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**Minutes of Meeting
Between
The Algerian Terminal Evaluation Team
And
The Japanese Terminal Evaluation Team
On
The Technical Cooperation Project for Capacity Development
Of
Environmental Monitoring in Algeria**

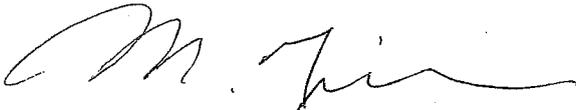
The Japanese Terminal Evaluation Team (hereinafter referred to as 'the Japanese Team'), organized by Japan International Cooperation Agency (hereinafter referred to as 'JICA') and headed by Dr. Mitsuo Yoshida, visited Algeria from October 5 to October 19 2008 for the purpose of conducting the joint terminal evaluation on the Technical Cooperation Project for Capacity Development of Environmental Monitoring in Algeria (hereinafter referred to as 'the Project') on the basis of the Record of Discussions signed on September 5, 2005.

During its stay in Algeria, the Team had a series of discussions and exchanged views with the Algerian Terminal Evaluation Team (hereinafter referred to as 'the Algerian Team') headed by Mr. Abdelkader Benhadjoudja and Mr. Bachir Slimani.

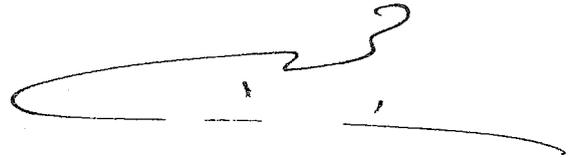
As a result of discussions, the Algerian Team and the Japanese Team agreed upon the Joint Terminal Evaluation Report attached as attachments.

This Minutes of Meeting including attachments is prepared in two versions. The main version is written in English and the other version is written in French. In case of any divergence of interpretation, the English version shall prevail.

Alger, October 18, 2008



Dr. Mitsuo Yoshida
Leader
Japanese Terminal Evaluation Team,
Senior Advisor,
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(JICA)



Mr. Abdelkader Benhadjoudja
Chief of Minister's Cabinet,
Ministry of Land Planning, Environment
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Director General
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Attachment I Joint Terminal Evaluation Report
Attachment II List of Attendants

ATTACHMENT I

THE JOINT TERMINAL EVALUATION REPORT

For

**THE PROJECT FOR CAPACITY DEVELOPMENT OF
ENVIRONMENTAL MONITORING
IN ALGERIA**

October 18, 2008

Joint Terminal Evaluation Team

Handwritten marks: a fraction-like symbol $\frac{1}{10}$ and a cursive signature.

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Abbreviation and Acronyms

ADE	Algèrien des Eaux
ANRH	Agence Nationale des Ressources Hydrauliques
BOD	Biochemical Oxygen Demand
BTX	Benzene, Toluene, Hexane
CD	Capacity Development
COD	Chemical Oxygen Demand
C/P	Algerian Counterpart
CRL	Central Regional Laboratory
DEWA	Direction de L'environnement de la Wilaya d'Alger
EIA	Environmental Impact Assessment
GC/MS	Gas Chromatograph – Mass Spectrophotometer
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HURBAL	Etablissement de l'hygiene urbaine de la ville d'Alger
ISMAL	Institut des sciences de la mer et de l'aménagement de littoral
ISO	International Organization for Standardization
JET	JICA Expert Team
JER	Joint Evaluation Report
JICA	Japan International Cooperation Agency
MATET	Ministry of Land Planning, Environment and Tourism
NA	Norme de Algerie
M/M	Minutes of Meeting
NAPE-SD	National Environment Action Plan for Sustainable Development
OEH	Oued El Harrach
ONA	Office National de l'Assainissement
ONEDD	National Observatory for Environment and Sustainable Development
ONEDD/HQ	Headquarter of ONEDD
PAH	Polycyclic Aromatic Hydorcarbons
PCM	Project Cycle Management
PDM	Project Design Matrix
PNAE-DD	Plan National d'Action pour l'Environnement et le Développement Durable
PO	Plan of Operation
QA/QC	Quality Control/Quality Assurance
RNE2000	Rapport National sur l'état et l'avenir de l'Environnement 2000
P/R	Progress Report
R/D	Record of Discussions
SNE	Stratégie Nationale de l'Environnement
SIE	Système d'Information Environnementale
SOP	Standard Operating Procedure
USTHB	Université des Sciences et Technologies Houari Boumediene

1. OUTLINE OF THE EVALUATION STUDY

1-1 Background of the Evaluation Study

The Ministry of Land Use Planning, Environment and Tourism (MATET) prepared the “Environment National Strategy” and the “National Environment Action Plan for Sustainable Development (NAPE-SD)” under the process of preparing “The Report on the Environmental State and Future” in 2000. The “Environment National Strategy” identified twelve challenges to achieve the following three objectives: 1) To integrate the environmental viability into the programs of the socio-economic development of the country, 2) To achieve a sustainable growth, and reduce poverty, and 3) To secure the public health.

The National Observatory of Environment and Sustainable Development, ONEDD, was established under MATET as a part of the NAPE-SD in 2002. The mission of ONEDD is to support the decision making of the environmental administration, and to provide services in the field of laboratory analysis through collecting the information on the current condition of the environment and industrial activities and research of the environment. When outline of the water and sediment pollution in the Oued El Harrach was reported as a result of field studies conducted by the JICA short-term experts dispatched from 2003 to 2005, ONEDD recognized the needs to strengthen his capacity to conduct the environmental monitoring. Consequently, the Government of Algeria requested to the Government of Japan a technical cooperation project for capacity development of ONEDD in environmental monitoring.

According to the request on the above, the JICA dispatched the Preliminary Study Mission to Algeria in March 2005 and agreed on the contents of the Project signing on the Record of Discussions (R/D) on September 5, 2005, which stipulated the framework of the Project. The Project especially focused on the strengthening of environmental monitoring capacity of the Central Regional Laboratory (CRL), which is a part of the ONEDD, located in Alger. The Project was started from November 2005 for the period of three years.

In the occasion prior to the end of the Project in November 2008, a terminal evaluation is conducted to examine the degree of achievement on a comprehensive level in the Project. The specific objectives of the terminal evaluation are summarized in the next section.

1-2 Objectives of the Evaluation Study

The specific objectives of the terminal evaluation are outlined as follows:

- (1) To review the progress of the Project and evaluate the achievement in accordance with the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability)
- (2) To identify the factors to promote/impede the effects
- (3) To consider the necessary actions to be taken before/after the end of the Project, and make recommendations for the Project
- (4) To summarize the result of the study in a joint evaluation report (JER)

1-3 Members of Evaluation Study Team

The Joint Evaluation Members of the Terminal Evaluation consist of the following members:

1-3-1 The Algerian Side

Mr. Abdelkader BENHADJOURIA	Team Leader	Chief Minister's Cabinet Ministry of Land Planning, Environment and Tourism (MATET)
Mr. Bachir SLIMANI	Member	Director General National Observatory for Environment and Sustainable Development (ONEDD)
Mr. Abderrahmane LALEG	Member	Assistant of Director General National Observatory for Environment and Sustainable Development (ONEDD)

1-3-2 The Japanese Side

Dr. Mitsuo Yoshida	Team Leader	Senior Advisor, Institute for International Cooperation, JICA
Ms. Eriko Tamura	Member	Senior Program Officer, Environmental Management Division 2, Global Environment Department, JICA
Ms. Shinobu Mamiya	Member	Permanent Expert, International Development Associates, Ltd.

1-4 Schedule of the Evaluation Study

Date		Activities	
4/Oct.	Sat		(Ms.Mamiya) Departure from Japan -> Arrival at Paris
5/Oct.	Sun		(Ms.Mamiya) Departure from Paris -> Arrival at Alger Meeting with Mr. Yahata, JICA Expert on Development Cooperation and Japanese Expert Team (JET) Courtesy visit to the Embassy of Japan (EOJ)
6/Oct.	Mon	9:00 11:00 13:00	Courtesy call to the ONEDD and MOFA Orientation Meeting with key C/Ps of ONEDD Interviews and meeting with C/Ps
7/Oct.	Tue	8:30	Interviews and meeting with C/Ps
8/Oct.	Wed	8:30	Interviews and meeting with C/Ps Examination of equipment provided by Japan
9/Oct.	Thu	8:00	(Dr. Yoshida/Ms. Tamura) Departure from Japan Interpretation of data and information/Data Analysis
10/Oct.	Fri	11:00 14:00	(Dr. Yoshida/Ms. Tamura) Arrival at Alger Internal meeting among Japanese evaluation members
11/Oct.	Sat	8:30	Practical Test on laboratory analysis, interviews with C/Ps
12/Oct.	San	8:30	Courtesy visit to the Embassy of Japan (EOJ), MoFA, and MATET Interviews and meeting with C/Ps
13/Oct.	Mon	8:30 13:00	Meeting with MATET officials Meeting with ONEDD officials Interviews and meeting with C/Ps
14/Oct.	Tue	8:30	ONEDD Seminar, presentations by each C/P Explanation on the draft Joint Evaluation Report (JER)
15/Oct.	Wed	8:30	Discussion on the JER
16/Oct.	Thu	8:30	Correction of the JER, Preparation of the Minutes of Meeting (M/M)
17/Oct.	Fri	8:30	Correction of the JER, Preparation of M/M
18/Oct.	Sat	11:00 13:00	Signing on M/M Discussion on future programs (MATET, ONEDD, DEWA) Reporting to EOJ

19/Oct.	Sun	10:00 19:00	Departure to Paris (Dr. Yoshida/Ms. Tamura/Ms. Mamiya) Departure of Paris to Japan (Dr. Yoshida)
20/Oct	Mon	9:00 19:00	Report to JICA France Office (Ms. Tamura/Ms. Mamiya) Arrival at Narita (Dr. Yoshida) Departure of Paris to Japan (Ms. Tamura/Ms. Mamiya)
21/Oct.	Tue	13:00	Arrival at Japan (Ms. Tamura/Ms. Mamiya)

1-5 Methodology of Evaluation

1-5-1 Evaluation Procedure

The Evaluation Team (hereinafter referred to as “the Team”) conducted surveys by questionnaires and interviewed the counterpart personnel (herein after referred to as “C/Ps”) and the Japanese experts as well as those officials concerned with the Project. The Team also made the visit to the project site. The Team analyzed and evaluated the Project from the viewpoints of evaluation criteria according to the method of Project Cycle Management (PCM).

1-5-2 Items of Analysis

(1) Accomplishment of the Project

Accomplishment of the Project was measured in terms of Inputs, Outputs, and Project Purpose in comparison with the Objectively Verifiable Indicators of the PDM (PDM2 developed in the Mid-Term Evaluation in February 2007) as well as the plan delineated in the R/D.

(2) Implementation Process

Implementation process of the Project was also reviewed from the various viewpoints, such as technical transfer, communications among stakeholders, and monitoring process, to see if the Project has been managed properly as well as to identify obstacles and/or facilitating factors that have affected the implementation process.

(3) Evaluation based on the Five Evaluation Criteria

The Evaluation Team also assessed the Project from the viewpoint of following five evaluation criteria.

1) Relevance:

The extent to which the Project Purpose and Overall Goal are consistent with the government development policy of Algeria as well as the development assistant policy of Japan, and needs of beneficiaries.

2) Effectiveness:

The extent to which the Project has achieved its purpose, clarifying the relationship between the Project Purpose and Outputs.

3) Efficiency:

The extent to how economically resources/inputs (funds, expertise, time, etc.) are converted to results/output with particular focus on the relationship between inputs and outputs in terms of timing, quantity and quality.

4) Impact:

Project effect on the surrounding environment in terms of technical, socio-economic, cultural, institutional and environmental factors. Project impacts are to be viewed from cross-cutting aspects according to positive or negative effects.

5) Sustainability

Sustainability of the Project is assessed from the standpoint of organizational, financial and technical aspects, by examining the extent to what the achievements of the Project will be sustained or expanded after the assistance is completed.

2. OUTLINES OF THE PROJECT

The expected Overall Goal, Project Purpose and Outputs written in the current PDM (PDM2) are as follows:

2-1 Overall Goal:

- (1) ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations with the Central Regional Laboratory (Alger) plays a leading role.
- (2) National environmental protection policy is promoted and counter-measures are recommended.
- (3) Counter-measures to prevent environmental pollution in Oued El Harrach industrial areas are deployed.

2-2 Project Purpose:

Environmental monitoring capacity of the Central Regional Laboratory (Alger) is strengthened.

2-3 Outputs:

- (1) Laboratory management to ensure a high-quality operation is in place.
- (2) Skills and knowledge in field survey and sampling management are acquired.
- (3) Skills and knowledge in organic chemical analysis are acquired.
- (4) Skills and knowledge in inorganic chemical analysis are acquired.
- (5) Skills and knowledge in microbiological analysis are acquired.
- (6) Skills and knowledge in developing and maintaining database are acquired.
- (7) Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained data are acquired.
- (8) Technical knowledge for the de-pollution and remediation are acquired.
- (9) Knowledge on environmental quality standards, regulations, and institutional/administrative setup for de-pollution and remediation are acquired.

2-4 Considerations for the Terminal Evaluation

In order to conduct the evaluation, the Team has given some consideration to the following items which characterized the framework of the Project.

(1) Components of the Project

The Project is consisted of nine (9) Outputs. There are some differences among Outputs in terms of

beneficiaries and the channel to contribute to the Project Purpose. The Output 1~7 are intended to directly contribute to the Project Purpose whose target groups are solely those C/Ps at CRL. On the other hand, the Output 8 is intended to connect the outcome of the Project with the policy application and its target groups are those C/Ps at the ONEDD/HQ. And the Output 9 is intended to further enhance the outcome of the Project to actually develop the policy and tools (law and standards) by utilizing the data interpreted under the Output 8. Consequently, the target groups are those C/Ps at the MATET. As for the management on a side of the Japanese technical cooperation, the activities under the Output 1 through 8 combined were managed by the Japanese consulting company. Activities under the Output 9 which was newly added at the Mid-Term Evaluation were carried out directly by JICA itself.

(2) Overall Goals

There is normally an overall goal set for a project, while the multiple overall goals could be set for the special case in which the multiple effects are expected as such for this Project. However, considering the background and the process that the Project was formulated, the ultimate effect to be attained by the Project would be the first Overall Goal as “ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations with the Central Regional Laboratory (Alger) plays a leading role”, and the rest two Overall Goals would generate rather subordinate effects by the Project. Therefore, it is confirmed among the Team that the prospect of the effect on the first Overall Goal will mainly be focused at the Terminal Evaluation.

(3) Important Assumptions

Having reviewed the current PDM, the Team recommended that the important assumption as “Algerian Government maintains the current proactive attitude toward environmental policy and its enforcement.” from the Project Purpose to the Overall Goal should be applied to support the logical framework of the current PDM.

3. ACHIEVEMENT AND IMPLEMENTATION PROCESS

3-1 Inputs

Inputs to the Project up to now since its inception are as follows:

3-1-1 Japanese Side

Most of the inputs from the Japanese side except the equipment are executed as planned.

(1) Dispatch of the Japanese Experts

For the technical transfer at the CRL under the Output 1~8, ten (10) experts in the seven (7) fields were dispatched. And for the C/Ps of ONEDD/HQ and MATET, seminars and workshops on the environmental standards were held under the Output 9. Eight (8) experts as lecturers were dispatched for these seminars and workshops. Details are given in the ANNEX 4.

(2) Counterpart Trainings

Total of five (5) C/Ps participated in the counterpart trainings on the environmental monitoring and a lab

analysis in Japan in 2006 and 2007.

In addition to the above, two (2) C/Ps participated in the 1st year and the 4th year program of training course on the Industrial and Urban Environmental Management for Algeria¹, which was financed by the scheme of JICA Country-Focused Training Course. Details are given in the ANNEX 5.

(3) Provision of Equipment

Equipment, which is equivalent to approximately JPY73.5 million (Euro464 thousands) were provided for the implementation of the Project. Major equipment includes, GC/MS, ED-XRF, Mercury Analyzer, TOC Analyzer, FTIR, Spectrophotometer, Ultrapure Water System, Oil Content Meter, and Gas Scrubber, etc. Details are given in the ANNEX 6.

(4) Local Cost

In order to carry out the activities, the total amount of Euro165, 269. - (equivalent to JPY26.2 million) was disbursed from the Japanese side. Major items for the local costs are to employ local consultants who support the project members to carry out the activities. Details are given in ANNEX 7.

3-1-2 Algerian Side

(1) C/Ps

The Algerian side nominated the C/Ps for conducting project activities (Output 1~8) defined by the R/D. At the beginning of the Project, there were thirteen (13) C/Ps attending the project activities from the ONEDD/HQ, and CRL. At the end of the Project, the number of C/Ps increased to twenty-two (22). Three (3) C/Ps left the Project due to the various reasons. The list of C/Ps is shown in ANNEX 8.

(2) Project Management Cost

In order to carry out the activities, the total amount of Euro380,920.00 (equivalent to Algerian Dinar38.9 million) ² was disbursed from the Algerian side. Details are given in ANNEX 9.

(3) Office Space for the Experts and Consumables

The Algerian side has allocated the office space for the JICA Expert Team in the CRL with utilities and some furniture for the Project. And in order to carry out the project activities, the Algerian side provided consumables, such as chemicals, gas, etc.

(4) Construction of Provisional Laboratory Facilities

The Algerian side constructed the provisional laboratory cabin in the Ben Aknoun Compound to carry out the laboratory analysis.³

(5) Vehicles for Field Sampling

The Algerian side has allocated two vehicles to the CRL in order to conduct field sampling.

¹The first year program of this training course was conducted before the commencement of the Project, however, the training greatly served to improve the capacity of C/P which eventually contributed to the achievement of the Project. Therefore, it was listed as the Input of the Project.

² FX rate at @102.00 per Euro as of Oct.13,2008

³ New laboratory facilities were expected to be constructed in the new town called Bouinan. However, the construction has been delayed. The ONEDD/HQ constructed the provisional laboratory to precede the laboratory activities until the construction of new laboratory is completed.

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3-2 Achievement of the Project

The Team evaluated the achievements of Outputs and Project Purpose according to the indicators on PDM (PDM 2) and summarized the results as follows:

3-2-1 Outputs

Output 1: "Laboratory management to ensure a high-quality operation is in place."

Objectively Verifiable Indicators:

- 1-1 Organizational arrangement, mandate for staff and directional authority are clearly defined
- 1-2 Meeting of laboratory members is organized regularly
- 1-3 Operation plan is prepared
- 1-4 Operation is carried out based on the operation plan

The Algerian side has made much effort to improve the laboratory management especially after the acting director of the laboratory was appointed. The organizational chart was created, but the directional authority and the mandate of staff have not yet been specifically defined ⁴(Indicator 1-1). Meetings of laboratory members were held regularly in 2006 and 2007 with the initiative of JET. However, the frequency of meetings has been decreased in 2008(Indicator 1-2). The operation plan has not yet been prepared, therefore, the operation has not been systematically carried out based on the operation plan (Indicator 1-3, 1-4). These results imply that further efforts and time are needed to improve the management of laboratory.

Not yet explained by previously arranged indicators, however, some positive aspects of laboratory management have also been identified. In order to provide some initial introductory on-the-job-training for those C/Ps who have fewer experiences in the field of chemical analysis, the physico-chemical section was newly created. This mutual-training mechanisms built-in the CRL have helped to increase the individual technical capacity of C/Ps. In spite of relatively greater responsibility of ONEDD/HQ for the management of CRL, insufficient attention has been paid by the ONEDD/HQ.

In summary, the Output 1 could be said as "**partly achieved**". Further efforts should be made, especially to improve the information sharing mechanism among laboratory staff and to streamline the decision making process.

Output 2: "Skills and knowledge in field survey and sampling management are acquired."

Objectively Verifiable Indicators:

- 2-1 C/P is able to perform field survey including sampling
- 2-2 C/P is able to perform sample management (preparation, storing, labeling, etc.)

C/Ps under the sampling and stock management section has been conducting the field sampling on a regular basis. They have been implementing the regular monitoring at nine (9) sites in the Project area from August 2006 to June 2007. From November 2007 to June 2008, industrial waste water survey (inspection of factory and sampling) was conducted in cooperation with DEWA. In January 2008, sampling

⁴ For the organizational chart, please see ANNEX 10-2.

of groundwater at piezometer in Oued Smar was conducted. During summer season of 2008, sampling of sea water at coastal bathing beach was conducted. Numbers of collected samples are increasing by year as shown below. In addition, a satisfactory level of C/Ps performance in technical capabilities on environmental monitoring was assured by the practical test conducted during the Terminal Evaluation.(Indicator 2-1).

Year	2005	2006	2007	2008
Water Monitoring along OEH	0	13	13	0
Industrial waste water survey	0	0	17	77
Coastal bathing beach	0	0	0	46
Others (soil/sediment/biota)	0	10	15	25

SOPs for field survey and sampling were prepared and C/Ps were able to provide trainings for those laboratory engineers / technicians at Oran and Constantine Regional Laboratories as well as the monitoring station using SOPs (Indicator 2-2). For details, please see ANNEX 10-8.

In summary, it was confirmed that the Output 2 could be said as “**satisfactorily achieved**”.

Output 3: “Skills and knowledge in organic chemical analysis are acquired.”

Objectively Verifiable Indicators:

- 3-1 C/P is able to perform organic chemical analysis of compounds specified in the Algerian standard
- 3-2 Analytical protocol is established
- 3-3 Accuracy of data obtained from the analysis maintains within the accepted range

In spite of the delay of equipment provision, C/Ps are now able to measure COD, BOD, Kjeldahl nitrogen, oil & grease, suspended substances, phenols, hydrocarbons, chlorinated organics, BTX and PAH in water sample with the Algerian standard method. Organic mercury can be measured by method introduced by JET. C/Ps also started measurement of oil & grease based on DIN. Suspended substances were analyzed with the Algerian standard for the first time. The number of organic parameters provided by CRL has been increased from 3 in 2006, 6 in 2007 and 11 in 2008. In addition, the satisfactory level of C/Ps performance was assured by the practical test conducted during the Terminal Evaluation (Indicator 3-1). However, the level of C/Ps performance on GS/MS could not be fully evaluated due to a lack of installation of P.T.unit. For the details, see ANNEX 10-1, “Results of Achievement.”

SOPs for suspended substances, COD, BOD, total organic carbon, oil & grease, Kjeldahl nitrogen, phenols, total hydrocarbons, chlorinated organics, BTX, PAH and organic mercury were prepared (Indicator 3-2). For the list of SOPs, please see ANNEX 10-8.

Introduction of the analytical data sheet decreased the mistakes in the data processing. The interim laboratory director has been checking all results of analysis, prior to submit analytical report to clients. In case that unexpected data is obtained, the director investigates the appropriateness of each step (sampling, sample preservation, measurement and data processing) through discussions with concerned personnel (Indicator 3-3).

In summary, the Output 3 could be said as “**partly achieved**”. For further improvement, some efforts

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should be made to improve the accuracy of data in analysis.

Output 4: “Skills and knowledge in inorganic chemical analysis are acquired.”

Objectively Verifiable Indicators:

- 4-1 C/P is able to perform inorganic analysis of compounds specified in the Algerian standards
- 4-2 Analytical protocol is established
- 4-3 Accuracy of data obtained from the analysis maintains within the accepted range

C/Ps are able to analyze phosphorus, cyanide, fluoride, Cr(VI) and 12 elements (Al, Cd, Co, Cu, Pb, Ni, Sn, Cr, Hg, Mg, Mn and Fe) with the Algerian standard method. Knowledge and skills of some C/Ps have been advanced through trainings from the previous technical assistance by Japan and Germany. Therefore, the Project has served to further strengthen their capacities. The number of inorganic parameters analyzed has been increased from 3 in 2005 to 18 in 2008. In addition, the excellent performance level of C/Ps was assured by the practical test conducted during the terminal evaluation (Indicator 4-1).

SOPs for all of inorganic chemical parameters on the Algerian standards have been prepared (Indicator 4-2). For the list of SOPs, please see ANNEX 10-8. Analytical data sheet has been used to decrease the mistakes in the data processing. The interim laboratory director has been checking all results of measurement. The lectures on the method to determine detection limits are made by JET. By using the obtained knowledge, detection limit of mercury by mercury analyzer was determined by C/Ps. Detection limits specified by ISO are applied in CRL. C/Ps have obtained the knowledge on the reporting digits. As for cyanide and fluoride, recovery tests were made by using standard samples brought from Japan (Indicator 4-3).

In summary, the Output 4 could be said as “**satisfactorily achieved**”. With continuous efforts to improve the accuracy of data in analysis, their skills and knowledge in inorganic chemical analysis have greatly advanced.

Output 5: “Skills and knowledge in microbiological analysis are acquired.”

Objectively Verifiable Indicators:

- 5-1 C/P is able to perform microbiological analysis specified in the Algerian standards
- 5-2 Analytical protocol is established
- 5-3 Accuracy of data obtained from the analysis maintains within the accepted range

Due to the delay in constructing the laboratory facilities, activities under the Output 5 has just started from April, 2008. Two C/Ps are now able to analyze for total and fecal coliform using ISO 9308-1 membrane filter. Analytical studies have been started since May 2008 and samples have been taken from the coastal area twice a week to conduct the analysis. There has not been any orders from clients received so far, while sea water at bathing beach (more than 23 samples) was analyzed (Indicator 5-1).

Analytical protocol, SOPs for the coliform testing was prepared (Indicator 5-2). See ANNEX 10-8 for a list of SOPs. At this moment, to secure the accuracy of data (to confirm the contamination-free), blank test has been implemented in all analysis patch. Duplicate tests are also executed to know the variation of

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analysis data. Accuracy of data obtained from the analysis has not yet been confirmed (Indicator 5-3).

In summary, 2 of 3 indicators indicate the achievement, thus the Output 5 could be said as “**mostly achieved**”. However, continuous efforts should be made to ensure the accuracy.

Output 6: “Skills and knowledge in developing and maintaining database are acquired.”

Objectively Verifiable Indicators:

- 6-1 Architecture of the database for the Central Regional Laboratory (Alger) is designed
- 6-2 The database is established
- 6-3 Data collected from the analysis is stored in the database, and is available when requested.

The C/P was assigned from ONEDD/HQ and designed the architecture of database for CRL with the support of JET (Indicator 6-1). Currently, the C/P commutes from ONEDD/HQ twice a week and input the data of regular monitoring results into the database (Indicator 6-2). The volume of data input into the database has been increased from 700 in 2006 to 2000 in 2008. For details, see ANNEX 10-1. The accumulated data can be properly accessed with applying the password (Indicator 6-3).

In summary, the Output 6 could be said as “**mostly achieved**”. In order for efficient utilization of database, a permanent staff should be allocated in CRL. For the security measures to protect the data from computer virus should be installed shortly.

Output 7: “Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained data are acquired.”

Objectively Verifiable Indicators:

- 7-1 C/P is able to produce environmental reports based on the monitoring results (results of survey analysis and interpretation)
- 7-2 C/P is able to present the analytical results base on monitoring results at seminars and meetings, etc.

The report on the monitoring results with Oued El Harrach based on the available data was prepared and circulated internally. C/Ps made presentation about the water pollution in the Project site at the 3rd seminar in February 2007 for the first time. And two presentations were performed at the workshop on June 25, 2008. Although C/Ps could produce some outcomes from trainings, their experience was limited due to that there are not sufficient data currently available. In order to acquire the skills and knowledge for data interpretation and analysis, further experiences and exercises in this field are essential.

In summary, the Output 7 could be said as “**partly achieved**”. For comprehensive understandings and for application, continuous efforts should be made to experience the interpretation of analyzed data.

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Output 8: “Technical knowledge for the de-pollution and remediation are acquired.”

Objectively Verifiable Indicators:

C/P is able to present the information on de-pollution and remediation technologies for the Project area at seminars and meetings, etc

Technical information on de-pollution and remediation and water quality management plan was introduced by JET. C/Ps have also participated in the seminars conducted by the Japanese experts and they are now able to research and obtain the necessary information by using internet. However, their exposures through Project activities were much limited in order to acquire the technical knowledge for de-pollution and remediation.

In summary, the Output 8 could be said as “**partly achieved**”. For comprehensive understandings about the de-pollution technology, continuous efforts should be made.

Output 9: “Knowledge on environmental quality standards, regulations, and institutional/administrative setup for de-pollution and remediation are acquired.”

Objectively Verifiable Indicators:

C/P is able to propose an environmental quality standard, regulation and institutional/administrative setup for de-pollution and remediation, etc

The Output 9 has been added after the Mid-Term Evaluation to enhance the comprehensive approach toward the environmental policy in MATET. Two seminars and workshops were conducted in July 2007 and April 2008. In July 2007, four Japanese experts from the Ministry of Environment, Regional Environmental Administrations, JICA as well as a private company lectured on the environmental quality standards from the various aspects, such as water, soil/sediment, chemicals and air. In April 2008, JICA experts on the environmental management lectured on the Environmental Impact Assessment, Environmental Administration, Enforcement and Environmental Monitoring conducted the workshop and seminar. Participants for both seminars and workshops included the staff of CRL, officials of ONEDD/HQ, MATET and other ministries, and those from Wilaya environmental departments. Proceedings of both seminars were prepared and distributed to those participants for their reference. Recommendation papers have been also prepared and submitted by the JICA experts. According to the interviews and questionnaires conducted during the Terminal Evaluation Study, seminars and workshops served to enhance the knowledge on environmental quality standard, regulations and environmental administration. After the first workshop in 2007, soil quality standard was drafted by MATET. Importance of environmental quality standards and institutional setup for de-pollution have been recognized among relevant officers in MATET and Wilaya environmental departments.

In summary, the Output 9 could be said as “**mostly achieved**”, since the planned activities for the Output 9 were mostly conducted and the draft soil quality standard was prepared. Awareness on the necessity of environmental quality standards in among MATET relevant officers has been raised. However, in order to build the institutional /administrative setup for de-pollution and remediation, continuous efforts should be made.

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3-2-2 Project Purpose

Project Purpose: "Environmental monitoring capacity of the Central Regional Laboratory (Alger) is strengthened."

Objective Verifiable Indicators:

1. The Central Regional Laboratory (Alger) is able to response to the requisition about the environmental monitoring from various clients
2. The Central Regional Laboratory (Alger) is able to publish comprehensive environmental report(s) on the Oued El Harrach pollution problems, which promotes appropriate counter-measures for environmental protection and remediation of the area.
3. C/P is able to Implement technical advise to ONEDD's other regional laboratories in Algeria.

In general, the number of clients to the CRL has been increasing and the C/P has been providing the technical advises to ONEDD's other regional laboratories, for example, organizing the training courses about chemical analysis and practical trainings for lab analysis. Combined efforts of the Algerian and the Japanese sides have contributed to improve the overall performance of the CRL and the environmental monitoring capacity of the CRL has been apparently strengthened in comparing with the beginning stage of the Project.

The number of orders from clients has been greatly increased by year and the number of samples analyzed has also been increased accordingly. The performance of the first indicator, as shown below, is very satisfactory. An increasing trend of new clients by year implies that the quality of services by CRL has been ensured. For details such as the list of clients, see ANNEX 10-3.

	2005	2006	2007	2008 ⁵
Number of Samples				
Heavy Metals	50	337	351	142
Other Parameters	53	431	351	242
Number of clients				
Heavy Metals	2	21	18	23
Other Parameters	3	20	39	44

As for the performance of the second indicator, the report produced by the CRL was drafted by those staff of CRL. For the presentation material of the report, please see ANNEX 10-4. The Team could not identify the comprehensive environmental report with Oued El Harrach pollution problems. As for the performance of the third indicator, C/Ps at CRL is now able to provide technical advice to other regional laboratories, such as Oran and Constantine. In addition, they also provide the training to the staff of monitoring stations in Skikda, Anaba and Bordj Bou Arreridj as well. For those occasions, SOPs prepared by the Project were effectively utilized and distributed for those participated in the training. Please refer to the ANNEX 10-7 for the report of missions/trainings to other laboratories. Furthermore, the environmental monitoring capacity of C/Ps of the CRL can be ensured by the list of training completed and the parameters applied by each C/P shown in ANNEX 10-5 and ANNEX 10-6.

⁵ The data included in 2008 were from January up to September 2008.

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Judging from the performance of indicators and the comments received from beneficiaries and related laboratories, the Team concluded that the Project Purpose could be said as “**mostly achieved**”. However, in order to sustain the current level of achievements, continuous efforts to strengthen the laboratory management and to improve the quality control of analyzed data are needed.

3-2-3 Overall Goals

As mentioned before, the Project has maintained three Overall Goals to be attained. The prospects of each Overall Goal have been examined as follows:

- 1) **“ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations with the Central Regional Laboratory (Alger) plays a leading role.”**

Objective Verifiable Indicators:

- 1-1 Regional laboratories in Oran and Constantine carry out environmental monitoring utilizing the standard procedures employed in the Central Regional Laboratory (Alger).
- 1-2 Realization of national monitoring system based on the National Environmental Strategy and an establishment of National Environmental Database (SNIE).
- 1-3 The Central Regional Laboratory (Alger) develops the quality of the reference laboratory in Algeria.

Likelihood of achieving this Overall Goal is high. As previously mentioned, regional laboratories in Oran and Constantine have already been provided the assistance from C/Ps of CRL using the SOPs prepared by the Project. If such support from CRL is continued, it is likely that those at Oran and Constantine regional laboratories will be able to carry out environmental monitoring utilizing the standard procedures employed by CRL(Indicator 1-1). According to the interviews for those in the management level of ONEDD/HQ and CRL, it was confirmed that they are going to create “the taskforce” to establish the quality control section in order to ensure the analytical quality and the precision of results as the reference laboratory.(Indicator 1-3). Furthermore, the interviews to the high-level officials of MATET assured that the Government of Algeria will continue to strengthen the capacity of ONEDD and its affiliated laboratories through appropriating the financial supports and especially setting CRL as the key player of environmental monitoring. So that the CRL will be established as the reference laboratory in Algeria. Judging from the current performance of these indicators, it is likely that the Overall Goal will be achieved provided that the current level of efforts by ONEDD/HQ and CRL are continued.

- 2) **“National environmental protection policy is promoted and counter-measures are recommended.”**

Objectively Verifiable Indicators:

- 2-1 Counter-measures are recommended concretely.
- 2-2 Partnership among ministries related to environmental regulation are established.

It is premature to judge the likelihood of achievement of this Overall Goal. However, there are some positive impacts by the Project has been observed. In early 2008, draft soil quality standard was prepared. For the environmental protection, the Government of Algeria has accelerated to set the rules, laws, decrees and ordinances to natural resources in several field (Indicator 2-1). The Government of Algeria has also made much efforts to strengthen the partnership among related ministries through setting the national level

of committees. It appeared that the workshops and seminars organized by the Project in 2007 and 2008 have surely contributed. According to the interviews for those officials participated in the seminars/workshops, it is confirmed that these opportunities have served to enlighten them to recognize the importance of environmental quality standards to cope with the problems on environmental protection.

3) **“Counter-measures to prevent environmental pollution in Oued El Harrach industrial areas is deployed.”**

Objectively Verifiable Indicators:

Decrees and public orders based on the measures against environmental polluters in the Oued El Harrach industrial areas are enforced.

It is also premature to judge the likelihood of achievement of this Overall Goal. However, there are some positive impacts by the Project have been observed. According to the questionnaires and interviews conducted by the Team, it was revealed that Environmental Department of Alger Wilaya (DEWA) with which CRL has worked together to monitor the industrial waste water has taken more strict action to control the coastal area of the Oued El Harrach through reinforcing the inspection toward industrial factories. It is also explained by officials of MATET that emergency action plan of de-pollution of Oued El Harrach has been prepared and the dredging work of contaminated sediments around the estuary zone of the river was implemented by the Ministry of Water Resource. Control and enforcement to the polluters (factories in the Oued El Harrach industrial zone) including the mercury polluting chlorine factory, has been strengthened through applying pollution tax by MATET.

3-3 Project Implementation Process

Project Design Matrix (PDM) has been developed before the inception of the Project as a tool to monitor the progress of project implementation. The monitoring was regularly conducted but not necessarily through the joint work of both Japanese and Algerian sides. And the findings of monitoring have been shared among the Project members. Some of activities could have been carried out effectively, if some modifications have been reflected on the PDM at the time of Mid-Term Evaluation.

During the first half of the Project period, some delays in the project implementation were observed. These delays are attributable to the delay of procurement of equipment and chemicals, malfunction of gas chromatograph, etc. Other delays are attributable to the delay of the appointment of the laboratory director, and the delay in decision making process. It was identified through the questionnaires and interviews conducted by the Team, that the communication between ONEDD/HQ and CRL should have been improved and the information should be effectively shared among C/Ps in CRL in order to increase the internal collaboration in ONEDD.

Overall, the communications between C/Ps in CRL and ONEDD/HQ and JET and JICA experts have been very smooth in technology transfer with the effective use of Algerian interpreter, who has greatly contributed to maintaining the smooth communications between both parties. According to the questionnaires and interviews conducted by the Team, many C/Ps expressed that they acquired not only the specific technical knowledge and skills, but also the effective way to apply the obtained knowledge and skills for further enhancement of laboratory activities

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4. EVALUATION BY FIVE CRITERIA

4-1 Relevance

The relevance of the Project is considerably high.

According to the PNAE-DD which describes the specific action plans and investment of National Environmental Strategy (SNE), the environmental monitoring is one of the priority issues in the Algerian environmental sector. And the Government of Algeria sets up the national project to establish the national environmental monitoring network. And there is an increasing concern on the sustainable development and environmental protection in Algeria since the environmental pollutions were detected in various areas including heavy metal contamination of Oued El Harrach, Alger. The ONEDD was created under MATET to reinforce the institutional infrastructure with affiliating laboratories and monitoring stations. With pressing demands of environmental monitoring, it is very likely for the Government of Algeria to further support the environmental sector and the role and responsibility of ONEDD, especially analytical laboratories, national network of monitoring stations and network of air quality monitoring stations will be enhanced. In this respect, the Project's Overall Goal and the Project Purpose have been consistent with the policy of the Government of Algeria and its needs of the target population.

Japanese Official Development Assistance (ODA) policy puts high priority on environmental protection toward the assistance for Algeria. Therefore, the Project has also been relevant with the policy of Japanese ODA. Furthermore, the Japanese assistance has its comparative advantages in transferring the technologies and her experiences of environmental analysis and pollution control as well as development of environmental monitoring network.

4-2 Effectiveness

The effectiveness of the Project is relatively high.

1) Project Purpose

As explained in 3-2-2, judging from the performance of indicators and the comments received during the Terminal Evaluation, the Project Purpose could be said as "mostly achieved". However, in order to sustain the current level of achievements, continuous efforts to strengthen the laboratory management, to improve the quality control of analytical results, and to enhance the capacity on data interpretation are needed.

2) Contribution of Each Output

Nine (9) Outputs have been contributing to achieve the Project Purpose in the following manner. Output 1 was intended to strengthen the laboratory management by sharing the information and facilitating the collective action of all engineers and technicians, thus to produce the better outcome as CRL. Outputs 2, 3, 4 and 5 were intended to strengthen the technical expertise of individual engineer on environmental chemical analysis which can respond to the needs of increasing number of clients. Output 6 serves to aggregate the information and data produced by each section concerning the parameters applied, and it is saved in the database to be ready for further utilization. Output 7 is the development of ability on environmental data interpretation. These seven Outputs have been mainly to be infused for activities of CRL and have directly contributed to achieve the Project Purpose. On the other hand, Outputs 8 and 9 were intended to strengthen the consultation abilities based on the results of environmental monitoring for

decision-makers in ONEDD/HQ and eventually policy-makers in MATET. Overall, the Project tried to cover the three layers of capacity development from individual through institutional level.

Now that the Project Purpose has been almost achieved and the individual technical capacity of environmental monitoring, in particular the capacities of laboratory analyses, have been strengthened at CRL, the Algerian side should expand the scope to strengthen the organizational capacity of CRL, at the same time, it should strengthen the institutional framework by collaboration with ONEDD/HQ, the network of affiliated laboratories and Wilaya environmental departments.

3) Inhibiting Factors to Achieve the Project Purpose

According to the interviews and questionnaires, it seems that the communication and information sharing between CRL and ONEDD/HQ have not been conducted effectively. This may be attributable to the conventional centralized decision-making mechanism of ONEDD. At the same time, it is also attributable to the fact that the initiative by the laboratory management level may not be strong enough to overcome problems encountered during the Project period.

4-3 Efficiency

The efficiency of the Project is considered as relatively low. As previously explained, the Project suffered some delays of activities for the first half part of the Project period.

1) Japanese Side

Most of the inputs from Japanese side, such as training of C/Ps in Japan and local cost support, were executed as planned. Timings of some of equipment provision, however, were delayed due to the insufficient understanding and responsibilities of procurement procedures for those concerned, and affected by the delay of construction of the new laboratory on a part of Algerian responsibility.

2) Algerian Side

The Algerian side gradually increased the technical C/Ps and the number reached up to twenty-two (22) at the time of Terminal Evaluation. Some of newly joined C/Ps came from the appropriate background to be able to conduct chemical analysis by applying their expertise already established, however, several C/Ps needed to be trained additionally to acquire the knowledge of chemical analysis. Much time has been spent on the completion of provisional laboratory facilities to carry out the environmental chemical analysis and this has caused the delay of equipment provisions and activities to be carried out, especially for the first half of the Project period.

3) Management of the Project

Activities have been carried out by joint efforts of the Algerian and the Japanese side. Relatively slow decision-making and insufficient information sharing caused by present condition of management system of CRL have made it difficult to establish the strong and resilient cooperation among C/Ps. The initiative of Project management should be strengthened to resolve issues to be coped with.

4-4 Impact

Impact of the Project is expected to be relatively large and it is likely that the one of Overall Goals "ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations. The Central Regional Laboratory (Alger)

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plays a leading role in national environmental monitoring network” will be achieved if the strong initiative of ONEDD/HQ on their part is effectively demonstrated. Private sector is going to deploy self-monitoring of effluents with analytical support by CRL under Polluter-Pay-Principle.

At the time of Terminal Evaluation, the following positive impacts by the Project have been observed. According to the questionnaires and interviews conducted by the Team, it was confirmed that the cooperation between CRL and Environmental Department of Alger Wilaya (DEWA) has been strengthened based on the experience of collaboration for monitoring industrial waste water. This has made DEWA to take more strict action to control the coastal area of the Oued El Harrach through reinforcing the inspection toward industrial factories. Also, the Project has played an influential role for policy makers to realize the need to set up the legal framework for environmental quality standard. In early 2008, draft soil quality standard has been prepared.

It appeared that the workshop and seminar organized by the Project in April 2008 have contributed to expand and strengthen the network among ONEDD, Wilaya, MATET, relevant ministries, academic and private sectors, which was highly appreciated by high level officials of MATET. Strengthening of this network has resulted in the increasing number of research projects (currently 45) conducted in collaboration of ONEDD with universities and research institutes in Algeria.

Furthermore, it was also revealed that the importance in treatment of laboratory waste water introduced by JET was highly recognized by the C/Ps of CRL who have been in process of establishing the system to properly treat the laboratory waste water by itself.

4-5 Sustainability

The sustainability of the Project can be secured through continuous efforts to strengthen the laboratory management with an initiative of ONEDD/HQ.

1) Policy aspects

There is a pressing need to strengthen the environmental monitoring, especially in the industrial and coastal area of Algeria. It is very likely for the Government of Algeria to continue to strengthen the environmental monitoring capacity with high priority. To execute the policy, it is very likely that the ONEDD continues to play a major role in environmental monitoring and CRL in environmental chemical analysis of Wilaya Alger.

2) Organizational aspects

To respond to the needs of the increasing number of clients on chemical analyses and to cope with the current demand of public services on environmental monitoring as well, ONEDD/HQ and CRL should continue their efforts to improve their laboratory management and to establish the effective mechanism among stakeholders.

3) Financial aspects

According to the interviews to the officials of MATET, the Government of Algeria will continue to strengthen the capacity of ONEDD and its laboratories, especially setting CRL as the key player of environmental monitoring, and will continue to support them providing the necessary financial assistance.

4) Technical aspects

It is confirmed that most of knowledge and technologies transferred through the Project activities are appropriate in the context of Algeria and it is very likely to be adopted. If those staff trained under the Project remained and to serve to expand the knowledge and skills for those at other regional laboratories, the technical sustainability will be secured.

5. CONCLUSIONS AND RECOMMENDATIONS

5-1 Factors Promoting the Impact and Sustainability

5-1-1 Factors Concerning to Planning

(1) Coping with the Needs in the Environmental Monitoring

Since industrialization is accelerating according with expanding economy in Algeria, there are growing needs for industries to monitor their effluents discharged from their operation and capacity development of CRL is required as a reliable monitoring/analytical institution. The Project was planned to meet this situation in Algeria.

(2) Appropriateness of the Subjects Selected for Technology Transfer

Most of techniques and parameters for analysis dealt by the Project have been carefully selected considering the laws and regulations currently being exercised in Algeria. Technologies of these subjects have been fully utilized by CRL to respond the increasing demands of chemical analysis requested from industries and regulating authorities. This eventually will contribute to increase revenues of ONEDD and to disseminate the idea of Polluter-Pay-Principle among those industries as well.

(3) Responding the Needs from Other Regional Laboratories of ONEDD

Although the facilities of regional laboratories in Oran and Constantine have been well-equipped, their technical capacities to use equipments are not sufficient enough. CRL was requested to support these laboratories to train analytical staff to upgrade their technical capacities. Such activities conducted under the Project have certainly served to expand the technologies, especially on the sampling, chemical analysis and manipulation of equipment as well as to strengthen the laboratory networks (regional laboratories and monitoring stations). At the same time, it has contributed to further develop the collaboration network among stakeholders in environmental monitoring.

5-1-2 Factors Concerning to the Implementation Process

(1) Utilization of Seminars

ONEDD staff made presentation regarding the result of laboratory monitoring activities in the seminar held in April 2008 where more than 100 participants from the various organizations and ministries and environmental department of Wilayas joined. This seminar served as a good opportunity to promote the activities of CRL and to reinforce the network among different parties.

(2) Timing of Dispatch of the Japanese Experts

In the first half of the Project, the JET visited Algeria as a group at the same time. However, the schedule of JET was revised after the Mid-term evaluation in February 2007, and JET tried to minimize the absence of the Japanese experts in Algeria. This rescheduling of dispatch JET ensured seamless collaboration between JET and C/Ps.

5-2 Factors Inhibiting the Impact and Sustainability

5-2-1 Factors Concerning to Planning

(1) Constraints for Smooth Procurement Procedure of Equipment and Chemicals

Capacities of some suppliers of equipment/chemicals are not sufficient enough and the processing for custom clearance for imported equipment/chemicals takes time in Algeria. These caused the delay of the introduction of equipment/chemicals, and the repair of certain instrument, thus the delay of implementation of some activities.

5-2-2 Factors Concerning to the Implementation Process

(1) Insufficient Involvement of ONEDD/HQ and MATET

The JCC meetings are rarely organized because the Project Director and Project Manager are busy. It resulted in the delay of the decision making and action for important issues, such as timely allocation of budget and other inputs and establishment of the management system of CRL.

(2) Necessity to improve facility and hardware for CRL

There are still many concerns in the present conditions of facility and hardware for CRL, such as unstable structure of the wall, electric capacity, back-up system for power failure and so on. Activities in CRL could have been more efficient and functional if these necessary facilities and hardware are fully equipped.

5-3 Conclusions

Overall evaluation based on the Five Evaluation Criteria, Relevance and Effectiveness of the Project reached satisfactory level, and the Team observed various positive Impacts in the course of Project. On the other hand, Efficiency of the Project is not very remarkable and Sustainability is still remained a challenge for the Algerian side.

Thus, the Team concluded that the Project has mostly been able to fulfill its Purpose within the Project period, but further continuous efforts are indispensable for ensuring the sustainability of ONEDD Central Regional Laboratory.

The Team identified that one of the largest constraints for efficient implementation of the Project is significant delay of the establishment of new Central Regional Laboratory (Alger) of ONEDD, implementation agency of the Project, that included not only the construction of lab-facilities but also the staff allocation and organizational setup, that was committed by the Algerian side before the commencement of the Project (R/D). Construction of provisional laboratory cabin, limited recruitment of lab engineers, assignment of acting lab director were made in the meantime as alternative measures for securing the activities of the Project, but the delay of initial plan interfered with smooth implementation of the Project and eventually affected the sustainability.

However, the Team highly evaluated remarkable elevation of environmental monitoring capacity of ONEDD, and technical C/Ps of CRL, particularly in terms of their technical capacities, ownership, and self-motivation, which were more or less deprived before the ONEDD-JICA technical cooperation since March 2004.

5-4 Recommendations

(1) Laboratory Analyses

The Project was successfully introduced various analytical techniques needed for environmental monitoring activities of CRL, while it is still a beginning stage of the capacity development. The CRL has not yet completely established as an environmental analytical laboratory, of which current level is just a beginning stage of its development. Later in the Project period, intensive activities are conducted for strengthening the laboratory chemical analysis skills, but the level of proficiency is not enough in some analytical fields such as organic chemical analyses using GC/MS and FTIR.

After the concluding the Project, it is recommended that the further enhancement of the acquired analytical techniques and the strengthening of capacity of environmental monitoring by CRL, are needed in the course of implementation of actual environmental monitoring activities.

(2) Laboratory Coordination

Individual analytical lab units, such as sample management, physico-chemistry, inorganic chemistry, organic chemistry and microbiology, have been established in the Project, but the coordination among the lab units is still insufficient. Without a proper coordination, effective environmental monitoring cannot be carried out. It is recommended that the coordination among analytical labs should be promoted in order to improve the integration and interpretation of monitoring data.

(3) Management

Establishing appropriate laboratory management system within ONEDD left a room for improvement. More frequent communication between CRL and ONEDD/HQ is recommended. Periodical internal meetings and in-house seminar are necessary for effective management and information exchange.

(4) Dissemination

The Team recommends that activities for diffusing monitoring and analytical techniques acquired by the CRL in the Project to other regional laboratories of ONEDD should be accelerated in order to establish a nation-wide monitoring network. Practical trainings by the engineers of CRL to other laboratories have been already organized in the period of the Project. It is recommended that such activities should be intensified in the future. The Standard Operation Procedures (SOPs) compiled by the Project will be very useful tool for the practical training.

The nature of the capacity development is a long term process, and from this perspective, CRL still has many challenges for its development as an environmental monitoring laboratory, thus the Team concludes that continuous supports and resource allocation to CRL by ONEDD/HQ and MATET are vital.

5-5 Lessons Learned

(1) Careful Planning of the Project Schedule

It should take a flexible approach about revising the Project implementation schedule for technical transfer

if delays of preparation of the lab facility and/or procurement of equipment are presumed. Capacities of suppliers of equipment and schedules for procurement of equipment should be carefully assessed at the designing stage of the Project.

(2) Importance of Capacity Assessment

The level of technology to be transferred in the Project should be set based on the actual capacity of the C/Ps and surrounding organizational/institutional conditions. At the designing stage of the Project, partner country sometimes overestimates their own capacities, since they do not have clear images for the new technologies to be acquired in the Project. In addition, the partner country is too ambitious to acquire new knowledge in the short period of time. Thus, the capacity of C/Ps in the initial stage of the Project should be carefully assessed for successful implementation of the technology transfer.

PROJECT DESIGN MATRIX (PDM)

Project Name: Capacity Development of Environmental Monitoring in Algeria
Implementing Agency: ONEDD Supporting Organization: MATET
Target Group: Staff of ONEDD Target Area: Alger (Wilaya)

Project Period: November 2005 to October 2007
Revised Date: Feb. 13, 2007

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Overall Goal</p> <p>1. ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations with the Central Regional Laboratory (Alger) plays a leading role.</p> <p>2. National environmental protection policy is promoted and counter-measures are recommended</p> <p>3. Counter-measures to prevent environmental pollution in Oued El Harrach industrial areas is deployed</p>	<p>1.1 The Regional laboratories in Oran and Constantine carry out environmental monitoring utilizing the standard procedures employed in the Central Regional Laboratory (Alger)</p> <p>1.2 Realization of national monitoring system based on the National Environmental Strategy and an establishment of National Environmental Database (SNIE)</p> <p>1.3 The Central Regional Laboratory (Alger) develops the quality of the reference laboratory in Algeria</p> <p>2.1 Counter-measures are recommended concretely.</p> <p>2.2 Partnership among ministries related to environmental regulation are established</p> <p>3. Decreases and public orders based on the measures against environmental polluters in the Oued El Harrach industrial areas are enforced.</p>	<p>1.1 The conditions of environmental monitoring systems in the regional laboratories in Oran and Constantine</p> <p>1.2 National environmental monitoring network</p> <p>1.3.1 Record of supply of reference materials other laboratories</p> <p>1.3.2 Record of technical support, consulting and training, to other laboratories</p> <p>1.3.3 Network with research institutes in Algeria</p> <p>1.3.4 Accredited from international analytical association</p> <p>2.1/2.2 List of public orders, list of plans of counter measures submitted by polluters</p> <p>3. Decreases and public orders issued for measures against contamination of Oued El Harrach (environmental quality data obtained at several survey stations in Oued El Harrach.)</p>	
<p>Project Purpose</p> <p>Environmental monitoring capacity of the Central Regional Laboratory (Alger) is strengthened.</p>	<p>1. The Central Regional Laboratory (Alger) is able to response to the requisition about the environmental monitoring from various clients</p> <p>2. The Central Regional Laboratory (Alger) is able to publish comprehensive environmental report(s) on the Oued El Harrach pollution problems, which promotes appropriate counter-measures for environmental protection and remediation of the area.</p> <p>3. C/P is able to implement technical advise to ONEDD's other regional laboratories in Algeria.</p>	<p>1. Number of clients, record of consulting and number of reports</p> <p>2.1 Published report</p> <p>2.2 Record of seminar</p> <p>3. Record of workshops to ONEDD engineers in other laboratories, record of consulting</p>	<p>The Government of Algeria continues and maintains to appropriate the financial supports to ONEDD.</p> <p>Algerian Government maintains the current proactive attitude toward environmental policy and its enforcement.</p>

<p>Output</p> <p>1. Laboratory management to ensure a high-quality operation is in place</p>	<p>1.1 Organizational arrangement, mandate for staff and directional authority are clearly defined.</p> <p>1.2 Meeting of laboratory members is organized regularly</p> <p>1.3 Operation plan is prepared</p> <p>2.3 Operation is carried out based on the operation plan</p> <p>2.1 C/P is able to perform field survey including sampling</p> <p>2.2 C/P is able to perform sample management (preparation, storing, labeling, etc.)</p>	<p>1.1 Organizational chart with personnel list, job description</p> <p>1.2 Minutes of lab meeting</p> <p>1.3 Operation plan</p> <p>1.4 Operation/annual report</p> <p>2.1 Observation by the experts, sampling manual</p> <p>2.2 Observation by the experts, sampling manual</p>	
<p>3 Skills and knowledge in organic chemical analysis are acquired</p>	<p>3.1 C/P is able to perform organic chemical analysis of compounds specified in the Algerian standards</p> <p>3.2 Analytical protocol is established</p> <p>3.3 Accuracy of data obtained from the analysis maintains within the accepted range</p>	<p>3.1 Observation by the experts, logbook</p> <p>3.2 Analytical manual</p> <p>3.3 Relative standard deviation test, reference material test</p>	
<p>4 Skills and knowledge in inorganic chemical analysis are acquired</p>	<p>4.1 C/P is able to perform inorganic analysis of compounds specified in the Algerian standards</p> <p>4.2 Analytical protocol is established</p> <p>4.3 Accuracy of data obtained from the analysis maintains within the accepted range</p>	<p>4.1 Observation by the experts, logbook</p> <p>4.2 Analytical manual</p> <p>4.3 Relative standard deviation test, reference material test</p>	
<p>5 Skills and knowledge in microbiological analysis are acquired</p>	<p>5.1 C/P is able to perform microbiological analysis specified in the Algerian standards</p> <p>5.2 Analytical protocol is established</p> <p>5.3 Accuracy of data obtained from the analysis maintains within the accepted range</p>	<p>5.1 Observation by the experts, logbook</p> <p>5.2 Analytical manual</p> <p>5.3 Statistical analysis of the data</p>	
<p>6 Skills and knowledge in developing and maintaining database are acquired</p>	<p>6.1 Architecture of the database for the Central Regional Laboratory (Alger) is designed</p> <p>6.2 The database is established</p> <p>6.3 Data collected from the analysis is stored in the database, and is available when requested.</p>	<p>6.1 Specification and algorithm of the database</p> <p>6.2 Database installed</p> <p>6.3 Number of records, number of users</p>	
<p>7. Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained data are acquired</p>	<p>7.1 C/P is able to produce environmental reports based on the monitoring results (results of survey analysis and interpretation)</p> <p>7.2 C/P is able to present the analytical results base on monitoring results at seminars and meetings, etc.</p>	<p>7. 1 Report on the results of environmental monitoring</p> <p>7.2 Proceeding, papers and reports by C/P at local and international seminars and meetings, etc.</p>	
<p>8 Technical knowledge for the de-pollution and remediation are acquired</p>	<p>8. C/P is able to present the information on de-pollution and remediation technologies for the Project area at seminars and meetings, etc.</p>	<p>8. Proceedings, papers and reports by C/P at local and international seminars and meetings, etc.</p>	
<p>9 Knowledge on environmental quality standards, regulations, and institutional/administrative setup for de-pollution and remediation are acquired</p>	<p>9. C/P is able to propose an environmental quality standard, regulation and institutional/administrative setup for de-pollution and remediation, etc.</p>	<p>9. Proceedings, papers, reports, internal documents by C/P at local and international seminars and meetings, etc.</p>	

<p>Activities</p> <p>1. [Laboratory management to ensure a high-quality operation is in place]</p> <p>1.1 Nominate the members of JCC</p> <p>1.2 Define organization and management the Central Regional Laboratory (Alger)</p> <p>1.3 Develop operation plan the Central Regional Laboratory (Alger)</p> <p>1.4 Organize laboratory meeting of the Central Regional Laboratory (Alger)</p> <p>1.5 Monitor the implementation based on the operation plan</p> <p>1.6 Manage chemicals and wastes</p> <p>1.7 Evaluate the result of implementation based on the operation plan</p> <p>1.8 Feedback the monitoring results to the JCC regularly</p> <p>2: [Skills and knowledge in field survey and sampling management are acquired]</p> <p>2.1 Assess existing capacity of field survey and sampling management.</p> <p>2.2 Identify training needs</p> <p>2.3 Procure and install equipment and material</p> <p>2.4 Implement training in field survey and sampling management (water, soil and sediment)</p> <p>2.5 Implement training in groundwater sampling</p> <p>2.6 Collect the Samples from the Project area</p> <p>2.7 Develop manual for the field sampling</p> <p>2.8 Prepare working papers survey and sampling results</p> <p>2.9 Monitor and evaluate the training</p> <p>3: [Skills and knowledge in organic analysis are acquired]</p> <p>3.1 Assess existing capacity of organic analysis.</p> <p>3.2 Identify training needs</p> <p>3.3 Procure and install equipment and material</p> <p>3.4 Implement training in analyzing organic metals (methyl mercury etc.)</p> <p>3.5 Implement training in analyzing total organic carbon</p>	<p>Input</p> <p>< Input from Japanese Side ></p> <p>(1) Short-term Experts</p> <p>(2) Provision of technical study and analytical devises</p> <p>(3) Provision of database equipment</p> <p>(4) Co-hosting workshops and seminars</p> <p>(5) Individual training in Japan</p> <p>(6) Publication of research outcomes</p> <p>(7) Recruitment of local consultants</p> <p>(8) Ground water sampling well</p> <p>◆ Country-focused technical training (at JICA Kyushu)*</p> <p>* These training are implemented under other project schematics.</p>	<p>Input</p> <p>< Input from Algerian Side ></p> <p>(1) Assigning C/P personnel</p> <p>(2) Provision of the Central Regional Laboratory (Alger) (Installation of provided machinery and equipment, construction of lab.)</p> <p>(3) Local cost incurred by survey and study laboratory</p> <p>(4) Local cost incurred by analytical work at the laboratory</p> <p>(5) Co-hosting of workshops and seminars</p> <p>(6) Publication of research outcomes</p> <p>Organizing the JCC (inclusive of stakeholder organizations)</p>	<p>Field survey and sampling in industrial sites in the El Harrah river basin can be carried out without any restriction.</p>
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<p>3.6 Implement training in analyzing oil and grease</p> <p>3.7 Implement training in analyzing hydro carbons, BTX, and aromatic hydro carbons</p> <p>3.8 Implement training in analyzing polychlorinated biphenyls (PCBs), pesticides, and halogenated organics</p> <p>3.9 Implement training in analyzing nonvolatile organics</p> <p>3.10 Analyze the Samples from the Project area</p> <p>3.11 Develop manual for the analysis</p> <p>3.12 Prepare working papers on the results of organic chemical analysis</p> <p>3.13 Monitor and evaluate the training</p> <p>4: [Skills and knowledge in inorganic analysis are acquired]</p> <p>4.1 Assess existing capacity of inorganic analysis.</p> <p>4.2 Identify training needs</p> <p>4.3 Procure and install equipment and material</p> <p>4.4 Implement training in analyzing heavy metals and toxic elements</p> <p>4.5 Implement training in analyzing ionic compounds and inorganic substances</p> <p>4.6 Analyze the Samples from the Project area</p> <p>4.7 Develop manual for the analysis</p> <p>4.8 Prepare working papers on the results of inorganic chemical analysis</p> <p>4.9 Monitor and evaluate the training</p> <p>5: [Skills and knowledge in microbiological analysis are acquired]</p> <p>5.1 Assess existing capacity of needs</p> <p>5.2 Procure and install equipment and material</p> <p>5.3 Implement training in microbiological analysis</p> <p>5.4 Analyze the samples from the Project area</p> <p>5.5 Develop manual for the analysis</p> <p>5.6 Prepare working papers on the results of microbiological analysis</p> <p>5.7 Monitor and evaluate the training</p> <p>6: [Skills and knowledge in developing and maintaining database are acquired]</p> <p>6.1 Define specifications of the database</p> <p>6.2 Develop a database</p> <p>6.3 Implement user training for the database</p>		
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<p>6.4 Monitoring and evaluation of the training is carried out.</p> <p>7: [Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained data acquired]</p> <p>7.1 Develop environmental survey plan of the Project Area</p> <p>7.2 Coordinate with the district environment department to inspect the suspected pollutants as necessary</p> <p>7.3 Analyze and evaluate the data</p> <p>7.4 Develop inventory of pollution of the Project Area</p> <p>7.5 Discuss and interpret the results of data analysis</p> <p>7.6 Prepare the comprehensive environmental report(s) on the pollution problems in the Project Area</p> <p>7.7 Prepare other technical reports related to the Activities</p> <p>7.8 Evaluate the report(s)</p> <p>7.9 Organize and participate workshops and seminar</p> <p>7.10 Publish annuals and reports</p> <p>8: [Technical knowledge for the de-pollution and remediation are acquired]</p> <p>8.1 Introduce about the experience on de-pollution and remediation</p> <p>8.2 Present the recommendations on de-pollution and remediation technologies for de-pollution of the Project area</p> <p>8.3 Disseminate the knowledge of de-pollution and remediation technologies</p> <p>9: [Knowledge on environmental quality standards, regulations, and institutional setup for de-pollution and remediation are acquired]</p> <p>9.1 Organize a seminar on environmental quality standards and regulation</p> <p>9.2 Organize a seminar on economic incentive, subsidies, and environmental fund</p> <p>9.3 Recommend necessary institutional/administrative setup for de-pollution and remediation</p> <p>9.4 Recommend for de-pollution policy and strategy of the Project area</p>		<p>Pre-conditions</p> <ul style="list-style-type: none"> Algerian Government maintains the current proactive attitude toward environmental policy and its enforcement. The mandate of the Central Regional Laboratory (Alger) of ONEDD maintains the same. ONEDD recruits and assigns necessary personnel as indicated in the application. At least the current microbiological analysis identifying raining level of security situation is maintained so JICA experts can implement their services within the Wilaya of Alger.
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Plan of Operation (PO)

ANNEX 2

Japanese Fiscal Year		JFY2005			JFY2006			JFY2007			JFY2008		
Month		2	5	8	11	2	5	8	11	2	5	8	11
Outputs	Activities	Year 1			Year 2			Year 3					
1. Laboratory management to ensure a high-quality operation is in place	1.1 Nominate the members of the JCC												
	1.2 Define organization and management of the Central Regional Laboratory												
	1.3 Develop operation plan of the Central Regional Laboratory												
	1.4 Organize laboratory meeting of the Central Regional Laboratory												
	1.5 Monitor the implementation based on the operation plan of the Central Regional Laboratory												
	1.6 Evaluate the result of implementation based on the operation plan												
	1.7 Manage chemicals and wastes												
	1.8 Feedback the monitoring results to the JCC												
	1.9 Carry out maintenance of laboratory facility regularly												
2. Skills and knowledge in field survey and sampling management are acquired	2.1 Assess existing capacity of field survey and sampling management.												
	2.2 Identify training needs												
	2.3 Procure and install equipment and material												
	2.4 Implement training in field survey and sampling management (water, soil, and sediments)												
	2.5 Implement training in groundwater sampling												
	2.6 Collect the samples from the Project area												
	2.7 Develop manual for the field sampling												
	2.8 Prepare working papers of the survey and sampling results												
	2.9 Monitor and evaluate the training												
3. Skills and knowledge in organic analysis are acquired	3.1 Assess existing capacity of organic analysis.												
	3.2 Identify training needs												
	3.3 Procure and install equipment and material												
	3.4 Implement training in analyzing organic metals (methyl mercury etc.)												
	3.5 Implement training in analyzing total organic carbon												
	3.6 Implement training in analyzing oil and grease												
	3.7 Implement training in analyzing hydro carbons, BTX, and aromatic hydro carbons												
	3.8 Implement training in analyzing polychlorinated biphenyls (PCBs), pesticides, and halogenated organics												
	3.9 Implement training in analyzing nonvolatile organics												
	3.10 Analyze the samples from the Project area												
	3.11 Develop manual for the analysis												
	3.12 Prepare working papers on the results of organic chemical analysis												
	3.13 Monitor and evaluate the training												
4. Skills and knowledge in inorganic analysis are acquired	4.1 Assess existing capacity of inorganic analysis.												
	4.2 Identify raining needs												
	4.3 Procure and install equipment and material												
	4.4 Implement training in analyzing heavy metals and toxic elements												
	4.5 Implement training in analyzing ionic compounds and inorganic substances												
	4.6 Analyze the sample from the Project area												
	4.7 Develop manual for the analysis												
	4.8 Prepare working papers on inorganic chemical analysis												
	4.9 Monitor and evaluate the training												

Plan of Operation (PO)

ANNEX 2

Japanese Fiscal Year		JFY2005				JFY2006				JFY2007				JFY2008			
Month		2	5	8	11	2	5	8	11	2	5	8	11	2	5	8	11
Outputs	Activities	Year 1				Year 2				Year 3							
5. Skills and knowledge in microbiological analysis are acquired	5.1 Assess existing capacity of microbiological analysis Identify training needs																
	5.2 Procure and install equipment and material																
	5.3 Implement training in microbiological analysis																
	5.4 Analyze the sample from the Project area																
	5.5 Develop manual for the analysis																
	5.6 Prepare working papers on micro biological analysis																
	5.6 Monitor and evaluate the training																
6. Skills and knowledge in developing and maintaining database are acquired	6.1 Define specifications of the database																
	6.2 Develop a database																
	6.3 Implement training for the database																
	6.4 Monitoring and evaluation of the training is carried out.																
7. Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained data acquired	7.1 Develop environmental survey plan of the Project area																
	7.2 Coordinate with the district environment department to inspect the suspected pollutants as necessary																
	7.3 Analyze and evaluate the data																
	7.4 Develop inventory of pollution of the Project area																
	7.5 Discuss and interpret the results of data analysis																
	7.6 Prepare the comprehensive environmental report(s) on the pollution problems in the Project area																
	7.7 Prepare working papers related to the Activities																
	7.8 Evaluate the working papers and report(s)																
	7.9 Organize and participate workshops and seminar																
	7.10 Publish annuals and reports																
8. Technical knowledge and for the de-pollution and remediation are acquired	8.1 Introduce about the experience on de-pollution and remediation																
	8.2 Present the recommendations for de-pollution of the Project area																
	8.3 Disseminate the knowledge for de-pollution and remediation																
9. Knowledge on environmental quality standards, regulations, and institutional setup for de-pollution and remediation are acquired	9.1 Organize a seminar on environmental quality standards and regulation																
	9.2 Organize a seminar on economic incentive, subsidies, and environmental fund																
	9.3 Recommend necessary institutional/administrative setup for de-pollution and remediation																
	9.4 Recommend for de-pollution policy and strategy of the Project area																

 : original plan
 : revised plan

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1. ACHIEVEMENT

Items of Investigation	Evaluation Questions		Necessary Data/Information to be collected		Means of Analysis	
	Is input from Japanese side implemented as planned?	Is input from Algerian side implemented as planned?	Dispatch of Japanese Experts, C/P training in Japan, Equipment Provision, Local Cost Support	Assignment of counterparts, Budgetary allocation for project activities, Spaces and facilities provided for project activities	Mid-Term Evaluation Report, Activity Summary Report, Progress Report Japanese Expert Team (JET), Counterparts (C/Ps) Mid-term Evaluation Report, Activity Summary Report, Progress Report JET, C/Ps	Document Review Questionnaire survey, Interviews Document Review Questionnaire survey, Interviews
Achievement of Outputs	Output 1 Laboratory management to ensure a high-quality operation is in place.	1-1 Organizational arrangement, mandate for staff and directional authority are clearly defined. 1-2 Meeting of laboratory members is organized regularly. 1-3 Operation plan is prepared. 1-4 Operation is carried out based on the operation plan.	1-1 Organizational chart with personnel list, job description 1-2 Minutes of lab meeting 1-3 Operation plan 1-4 Operation/annual report	1-1 Organizational chart with personnel list, job description 1-2 Minutes of lab meeting 1-3 Operation plan 1-4 Operation/annual report	Document Review; Interviews	
	Output 2 Skills and knowledge in field survey and sampling management are acquired.	2-1 C/P is able to perform field survey including sampling 2-2 C/P is able to perform sample management (preparation, storing, labeling, etc.)	2-1 Observation by the JET, logbook 2-2 Observation by the JET, sampling manual	2-1 Observation by the JET, logbook 2-2 Observation by the JET, sampling manual	Document Review, Practical Tests Interviews	
	Output 3 Skills and knowledge in organic chemical analysis are acquired.	3-1 C/P is able to perform organic chemical analysis of compounds specified in the Algerian standards. 3-2 Analytical protocol is established. 3-3 Accuracy of data obtained from the analysis maintains within the accepted range.	3-1 Observation by the JET, logbook 3-2 Analytical manual 3-3 Relative standard deviation test, reference MATET Trial test	3-1 Observation by the JET, logbook 3-2 Analytical manual 3-3 Relative standard deviation test, reference MATET Trial test	Document Review, Practical Tests Interviews	
	Output 4 Skills and knowledge in inorganic chemical analysis are acquired.	4-1 C/P is able to perform inorganic chemical analysis of compounds specified in the Algerian standards. 4-2 Analytical protocol is established. 4-3 Accuracy of data obtained from the analysis maintains within the accepted range.	4-1 Observation by the JET, logbook 4-2 Analytical manual 4-3 Relative standard deviation test, reference MATET Trial test	4-1 Observation by the JET, logbook 4-2 Analytical manual 4-3 Relative standard deviation test, reference MATET Trial test	Document Review, Practical Tests Interviews	
	Output 5 Skills and knowledge in microbiological analysis are acquired.	5-1 C/P is able to perform microbiological analysis specified in the Algerian standards. 5-2 Analytical protocol is established. 5-3 Accuracy of data obtained from the analysis maintains within the accepted range.	5-1 Observation by the JET, logbook 5-2 Analytical manual 5-3 Statistical analysis of the data	5-1 Observation by the JET, logbook 5-2 Analytical manual 5-3 Statistical analysis of the data	Document Review, Practical Tests Interviews	
	Output 6 Skills and knowledge in developing and maintaining database are acquired.	6-1 Architecture of the database for the Central Regional Laboratory (Alger) is designed. 6-2 The database is established. 6-3 Data collected from the analysis is stored in the database, and is available when requested.	6-1 Specification and algorithm of the database 6-2 Database installed 6-3 Number of records, number of users	6-1 Specification and algorithm of the database 6-2 Database installed 6-3 Number of records, number of users	Document Review Interviews	
	Output 7 Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained data are acquired.	7-1 C/P is able to produce environmental reports based on the monitoring results (results of survey analysis and interpretation) 7-2 C/P is able to present the analytical results based on monitoring results at seminars and meetings, etc.	7-1 Report on the results of environmental monitoring 7-2 Proceeding, papers and reports by C/P at local and international seminars and meetings, etc.	7-1 Report on the results of environmental monitoring 7-2 Proceeding, papers and reports by C/P at local and international seminars and meetings, etc.	Document Review Interviews	
	Output 8 Technical knowledge for the de-pollution and remediation are acquired.	8-1 C/P is able to present the information on de-pollution and remediation technologies for the project area at seminars and meetings, etc.	8 Proceedings, papers and reports by C/P at local and international seminars and meetings, etc.	8 Proceedings, papers and reports by C/P at local and international seminars and meetings, etc.	Document Review Interviews	
	Output 9 Knowledge on environmental quality standards, regulations, and institutional/administrative setup for de-pollution and remediation are acquired.	9-1 C/P is able to propose an environmental quality standard, regulation and institutional /administrative setup for de-pollution and remediation, etc.	9. Proceedings, papers, reports, internal documents by C/P at local and international seminars and meetings, etc.	9. Proceedings, papers, reports, internal documents by C/P at local and international seminars and meetings, etc.	Document Review Interviews	
Achievement of the "Project Purpose"	1. The Central Regional Laboratory (Alger) is able to response to the requisition about the environmental monitoring from various clients.	* Number of clients, record of consulting and number of reports	* Number of clients, record of consulting and number of reports	* Number of clients, record of consulting and number of reports	Document Review Questionnaire survey, Interviews	
	2. The Central Regional Laboratory (Alger) is able to publish comprehensive environmental report(s) on the Oued El Harrach pollution problems, which promotes appropriate counter-measures for environmental protection and remediation of the area.	* Published report * Record of seminar	* Published report * Record of seminar	* Published report * Record of seminar	Document Review Questionnaire survey, Interviews	
	3. C/P is able to implement technical advise to ONEDD's other regional laboratories in Algeria.	* Record of workshops to ONEDD engineers in other laboratories, record of consulting	* Record of workshops to ONEDD engineers in other laboratories, record of consulting	* Record of workshops to ONEDD engineers in other laboratories, record of consulting	Document Review Questionnaire survey, Interviews	

2. IMPLEMENTATION PROCESS

Items of Investigation		Evaluation Questions		Necessary Data/Information to be collected		Data Source		Means of Analysis	
Progress of Activities	Are activities implemented as planned? What are the reasons for change of activity plans if any?	How have activities been carried out? Reasons of change in activities	Activity Summary Report, Progress Report, Mid-term Evaluation Report JET, C/Ps	Document Review Questionnaire, Interviews					
Technical Transfer	Are there any problems in the method for technology transfer?	Method of technical transfer and efforts by individual expert number of counterparts for technical transfer by each expert	Activity Summary Report, Progress Report, Mid-term Evaluation Report Practical tests on laboratory analysis JET, C/Ps	Document Review Questionnaire survey, Interviews					
Monitoring	How is the monitoring conducted? (the person in charge, frequency, etc.) Are the monitoring results applied for the project management?	System of monitoring, modified plan, review of methodologies and strategies, and feedback system, etc.	Activity Summary Report, Progress Report, Mid-term Evaluation Report, C/P Assessment Sheets JET, C/Ps	Document Review Questionnaire survey, Interviews					
Decision Making Process	What is the process of decision making in modification of plan on activities, personnel allocation and target areas, etc.	Process of decision making, problems in the decision making process	Activity Summary Report, Progress Report, Mid-term Evaluation Report JET, C/Ps	Document Review Questionnaire survey, Interviews					
Communication among stakeholders	Is the communication between JICA HQ, JICA Europe Office (meetings, reporting frequency, feedback system, etc.) conducted effectively?	Frequency of communications among stakeholders, method of communication, etc.	Activity Summary Report, Progress Report, Mid-term Evaluation Report JET, JICA HQ	Document Review, Questionnaire survey, Interviews					
	Is the mechanism of project implementation effectively conducted?	Frequency of meetings, Reporting / feedback system	Activity Summary Report, Progress Report, Mid-term Evaluation Report JET, JICA HQ	Document Review, Questionnaire survey, Interviews					
	Is the communication within the project effectively conducted? ---Among JET ---Between JET and Algerian C/Ps	Frequency, method of communication Duration, frequency of collaboration Joint problem solving procedure	Activity Summary Report, Progress Report, JET, C/Ps, JICA HQ	Document Review, Questionnaire survey, Interviews					
Ownership	Is there any factors that hinder the communication among stakeholders?	Language (French / English) and cultural barriers coping strategies	JET, C/Ps	Questionnaire survey, Interviews					
	Are the communication between ONEDD/CRL and ONEDD HQ, and the communication between ONEDD/CRL and related environmental organizations/institutions (MATET, DEWA, etc.) conducted effectively?	Frequency, method and contexts of communication Problem solving procedure	JET, C/Ps	Questionnaire survey, Interviews					
Allocation of Counterparts	Is the degree of participation of the implementing agency and counterparts in the project high?	Expectation for the Project effect Contribution to the project activities	Activity Summary Report, Progress Report, JET, C/Ps, JICA HQ	Document Review, Questionnaire survey, Interviews					
	Are assigned counterparts suitable for the position to carry out project activities? And how are they participated in project activities?	Allocation of counterparts Participation of each counterpart in project activities	Activity Summary Report, Progress Report, JET, C/Ps, JICA HQ	Document Review, Questionnaire survey, Interviews					
Others	Is the mechanism of project implementation properly functioned to promote the project implementation? Are there any issues/problems identified in the process of implementation? What are the causes?	Working plan of each Output and their progress Problems / Causes identified up to now	Activity Summary Report, Progress Report, JET, C/Ps, JICA HQ Activity Summary Report, Progress Report, JET, C/Ps, Expert on Coordination of Development Assistance, JICA HQ	Document Review, Questionnaire survey, Interviews					

Evaluation Grid

3 RELEVANCE -- Is the project justifiable? Is the project needed?

Items of Investigation		Evaluation Questions		Necessary Data/Information to be collected		Data Source	Means of Analysis
Necessity	Is the project in line with the needs of the target areas and society?		Issues of environment sector of Algeria Environmental policy of the government of Algeria		Ex-ante evaluation report, Mid-term Evaluation Report, PNAE-DD, RME2000, SNE C/Ps, JICA HQ		Document Review, Interviews
	Is the project in line with the needs of the target group?		Issues of environment sector of Algeria				
Priority	Is the project consistent with the development policy of the Algeria?		National Development Policy and the Environmental Policy of the Government of Algeria		Country Specific Strategy JICA's Country-Specific Program JICA HQ		Document Review, Interviews
	Is the project consistent with Japan's ODA policy and JICA's plan for country-specific program implementation?		Japanese ODA policy				
Suitability as a means	Is the project suitable as a strategy to produce an effect with respect to the development issues of the environmental sector of Algeria? (Is the selection of the project approach and target region suitable? What synergy effects are possible in cooperation with other donors)		How the accumulated know-how in Algeria and Japan has been utilized.		Ex-ante Evaluation Report, Mid-term Evaluation Report, Reports on Project Finding, C/Ps, JET, Officials of MATET		Document Review, Questionnaire survey, Interviews
	Is the selection of the target group appropriate? (target, volume, gender distribution, etc.)		Selection process of target group		Ex-ante evaluation report, Mid-term Evaluation Report, JET, Expert on Coordination of Development Assistance		Document Review, Questionnaire survey, Interviews
	Does Japan have a technical advantage? (Can Japan's experiences be put to use thru project implementation?)		Record of technical transfer using Japanese technical advantages		Ex-ante evaluation report, Mid-term Evaluation Report JET		Document Review, Questionnaire survey, Interviews
Others	Is the selection of implementing agency appropriate?		Selection process of implementing agency		Ex-ante evaluation report, Mid-term Evaluation Report JET, Expert on Coordination of Development Assistance		Document Review, Questionnaire survey, Interviews
	Have there been any changes in the environment surrounding the project (politics, economy, society, etc.) since the ex-ante evaluation?		Information/ documents relating to the political, socio-economic changes		Activity Summary Report, Progress Report, Mid-term Evaluation Report, Director and Sub-director of ONEDD, C/Ps, JET, Expert on Coordination of Development Assistance		Document Review Questionnaire survey, Interviews

4. EFFECTIVENESS -- Has the project been effective to cope with the problems/issues of partner country?

Items of Investigation		Necessary Data/Information to be collected		Data Source	Means of Analysis
Evaluation Questions					
Achievement forecast for Project Purpose	Looking at the input and output performance and at the activity, is the project objective likely to be achieved?	Project performance	Degree of achievement of the Project Purpose	Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document Review, Questionnaire survey, Interviews, Discussion
	Have outputs been contributing to achieve the Project Purpose?	Consequences between the Output and the Project Purpose		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document review Interviews, Discussion
Causal relationships	Is the output sufficient to achieve the project objective?	co-relations between the Project Purpose and Outputs		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document review Interviews, Discussion
	Are the important assumptions from the output to the project objective correct also at the present point of time? Is it likely that the important assumptions will occur?	Influence of the important assumptions / external factors		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document Review, Interviews, Discussions
	Are there any factors that inhibit the achievement of the project objective?	Comments from project implementers (JET, C/Ps) in regard to the inhibiting / promoting factors		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document Review Questionnaire survey, Interviews, Discussion

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5. EFFICIENCY -- Has the project been implemented efficiently?

Items of Investigation		Necessary Data/Information to be collected		Data Source		Means of Analysis	
Evaluation Questions							
Achievement level of outputs	Is the output achievement level adequate?	Record of progress of each activity		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps JICA HQ	Document Review, Questionnaire survey, Interviews, Discussion		
	Are there any factors that inhibited the achievement of the output?	Degree of achievement of each output Comments from project implementers (JET, C/Ps) in regard to the inhibiting factors		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps JICA HQ	Document Review, Questionnaire survey, Interviews, Discussion		
Causal relationships	Were the activities sufficient to produce the output?	Record of activities, achievement of outputs		JET, Director and Sub-director of ONEDD, C/Ps JICA HQ	Interviews, Discussions		
	Was the input sufficient to produce the output?	Record of inputs, achievement of outputs		JET, Director and Sub-director of ONEDD, C/Ps JICA HQ	Interviews, Discussions		
Timing	Are the important assumptions from the activities to the output correct also at the present point of time? Is there any influence from important assumptions?	Comments from project implementers (JET, C/Ps) in regard to the important assumptions		JET, Director and Sub-director of ONEDD, C/Ps	Questionnaire survey, Interviews, Discussion		
	Was input of an adequate quantity and quality performed in the right time to conduct the activities as planned? Is it being implemented?	Record of inputs		JET, Director and Sub-director of ONEDD, C/Ps JICA HQ	Questionnaire survey, Interviews, Discussion		
Project Management	How has the Project coped with the timing problem (delays in procurement, etc.)	Response, solutions towards problems		JET, Director and Sub-director of ONEDD, C/Ps JICA HQ	Questionnaire survey, Interviews, Discussion		
	Has the project management been conducted effectively to promote the progress of activities?	Record of implementation process		Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document Review, Questionnaire survey, Interviews, Discussion		
Others	Have lessons learned through other similar project been applied?	Comments from project implementers (JET, C/Ps) in regard to the important assumptions Recommendation / lessons learned at other similar projects		Reports and documents on similar projects, Other research reports such as Capacity Development, etc. JET, JICA HQ	Document review, Interviews		

6.IMPACT -- Is there (positive) effects by the implementation of the project, including the ripple effects in the long term?

Items of Investigation		Necessary Data/Information to be collected		Data Source	Means of Analysis
Evaluation Questions					
	Looking at the achievement of the Project Purpose, are there prospects that the following overall goals will be achieved? (1) "ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations with the Central Regional Laboratory (Alger) plays a leading role will be produced as an effect of the project?" (2) "National environmental protection policy is promoted and counter-measures are recommended will be produced as an effect of the project?" (3) "Counter-measures to prevent environmental pollution in Oued El Harrach industrial areas is deployed. will be produced as an effect of the project?" Are there factors that impede the achievement of the overall goal?	Indicators on current PDM 1-1. The Regional laboratories in Oran and Constantine carry out environmental monitoring utilizing the standard procedures employed in the Central Regional Laboratory (Alger) 1-2. Realization of national monitoring system based on the National Environmental Strategy and Establishment of National Environmental Database (SNIE) 1-3. The Central Regional Laboratory (Alger) develops the quality of the reference laboratory in Algeria 2-1. Counter-measures are recommended concretely. 2-2. Partnership among ministries related to environmental regulation are established. Decreases and public orders based on the measures against environmental polluters in the Oued El Harrach industrial areas are enforced. Cases to support the factors that impede the achievement of the overall goal	* The conditions of environmental monitoring systems in the regional laboratories in Oran and Constantine * National environmental monitoring network * Record of supply of reference materials of other laboratories * Record of technical support, consulting and training, to other laboratories * Network with research institutes in Algeria * Accredited from international analytical association * List of public orders, list of plans of counter measures submitted by polluters * Decreases and public orders issued for measures against contamination of Oued El Harrach environmental quality data obtained at several survey stations in Oued El Harrach. Ex-ante Evaluation Report, Mid-term Evaluation Report, JET, Director and Sub-director of ONEDD, C/Ps JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document Review, Questionnaire survey, Interviews, Discussion Document Review, Questionnaire survey, Interviews, Discussion Document Review, Questionnaire survey, Interviews, Discussion Document Review, Interviews, Discussions Interviews Discussions Document Review, Questionnaire survey, Interviews, Discussion Document Review, Questionnaire survey, Interviews, Discussion	
Causal relationships	Are the overall goal and the project purpose consistent? Influence on the establishment of policies and on the preparation of laws, systems, standards, etc. Economic influence on the target society, project parties, beneficiaries, etc. Influence on social and cultural aspects such as gender, human rights, rich and poor Influence on environmental protection Influence from technological changes in the Environmental Monitoring Are there different positive and negative influence? What measures are there to eliminate negative influence?	Logical framework of the Project, influence of important assumption and promoting/inhibiting factors Cases to support influence on the establishment of policies and on the preparation of laws, systems, standards, etc. Cases to support economic influence on the target society, project parties, beneficiaries, etc. Cases to support influence on social and cultural aspects such as gender, human rights, rich and poor Cases to support influence on environmental protection Cases to support influence from technological changes in the environmental sector Cases of measures to eliminate negative influence	JET, Director and Sub-director of ONEDD, C/Ps JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps Activity Summary Report, Progress Report, JET, Director and Sub-director of ONEDD, C/Ps	Document Review, Interviews, Discussions Interviews Document Review, Questionnaire survey, Interviews, Discussion Document Review, Questionnaire survey, Interviews, Discussion	
Ripple effects					

7. SUSTAINABILITY -- Has the benefits / effects produced by the project been sustained after the termination of project?

Items of Investigation		Evaluation Questions		Necessary Data/Information to be collected		Data Source		Means of Analysis	
Policies and systems	Will the development policy of the government of Algeria continue also after the cooperation is finished?		Policy and strategy of the Algerian government		Director/Sub-director of ONEDD, Officials of MATET JET, C/Ps		Questionnaire survey, Interviews, Discussion		
	Are the relevant regulations and legal systems prepared? Are there plans for their preparation?		Related regulations on environmental issues		Director/Sub-director of ONEDD, Officials of MATET JET, C/Ps		Interviews Discussions, Questionnaire		
	For projects target sites, will the effect by the project spread afterwards?		Policy of Algerian government, plan of ONEDD		Director, Sub-director of ONEDD JET, C/Ps		Interviews Discussions, Questionnaire		
	Does ONEDD have sufficient organizational capacity to implement activities to produce effects also after the cooperation has ended? (assignment of human resources, decision-making process, etc.)		ONEDD's mission and policy (working plan, staffing plan, budget allocation, etc.)		Director/Sub-director of ONEDD, Officials of MATET JET, C/Ps		Questionnaire survey, Interviews, Discussion		
Organizational and financial aspects	Does ONEDD has a sense of ownership towards the project?		ONEDD's mission and policy (working plan, staffing plan, budget allocation, etc.)		Director/Sub-director of ONEDD, Officials of MATET JET, C/Ps		Interviews, Questionnaire Discussions		
	Environmental Monitoring : Will ONEDD be capable of taking initiative to handle the environmental monitoring? (What has to be done?)		ONEDD's mission and policy (working plan, technical level, staffing plan, budget allocation, etc.)		Director/Sub-director of ONEDD JET, C/Ps		Questionnaire survey, Interviews, Discussion		
Technology	Does ONEDD currently have the sufficient budget and have a plan to obtain enough budget in the future too?		Policy and strategy of the Algerian government		Director/Sub-director of ONEDD, Officials of MATET JET, C/Ps		Interviews, Questionnaire Discussions		
	Are the methods of technology transfer used in the project being accepted? (technology level, social and conventional factors, etc.)		Capacity of individual counterparts Progress made		Director/Sub-director of ONEDD JET, C/Ps		Questionnaire survey, Interviews, Discussion		
Society, culture, and environment	Is the equipment appropriately maintained and managed? (Do C/Ps has sufficient knowledge and skills to maintain the equipment by themselves?)		Capacity of individual counterparts, How the equipment is utilized and maintained.		Director/Sub-director of ONEDD JET, C/Ps		Questionnaire survey, Interviews, Discussion		
	Is there any possibility that a lack of consideration for women, the poor and the socially vulnerable might jeopardize a sustained effect of the Project? Or, is there any synergy effects produced by the Project?		Particular cases to support inhibiting factors Particular cases to support promoting factors		JICA Guidelines for Environmental Social Considerations JET, Director/Sub-director of ONEDD, C/Ps, JICA HQ		Document Review, Interviews, Discussions		
Others	Is there any possibility that a sustained effect is impeded through a lack of consideration for the environment?		Particular cases to support inhibiting factors		JICA Guidelines for Environmental Social Considerations JET, Director/Sub-director of ONEDD, C/Ps, JICA HQ		Document Review, Interviews, Discussions		
	Are there any other factors that might inhibit sustainability?		Particular cases to support inhibiting factors		Director/Sub-director of ONEDD, C/Ps, JET, JICA HQ		Questionnaire survey, Interviews, Discussion		

List of the Japanese Experts

(1) Japanese Experts (9 persons in total for Outputs 1 to 8)

#	Field	Name	Assignment Period	m/m	Responsible Outputs and/or Activities of PDM
1	Chief Adviser/ Environmental Management	Mr. Hiroyuki Oi	2005.12.01 – 2006.01.11 (42)	1.40	1 to 8 and
			2006.05.27 – 2006.08.06 (72)	2.40	1-1, 1-2, 1-3, 1-4, 2-1, 2-2
			2007.01.25 – 2007.02.23 (30)	1.00	
			2007.03.15 – 2007.03.29 (15)	0.50	
			2007.05.17 – 2007.07.09 (53)	1.77	
		Mr. Yoshitaka Imaeda	2007.11.14 – 2007.12.10 (27)	0.90	1 to 8 and
			2008.03.03 – 2008.03.21 (19)	0.63	1-1, 1-2, 1-3, 1-4
			2008.04.23 – 2008.05.09 (17)	0.57	
			2008.10.04 – 2008.10.24 (21)	0.70	
			2008.11.13 – 2008.11.27 (15)	0.50	
2	Environmental Organic Chemical Analysis	Mr. Eiji Miyaki	2005.12.01 – 2005.12.27 (27)	0.90	3-1, 3-2, 3-3
			2006.06.02 – 2006.07.31 (60)	2.00	
			2007.06.10 – 2007.07.09 (30)	1.00	
		Mr. Koji Kimura	2008.05.01 – 2008.05.30 (30)	1.00	3-1, 3-2, 3-3
			2008.06.19 – 2008.07.18 (30)	1.00	
			2006.06.28 – 2006.08.26 (60)	2.00	4-1, 4-2, 4-3, 5-1, 5-2, 5-3
3	Environmental Organic Chemical Analysis/ Microbiological Analysis	Mr. Mamoru Sato	2007.06.10 – 2008.07.09 (30)	1.00	
			2007.10.25 – 2007.11.23 (30)	1.00	
			2008.03.01 – 2008.03.21 (21)	0.70	
		2008.06.12 – 2008.07.11 (30)	1.00		
			2008.10.04 – 2008.10.24 (21)	0.70	
			2008.10.04 – 2008.10.24 (21)	0.70	

4	Organic Mercury Analysis	M. Daisuke Kawakami	2005.12.01 – 2006.01.11 (42)	1.40	3-1, 3-2, 3-3, 4-1, 4-2, 4-3
			2006.06.28 – 2006.08.26 (60)	2.00	
5	Laboratory Database	Mr. Hiroyuki Oi	2007.06.10 – 2007.07.09(30)	1.00	
			2008.05.01 – 2008.05.23 (23)	0.77	3-1, 3-2, 3-3, 4-1, 4-2, 4-3
			2008.06.26 – 2008.07.18 (23)	0.77	
			2006.06.22 – 2006.07.06 (15)	0.50	6-1, 6-2, 6-3
6	Environmental Evaluation, Analysis, and Recommendation utilizing obtained data	Dr. Masamichi Tuji	2007.06.10 – 2007.07.09 (30)	1.00	and
			2007.11.04 – 2007.11.24 (21)	0.70	3-1, 3-2, 3-3, 4-1, 4-2, 4-3, 8
			2008.06.12 – 2008.07.11 (30)	1.00	
7	Coordination	Mr. Kazuhiko Tezuka	2007.11.22 - 2007.12.05 (14)	0.50	7-1, 7-2
			2008.05.29 – 2008.06.27 (30)	1.00	And 8
7	Coordination	Ms. Yuki Sugimori	2006.06.28 – 2006.08.26 (60)	2.00	1 to 8

(2) Japanese Experts directly dispatched from JICA Headquarters for Seminar on Environmental Quality Standards (7 persons in total for Output 9)

1	Air Quality Standard	Mr. Takao Mizumaru	2007.07.18 – 2008.07.26	0.29	9
2	Water Quality Standard	Mr. Kazuomi Okuda	2007.07.21 – 2008.07.26	0.19	9
3	Soil Quality Standard	Mr. Shoe Fujioka	2007.07.18 – 2008.07.26	0.29	9
4	Hazardous Chemicals Control	Dr. Mitsuo Yoshida	2007.07.04 – 2008.07.26	0.74	9
5	Environmental Administration	Mr. Senro Imai	2008.04.18 – 2008.04.26	0.30	9
6	Enforcement	Mr. Mitsuhiro Yamamoto	2008.04.18 – 2008.04.26	0.30	9
7	Environmental Impact Assessment	Mr. Kenichi Tanaka	2008.04.18 – 2008.04.26	0.30	9
8	Monitoring	Dr. Mitsuo Yoshida	2008.04.03 – 2008.04.26	0.80	9

List of Counterparts trained in Japan

Counterpart Training

#	Name	Title/ Responsibility	Title of Training Course	Training Period
1.	Mr. MOALI Mohamed	Interim Director of CRL	Environmental Monitoring and Analysis	1 September 2006 to 30 September 2006
2.	Mr. LAKHDARI Mohamed	In charge of the Field measure/sampling and stock management	Environmental Monitoring and Analysis	- ditto -
3.	Mr. SLIMANI Bachir	General Director of ONEDD	Environmental Monitoring and Analysis	9 January 2007 to 24 January 2007
4.	Mr. NEZZAR Farid	Manager, Financial & Admin. Dev., MATET	Environmental Monitoring and Analysis	- ditto -
5.	Mr. LALEG Abderrahmane	Assistant Director of ONEDD	Environmental Monitoring and Analysis	22 May 2007 to 8 June 2007

Country-Focused Training*

#	Name	Title/ Responsibility	Title of Training Course	Training Period
1	Mr. HOUAS Omar	In charge of the Inorganic Analysis	Industrial and Urban Environmental Management for Algeria, The 1st year program**	1 March 2004 to 20 March 2004
2	Ms. NECHAOUNE Leila	In charge of the Organic Analysis	Industrial and Urban Environmental Management for Algeria, The 4 th year program: Environmental Monitoring	14 May 2007 to 29 June 2007

Remark: *) The course was financed by the scheme of Country -Focused Training Course. **) The program was organized before the commencement of the Project.

List of the Provided Equipment

Utilization Level:
Maintenance Condition:

A=Fully Utilized, B=Moderately, C=Rarely, D= Not at all
A=Very well maintained B=Acceptable C=Insufficient

IFY	No.	Item and Specialization	Manufacturer	Qty	Unit Price (Yen)	Total Price (Yen)	Model number / Management number	Location installed	Responsible Person (or Station)	Date of Delivery	Date of Installation	Utilization Level	Maintenance Condition	Activity Nos (to be utilized in FY)	Total price in Euro	exchange rate (Yen/Euro)	Total price in Dinar	exchange rate (Yen/Dinar)
2005	1	Sampling Equipment for Water	Rigo-sha	1	120,000	120,000	Rigo-sha 5026-B	CRL	Mr. LAKHDARI	Dec. 2005		B	B	2	655	140.31		
2005	2	Sampling Equipment for sediment	Rigo-sha	1	167,100	167,100	Rigo-sha 5141-A	CRL	Mr. LAKHDARI	Dec. 2005		B	B	2	1,191	140.31		
2005	3	Sampling Equipment for Soil	Deikl	1	92,160	92,160	Deikl DIK-1601	CRL	Mr. LAKHDARI	Dec. 2005		C	B	2	657	140.31		
2005	4	Spectrophotometer	Aquamate	1	126,900	126,900	UV-visible	CRL	Ms. NECHAOUNI	June 2006		B	B	3 and 4	884	141.99		
2005	5	Filter holder for TSS	Advantec Toyo	1	80,000	80,000	KSF-47	CRL	Ms. TIBECHE	June 2006		A	B	3	560	142.81		
2006	6	AAS burner head	Perkin Elmer	1	133,000	133,000	No. 00400277	CRL	Mr. HOUS	June 2006		B	B	3	931	142.81		
2006	7	PC desk-top, Windows XP, 17" monitor	Fujitsu-Siemens	1	114,983	114,983	Science edition X1021	CRL	Ms. CHATAL	July 2006		A	A	6	786	145.98	72,544	1,565
2006	8	Printer scanner and copier	Epson	1	123,560	123,560	DX 3800	CRL	Ms. CHATAL	July 2006		A	A	6	846	145.98	77,953	1,565
2006	9	Gas Strubber	Buchi	1	1,120,979	1,120,979	B-414	CRL	-	Jan. 2007		B	B	3 and 4	7,165	156.01	652,111	1,719
2006	10	Refrigerator	Mont Blanc	2	166,976	333,951		CRL	-	Jan. 2007		A	A	2, 3 and 4	2,165	156.01	196,481	1,719
2006	11	DO Meter	WTW	1	369,299	369,299	Inlab Oxi 730	CRL	-	Feb. 2007		A	A	2, 3 and 4	2,340	157.82		
2006	12	pH meter	Jenway 3610	1	173,602	173,602	Jenway 3610	CRL	-	Feb. 2007		A	A	2, 3 and 4	1,100	157.82		
2006	13	EC Meter	WTW	1	198,064	198,064	Inlab Cond 720	CRL	-	Feb. 2007		A	A	2, 3 and 4	1,255	157.82		
2006	14	Water Purification Unit	Human	1	569,730	569,730	New Power 1000 Type	CRL	-	Feb. 2007		A	A	2, 3, 4 and 5	3,610	157.82		
2006	15	Cool Water Generator	Julabo	1	519,228	519,228	F12-ED	CRL	-	Feb. 2007		B	B	3 and 4	3,290	157.82		
2006	16	Incubator	Velp	1	213,057	213,057	FOC 225E	CRL	-	Feb. 2007		A	A	3 and 4	1,350	157.82		
2006	17	Kjeldahl Distillation Unit	Velp	1	362,986	362,986	UDK 127	CRL	-	Feb. 2007		B	B	4	2,300	157.82		
2006	18	Oven	MMM	1	205,166	205,166	Ecosell-111	CRL	-	Feb. 2007		A	A	2, 3, 4 and 5	1,300	157.82		
2006	19	Muffle Furnace	Nabertherm	1	291,967	291,967	L3B170/1100°C	CRL	-	Feb. 2007		A	A	3 and 4	1,650	157.82		
2006	20	Flock tester	Velp	1	298,730	298,730	FC6S	CRL	-	Feb. 2007		C	B	7	1,500	167.82		
2006	21	Oil Content Meter	Wilks	1	1,923,714	1,923,714	IntraCal model CVH	CRL	-	Mar. 2007		C	B	3	12,186	157.82		
2006	22	Centrifuge		1	770,672	770,672	RK 1028H	CRL	-	Mar. 2007		B	B	3 and 4	4,883	157.82		
2006	23	Micro-pipet		1	45,674	45,674	0 to 1,000 µL	CRL	-	Mar. 2007		A	A	3 and 4	289	157.82		
2006	24	Micro-pipet		1	126,162	126,162	0 to 5 mL	CRL	-	Mar. 2007		A	A	3 and 4	799	157.82		
2006	25	Distillation Apparatus		2	157,016	314,032	for Cyanide	CRL	-	Mar. 2007		B	B	4	1,990	157.82		
2006	26	Distillation Apparatus		2	436,909	873,818	for Fluoride	CRL	-	Mar. 2007		B	B	4	5,337	157.82		
2006	27	Distillation Apparatus		2	62,718	125,437	for Phenol	CRL	-	Mar. 2007		B	B	4	795	157.82		

ANNEX 6

JFY	No.	Item and Specialization	Manufacturer	Qn	Unit Price (Yen)	Total Price (Yen)	Model number / Management number	Location installed	Responsible Person (if Section)	Date of Delivery	Date of Installation	Utilization Level	Maintenance Condition	Activity Nos to be utilized in PDM	Total price in Euro	exchange rate (Yen/Euro)	Total price in Dinar	exchange rate (Yen/Dinar)
2006	28	Ultrasonic bath		1	345,135	345,135	RK 1028H	CRL	-	Mar. 2007		A	A	3 and 4	2,187	157.82		
2006	29	Autoclave		1	465,837	465,837	Vertical 20 L	CRL	-	Mar. 2007		A	A	3, 4 and 5	2,952	157.82		
2006	30	Rotary Evaporator		1	434,231	434,231	Type G1	CRL	-	Mar. 2007		B	B	3 and 4	2,751	157.82		
2006	31	Homogenizer		1	555,425	555,425	UP 50H	CRL	-	Mar. 2007		C	B	3 and 4	3,528	157.82		
2006	32	Water Current Meter		1	1,395,158	1,395,158	Flowmets	CRL	Mr. LAKHIDARI	Mar. 2007		B	B	2	8,460	157.82		
2006	33	Slaves		1	75,888	75,888	# 0.06, 0.1, 0.2, 0.5, 1.0 and 2.0	CRL		Mar. 2007		C	B	2 and 4	481	157.82		
2006	34	Ultrapure water system	Milipore	1	3,337,598	3,337,598	Gradient	CRL		Mar. 2007	Jun. 2007	B	B	3	21,100	158.18		
2006	32	TOC analyzer	Shimadzu	1	7,434,480	7,434,480	TOC-VCPN	CRL		Mar. 2007	Jun. 2007	B	B	3	47,000	158.16		
2006	33	FTIR spectrophotometer	Shimadzu	1	4,903,580	4,903,580	FTIR-8400S	CRL		Mar. 2007	Jun. 2007	C	C	3	31,000	158.18		
2006	34	GC/MS with P&T	Shimadzu AQUA	1	24,201,540	24,201,540	QP-2010 PT 5000J	CRL		Mar. 2007	Jun. 2007	B	B	3	153,000	158.18		
2006	35	ED-XRF	PANalytical	1	13,951,476	13,951,476	MINIPAL4	CRL		Mar. 2007	Jun. 2007	B	B	4	88,200	158.18		
2007	36	Capillary column for BTX	Agilent	1	90,000	90,000	DS624	CRL		Jun. 2007	May 2008	B	B	3	555	162.18		
2007	37	Capillary column for PAH	Agilent	1	93,000	93,000	DS17BS	CRL		Jun. 2007	May 2008	B	B	3	573	162.18		
2007	38	Mercury analyzer (main unit)	Milestone	1	4,975,500	4,975,500	DM480	CRL		Jan. 2008	Jun. 2007	B	B	4	30,000	165.85		
		(software etc.)		1	210,656	210,656									1,332	158.15		
2007	38	Stainless steel vacuum manifold	Milipore	1	285,183	285,183	XX25 047 35	CRL		Jun. 2007	Jun. 2007	B	B	5	1,745	163.44		
2007	39	Stainless steel holder Funnell	Milipore	3	100,210	300,630	XF20 047 25	CRL		Jun. 2007	Jun. 2007	B	B	5	1,839	163.44		
2007	40	Chemical Duty Vacuum Pump	Milipore	1	134,981	134,981	WRP1 220 50	CRL		Jun. 2007	Jun. 2007	B	B	5	826	163.44		
2007	41	Incubator lab kit	Milipore	1	453,423	453,423	XX63 1KO 05	CRL		Jun. 2007	Jun. 2007	B	B	5	2,774	163.44		
2008	42	RO Pack for water purification	Human	2	42,000	84,000		CRL		Jun. 2008				2, 3, 4 and 5	517	162.39		
2008	43	UP Pack for water purification	Human	2	57,750	115,500		CRL		Jun. 2008				2, 3, 4 and 5	711	162.39		
						506,150		in Euro										
						66,270,928		in Euro										
						6,543,953		in Euro										
						199,500		in Euro										
						73,519,931		in Euro										

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Local Costs by the Japanese Side

Major Budget Item	CCY Unit	JFY2005 (Nov.2005-Mar.2006)	JFY2006 (April.2006-Mar.2007)	JFY2007 (Apr...2007 - Mar.2008)	JFY2008 (Apr.2008 - Nov.2008)	Total
Exchange rate (Euro/Yen)		137.90	158.18	160.61	161.27	
1 Employment Cost	Yen	750,725	3,750,283	3,202,654	2,569,760	10,273,422
	Euro	5,444	23,709	19,941	15,935	65,028
2 Consumable goods	Yen	1,350	12,900	42,990	9,200	66,440
	Euro	10	82	268	57	416
3 Travel and transport	Yen	0	9,000	0	0	9,000
	Euro	0	57	0	0	57
4 Communication	Yen	6,637	19,200	16,515	0	42,352
	Euro	48	121	103	0	272
5 Publishing materials	Yen	0	5,135	34,843	27,552	67,530
	Euro	0	32	217	171	420
6 Rental and employemnt	Yen	791,061	2,378,478	2,136,520	1,895,251	7,201,310
	Euro	5,736	15,037	13,303	11,752	45,828
7 Office maintenance	Yen	0	29,259	0	0	29,259
	Euro	0	185	0	0	185
8 Local Consultant	Yen	0	0	2,020,000	0	2,020,000
	Euro	0	0	12,577	0	12,577
9 Seminars and Workshops on environmental quality standards	Yen	0	0	3,428,000	3,087,000	6,515,000
	Euro	0	0	21,344	19,142	40,485
10 others	Yen	0	0	0	0	0
Total in Japanese Yen	Yen	1,549,773	6,204,255	10,881,522	7,588,763	26,224,313
Total in Euro	Euro	11,238	39,223	67,751	47,056	165,269

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List of the Algerian Counterpart Personnel

ANNEX 8

#	Name	Function	Year					2008					Remarks			
			05	06	07	08	09	10	11	12	13	14		15	16	
Staff attending CRL																
1	Mr. MOALI Mohamed	Interim Director of CRL	↓											↑	assigned to ID in January 2007	
2	Mr. HOUAS Omar	inorganic (metals) analysis	↓												↑	trained on AAS in 2004
3	Mr. LAKHDARI Mohamed	stock management and field works	↓												↑	marine ecologist
4	Ms NECHAOUNI Leila	photometry + GC/MS	↓												↑	chemist
5	Ms BOUKHATEM Wassila	(attached to CRL)	↓												↑	retired after getting married
6	Mr. SMAI Mohamed	field works and typer	↓												↑	assistant technician
7	Ms GUERAINI Chanese	(attached to CRL)	↓												↑	retired on personal reasons
8	Ms ANANE Radhia	photometry, Kjeldahl-N	↓												↑	biologist, returned from maternity
9	Ms TIBECHHE Amel	physico-chemical + GC	↓												↑	hydrogeologist
10	Ms BENSOUILAH Ouahiba	physico-chemical + GC	↓												↑	ecologist
11	Ms NEKMOUCHE Lynda	physico-chemical + GC	↓												↑	chemist
12	Ms DJOGLAF Hadda	microbiological testing	↓												↑	biologist
13	Ms AZOUANI Sophia	inorganic (metals) analysis	↓												↑	chemical engineer
14	Ms MEBREK Hanifa	microbiological testing	↓												↑	microbiologist
15	Ms KIMRI Leila	photometry + GC/MS	↓												↑	chemical engineer
16	Mr. KHADRAOUI Sofiane	FTIR + GC/MS	↓												↑	chemical engineer
Staff attending ONEDD Headquarter																
17	Mr SLIMANI Bachir	General Director	↓												↑	Project Manager
18	Ms ABDEKRAHMAN Laleg	Assistant of General Director	↓												↑	Assistant of Project Manager
19	Ms CHATAL Assia	laboratory data base	↓												↑	ecologist
20	Mr. HARRANE Khalil		↓												↑	left for training in France
21	Ms OUSSALEM Salima	data interpretation	↓												↑	marine ecologist
22	Ms HOUDJAL Sarah	data interpretation	↓												↑	ecologist, returned from maternity
Project administrative management counterpart in MATET																
23	Mr BENHADJOU DJA Abdelkader	Chief of Minister's Cabinet	↓												↑	Project Director
Seminar counterpart from MATET																
24	Ms HAFFACI Natma	Director of Legislation													↑	Incharge of the Seminar on environmental quality standard

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Local Cost by the Algerian Side

The expenses paid by ONEDD during the period of the Project are as follows.

No.	Item	Cost (DA)	Remarks
1	Prefabricated Laboratory	4,587,700.88	5 modules, 2 toilets, air conditioners, transport storage, etc.
2	Site preparation (inside and outside)	3,000,000.00	Platform, drainage, water supply, electricity supply, civil works, etc.
3	Tables for experiment	1,439,240.00	
4	Office Furniture	200,000.00	
5	Computer	325,000.00	
6	Tax and transportation cost on equipment	850,000.00	
7	Laboratory equipment and consumables	10,000,000.00	
8	Salary and wage of technical staffs	9,512,000.00	Cumulative of 3 years Salary and social benefits
9	Security guards	6,400,000.00	
10	Car (fuel, maintenance, etc.)	200,000.00	After allocation of car to the laboratory
11	Utilities (water, electricity, telephone, etc.)	2,340,000.00	
Total		38,853,940.88	

Currency Unit: Algerian Dinar

Results of Achievement

(1) Overall Goals

Overall Goals	Indicators	Achievement
<p>1. ONEDD establishes environmental monitoring system based on the National Environmental Strategy under the well-organized network of laboratories and stations. The Central Regional Laboratory (Alger) plays a leading role in national environmental monitoring network</p>	<p>1.1 Regional laboratories in Oran and Constantine carry out environmental monitoring utilizing the standard procedures employed in the Central Regional Laboratory (Alger)</p> <p>1.2 Realization of national monitoring system based on the National Environmental Strategy and an establishment of National Environmental Database (SNIE)</p> <p>1.3 The Central Regional Laboratory (Alger) develops the quality of the reference laboratory in Algeria.</p>	<p>1.1 The regional laboratories in Oran and Constantine have already been provided the assistance from C/Ps of CRL using the SOPs prepared by the Project. If such support from CRL is continued, it is likely that Oran and Constantine regional laboratories will be able to carry out environmental monitoring utilizing the standard procedures employed in CRL.</p> <p>1.2 No specific achievement has been observed at this moment.</p> <p>1.3 According to the interviews for those in the management level of ONEDD and CRL, it was confirmed that they are going to create "the taskforce" to establish the quality control section in order to develop the quality of the reference laboratory.</p>
<p>2. National environmental protection policy is promoted and counter-measures are recommended</p>	<p>2.1 Counter-measures are recommended concretely</p> <p>2.2 Partnership among ministries related to environmental regulation are established</p>	<p>2.1 In early 2008, draft soil quality standard was prepared. For the environmental protection, the Government of Algeria has accelerated to set the rules, laws, decrees and ordinances to natural resources in several field.</p> <p>2.2 The Government of Algeria has also made much efforts to strengthen the partnership among related ministries through setting the national level of committees. It appeared that the workshops and seminars organized by the Project in 2007 and 2008 have surely contributed. According to the interviews for those officials participated in the seminars/workshops, it is confirmed that these opportunities have served to enlighten them to recognize the importance of environmental quality standards to cope with the problems on environmental protection. For the environmental protection, the Government of Algeria has started to set the rules and regulations to natural resources in several field, such as coastal line, marine environment, etc.</p>
<p>3. Counter-measures to prevent environmental pollution in Oued El Harrach industrial areas is deployed</p>	<p>3. Decrees and public orders based on the measures against environmental polluters in the Oued El Harrach industrial areas are enforced.</p>	<p>According to the questionnaires and interviews conducted by the Team, it was revealed that Environmental Department of Alger Wilaya (DEWA) with which CRL has worked together to monitor the industrial waste water has taken more strict action to control the coastal area of the Oued El Harrach through reinforcing the inspection toward industrial factories. And the emergency action plan of de-pollution of Oued El Harrach has been prepared and the dredging work of contaminated sediments around the estuary zone of the river was implemented by the Ministry of Water Resource. Control and enforcement to the polluters (factories in the Oued El Harrach industrial zone) including the mercury polluting chlorine factory, has been strengthened through applying pollution tax by MATET.</p>

(2) Project Purpose

Project Purpose	Indicators	Achievement																																			
<p>Environmental monitoring capacity of the Central Regional Laboratory (Alger) is strengthened.</p>	<p>1. The Central Regional Laboratory (Alger) is able to response to the requisition about the environmental monitoring from various clients</p>	<p>The number of services provided by the Central Regional Laboratory (Alger) has been greatly increased. Details are shown below.</p> <table border="1" data-bbox="359 280 646 1220"> <thead> <tr> <th>Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td>Number of Samples</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Heavy Metals</td> <td>50</td> <td>337</td> <td>351</td> <td>142</td> </tr> <tr> <td>Other Parameters</td> <td>53</td> <td>431</td> <td>351</td> <td>242</td> </tr> <tr> <td>Number of clients</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Heavy Metals</td> <td>2</td> <td>21</td> <td>18</td> <td>23</td> </tr> <tr> <td>Other Parameters</td> <td>3</td> <td>20</td> <td>39</td> <td>44</td> </tr> </tbody> </table> <p>Note: A list of clients is shown in ANNEX 10-3.</p>	Year	2005	2006	2007	2008	Number of Samples					Heavy Metals	50	337	351	142	Other Parameters	53	431	351	242	Number of clients					Heavy Metals	2	21	18	23	Other Parameters	3	20	39	44
Year	2005	2006	2007	2008																																	
Number of Samples																																					
Heavy Metals	50	337	351	142																																	
Other Parameters	53	431	351	242																																	
Number of clients																																					
Heavy Metals	2	21	18	23																																	
Other Parameters	3	20	39	44																																	
	<p>2. The Central Regional Laboratory (Alger) is able to publish comprehensive environmental report(s) on the Oued El Harrach pollution problems, which promotes appropriate counter-measures for environmental protection and remediation of the area.</p>	<p>Results of monitoring and recommendations are internally published. See ANNEX 10-4 for the presentation material of the report by CRL</p>																																			
	<p>3. C/P is able to implement technical advice to ONEDD's other regional laboratories in Algeria.</p>	<p>C/Ps has acquired the knowledge and skills through the technical transfer from JET. Analysis Parameters on Algerian Standards for Training and a list of parameters by each C/P are shown in ANNEX 10-5 and 10-6 respectively. C/Ps is now able to provide technical advice to other regional laboratories. Followings explain such activities. During July 1- 4, 2006, workshop in ONEDD/CRL with the staffs of Oran and Constantine laboratories was conducted. Total number of 6 staff has visited to CRL for the workshop which was organized by ONEDD. JET has made lectures. During June 30 - July 2, 2007, C/Ps visited to regional survey stations in Skikda, Anaba and BBA for the installation and training of Spectrophotometer to the staff. C/Ps has conducted the trainings and gave instructions to the regional laboratories in Oran and Constantine. General Director of ONEDD and Interim Director of CRL and other staff visited the Regional Laboratory in Constantine for the delivery of chemicals and equipment, and the training of staff during May 11-14 and in Oran during May 19-22, 2008. For the detailed reports, please see ANNEX 10-7.</p>																																			

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(3) Outputs

Outputs	Indicators	Achievements																									
<p>1. Laboratory management to ensure a high-quality operation is in place</p>	<p>1.1 Organizational arrangement, mandate for a staff and directional authority are clearly defined.</p> <p>1.2 Meeting of laboratory members is organized regularly</p> <p>1.3 Operation plan is prepared</p> <p>1.4 Operation is carried out based on the operation plan</p>	<p>The interim laboratory director was appointed in January 2007. Organization of the laboratory was prepared. For the organizational chart, see ANNEX 10-2. In order to provide some OJT for those who have less experiences in the chemical analysis, the physio-chemical section was newly created. This mutual-training mechanisms built-in the CRL have helped to increase the capacity of among C/Ps.</p> <p>A weekly meeting was proposed by the newly appointed laboratory director in February 2007. Weekly meetings were held until July 2007, but have currently discontinued since then.</p> <table border="1" data-bbox="560 322 676 1245"> <thead> <tr> <th>Year</th> <th>2005¹</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td>Number of regular laboratory meetings</td> <td>0</td> <td>21</td> <td>22</td> <td>0</td> </tr> </tbody> </table> <p>During the period of 2008 to 2010, OEDD is planning to implement industrial effluent water monitoring shown in ANNEX-xx and sea water monitoring at 83 beaches in 14 Wilaya.</p> <p>As of October 2008, industrial effluent water monitoring is not commenced. As for the sea water monitoring, during summer season of 2001, CRL monitored seawater in Wilaya of Alger (12 beaches); Boumerdes (10), Chleff(S), Tipaza (10), Tizi-ouzou (4). Oran Regional Laboratory, Mostaganem Sampling Station, Skikda Sampling Station and Annaba Sampling Station also monitored sea water in each Wilaya.</p>	Year	2005 ¹	2006	2007	2008	Number of regular laboratory meetings	0	21	22	0															
Year	2005 ¹	2006	2007	2008																							
Number of regular laboratory meetings	0	21	22	0																							
<p>2. Skills and knowledge in field survey and sampling management are acquired</p>	<p>2.1 C/P is able to perform field survey and including sampling</p>	<p>C/P has been implementing the regular monitoring at 9 sites in the Project area from August 2006 to June 2007. From November 2007 to June 2008, industrial waste water survey (inspection of factory and sampling) was conducted in cooperation with DEWA. In January 2008, sampling of groundwater at piezometers in Oued Smar was conducted. During summer season of 2008, sampling of sea water at coastal bathing beach was conducted. Numbers of collected samples are as follows.</p> <table border="1" data-bbox="1139 322 1305 1245"> <thead> <tr> <th>Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td>Water Monitoring along OEH</td> <td>0</td> <td>13</td> <td>13</td> <td>0</td> </tr> <tr> <td>Industrial waste water survey</td> <td>0</td> <td>0</td> <td>17</td> <td>77</td> </tr> <tr> <td>Bathing beach</td> <td>0</td> <td>0</td> <td>0</td> <td>46</td> </tr> <tr> <td>Others (soil/sediment/biota)</td> <td>0</td> <td>10</td> <td>15</td> <td>25</td> </tr> </tbody> </table>	Year	2005	2006	2007	2008	Water Monitoring along OEH	0	13	13	0	Industrial waste water survey	0	0	17	77	Bathing beach	0	0	0	46	Others (soil/sediment/biota)	0	10	15	25
Year	2005	2006	2007	2008																							
Water Monitoring along OEH	0	13	13	0																							
Industrial waste water survey	0	0	17	77																							
Bathing beach	0	0	0	46																							
Others (soil/sediment/biota)	0	10	15	25																							

¹ Before the commencement of the Project

	2.2 C/P is able to perform sample management (preparation, storing, labelling, etc.)	SOP for field survey and sampling is prepared. For the list of SOPs, see ANNEX 10-8.																				
3. Skills and knowledge in organic chemical analysis are acquired	<p>3.1 C/P is able to perform organic chemical analysis of compounds specified in the Algerian standards</p> <p>3.2 Analytical protocol is established.</p> <p>3.3 Accuracy of data obtained from the analysis maintains within the accepted range</p>	<p>C/P is able to measure COD, BOD, Kjeldahl nitrogen, oil & grease, Suspended substances, phenols, total hydrocarbons, chlorinated organics, BTX and PAH with the Algerian standard method. Organic mercury can be measured by method developed by JET. C/P also started measurement of oil & grease based on DIN. Suspended substances were analyzed with the Algerian standard for the first time.</p> <table border="1" data-bbox="459 322 582 1243"> <thead> <tr> <th>Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td>Number of organic parameters measured or analyzed with the Algerian standard</td> <td>0</td> <td>3</td> <td>6</td> <td>11</td> </tr> </tbody> </table> <p>SOPs for COD, BOD, Kjeldahl nitrogen, oil & grease, Suspended substances, phenols, total hydrocarbons, chlorinated organics, BTX, PAH and organic mercury were prepared. For the list of SOPs, please see ANNEX 10-8.</p> <table border="1" data-bbox="719 333 810 1243"> <thead> <tr> <th>Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td>Number of SOPs for organic parameters</td> <td>0</td> <td>6</td> <td>7</td> <td>12</td> </tr> </tbody> </table> <p>Introduction of the analytical data sheet decreased the mistakes in the data processing. Interim laboratory director has been checking all results of analysis, prior to submit analytical report to clients. In case that unexpected data is obtained, the director investigates the appropriateness of each step (sampling, sample preservation, measurement and data processing) through discussions with concerned personnel.</p>	Year	2005	2006	2007	2008	Number of organic parameters measured or analyzed with the Algerian standard	0	3	6	11	Year	2005	2006	2007	2008	Number of SOPs for organic parameters	0	6	7	12
Year	2005	2006	2007	2008																		
Number of organic parameters measured or analyzed with the Algerian standard	0	3	6	11																		
Year	2005	2006	2007	2008																		
Number of SOPs for organic parameters	0	6	7	12																		
4. Skills and knowledge in inorganic chemical analysis are acquired	<p>4.1 C/P is able to perform inorganic analysis of compounds specified in the Algerian standards</p> <p>4.2 Analytical protocol is established</p>	<p>C/P is able to analyze phosphorus, cyanide, fluoride, sulfide, chloride, Cr(VI) and 12 elements (Al, Cd, Ca, Co, Cu, Pb, Ni, Sn Cr, Hg, Mg, Mn, and Fe) with the Algerian standard method.</p> <table border="1" data-bbox="1114 333 1204 1243"> <thead> <tr> <th>Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td>Number of inorganic parameters analyzed with the Algerian standard</td> <td>3</td> <td>15</td> <td>18</td> <td>18</td> </tr> </tbody> </table> <p>SOPs for all of inorganic chemical parameters on the Algerian standards have been prepared. For the list of SOPs, please see ANNEX 10-8.</p>	Year	2005	2006	2007	2008	Number of inorganic parameters analyzed with the Algerian standard	3	15	18	18										
Year	2005	2006	2007	2008																		
Number of inorganic parameters analyzed with the Algerian standard	3	15	18	18																		

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		Year											
		2005	2006	2007	2008								
		0	16	18	18								
		Number of SOPs for inorganic parameters											
4.3 Accuracy of data obtained from the analysis maintains within the accepted range.	<p>Analytical data sheet has been used to decrease the mistakes in the data processing. Interim laboratory director has been checking all results of measurement. The lectures on the method to determine detection limits are made by J.E.T. By using the obtained knowledge, detection limit of mercury by mercury analyzer was determined by CP. Detection limits specified by ISO are applied in CRL. CP has obtained the knowledge on the reporting digits. As for cyanide and fluoride, recovery tests were made by using standard samples brought from Japan.</p>												
5. Skills and knowledge in microbiological analysis are acquired	<p>Two C/Ps are now be able to analyze for total and fecal Coliform using ISO 9308-1 membrane filter. Analytical studies have started since May. 2008 and samples have been taken from the coastal area twice a week to conduct the analysis. There has not been any orders from clients received so far, while sea water at beaches of Alger (12 beaches), Boumerdes (10) and Tipaza (10) was analyzed.</p> <p>Analytical protocol, SOPs for the Coliform testing was prepared. See ANNEX 10-8 for a list of SOPs.</p> <p>At this moment, to secure the accuracy of data (to confirm the non-existence of contamination), blank test has been implemented in all analysis. Duplicate tests are also executed to know the variation of analysis data.</p>												
5.1 C/P is able to perform microbiological analysis specified in the Algerian standards													
5.2 Analytical protocol is established													
5.3 Accuracy of data obtained from the analysis maintains within the accepted range													
6. Skills and knowledge in development and maintaining database are acquired	<p>Format for chemical analysis data and relevant contents has been prepared.</p> <p>The regular monitoring results were input. The actual data input into the system was greatly increased as shown below.</p> <table border="1"> <thead> <tr> <th colspan="2">Year</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> </tr> </thead> <tbody> <tr> <td colspan="2">Number of the input data</td> <td>0</td> <td>700</td> <td>2114</td> <td>2000</td> </tr> </tbody> </table> <p>The accumulated data can be easily accessed and processed. The security measures to protect the data should be further improved.</p>	Year		2005	2006	2007	2008	Number of the input data		0	700	2114	2000
Year		2005	2006	2007	2008								
Number of the input data		0	700	2114	2000								
6.1 Architecture of the database for the Central Regional Laboratory (Alger) is designed													
6.2 The database is established													
6.3 Data collected from the analysis is stored in the database, and is available when requested.													
7. Skills and knowledge for environmental evaluation, analysis and recommendation utilizing the obtained	<p>Reports on the OEH monitoring result based on the available data were prepared and published internally.</p>												

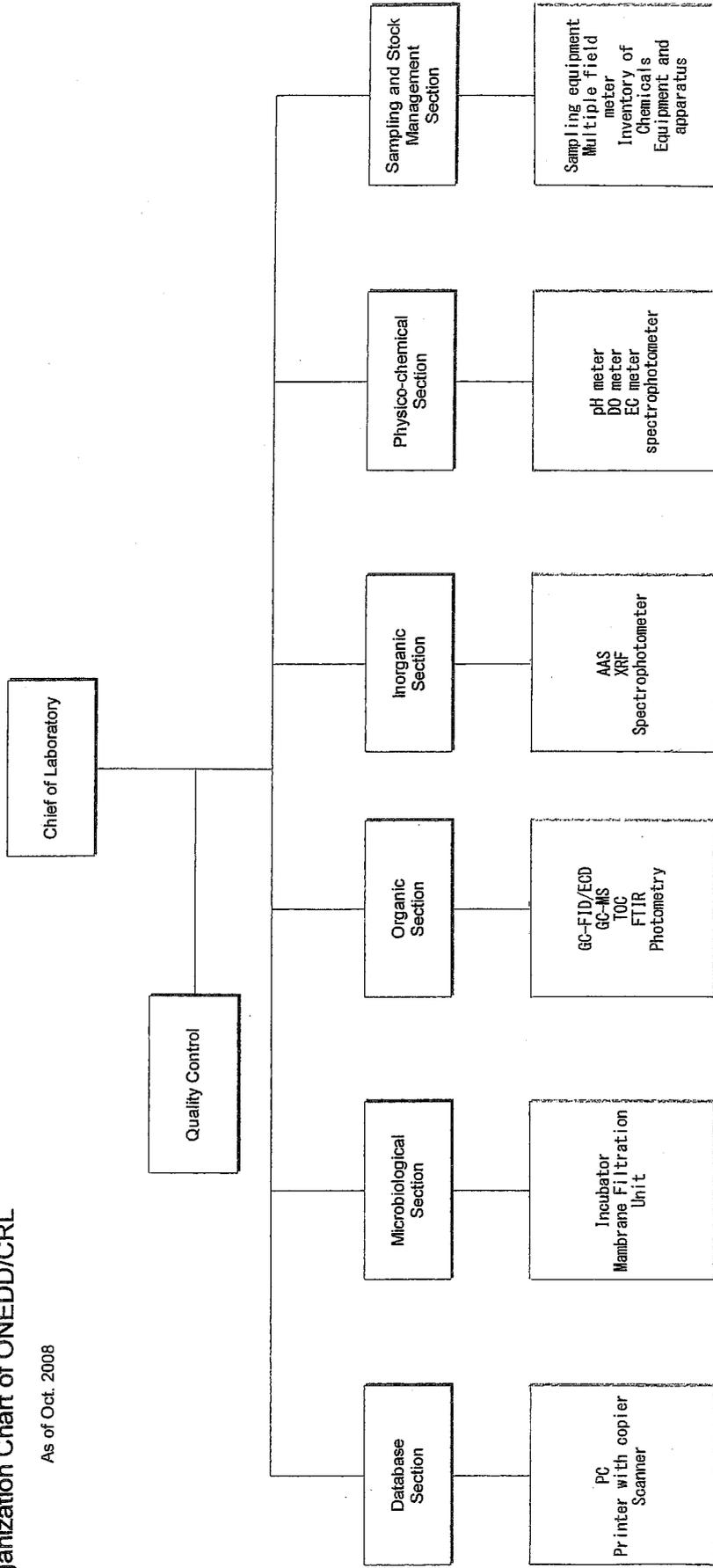
ANNEX 10-1

<p>data are acquired</p>	<p>7.2C/P is able to present the analytical results base on monitoring results at seminars and meetings, etc.</p>	<p>C/P made presentation about the water pollution in the Project site at the 3rd seminar in February 2007 for the first time. And two presentations were performed at the workshop on June 25, 2008.</p>
<p>8. Knowledge and experience for the de-pollution and remediation are acquired.</p>	<p>C/P is able to present the information for de-pollution and remediation of the Project area at seminars and meetings, etc.</p>	<p>Technical information on de-pollution and remediation and water quality management plan was introduced. C/P is now able to research and obtain the necessary information by using internet research technique.</p>
<p>9. Knowledge on environmental quality standards, regulations, and institutional/administrative setup for de-pollution and remediation are acquired.</p>	<p>C/P is able to propose an environmental quality standard, regulation and institutional /administrative setup for de-pollution and remediation, etc.</p>	<p>Two seminars were conducted and many government officials and stakeholders concerned from ONEDD/HQ, MATET, other ministries and other regional laboratories were participated to acquire knowledge on environmental monitoring.</p>

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Organization Chart of ONEDD/CRL

As of Oct. 2008



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The Volume of Samples Analyzed and Client Orders with a List of Client Names

Activity report of the AAS Section
Period 2005 - 2008

YEAR	2005	2006	2007	2008
NAME OF Clients	DEWA/ONEDD Oued El Harrach (Z.P)	COCHMA BEXAM SARL DEBRI JIJEL ENHYD WABAG Oued El Harrach (Z.P) SOTHYR ISMAL DEWA DEW Chlef Dr YOSHIDA GTZ GENDARMERIE .NA Etudiants Stagiaires Mr SATO RESVE C. Z MATET ADE SEAL Softal SPA GEOREAL DEW TIPAZA Banque centrale	ADE SEAL SARL SIDAR CRNB CEA Oued El Harrach (Z.P) FCP Hassi messoud DEWA Club des pins WATER ingennering Bouira MATET C.de détergent Banque centrale Etudiant C.UNIVER. COFAL ALGERIE GENCOS SARL BOUGOFA EURL LAQ Hôpital central de l'armée SOMIBAR Tissemsilt GEOREAL VATECH WABAG	Entreprise SACAR Z. I BEXAM CNTC Eurl Microanalyse MATET DEWA/ONEDD SOACHLORE ENAP CEVITAL VATECH WABAG EART Skikda ADEKAR BEJAIA CNDPA ENAP /cheraga SEAAL ENAP/ lakhdaria Banque d'algerie Renault (Tannerie Piézomètre O. Smar ONEDD LRC (rejet lab) Ain el melh Oued El Harrach (Z.P)
NUMBER OF services provides		45	46	68
NUMBER OF clients	02	21	18	23
NUMBER OF liquid samples	≈ 30	254	101	102
NUMBER OF solid samples	≈ 20	83	250	40
AAS/ SOPs		Cd , Cr , Ni, Pb, Cu, Zn	Al, Co, Hg	Mn, Fe, Sn
DMA-80/ SOPs				Hg

Carried out by Mr HOUAS OMAR
ONEDD Engineer

**Activity Report of CRL ONEDD other than AAS
Period 2005 to 2008**

Year	2005	2006	2007	2008
No of samples	53	431	351	242
NAME OF Clients	-DEWA -DEW Chlef - DEWTipaza	-COCHIMA -BEXAM -SARL DEBRI JJEL -ENHYD -WABAG -SOTHYR -ISMAL -DEWA -DEWTipaza -DEW Chlef -GTZ -Gendarmerie -MAT - SEAL -GEOREAL -Softal SPA -Banque d'algerie -SOMIBAR -SAIDAL Cherrhell -SAIDAL Mohammedia	-DEWA -SAIDAL Cherrhell -SAIDAL Mouhamadia -SAIDAL Gue de Constantine -MATET -ANRH -CU Media -Sonalgaz -EURL LAQ -Hôpital central de l'armée -GRANITEX -Usine de mercure Azzaba -GEOREAL -SANDOZ -PFIZER -ENAPT -VITA MILK -SARL LIKO -LATEL -Aventis -SAEL -WABAG -SOMIBAR -ENPEC -Water ingennering -Flash Algerie -Aromes Algerie -SARL Limonderie -FCP -SARL BOUGOF -Banque d'algerie -GENCOS -COFAL ALGÉRIE -CATEL -STIP_TUBOPLAST -ADE SEAL -CRNB CEA -SARL SIDAR -ZAOUI	-Renault -BELCOL -SARL El Bahdja -ENAP Chéraga -EDENAL -GDC Sonalgaz -SAIDAL Mohmadia -CNTC boumerdes -SIAD hydrotraitement -Réserve de chasse -SAIDAL Cherrhell - SAIDAL Gue de Constantine -Tannerie Djelfa - SPSRS -FAF Algérienne -Eurl Microanalyse -BEXAM -Gendarmerie -Tannerie Semmache -SOACHLORE -DEW Alger -DEW Chlef -DEW Tipaza -DEW Tizi Ouzou -DEW Boumerdes -PETROJET -Hôpital Baïnem -TRANSMEX Sonalgaz -GRANITX -SACAR groupe GIPEC -MERINAL -SOMEDIAL -CI Crêtes -SEAAL -Fourrage ETRTHB -Labo La palme -MATET -Cevital -WABAG -EART Skikda -Adekar Bejaia -ENAP Lakhdaria -Banque d'algerie -MATET
No of clients	3	20	39	44

Annex 10-4 The Presentation
Material of the Report by CRL

Ministère de l'Aménagement du Territoire, de l'Environnement et du Tourisme
Observatoire National de l'Environnement et du Développement Durable
Laboratoire Régional Centre

**ETUDE DE LA QUALITE DES
EAUX RESIDUAIRES DE LA
ZONE INDUSTRIELLE DE
OUED SMAR**

Présenté par:
MOALI Mohamed : Directeur du Laboratoire Régional Centre
Séminaire conjoint Algérie Japon, Alger, 20 et 21 avril 2008

Plan de la présentation

- > Introduction
- > Phase n° 1 : Analyses des effluents liquides industriels année 2005 des zones industrielles de Oued Smar, Baba Ali, El Mohammadia et Gué de Constantine
- > Phase n° 2 : Analyse des eaux et sédiments de Oued El Harrach années 2006 et 2007
- > Phase n° 3 : Analyses des effluents liquides dans la zone industrielle de Oued Smar année 2007-2008
 - o Résultats d'analyse in situ
 - o Résultats d'analyse au laboratoire
- > Interprétations
- > Conclusion et recommandations

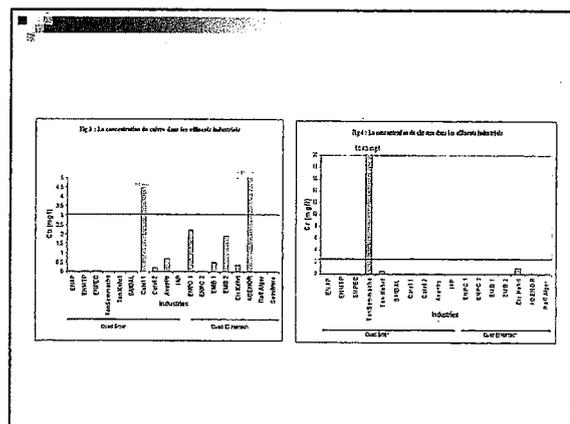
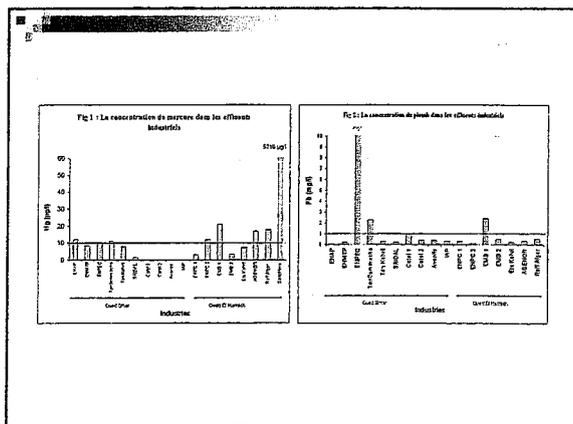
Introduction:

L'objectif de cette étude consiste à évaluer le degré de pollution des eaux de rejet de la zone industrielle de Oued Smar, par l'analyse de différents paramètres de Caractérisation d'une eau usée. En outre, les résultats d'analyses sont comparés aux critères et normes de déversements industriels, pour montrer enfin la forte pollution qui est préjudiciable pour le milieu récepteur (Oued Smar, Oued El Harrach et la baie d'Alger).

La zone industrielle de Oued Smar se situe dans le bassin versant de Oued El Harrach. Ces secteurs englobent un ensemble diversifié d'entreprises privées et d'état qui oeuvrent dans la sidérurgie, la cimenterie, le papier, les plastiques l'agroalimentaire, etc.

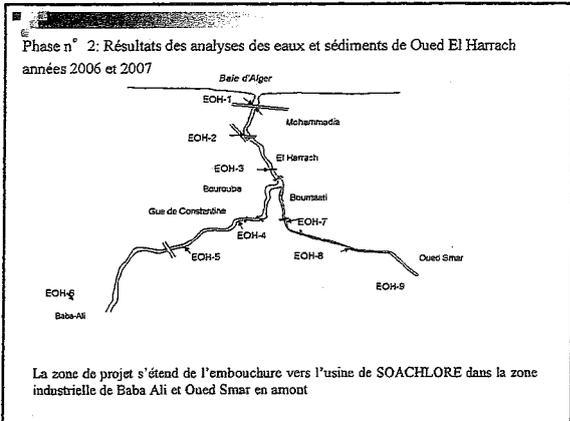
Phase n° 1: Résultats des analyses des effluents liquides industriels année 2005

Code	Site	Chlorure	Sulfate	Ammoniac	Nitrate	Phosphore	Calcium	Magnésium
00103905	EMAP	SLD	SLD	SLD	0,05	SLD	SLD	12,11
00203905	EMATP	SLD	SLD	0,20	0,05	0,01	SLD	0,57
00303905	EMFC 1	SLD	2,22	0,77	0,04	SLD	0,003	3,14
00403905	EMFC 2	SLD	SLD	0,12	0,01	SLD	0,012	12,99
00503905	EMFEC	SLD	0,62	37,89	0,07	SLD	SLD	10,23
00603905	TAN SEMBLANDE	60,43	0,03	5,23	SLD	SLD	0,012	11,04
00703905	TAN KEHRA	0,54	SLD	0,27	0,01	SLD	SLD	0,90
00803905	EMR 1	SLD	0,50	2,40	0,07	1,47	SLD	21,21
00903905	BAO	SLD	1,90	0,45	0,05	0,09	SLD	3,34
01003905	BE FIDJOU	0,96	0,36	0,23	0,05	SLD	SLD	7,28
01103905	AGENCE	0,15	0,56	0,34	0,27	1,05	SLD	17,00
01203905	RAIF ALGER	SLD	SLD	0,51	SLD	SLD	SLD	10,00
01303905	SAHVAL	SLD	SLD	0,19	0,09	SLD	SLD	1,50
01403905	CATEL 1	SLD	4,84	0,94	0,04	0,63	SLD	SLD
01503905	CATEL 2	SLD	0,22	0,38	SLD	SLD	SLD	SLD
01603905	AVENTIS	SLD	0,71	0,35	0,02	0,71	SLD	SLD
01703905	IAP	SLD	SLD	0,10	SLD	SLD	SLD	SLD
C1-1	SONACHELONE	-	-	-	-	-	-	2720,00
V.M.A		3 / 0,10	3,00	1,00	5,00	5,00	0,300	10,00



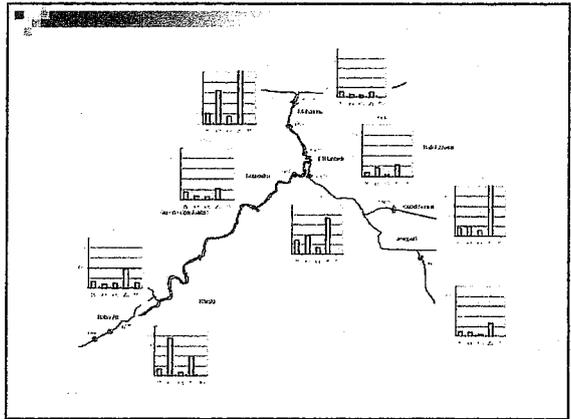
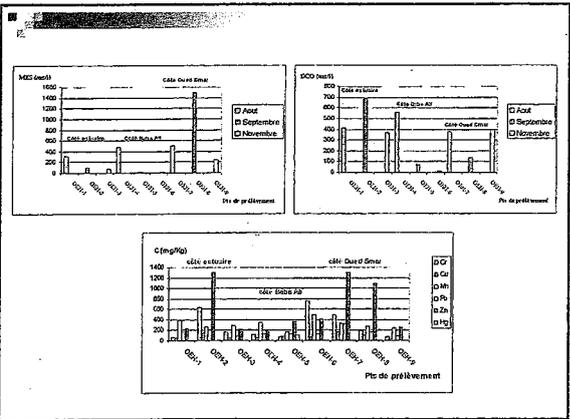
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Annex 10-4 The Presentation Material of the Report by CRL



Résultats d'analyses des échantillons de l'Oued El Harrach

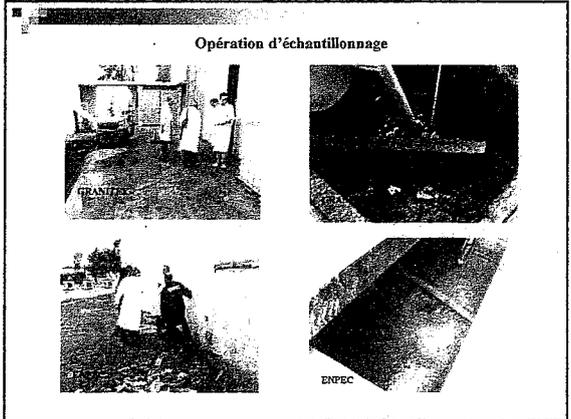
Code de l'échantillon	EOH-1	EOH-4	EOH-7	EOH-2	EOH-5	EOH-8	EOH-3	EOH-6	EOH-9	EOH-1	EOH-4	EOH-7
	15/02/2006			15/02/2006			20/11/2006			26/12/2006		
Date	11:36	12:27	13:03	10:40	12:00	12:57	12:45	15:30	15:15	12:10	13:35	14:15
pH	7.3	7.2	7.2	7.6	7.7	7.2	7.5	7.5	7.7	8.1	7.5	7.4
Oxygène dissous mg/l	0.15	0.15	0.09	0.9	1.2	0.1	0.3	0.3	2.1	4.7	6.6	1.5
MES mg/l	310	480	500	108	70	1500	77	18	240	150	150	178
DCO mg/l	410	550	340	69	7	140	378	15	400	62	0.5	238
DBO5 mg/l	-	-	-	45	49	428	148	119	50	28	22	39
Huile et graisse mg/l	-	-	-	3	4	15	30	17	24	2	5	2
Phosphore total mg/l	-	-	-	-	-	-	5	12	16	-	-	-
Métaux												
Cd mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Cr mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	0.54	<0.2	<0.2	0.5	<0.2	<0.2	<0.2
Cu mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mn mg/l	-	-	-	-	-	-	0.15	0.15	0.30	0.37	0.26	0.37
Ni mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pb mg/l	0.37	0.53	0.37	0.73	0.57	0.89	0.6	0.6	0.8	<0.2	<0.2	<0.2
Zn mg/l	<0.03	0.07	<0.03	<0.03	<0.03	1.2	0.15	<0.03	0.34	0.14	0.16	0.19
Hg mg/l	-	-	2.4	3.2	1.2	1.2	1.15	1.15	1.15	<0.0	<0.0	<0.0
Fe mg/l	<0.2	0.71	<0.2	<0.2	0.5	35	1.17	<0.2	6.2	5.8	6.4	7.7
Qualité de sédiment												
Cd mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cr mg/kg	37	120	500	640	76	189	162	762	78	56	68	124
Cu mg/kg	44	64	170	150	89	116	46	68	34	40	62	145
Mn mg/kg	460	350	330	270	170	380	325	450	237	265	307	477
Ni mg/kg	<20	<20	<20	<20	<20	<20	<20	30	<20	<20	<20	<20
Pb mg/kg	170	130	330	200	130	170	63	137	83	115	144	267
Zn mg/kg	250	210	1300	1300	380	1100	218	406	254	182	211	741
Hg mg/kg	-	-	2.4	105	0.3	0.3	0.3	0.7	0.2	0.2	0.2	0.2
Fe mg/kg	31	39	30	29	14	16	33	35	16	25	54	31



Phase n° 3: Résultats des analyses des effluents liquides industriels dans la zone industrielle de Oued Smar année 2008

Les paramètres à analyser ont été réalisés selon les catégories d'installations industrielles décrit dans le Décret exécutif n° 06-141 du 20 Rabie El Aouel 1427 correspondant au 19 avril 2006 définissant les valeurs limites des rejets d'effluents liquides industriels, ses catégories sont les suivantes:

- 1- Industries agro-alimentaire: Température, pH, DBO5, DCO, MES, huiles et graisses
- 2- Industries d'énergie: Température, pH, DBO5, DCO, MES, huiles et graisses, Azote total, phénols, sulfures, Hydrocarbure, BTX et métaux lourds
- 3- Industries mécaniques: Température, pH, DCO, MES, huiles et graisses, sulfures, Hydrocarbure et métaux totaux
- 4- Industries de transformation des métaux: Température, pH, DCO, Cyanures, MES, métaux lourds.
- 5- Industries de minerais non métalliques: Température, pH, DCO, MES, métaux lourds.
- 6- Industries de textile: Température, pH, DBO5, DCO, MES
- 7- Industrie de tannerie et mégisserie: DBO5, DCO, MES et chrome total



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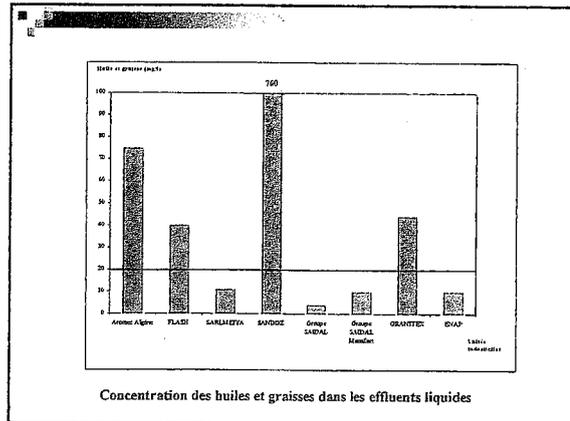
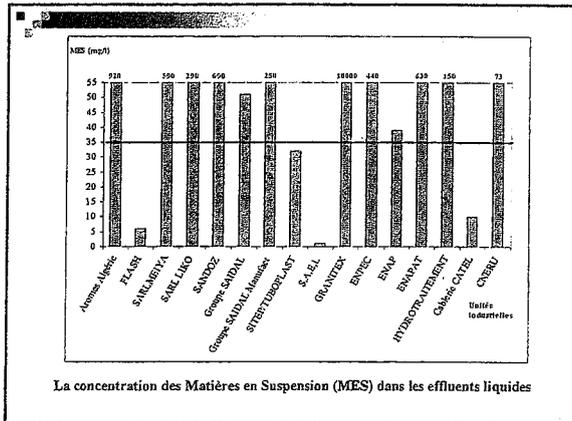
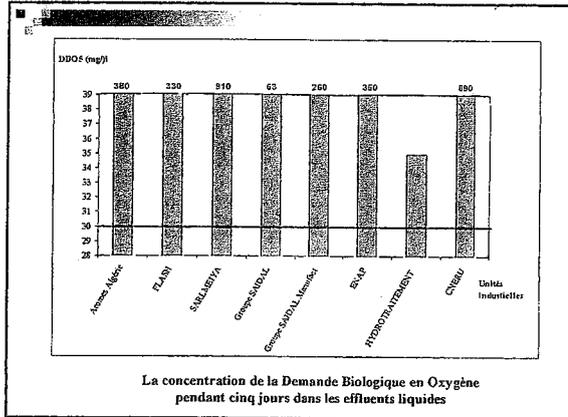
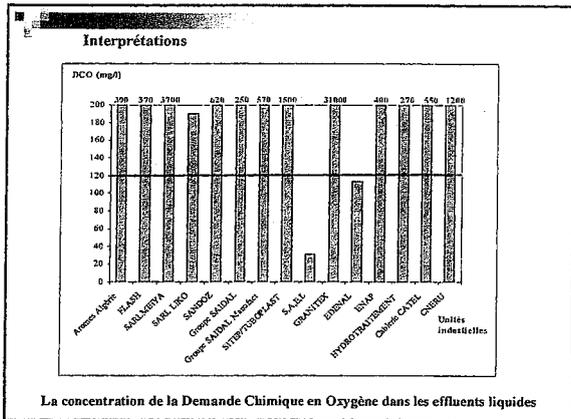
Annex 10-4 The Presentation Material of the Report by CRL

Résultats des analyses in Situ

Paramètres	Arbitrés	Date de l'opération	cadre	T°	pH	Cond	O2 Sat
Unités							
Amnes Algérie	Espaces non-couverts	21/11/2007	trouble	18	6,1	1,5	9
FLASH	Limnologique	21/11/2007	trouble	22	7,5	1,5	8,6
SARLAJEVA	Limnologique	21/11/2007	trouble	23	6,5	0,0024	2,1
SARLAJEVA	modules labél et dérivés	21/11/2007	trouble	23	7,0	1,4	8,5
SARLAJEVA	trouble	21/11/2007	trouble	24	7,7	1,3	4,1
PAUPPEZ SAIDAL	laboratoire de microbiologie	02/12/2007	trouble	18	7,2	1,4	8,9
GRANTEX	laboratoire de microbiologie	04/12/2007	trouble	20	7,64	1,4	5,1
ENAP	laboratoire de microbiologie	05/12/2007	trouble	18	7,2	1,4	7
GRANTEX	laboratoire de microbiologie	09/12/2007	trouble	20	7,6	1,8	0,64
GRANTEX	laboratoire de microbiologie	09/12/2007	trouble	18	7,9		
HYDROTRAITEMENT	laboratoire physique	24/02/2008	clair	14,4	7,8	0,70	10,23
SARLAJEVA	transformation de Casouidou	24/02/2008	trouble	20	7,7	1,7	3,7
GRANTEX	Pub. produit cosmétique TP	05/12/2007	trouble	18,1	8,3		
ENAP	Pub. des cosmétiques	05/12/2007	trouble	18,4	6,1		
LAINDHIER ALGERIENNE	Pro. de cosmétique ornement	11/07/2008	trouble	21	8,05	0,64	7,05
RELCODE	Pub. cosmétique	15/01/2008	trouble	18,3	7,4	0,7	2,6
ENAP	Pub. cosmétique de maquillage	11/02/2008	trouble	20	8,3	0,5	4,45
ENAP	Pub. produits pharmaceutiques	21/01/2008	clair	14	8,3	1,4	3
ENAP	Pub. produits, vases, Adhésifs et collés	23/01/2008	trouble	17	7,83	1,6	0,46
ENAP	Produits	23/01/2008	clair	17	7,6	2,03	7
ENAP	Produits	23/01/2008	clair	15	8,4	0,93	3,17
HYDROTRAITEMENT	Produits	24/01/2008	trouble	15	5,6	31,5	7
ENAP	Produits	04/12/2007	trouble	20	8,2	1,0	1,77
ENAP	Produits	07/12/2007	trouble	21	7,6	4,2	1,8
ENAP	Système de réverser eaux usées	10/12/2007	trouble	21	7,6	4,2	1,8
Echelle de 0 à 30							

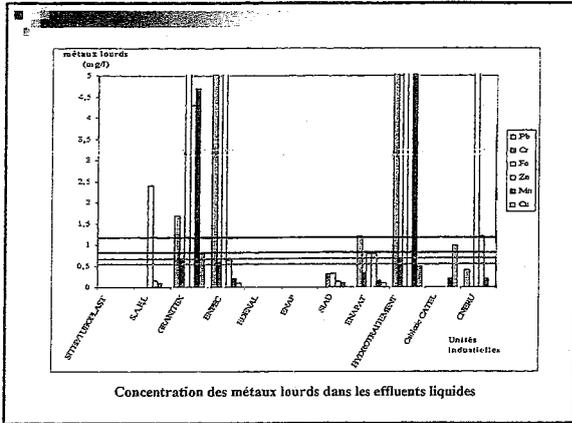
Résultats des analyses effectuées au laboratoire

Paramètres	DCO	DBP5	MES	pH	Temp	TP	TP	TP	TP	TP	TP	TP	TP	TP	TP	TP	TP	TP
Unités																		
Amnes Algérie	200	200	200	18	6,1	1,5	9											
FLASH	210	210	210	22	7,5	1,5	8,6											
SARLAJEVA	210	210	210	23	6,5	0,0024	2,1											
SARLAJEVA	210	210	210	23	7,0	1,4	8,5											
SARLAJEVA	210	210	210	24	7,7	1,3	4,1											
PAUPPEZ SAIDAL	210	210	210	18	7,2	1,4	8,9											
GRANTEX	210	210	210	20	7,64	1,4	5,1											
ENAP	210	210	210	18	7,2	1,4	7											
GRANTEX	210	210	210	20	7,6	1,8	0,64											
GRANTEX	210	210	210	18	7,9													
HYDROTRAITEMENT	210	210	210	14,4	7,8	0,70	10,23											
SARLAJEVA	210	210	210	20	7,7	1,7	3,7											
GRANTEX	210	210	210	18,1	8,3													
ENAP	210	210	210	18,4	6,1													
LAINDHIER ALGERIENNE	210	210	210	21	8,05	0,64	7,05											
RELCODE	210	210	210	18,3	7,4	0,7	2,6											
ENAP	210	210	210	20	8,3	0,5	4,45											
ENAP	210	210	210	14	8,3	1,4	3											
ENAP	210	210	210	17	7,83	1,6	0,46											
ENAP	210	210	210	17	7,6	2,03	7											
ENAP	210	210	210	15	8,4	0,93	3,17											
HYDROTRAITEMENT	210	210	210	15	5,6	31,5	7											
ENAP	210	210	210	20	8,2	1,0	1,77											
ENAP	210	210	210	21	7,6	4,2	1,8											
ENAP	210	210	210	21	7,6	4,2	1,8											



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Conclusion :

Les résultats des analyses des échantillons prélevés dans la zone industrielle de Oued Smar montrent que:

- Pour la majorité des paramètres analysés, la pollution des eaux de rejet est évidente et la norme algérienne de rejet industriel est souvent dépassée.
- Les valeurs des concentrations trouvées en MES, DBO5, DCO et huile et graisse permettent d'avancer que la charge polluante est essentiellement organique.
- 13 unités industrielles inspectées sur 15 ont une DCO très chargée et 4 unités présentent un pic de pollution chimique.
- 08 unités inspectées sur 08 présentent une forte teneur en DBO5, et 02 unités présentent un pic de pollution organique
- 12 unités inspectées sur 16 leurs effluents sont très chargés en MES et 05 unités présentent un pic
- 04 unités inspectées sur 08, présentent une concentration élevée en huiles et graisses et 01 unité présente un pic
- les teneurs des métaux lourds (fer, magnésium, plombs, chrome, zinc et cuivre) sont irrégulières

RESUME

Unité	MES	DBO5	DCO	H et G	Pb	Cr	Zn	Mn	Cu
Atomes Algérie				H et G					
FLAB				H et G					
SARLMEYA				II					
SARL VITAMIK									
SARL LIKO			DCO						
SPA PPRIZER SAIDAL									
AVENTIS									
SAHCOZ									
Groupe SAIDAL			DCO	DBO5	MES				
Groupe SAIDAL Manufact									
STEP/TUBROPLAST									
SAEL									
GRANITEC				H et G	Pb	Cr	Zn	Mn	Cu
ENPEC						Cr	Fe		
FAENDERES ALGERIENNE									
BELCOOL									
S.P.A.R.E									
EDENAL									
ENAPAT									
SIAD									
ENAPAT					Pb				
HYDROTRAITEMENT			MES			Cr			Cu
Cherite CATEL									Cu
CHERU			MES					Fe	

Recommandations

- Afin d'améliorer la qualité de eaux de rejet et éliminer les nuisances actuelles, les industriels doivent faire des efforts, en dotant leur unité d'un dispositif de traitement approprié, de manière à limiter la charge de pollution rejetée, incités par les pouvoirs publics et la réglementation.
- La Direction de l'Environnement de la Wilaya d'Alger doit inciter les exploitants des installations industrielles, sur la nécessité de la pratique de l'autocontrôle, et continuer à effectuer des contrôles périodiques, en collaboration avec le Laboratoire Régional Centre de l'ONEDD, des rejets des industries les plus polluantes, visant à s'assurer de leur conformité aux valeurs limites réglementaires.
- En appliquant ses recommandations, l'impact de la pollution industrielle sur Oued El Harrach et Oued Smar va être réduit.
- Concernant le projet ONEDD-JICA sur la zone d'étude de Oued El Harrach, des études complémentaires sur l'analyse organique, confirmeraient davantage la pollution des rejets industriels et les cours d'eau par les hydrocarbures, les BTX, les pesticides et autres polluants organiques.

REMERCIEMENTS

Cette étude a été réalisée en étroite collaboration avec La Direction Générale de l'ONEDD, les experts de la JICA, la Direction de l'Environnement de la Wilaya d'Alger et le Laboratoire Régional Centre. Je remercie vivement tous les responsables et leurs équipes respectives pour leurs disponibilités et contributions à la réalisation de ce travail.

MERCI DE VOTRE ATTENTION

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Analysis Parameters on Algerian Standards for Training

Parameter	Limit value (mg/l)	Method
Decret executif No. 06-141, Annex I		
Suspended Solids	35	ISO 11923 gravimetry
Kjeldahl nitrogen	30	ISO 5663 spectrophotometry
Phosphorus total	10	ISO 6878 spectrophotometry
COD	120	ISO 6060 titratmetry
BOD ₅	35	ISO 5815-1
Aluminum	3	ISO 12020 atomic absorption
Cyanide	0.1	ISO 6703-1 spectrophotometry
Fluorides	15	ISO 10359-2 spectrophotometry
Phenol index	0.3	ISO 6439 spectrophotometry
Hydrocarbons total	10	ISO 9377-2 gas chromatography
Oil and grease	20	Rodier gravimetry
Cadmium	0.2	ISO 8288 atomic absorption spectrophotometry
Copper total	0.5	
Lead total	0.5	
Chrome total	0.5	
Manganeze	1	
Nickel total	0.5	
Zinc total	3	
Iron	3	
Tin total	2	
Mercury total	0.01	
Organo-chlorines	3	ISO 6468 GC
Decret executif No. 06-141, Annex II – by industrial categories		
[Oil refinery]		
Nitrogen total	20 (g/t)	by TOC meter
Chrome 6+	0.1	ISO 11083 spectrophotometry
[Coking factory]		
Benzene, Toluene, Xylene (BTX)	0.08	ISO 11423 GC/MS
Poly-aromatic Hydrocarbons (PAH)	0.08	using GC/MS
Sulfides	0.08	ISO 13358 titratmetry
Microbiological		
Coliform total/fecal	500/100ml 100/100ml	ISO 9308-1 membrane filter

A List of Parameters by Each C/P

Parameters	JET	MOALI Mohamed	NECHAOUNI Leila	KIMRI Leila	KHADRAOUI Sofiane	ANANE Radhia	TIBECHE Amel	BENSOUILLAH Ouahiba	NEKMOUCHE Lynda	HOUS Omar	AZOUANI Sophia	DIQHLAF Hadda	MEBREK Hanafa	GUERAINI Chanece	BOUKHATEM Wassila	
Physico-chemical																
TSS	Miyaki	X					X							X		X
COD	Miyaki	X					X							X		X
BOD ₅	Miyaki							X						X		X
Oil and grease	Miyaki	X					X							X		X
Phenols	Miyaki							X						X		X
Sulfide	Miyaki							X						X		X
Phosphate																
total Phosphorus	Sato		X													X
Kjeldahl Nitrogen	Sato					X	X									
Cyanide	Sato		X			X	X					X				
Fluoride compounds	Sato					X	X									
Inorganics																
Hexavalent Cr	Sato						X				X	X				
Metals	Sato								X		X					
Al	Sato									X	X					
Sn	Sato									X	X					
Hg Analyzer	Sato									X	X					
XRF	Sato								X	X	X					
Organics																
Organic mercury (GC-ECD)	Kawakami Ohi	X							X							
TOC	Miyaki Ohi													X		
total Nitrogen																
total Hydrocarbon (GC-FID)	Kimura								X							
Organic chlorinated compounds (GCMS)	Kimura		X													
BTX (GCMS)	Kimura		X													
PAH (GCMS)	Kimura		X													
FTIR	Tsuji													X		
Microbiology																
total Coliform	Sato											X			X	
fecal Coliform	Sato											X			X	

Reports of Missions/Training Conducted for Monitoring Stations and Regional Laboratories (1/2)

Title	Date	Place	Participants	Note
Workshop in ONEDD-CRL	1 to 3 July 2006	CRL	<ul style="list-style-type: none"> • CRL: Omar, MOALI, Leila, Chaneche, Wassila, Khalil, Salima, Assia, LAKHDARI • Constantine: 4 staffs • Oran: 2 staffs • JET: Ohi, Kawakami Tsuji, Miyaki, Sato and Sugimori 	<p>Activity</p> <ul style="list-style-type: none"> • Presentation on outline of the Project • Lecture : How to make monitoring program on the assumption of develop a database • Interview on the activities of Constantine and Oran laboratory • Lecture: Management of analytical data • Presentation: Introduction of the laboratory works in Japan • Seminar : Environmental Database and Processing of Industrial Effluent
Inspection of Regional Survey Stations	30 June, 2007	Surveillance Station, Environment Direction, Wilaya of Bordj Bou Arreridj (BBA)	<ul style="list-style-type: none"> • CRL: MOALI and LAKHDARI • Representative from PHYWE (supplier of lab equipment) • Staffs of 3 Surveillance Station 	<p>Findings</p> <ul style="list-style-type: none"> • All of the 3 stations are equipped well with new lab equipment. • Lack of chemicals for the analyses recognized for all of the laboratories. • Lack of the technical staff of the laboratory in SKIKDA. • Needs of formation for the staff technical • Lack of the methods of analyses normalized; gave a set of SOP to ANNABA laboratory. • Some problems of electricity and the water pressure recognized in the local stations.
	1 July, 2007	Surveillance Station, Environment Direction, Wilaya of Skikda		
	2 July, 2007	Surveillance Station, Environment Direction, Wilaya of Annaba		

Reports of Missions/Training Conducted for Monitoring Stations and Regional Laboratories (2/2)

Title	Date	Place	Participants	Note
Delivery of chemicals and equipment, and the training of staffs	11 to 14 May, 2008	Regional Laboratory in Constantine	<ul style="list-style-type: none"> • ONEDD: SIMANI • CRL: MOALI and Omar • Staffs of Oran Regional Laboratory • Staffs of water monitoring stations in Skikda, Annaba and BBA 	Activity <ul style="list-style-type: none"> • Training of 2 regional laboratory staffs on the analysis of heavy metals (excluding mercury) by AAS • Training of all participants on physico-chemical analysis (pH, SS Temperature, DO, COD, BOD, oil & grease and Kjeldahl nitrogen) • Lectures on laboratory management, handling of samples, traceability of samples (preparation of Chain of Custody: COC) and In-situ measurements.
	19 to 22 May, 2008	Regional Laboratory in Oran	<ul style="list-style-type: none"> • ONEDD: SIMANI • CRL: MOALI and Omar • Staffs of Constantine Regional Laboratory • Staffs of water monitoring stations in Mostaganem, Ain Dffla and Saïda 	
Installation and training of Spectrophotometer	30 June to 2 July, 2008	Water Monitoring Stations in Skikda, Annaba and BBA	<ul style="list-style-type: none"> • CRL: MOALI and LAKHDARI • Staffs of water monitoring stations in Skikda, Annaba and BBA 	Note Spectrophotometer is purchased by ONEDD by using the loan of Worldbank.

Ministry of Land Planning, Environment and Tourism
National Observatory for Environment and Sustainable Development
Central Regional Laboratory

List of SOPs (Analytical Protocols) Developed by the Project
 (Parameter and Person in charge at Central Regional Laboratory)

Parameters/Items	Method	Norm	Persons in charge
Sampling	-	ISO 5667	Mohamed LAKHDARI
			Mohamed SMAI
Flow Rate	Electromagnetic Compute	-	Mohamed LAKHDARI
			Mohamed SMAI
BOD5	Digestion	ISO 5815-1: 2003	Bensouilah Wahiba
			Djoughlaf Hadda
			Tibeche Amel
			Nekmouche Lynda
			Mebrek Hanifa
COD	Oxydation by bichromate	ISO 6060 :1989	Bensouilah Wahiba
			Djoughlaf Hadda
			Tibeche Amel
			Nekmouche Lynda
			Mebrek Hanifa
Suspended substances	Gravimetry	ISO 11923 :1997	Bensouilah Wahiba
			Djoughlaf Hadda
			Tibeche Amel
			Nekmouche Lynda
			Mebrek Hanifa
Oil and grease	Gravimetry	Méthode Rodier	Bensouilah Wahiba
			Djoughlaf Hadda
			Tibeche Amel
			Mebrek Hanifa
Phosphorus total	Spectrophotometry	ISO 6878 : 2004	Nechaoui Leila
Sulfide	Spectrophotometry	ISO 13358-1997	Bensouilah Wahiba
			Djoughlaf Hadda
Chloride	Titration	Méthode Rodier	Bensouilah Wahiba
			Djoughlaf Hadda
			Tibeche Amel
			Nekmouche Lynda
			Mebrek Hanifa
Kjeldahl Nitrogen	Titration	ISO 5663-1984	Anane Radia
Fluorure	Spectrophotometry	ISO 10359-2: 1994	Tibeche Amel
			Anane Radia
Phenol index	Spectrophotometry	ISO 6439: 1990	Bensouilah Wahiba
			Djoughlaf Hadda
			Tibeche Amel
			Mebrek Hanifa
Chromium (VI)	Distillation	ISO 11083 ; 1994	Tibeche Amel
Cyanides	Distillation	ISO 5663 ; 1984	Anane Radia

			Nechaoui Leila Djoughlaf Amel
Cadmium Cd	SAA flame	ISO 8288 : 1986	Houas Omar Azouani Sophia
Calcium Ca	SAA flame	ISO 8288 : 1986	
Chromium Cr	SAA flame	ISO 8288 : 1986	
Cobalt Co	SAA flame	ISO 8288 : 1986	
Copper Cu	SAA flame	ISO 8288 : 1986	
Iron Fe	SAA flame	ISO 8288 : 1986	
Magnesium Mg	SAA flame	ISO 8288 : 1986	
Manganese Mn	SAA flame	ISO 8288 : 1986	
Zinc Zn	SAA flame	ISO 8288 : 1986	
Nickel Ni	SAA flame	ISO 8288 : 1986	
Lead Pb	SAA flame	ISO 8288 : 1986	
Aluminium Al	SAA flmme	ISO 12012 : 1997	
Mercury Hg	SAA flameless	ISO 5666 : 1999	
Organic Mercury	Chromatographie (detector ECD)	JIS K 0102 66	
Total Hydrocarbon	Chromatographie (detector FID)	ISO 9377-2: 2000	Tibeche Amel Nekmouche Lynda
Organo chlorines	Chromatographie (detector ECD)	Modified ISO 6468: 1996	Tibeche Amel Bensouilah Wahiba
		ISO 6468: 1996	Kimeri Leila Nechaoui Leila Khadraoui Sofiane
BTX	GC/MS	ISO 11423-1 :1997	
PAH		ISO 18287 :2006	
Coliformes fecaux	Membrane filter	ISO 9308-1: 2000	Mebrek Hanifa Djoughlaf Hadda
Coliformes total	Membrane filter	ISO 9308-1: 2000	

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12 October, 2008

Recommendations to ONEDD by JET**(1) Hardware (Equipment)**

- To fix the troubles of PT (Purge and Trap), because measurement of BTX by GCMS cannot be made due to this trouble
- To purchase the data library of FTIR, otherwise FTIR cannot be applied to actual samples

(2) Facility

- To repair cracked wall adjacent to old laboratory
- To double electric capacity of old and prefabricated laboratories
- To equip air conditioner in the rooms where Atomic Absorption Spectrometer (AAS) and Gas Chromatography are installed
- To install draft chamber (fume hood) in one or two rooms of prefabricated laboratory
- To install back-up systems for power failure
- To repair faulty or broken facilities of prefabricated laboratory such as electric outlet, air conditioner, window and door (including door knobs)
- To install shoe box at the entrance of prefabricated laboratory (use of indoor shoes shall be accustomed, use of sandal is not allowed)

(3) Management

- To appoint Resident Laboratory Manager (person who has authority of personnel and budget issues of the laboratory is preferable)
- To promote collaboration with other institutes including Hurbal and ANRH
- To strictly implement laboratory wastewater management
 - Acidic and basic wastewater shall be discharged after neutralization
 - Wastewater contains heavy metals shall be discharged after removal of heavy metals by precipitation
 - Other wastewater shall be segregated based on its nature and kept in the laboratory
- To implement anti virus measures

List of Attendants

The Algerian Side

Mr. Abdelkader BENHADJOURIA (Team Leader)
Chief, Minister's Cabinet, MATET

Mr. Bachir SLIMANI (Member)
Director General, ONEDD

Mr. Abderrahmane LALEG (Member)
Assistant of Director General, ONEDD

The Japanese Side

Dr. Mitsuo Yoshida (Team Leader)
Senior Advisor, Institute for International Cooperation, JICA

Ms. Eriko Tamura (Member)
Senior Program Officer, Environmental Management Division 2, Global Environment Department, JICA

Ms. Shinobu Mamiya (Member)
Permanent Expert, International Development Associates, Ltd.

Mr. Masayuki Shibahara
Interpreter

Mr. Yoshitaka Imaeda
Chief Adviser/ Environmental Management, JET

Mr. Mamoru Sato
Environmental Organic Chemical Analysis/ Microbiological Analysis, JET

Mr. Mohamed HOUARI
Interpreter

Mr. Akihiko Yahata
JICA Expert

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