

**Sustainable Development of Drylands
in Asia and the Middle East:
Jordan Component**

Visit Report

**January 8 to January 17, 2005
And
January 31 to February 3, 2005**

**Report Number
2005-001**

Prepared

by

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Robert J. Freitas, Project Director & Associate in Extension (ABE)**

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Tuesday, February 08, 2005

Table of Contents

Table of Contents.....	2
I. Introduction.....	3
II. Objectives	3
III. Jordanian Partners.....	5
1. Badia Research and Development Center (BRDC).....	5
2. The University of Jordan	5
3. RSS/ERC.....	6
IV. US Agency for International Development (USAID)	7
1. Biosolids	7
2. ASEZA.....	7
3. Wadi Mousa.....	8
4. Scope of Work for 2005/2006.....	8
V. Meet with the President of Jordan University of Science and Technology (JUST)	8
VI. Biosolids Application Experiment.....	9
VII. US Regional Environment Office.....	9
VIII. CDM International Inc.....	10
IX. Wadi Mousa Activities	10

Appendix A
Appendix B
Appendix C

I. Introduction

A trip to Jordan was scheduled for Dr. A. Tamimi from January 8 to January 17, 2005 to meet with Mr. Bob Freitas, the project director, to work on the Jordan component of the Sustainable Development of Drylands Project. One of the objectives related to the Wadi Mousa activity was not completed during the visit due to a postponement of a meeting with the Jordanian partners. The meeting was scheduled and was cancelled at the last minute. This necessitated another short trip to Jordan by Dr. Tamimi to attend the meeting and make a presentation as will be shown in this report. The second trip took place from January 31 to February 3, 2005.

This document reports the activities and findings during the two trips to Jordan.

II. Objectives

The objectives of both trips are:

1. Meet with Mr. Bob Freitas, the project director, who is visiting Jordan to work on the following aspects of the project:
 - Review the status of all project activities and the 2004/2005 Scope of Work (SOW).
 - Brainstorm for next year's activities and SOW.
 - Meet with the US Agency for International Development (USAID) to discuss current and future activities.
 - Meet with the President of Jordan University of Science and Technology (JUST) to introduce The University of Arizona Assistance Dean of the College of Engineering and Mines and to complete the Memorandum of Understanding (MOU) between the two universities for future cooperation and exchanges.
 - Visit the Ramtha experimental fields of the National Center for Agricultural Research and Technology Transfer (NCARTT) to observe the biosolids application experiment conducted by the Royal Scientific Society/Environmental Research Center (RSS/ERC).
 - Meet with the officer of the Regional Environment Office at the US Embassy in Amman.
 - Meet with CDM International Inc. Chief of Party.
 - Meet with the project's Jordanian Partners:
 - Badia Research and Development Center (BRDC)

- Water and Environment Research and Study Center (WERSC) at the University of Jordan (UoJ)
 - RSS/ERC
2. Attend the meeting at Wadi Mousa with all Jordanian partners to discuss the status of Wadi Mousa activities and decide on the next steps.

III. Jordanian Partners

The time available for Mr. Bob Freitas allowed for the following meetings:

1. Badia Research and Development Center (BRDC)

On Sunday, January 9, 2004 a meeting was held at BRDC. Present were: Mr. Bob Freitas and Dr. A. Tamimi from IALC; Engr. Mohammed Shahbaz and Dr. Saad Al-Ayyash from BRDC.

The Badia Research and Development Programme was upgraded to a Center; hence BRDP changed to BRDC as indicated by Engr. Mohammed Shahbaz, the president of the Center.

Copies of the Water Conserving Garden (WCG) Master Plan were received by BRDC and sent with an official letter to USAID – Amman Mission to be delivered to Aqaba Special Economic Zone Authority (ASEZA). A letter from Dr. Bilal Bashir, ASEZA's Commissioner and IALC main contact was requested by Dr. Tamimi to send an acceptance letter of the final design as indicated in Dr. Tamimi's visit report number 2004-005 dated November 22, 2004. Dr. Bilal Bashir sent an acceptance letter shown in appendix A of this report indicating that ASEZA has changed its priorities and wanted to reallocate the WCG funds to other activities in Aqaba. It was emphasized during the meeting at BRDC that ASEZA should work on implementing the WCG master plan in the near future and use the outcome as a model for other gardens in landscaping Aqaba. The concepts and ideas presented in the WCG master plan are applicable to many different landscape layouts and configurations in arid environments.

The Wadi Mousa activities were discussed and it was agreed that Wadi Mousa activities will stay on hold until a formal permission is obtained by Petra Regional Authority for implementing the Visitor's Center and the landscape master plan. A meeting was scheduled by CDM International Inc. the main contractor of the wastewater reuse implementation project on January 16, 2005. It was decided that the IALC project will attend the meeting as a technical assistant represented by Dr. A. Tamimi, Dr. Erin Addison and Dr. Saad Al-Ayyash as the IALC primary partner.

BRDC presented a new mechanism to develop the Scope of Work (SOW) for future years. The idea involves making a presentation about the IALC project to the different Jordanian ministries and academic institutions such as: Ministry of Agriculture, Ministry of Tourism and Antiquities, Ministry of Water, Ministry of Environment, ASEZA, University of Jordan (UofJ), Jordan University of Science and Technology (JUST), University of Zarqa, Yarmouk University, and Hashemite University. After the presentation a request will be made by BRDC to the different ministries and universities to give their list of priorities in the theme areas of the IALC project. The priorities will then be presented to and discussed with USAID in Amman to develop the SOWs. This suggestion will be discussed further by Mr. Bob Freitas with USAID.

2. The University of Jordan

A meeting was held on January 10, 2005 at WERSC. Attendees were: Mr. Bob Frietas and Dr. Akrum Tamimi from IALC; Dr. Saad Al-Ayyash from BRDC; Dr. Mohammed Shatnawi, Dr. Manar Fayyad, and Dr. Maha Halalsheh from WERSC.

The anaerobic digestion process was discussed. In the 2004-2005 SOW of the IALC project, an anaerobic digestion process activity was present with a priority level II. Due to funding restrictions the activity did not take place during this current year.

It was indicated that Dr. Halalsheh made a presentation at USAID – Amman mission explaining the SBR process. WERSC is looking forward to adopting their method to be used in a pilot study conducted by USAID in Jordan. Two pilot sites were selected at Shuneh in the Jordan Valley and at Showback in the south west of Jordan.

WERSC believes that the Water Authority of Jordan (WAJ) is interested in decentralized wastewater treatment systems and WERSC is interested in getting their process utilized.

IALC will be discussing this issue with USAID to see if the anaerobic activity with priority level II can be changed to priority I when the next SOW is developed.

3. RSS/ERC

On January 12, 2005, Mr. Bob Freitas and Dr. Akrum Tamimi from IALC; Dr. Saad Al-Ayyash from BRDC; Dr. Bassam Hayek and Engr. Wael Suleiman from RSS/ERC met at RSS/ERC headquarters.

The final meeting of the biosolids ad hoc committee was discussed. Dr. Chris Choi and RSS/ERC staff presented the biosolids application experiment and the weather station located at Wadi Hassan to the ad hoc committee. The presentation was well received by the ad hoc committee who included a representative from USAID – Amman Mission. A copy of the presentation was requested for IALC from RSS/ERC. A soft copy will be given to Dr. Tamimi since the size of the presentation is too large to be sent by email. The minutes of the ad hoc committee meetings were requested and were received in an electronic format from Engr. Wael. The minutes are in Arabic and are available from Dr. Tamimi whenever needed. A point was made during the presentation that proper acknowledgment of the partners, especially WAJ, should be made since WAJ's wastewater treatment plants are used; and the initial biosolids proposal was initiated by WAJ.

Characterizing the sludge produced at Al-Samra wastewater treatment plant was proposed in the phase II biosolids application project. It was suggested however that Irbid wastewater treatment plant be sampled instead since it is sludge that was generated using anaerobic treatment process. In this case, knowledge and procedure can be developed to handle the sludge that will come out of Al-Samra wastewater treatment plant when it is fully upgraded. It should be mentioned that Al-Samra wastewater treatment plant will produce anaerobic sludge.

It was recommended that the following issues be considered in planning for future work in the area of biosolids treatment and applications:

1. Testing of viruses
2. Perform Risk Assessment studies

In regard to the characterization of the biosolids at Wadi Mousa, the following questions were brought up: Should the biosolids at Wadi Mousa be used by the farmers? Is it safe enough? Who should decide on its use and the application rate?

The answers to these questions should be provided by WAJ the manager of the wastewater treatment plant.

A risk assessment workshop will be delivered by IALC sometime between September and December of 2005.

It was requested by RSS/ERC that Ali Omari who participated in the biosolids lab training at The University of Arizona from December 3 to December 18, 2004 be further trained at The University of Arizona labs on virus testing. Mr. Bob Freitas will be discussing this issue with the technical assistance team at The University of Arizona.

IV. US Agency for International Development (USAID)

In the morning of January 12, 2005 a meeting was held at USAID headquarters in Amman. Present were: Mr. Bob Freitas and Dr. A. Tamimi from IALC; Dr. Amal Hijazi and Mr. Jim Franckiewicz from USAID. The topics discussed were:

1. Biosolids

Dr. Amal indicated that the Aqaba Water Company is contracting a Jordanian Laboratory for the characterization of the sludge present at the current Aqaba wastewater treatment ponds. This sludge has to be removed to allow for the upgrading of the treatment plant. The contracting is being done through NCARTT.

It was suggested by USAID to invite Jordan Institute for Standard and Metrology (JISM) and the Environmental division at the Ministry of Health to be members of the ad hoc committee.

Dr. Amal indicated that she is pleased with the presentation given by Dr. Chris Choi and RSS/ERC during the last ad hoc committee meeting and with the biosolids application experiments running at Ramtha's NCARTT fields and being conducted by RSS/ERC.

2. ASEZA

It was indicated by USAID that they are accepting ASEZA's rearrangement of priorities as indicated to them in the letter shown in appendix A. The WCG master plans will be implemented some time in the future as promised by ASEZA. Jim indicated that there was a lot of miscommunication and misunderstanding between IALC and ASEZA. Dr. Tamimi indicated that the work that has been accomplished for ASEZA by IALC was well coordinated with ASEZA staff and all minutes of meetings at the different levels were documented and were sent to Dr. Bilal Bashir and concerned departments requesting comments. Mr. Jim Franckiewicz requested that a summary of the communications and set of circumstances surrounding the WCG be compiled by IALC and sent to him. Dr. Tamimi will compile a report to that affect and will send it to Jim as soon as possible.

USAID indicated that the wastewater budget being worked on by Dr. Pete Waller and Dr. Tamimi be completed and forwarded to Aqaba Water Company. Dr. Tamimi will consult with Dr. Waller and determine the status of the budget to finalize it and send it to BRDC and to USAID so as to be sent to Aqaba Water Company.

The design of the irrigation network for the city of Aqaba was discussed next and Dr. Tamimi indicated that there is a lack of input data to fulfill the design. The needed input data required for completing the irrigation system design are not available at ASEZA. After Dr. Waller's last trip to Aqaba (December 29, 2004 – January 7, 2005) Dr. Waller indicated that ASEZA is working hard to get the input data required to develop the irrigation system design for the city of Aqaba. For more information on the requirements and the deliverables, please see Tamimi's report #2004-005 dated November 22, 2004.

3. Wadi Mousa

Mr. Jim Franckiewicz indicated that the proposed meeting scheduled for December 16, 2004 to discuss the activities at Wadi Mousa will solve the permitting problems. It was indicated by Dr. Tamimi that the presence of IALC in the meeting will be restricted to providing neutral technical assistance and answering questions pertaining to technical assistance. More on this topic presented later in this report.

4. Scope of Work for 2005/2006

It was indicated by Mr. Jim Franckiewicz that an interest is present at USAID to have IALC work on the Rusayfeh project in cooperation with the Jordan Ministry of Environment. Dr. Tamimi compiled a preliminary report about Rusayfeh during his technical visit to Jordan in the summer of 2003. This report will be reviewed during the development of the 2005/2006 SOW.

Mr. Bob Freitas indicated that there should be a place for an aerobic activity conducted by UofJ during the 2005/2006.

In addition, Mr. Freitas indicated that an extension activity to disseminate the knowledge compiled through the wastewater and biosolids monitoring and research should be part of the 2005/2006 SOW. The Jordanian partners that would be involved are: JUST, NCARTT and RSS.

V. Meet with the President of Jordan University of Science and Technology (JUST)

At noon on January 11, 2005 Mr. Bob Freitas and Dr. A. Tamimi from IALC; and Dr. Ray Umashankar Assistant Dean at the College of Engineering, University of Arizona met with the president of JUST: Dr. Wajih Owais in his office in Irbid to discuss a Memorandum of Understanding (MOU) about the possibility of faculty and student exchanges between JUST and The University of Arizona.

The MOU was requested by President Owais during a meeting on June 10, 2004 that took place at JUST and involved Mr. Bob Freitas and Dr. Tamimi. A draft copy of the MOU was provided to President Owais for his review and comments.

Dr. Umashankar presented a wish by himself to have JUST as his main partner in the Middle East to cooperate with the virtual development center at the College of Engineering.

A meeting with JUST different deans and department heads was arranged quickly by President Owais and a good discussion took place. Dr. Umashankar presented the software used by the virtual development center: Solid Works that can be used to simulate and model any design and turn it into reality.

VI. Biosolids Application Experiment

On the morning of January 11, 2004 Mr. Bob Freitas and Dr. Tamimi accompanied with Engr. Wael Suleiman and Ms. Bayan from RSS/ERC visited the biosolids application experiment. The experiment is conducted at the Ramtha NCARTT field station about 2 miles east of JUST Campus. The different treatments and replications of the experiment were explained by the RSS/ERC staff. Photos 1 through 3 in appendix B show the biosolids application experiment.

The development of the new drying technology experiment at Wadi Hassan wastewater treatment plant was visited next. The meteorological station was observed and the entire process of recording and retrieving the different meteorological data was explained by the RSS/ERC staff. Photo 4 in appendix B shows the meteorological station and drying beds.

VII. US Regional Environment Office

On January 12, 2005, Mr. Bob Freitas and Dr. A. Tamimi from IALC; and Dr. Ray Umashankar Assistant Dean at the College of Engineering, University of Arizona met with the Regional Environment, Science, Technology and Health Officer for the Middle East and North Africa at the American Embassy in Amman. Mr. Jock Whittlesey's information is as follow:

Email: WhittleseyJK@state.gov or AmmanHub@hotmail.com
Office: (962- 6) 590-6621
Cell: (962-79) 559-3873
Fax: (962- 6) 592-7653

In addition Ms. Rana Safadi, Mr. Whittlesey's assistance was present at the meeting.

Dr. Tamimi gave a power point presentation to Mr. Whittlesey describing the work IALC is conducting through the Jordan component of the Sustainable Development of Drylands Project. Dr. Umashankar described the purpose of his visit which is to establish a linkage between The University of Arizona and JUST.

Mr. Whittlesey started with describing the tasks that his office deals with. The environment office can act as a linking body for the different entities involved in the research and work related to water resources, arid land studies, desertification, and health. In addition, the environment office works on multilateral and regional basis serving the Arab countries in the Middle East and Israel. The office provides information and makes contacts and acts as an advocate for collaboration in the previously described disciplines.

Dr. Tamimi is going to produce a concept paper about research in the areas of climate change, carbon sequestration, and biosolids and their relevance to long term ecological research. The concept paper will be circulated for the development of a multi-disciplinary research proposal. Mr. Whittlesey's office will be contacted to assist in the linking with the different parties who might be interested in working on the proposal.

The environment office can help with visa issuance for participants in the different training workshops that are held at The University of Arizona and can be contacted if needed.

VIII. CDM International Inc.

On January 13, 2005, a meeting was held between Mr. Bob Freitas and Dr. Tamimi from IALC and Mr. John Pasch from CDM. A review of the Wadi Mousa and Aqaba activities took place. It was determined that IALC would give a presentation in the December 16th, 2004 meeting related to Wadi Mousa activities. Dr. Tamimi and Dr. Addison would make the presentation and a representative from BRDC would attend the meeting.

IX. Wadi Mousa Activities

The 2004/2005 SOW breaks down the activities at Wadi Mousa to three with priority level I: the architectural design of the building, the landscape master plan and interpretive materials, and the tender documents preparation. The activities were being worked on according to the suggested timeline presented to USAID in the fall of 2004. On November 29, 2004 Dr. Tamimi received a copy of a letter sent to BRDC by Dr. Fawwaz Al-Khaysheh: Director General of the Department of Antiquities in Amman – Jordan. The letter was dated September 5, 2004; a copy of which is attached to this report in appendix C.

The letter talks about the different activities and requests BRDC to conduct a thorough archaeological survey and a thorough study of the current laws relating to the Petra National Park.

It was determined that a halt on the Wadi Mousa activities would be made until a permit is issued for the establishment of the Visitor's Center by the Petra Regional Authority (PRA) the owner of the park.

The letter was given to USAID on December 2, 2004 since they are the ones who are funding the reuse activities at Wadi Mousa. USAID and through the contractor of the reuse implementation project at Wadi Mousa: CDM International Inc. called for a meeting to be held on January 16, 2005. That meeting was postponed and was reschedule to take place at Wadi Mousa on February 1, 2005. The following persons attended the meeting:

- | | | |
|----|------------------------------------|--|
| 1. | Excellency Sharifa Zain Bint Naser | Royal Court |
| 2. | Engr. Ibtisam Younes | Royal Court |
| 3. | Dr Fawaz Khraisha | Director General Department of Antiquities |
| 4. | Ms. Mai Al Shaer | Department of Antiquities |
| 5. | Mr. Suliman Farajat | Director PAP |

6.	Mr. Abdalah Abu Alaim	Director General PRA
7.	Dr. Akram Tamimi	IALC
8.	Dr. Erin Addison	IALC
9.	Engr John Pasch	COP CDM
10.	Dr. Ahmad Abu Awwad	Task Leader CDM
11.	Ms. Aysar Akrawi	Director PNT
12.	Mr. Philippe	UNESCO
13.	Dr. Amal Hijazi	USAID
14.	Mr. Jim Franckiewicz	USAID
15.	Engr. Ismail Twaisi	CDM
16.	Engr. Majed Al Hassanat	PRA

A representative from BRDC was not able to attend the meeting due to previously arranged commitments. The agenda of the meeting included:

- I. Project Background
 - a. History
 - b. Partners and Stakeholders
 - c. Legal Authorization/Land Rights
 - d. Supporting Documentation

- II. Current and Planned Activities
 - a. Existing Farm Operations
 - b. Planned Agricultural Expansion
 - c. Visitor's Center
 - d. Landscaping

- III. Issues and Points of Concern
 - a. Long-term Management
 - b. Archaeological Survey/Water User's Organization
 - c. Cropping Pattern / Plant Varietals
 - d. Agricultural/Landscaping Expansion
 - e. Visitor's Center Construction
 - f. General Environmental Issues (Clearances/Approvals)

During the meeting, Dr. Abu Awaad from CDM presented items I-a through I-d, items II-a and II-b. Dr. Tamimi presented a power point presentation showing the history of the Visitor's Center and the development of the activities starting November 2002 up until October 2004 when the project was put on hold. Dr. Erin Addison presented the landscape master plan of the park.

Dr. Abu Awaad from CDM then continued with items III-a through III-f. The floor then was opened for discussion and her Highness Sharifa Zein suggested the establishment of a small committee headed by PRA director to review the reports and the park operational laws and return on March 15 to report on the findings and make recommendations on the activities proposed for

Petra National Park. Her highness also expressed concerns about naming the center as the Visitor's Center and requested that the name be changed.

Dr. Fawwaz Kraishah, director general of the department of antiquities agreed with the formation of the committee and requested that an archaeological survey be conducted. Dr. Amal Hijazi indicated that USAID has no funds to support the survey. Dr. Fawwaz indicated that the Department of Antiquity would pay for the archaeological survey.

After the discussion finished the participants were invited to go on a field trip to the site where the Visitor's Center is proposed to be constructed.

On Sunday February 6, 2005, Dr. Tamimi received a phone call requesting that he and Dr. Erin Addison serve on the previously mentioned committee. Dr. Tamimi indicated that BRDC should be invited to be on the committee representing the IALC project. Dr. Tamimi also indicated that he can not serve on the committee since he can only provide technical assistance and indicated that the same applies to Dr. Addison. However, he indicated that if the committee is interested in Dr. Addison's participation, she would gladly do that but she needs to be compensated for her time and her expenses should be covered by the committee.

Dr. Tamimi indicated that Dr. Addison and he will be available for any information requested by the committee and a report will be sent to the committee reflecting the history of the Wadi Mousa activities and copies of the Master Plan will be sent to each member of the committee.

Appendix A

ASEZA's Letter to USAID – Amman Mission



سلطة المنطقة الاقتصادية الخاصة
AQABA SPECIAL ECONOMIC ZONE AUTHORITY

4/B1/14753

25/11/2004

Mr. James Franckiewicz, Director
Office of Water Resources and Environment
USAID
Amman, Jordan

24th of November 2004

د. جيمس فرانكيويكز
المصطفى، المصطفى
البيروت، المصطفى
لجانته المصطفى

2004/11/25

Dear Mr. Franckiewicz,

I would like here first to extend my sincerest thanks and appreciation for the assistance that your office is extending towards supporting ASEZA's efforts in protecting the environment and improving the quality of life in the zone.

Also I would like to convey to you here ASEZA's position on some pending issues pertaining to USAID's funded projects that are currently under implementation namely; Sustainable Development of Drylands Project (implemented by Badia Research Development Program) and Reuse for Industry, Agriculture and Landscaping Project, RIAL (implemented by CDM).

As you know our initial agreement was that the Drylands Project will undertake a xeriscape design of a water friendly garden in Aqaba and the actual implementation of this design will be funded and carried out by the RIAL Project.

Recently we have been deliberating this matter within ASEZA's concerned departments and following a meeting that was carried out with the participation of Dr. Hijazi from your good office and the RIAL Chief of Party, where we here at ASEZA have arrived at the following:

To formally accept the "Principles of Design and Master Planning of the Water Friendly Garden" as last submitted by the International Arid Consortium. We would appreciate receiving final copies of this design in hard and electronic copy formats and receiving the design of the irrigation network.

ص.ب: ٢٥٦٥ العقبة ٧٧١١٠ الاردن تلفون: ٢٠٩-١٠٠٠ (٣) (٢٠٩) + فاكس: ٢٠٩-١٠٠٠ (٣) (٢٠٩) +
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URL: www.aqabazone.com - E-mail: info@aseza.jo



سلطة منطقة العقبة الاقتصادية الخاصة
AQABA SPECIAL ECONOMIC ZONE AUTHORITY

However due to changing priorities here at ASEZA and in order to utilize the funds of the RIAL project in a more efficient way and to maximize its impact, it became evident to us that the funds available under the RIAL Project for landscaping activities are best to be marshaled towards the implementation of AL Darb Promenade. This is a primary a pedestrian road access from the northern part of the city facilitating access of residential areas to the sea. The architectural design of this promenade has been prepared and it will be landscaped using tertiary treated wastewater.

Accordingly, ASEZA is here requesting your approval to reallocate available funds under the RIAL Project originally for the implementation of the Water Friendly Garden and the landscaping of the Environmental Street, in line with ASEZA's priorities and reallocate these funds towards the implementation the first phase of the Al Darb Promenade; approximately 150-200 m section.

Also, I would like here to inform you that ASEZA would make valuable use of the design and master plan of the Water Friendly Garden as developed by Arid Land Consortium in the greening of some public spaces within the city of Aqaba.

I thank you again for your valuable assistance and I would appreciate highly your favorable answer to the above request..

Sincerely,

Bilal Al Bashir
Commissioner of Environment
Aqaba Special Economic Zone Authority

Cc: Commissioner for Planning and Infrastructure
Cc: Badia Research and Development Program
Cc: Dr. Amal Hijazi, USAID
Cc: Mr. John Pash, RIAL Project

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Appendix B

Photos from Ramtha NCARTT field station and from Wadi Hassan Biosolids Meteorological station



Photo 1: Biosolids application experiment signage



Photo 2: Biosolids application experiment showing Replication 1 with the different Treatments.



Photo 3: General view of the biosolids application lots



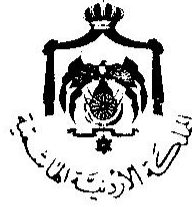
Photo 4: Biosolids drying beds with meteorological sensors to measure factors affecting the quality of treated Biosolids.

Appendix C

Department of Antiquities Letter to BRDC

بسم الله الرحمن الرحيم

THE HASHEMITE KINGDOM
OF JORDAN
MINISTRY OF TOURISM & ANTIQUITIES
Department of Antiquities
Amman



المملكة الأردنية الهاشمية
وزارة السياحة والآثار
دائرة الآثار العامة
عمان

Ref. No 519/2931

Date 14/9/2004

الرقم

التاريخ

الموافق

Mr. Mohammad Shabbaz
Jordan Badia Research and Development Project

Dear Mr. Shabbaz,

I would first like to take this opportunity to thank you for presenting the Wadi Musa reclaimed water reuse project. We are very appreciative of the hard work and serious studies that are being carried out through the project.

In that regard, it is worth mentioning a number of issues that are of major importance and should be addressed. To begin with, there is the issue of sustainability and the long term management of the site. This implies not only the establishment of a management system and a mechanism that would assure the adequate maintenance of the proposed activities, but also assurance that this management body is in fact capable of carrying out its obligations.

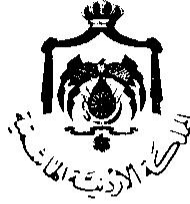
Considering that the site is obviously the location of many archaeological features related to water harvesting, and, is fairly close to the well known Ba'ja site, it is pertinent to conduct a thorough archaeological survey. It is possible that some archaeological soundings might then have to be made. Also, the issue of planting trees should be thoroughly studied, especially with regards to established laws. When such laws forbid the planting of trees, then these laws should be taken into consideration. Fruit trees and non-native species that require continuous irrigation must be disregarded, even if they are only considered for demonstrative purposes. If native trees are suggested for planting in certain areas in order to prevent erosion, then this initiative needs to be well studied and planned.

Developing the site to become a planned picnic area with landscaping, paths and services for picnickers is a serious matter, as it will not only legitimize using the site as a picnic area, but will also impact the site, compromising its integrity, especially where new structures are proposed. Moreover, the issue of land ownership should be seriously considered, whereby the concerned stakeholders should be a major part in the decision making process.

Received by
Amr H. H. H.
Dec. 21, 2004

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

THE HASHEMITE KINGDOM
OF JORDAN
MINISTRY OF TOURISM & ANTIQUITIES
Department of Antiquities
Amman



المملكة الأردنية الهاشمية
وزارة السياحة والآثار
دائرة الآثار العامة
عمان

Ref. No

Date

..... الرقم

..... التاريخ

..... الموافق

Therefore, as a first step, it is necessary to conduct a thorough archaeological survey (with funding through your project), as well as a thorough study of the current laws relating to the Petra National Park. Based on the results, future steps can be discussed and planned, with the prime aim of protecting the site and conserving it for future generations.

Sincerely,

Fawwaz

Dr. Fawwaz Al-Khraysheh
Director-General

المجلس الأعلى للآثار والتراث والتكنولوجيا
الرقم المسجل: ١٥٣٤
التاريخ: ٢١ ابريل ٢٠٠٤
الجهة المعنية: البادية
رقم الملف: ٥٤/١

cc. International Cooperation projects