐	**Rainy** ☐	**Weather**
other	**activities** ☐	**Barrer area** ☐	**grass around** ☐	**General**

Physical description of the wadi				
Reason	black☐	White ☐	gray ☐	Color
other	Wast water only ☐	Processed products ☐	Food materid ☐	Oder
other	very bad ☐	bad ☐	good ☐	Status of cleanness
other	without agricutaral ☐	tree ☐	Vegetables ☐	Agricultural

Annex (6)

Sampling Analysis Results from Al-Najah University Lab.

CHEMICAL ANALYSIS OF WASTEWATER SAMPLES COLLECTED FROM SIX WADIS IN THE WEST BANK

Sample No.	Location	Date of sampling	pH	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	NH4 (mg/l)	PO4 (mg/l)	Cl (mg/l)	B (mg/l)	TDS (mg/l)
1	Wadi Beit Jala	24/11/2010	7.36	589	960	728	121	2.3	500	3.16	1,186
2		8/12/2010	7.57	540	960	524	119	1.1	462	5.72	1,368
3		22/12/2010	7.68	484	920	712	116	2.5	374	8.02	1,388
4		5/1/2011	8.1	362	800	584	92	1.2	375	8.83	1,104
5		19/1/2011	7.7	248	800	39,140	108	0.25	275	40.96	1,600
6		9/2/2011	8.13	589	960	580	130	5.5	550	41.35	1,980
7	Wadi As-Samin	24/11/2010	7.68	117	320	7720	123	1.5	1,325	3.79	2,070
8		8/12/2010	7.38	281	360	9,390	101	0.25	650	7.44	1,300
9		22/12/2010	7.44	405	560	7,080	107	2.0	500	3.91	1,300
10		5/1/2011	7.66	264	320	11,270	112	3.2	875	6.72	2,390
11		19/1/2011	7.5	264	480	11,710	83	1.8	525	<1.0	1,908
12		9/2/2011	7.7	260	386	11,478	98	2.8	654	5.33	2,068
13	Ramallah station	24/11/2010	7.23	286	480	166	66.7	2.2	475	3.19	880
14		8/12/2010	7.10	97	320	94	61	0.36	450	6.29	1,230
15		22/12/2010	7.22	53	160	132	77	2.1	312	1.40	966
16		5/1/2011	7.7	43	120	42	96	0.3	312	101.32	970
17		19/1/2011	7.2	57	280	136	61	1.5	287	99.67	1,660
18		9/2/2011	6.9	86	200	54	47	6.3	250	13.51	854

An-Najah National University
Water & Environmental Studies Institute
Nablus - Palestine
Established 1994

A. Abu Jeen

Cont. CHEMICAL ANALYSIS OF WASTEWATER SAMPLES COLLECTED FROM SIX WADIS IN THE WEST BANK

Sample No.	Location	Date of sampling	pH	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	NH4 (mg/l)	PO4 (mg/l)	Cl (mg/l)	B (mg/l)	TDS (mg/l)
19	Wadi As-Salman	25/11/2010	7.34	259	560	296	48	0.63	250	11.96	952
20		9/12/2010	7.25	389	640	462	39.8	0.55	250	10.41	958
21		23/12/2010	7.33	243	480	388	35	2.4	300	6.34	1,192
22		6/1/2011	7.66	217	480	44	31.6	0.2	250	<1.0	930
23		20/1/2011	6.8	181	400	246	23	0.5	250	<1.0	915
24		10/2/2011	7.56	162	400	276	36	4.0	250	<1.0	1,132
25	Wadi Az-Zumar	25/11/2010	7.70	335	720	1,640	84	0.16	1,200	1.77	2,158
26		9/12/2010	7.55	800	416	1,832	68.8	0.7	874	9.50	1,824
27		23/12/2010	7.53	470	600	9,510	90	1.7	974	7.85	2,110
28		6/1/2011	7.9	142	320	1,268	64.8	0.25	300	35.96	941
29		20/1/2011	7.02	356	720	5,470	90	0.4	1,000	19.0	2,510
30		10/2/2011	7.8	109	240	1,680	94	5.5	300	68.36	876
31	Wadi Al Muqata'	25/11/2010	7.63	454	880	2,740	168	3.0	575	1.65	1,600
32		9/12/2010	7.52	680	378	226	110	0.99	500	13.07	1,308
33		23/12/2010	7.56	264	560	106	83	2.5	375	10.86	1,204
34		6/1/2011	7.8	234	645	172	102	1.5	407	8.26	1,321
35		20/1/2011	7.4	385	800	274	127	0.48	450	<1.0	1,480
36		10/2/2011	7.3	171	425	188	93	1.4	437	6.34	1,272

An-Najah National University
Water & Environmental Studies Institute
Nablus - Palestine
Established 1994

A. Abu Jaish

Annex (7)

Parts of Beit Selem Report, 2009, about the Israeli Policy towards the Palestinian Wastewater Sector

6 The Israeli Policy towards the Palestinian Wastewater Sector

6.1 Israeli Policy towards the Transboundary Wastewater Streams

Current Israeli policy exploits the fact that Palestinian wastewater is not treated inside the West Bank and flows into Israel. Israel treats some of this wastewater in facilities inside its sovereign area and uses it for agricultural irrigation and to rehabilitate streams, yet deducts the cost of building these facilities and of the treatment from tax monies owing to the Palestinian Authority (PA). Several facilities inside Israel treat the Palestinian wastewater. One is the emergency reservoir next to Kibbutz Yad Hana (Emek Hefer), which is treating wastewater from Nablus and Tulkarm since 1996. The Israeli deducted 18.5 million NIS from the Palestinian tax money to upgrade this treatment plant and to rehabilitate the Alexander stream. Another is the Nir Eliahu facility, which has treated wastewater from Qalqiliya, Habla, and ‘Azzun since 1999. The wastewater from this facility is used to irrigate citrus groves of the Sharon area and to rehabilitate the Yarkon. Soreq, Jerusalem’s western wastewater treatment facility, treats wastewater from West Bethlehem and some of Beit Jala’s wastewater in addition to partially treated wastewater flowing from Ramallah and North Jerusalem villages. From there, the water flows into the Soreq stream and is used for agricultural irrigation in the area of Kibbutz Tzora. According to Israeli sources, about 5.9 mcm of wastewater from Palestinian towns and villages are treated in these three facilities every year. Additional Palestinian wastewater is treated in the facility at Shoqet junction, which began operating at the end of 2008. This plant was built following a petition to the High Court of Justice by Meitar Council regarding the pollution of the Hebron stream by wastewater from Hebron and the Kiryat Arba settlement, which lie 40 kilometers away. According to estimates, about 5.7 mcm of wastewater flow into the Hebron stream yearly, some of them toxic industrial wastewater. After the High Court ordered the state to take appropriate measures to eliminate the nuisance, the government decided to build a wastewater treatment plant near the Green Line. The facility will also treat wastewater of Israeli communities in the area – Meitar, Carmit, Laqiya, and Hora. Although the cost of building the facility is about 30 million NIS, the Ministry of National Infrastructure informed B'Tselem that Israel charged the PA 40.666 million NIS, as the share of the PA is expected to be higher due to the supply

and organic load coming from their communities. These solutions are problematic; they delay implementation of a proper solution for treating Palestinian wastewater and ignore the flow of Palestinian wastewater in the valleys of the West Bank and seepage of pollutants into the Mountain Aquifer, as the wastewater makes its way to the facilities in Israel.

Tariff Policy

There is no clear policy about how to calculate the tariff for treating the Palestinian wastewater. The prices for the treatment range from 0.8 NIS per cubic meter up to 2.2 NIS per cubic meter. The Israeli deduct directly the money from the Palestinian tax money collected by Israelis. Till now, more than 200 hundred million NIS were deducted either to construct wastewater facilities or to treat wastewater in already constructed facilities. The Palestinian just receive invoices about the value of deduction, no break down analysis or justifications about quality of quantity of treated water or level of treatment were provided to ensure the reliability of like deduction. Also, despite most of the treated wastewater are reused for irrigation, but the value of this reused wastewater doesn't taken into consideration through calculation the tariff.

6.2 The Israeli Delays

6.2.1 Delay in Developing Palestinian Wastewater Treatment Infrastructure

Israel's neglecting is a major reason for the lack of wastewater treatment facilities in the West Bank. In the early 1970s, Israel built four wastewater treatment facilities in the West Bank – in Jenin, Tulkarm, Hebron, and Ramallah. Over the years, their effectiveness has been deemed minimal to poor. Three of them no longer function, and wastewater arriving at them is channeled, without treatment, to streams that flow towards Israel – the Kishon stream, the Hebron stream and the Shechem stream, which flows to an Israeli emergency reservoir at Yad Hana. The only facility that still functioning is in Ramallah, but it is relatively small and its capabilities are poor even it is renovated in 2003. It does not have the capacity to handle the whole wastewater of the city, and industrial facilities in the area do not properly treat wastewater before it flows to the facility, which hampers its operation. Consequently, wastewater is barely treated and then flows into the Soreq stream. Over the years, Israel did not allocate funds to improve the

facilities, to build infrastructure for transporting and treating the wastewater, or to build additional treatment facilities in the West Bank. In 1993, the State Comptroller warned that many plans that had been drawn up since the early 1970s for the treatment of wastewater from Palestinian cities were not implemented due to lack of funding, though the authorities knew that the flow of wastewater endangered water sources and crops. The investment needed to build treatment facilities for Palestinian communities in the West Bank is currently estimated at 1.2 - 1.8 billion dollars. The Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip, signed in 1995, transferred to the PA responsibility for treatment of the wastewater of Palestinian communities. The article of the agreement dealing with water and wastewater stipulates that the sides will cooperate on this matter, including "in the promotion and development of other agreed water-related and wastewater-related joint projects, in existing or future multi-lateral forums". Each side also promised to take "all necessary measures" to prevent pollution or contamination of the water sources, "including those caused by the other side". Pursuant to this article, an Israeli-Palestinian committee was established. The Joint Water Committee's (JWC) responsibilities include approval of new water and wastewater projects throughout the West Bank. The JWC continued operating during all the years of the second intifada and continues to meet. The sides are equally represented on the JWC, and all its decisions must be unanimous. Since no mechanism has been developed to resolve disputes, Israel is able to approve or reject every request relating to water and wastewater that is submitted by Palestinian members of the committee. The PA acknowledges the urgent need to treat wastewater in the West Bank. Toward this end, between 1996 and 2002, it raised donations amounting to 230-260 million dollars, most of them from the German development bank (KfW) and from the United States Agency for International Development (USAID). The funds were to be used to build 15 wastewater treatment plants in Palestinian towns and industrial areas in the West Bank. However, since 1996, when the Palestinian Water Authority was established and the JWC was formed, only one wastewater treatment plant has been built which is Al-Birah WWTP. It was built in 1998 and funded by KfW, its construction was possible because Al-Birah district is in Area B, which is under Palestinian civilian control. Israel was interested in having the facility built after it succeeded in forcing the Al-Birah

Municipality to connect the nearby Psagot settlement to the facility. Although its wastewater is treated in the facility, the settlement refuses pay for the treatment.

6.2.2 Delay in Approval of Plans

Obtaining approval to build a wastewater treatment facility is a complicated and prolonged process, due to the environmental ramifications of such a project. The process is even more complex and exhausting when it involves a Palestinian facility in the West Bank, where Israel's approval is needed. Any project must be submitted first to the JWC which must approve on it. In principle, the submission includes the location of the facility and the proposed method of wastewater treatment. If the facility is located in Area C, where Israel is responsible for civil affairs, Civil Administration approval is also required for the plan. This additional stage of Civil Administration approval applies in most cases, as wastewater treatment facilities require large swaths of land that are far from residential areas and can enable future expansion of the facilities. Areas A and B, in which the PA is responsible for civil affairs, contain for the most part Palestinian cities and towns, and most of the land in these areas is built-up. Area C comprises 60 percent of the West Bank and contains the largest land reserves for development there. Given the need to locate suitable land for these relatively large facilities to negotiate its purchase if it is privately owned, and to obtain Israel's consent to its location, rejection of a proposed site by the Civil Administration causes years of delaying, since new plans have to be submitted both to the JWC and the Civil Administration for approval. Although Civil Administration officials are members of the JWC, there is no coordination between the two bodies, and understandings reached by the JWC are often breached by the Civil Administration. The lack of coordination causes lengthy, unreasonable delay, sometimes for more than a decade, in approval of plans to build Palestinian wastewater treatment facilities, and increases distrust between Israel and the Palestinian Authority. The Palestinian Water Authority claims that Israel is currently delaying 140 water and wastewater infrastructure projects. The Civil Administration, on the other hand, contends that it "gives great importance to establishment of these facilities, and all the relevant bodies are instructed to deal vigorously and attentively with every request to build Palestinian wastewater treatment plants." Examples of prolonged delay in approval are in the following points:

- In Tulkarm, a plan to build a plant was submitted to the JWC in 1996. It was not until 2006, after a year of negotiations over the plant's location alone, that the JWC reached a memorandum of understanding regarding location in Area C. However, when the plan was presented to the Civil Administration in December 2008, the head of the International Organizations Desk recommended that "establishment of the facility in Area A be examined, and that care be taken that it does not extend into Area C." The plan will not be realized if the site agreed on by the JWC is rejected, given that the Tulkarm Municipality does not have available land on which to build such a facility.
- A plan to build a facility for West Nablus was submitted to the JWC in August 1997. The Civil Administration demanded a change in location twice, and it was not until May 2008 that permits for its construction were issued. Construction has not yet begun. A plan to build a similar facility in East Nablus was cancelled due to delay in obtaining approval.
- After a plan to build a facility in West Ramallah, submitted to the JWC in July 1999, was approved, the Civil Administration demanded a change in location, on grounds that it was located along the planned route of the Separation Barrier. In September 2008, the head of the Civil Administration approved construction of the plant but required the Palestinians to connect the Beit Horon settlement to it. The plan for the facility has not yet been submitted to the Civil Administration for approval.

6.3 Israel's Attempt to Force the PA to Treat Wastewater from Settlements

From 1996 to 1999, Israel conditioned construction of Palestinian treatment plants on connection of settlements to the proposed facility. For example, Israel tried to force the Palestinians to connect the Kochav Ya'ir settlement to the Al-Birah WWTP and demanded that settlements be connected to facilities planned for West Nablus, Salfit, and the Hebron area. The Palestinian Authority, which views consent as granting legitimacy to the settlements, rejected these demands. In 1999, with a change in Israel's government, Israel ceased insisting that settlements be linked to Palestinian plants. This policy was implemented at a time when the Palestinian Authority, together with the donor countries,

had gathered substantial resources to build wastewater treatment facilities. Israel's position greatly delayed the approval of the plans to build these facilities. Israel recently reverted to its linkage policy, when, as noted above, it conditioned approval of the proposed Ramallah plant on connecting the Beit Horon settlement to it.

6.4 Dispute over Wastewater Treatment Standards

In 2002, during JWC discussions on the proposed plant for the Hebron area, Israel compelled the Palestinians to meet advanced wastewater-treatment standards, which require tertiary treatment of the treated wastewater in all the planned Palestinian facilities. This level of treatment enables use of wastewater for irrigation of all types of crops and for urban and industrial purposes. The standards recommended by the World Health Organization (WHO) require a secondary treatment process and were adopted by the Palestinian Authority. The tertiary treatment standards are not yet in effect in wastewater treatment plants in Israel, or in existing plants in the settlements. The government of Israel did not adopt these standards until 2005, and they will be implemented gradually, until 2015, in all existing wastewater treatment plants in Israel. The WHO estimates that switching from secondary to tertiary treatment increases the cost by 66 to 100 percent per cubic meter. Therefore, applying the advanced standards will substantially raise the cost of building the Palestinian facilities, as well as the future cost of their operation and maintenance.

6.5 Dependence on Donor Countries and Cutback in their Commitment to Palestinian Projects

Since the outbreak of the second intifada in September 2000, Israel has placed severe restrictions on Palestinian movement in the West Bank. As a result, donor countries have had difficulty implementing wastewater projects that they committed to fund. The restrictions raised project costs by 25 to 35 percent and led these countries to reconsider their commitments. USAID was responsible for wastewater treatment projects in the southern West Bank, including the facility that was to be built in the Hebron area. At first, USAID decided to continue to advance these projects, but after Palestinians attacked one of its convoys in the Gaza Strip in October 2003, it decided to freeze the projects. In 2004, the agency allocated funds primarily for humanitarian projects, which did not

include wastewater treatment, and after Hamas won the elections in January 2006, it decided to freeze funding for wastewater-treatment projects. The German development bank, which was responsible for projects in the northern West Bank, at first reduced its activity in especially dangerous areas, such as Nablus, and sought to advance the smaller projects, such as in Tulkarm and Salfit. After Israel delayed progress on these projects too, the bank informed the Palestinian Water Authority that its commitment extended only to the projects planned in West Nablus, Ramallah, and Jenin.

6.6 Breaches of International Law

Neglect in treating wastewater in the West Bank infringes the rights of Palestinians to water and sanitation and their right to gain a livelihood from their agricultural crops.

6.6.1 Breach of Obligations Specified in International Humanitarian Law

Article 56 of the Fourth Geneva Convention imposes on the occupying state the duty of "ensuring and maintaining, with the cooperation of national and local authorities… public health and hygiene in the occupied territory". This article imposes on the occupying state primary responsibility for ensuring public health and hygiene in order to prevent the spread of disease and epidemics.

The obligation to protect water sources is also derived from the occupying state's duty to ensure "public order and safety." This duty includes not only the negative obligation to refrain from harming the local population, for example, by damaging water sources and their supply, but also the positive obligation to take suitable means to protect the population from dangers to which it is exposed. The High Court of Justice interpreted this duty to include "taking all means necessary to ensure growth, change, and development," and requiring "essential investments and carrying out long-term plans for the benefit of the local population," even if they result in changes "that might remain after the military government ends." In a later judgment, the court held that this duty "applies to the varied living requirements of the inhabitants, including medical needs, sanitation… and other needs that people require in modern society."

6.6.2 Breach of the Right to Water and Sanitation

The right to water and sanitation is derived from the right of every person to an "adequate standard of living" and to "the highest attainable standard of physical and mental health," as defined in the International Covenant on Economic, Social and Cultural Rights. The Committee on Economic, Social and Cultural Rights (CESCR), established pursuant to the Covenant, held that the right to water includes the right to clean drinking-water. The committee defined for the first time the right to water as an individual, independent, and separate right, given it is a prerequisite to life and health. State parties to the Covenant must respect this right in every area under its control and refrain from actions that interfere, directly or indirectly, with realization of this right. Article 11 of the Covenant enumerates the components of the right to an adequate standard of living, among them the right to housing. CESCR held that, "All beneficiaries of the right to adequate housing should have sustainable access to… safe drinking water… sanitation and washing facilities…." This right is explicitly recognized in the Convention on the Elimination of All Forms of Discrimination against Women, of 1981, which requires access to water and acknowledges that the right "to enjoy adequate living conditions" includes the right to sanitation. The Convention on the Rights of the Child, of 1989, requires state parties "to combat disease and malnutrition… through, inter alia… the provision of … clean drinking-water, taking into consideration the dangers and risks of environmental pollution," and ensure information and education on "environmental sanitation."

In 2006, the UN Sub-Commission on the Promotion and Protection of Human Rights adopted the recommendations of CESCR on realization of the right to safe drinking water and sanitation. These recommendations require states to realize the right to drinking water and consider the right to sanitation an essential part of the right to water, and require state parties to prevent pollution of water sources. The recommendations provide that all persons have the "right to access to adequate and safe sanitation that protects public health and the environment." A series of decisions made by international committees and bodies, some of which are not binding, expanded the definition of "adequate standard of living" to include the right to water and the right to sanitation. Principle No. 2 of the Program of Action adopted by the UN Conference on Population and Development, held in Cairo in 1994, and Principle No. 11 of the Second UN

Conference on Habitats (Habitat II), held in Istanbul in 1966, recognized that "adequate standard of living" includes the right to water and the right to sanitation. The International Children's Emergency Fund (UNICEF) held that access to sanitation is a "basic human right" that ensures health and human dignity. In addition, the United Nations Millennium Declaration, of 2000, adopted by the UN General Assembly, set a goal of halving, by 2015, the proportion of people who do not have sustainable accessibility to safe drinking water and sanitation. The Johannesburg Declaration on Sustainable Development, of 2002, expanded this goal to include clean water in general and sanitation. A 2008 resolution of the UN Human Rights Council includes a declaration on the commitment to access to sanitation. The UN General Assembly passed a resolution in 2006 declaring 2008 the International Year of Sanitation to raise awareness and achieve the goals of the Millennium Declaration and the Johannesburg Declaration relating to promoting access to safe drinking water and sanitation.

Annex (8)

Parts of the Negotiation Support Unit Report, 2005, about the Israeli Policy towards the Palestinian Wastewater Sector

7 السياسة الإسرائيلية تجاه قطاع الصرف الصحي الفلسطيني

لا تختلف السياسة الإسرائيلية في قطاع الصرف الصحي عنها في قطاع المياه أو أي قطاع آخر، فممارسات الاحتلال على الأرض تتنوع ما بين هدم وتدمير البنى التحتية وتهجير السكان ودفعهم لترك الأرض والرحيل، ومصادرة وتفريغ الأراضي والاستيلاء على المصادر الطبيعية، وحرمان أصحاب الحق والأرض من ممارسة حقوقهم، والتصرف بمواردهم أو التمتع بحرية الحركة أو التنقل أو العيش بكرامة على أرضهم وفي وطنهم.

7.1 لمحة عامة حول سياسة الاحتلال في قطاع المياه

بعد احتلال إسرائيل لبقية الأراضي الفلسطينية في أعقاب حرب 1967، سارعت قواتها إلى السيطرة الكاملة على الموارد المائية الفلسطينية، حيث أصدرت عدداً من الأوامر العسكرية، كان أولها قبل انتهاء العمليات العسكرية يوم 1967/6/7، يتم بمقتضاها نقل جميع الصلاحيات بشأن المياه في الضفة الغربية وقطاع غزة إلى الحاكم العسكري الإسرائيلي، ثم تلا هذا الأمر سلسلة من الأوامر العسكرية منها:-

1- الأمر رقم 92 بتاريخ 1967/8/15، وينص على منح كامل الصلاحية في السيطرة على كافة المسائل المتعلقة بالمياه لضابط المياه المعين من قبل المحاكم الإسرائيلية.

2- الأمر رقم 158 بتاريخ 1967/8/19، وينص على أن يمنع منعاً باتاً إقامة أي إنشاءات مائية جديدة بدون ترخيص، ولضابط المياه حق رفض أي ترخيص دون إعطاء الأسباب.

3- الأمر رقم 291 الصادر عام 1967، وينص على أن جميع مصادر المياه في الأراضي الفلسطينية أصبحت ملكاً للدولة وفقاً للقانون الإسرائيلي عام 1959.

4- الأمر العسكري رقم 948 الذي ينص على إلزام كل مواطن في قطاع غزة بالحصول على موافقة الحاكم العسكري الإسرائيلي إذا أراد تنفيذ أي مشروع يتعلق بالمياه، بالإضافة إلى الأمر رقم 457 عام 72، 715 عام 77، 1336 عام 91 .

وقد مكنت الأوامر العسكرية الإسرائيلية السابقة القوات الإسرائيلية خلال العقود الثلاثة الماضية من إحكام سيطرتها على موارد فلسطين المائية حارمة الشعب الفلسطيني من حقوقه المائية من خلال العديد من الإجراءات ومنها:-

1. فرض القيود على استغلال الفلسطينيين لحقوقهم المائية في الضفة وغزة.
2. تقييد حفر الآبار الزراعية في الضفة الغربية وقطاع غزة.
3. حفر إسرائيل العديد من الآبار داخل المستوطنات الإسرائيلية في الضفة وغزة.
4. حفر سلسلة من الآبار على طول خط الهدنة مع قطاع غزة لاستنفاذ المياه العذبة والتقليل من المياه المنسابة إلى الخزان الجوفي الساحلي في قطاع غزة.

لقد تركت الإجراءات الإسرائيلية آثارها الخطيرة على الحقوق الفلسطينية في المياه، فمعدلات الاستهلاك الفردي للمواطن الفلسطيني أصبحت تقل كثيراً عن معدلات الاستهلاك الفردي في إسرائيل. حيث أن معدل نصيب الفرد

الفلسطيني من المياه يصل إلى 27% بالمقارنة مع نصيب الفرد الإسرائيلي، وهذا راجع إلى اعتماد إسرائيل الكبير على المياه الفلسطينية لتلبية متطلباتها المائية الكبيرة، وتستغل إسرائيل مياه الخزان الجوفي الفلسطيني عبر شبكة من الآبار العميقة يصل عددها إلى 300 بئر غرب الخط الأخضر، بالإضافة إلى 51 بئراً موجودة في المستوطنات الإسرائيلية بالضفة، و43 بئراً موجودة في المستوطنات الإسرائيلية في قطاع غزة.

إن إسرائيل تستنفذ 86.5% من إجمالي المياه الفلسطينية الجوفية والسطحية (نهر الأردن) فيما لا يشكل الاستهلاك الفلسطيني أكثر من 13.5. وبالإضافة إلى هيمنة إسرائيل الكاملة على المياه الفلسطينية، فإنها لم تعمل على تطوير المرافق المائية طوال سنوات احتلالها للأراضي الفلسطينية، إذ تشير نتائج إحصاءات المياه في الأراضي الفلسطينية التي قام بها الجهاز المركزي للإحصاء بأن عدد التجمعات السكانية الفلسطينية التي لا يوجد فيها شبكات مياه عامة قد بلغ 264 تجمعاً سكانياً في الضفة الغربية، أي ما يعادل 38.5% من مجموع التجمعات السكانية وفي قطاع غزة هناك 8 تجمعات لا يوجد فيها شبكات مياه عامة أي بنسبة 19.5% من جملة عدد التجمعات، ولذلك يقوم المواطنون في هذه المناطق بالاعتماد على شراء صهاريج المياه بأسعار عالية، وعلى حفر آبار جمع مياه الأمطار كمصادر بديلة مما يسبب الكثير من المعاناة لهم، ليس هذا بل قامت إسرائيل ومنذ أيلول 2000 بتدمير أجزاء كبيرة من المرافق المائية مثل هدم الآبار وتدمير شبكات الري والخزانات وخطوط المياه خلال أعمال التجريف التي قامت بها إثر اندلاع انتفاضة الأقصى.

إن إسرائيل تحاول إحكام سيطرتها الكاملة على الموارد المائية في الضفة الغربية وقطاع غزة، فبالإضافة إلى الأوامر العسكرية الصادرة بهذا الشأن والتي سبق ذكرها فقد حاولت في مفاوضات الحكم الذاتي التي بدأت في أعقاب زيارة الرئيس السادات أن تبقى إدارة المياه في يدها، وقد عبر عن ذلك رئيس وزرائها مناحيم بيجن في خطابه أمام الكنيست في 1977/12/26، كما كشفت دراسة أصدرتها الأمم المتحدة عام 1980 حول مفهوم الحكم الذاتي توصيات لجنة شكلتها الحكومة الإسرائيلية لبحث الموقف من الحكم الذاتي، حيث أوصت اللجنة بضرورة سيطرة إسرائيل على الموارد المائية في الأراضي الفلسطينية المحتلة، وذلك للخطر المحدق باحتياطي المياه داخل الخط الأخضر. وفي دراسة سرية مشابهة كشف عنها المعلق العسكري زئيف شيف في صحيفة هآرتس في 6 تشرين أول 1999، طالبت بضرورة سيطرة إسرائيل على مناطق محددة في الضفة الغربية للحيلولة دون إفراط الفلسطينيين في استخدام المياه الجوفية التي يمكن أن تمد القدس والسهل الساحلي، وحتى في المفاوضات الإسرائيلية الفلسطينية ما زالت إسرائيل تصر على تأجيل موضوع المياه واعتباره من موضوعات الحل الدائم لكون مسألة المياه مسألة معقدة فهي مسألة وجود لكلا الطرفين، كما أن إسرائيل لم تنفذ ما وقعت عليه من اتفاقات حول المياه في اتفاقية أوسلو 2 الموقعة في 28 أيلول 1995 المادة 40 والتي جاء فيها: ضرورة تزويد الفلسطينيين بكميات مياه إضافية. كما أنها منعت الفلسطينيين من حفر آبار للمياه أو إقامة أي منشآت مائية بالإضافة إلى تحديدها كمية المياه المستخدمة من قبل الفلسطينيين، وعلى ذلك فإنها تقوم ببيع الفلسطينيين كمية من مياههم التي استولت عليها، حيث تقوم شركة ميكروت الإسرائيلية بضخ ما بين 4.5 – 5 مليون م3 من المياه إلى قطاع غزة.

7.2 السياسة المتفق عليها تجاه حماية البئة

لم تف إسرائيل منذ احتلالها للأراضي الفلسطينية عام 1967 باعتبارها القوة المحتلة بالتزاماتها المتمثلة في ضمان سلامة الأراضي الفلسطينية وحمايتها من التلوث البيئي. وخلال الفترة التي كانت فيها إسرائيل مسئولة بمفردها عن إدارة الأراضي الفلسطينية التي تحتلها، لم تقم إسرائيل باستثمار الأموال اللازمة في البنية التحتية لشبكات الصرف الصحي بشكل كاف، كما أنها لم تنشئ محطات لمعالجة مياه المجاري بحيث تتلاءم مع احتياجات أعداد السكان المتزايدة. وبحسب تصريحات سلطة المياه الفلسطينية، فإنه وعلى مدى فترة زمنية تربو على 30 عاما، لم تستفد سوى ما نسبته 20% فقط من التجمعات السكانية للمواطنين في الأراضي الفلسطينية المحتلة من شبكات الصرف الصحي، كما أنه لم يتم معالجة سوى 5% فقط من مياه الصرف الصحي في محطات للمعالجة.

وفيما يتعلق بحماية البيئة، ينص البروتوكول المتعلق بالشؤون المدنية، الملحق الثالث للاتفاقية الإسرائيلية-الفلسطينية للمرحلة الموقعة عام 1995، على ما يلي:

"على كلا الطرفين تبني وتطبيق وضمان التقيد بالمعايير المعترف بها دوليا والتي تتعلق بالآتي.. مستويات مقبولة من معالجة النفايات الصلبة والسائلة، والطرق والوسائل المتفق عليها بشأن التخلص من هذه النفايات، واستخدامها والتعامل معها ونقلها...وتخزين النفايات و المواد الخطرة (بما فيها مبيدات الجرذان، والمبيدات الحشرية ومبيدات الأعشاب)".

وبموجب المادة (40) من البروتوكول المتعلق بالشئون المدنية، اتفق الجانبان الإسرائيلي والفلسطيني على التعاون، على أساس من التفاهم المتبادل والمسؤولية المشتركة، في كافة المسائل المتعلقة بالمياه والصرف الصحي، وقد نصت الفقرات من 21-24 من المادة (40) من البروتوكول المذكور على أنه يتوجب على كل جانب اتخاذ كافة الإجراءات اللازمة لحماية مصادر المياه وأنظمة الصرف الصحي في المناطق التي تقع تحت سيطرته، والحيلولة دون تلوث أو تسمم مصادر المياه وأنظمة الصرف الصحي، بما في ذلك الخاصة بالجانب الآخر. كما تنص المادة (40) المذكورة أعلاه على تشكيل "لجنة المياه المشتركة" والتي تضم في عضويتها عددا متساويا من الممثلين من كلا الجانبين، وتركز عملها على كافة المسائل ذات الصلة بالمياه والصرف الصحي في الضفة الغربية. كما نصت هذه على وجوب صدور قرارات هذه اللجنة بإجماع أعضائها.

7.3 التلوث البيئي الناتج عن السياسات الإسرائيلية:

إن سلسلة السياسات الإسرائيلية الممنهجة تهدف إلى إحداث أضرار بيئية ضخمة في الأراضي الفلسطينية المحتلة. وفي هذا السياق، صدر تقرير عن برنامج الأمم المتحدة البيئي خلال شهر كانون الثاني من عام 2003 دراسة تشير على وجه التحديد إلى الآثار الضارة الناتجة عن التخلص من النفايات الصلبة الصادرة عن المستوطنات الإسرائيلية وتدفق مياه المجاري من هذه المستوطنات على الأراضي الفلسطينية ، وتدمير البنية التحتية الخاصة بالمياه وشبكات الصرف الصحي، والقيود التي تفرضها سلطات الاحتلال على تطوير المشاريع الفلسطينية، إلى جانب الممارسات التعسفية الإسرائيلية الأخرى.

تعتبر المستوطنات الإسرائيلية والبنى التحتية المقامة فيها مصدرا رئيسيا من مصادر التلوث والضرر البيئي في الأراضي الفلسطينية المحتلة. ويخلص تقرير برنامج الأمم المتحدة البيئي إلى أنه، من الناحية التاريخية، جرى إهمال معالجة مياه الصرف الصحي في الأراضي الفلسطينية المحتلة وأن الوضع في الأراضي الفلسطينية يزداد سوءا بسبب المستوطنات الإسرائيلية التي تفتح مياه المجاري غير المعالجة منها على أراضي المواطنين. كما تشير هذه الدراسة إلى أنه وبناء على المعلومات المتوفرة، لا تحتوي العديد من المستوطنات الإسرائيلية المقامة فيها، وعلى الرغم من زيادة أعداد المستوطنين في هذه المستوطنات، لم تعمل السلطات الإسرائيلية المحتلة على اتخاذ أية تدابير لحل المشاكل البيئية المترتبة على مياه المجاري المنسابة من هذه المستوطنات. ويشير التقرير نفسه إلى أن مياه المجاري المنسابة من المستوطنات الإسرائيلية تتدفق في الأودية دون إعارة أدنى اهتمام للآثار البيئية السيئة المترتبة على ذلك.

وبحسب تقرير البرنامج البيئي للأمم المتحدة، قدمت إسرائيل تقارير متضاربة حول الوضع البيئي في الأراضي الفلسطينية المحتلة، حيث أشارت إلى أنها تقوم بمعالجة معظم المياه العادمة، والتي تبلغ كميتها 11 مليون متر مكعب، والتي تتدفق من المستوطنات الإسرائيلية إلى داخل الأراضي الفلسطينية المحتلة في الضفة الغربية. وتدعى إسرائيل بأن حوالي 66% من المستوطنات الإسرائيلية تمتلك محطات لمعالجة مياه الصرف الصحي فيها، بيد أن برنامج الأمم المتحدة البيئي لم يتمكن من تأكيد هذا الادعاء الإسرائيلي بسبب منع القائمين على هذا البرنامج من زيارة محطات معالجة مياه المجاري التي تحدثت إسرائيل عن وجودها في المستوطنات.

ويؤكد المواطنون الفلسطينيون القاطنون في التجمعات السكانية القريبة من المستوطنات الإسرائيلية على صحة المعلومات المتعلقة بالتلوث الذي تتسبب به هذه المستوطنات، والذي ورد ذكره في تقرير البرنامج البيئي للأمم المتحدة على النحو التالي:

- **مدينة سلفيت:** بحسب إفادات بلدية سلفيت، تتسبب مياه المجاري المتدفقة من مجمع مستوطنات "أرئيل" في تدمير الأراضي الزراعية وتلويث نبع عين المطوي، الذي يقع إلى الغرب من مدينة سلفيت، والذي يشكل حوالي 20% من إجمالي استهلاك المياه في المدينة.
- **بلدة دير بلوط في محافظة سلفيت:** يشير التقرير إلى أن مياه المجاري تتدفق من مستوطنتي "بدوئيل" و"إيلي زهاف" على الأراضي الزراعية في البلدة، مما يؤدي إلى تدمير حقول المواطنين المزروعة بأشجار الزيتون.
- **قرية دير نظام في محافظة رام الله:** أشار التقرير إلى أن المستوطنين في مستوطنة "حلاميش" يفتحون مياه المجاري من المستوطنة على أراضي المواطنين الزراعية، مما يؤدي إلى تدمير أشجار الزيتون في هذه القرية

7.4 السياسة الإسرائيلية تجاه مشاريع الصرف الصحي

تمارس إسرائيل عدة سياسات من شأنها أن تعيق الفلسطينيين من تنفيذ مشاريع الصرف الصحي ومعالجة المياه العادمة، ومن هذه الممارسات ما يلي:

- تصر كل من لجنة المياه المشتركة- التي تقضي تشكيلها باتخاذ كافة القرارات الصادرة عنها بإجماع أعضائها من الجانبين الإسرائيلي والفلسطيني- والإدارة المدنية الإسرائيلية على منع السلطة الوطنية الفلسطينية من الوفاء بالتزاماتها التي نصت عليها اتفاقية المرحلة الانتقالية، حيث تواصل السلطات الإسرائيلية رفض الموافقة على المشروعات التي يتم التقدم بها للجنة المياه المشتركة، فحتى نهاية عام 2004 استمرت السلطات الإسرائيلية في رفض الموافقة على تنفيذ مقترحات لإنشاء مشاريع لمعالجة مياه المجاري، والتي تهدف إلى خدمة التجمعات السكانية الفلسطينية، بدعوى أن هذه المشاريع لا تخدم المستوطنات الإسرائيلية المقامة بالقرب من التجمعات الفلسطينية. وقد تم تجاهل الاعتراضات التي تقدمت بها السلطة الفلسطينية، والتي تستند إلى أن وجود هذه المستوطنات غير قانوني بموجب أحكام القانون الدولي.
- وفي حالة موافقة لجنة المياه المشتركة على مشروع ما، تشترط السلطات الإسرائيلية رفع هذا المشروع أمام مكتب التنسيق اللوائي للموافقة عليه، والذي نادرا ما يوافق على إنشاء مثل هذه المشاريع، وبحسب تصريحات سلطة المياه الفلسطينية، رفضت السلطات الإسرائيلية الموافقة على عدد من المشاريع التي تقدمت بها لإقامة محطات لمعالجة مياه المجاري لخدمة التجمعات السكانية الفلسطينية في كل من محافظات طولكرم، ونابلس، وسلفيت، ورام الله، و القدس، وبيت لحم، والخليل بسب عدم الموافقة عليها من قبل اللجنة المشتركة. وفي حالة موافقة هذه اللجنة على هذه المشاريع، فإن مكتب التنسيق اللوائي لا يوافق عليها.
- بموجب اتفاقية المرحلة الانتقالية، تم تقسيم الضفة الغربية إلى ثلاثة مناطق: أ، ب، ج. تشكل المنطقة ج 60% من مساحة الضفة الغربية، وبالنظر إلى بعدها عن التجمعات المأهولة بالسكان، تعتبر المنطقة ج المكان المناسب لإقامة محطات معالجة النفايات السائلة ومياه المجاري فيها. وعلى أية حال، لا تزال المنطقة ج تحت سيطرة قوات الاحتلال الإسرائيلي. وقد رفضت الإدارة المدنية الإسرائيلية أكثر من مرة الموافقة على مشاريع اقترح الفلسطينيون إنشاءها- تحت ذريعة الأسباب الأمنية- لمعالجة مياه المجاري والنفايات في هذه المنطقة.
- في عام 1999، توجهت سلطة المياه الفلسطينية بطلب إلى بلدية سلفيت للاشتراك في مشروع يهدف إلى معالجة مياه المجاري في قرى فلسطينية في محافظة سلفيت بتمويل من بنك التنمية الالماني، واشتمل المشروع على بناء شبكة للصرف الصحي، إلى جانب محطة لمعالجة المياه العادمة، بحيث يتمكن المزارعون في هذه المنطقة من استخدام المياه المعالجة لري مساحة تقدر بـ10.000 دونم من الأراضي الزراعية، وبحسب محاضر اللجنة المشتركة، اشترطت الإدارة المدنية الإسرائيلية للموافقة على هذا المشروع تصميم محطة معالجة المياه العادمة بحيث يخدم المستوطنات الإسرائيلية في المنطقة إلى جانب القرى الفلسطينية. وقد احتجت سلطة المياه والبلدية الفلسطينيون على هذا الشرط ولا يزال هذا المشروع معلقا حتى اللحظة.

إن السياسة التي تنتهجها السلطات الإسرائيلية في رفضها المتواصل الموافقة على إنشاء مشاريع لمعالجة مياه الصرف الصحي لم يتسبب في الحيلولة دون وفاء السلطة الفلسطينية بالتزاماتها التي تمليها عاليها الاتفاقية المرحلية فحسب، بل إنها تسببت في خسائر مالية باهظة بالنسبة للفلسطينيين، ففي الوقت الذي يقدم فيه الفلسطينيون مقترحات المشاريع أمام لجنة المياه المشتركة بعد الحصول على التمويل اللازم، يتسبب رفض هذه اللجنة الموافقة على إنشاء هذه المشاريع في ضياع فرص التمويل لإقامتها، أضف إلى ذلك أن رفض إسرائيل التصريح لإقامة هذه المشاريع يتسبب في حرمان الفلسطينيين من الاستفادة من الفوائد التي يجنونها من معالجة المياه العادمة، ومن ضمنها إعادة استخدام هذه المياه.

7.5 المطالبات المالية الإسرائيلية من الفلسطينيين تحت ذريعة معالجة المياه العادمة

على الرغم من الإعاقة المستمرة من جانب لجنة المياه المشتركة و/أو الإدارة المدنية الإسرائيلية للجهود التي يبذلها الفلسطينيون لمعالجة النفايات ومياه المجاري، تعتقد إسرائيل بأن لها الحق في فرض عقوبات على السلطة الوطنية الفلسطينية، وذلك- حسب ادعاءاتها- لأن مياه المجاري تنساب من الأراضي الخاضعة للسلطة الفلسطينية إلى الأراضي الإسرائيلية، مما يسبب أضرارا بيئية للتجمعات السكانية الإسرائيلية.

وقد أبلغت وزارة المالية الإسرائيلية في رسالة بعثت بها إلى السلطة الوطنية الفلسطينية خلال شهر كانون الثاني من عام 2003 بقرار إسرائيل القاضي بمعالجة مياه المجاري المتدفقة –حسب ادعائها- من الأراضي الفلسطينية في المعامل الإسرائيلية، كما دعت الجانب الفلسطيني إلى دفع المبالغ المالية التي تترتب عليه مقابل ذلك.

ووفق حسابات وزارة المالية الإسرائيلية، تدين السلطة الفلسطينية لإسرائيل في نهاية العام 2003 بمبلغ يصل إلى 39.1 مليون شيكل، وذلك مقابل معالجة المياه العادمة المتدفقة من مناطق بيت لحم، وبيت جالا، وبير نبالا، والرام، وقلقيلية، وحبله، ونابلس وطولكرم وجنين. ومما يبعث على الاستياء من هذه الممارسات التعسفية أن هذه المناطق هي عينها التي رفضت لجنة المياه المشتركة أو الإدارة المدنية الإسرائيلية، أو كليهما معا، الموافقة على إنشاء مشاريع لمعالجة مياه المجاري فيها في الفترة الواقعة بين عامي 1996 و2003.

من جانب آخر، تضمنت رسالة ثانية تتعلق بمعالجة مياه المجاري المنسابة من مدينة الخليل تفصيلا بأن المستوطنين الإسرائيليين تقدموا باستدعاء أمام المحكمة العليا الإسرائيلية لاستصدار حل لمشكلة المياه العادمة المتدفقة من المدينة. وكان الحل العاجل الذي بادرت به العديد من الوزارات الإسرائيلية يكمن في معالجة مياه المجاري المنسابة من الخليل في محطة المعالجة الإسرائيلية القائمة في مدينة بئر السبع، داخل الخط الأخضر. وقد جاء الحل متضمنا تمديد خط أنابيب لنقل مياه المجاري ومحطة لضخ هذه المياه، تقدر التكلفة الإجمالية لها بحوالي 16.000.000 شيكل، بالإضافة إلى ذلك، تبلغ تكلفة معالجة ما كميته 1.8 مليون متر مكعب من المياه العادمة بـ1.741 شيكل للمتر المكعب الواحد،حيث تصل تكلفة معالجة مياه المجاري المتدفقة من مدينة الخليل بحوالي 3.134 مليون شيكل (حوالي 728.840 دولار أمريكي).

وقد أتاحت كل من الرسالتين المذكورتين أعلاه فترة لا تزيد على الـ7 أيام أمام السلطة الوطنية الفلسطينية كي تعمل على وقف تسرب مياه المجاري من التجمعات السكانية الفلسطينية إلى داخل الأراضي الإسرائيلية، وفي حالة عجز السلطة الفلسطينية عن اتخاذ الإجراءات اللازمة لمعالجة مياه المجاري- بحسب الرسالتين- فإن إسرائيل ستتولى اتخاذ هذه الإجراءات. كما أشارت الرسالتين إلى أن السلطة الفلسطينية ستكون مسئولة عن التكاليف المترتبة على ذلك.

ووفق هاتين الرسالتين، فإن إسرائيل تستند في مطالبتها للسلطة الوطنية الفلسطينية إلى المسؤولية التي تقع على عاتق السلطة الفلسطينية التي نصت عليها الفقرات 21-24 من المادة (40) من البروتوكول المتعلق بالشؤون المدنية الملحق بالاتفاقية الإسرائيلية- الفلسطينية للمرحلة الانتقالية، وعلى الرغم من مصداقية هذا النص من الناحية المبدئية، إلا أنه لا ينطبق على هذه الحالة. فبينما تنص الفقرة رقم (24) على أي من الطرفين تعويض الطرف الآخر، فإن الفقرة تشترط دفع التعويض في حالتين محددتين فقط: وذلك في حالة "الاستخدام غير المصرح به" أو في حالة وقوع تخريب لـ"للمياه أو أنظمة معالجة المياه العادمة الواقعة في المناطق التي تقع تحت سيطرة احد الطرفين والتي تخدم الطرف الآخر". ومع الأخذ بعين الاعتبار أن إسرائيل لم تقدم الدليل الذي يعزز أي من الاستخدام غير المصرح به أو التخريب، وبالنظر أيضا إلى أن الأساس الواقعي الذي تقدمه إسرائيل يعجز عن التصريح بأن أيا من هذين الحدثين قد وقع فعلا، فإن نص هذه الفقرة لا ينطبق بحال على هذا الوضع القائم.

وعلاوة على أن السلطات الإسرائيلية أساءت تفسير المادة (40) المذكورة من أجل أغراضها، فإن الادعاء الذي تتقدم به إسرائيل يعتبر معيبا من الناحية الإجرائية، حيث انه يتجاهل الإجراءات القانونية التي نص عليها البروتوكول المتعلق بالشؤون المدنية. فمن ناحية، لم تشتمل الرسائل التي بعثت بها وزارة المالية الإسرائيلية على تفسير للطريقة التي توصلت من خلالها إسرائيل إلى تحديد مصدر تدفق مياه المجاري أو كميات المجاري المتدفقة.

كما أن هذه الرسائل لم تشر إلى الكيفية التي تمكنت إسرائيل من خلالها إثبات –إن كانت قد قامت بذلك أصلا- أن قسما من المياه الملوثة لم تكن، في واقع الأمر، قد تسربت من المستوطنات الإسرائيلية المقامة على أراضي الضفة الغربية. وفي الوقت الذي تشير فيه هذه الرسائل إلى قيام بمعالجة المياه العادمة (المتسربة من التجمعات السكانية الفلسطينية)، فإنها لا تقدم دليلا واحدا يعزز هذا الادعاء، أو الطريقة التي تقوم من خلالها بمعالجة هذه المياه، إن كانت في حقيقة الأمر تقوم بمعالجتها. زد على ذلك أن الرسائل المذكورة لا تتضمن أية إشارة واحدة إلى ما إذا كانت إسرائيل تعيد استخدام مياه المجاري المعالجة، وإن كان الوضع كذلك، فهل قامت إسرائيل بخصم قيمة هذه المياه المعالجة من القيمة الكلية التي تطالب بها السلطة الوطنية الفلسطينية؟

أخيرا تنص المادة (40) على أنه على كل من الطرفين الالتزام باتخاذ كافة الإجراءات اللازمة لحماية موارد المياه العادمة في المناطق الواقعة تحت سيطرة كل منهما، وذلك للحيلولة دون حدوث تلوث أو تسمم في هذه الموارد والأنظمة التي تخص الطرفين معا، وفي الوقت الذي تستخدم فيه إسرائيل هذا النص لتعزيز مطالبتها للسلطة الفلسطينية لتسديد مستحقاتها عن معالجة مياه المجاري المنسابة من مناطقها، فإن إسرائيل لم تشر إلى أنها تنوي

تعويض الجانب الفلسطيني عن الضرر البيئي الذي سببته في الأراضي الفلسطينية المحتلة من خلال ممارستها المدمرة المذكورة أعلاه.

وحتى نهاية عام 2005، صرحت إسرائيل بأنها خصمت 65 مليون شيكل من الأموال التي تجنيها السلطة الوطنية الفلسطينية من ضريبة القيمة المضافة، وفي نهاية عام 2010، اشارت سلطة المياه الفلسطينية ان مجموع الخصميات الاسرائيلية زادت عن 220 مليون شيكل، استخدمت حسب الادعاءات الاسرائيلية ببناء محطات لمعالجة المياه العادمة من الجانب الفلسطيني كما هو الحال في عيمق حيفر(2002) لمعالجة مجاري طولكرم ونابلس، ومحطة معالجة شوكيت في بئر السبع (2009) لمعالجة مجاري الخليل،او توسيع محطات معالجة كفار هداروم لمجاري قلقيلية، محطة معالجة سوروكا في القدس الغربية لمعالجة مجاري بيت جالا، ورام الله وضواحي القدس الشرقية ومحطة معالجة جفعات شاؤول لمعالجة مجاري جنين. كما أن السلطات الاسرائيلية تلزم السلطة الفلسطينية بما قيمته 3-5 ملايين شيكل كل شهر كمستحقات لها عن معالجة مياه المجاري المتدفقة من الأراضي الفلسطينية المحتلة إلى داخل إسرائيل. وبالنظر إلى قيام إسرائيل باحتجاز كافة الأموال المستحقة للسلطة الفلسطينية التي تدخل عليها من ضريبة القيمة المضافة، فإن الجانب الفلسطيني عاجز عن التحقق من قيمة المبلغ الذي تطالبها به إسرائيل على وجه الدقة، كما ان الخصميات الاسرائيلية تصدر دون موافقة الطرف الفلسطيني ولا تحتوي الخصميات على بنود تفصيلية توضح قيمة الخصميات، ولا تحدد آلية احتساب الاسعار، ولا تأخذ بعين الاعتبار قيمة المياه المعالجة من الجانب الفلسطيني والتي يعاد استخدام معظمها من قبل المزارعين الاسرائيلين وينتفع منها.

ومما يزيد الأمر تعقيدا أن سياسة إسرائيل المتمثلة في توسيع المستوطنات المقامة على الأراضي الفلسطينية قد عملت على استفحال التلوث البيئي في هذه الأراضي.

وخلال الفترة التي كان المفروض فيها تولي السلطة الوطنية الفلسطينية المسؤولية عن معالجة المياه العادمة في بعض المناطق من الأراضي الفلسطينية المحتلة، عملت سلطات الاحتلال الإسرائيلية بشكل متكرر على إعاقة الجانب الفلسطيني عن الوفاء بالتزاماته من خلال رفضها المصادقة على تنفيذ المشاريع الخاصة بإنشاء معامل معالجة مياه المجاري ومكبات النفايات الصحية.

إن الاستنزاف المالي الذي يحصل من الجانب الإسرائيلي مجحف بحق الفلسطينيين لعدة أسباب:

- الاحتلال الإسرائيلي هو من يصدر فواتير المعالجة ويراجع عليها ويصادق على خصمها من حسابات السلطة، دون النظر إلى أن هناك طرفا فلسطينيا.
- إن السلطة الفلسطينية غير شريكة بالمنافع الاقتصادية المتعلقة بمياه المجاري المعالجة ولا يتم تعويضها عنها؛ حيث من المعلوم أن سعر المتر المكعب من المياه المعالجة في إسرائيل يبلغ 0.50 شيكل، فالمستفيد من معالجة مياه المجاري الفلسطينية هو قطاع الزراعة الإسرائيلي.
- إن مبدأ الملوث يدفع، لا يعني أن يقوم الاحتلال الإسرائيلي بتحميل السلطة كامل تكاليف المعالجة المتقدمة حيث من المتعارف عليه أن هذا المبدأ يُلزم بالمعالجة للحدود التي لا تضر في البيئة.

- إن تأخير الموافقة على مشاريع الصرف الصحي في الضفة الغربية من قِبل الاحتلال الإسرائيلي سواء اللجنة المشتركة أو الإدارة المدنية أضاع فرصة بناء محطات معالجة، وأدى إلى تكاليف كان من المفترض أن لا تُدفع.