

Investigative Report Series on Water Issues No. 2

Pollution of the Mountain Aquifer by Sewage

FINDING SOLUTIONS

July 2005

Zach Tagar, Tamar Keinan, Violet Qumsieh

A. Background:

The underground water reservoir of the Mountain Aquifer is the most important source of water for Israelis and Palestinians. It supplies an average of 600 million cubic meters of good quality water per year, more than any other source between the Mediterranean Sea and the Jordan River.

The problem

The sewage of over 2 million people who live above the Mountain Aquifer is discharged untreated into streams and wadis, percolating into the groundwater. Sewage from most Palestinian cities and villages receives no treatment at all. The sewage of many Israeli settlements in the West Bank is not treated adequately, or even at all. As a result, many natural springs have been contaminated and evidence of pollution in deep groundwater has already been detected. Continued pollution would lead to the destruction of large parts of the Mountain Aquifer.

The solution

The treatment of Palestinian sewage is the responsibility of the Palestinian Authority and Palestinian municipalities. Significant assistance to the sewage sector has been extended to the Palestinian Authority by the international community: the governments of Germany and the US have generously committed \$230 million for sewage infrastructure in the West Bank. Plans for sewage treatment plants exist for the Palestinian

cities of Hebron, Ramallah, Nablus, Tul Karem, Jenin, and Salfit. However, only one sewage treatment plant has been built since 1993 (El Bireh), and another rehabilitated (Tul Karem), while the other projects remain largely on hold. Importantly, the sewage problems of Palestinian villages, in which the majority of West Bank Palestinian population resides, received very little attention by way of planning, financing or implementation.

The Israeli government is responsible for ensuring that Israeli settlements in the West Bank receive adequate sewage treatment. While some settlements have adequate sewage treatment and several projects are underway (including the Kanah Stream project, Ariel sewage treatment plant and several others), the problem in many settlements is yet to be solved.¹

This report is an update to EcoPeace/FoEME's first report on pollution of the Mountain Aquifer by sewage, *A Sleeping Time Bomb*, published in February 2004. During 2003, when the first publication was being researched and interviews conducted, all parties were pessimistic about the chances of progress, mostly blaming each other for the inability to proceed.

Since the publication of the first report and constant public scrutiny on all sides regarding the lack of progress, some significant progress has been achieved due to the additional efforts made by the respective governments. Despite the progress to date, however, much remains to be done to prevent pollution of shared groundwater.



¹ Friends of the Earth Middle East stands firmly against Israel's settlement activity in the West Bank and Gaza Strip, and considers the return of Israeli settlers a necessary part of future peace between Israel and Palestine. With this recommendation we call to minimize the damage of existing settlements and not to continue or prolong settlement activity.

B. Key developments since the publication of EcoPeace/FoEME's report *A Seeping Time Bomb* (2004)

- Opening of sewage treatment plant rehabilitation project in **Tul Karem** (by German funding) on February 6, 2005. Palestinians, Israelis and donor country guests took part in the extraordinary event celebrating the completion of the first sewage project since the beginning of the Intifadah.
- Location of the planned sewage treatment plant was agreed upon in **Salfit**. A letter of commitment for non-obstruction to the project by Israel's security barrier was sought from Israel, and finally provided by the Foreign Ministry. Consequently, a schedule of implementation has been reached for the Salfit project (German funding).
- USAID, Israel and the PA agreed on a location for a sewage treatment plant in the **Hebron** area. Consequently, a schedule of implementation has been reached for the Hebron project (U.S. funding).
- Reconsideration for **Nablus** sewage solutions: the Nablus East project has been cancelled, while plans for the treatment of Nablus West sewage were changed (funding for both projects was committed by Germany). Several alternatives have been investigated, among others, treatment inside Israel. The different proposals are currently being studied, with a decision to be made in the coming months.
- A German funded socio-economic study is taking place in Nablus, examining the ability of the Nablus population to afford sewage treatment.
- The Israeli Environment Ministry opened a criminal investigation against the Mayor of **Ariel settlement**, on account of sewage mismanagement. Consequently, a schedule of implementation has been reached for the Ariel sewage treatment project (Israeli funding), and the old sewage facility has been rehabilitated.
- There has been progress on several other sewage projects in Israeli settlements.
- The Israeli Association of Regional Councils, which recently emerged as an interested stakeholder in the issue, began to meet with Israeli, Palestinian and international stakeholders to promote solutions for transboundary pollution.
- The Palestinian Cabinet became involved in the issue of sewage infrastructure. The specific issue currently dealt with is the reconsideration of Nablus-Tul Karem sewage solutions.
- The office of Vice Premier in Israel Shimon Peres began to be interested in the issue of sewage infrastructure in the West Bank.
- The Joint (Israeli-Palestinian) Water Committee has approved additional sewage treatment plants in the West Bank: Beir Zeit, Jifna and Gilazoon; Ramallah – Bitunia; and Ramallah – North.
- A pre-feasibility study has been conducted on the rehabilitation of the Jenin sewage treatment plant.



C. Update on sewage solutions

German funded projects

Tul Karem rehabilitation completed: The German Association for Technical Cooperation (GTZ) and the German Development Bank (KfW) completed rehabilitating the old sewage treatment ponds in Tul Karem. The good cooperation between the neighboring municipalities of Tul Karem in Palestine and Emek Hefer in Israel was highly instrumental in facilitating the work. The rehabilitated plant, which was opened on February 2005, consists of three aeration ponds which provide initial treatment for Tul Karem sewage. Once the wastewater undergoes primary treatment in the ponds, it flows underneath the security barrier into the treatment plant established by the Emek Hefer municipality for final treatment.

Revisions of Nablus West sewage solution plans: Concerns regarding the ability of Palestinians to finance running costs of the proposed plant in Nablus West led to the reevaluation of the project, and consideration of several lower cost alternatives. A KfW delegation has investigated this option as well as several others, and its conclusions are expected to be discussed in July 2005 with the Palestinian partners. A possible alternative highlighted by the delegation is a lower cost treatment

plant near Nablus instead of the originally planned, activated sludge project. Another alternative discussed was the treatment of Nablus sewage in the Israeli side of the green line: the KfW would finance a pre-treatment facility in Nablus and a carrier line for the sewage into Emek Hefer, inside Israel. Nablus sewage would add to the sewage from Tul Karem already treated there. This would require upgrading the Emek Hefer facility.

Both the Israeli Water Commission and the Palestinian Water Authority expressed their support for treatment of Palestinian sewage by Palestinians, opposing the proposal for treatment beyond the green line. However, the bordering municipalities of Tul Karem and Emek Hefer were supportive of the proposal. FoEME supports treatment of Nablus sewage near Nablus, by Palestinians. FoEME's position is that each side has the responsibility to treat its own sewage, and all efforts must be encouraged to develop Palestinian capacity in the wastewater sector, and to make treated wastewater available for Palestinian agriculture to the greatest extent possible.

The sewage project proposed for **Nablus East** has been cancelled, and its funding shifted to another



project of employment generation. FoEME has serious concerns about this precedent, in which commitments made for the wastewater sector are withdrawn, leaving a serious source of pollution unanswered.

Salfit project: The successful implementation of the Tul Karem project served as a green light for commencement of other German funded projects. Consequently, tender documents for the Salfit project were reevaluated, and the contract reassigned to the original contractor. Germany requested from Israel a letter guaranteeing that the separation barrier planned for the Ariel area will not obstruct the planned sewage treatment plant in neighboring Salfit. After initial refusal, a letter to this effect was provided by the Israeli Foreign Ministry in consultation with the Israeli military. A schedule of implementation has been reached for the Salfit project, with construction expected to commence in July 2005.

Ramallah: rehabilitation of the old sewage ponds has taken place with German funding.

Other projects:

Jenin: A pre-feasibility study for the rehabilitation of the **Jenin sewage treatment plant** has been completed by the Palestinian Wastewater Engineers Group (PWEG), in association with the Jenin municipality. The German Development Cooperation has committed funds for sewage solutions for the Jenin region.

U.S. funded projects

In the trilateral water meetings held between US, Israeli and Palestinian officials, an agreement has been reached on the controversial location of the planned sewage treatment plant for the Hebron area. A schedule of implementation has been agreed upon. Construction is expected to commence in January 2006. The USAID is planning a donor-Palestinian-Israeli meeting during 2005, focusing on water and sanitation as a priority issue.

New projects

The joint Israeli-Palestinian Water Committee has approved three additional sewage projects in West Bank Palestinian cities: Beir Zeit, Jifna and Gilazoon; Ramallah – Bitunia; and Ramallah – North. Funding for these projects is not assured yet. The parties have

approached Germany with a request for assistance on these projects.

Settlements' sewage

Kanah Stream carrier: The laying of a pipeline to collect sewage from five Israeli settlements in the West Bank into Israel has been nearly completed (the last 70 meters are under construction). The connection of settlements to the pipeline has been approved, however there is no ready solution for the treatment of the sewage at the pipe-end, as the facility in Nir Eliyahu (inside Israel) is not capable of receiving additional sewage. Further, the Nir Eliyahu facility provides secondary treatment only. The settlements that participate in the project include Oranit, Sha'arei Tiqva, Alfei Menashe and Karnei Shomron.

Sewage treatment plant for Ariel (planned and existing): The old facility has been repaired with an investment of NIS 300,000, and is currently in operation. A new facility is being planned, to be located near the planned Salfit sewage treatment plant. Discussions are being held with the Ministry of Finance and the Prime Minister's Office regarding a grant for the planned facility, amounting to 25% of the construction costs. Such grants are currently not provided to municipalities inside Israel, therefore the decision is yet to be approved by the government.

FoEME's position is that the project should be implemented regardless of the availability of the grant. FoEME opposes government subsidies to settlements.

Additional facilities: An activated sludge facility has been established for the settlement of Tko'a; sewage facilities in Telem were upgraded; Gush Etzion facilities were upgraded; and facilities were established for the settlements of Keidar and Karnei Tzur.

Legal Action:

- The Israeli Ministry of the Environment opened a criminal investigation against the Mayor of Ariel on account of failing to prevent pollution of water sources due to inadequate sewage treatment in Ariel. The Mayor has been called for a hearing, leading to possible prosecution.
- A water and sewage corporation has been established for the settlement of Ariel.

Additional developments

Palestinian Authority

The Palestinian Water Authority has prioritized the issue of sewage solutions more than in the past. This has been expressed in interviews with other parties,

and is also evident in its efforts in Tul Karem, Salfit and Hebron, as well as in attempts to find sewage solutions in Nablus, Jenin and other localities.

The Palestinian Cabinet, including Ministers of Planning and of Local Government, became involved in the decision over sewage projects, notably including the new plans for Nablus sewage.

Israel

According to sources at the German Development Cooperation, the coordination of the Israeli security forces with German agencies has significantly improved.

At the local government level, the Association of Regional Councils in Israel has emerged as an interested stakeholder in the issue, as many regional councils border the West Bank and suffer from untreated sewage. In association with EcoPeace/FoEME, a survey of transboundary environmental nuisances was conducted, as well as of the history of direct Israeli-Palestinian contacts at the municipal level. The leadership of the Association has unanimously decided to promote joint activities with EcoPeace/FoEME. Consequently, a joint team of EcoPeace/FoEME and the Association of Regional Councils began to hold meetings with Israeli, Palestinian and donor country representatives.

The planned disengagement of Israel from the Gaza Strip and northern West Bank may imply a reduction of military presence between the cities of Jenin, Nablus and Tul Karem. Should this take place, many of the difficulties associated with restrictions on movement may be removed, thereby easing the implementation of infrastructure projects such as the Nablus, Tul Karem or Jenin sewage treatment plants.

The Israeli Water Commission recently made a positive move towards dialogue with civil society on issues of regional water policy, by presenting its positions publicly and inviting comments.

Germany

The office of KfW regional manager has been relocated from Amman to Jerusalem, due to recognition of the greater need for coordination in the Palestinian Authority in the midst of conflict.

Trilateral meetings between Germany, the Palestinian Authority and Israel were held on the issue of sewage.



Regional cooperation on sewage: the case of Tul Karem and Emek Hefer

During the last four years of armed conflict, reduced cooperation, restrictions on movement and their associated difficulties on implementing sewage solutions in the West Bank, the case of (Palestinian) Tul Karem and (Israeli) Emek Hefer deserves close attention. The two neighboring municipalities, located in close proximity yet divided by the green line, were successful in some important ways to bridge the hostilities and achieve progress in sewage solutions by maintaining Israeli-Palestinian cooperation at the local level.

Sewage from the city of Tul Karem flows underneath the separation barrier into the municipality of Emek Hafer, and has in the past polluted the Alexander River, which flows through Emek Hefer Regional Council on its way to the Mediterranean Sea. Several years ago, Israel unilaterally established an emergency treatment plant in Emek Hefer, to treat Tul Karem sewage. Funds for the emergency project were deducted from money owed by Israel to the Palestinian Authority. However, the treatment provided has not been sufficient, requiring pretreatment of Tul Karem sewage before reaching Emek Hefer.

One of the projects planned and funded by the German Economic Cooperation was the rehabilitation of the old sewage facilities of Tul Karem. Being a relatively minor, low risk project, it was chosen by the Germans as a pilot project for implementing larger scale sewage solutions, such as Salfit, Nablus and Jenin. The rehabilitation of the aeration ponds in Tul Karem was facilitated by the cooperative effort of the local municipality, German assistance and the neighboring community of Emek Hefer. The ties established between the two mayors and their mutual interest to find solutions for the pollution threat resulted in

a close working relationship that was crucial for successful project implementation. Many of the conflict related difficulties encountered by donor countries operating in the West Bank could be alleviated through Israeli-Palestinian municipal cooperation, helping to reduce conflict related costs. Emek Hefer mayor prioritized the issue, facilitated coordination with the Israeli side, including the military, Water Commission, Foreign Ministry and others. The close cooperation continues to date, with both mayors traveling together to Germany to seek additional funding for other joint sewage solution projects.

The Tul Karem plant was launched on February 6th 2005. Among the guests attending the opening ceremony were members of both communities, who managed to establish cooperative working relations to solve common problems where their national governments were less successful.

Fostering cooperation at the community level is a necessary step to achieving sustainable, cross border pollution prevention, and must be supported in addition to physical infrastructure. Friends of the Earth Middle East has carried out a joint Israeli-Palestinian project titled "Good Water Makes Good Neighbors" since 2001, involving both youth and adult members of neighboring communities on the threats and significance of their shared water resources. In Tulkarem and Emek Hefer the local community support received by the respective mayors from members of their own constituency was important for them to move forward. No less significantly, the general public on both sides recognizes that the German funding invested was a positive contribution to peace. Such recognition is a direct consequence of the public involvement generated.

D. Progress to Date:



The progress evident on sewage solutions demonstrates that protecting shared groundwater resources is indeed a growing priority for the parties. EcoPeace/FoEME congratulates this momentum, which should be maintained and increased, as many cities and most villages in the West Bank are still without sewage solutions, and groundwater continues to be polluted.

On different occasions, both Palestinian and Israeli officials have expressed their desire to institutionalize the coordination between themselves and donor countries. With regard to US funded projects, a tri-lateral forum on water has been meeting over the past several years. The establishment of a similar, ongoing forum is possible with German agencies, and some attempts to that effect have already taken place. Despite the difficulties and disagreements that were evident in the Israeli-Palestinian-German trilateral discussions, it is hoped that these efforts continue.

The progress on the sewage issue over the last two years, even though Israeli-Palestinian hostilities continued, signifies a joint interest in preventing pollution. In this effort, the activities of governments, municipalities and civil society all aim to achieve a common solution. Disagreements and criticism from all parties abound, but overall, the positive change has been noticeable through concrete developments on the ground (the Tul Karem Project); in the planning (achievement of schedules of implementation for three sewage projects and approval of others at the Joint Water Committee); and in the negotiations (commencement of tri-lateral meetings between Israeli, Palestinian and German agencies). All credit is given to the government actors involved who came to accept demands for greater transparency, scrutiny and exposure to the public regarding affairs that were previously the exclusive domain of governments. Still, the problem of groundwater pollution persists, as most of the

E. Further steps needed

Israel:

- The level of involvement of the Israeli government in promoting Palestinian sewage solutions in the West Bank should be increased, particularly with regard to the seniority of officials involved. The successful implementation of such projects requires active promotion by a senior official, to be appointed by the Minister of National Infrastructure.
- The treatment of sewage from Israeli settlements should be improved. In particular, the sewage treatment plant in Nir Eliyahu, which is expected to receive additional sewage for treatment from the Kanah Stream project, is yet to be upgraded. Further, the planned sewage treatment plant in Ariel should be built as soon as possible, regardless of the availability of government funding to it.
- Israel's planned disengagement from the northern West Bank should be coordinated with donor countries that operate or plan to operate in these areas.

Palestinian Authority:

- Many Palestinian localities, including the majority of the Palestinian population in the West Bank, do not have plans for the treatment of their sewage. The Palestinian Authority should encourage donor countries to support additional sewage solutions, particularly in West Bank villages.
- Training of Palestinian personnel in the wastewater sector must be prioritized so as to enhance Palestinian capacity to prevent groundwater pollution and then utilize the treated wastewater as a resource.

Donor countries:

- Where costs of operation and management of sewage facilities cannot be born by the Palestinian population due to the current economic crisis, donor countries should participate in these costs for a limited period to ensure their success. Similarly, training of local personnel and investment in treated wastewater reuse for agriculture is crucial for the success of sewage projects.
- If the treatment of Palestinian sewage will be carried out inside Israel, and donor funds shifted for this purpose from Palestinian territories, the commitment of these donors to future investment in the wastewater sector inside Palestinian territory should be strengthened and reaffirmed.
- Current German policy of a "phased approach" in project implementation is an impediment to timely progress. The urgency of the pollution problem requires the parallel implementation of all sewage treatment projects in the West Bank. This would be especially feasible should Israel remove its military presence from the northern West Bank in the planned disengagement from Gaza Strip and the northern West Bank. Removal of the military obstacles would significantly ease operation, thereby reducing delays, additional risks and conflict-related costs which contributed to adopting a cautious approach towards implementing sewage solutions.
- Additional sewage solutions in the West Bank, primarily for villages, should be supported by the donor community to prevent further pollution of the Mountain Aquifer. Funds committed previously to the Nablus East project by Germany should be reinvested in the Palestinian wastewater sector.

This report is based on research carried out by Friends of the Earth Middle East through its project on protecting the Mountain Aquifer. Friends of the Earth Middle East is a joint Israeli, Jordanian and Palestinian organization that deals with transboundary environmental problems in the Middle East. The organization promotes solutions to shared environmental problems as part of advancing efforts for peace building in the region. FoEME is a member of Friends of the Earth International, the largest network of environmental NGOs, with member organizations in 70 countries. FoEME has offices in Tel-Aviv, Bethlehem and Amman. FoEME's main issue areas include water, the Dead Sea, the Gulf of Aqaba/Eilat and the environmental impact of international trade agreements.

Note of gratitude:

EcoPeace/FoEME would like to recognize the support of the Richard and Rhoda Goldman Fund and of the Heinrich Böll Foundation for the research and publication of this report, and for EcoPeace/FoEME's advocacy efforts on the Mountain Aquifer.

The views expressed in this report are those of the authors and do not necessarily represent those of the Richard and Rhoda Goldman Fund or the Heinrich Böll Foundation.

www.foeme.org

Amman Office:

EcoPeace / Friends of the Earth Middle East (FoEME)
P. O. Box: 9341 Amman 11191, Jordan
Tel: + 962-6-5866602, Fax: +962-6-5866604
E-mail: foeme@go.com.jo

Tel-Aviv Office:

EcoPeace / Friends of the Earth Middle East (FoEME)
85 Nehalat Benyamin St., Tel. Aviv 66102, Israel
3-5604693-Tel: + 972-3-5605383, Fax: +972
E-mail: info@foeme.org

Bethlehem Office:

EcoPeace / Friends of the Earth Middle East (FoEME), C/O WEDO
PO Box 844, Bethlehem, Palestine
Tel: +972-2-2747948, Fax: +972-2-2745968
E-mail: wedo@p-ol.com