

Complaint Against
**Greater Beirut Water
Supply Project (GBWSP)**
(Litani / Bisri)

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I, Fathi Chatila live in the Greater Beirut area, and with this complaint, I am representing the concerns of several other Greater Beirut inhabitants whose names, addresses, contact details and signatures are attached in Document # 12.

We are likely to suffer harm as a result of the World Bank's (WB) failures and omissions in the **Greater Beirut Water Supply Project (GBWSP)** located in the Greater Beirut area. We believe that our rights and interests will be adversely affected in a direct and material way in case the **Greater Beirut Water Supply Project (GBWSP)** is approved and implemented by the World Bank. This project calls for the delivering of 50 MCM of water during the summer season from the Litani River stored at the Qaroun lake diverted to the Awali River to be conveyed by means of a 26 kilometer tunnel to Khalde' village in Greater Beirut.

We firmly believe that meeting Greater Beirut water needs by implementing Mr. Fathi Chatila's project (submitted since 1996) which calls for storing water of the Damour river by erecting a dam and conveying the water to Greater Beirut, is a much better alternative.

I. Introduction

The Damour River is located in the vicinity of Greater Beirut with an average annual flow during the winter season of 180 MCM. This water flows to the sea without being used. Several studies were done on the River over the last 40 years to test the possibility of storing its water in order to meet the water needs of Greater Beirut. All these studies led to the conclusion that it is impossible to store the Damour River water. Among such studies was one made by the **Litani River Authority (LRA)** which led the Council of Ministers to decide in decree number 14522 dated May 16, 1970 to disregard storing the Damour River water and instead to convey 50 MCM of the Litani River water stored at the Qaroun Lake to meet Greater Beirut water needs. Another study was done on January 1992 by **Dar Al-Handasah (Nazih Taleb)** which recommended that the Ministry of Energy & Water (MoE&W) make use only of the winter flow of the Damour River.

The third study was made by the MoE&W who confirmed in its letter Ref. number 4264 date August 17, 1998 that it is impossible to store the Damour River water and decided not to carry out any more studies to store its water (Doc.# 1).

During 1996, Mr. Fathi Chatila made his own geological and hydro geological studies for storing the Damour River water. As a result, he found out that the conditions are most suitable for storing 90

MCM at a dam site located two kilometers upstream of the Damour - at Multaqa Annahrain juncture (Doc. # 2).

This complaint is against the project which calls for meeting Greater Beirut water needs from the Litani / Awali River to be financed by the World Bank and the Bisri Dam project at the Awali River to be financed by the Islamic Development Bank. Although the Bisri Dam project is not financed by the World Bank, the GBWSP will necessitate the construction of the dam at Bisri village as will be clarified later in the complaint.

II. Analysis of Alternatives

This section in the *Environmental Impact Assessment*, failed to include alternative water sources. Nowhere was the alternative of a different water source considered, for example the Damour River which is closer to Beirut than the Litani River diverted to the Awali River. The Environmental Assessment report states that the constraints for the Alternatives Analysis were based on studies done in 1972 and 1984. The validity and relevance of this data (the data is now at least 26 years old) are questionable.

According to World Bank policy, the *Analysis of Alternatives* "systematically compares feasible alternatives" and "for each of the alternatives", quantifies the environmental impacts to the extent possible and attaches economic values where feasible. Therefore the analysis should not be limited by the above boundaries but should present all the options and then determine which are feasible and which are not.

There are four projects that can meet Greater Beirut water needs:

A. The Greater Beirut Water Supply Project

This project is supported by the **MoE&W**, the **Council of Development & Reconstruction (CDR)** and **Beirut Mount Lebanon Water Authority (BMLWA)**. It calls for the diversion of 50 MCM of water during the summer season from the Litani River stored at the Qaroun Lake to the Awali River. This water will be conveyed to Greater Beirut by means of a 26 kilometer tunnel to Khalde' village after it gets treated in Ourdaniyah water treatment plant. The cost of the Awali tunnel, the Ourdaniyah Water Treatment Plant, and the associated land acquisitions will reach USD 210 million. The total cost including the reservoirs, transmission system, pumping station and metering will equal to USD 370 million and will be jointly financed as follows.

Entity	Amount (USD / Million)
BMLWA	140.00
Government of Lebanon	30.00
World Bank	200.00
Total Amount	370.00

The estimated time for completing this project is 4 years plus one year for **miscellaneous matters**.

B. The Bisri Dam

This project was studied by the LRA in 1983. It calls for the storing of some 110 MCM at the middle reach of the Awali River by means of a dam which lies close to Bisri village. A total of 40 – 50 MCM of the Bisri Dam water will be delivered by the same conveyor to carry the Litani River water to Greater Beirut .The remaining water stored will be used for Ikleem Al-Toffah and other nearby regions.

The cost of the Bisri Dam plus land acquisition is USD 230 million. Since the Litani River and the Bisri Dam water will be carried by the same conveyor to Greater Beirut, the MoE&W and BMLWA consider both projects as one project. In this case, we have to take into consideration that both projects will be used to meet Greater Beirut water needs. The cost of conveying 90 MCM from the Bisri Dam and the Litani / Awali River to Khalde Village equals to USD 440 million.

C. Damour Dam proposed by Fathi Chatila since 1996

The table below shows the dam height, storage capacity, flow rate and related costs of the Damour Dam project in USD.

Dam Height/m	Stored capacity / m3	Flow Rate / MCM	Cost/USD Million
100	38	47	85
125	68	78	122
130	78	90	140

The cost of delivering 90 MCM during the 6-month summer season, land acquisition, water treatment plants, pumping stations and conveying this water to Khalde is USD 225 million.

This dam site was studied by three international experts on dam storage and Hydrogeology who were called by the CDR during 1999 and early 2000; namely *Eng. Peter Rae* and *Michael Bruen* of **Harza Engineering** and *Dr. Rene Kareh* of **Water Engineering**. (Doc #3) They all confirmed the fact that this site is most suitable for storing over 90 MCM and that it lies in a region which is tectonically stable and not affected by seismic activities. Of special interest are the details written by Eng. Peter Rae on page 20 of his report about the proposed dam site as mentioned in the table below:

Flow rate		Reservoir		Project Cost
M3/s	Mm3	Volume (Mm3)	Depth (m)	USD / Million
1.00	31.5	24.41	75	65
1.50	47.3	33.66	100	87
2.00	63.1	42.9	108	99
2.50	78.8	62.56	125	122

2.8	90	73.0	135	150
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On August 17, 1999, Dr. Kareh sent a letter to the Minister of the MoE&W , confirming in it that it is possible to store more than 100 MCM at the dam site proposed by Mr. Fathi Chatila (Doc.# 4) .

The World Bank did not consider the Damour dam project in the Analysis of Alternatives.

D. Damour Dam Proposed By Liban Consult

In late 2007, after a delay of over seven years, the CDR asked **Liban Consult** to carry out a feasibility study for storing the Damour River at another dam site located some 300 meters downstream from the dam site Mr. Fathi Chatila had studied and proposed in 1996 . This new dam site was chosen by the CDR and Liban Consult without doing any geological, hydro geological or geotechnical studies at the dam site proposed by Mr. Chatila.

Liban Consult mentioned in the feasibility report that the geological conditions in the area are most suitable for storing water and that the site lies away from any active tectonic activities or faults. It also mentioned that the hydrogeological conditions will prevent the water stored to infiltrate underground. This confirms that the studies made by Mr. Fathi Chatila during 1996 for storing the Damour River water were correct.

As a result of the feasibility study, Liban Consult confirmed that it is possible to store 42 MCM at the dam site at a cost of USD 80 Million. The cost of building the dam, the expropriation of land, the water treatment plant, pumping station, reservoirs, and the conveying of 260,000 m³/d to Khalde is USD 155 million.(Doc. #4/1)

III. Harms that will result from the GBWSP as it is currently being planned

A. Caused to Greater Beirut Inhabitants

i. High Water Tariffs

On June 14, 1999, the Council of Ministers decided in decree number 17/99, to form a committee to study the project for meeting Greater Beirut water needs from the Litani River. Among its members were the Director General of the MoE&W, Head of the CDR, Director General of BMLWA, Director General of the LRA, etc.

This committee met on July 2, 1999. All of its members called for the delivering of 50 MCM of the Litani River water stored at the Qaroun Lake. Studying of the Damour River is not urgent and can be made at a later date. Among the testimonies made, was one by the Director General of BMLWA who stated that *"the Studies made by the BMLWA showed its ability to meet the costs of the Litani/Awali river project during 10 years period by increasing the water tariff by 10 -15% annually. The net income of BMLWA will reach after meeting all debts will equal to USD 93 million starting from the year 2010."*

The current annual tariff applied by the BMLWA equals to USD 157. If we apply a 10% increase annually, the rate will reach USD 407.09 after a 10 year period. This will be equal to 7.54% of the minimum wage. In case we apply a 15% increase, the tariff will reach USD 635.13 annually, equivalent to 11.75% of the minimum wage income.

The reason behind BMLWA Director General's decision apply a 10-15% increase in the tariff is that the GBWSP is very expensive and the more expensive a project is, the higher the tariff will be. This constitutes additional harm to the majority of Greater Beirut inhabitants. In other words, since the government and the World Bank are going to implement GBWSP as opposed to a cheaper option, it is the inhabitants of Beirut who will have to suffer the consequences through higher tariffs.

ii. Water Pollution

Water analysis conducted over three decades ago on the Litani River water stored at the Qaroun lake and the Litani River water diverted to the Awali River confirms that this water is extremely industrially polluted and has high levels of chemicals and bacteria. The analysis made by *Dr. Aref Dia*, Professor of Ecology - Faculty of Sciences at the Lebanese University (L.U) and a researcher at the Research Lebanese Scientific Center showed that this water carries carcinogens, chemicals that are very dangerous to humans. The analysis Dr. Dia made to the Damour river showed that its water has only small amounts of bacteria and can be treated by conventional methods.

A recent petition against the GBWSP raised by two Senior Engineers and a Chief Accountant in the Litani River Authority was printed in An-Nahar Newspaper on October 14th 2010. They confirmed that the Litani River stored at the Qaroun Lake is highly polluted and is not suitable for drinking purposes. Treating the water in the wastewater treatment plants built in the Litani River basin will be insufficient because the pollution is caused by the industrial wastes such as paints and chemicals used by tanneries in addition to household wastes dumped by inhabitants of the Litani River basin (Doc. # 5).

For over two decades, some 70 villages in Southern Bekaa which lies close to the Qaroun Lake have been facing severe potable water shortages. This could have been met by a few wells drilled in the Cenomanian or Eocene aquifers fed by the Qaroun Lake or by pumping water directly from the Lake after having this water treated to remove all pollutants. However, the inhabitants being aware of the dangers and harms caused by using the Qaroun Lake water and the water pumped from wells were all against such a project even if the water to be used were to be treated. They decided to have their potable water needs met from Ain Zarka spring whose water is pure and lies 25 kilometers away. The spring is at an elevation of 640 meters above sea level and is located 200 meters below the Qaroun Lake, whereas the Qaroun Lake and wells are located over 840 meters above sea level, which would have meant greater pumping costs. Pumping of the Ain Zarka spring will start in a few months time.

The same water which was refused by all inhabitants of South Bekaa to meet their potable water needs will be conveyed to meet Greater Beirut water needs if the GBWSP goes through!!

. The decision by the CDR, MoE&W and BMLWA to convey the Litani River water stored at the Qaroun Lake to Greater Beirut is questionable because the inhabitants of the Greater Beirut area

may not be aware of the great risks associated with the polluted water reaching their area. Mechanical and human errors also may occur while treating water and in that case, the resulting harms would be catastrophic. The Dasani water bottling project in London owned by Coca Cola is a clear example of the harms that can be caused by human errors.

B. Depriving Dry Lands from being Irrigated

The GBWSP depends on the Litani River water stored at the Qaroun Lake at the elevation of 840 meters above sea level. The water volume to be conveyed to Greater Beirut during the summer season can be used to irrigate 7000 hectares of dry land in South Lebanon and/or the Upper Litani River basin which suffers from poor surface and ground water resources. The inhabitants of this region are so poor and have had to migrate to the suburbs of Greater Beirut and other towns to make their living. By conveying the water of the Litani River stored at the Qaroun Lake to provide potable water to Greater Beirut, the livelihoods of agriculture-dependent communities in South Lebanon and/or the Upper Litani River basin are directly harmed. According to studies made by the Ministry of Agriculture and the LRA, the additional income these communities could have would reach USD 4000 per hectare, or a total of USD 28 million annually for irrigating 7000 hectares.

C. Harms Caused to Al- Chouf / Ikleem Al Kharroub Region

The Al Chouf/Ikleem Al-Kharroub region has been witnessing severe water shortages for several decades. Its potable water needs are met mainly by two springs, Al-Safa and Barouk. The Al-Safa Spring lies at the elevation of 950 meters above sea level and its water requires no treatment and can be conveyed to all villages simply by means of gravity. Some 50,000 m³/d of Al Safa Spring flows during the summer season along the Damour River bed to a distance of 30 kilometers to irrigate the Damour plain which lies at the elevation of 30 meters above sea level. Meeting the Damour plain irrigation needs and those of other dry coastal lands from the Damour Dam will enable inhabitants to use some 50,000 m³/d of the Al-Safa Spring for meeting their potable water needs for the coming 25 years.

The GBWSP by conveying water from the Litani River stored at the Qaroun Lake, disregarded the Damour River (Close to Beirut) as an alternative option for providing potable water to Beirut and consequently for irrigating the Damour Plain. This means the Al-Safa spring will be tied up in providing irrigation for the Damour Plain and therefore leaves the Al-Chouf / Ikleem Al-Kharroub region suffering from the water shortages. For this reason, the GBWSP will indirectly harm residents of that area.

Meeting the potable water needs of Al Chouf/Ikleem Al Kharroub could also result in several benefits. The lake to be created beyond the Dam will be 4-5 kilometers long surrounded by two hills covered by a green forest.

It would also allow the carrying out of an artificial recharge to the Cenomanian aquifer feeding Greater Beirut. This will increase the water volume pumped by some 25,000 m³/d.

IV. Operational Policies Not Observed

A. Environmental Assessment (OP 4.01)

i. Public Consultation

- The policy of the World Bank states that the borrower should consult “*project –affected groups and local nongovernmental organizations (NGO’s) about the project’s environmental aspects and takes their views into account*”. The EA report includes consultations with individuals representing ministries, municipalities and consulting agencies as well as university professors and scientists. Although regarded as authorities, these individuals cannot be considered representative of local communities affected by the Greater Beirut Water Supply Project (GBWSP). Also, the consultations took place between June 10th 1997 and January 20th 1998. Consequently, the consultations can be considered outdated, knowing that the GBWSP is to be approved on December 16, 2010 by the Board of Directors at the World Bank (the project was proposed in 1998 and later dropped).

However, many participants expressed the needs for public consultations with local communities and NGOs and agreed upon dates which were not disclosed in the report.

- The EA report includes a Socio-Economic Survey Questionnaire that was conducted with local authorities of municipalities and other stakeholders who do not necessarily represent the interest of their communities. The survey focused mostly on demographic information and development levels and needs in the towns and villages affected by this project. This information does not show how specific communities, households and individuals will be affected by the project. The report also states that any socio-economic or demographic data related to these villages and towns are “**estimates and do not constitute accurate quantitative data**”. Therefore, this data cannot be considered a reliable source upon which the decision to implement the project can be based.
- Two more recent public consultations were held in 2010 conducted by the **ELARD** team in agreement with the MoE&W to consult potentially affected people and concerned Municipalities. They were held on May 12th and July 27th of 2010 at the Lebanese University - Hadath Campus. After having looked at the professions of the attendees, where they were from, and the questions asked, it can be noticed that such consultations were not comprehensive and do not reflect the opinion of Greater Beirut inhabitants or the communities of Damour, Al Chouf and Ikleem Al Kharroub who might be negatively affected by the project.

Following is a breakdown of the type of interests represented at these consultations:

Entity Name / Type	Number	Remarks
Public Sector	11	Do not represent local inhabitants interests
Municipality	14	Only 4 are located close to Greater Beirut
Schools Representatives	2	Located outside Greater Beirut
Total Number	33	

- The only attendant who lives in Greater Beirut was Eng. Abdul Rhaman Ghaziri, a government employee. Not one of the remaining 1.5 million inhabitants of Greater Beirut was consulted.
 - On July 5th 2005, a conference was held by Nadwat Al Amal Al Watani and Mr. Fathi Chatila for storing the Damour River. It was attended by over 125 of Greater Beirut inhabitants, among whom was Mr. Ramez Kayal, Director General of ELARD. The consultations made by ELARD did not take into consideration the Damour Dam project or any of Greater Beirut inhabitants who attended this conference.
 - Another conference was held by Nadwat Al Amal Al watani and Mr. Fathi Chatila on April 20, 2010 and was attended by over 150 visitors most of whom were of Greater Beirut inhabitants. Among the visitors was H. E. Dr Salim Al Hoss, ex Prime Minister of Lebanon, several ex ministers, namely Dr Issam Naaman(Telecommunication), Mr. Mohamad Yousuf Baidoun (MoE&W) and Mr. Bechara Mirhej.(Interior). The remaining visitors were lawyers, doctors, engineers, business men and several NGO's .(Photos Attached)
- More serious and widespread efforts should have been made to involve Greater Beirut communities, which would have resulted in a larger representation of affected communities in the consultation process. Also, more informed answers should have been provided for the questions at the end.
 - A total of 19 questions were asked, 16 of which were not relevant to the interest of Greater Beirut inhabitants and other communities. Only questions number 8, 10 and 11 discussed the water quality and quantity to be conveyed, but the answers were misleading.
 - Although the Bisri dam is not being financed by the World Bank, its construction will follow shortly after the implementation of the GBWSP and its construction directly depends on the existence of the GBWSP project. This is confirmed in the 1997 consultation as well as in the most recent public consultation in 2010. Since the inhabitants of Bisri and several other

villages to be effected by constructing the dam were not consulted, the public consultation process can be considered incomplete and does not address all affected communities.

B. Disclosure of information

According to this section of the Environmental Assessment, "the borrower provides **relevant material** in a timely manner **prior to consultation** and in a form and language that are **understandable and accessible** to the groups being consulted. It is unclear why the complete document for the RAP is not available on the World Bank website as of the date of this complaint. Also, relevant Arabic versions of the document provided to citizens prior to consultations are not available both on the World Bank and CDR websites.

C. Involuntary Resettlement (OP 4.12)

The *Integrated Safeguards Data Sheet* triggered the Involuntary Resettlement Safeguard for the areas that would be affected by the GBWSP but not for Bisri and neighboring villages which will be directly affected by the construction of the Bisri Dam. Even though this dam is not (as of yet) funded by the World Bank, it is essential for the World Bank to consider the impacts of this future dam because it is an inherent part of the project.

The World Bank representative in Lebanon Dr. Mutasem El-Fadel mentioned in his email dated September 16, 2010, item no. 3, that the World Bank is not financing dams at this time. On the other hand, the following statement was made by the Minister of Energy and Water in An-Nahar newspaper dated October 15, 2010 (Doc.# 6)

1. The Litani/Awali project is the first phase and Bisri dam the second phase of the GBWSP. The Bisri dam is to follow the Litani/Awali after a maximum of one year.
2. The Minister agreed to go on with the Litani/Awali project on condition that the World Bank will make commitments to finance Bisri Dam.
3. The World Bank agreed to finance Bisri Dam.
4. The MoE&W forwarded a letter to the Ministry of Finance asking it to send an official request to the World Bank to finance Bisri Dam.
5. Currently, the consultant is doing a feasibility study which will be available by the end of 2010.
6. It is expected that the World Bank will send delegates to start preparing for the Bisri Dam in January 2011. Therefore, the Litani/Awali project and Bisri Dam are one project and The Litani/Awali project will necessarily lead to the Bisri dam development.

The fact that the Awali project took into consideration that more water will be conducted through it, is a guarantee that the Bisri dam will be executed. Both projects will supply Greater Beirut with its entire water requirement (90 MCM) for the coming 25 years.

According to OP 4.12, "This policy applies to **all components** of the project that result in involuntary resettlement, **regardless of the source of financing**. It also applies to other activities resulting in involuntary resettlement, that in the judgment of the Bank, are (a) directly and significantly related to the Bank-assisted project." We would therefore argue that the World Bank should also consider any resettlement that might occur in the future as a result of the Bisri Dam's construction.

The *Environmental Impact Assessment* report includes a list of expropriation decrees issued by the CDR (**the World Bank had no involvement in that process**) during the period of 1998-1999. Some of these acquisitions have been completed, while the rest of the expropriations are being updated or reissued by the CDR (the decrees are only valid for 8 years). It is questionable whether these expropriations which were completed should have taken place knowing that the project is to be approved at the end of 2010, more than ten years later. Although the World Bank was not involved in the process, since the CDR "has previously undertaken land acquisitions **for the purpose of the current project**" and is still in the process of expropriating others, it raises the question whether the World Bank's policy on resettlement should be applied to these lands now.

Also, according to the RAP, "Apart from losses associated with a minor agriculture business, there will be **no loss of any other businesses or income generating activities nor physical relocation of people**." It is unclear whether the RAP is referencing all the expropriated lands (previous and new) or the new ones to be completed within the next year.

The consultations for the RAP were the **same ones** used for the Environmental and Social Impact Assessment report: the two most public consultations in 2010 and the socio-economic survey conducted mainly with heads of municipalities and non-representative stakeholders. It is difficult to judge whether the same sample of affected communities could be used for both an environmental and social assessment, as well as for the RAP. The only additional consultations for the RAP were made with heads of municipalities concerning the location of the reservoirs to be constructed. This is considered a technical issue and does not address the concerns of affected communities.

D. Safety of Dams (OP 4.37)

In the *Integrated Safeguards Data Sheet*, the Safety of Dams safeguard was not triggered when assessing the environmental impact of this project. The Bisri dam is a part of the World Bank financed project, the Greater Beirut Water Supply Project. Therefore, since the World Bank will fund the dam, the Bank's Safeguard on Dams should be triggered and considered.

The Bisri dam will be built over the Lower Cretaceous formations which are composed mainly of sandstones, clays, marls and thin marly limestone layers. Such formations are not rigid and do not constitute a suitable site for dam construction. Once saturated, the marls and clay formations will become very loose and this will pose great danger to the dam body.

The other disadvantage which will face the Bisri Dam is the Roum / Azour fault which is highly active and has caused severe damages in Lebanon during the last 50 years .This fault runs at a distance of 2 kilometers west of the Bisri dam whose weight together with the water to be stored will be over 250 million tons. Several studies were carried out to store the Awali River at Bisri dam by the LRA and other international consulting firms engaged in dam construction and tectonics. Such studies reached a conclusion that it is possible to build Bisri Dam to face earthquakes whose strength reaches up to 7.2 degrees on Richter scale. However, earthquakes may occur and whose strength may reach more than 7.2 degrees. Once this takes place and because of the short distance separating Roum fault and Bisri dam, a catastrophe will hit Lebanon and the financial and human losses will be beyond imagination.

For this reason, if the dam is to be built, it is recommended that the Bisri Dam should be built in stages. Seismic activities before, during and after each stage will be documented. The results we will have from the first stage and which will last for some 5 years period, will determine whether it is possible to go ahead with the second stage. On March 2010, the CDR made a USD 70 million loan with the Islamic Development Bank for the building of the Bisri Dam. This amount will cover only a part of the project's costs.

E. Economic Evaluation of Investment Operations (OPO 10.04)

This policy requires the World Bank to finance the cheapest alternative (assuming the same outcome). It states that *"the expected present value of the project's net benefit must be higher than or equal to the expected new present value of mutually exclusive project's alternatives"*. Therefore if there is a cheaper project that will yield the same or better results than that is the one the World Bank should go with. It is unclear whether the GBWSP is the least costly option because we believe the alternatives considered are not exhaustive.

Greater Beirut will need 90 MCM during summer season for the coming 25 years. This water volume can be secured from two projects, the Litani water stored at the Qaroun Lake diverted to the Awali River to be conveyed to Greater Beirut and the Bisri Dam to store the Awali River. The other project is that proposed by Mr. Fathi Chatila during 1996. It calls for the storing of the Damour River and to convey 90 MCM to Greater Beirut during summer season.

The following table shows a cost estimate for delivering 90 MCM during the summer season to Greater Beirut from each project to Khalde village:

	Litani / Awali & Bisri Dam (USD Million)	Damour Dam (USD Million)
Dam Construction	200	150
Conveyor to Khalde	110	25
Land Acquisition	80	20
Water Treatment Plant	100	30
Total Amount	470	225

This shows that delivering 90 MCM during summer season from the Litani/Awali & Bisri Dam Project to Khalde Village will cost some USD 215 million more than the Damour Dam project. Meeting Greater Beirut water needs from the Litani /Awali project will cause the following direct losses:

1. The 50 MCM stored at the Qaroun Lake and to be delivered to Greater Beirut during summer season is under the control of the LRA. The BMLWA will have to pay the cost of this water volume. If we take into consideration that the cost of each cubic meter is USD 0.10, the total annual cost of the 50 MCM will equal to USD 5 million or a total cost of USD 125 million during 25 years period. This value may increase or decrease depending on the agreement to be made by the LRA and BMLWA.
2. The Litani River water stored at the Qaroun Lake is chemically, bacteriologically and industrially polluted compared to the Damour River whose water is slightly bacteriologically polluted. The cost of the water treatment plant for the Litani River should be equipped with more sophisticated expensive instruments and chemicals which will lead to an increase in the treatment cost. In case we consider that the cost of treating one cubic meter of the Litani river to be mixed with the Bisri dam water will be USD 0.05 higher than the cost of treating one cubic meter of the Damour River, the annual cost increase will reach (90 MCM X USD 0.05) USD 4.5 million, or a total of USD 112.5 million during 25 years period.
3. Due to the high cost of the Litani/Awali and Bisri project, the CDR, MoE&W and BMLWA will have to make loans with the World Bank, the Islamic development Bank and other financial bodies for over USD 400 million.(USD 200 million for the GBWSP and USD 200 million for the Bisri Dam project) In case the annual interest will reach 4% equivalent to USD 16 million , or a total cost of USD 160 million during 10 years period(taking into consideration that the loans will be settled during this period)

Taking the above expenses into consideration, the total cost for conveying 90 MCM annually to Greater Beirut from the Litani /Bisri dam to Khalde village will reach:

- USD 440 million + USD 125 million + USD 112.5 million + USD 160 million = **USD 837.5 million**

Cost of conveying 90 MCM annually from the Damour Dam project will be **USD 225 million.**

In other words, meeting Greater Beirut water needs from the Bisri Dam and the Litani/Awali project will cost around USD 612.5 million more than the Damour dam project.

The indirect losses to be caused by diverting 50 MCM annually from the Litani River to Greater Beirut will be as follows:

1. The average annual water volume of the Damour River flowing to the sea unused during winter season is 180 MCM. If we take into consideration that the cost of each cubic meter is USD 0.10, the annual loss will equal to USD 18 million or a total of USD 450 million during 25 years period.
2. The 50 MCM stored at the Qaroun Lake at the elevation of 840 meters above sea level can be used during summer season for irrigating 7000 hectares of dry land. The net increase in income

to be caused by irrigating one hectare is USD 4000 annually. The total annual loss the communities will bear is USD 28 million or a total of USD 700 million during 25 years period.

3. Meeting Greater Beirut from the Damour dam will enable al Chouf/Ikleem Al Kharroub inhabitants to use 50,000 m³/d of Al Safa spring. Cost of building a dam to store such a water volume at the elevation of 950 meters above sea level with a water treatment station and land acquisition will reach more than USD 50 million.

The total indirect losses which will be caused during 25 years by meeting Greater Beirut water needs from the GBWSP will reach USD 1200 million as follows:

- **USD 450 million + USD 700 million + USD 50 million = USD 1200 million**

The majority of Greater Beirut inhabitants is of low income and poor and cannot afford to pay a water tariff higher than USD 157 annually. Meeting Greater Beirut water needs from the Damour Dam will enable BMLWA to meet its costs especially it is saving over USD 20 million annually from the current tariff. With the construction of the Damour Dam, the amount BMLWA will be able to save will be over USD 50 million annually by applying the same tariff. This amount will be more than enough to build the Damour Dam, convey its water to Greater Beirut and carry out all waste water treatment projects.

For helping all those with low income in Greater Beirut, each family member will have 50 liters a day for free or a total of 250 liters for a family of five members.

V. Proposed Plan for the Analysis of Alternatives

In order to ensure a more rigorous study of alternatives for meeting Greater Beirut's water needs, it is essential to consider the Damour river as a source of water before the Awali/Litani project. This analysis must also include where to construct the dam. We have two dam sites for storing the Damour River, the first one was proposed by Mr. Fathi Chatila on 1996 and the second site proposed by the CDT and Liban Consult on late 2007.

The studies made by three international experts in water storage on late 1999 and early 2000, confirmed that this dam site proposed by Mr. Fathi Chatila is most suitable for storing 90 MCM at a low cost of USDD 140 million. Unfortunately, the CDR did not carry out the feasibility study for this dam site.

The dam site proposed by the CDR and whose feasibility studies was made by Liban Consult during 2008-09, and which was located some 250 meters downstream of the dam site proposed by Mr. Fathi Chatila, confirmed that it is possible to store 42 MCM or 250,000 m³/d at a low cost of USD 80 million. Cost of land acquisition, pumping station, water treatment plant and the conveyance of this water to Khalde is less than USD 155 million. This study confirmed that the Geological formations over which the water will be stored will not cause any water loss or seepage, and that it is far away from any seismic or tectonic activities.

The infrastructure development for meeting Greater Beirut water requirements will need over 15 years for completion. Among the work to be carried out are the main and secondary transmission system, service reservoirs and pumping stations, distribution system, service connection and metering, pipeline replacement, etc. For this reason, the water volume which will be needed during the next 5 years will not exceed 40 – 50 MCM or 250,000 m³/d.

Taking the above facts into consideration, we would propose the following plan to be carried out.

1. Detailed geological, and geotechnical study should be made to the dam site proposed by Mr. Fathi Chatila. This calls for the drilling of 3-4 core wells, each to a maximum depth of 30 meters for knowing the depth of the weathered Lower Aptian formations over which the dam will be located and the maximum water volume which can be stored. The time needed to carry out this work is maximum 4 months. Such a project will be carried out by an international firm engaged in water storage and dam building, such as the FAO, EDF, UNDP or Montgomery & Harza Engineering Co. We strongly propose to have Mr. Fathi Chatila to act as the consultant and supervisor for this project.
2. The studies to be carried out as mentioned above will determine the maximum water volume which can be stored at the dam site proposed by Mr. Fathi Chatila. Once the results of this study becomes available, it will be possible to compare which of the two dams is most suitable

for storing over 250,000 m³/d for meeting Greater Beirut water needs and the costs of storing water at each dam site.

3. Since the minimum water volume which can be stored at the Damour Dam is over 250,000 m³/d, and because the water volume which will be conveyed by from the Litani River stored at the Qaroun lake is highly polluted and most expensive, we recommend to meet Greater Beirut water needs from either of the Damour Dams .The Litani River stored at the Qaroun lake can be used to irrigate land lying in South Lebanon and/or the Upper Litani River Basin.
4. Final feasibility studies will be made for the dam for the dam site proposed by Mr. Fathi Chatila .It will determine the maximum water volume which can be stored and the costs needed.. This study will be made by the same firm who will carry out the studies mentioned in item no. 1: The maximum period needed for doing such studies will be six months period. In case such a study showed that it is possible to store and deliver 90 MCM to Greater Beirut Chatila, this project will be followed. If the maximum water volume which can be stored and conveyed to Greater Beirut is less than 90 MCM, we will in this case meet the water volume needed from the Bisri dam, which has to be built on stages.

VI. Conclusion

We have brought our concerns via email communication to various World Bank staff including *Mr. Hocine Chalal*, MENA Safeguard Advisor, *Mr. Parameswaran Iyer*, task leader for this project and *Mr. Mutasem El-Fadel*, the environmental specialist responsible for this project. This email communication took place over several emails dating between August 11th and September 16th 2010. Mr. Chatila also met in person with Mr. Fadel twice to discuss the project. On September 16th 2010, Mr. Chalal expressed that *GBWSP is based on the recognition that bridging the gap of water supply for the Greater Beirut area is an urgent matter and that the Awali Conveyer option is the one that could be the most readily implemented (Doc.# 8).*

We fully agree that Greater Beirut inhabitants urgently need water. The time needed to carry out the Litani / Awali project is four years plus one year for administrative and miscellaneous matters. This is the same period needed to carry out the Damour Dam whose location is confirmed by all experts consulted as unique and ideal. We only need 4 month to confirm that the dam site proposed by Mr. Fathi Chatila will store 90+ MCM at a very low cost compared to the Litani / Awali and Bisri Dam projects. If it was not for the violations made by the CDR and the MoE&W which led to the suspension of the feasibility studies asked by the Council of Ministers on September 1st 1999 the Damour Dam would have already been built and Greater Beirut water needs would have been met and exceeded at least five years ago!

We agree that water is essential but where it comes from and how it is done are of course equally important as well. Mr. Chalal told us that should we like to express our concerns further, we may want to contact the Inspection Panel if we were not satisfied with the responses we were getting from the World Bank. We still believe that this is a harmful project and so this is why we are now contacting the Inspection Panel.

We request the Inspection Panel recommend to the World Bank's Executive Directors that an investigation of these matters be carried out. Thank you for your consideration and we look forward to your prompt response.

On behalf of the petitioners submitting this complaint against GBWSP,

Fathi Chatila
Hydro geologist



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Tuesday, November 02, 2010

VII. Attachments Index

- Doc. 1: Letter from the MoE&W dated August 17, 1998
- Doc. 2: Article about the Damour River Dam by Mr. Fathi Chatila published in the Arab Water World (AWW) magazine -1998.
- Doc. 3: Report of Dr. Rene Kareh presented to the CDR on Feb.4th 2000.
- Doc. 4: Letter sent to the Minister of the MoE&W dated August 17th 1999.
- Doc. 4/1: Press Conference made by Liban Consult dated December 20th 2009.
- Doc. 5: Article printed in Al-Nahar Newspaper date October 14th 2010.
- Doc. 6: MoE&W Press Announcement in Al-Nahar Newspaper dated October 15th 2010.
- Doc. 7: Council of Minister Decree no. 12/99 dated September 1st 1999.
- Doc. 8: Email from Mr. Hocine Chalal dated September 16th 2010.
- Doc. 9 & 10: Testimonies from Greater Beirut inhabitants.
- Doc. 11: Testimony of Al-Chouf / Ikleem Al-Kharroub Inhabitant.
- Doc. 12: List of names, signatures, telephone number and addresses of petitioners.

المنشآت الفنية
الرقم ٩٨/٢٤٤
التاريخ ٩٨/٨/١٧

الجمهورية اللبنانية
وزارة الموارد المائية والكهربائية
الترتبة العامة للترتيب الثاني والكرتياك

بواسطة المدير العام للتجهيز المائي والكهربائي

رقم المحفوظات: /
رقم الصادر: /

الموضوع: نتائج الاجتماع مع السيد رولوي نتحي شاتيل

الترتبة العامة للترتيب الثاني
المائي والكهربائي
رقم ٩٨/٤٤٤
تاريخ ٩٨/٨/١٧

المراجع: تكلينكم رقم ٩٨/١١/٦٢ بشأن تخزين مياه نهج الدامور

بتاريخ ١٩٩٨/٨/٢ تم الاجتماع مع السيد نتحي شاتيل في مكنتي وابلغته التالي:

(١) ان الادارة وخلال السبعينات طلبت وعلى عدة مراحل مشورة خبراء عالميين مختصين في تخزين المياه وانشاء المدود من شركة كهرباء فرنسا ومنظمة الاغذية والزراعة ومن ثم شركة كارلو لوني الايطالية بشأن موضوع تخزين المياه على نهج الدامور وعلى الاخص في الموقع الذي يقترحه السيد نتحي شاتيل فكان الجواب ان الطبقات الجيولوجية متشققة جدا والحلول مكلفة ومعقدة جدا وحتى شبه مستحيلة وبالتالي يتوجب صرف النظر عنه.

(٢) ابلغت السيد نتحي شاتيل انه ليس خبيرا في جيولوجية المدود وبأنني سأقترح على معالي الوزير والادارة من اجل سحب الموضوع في التداول الاعلامي وابعاد الاوهام ما يلي:

اجراء سير افوار جيوتقنية لتأكيد رشوحة موقع التخزين.

ومع عدم اللجوء لدراسات على الورق كما يتغنى السيد شاتيل.

بيروت في ١٩٩٨/٨/٦
رئيس مصلحة الابحاث والمنشآت الفنية

يرفعه الى السيد الوزير

على سعادة الاطلاع
٦ آب ١٩٩٨

المدير العام للتجهيز المائي والكهربائي

سعادة الوزير

المهندس اندره عطالله

المراجع على
مع الاطلاع
الابحاث والمنشآت الفنية

وزير الموارد المائية والكهربائية

٩٨/٨/٤

بإني رئيس
الابحاث
لا بلاغ السيد
معتد بروتين
على امره

المدير العام للتجهيز المائي والكهربائي

١٤ آب ١٩٩٨

سعادة الوزير

Damour River Dam



(Map No.3)

Lebanon, with a total area of 10450 km² has a typically Mediterranean type of climate with heavy rains in the winter season (January to May) & arid and semi arid conditions in the remaining 7 months of the year. It has a relatively favourable position as far as its rainfall and water resources are concerned, but constraints for development consist of the limited water availability during the severe dry summer months. Annual internal renewable water resources are estimated at about 4.8 km³. Annual surface run off is estimated at 4.1 km³.

The groundwater recharge is 3.2 km³,

out of which 2.5 km³ constitutes the baseflow of the rivers. The surface water volume flowing in the different rivers during winter season except those of the Orontes and Hasbani rivers, equal to 3375 million m³; 80% of which flows to the sea; equivalent to 2.7 million m³. The remaining 670 million is used during summer season.

The geological investigations carried out on all rivers of Lebanon since the 50's confirmed that the suitable locations for building large dams for storing their winter flow are rare. This is due to deep valleys with steep slopes plus the

fractured geologic formations which makes the building of such dams extremely costly, if not impossible. As a result, the maximum water volume which can be stored at all the dams whose geological, topographical and hydrological conditions proved to be suitable will not be more than 335 million cubic meters (excluding the Litani Dam) as shown below:

Dams at Rivers of North Lebanon

(Kebir, Ostuane, Arka, Al Bared): 65 Mm³.

Dams at Rivers of Central Lebanon

Ibrahim and Beirut: 30Mm³.

Dams at Rivers of South Lebanon

Awali, Lower Litani (Khardali): 240 Mm³.

Total 335 Mm³

The investigations made on most of these dams are still in their early stages. The most important dams whose studies are well advanced are the following:

1- Karaoun Dam

The Karaoun dam on the upper Litani was completed in November 1965. The water volume stored is 220 Mm³ out of which 60 Mm³ are as inter-annual reserves and a usable storage of 160 Mm³. It regulated the down stream flow of the Litani river for power generation, irrigation & domestic needs for Greater Beirut.

2- Bisri Dam

This dam lies at a distance of 23 kilometers upstream of the Awali river embouchure. Investigations on this river started on early 1950's. The dam will have a storage capacity of 120 Mm³ and is intended mainly for supplying water to Greater Beirut. The usable storage of the dam is 105 Mm³.

3- Khardali Dam

This dam lies in the Middle reach of Beirut of the Litani river. Investigations at this dam started on early 1950. The water value which can be stored equal to 125 Mm³.

Future Water Needs

By the year 2020, the population of Lebanon will reach about 5.0 million people. The total area to be irrigated will equal to 177000 ha. Water requirements will be in the range of 1950 Mm³.

- Agriculture (7000 m ³ /ha)	1250 Mm ³
- Domestic	500 Mm ³
- Industrial	200 Mm ³
Total	1950 Mm³

By 1994, the total water withdrawal was 1295 million m³. The water value needed to meet future requirements will equal to 655 million m³.

This water value has to be met by both dams and groundwater aquifers.

Greater Beirut Domestic Water Needs

Beirut, the capital of Lebanon, has



*Photo No.1
Dam Site. Upper Aptian Limestone with a dip range of 80°. Lower Aptian clays and sand are on right of picture.*

suffered from a severe shortage of water. By the year 2015, Greater Beirut will need some 646,000 cubic meter/day to meet its domestic water requirements. The two main projects which have been studied for meeting up Greater Beirut summer water needs are:

- 1- The Awali-Beirut water conveyer project
- 2- Constructing a dam on Bisri river

Awali Conveyer

The objective of the proposed project is to meet the actual and future demands for domestic and non-domestic water in the Greater Beirut areas (estimated population of 1.8 million). The conveyer will transmit 6 cu.M/sec of treated water from the Qaraoun water at Awali river to Greater Beirut through a 24 Km concrete lined tunnel aqueduct that conveys water by gravity from an existing hydro-electric water intake at Joun to a treatment plant at El Ouardaniya; and then to a storage reservoir in Greater Beirut (Map No.2). The water treatment plant at El Ouardaniya will have an initial capacity of 260,000 m³/day to be increased to 520,000 m³/day.

The estimated cost in Million U.S \$ is:

Conveyer:	86.7
Ouardaniya water treatment:	59.5
Total:	146.2

Tender documents for request for proposals for B.O.T. Financing are under preparation.

Bisri Dam

The Dam is a complimentary project to the Awali Beirut conveyer, the objective of which is to provide water from Bisri to Beirut using the Awali conveyer. The Bisri dam will have useful capacity of 100 Km³.

The estimated cost in million US dollars is:

Bisri dam	164.5
Land Acquisition	20.0
Ouardaniya water treatment	
Phase II	40.0
Land Acquisition	0.8
Total:	225.3

"Grand Total U.S. 371.5 million"

Design and tender documents were completed by August 1997. Bidding process could be initiated once the necessary funding has been secured.

Damour River

The Damour river acts the southern borders of Greater Beirut and lies at quarter distance between the Awali-Bisri dam and the capital. The average annual flow of this river is over 210 km³ with about 200 km³ flow to the sea dur-

ing winter season. Unfortunately, and until this date, the Lebanese government has no plans what-so-ever to make use of this river flow for meeting up Greater Beirut water needs.

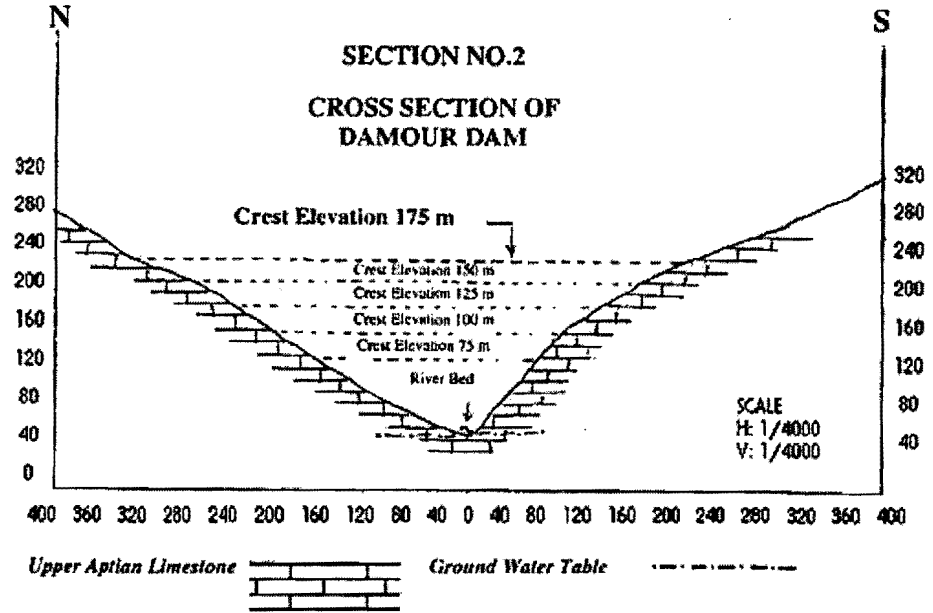
The reason is simple. All geological studies made on Damour river since mid fifties led to the following conclusion. "The Damour river, due to widespread faulting and steeply eroded valleys have made the selection of storage reservoirs difficult, both from the stand point of the expense of uncertainties involved in treating localities of probable leakage." The most suitable dam site was selected on the Nahr Damour about 275 meters upstream of Jisr El Qadi near El Billata Village, with a structural height of 47 meters (Map No. 2). It will store about 5 km³. Due to the small capacity of this dam, the idea of storing the winter flow of Damour river was closed for good.

Hydro-Geological Study Made on 1996

As a hydro-geologist with over 15 years of experience, out of which 5 years were in a joint project between the Lebanese government and the UNDP. I decided during 1996 to do my own hydro-geological studies on Damour river. This study revealed the following.

Hydrology

The Nahr Damour is fed by four main tributaries that drain a basin containing approximately 323 square kilometers. The main course of the river is formed by the junction of Nahr Bou Zebli and the Nahr es Safa. Approximately 9 kilometers downstream from this junction, the Ouadi Checkfita enters the Damour and about 3.5 kilometers from the Coast, Nahr Al Hammam adds its flow to the river. The average annual flow of Nahr Checkfita is 170 km³, whereas the flow of Nahr El Hammam is 40 km³ making the total average annual flow of Nahr



Damour equal to 210 km³. Some 10 km³ are used for irrigating the Damour Plain and the remaining 200 km³ flows during winter to the sea.

Geology

The four main tributaries which drain Nahr Damour rise in deposits of Cretaceous Age. The drainage pattern has

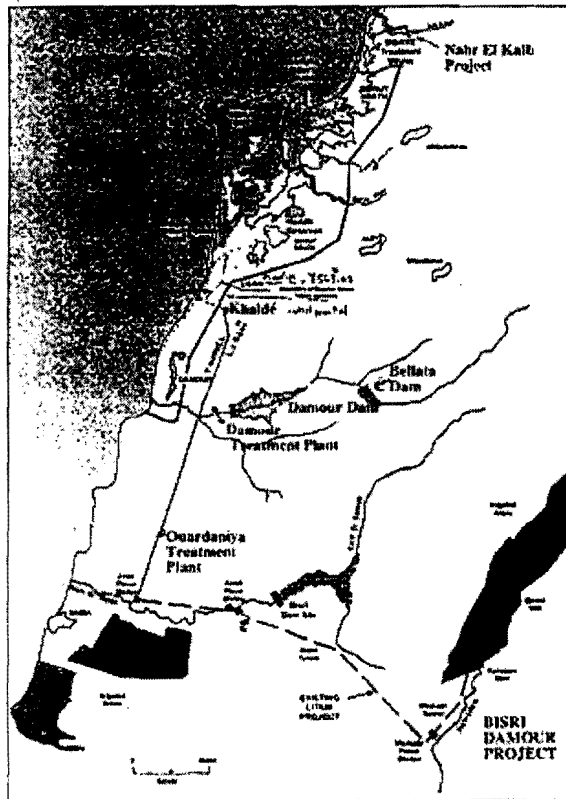
been formed in deeply eroded, often V shaped canyons in which outcrops of Cretaceous formations predominate. Above the junction of the Ouadi Checkfita (Jisr Al Qadi) and for a distance of approximately 7 kilometers downstream, the river flows on massive limestone of Upper Jurassic Age (Map No. 1).

Jurassic

The Portlandian subdivision of the upper Jurassic formation (J7) and possibly the upper layers of the Kimmeridgian only outcrop at the deeply eroded V shaped valley. The Portlandian has been divided into three members; the Upper, Middle and Lower. The Upper and Lower Portlandian are composed of yellowish marly limestone containing alternating thin beds of limestone and marl. The Middle Portlandian has a thickness of about 60 meters, is massive gray limestone. These formations are highly karstic and have been crossed by many faults. Their dip is horizontal through the valley, except at the extreme west, where it ranges between 15-20°.

Cretaceous Formations

The Cretaceous formations over which Damour river flows take the shape of a rectangular plateau cut by a deep canyon. These formations dip gently westward toward the sea. At some 2.0 kilometers upstream of Nahr Damour/Nahr Hammam junction, the



(Map No. 2)

dip gradually increases until it reaches some 80°, forming a flexure which runs in a NW-SE direction (see cross section No. 1 & photo No. 1).

Stratigraphy

Base of Cretaceous (C1) 250 m.

It consists of quartzic sandstones cemented by iron oxide, interbedded with thin argillaceous layers and submarine basalt with up to 40 cm thick.

Aptian (C2) 250 m.

Aptian Inferior (C2a) 135 m. Consists of sandstone with clay beds and thin limestone layers.

Aptian Superior (C2b) 115 m. The base of these formations consist of hard grey limestone (50-60 m). These are overlain by this bedded limestone with sandstone beds cemented with iron oxide deposits (15 m) and yellowish limestone (20m).

Albian (C3) 70 m.

The lower part consists of hard, yellow limestone (40 m) covered by greenish clays and marls (30 m).

Cenomanian (C4) 600 - 700 m

These are well thin bedded, light coloured limestone at dolomitic limestone, interbedded with white marly layers and Geodic quartz. The lower formations lay along a flexure with a dip reaching up to 70°. West of the flexure, the dip becomes gentler ranging between 15 - 20°.

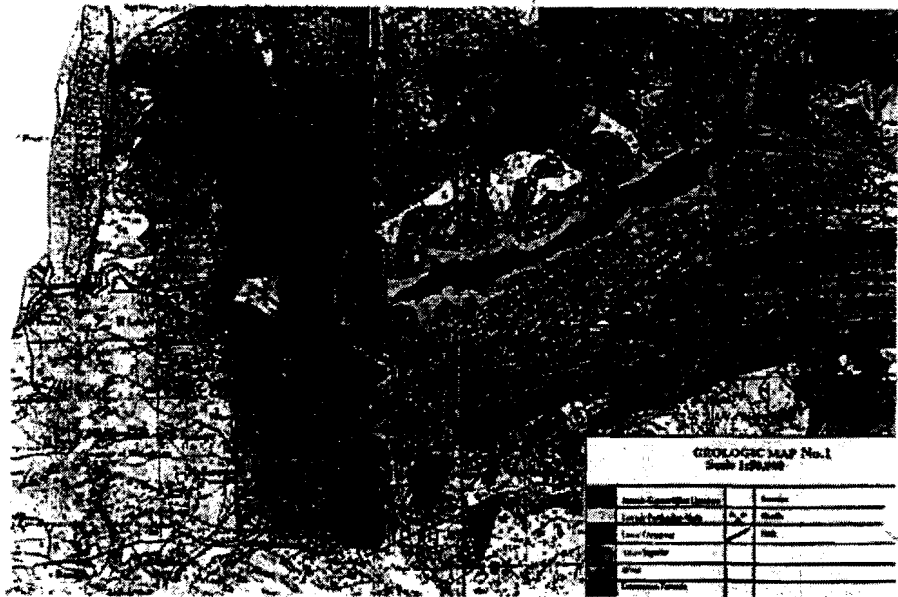
Turonian (C5) 200 m.

Consists of marly limestone and limestone in alternation with chalky marls with dolomites and cherts at certain horizons.

Ground Water

Jurassic:

These formations are fed by both the rain water and the Damour River flow. Water infiltrates through the fissures, cracks and crevices and percolates within the formation until it reaches the confining marly layers and then moves down the slope dip. Since the faults



crossing these formations cause vertical displacement of the marly layers, there is no uniform ground water level. This is witnessed by the presence of over four springs scattered along the river bed whose coordinates are shown on table 1.

Lower Cretaceous

These formations which consist mainly of sandstones and clays, are considered highly impermeable due to the presence of marls and clays and iron oxidized deposits filling the pore spaces. Springs which are fed by these formations have negligible flow not exceeding few cubic meters per day. An exception is the upper Aptian limestones. These are highly fissured formations which give rise to two overflow springs lying along the river bed at an elevation of 50 meters above sea level, the Halazoun and Al Aaraj springs.

Upper Cretaceous

Albain: Consists mainly of marls with marly limestones and are considered as impermeable.

Cenomanian - Turonian

Due to the highly fissured characteristics of these limestones, they are considered as water bearing formations. The Albian impermeable marls and the upper Aptian sandstones and clays separate the ground water body of the Aptian superior limestones whose water table lies at some 50 meters above sea level and the Cenomanian limestone whose water table lies at maximum elevation of 10 meters above sea level. Due to the extremely fissured behaviour of the Cenomanian limestones, wells drilled at Mechref-Damour area give yield to over 50 l/sec each.

Taking the above facts into consideration, one can conclude that the Jurassic formations are surrounded on all sides by impermeable sandy-marly-clayed deposits. Such formations prevent the subterranean flow of the Jurassic water westward, into the Aptian Superior and the Cenomanian-Turonian limestones. The presence of several springs along Damour river fed by the Jurassic limestones confirms that these formations lying below springs levels are either saturated with water or compact. Else, the water in filtrating through the Jurassic limestones will seep to levels lower than the riverbed and no such springs will appear. The impermeable lower Cretaceous marls, sandstones and clays whose thickness is over 400 meters, act as a barrier which prevents the

Table No.1

Spring	X	Y	Elevation - m
Ain Bou Slaiman	132.400	197.700	182
Ain Mantaqat Al Buhairi	131.800	197.400	160
Ain Al Blata	130.700	197.400	120
Nabaa Al Shahhameh	129.100	196.540	65

Maximum Dam Height-Meter	Average Dam Height-Meter	Maximum Crest Width-Meter	Average Crest Width-Meter	Water Storage Km'
50	27	152	80	5
75	40	212	115	18
100	52	276	145	38
125	65	352	180	68
150	80	470	300	113
175	90	536	450	175

Table No.2

river will cover mainly Jurassic lime stones and lower Cretaceous formations. The Dam and its lake will lie in an area considered as touristic zone where construction of houses is prohibited. Fortunately, no constructions will be covered by the lake to be created except one residential center. Table No.2 shows the approximate water volumes which will be stored at different dam crests.

The recommended crest height is maximum 150 meters or an average height of 80 meters. The water volume to be stored is approximately 113 km'. The usable volume is 100 km' equivalent to 550,000 cubic meter a day during 180 days. Construction costs of such a dam is \$115 million.

Water Treatment & Conveyance to Beirut

1- Using Existing Pipelines

A treatment plant will be built at some 2 kilometers downstream of the dam site at an elevation of 190 meters. The treated water will be conveyed by two 1400 mm diameter pipelines to a water reservoir at El Naameh village whose elevation is 160 meters. Water will be conveyed from this reservoir by two existing 700 mm and one 600 mm diameter pipelines which runs to Tallet Al Khayyat reservoir and Khalde' respectively.

2- Using the Bisri Conveyor

A 24 km concrete lined tunnel aqueduct will convey Bisri water by gravity to Beirut. This tunnel will pass at a distance of few hundred meters west of the treatment station. The treated Damour dam water can flow by gravity through this tunnel to Khalde' from which it

will be distributed to Greater Beirut. (Map No. 2)

3- Damour-Khalde' Conveyor

Should any delay arises in building Bisri dam, a tunnel can be constructed between the Damour treatment station to Khalde'. Length of such a tunnel is 5400 meters. This tunnel can be used at a later stage to convey the Bisri water to Greater Beirut. (Map No.2).

Cost Estimate of Damour Dam Project

Type of Work	Cost US\$ Million
Dam Rockfill	115
Treatment Plant	24
Pumping Station	6
Pipeline/Tunnel	15
Land Acquisition	8
Miscellaneous/ Consultancy Services	7
Total	175

The Sum of One Hundred Seventy Five million U.S. Dollars.

Benefits:

The preliminary hydro-geological studies I have carried during 1996 revealed that it is possible to deliver some 550,000 cubic meters a day during 180 days or 650,000 cubic meters for 150 days be mean of a dam to be constructed at Damour River. The main benefits which will be met from such a project are:

1- It will prevent wastage of over 150 km' of the Damour river to the sea. Some 100 km' of this water will be conveyed to Greater Beirut during summer

and the remaining 50 km' will be conveyed during winter season.

2- The costs for building dam and conveying its water to Beirut equal to \$175 million. Costs for delivering some 500,000 cubic meters a day from the Awali river and Bisri dam will equal to \$ 371 million. A total of \$ 195 million will be saved by meeting up Greater Beirut water needs from Damour dam.

3- The 50 million cubic meters of the Awali water to be conveyed to Beirut will be released during summer from the Karaoun dam whose lake lies at elevation over 830 meters above sea level. Meeting Beirut water needs from Damour dam will enable the Lebanese government to make use of the Karaoun water for irrigating new land in the Litani basin and South Lebanon.

4- The dam and the 5 km long lake to be created at Damour river will attract business and tourism, which are essential to the country's economic development.

5- Over 5 million cubic meters of Nabaa es Safa water whose elevation is 980 meters above sea level, is used during summer to irrigate the Damour plain. By meeting the plain irrigation needs from the dam, the Safa spring water will be used to cover the potable needs of the villages of El Chouf district by gravity. This will save over \$30 million needed for conveying maximum 30,000 m³/day to this region from Anan reservoir.

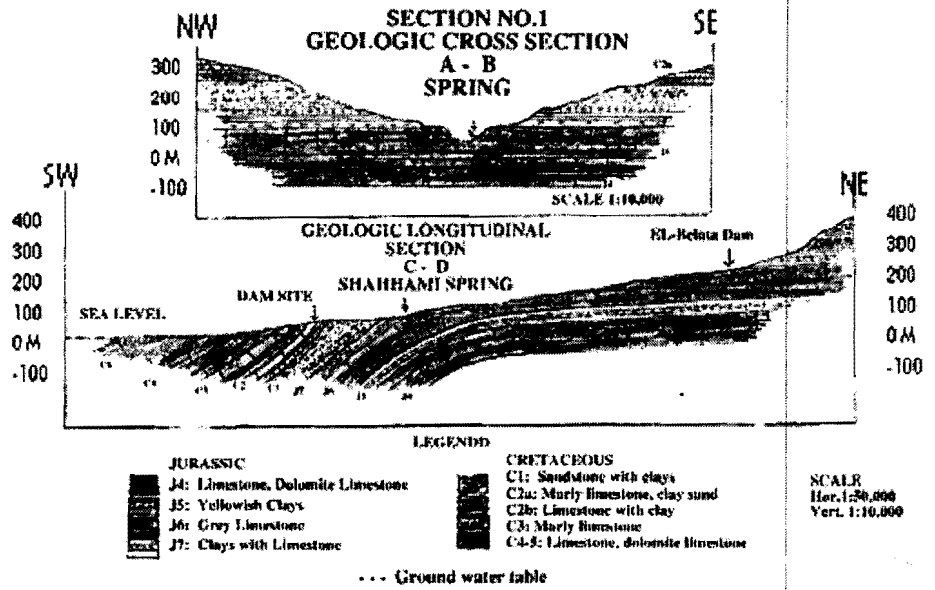
In other words, cost of storing the Damour water and conveying 550,000 m³/day to Greater Beirut during summer will decrease to 145 million in case Bisri conveying tunnel was not constructed and 130 million by construction tunnel. The money to be saved will be \$ 225 million and \$ 210 million respectively.

Was it predestined since ages to construct a dam on Damour river? Afterall, the name of the river reversed is Our-Dam? □

water which infiltrates into the Jurassic limestones from flowing underground to the Cenomanian-Turonian aquifer. The faults which cross the Jurassic limestones and the lower Cretaceous formations, due to the soft lithology of the clay and marly layers, will self seal. In other words, the water stored in the fissured and Karstic Jurassic limestones will not infiltrate below the saturated zone feeding Al Shahhami spring which is the lowest source fed by these limestones.

Dam Site

The most suitable site for placing the dam lies at a distance of 2000 meters upstream of Nahr Damour-Hammam river junction. The dam is located at a sharply eroded V shaped valley over the upper Aptian limestones with a stream bed elevation of 50 meters and a maximum structural height of 150 meters, or an average height of 80



meters. The width of the valley at the tentative crest elevation of 200 meters at the site is 470 meters or an average width of approximately 300 meters.

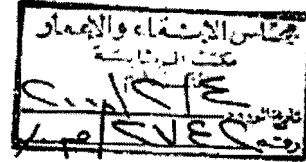
Water Volume Stored

The water to be stored along Damour

SCALE
Hor. 1:10,000
Vert. 1:10,000



هندسة المياه
WATER ENGINEERING sari
PLANT DIVISION



Council for Development And Reconstruction
P.O.Box 16/5351
Beirut, Lebanon.

Attention : Mr. Mahmoud Osman, President of the Council

Subject : Damour River Dam Project

Dear Sir,

Following our meeting with you in the presence of Mr. Ismail Makli and upon your request, we are pleased to submit a short preliminary hydrogeological report on our investigation concerning the above-mentioned subject.

Our observations were based on three site visits (one undertaken in the company of Hydrogeologist Fathi Chatila) to the area in the week 17/22 January 2000 and on the various documentation available to us (Geological & Hydrogeological maps, well drilling logs flow measurements and other pertinent information concerning rainfall, temperatures etc.....).

We shall only stress in this report mainly on the geological and hydrogeological conditions existing at and around the suggested dam site and whether these conditions constitute a serious scientific base for the proposal of a detailed final pre-feasibility study for a dam construction on the Damour River.

SINCERELY YOURS

Dr. René Ph. Kareh
Consultant Hydrogeologist
B.Sc., M.Sc., D.Sc.

Water Engineering S.A.L.
Sin El-Fil - P. O. Box 55154
Tel. : 499 646 - Telex : 42013

CAPITAL 100.000 L.L. (entièrement versé)

Summary of the data

- 1- The geological formations in the Damour river valley as well as the hydrogeological conditions prevailing in the area could be considered as ideal for the formation of a reservoir .As a matter of fact they are unique in a sense that rarely could one expect karstic limestones to be totally saturated in such conditions.
- 2- The Jurassic limestones in the Damour River valley have no connection whatsoever with the Jurassic of the Barouk as stated in the Harza Engineering report. This fact destroys the theory advanced by some persons that the Dnit deep well could be fed by the Barouk limestones of Jurassic age. We can also confirm that there is no connection between the limestones of the Jurassic and the formations of the Cretaceous.
- 3- The inventory of wells in the area has shown that five of them have penetrated the limestones of the Jurassic to various depths. One of them has reached the saturated zone mentioned earlier. These wells have confirmed the presence of two aquifers in the Jurassic limestones: an unconfined one feeding most of the surface contact springs and the wells that did not reach the saturated zone and a confined deep aquifer feeding the Dnit well and some overflow springs.
- 4- On the other hand the volume of water available for the dam (around 200 MM3) includes a part of the 37 MM3 of the Nahr al Hammam which could be diverted to the reservoir by gravity.

Conclusions and recommendations

Based on the scientific data available and on the geological and hydrogeological conditions prevailing in the Damour River valley one can conclude that the site suggested for the dam construction and located at a distance of about 2000 m. above the junction of the Damour and Nahr el Hammam is ideal.

Even though we agree with Harza Engineering that additional detailed informations should be obtained before the impletentation of the reservoir, we think that the suggestion to proceed with hydrogeological reconnaissance, pre-feasibility and feasibility studies will only delay unnecessarily what looks to be a good prospect for the adoption of this important project.

Furthermore the studies as recommended by Harza will require a long period of time as well as an important budget and will not give much more information than will be available after the completion of a single detailed final pre-feasibility study, which we strongly recommend.

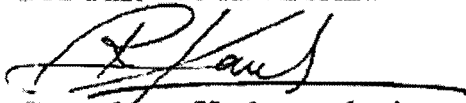
This final pre-feasibility study shall include a more detailed geological, hydrological and hydrogeological investigation as well as all other pertinent information such as alternate solutions of water supply, eventual risks, construction costs etc..... that will allow the officials in charge to either confirm or infirm the possibility of the erection of the dam on the Damour river.

This pre-feasibility study should not require more than a maximum of one year for its completion.

Important remarks

This short preliminary report is based on the documentation made available to us as listed in Page 2 and on our experience as a Consultant Hydrogeologist for over 30 years in Lebanon and other countries of the world with many international companies and official authorities.

DR. RENE PH. KAREH



Consultant Hydrogeologist
B.Sc., M.Sc., D.Sc.

Water Engineering S. B. L.
Sin El-Fil - P. O. Box 55154
Tel. : 499 646 - Telex : 42013

إلى: معالي الوزير
الأستاذ محمد يوسف بيضون ... المحترم

فاكس: ٦٤٥٠٤٣

من: الدكتور رينه القارج
هيدروجيولوجي

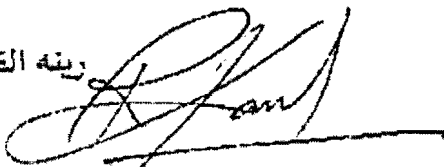
الموضوع: بناء سد على نهر الدامور

تحية طيبة وبعد،

أنا الموقع أدناه الهيدروجيولوجي الدكتور رينه القارج، أحد مؤسسي مصلحة المياه الجوفية والجيولوجيا في لبنان، أفيد بأن الدراسة الجيولوجية التي وضعها الهيدروجيولوجي فتحي شاتيلا لتخزين مياه نهر الدامور أكدت إمكانية تخزين أكثر من ١٠٠ مليون متر مكعب من مياه النهر يمكن أن تؤمن حاجة بيروت لمدة ربع قرن قادم. وإن جر مياه نهر الأولي لمدينة بيروت سيؤدي إلى وقوع خسائر مادية مباشرة قدرها ٤٠٠ مليون دولار أمريكي وإلى خسائر مادية غير مباشرة تُقدر بحوالي ١٤٣٥ مليون دولار أمريكي.

أقترح عدم الموافقة على تلزيم مشروع جر مياه نهر الأولي للعاصمة قبل استدعاء أحد الخبراء العالميين بتخزين المياه ووضع دراسة أولية تقييمية لنهر الدامور.

وتفضلوا بقبول فائق الاحترام.

رينه القارج

د. هيدروجيولوجي

بيروت في ١٨/٨/١٩٩٩

ندوة عقدتها صاحبة شركة Liban Consult
في دار المهندسين بتاريخ 20/12/2010

سد الدامور يوفر المياه لبيروت
وتضمنت المليون سنة

حاضر رئيس لجنة المياه والسدود في نقابة المهندسين أنطوان المعوشي عن 'سد الدامور' موقعا وهدفا مؤكدا الجدوى الفنية والاقتصادية المكتملتين للمشروع.

صلى الله عليه وسلم

سد الدامور هو السد الأول من سلسلة سدود لبنان التي ستوفر المياه لبيروت. وقد تم اختيار هذا الموقع لسهولة الإنشاء وقربه من العاصمة اللبنانية. وتبلغ مساحته 110 أمتار بارتفاع 100 متر. وستتمثل المرحلة الأولى بارتفاع السد في المرحلة الأولى إلى 100 متر بارتفاع 32 مليون متر مكعب من المياه. وفي المرحلة الثانية 110 أمتار بارتفاع 42 مليون متر مكعب وتقترب مساحة بحيرة السد في المرحلة الثانية الكيلومتر مربع ويستوجب السد محطة ضخ لإيصال المياه إلى منطقة بيروت تعمل فقط عند تدني مستوى المياه في السد. ومنشأة تحويل بقطر 1.50 متر ومحطة تكرير لمياه الشرب.

جريدة صدى البلد
20/12/2010

Doc.# 5: Article printed in AL Nahar News paper on October 14,2010.

العنوان: مياه الشرب لبيروت الكبرى: سد بسري
أولا

٢٠١٠ / ١٠ / ١٤

النص

نشرت الصحف الصادرة في 2010/9/29 اخبار زيارة وفد من لجنة الاشغال العامة والنقل النيابية برئاسة النائب محمد قباني مكاتب مؤسسة مياه بيروت وجبل لبنان، وما يهمنا هو ما قاله رئيس اللجنة عن مشاريع مياه الشرب لبيروت الكبرى (العاصمة بيروت وضواحيها الشمالية والشرقية والجنوبية، من الضبة شمالاً وحتى الدامور جنوباً) ان مصادر المياه ثلاثة، اثنان منهما اقرّاهما سد بسري وجر مياه الأولي. وسيبدأ العمل في جر مياه الأولي (حوالي 40 الى 50 مليون متر مكعب في السنة) بكلفة 370 مليون دولار يتأمن 200 مليون دولار منها من البنك الدولي، وتساهم مؤسسة مياه بيروت وجبل لبنان بـ 140 مليون دولار. وتؤمن الموازنة العامة نفقات استهلاك المشروع البالغة 30 مليون دولار. اما العمل في سد بسري فسيبدأ بعد سنتين، وتستغرق المرحلة الأولي منه 4 الى 5 سنوات، وقد تعهد الصندوق الكويتي بتمويل 70 مليون دولار من تكاليفه، في حين تجرى مفاوضات مع البنك الدولي لتأمين الـ 70 مليون دولار المتبقية. نحن الموقعين ادناه، الخبير المالي انس سنو، والمهندس سليم [REDACTED]، والمهندس كامل عويضة، الذين عملنا لفترة طويلة في المصلحة الوطنية لنهر الليطاني في مواقع مسؤولة، وساهمنا في مرحلة الاعمال الكبرى للمصلحة (سد القرعون والانفاق ومعامل الطاقة الكهرثائية الثلاثة، والتحضير لمشاريع الري) نشكل منذ عام 2004 قوة ضغط (LOBBY) لتنفيذ مشروع سد بسري، وليست لدينا مصلحة شخصية مباشرة او غير مباشرة، فدافعنا الوحيد ان نقوم بدورنا كمواطنين ونوجه المسؤولين الى الحلول الانسب. وقد قمنا باتصالات بالمسؤولين وقدمنا دراسات وحضرنا اجتماعات للجنة الاشغال العامة والنقل النيابية.

وفي كل هذه الاتصالات واللغوات والاجتماعات لفتنا الى ضرورة بدء تنفيذ سد بسري قبل اي مشروع آخر، وحذرنا من خطر وخطأ تنفيذ مشروع جر المياه الخارجة من معامل الليطاني الذي اطلق عليه، عن طريق الخطأ المقصود "مشروع جر مياه الأولي".
وباختصار كلي:

1 - ان سد بسري يقع على المجرى الاوسط لنهر الأولي، وقد درست المصلحة الوطنية لنهر الليطاني تنفيذه منذ عام 1977، وعام 1984 انتهت الدراسة الأولي للجدوى الاقتصادية. وعام 1994 وضعت دراسة الجدوى الاقتصادية وبموجبها يتبين ان سعة تخزين السد تبلغ 128/ مليون متر مكعب يمكن استخدام 105/ ملايين منها في السنة لمياه الشفة. اي ان حاجات بيروت وضواحيها ستكون مؤمنة لفترة ربع قرن.

2 - ان ما يسمى "مشروع جر مياه نهر الأولي" هو في الحقيقة، جر المياه الخارجة تبعاً من معمل عبد العال ومعمل بولس لرقش، وهي في معظمها مياه بحيرة نهر الليطاني.

وهناك اكثر من مشكلة تعترض الاستفادة من مياه الليطاني لتأمين ما تحتاج اليه بيروت وضواحيها من مياه الشرب:

أ - ان مجلس الانماء والاعمار حصل على فرض من الصندوق العربي وفرض من الصندوق الكويتي لتنفيذ مشروع ري الجنوب الذي سيحول 110/ ملايين متر مكعب في السنة من بحيرة الليطاني لري 14700/ هكتار في الجنوب.

ب - ان مشروع ري البقاع الجنوبي على المنسوب 900/ متر سيعتمد ايضاً على مياه بحيرة الليطاني بمقدار ثلاثين مليون متر مكعب في السنة.

ت - وهذا يعني انه لن تكون هناك مياه كافية لبيروت وضواحيها في حال نفذ المشروعات، او المشروع الاول فقط

ث - ان مياه الليطاني ملوثة بشكل خطير ولا تصلح للشرب حتى بعد اقامة محطات تكرير الصرف الصحي في البقاع التي تصب حالياً في بحيرة الليطاني، وذلك لان التلوث لا يقتصر على مياه الصرف الصحي، فهناك التلوث الذي تسببه مصانع المنطقة (دهانات

ومواد كيميائية) وما يرميه سكان المنطقة في مياه البحيرة.
ونلفت الى ان اهالي البقاع الغربي (وهم ساهموا كثيراً في تلويث مياه الليطاني) رفضوا اي مشروع لمياه الشرب من نهر
الليطاني. وقد اجازت المصلحة الوطنية لنهر الليطاني لمجلس الجنوب تنفيذ ضخ مياه عين الزرقاء النقية لتزويد سبعين قرية وبلدة
في البقاع الغربي بمياه الشرب الاضافية والضخ مكلف جداً لانه ينقل المياه من مستوى /600/ متر الى مستوى /800/ متر.
وما رفضه سكان البقاع الغربي، وهم الادري بمياه الليطاني، سيعطى لسكان بيروت وضواحيها.

الخبير المالي المهندس

أنس سنو سليم كرنج

المهندس

كامل عويضة

Nohma Khayrallah (Ms)
An-Nahar Research Center
Head of Indexing and Clippings Dept.
<http://archives.annahar.com.lb/>
An-Nahar, El Bourg
Tel : 961 1 994888
Direct Line : 961 1 963786
P.O.Box : 20145401
Beirut - Lebanon

on October 15, 2010.

Subject:

FW: annahar

15 / 10 / 2010

كلمات المفتاح:

بصري

مرتفعات المكمل في دائرة الخطر

الأولي وسد بصري بمشروع واحد

أصدر المكتب الاعلامي في وزارة الطاقة والمياه التوضيح الآتي:

ان مشروع الاول هو المرحلة الاولى وسد بصري هو المرحلة الثانية بفارق زمني لا يتعدى السنة، هذه هي باختصار المراحل التي مر بها هذا المشروع الواحد:

- 1 - وافق وزير الطاقة والمياه على المضي في تحضير شق الاول شرط تعهد البنك الدولي بالمساهمة في تمويل سد بصري.
 - 2 - وافق البنك الدولي على المساهمة في تمويل سد بصري.
 - 3 - وجهت وزارة الطاقة والمياه رسالة الى وزارة المال تطلب اليها توجيه طلب رسمي الى البنك الدولي لتمويل سد بصري.
 - 4 - يقوم الاستشاري حالياً بتحديث دراسة الجدوى ومن المتوقع ان تنتهي الدراسة في آخر العام 2010.
 - 5 - من المتوقع ان يوفد البنك الدولي بعثة لبدء تحضير مشروع سد بصري في كانون الثاني عام 2011.
- بناء عليه، ان مشروع الاول وسد بصري هما مشروع واحد، ولا يجوز تنفيذ مشروع الاول دون التأكد من تنفيذ سد بصري والقيام بكل الاعمال التحضيرية اللازمة لذلك، وهو ما يهدف وزير الطاقة والمياه الى القيام به.

Doc.# 7: Council of Minister decree no.12/99 dated 1st September 1999.

الجمهورية اللبنانية

مجلس الوزراء

الامانة العامة

بم

رقم المحضر : ٢٩

رقم القرار : ١٢

سنة : ١٩٩٩

من محضر جلسة مجلس الوزراء

المنعقدة في : مقرر يوم : الاربعاء الواقع في ١/٩/١٩٩٩

الموضوع : نتيجة اجتماع اللجنة المكلفة درس نقل المياه من نهر الأولي الى بيروت وامكانية نقل مياه نهر الدامور الى بيروت .

- المرجع : - قرار مجلس الوزراء رقم ٢٣ تاريخ ١٩٩١/٢/٢٠ ورقم ١٣ تاريخ ١٩٩٩/٦/١٤ .
- كتاب وزارة الموارد المائية والكهربائية رقم ١٤١/١٤١ تاريخ ١٩٩٩/٧/١٧ ومرنقاته .
- كتاب مجلس الانماء والاعمار بتاريخ ١٩٩٩/٩/١ الذي عرضه دولة رئيس مجلس الوزراء في الجلسة .

قرار المجلس :

اطلع المجلس على المستندات المذكورة أملاه .

وتم تبين من قبل قرار مجلس الوزراء رقم ٢٣ تاريخ ١٩٩١/٢/٢٠ قضي بالصيانة على استكمال دراسة انشاء سد على نهر بسري لتأمين مياه الشفة لمدينة بيروت وخواجبا التي عيّد وبها الى الشركة الاميركية (E.C.A) في دفتر كزولورادو بالاشتراك مع الاستشاري اللبناني دار الهندسة نزيه طالب .

كما تبين انه سبق لمجلس الوزراء ان وافق بقراره رقم ١٧ تاريخ ١٩٩٩/٦/١٤ على تشكيل لجنة برئاسة معالي وزير الموارد المائية والكهربائية ومعضوية كل من رئيس مجلس الانماء والاعمار ، مدير عام المحافظة الوطنية لنهر الليطاني ، مدير

رقم المحضر : ٢٩

رقم القرار : ١٢

تاريخ القرار : ١٩٩٦/٩/١

وان معالي وزير الموارد المائية والكهربائية يعرض على مجلس الوزراء النتيجة التي توصلت اليها اللجنة المكلفة بموجب قرار مجلس الوزراء السابق أعلاه وتتضمن التالي :

١- بالنسبة الى مشروع جسر مياه الأولي الى بيروت بطريقة B.O.T :

ان دراسات تنفيذ هذا المشروع أصبحت جاهزة وان الوضع الساني في مدينة بيروت وضواحيها يتطلب المباشرة في تنفيذه لسد الحاجات الملحة وبالتالي فان اللجنة توصي باعتماده والسير به بطريقة B.O.T على ان تدرج في دفتر الشروط بعض البنود التي تؤمن حقوق الادارة اللبنانية ، مع الاشارة الى التلازم بين جسر مياه الأولي والسير بمشروع سد بسري نظرا للعلاقة الوثيقة بينهما وللأمان الذي يؤمنه المشروع الأخير .

٢- بالنسبة لدراس إمكانية نقل المياه من نهر الدانور الى بيروت :

ان حاجات مدينة بيروت وضواحيها العالية والمستقبلية تتطلب الاستنادة بجميع مصادر المياه المتوفرة ، و ان مشروع نقل المياه من نهر الدانور لا يزال في مراحل الدراسة الأولية وان تنفيذه فيما لو كان ممكنا يستلزم عدة دراسات ولا يبرر بأي شكل من الأشكال استئجار العسير بالمشروع الأول وبالتالي فان اللجنة توصي بإجراء الدراسات اللازمة لمشروع سد الدانور والتي ستخدم موضوع بسري هذا المشروع .

وان دولة رئيس مجلس الوزراء عرض خلال الجلسة كتاب مجلس الامناء والاعمار الذي يتضمن ما يلي:

- مصادر وكميات المياه المؤمنة حالياً لمدينة بيروت .
- مصادر وكميات المياه الممكن تأمينها مستقبلاً لتغذية مدينة بيروت
- تقديرات المصاريف المقترحة لتنفيذها لتأمين المياه لمدينة بيروت



الجمهورية اللبنانية

مجلس الوزراء
الامانة العامة

رقم المحضر : ٢٩

رقم القرار : ١٢

تاريخ القرار : ١٩٩٩/٩/١

بناء عليه ،
ولدى المداولة ،

قرر المجلس الموافقة على تكليف مجلس الانماء والاعمار بما يلي :

أولاً : استكمال المعاملات والاجراءات اللازمة لتنفيذ مشروع جسر مياذ نهر الأولي الى بيروت بطريقة B.O.T .

ثانياً : استكمال تحديث الدراسة العائدة لمشروع سد بسري التي عهد بها الى الشركة الاميركية (E.C.I) في دنفر كولورادو بالاشتراك مع الاستشاري اللبناني دار الهندسة نزيه طالب والمباشرة بالاجراءات المتعلقة بتنفيذ هذا المشروع .

ثالثاً : وضع دراسة جنوى لمشروع انشاء سد الكامور على ان تؤخذ الامتيازات اللازمة لذلك من الامتيازات الملحوظة في خطة النهوض الاقتصادي ، وعلى ان يتم تلزيم تلك الدراسة بطريقة الاتفاق بالتراضي من خلال عقد يقدّمه ليقدم الغاية من قبل مجلس الانماء والاعمار خلال مئة شهر واحد من تاريخ تبينه لهذا القرار .

أمين عام مجلس الوزراء

بيلج لجاناً

- رئاسة مجلس الوزراء

- مجلس الانماء والاعمار

- وزارة الموارد المائية والكهربائية

- وزارة المالية

- المديرية العامة لرئاسة الجمهورية

- المديرية العامة لرئاسة مجلس الوزراء

- مديرية الشؤون الاقتصادية

- مديرية الشؤون المالية

- المجلس

مشارف السعد

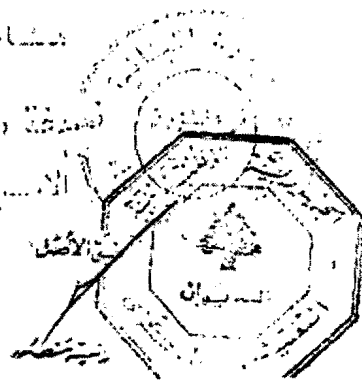
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Doc #8: Email from Mr. [REDACTED] dated September 16, 2010

Hydro geo

From: [REDACTED]
S reply: Thursday, September 16, 2010 4:17 PM
To: Fathi Chatila

CC: [REDACTED]

Subject: Re: FW: FW: Greater Beirut Water Supply

Dear Mr Chatila

Thanks for your email. I am glad to hear that you and Dr. El-Fadel were able to meet. As experts in the field I am sure that the discussion was extensive and fruitful. But it is also true that experts often disagree between themselves.

We reviewed the attached report from Dr El-Fadel and came to the conclusion that although you had legitimate points regarding for instance the need to take into account the studies you have made on the Damour (location of a future Dam, capacity, etc...) they go beyond the scope of the project the Bank is asked to finance. This project is ~~not intended to be a pre-emptive study of water supply for the greater Beirut area in an attempt to anticipate future needs or to provide a basis for decision making on the matter. It is rather a study that aims to provide a clear and concise summary of the current state of the water supply situation in Beirut and to identify the key issues and challenges facing the city. It is not intended to provide a detailed analysis of the various options available for addressing the water supply deficit in Beirut, nor is it intended to recommend a specific course of action. The study is rather a first step in the process of identifying the water supply needs of the city and of exploring the various options available for addressing these needs. It is not intended to disqualify other options (including Damour Dam) as it was made clear by the Lebanese authorities during your meeting with them. This rather merely a matter of sequencing submitted to usual constraints of financing and other readiness factors.~~

Nevertheless, the Bank will convey to its counterparts in Lebanon that the feasibility studies for the next phases, including the Damour Dam, would benefit from taking into account your findings. If the Bank is requested to provide all or part of the financing necessary for the Damour Dam and Water Conveyance project then it is clear that the feasibility studies will be carefully reviewed and that you will be appropriately consulted.

One point I want to make relative to the issue of access to information is that the Bank is committed to provide access to all documentation necessary for third parties to understand and evaluate a project financed by the Bank, in this case I suggest you consult the Environmental Impact Assessment prepared (available on World Bank and CDR website) for this project as it summarizes all pertinent technical questions, looks at alternatives and documents the consultation process (although I understand that you have some reservations about the consultation process for this project)..

Finally, as mentioned at the beginning of this email, you have obviously the right to disagree on the rationale for this proposed project and the Bank has, should you choose to use it, a mechanism (Inspection Panel) that would allow you to bring forward your concern at a higher level. In any case, I would like to express my compliments for the way you have responded to our attempts to ensure transparency over this process during the past month or so.

I wish good luck in your endeavors.

Best regards

(See attached file: Minutes of Meetings with Mr Chatila.doc)

[REDACTED] Regional Safeguards Advisor
Core Operations and Strategy Department
Middle East and North Africa Region
The World Bank

Doc.# 9 & 10: Two Testimonies from Greater Beirut Inhabitants.

Subject: Testimony Against Meeting Beirut Water Supply from the Litani River

Dear Sir,

I am an Architect and inhabitant of Al Mazraa in Beirut and I am a member of a political party known as "Al Moutamar Al Cha'abi Al Lubnani" or the "Lebanese Popular Congress".

All over the world, the governments discuss with their inhabitants the pros and cons of the different water project available to meeting their potable water needs before taking a final decision. We have been raising the matter of securing Beirut potable needs since late sixties and strange enough, we were never consulted by the Ministry of Energy & Water nor any other public sector firm regarding this matter. We represent a large part of Beirut inhabitants and we, in addition to tens of other political parties and NGO's and over 1.5 million of Beirut inhabitants should have the last word to chose the source from which our water needs will be met.

The project proposed by Mr. *Fathi Chatila* since over 14 years ago will enable Beirut inhabitants to have their water needs from the Damour River which is very close and whose water is slightly polluted and at a very low cost. The project to be financed by the World bank calls for meeting Beirut water needs from a far away source and whose water is chemically, industrially and bacteriologically polluted and is most expensive. I can confirm that nobody of the Beirut inhabitants wish to have his water needs from the Litani river.. They all prefer to have their water supply from the Damour Dam project.

We all urge the World Bank not to finance the Litani project because of the great harm it will cause to Beirut inhabitants. It will be our great pleasure for securing a meeting between the World Bank officials and tens or even hundreds of Beirut inhabitants, mainly engineers, doctors, lawyers and businessmen for discussing their fears from the Litani River project.

Best Regards

[REDACTED]
Lebanese Popular Congress

Central Committee

Mobile [REDACTED]

Email [REDACTED]

To Whom It May Concern,

Dear Sir,

I am an inhabitant of Beirut City and a member of "*Nadwat Al Amal Al Watani*" headed by H.E. Dr. Salim Al Hoss, ex prime Minister of Lebanon.

I am aware that the Lebanese Government has decided to meet Beirut water needs from the Litani River. This project will not only harm me and my family and relatives, but all of Greater Beirut inhabitants. The water to be delivered is most polluted. It carries all the sewage water of the villages and towns in the Litani River basin in addition to chemicals caused by all industrial factories and tanneries whose remains are carcinogenic and the pollution caused by over 50 gas stations and countless farms who get rid of the dead animals and chicken by throwing their carcasses in the Litani river bed. Most important, are the insecticides and fertilizers used on large quantities and different qualities for treating agricultural products in over 20,000 irrigated hectares. All such chemicals are washed away during winter season to the Qaroun Lake.

Form avoiding the delivery of this highly polluted water to Greater Beirut and for meeting Beirut potable water needs from the Damour Dam project, we at "*Nadwat Al Amal Al watani*" with the cooperation of Mr. Fathi Chatila have called for two conferences; the first was held on July , 2005 and the second was held on April 20, 2010. Both conferences were attended by over 150 decision makers and NGO's of Greater Beirut inhabitants in addition to businessmen from different religious sectors and political beliefs.

On behalf of myself, H. E. Dr. Salim Al Hoss and all members of "*Nadwat Al Amal Al watani*" we all urge the World Bank not to finance the Litani River project because of the great harm it will cause to Greater Beirut inhabitants and to meet our potable water needs from the Damour River.

Best regards,

[REDACTED]

[REDACTED]

[REDACTED] CELL
[REDACTED] CELL
[REDACTED] OFFICE
[REDACTED] TEL/FAX

Beirut : October 21, 2010

Email: [REDACTED]

To Whom It May Concern

Dear Sir,

My name is [REDACTED] an inhabitant of Kitermaya village, Ikleem Al Kharroub.

When a person fails to make his living in the region he was raised in, he will have no choice but to look for job opportunities elsewhere. This is what over 90% of the working hands of Ikleem Al Kharroub and Al Chouf district has made. They had to leave their villages and seek jobs in Beirut, Saida and elsewhere. I am among such a team and I am working in Beirut to make my living.

The only solution which will change the whole situation is the building of the Damour Dam. The lake to be created behind this dam will make the region a touristic center and will attract financial institutions to build hotels, restaurants and other creational centers. This will lead to having jobs for hundreds of men and women of Ikleem Al Kharroub and Al Chouf inhabitants.

Meeting Beirut water needs from the Litani/Bisri dam will lead to our losing this dream for decades.

For this reason, I would like to raise my complaint to the World bank , hoping that it will realize the great harm it will cause to the inhabitants of Ikleem Al Kharrouib and Al Chouf district by financing the Litani/Bisri Dam project.

If necessary, I can have the signatures of hundreds of this region inhabitants to this testimony.

[REDACTED]
[REDACTED]
[REDACTED] 19-10-10

Mobile number:

[REDACTED]

Email address:

[REDACTED]

Doc.# 12: List of Names, signatures, phone, numbers, emails and
addresses of petitioners living in Greater Beirut.

نحن الموقعين أدناه، نكلف السيد فتحي شاتولا بتمثيل قضايانا وتقديم شكوى الى " لجنة الشكاوى " في البنك الدولي تتعلق بمشروع تأمين مياه الشرب لمدينة بيروت وضواحيها من نهر الليطاني. نحن ضد تمويل هذا المشروع بسبب الأضرار التي سوف يسببها لأهالي مدينة بيروت وضواحيها وغيرها من المناطق اللبنانية.

We, the undersigned, authorize Mr. Fathi Chatila to represent our concerns and file a complaint to the World Bank's Inspection Panel with respect to the Greater Beirut Water Supply Project. We are against the funding of this project because of the harms it will cause to Greater Beirut inhabitants and other regions in Lebanon.

Name	Signature	Tel/Mobile#	Email	Address
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