Environmental Monitoring Report

Project Number: 35340
June 2010

PRC: Fuzhou Environmental Improvement Project

Prepared by Fuzhou Municipal Government
With the assistance of Black & Veatch International Company (B&V)

For
- Fuzhou Municipal Government
- Fuzhou Water Environment Construction and Development Company (FWECDC)
- Fuzhou Urban Visual Construction and Development Company (FUVCDC)

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Asian Development Bank
FUZHOU ENVIRONMENTAL IMPROVEMENT PROJECT

FUZHOU ADB LOAN PROJECT MANAGEMENT OFFICE

Semi-Annual Environmental Report

As of 31 May 2010

June 2010
## Semi-Annual Environmental Report

### As of 31 May 2010

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ABBREVIATIONS

ADB  Asian Development Bank
B&V  Black & Veatch International Company
BOT  build, operate and transfer
CNY  Renminbi Chinese Yuan
CSC  construction supervision company
EA   Executing Agency
EEM  external environmental monitoring
EIA  environmental impact assessment
EMC  environmental monitoring consultant
EMP  environmental management plan
EPB  environmental protection bureau
FEMS Fuzhou Environmental Monitoring Station
FMEPB Fuzhou Municipal Environmental Protection Bureau
FMG  Fuzhou Municipal Government
FPMO Fuzhou ADB Loan Project Management Office
FUVCDC Fuzhou Urban Visual Construction and Development Company
FWECDC Fuzhou Water Environment Construction and Development Company
GDP  gross domestic product
IA   Implementing Agency
PRC  People's Republic of China
US$  US dollars
WWTP wastewater treatment plant
I. INTRODUCTION

1.1 General Introduction

This Report is the fifth semi-annual environmental report for the Fuzhou Environmental Improvement Project (the Project) for the period from 1 Dec 2009 to 31 May 2010. It is prepared by the Fuzhou Project Management Office (FPMO) with the assistance of Black & Veatch International Company (B&V). B&V has been providing project implementation consulting services to FPMO who is the Executing Agency (EA) for the Project.

ADB funded civil work contracts have progressively been awarded since Nov 2006, and construction of the first awarded contract started in Jan 2007. This Report describes the activities undertaken in the period from the beginning of Dec 2009 till end of May 2010 with respect to the implementation of the environmental management plans (EMPs) of the project components. This Report contains the following activities and topics: (i) the environmental institutional strengthening and capacity building; (ii) mitigation measures undertaken to minimize adverse environmental impacts arising from the construction of the Project facilities; (iii) environmental monitoring and assessment; (iv) responses to ADB’s comments on last environmental report; and (iv) conclusions and suggestions.

1.2 Description of the Project

This Project has the following three structural components, and the project location is shown in Figure 1:

- Component A - Yangli Phase 2 Sewer Networks: to construct 253.25 km of new sewers, rehabilitate 27 km of existing sewers, and construct and upgrade 5 pumping stations;
- Component B - Lianban Sewer Networks: to construct 126.83 km of new sewers, rehabilitate 76 km of existing sewers, and construct 4 pumping stations; and
- Component C - Nantai Island Inland Creek Rehabilitation: to rehabilitate 12 inland creeks with a combined length of about 48 km; dredge and/or excavate 3.63 million tons of earthwork; construct varying widths of stone-lined rectangular channels and 1 rubber dam; and rehabilitate 4 existing flood gates.

There is also a Capacity Building component (Component D) which is non-structural in nature to support project implementation and training of the implementing agencies (IAs). One important element in this component is institutional strengthening, capacity building, and training in environmental management. The target trainees include the FPMO and IAs as well as contractors and construction supervision companies. The purpose is to build up the capacity of these entities so that they are more capable in implementing the EMP and environmental monitoring.

The total estimated project cost is US$ 185.5 million of which US$ 55.8 million is loaned by the Asian Development Bank (ADB) to the People's Republic of China (PRC) and then on-lent to the Fuzhou Municipal Government (FMG). The counterpart funding of the Project is about US$ 130 million which is being provided by a combination of domestic borrowing and FMG equity.

1.3 Description of the Environment

As the capital of Fujian Province, Fuzhou is one of the important cities in Southeast China, and is the Province’s main political, economic, trade, information and cultural center. Fuzhou is located in eastern Fujian Province, adjacent to the China East Sea. Nantai Island is located south of Fuzhou at Cangshan which is one of Administration Districts of Fuzhou. As of the end 2009, the residential population of Fuzhou Municipality is 6.87 million including 2.71 million in main urban area.
The terrain of Fuzhou is characterized as hilly with low mountains that generally form a semi-circular land shape. Hot spring water is generated within the basin. The topography of Nantai Island is characterized as hilly in the northwest and middle, and broad alluvial plain in the southeast, sloping from northwest to the southeast of the island.

The Project area has a subtropical marine monsoon climate, warm and humid, with abundant precipitation mostly falling during summer. The average annual precipitation is 1,343 mm, approximately 75% of which falls during April to September accompanied by frequent typhoons. The average annual temperature is 19.6°C. The hottest month is July, and the highest temperature over the years is 39.9°C. The prevailing wind direction through the year is from the
southeast, with the average and the highest wind speeds being 2.7 and 31.7 m/s, respectively.

Fuzhou has complicated waterways in the urban area. There are over 70 inland rivers including Guangming Gang, Jin’an River and Baima River, with a total length of 99.3 km in the northern bank of Min River. Other than a few rivers including Jin’an River, most of the other rivers are small and without natural sources. These inland rivers join Min River and their hydrological conditions are subjected to the influence of tide from Min River and the operations of flood gates along the rivers. Flood control is the primary function of these inland rivers. Most of these inland rivers have little natural runoff other than the wastewater discharge to them. The inland rivers in the city require flow augmentation from Min River to flush their stagnant water, typically with a total flow of about 30 m³/s.

Min River is the largest river in Fuzhou, and traverses Fuzhou from the northwest to southeast, with a total length of approximately 150 km. The main trunk of Min River was divided into the northern and southern branches at Huaiian by Nantai Island. Min River has a large water flow and the annual average flow is about 1,713 m³/s, and average annual runoff flow reaches 55.1 billion m³. Min River is the most important water source and is also the primary receiving water body for wastewater, and navigation channel for the Fuzhou urban area.

Native vegetation has been damaged by human activities, and currently secondary and planted vegetation forms a relatively simple biota structure. There are no large wild animals inhabiting within the Project area, and most of the wild animals are mice. There are two small wetlands in the eastern Nantai Island that are major bird habitat areas. There are no forests (secondary or native), nature reserves, rare or endangered species in the Project area.

The predominant industries in Fuzhou include machinery, metallurgy, electronics, light industry, food, textile, pharmaceutical and high tech. The gross domestic product (GDP) of Fuzhou in 2009 was CNY 252,428 billion, approximately CNY 36,851 per capita.

II. CIVIL WORK CONSTRUCTION PROGRESS

The implementation agency (IA) for Components A and B is the Fuzhou Water Environment Construction and Development Company (FWECDC), while the Fuzhou Urban Visual Construction and Development Company (FUVCDC) is the IA for Component C. They have the ultimate responsibility for all aspects of Project construction including environmental protection and adverse impact mitigation during the construction.

2.1 Component A - Yangli Phase 2 Sewer Networks

To date, nine out of the ten civil works contracts have been awarded. With 8 contracts completed, only one contract is ongoing in this reporting period. Construction of the related Yangli WWTP Phase II extension was completed in Oct 2008 and has since then been operational.

2.2 Component B - Lianban Sewer Networks

All of the eight civil works contracts have been awarded. One contract was terminated and its outstanding work scope has been incorporated into the last contract which is about to start construction. Construction of the remaining 6 contracts is ongoing during the reporting period. The associated Lianban Wastewater Treatment Plant (WWTP) being implemented using a BOT approach, was awarded to Tsinghua Tongfang Co., Ltd in May 2009. Its construction started in Jul 2009 and is ongoing.

2.3 Component C - Nantai Island Inland Creek Rehabilitation

As of 31 May 2010, 6 out of the total 15 civil contracts have been awarded involving the Yuejin, Longjin, Puxia, Linpu and Lianban rivers, 5 of which are under construction. The implementation of the actual resettlement and construction progress has been slow. On this basis, Component C is presently expected to be completed by December 2011, two years later than originally planned.
III. ENVIRONMENTAL INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING

3.1 Institutional Arrangements and Improvement

The environmental management system which was established during the inception stage of the Project implementation consultancy (see the May 2008 Semi-Annual Environmental Report) has progressively been improved and strengthened. All newly awarded civil contracts have been managed with personnel designated for environmental management, monitoring, supervision and reporting for the respective components. Their responsibilities and areas for coordination are also clearly defined.

3.2 Responsibilities and Performance

FPMO

The FPMO continues to play critical roles in the overall management establishing policies, report review, monitoring and coordinating of environmental management, and also in coordination with ADB, the IAs, B&V and related government departments. During this reporting period, the FPMO continues to actively coordinate with the related parties including FMG, FMEPB, Fuzhou Environmental Monitoring Station (FEMS) and IAs on the implementation of external environmental monitoring (EEM). The monitoring exercises have been ongoing since Jul 2009.

IAs

The two IAs, FWECDC and FUVCDC have designated environmental personnel whose relevant duties and performance to date are shown in Appendix 1a.

Contractors

The contractors appointed for the ongoing civil work contracts under Components A, B and C have designated staff from their site management team to be responsible for internal monitoring and management at each construction section. The designated environmental personnel of the contractors are shown in Appendix 1b which also shows their relevant duties and performance to date.

Construction Supervision Companies

To date, four construction supervision companies (CSCs) have been appointed:

- For Component A - Fuzhou Chengjian Construction Supervision Co., Ltd;
- For Component B - Guangzhou Municipal Engineering Supervision Co., Ltd;
- For Component C - (i) Fuzhou Minshui Engineering Construction Supervision Co., Ltd for Longjin Contract C1, and Yuejin Contracts C1 and C2; and (ii) Chongqing River Engineering Construction Supervision Co., Ltd for Puxia Contracts C1 and C1.

The CSCs have appointed their respective environmental supervision engineers to be responsible for environmental supervision for all awarded civil work contracts. The designated environmental supervision engineers of the CSCs and their relevant duties and performance to date are shown in Appendix 1c.

Environmental Monitoring Consultant

B&V’s Environmental Monitoring Consultant (EMC) has assisted FPMO in supervising and coordinating the implementation of the environmental management plans (EMPs), and in the preparation of this Semi-Annual Environmental Report (as of 31 May 2010).
3.3 Training and Capacity Strengthening

In order to ensure all personnel directly involved in environmental management are appropriately qualified in undertaking their designated tasks, a series of training sessions on environmental management were conducted by B&V’s EMC. These training sessions provided an understanding of and advised on the following environmental aspects related to the project implementation to related environmental management personnel.

- ADB’s environmental policies and guidelines;
- ADB’s environmental management requirements on project implementation;
- PRC’s environmental policies and regulations throughout the project cycle;
- Environmental monitoring in project implementation and final environmental acceptance;
- Ecological protection in project implementation; and
- Cultural relics discovery and protection in project construction.

Further training will be arranged as necessary.

3.4 Reporting

From the inception of the implementation consultancy to 31 May 2010, the following environmental reports have been prepared for the Project:

- Environmental sections in the Inception Report, by B&V;
- Environmental supervision monthly reports for the ongoing contracts under Component A, by the Fuzhou Chengjian Construction Supervision Co. Ltd;
- Environmental supervision monthly reports for the ongoing contracts under Component B, by the Guangzhou Municipal Engineering Supervision Co. Ltd;
- Environmental supervision monthly reports for the ongoing Yuejin and Longjin rivers contracts under Component C, by the Fuzhou Minshui Engineering Construction Supervision Co., Ltd;
- Environmental supervision monthly reports for the ongoing Puxia river contracts under Component C, by the Chongqing River Engineering Construction Supervision Co., Ltd;
- Semi-annual environmental management reports, by the two IAs;
- Environmental monitoring reports, by FEMS;
- Environmental section in the semi-annual progress reports, by B&V; and
- Semi-annual environmental reports, by B&V.

Semi-Annual Environmental Reports

The previous four semi-annual environmental reports were submitted to ADB in Jun 2008, Jan 2009, Jun 2009 and Jan 2010 respectively. ADB has given comprehensive comments after reviewing the reports. FPMO’s responses to ADB’s comments on each report have been made, and those for the last Nov 2009 Semi-annual environmental report are presented in Appendix 4.

This May 2010 Semi-Annual Environmental Report is to be submitted to ADB by the end of Jun 2010. Subsequent submission of the semi-annual environmental reports would remain be at 6 monthly intervals in December and June.

Other Reports

The environmental supervision engineers compile monthly reports on all ongoing contracts under their supervision in a timely manner, and the reports’ quality has gradually been improving with provision of specific mitigation measures for each contract. Both FWECDC and FUVCDC duly prepare and submit their semi-annual environmental reports.

IV. IMPLEMENTATION OF MITIGATION MEASURES

The EMPs have been incorporated in the contract documents by the two IAs according to ADB’s requirements. The contractors have implemented proper measures to mitigate unfavorable environmental impacts produced in construction phase. The implemented measures are
generally in line with the EMPs.

4.1 Component A - Yangli Phase II Sewers

Construction activities in Component A were little in this reporting period, and the contractor implemented proper measures to mitigate any unfavorable environmental impacts produced in construction. The associated Yangli WWTP Phase II Extension Work has been operational since Oct 2008. Mitigation measures for the operation phase are implemented, and environmental monitoring exercises are conducted in accordance with the local EPB’s requirements. Detailed mitigation measures implemented are presented in Appendix 2a.

4.2 Component B - Lianban Sewers

In this reporting period, proper mitigation measures were implemented by the contractors to mitigate unfavorable environmental impacts. Construction of the associated Lianban WWTP work is ongoing. The contractor implements proper measures to mitigate unfavorable environmental impacts according to the EIA requirements. Detailed mitigation measures implemented are presented in Appendix 2b.

4.3 Component C - Nantai Island Creek Rehabilitation

Civil construction activities under Component C such as earth excavation and river bank lining have produced some unfavorable environmental impacts such as dust and noise etc. Proper implementation of mitigation measures by the contractors has mitigated the impacts. However, some problems still exist. For example, the demolition waste has still not been disposed of from Gaohu Village along the Yuejin River, causing negative impacts on traffic and the local residents’ living environment. Detailed mitigation measures implemented are presented in Appendix 2c.

V. ENVIRONMENTAL MONITORING AND ENVIRONMENTAL QUALITY

5.1 Environmental Monitoring

A. Internal Environmental Monitoring

Internal environmental monitoring at construction sites has been conducted by contractors’ qualified personnel and supervised by CSCs and reported via monthly reports. The internal monitoring results have shown that except that the demolition wastes at Gaohu Village have not been removed, the environment has generally been well maintained in the Project.

B. External Environmental Monitoring

FEMS under FMEPB has been engaged to undertake the external environmental monitoring exercises involved in the Project. No monitoring exercise was conducted in this reporting period. FEMS has selected the relevant monitoring data of their regular monitoring points for the preparation of this semi-annual environmental report (as presented in Section 5.2 below).

5.2 Environmental Quality

5.2.1 General Environmental Situation of Fuzhou Urban Area

Water: Information in FMEPB’s website shows that from Dec 2009 to Apr 2010, the water quality of the Min River (Fuzhou Kuiqi section) was of Class III standard, which remained satisfactory. It also shows that in the forth quarter of 2009 and the first quarter of 2010, only 50% of the monitored inland creeks in the Fuzhou urban area met national standard. This indicates that the water quality of the creeks was generally not good.

Air: According to information in FMEPB’s website, the ambient air quality during the five months from Dec 2009 to Apr 2010 in the reporting period was acceptable with the Air Pollution Index (API) being 60, 70, 44, 92 and 58 respectively which are within the acceptable range of API from 0 to 50 (Class I) or 51 to 100 (Class II).
**Noise:** As one of the key national environmental protection cities, 24-hour continuous noise monitoring is conducted in the built-up areas of Fuzhou. It shows that in the forth quarter of 2009, 60% of the day and night time monitoring results met national standards, which shows the sonic environmental quality was still not satisfactory.

**5.2.2 Environmental Situation of the Project Area**

It is shown from the monitoring data provided by FPMO that in this reporting period, the water quality of the Yuejin and Longjin rivers is still worse than Class V; and the ambient air quality in the Project area met the relevant standards. The monitoring results did not show that the construction of the Project has had unfavorable impacts on the environment of the Project area. Details are presented in Appendix 3.

**VI. CONCLUSIONS AND RECOMMENDATIONS**

In this reporting period, the contractors have implemented proper measures to mitigate unfavorable environmental impacts produced in construction. The monitoring and evaluation exercise has revealed that the EMPs are generally being satisfactorily implemented, and the following conclusions can be drawn:

- The environmental management system which was established during the inception stage of the Project implementation consultancy has progressively been improved and strengthened. Under the coordination of the FPMO, all related parties have cooperated for better implementation of the EMPs and to comply with the environmental requirement of the Project Agreement.

- For the ongoing contracts, noise, dust and solid waste pollution during construction have been minimized through undertaking the relevant mitigation measures.

- The monitoring data collected from the local EPB’s website shows that the water quality of Min River is satisfactory and meet Class III standard. However, for the inland creeks, the water quality was poor. Within the whole Fuzhou urban area, the air quality is good, but the quality of the sonic environment remains less than satisfactory.

- Specific monitoring data for the Project area show that the water quality of the inland creeks is still poor and worse than Class V. However, the ambient air quality in the Project area meets relevant standards. There is no evidence to show that the construction of the Project has had unfavorable impacts on the environment of the Project area.
APPENDIX 1: ENVIRONMENTAL PERSONNEL AND PERFORMANCE

A1-1: IAs’ environmental personnel and performance
from 1 Dec 2009 to 31 May 2010

<table>
<thead>
<tr>
<th>Component</th>
<th>IA</th>
<th>Key Person</th>
<th>Contact</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Yangli Phase II Sewers</td>
<td>FWECDC</td>
<td>Director of Admin Office</td>
<td>Zhong Hongbin</td>
<td>0591-87886150 <a href="mailto:zhb@fzylws.com">zhb@fzylws.com</a> Implemented the EMPs; supervised and coordinated the Contractors and Supervision Company's environmental work; prepared Components A and B semi-annual environmental management performance report for the 1st half year of 2010; and assist in preparation of this May 2010 Semi-Annual Environmental Report.</td>
</tr>
<tr>
<td>B. Lianban Sewers</td>
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<tr>
<td>C. Nantai Island Inland Creek Rehabilitation</td>
<td>FUVCDC</td>
<td>Deputy General Manager</td>
<td>Zheng Yanbin</td>
<td>13705056313 <a href="mailto:zhangzuochao@hotmail.com">zhangzuochao@hotmail.com</a> Implemented the EMP; supervised and coordinated the Contractors and Supervision Company's environmental work; prepared Component C semi-annual environmental management performance report for the 1st half year of 2010; and assist in preparation of this May 2010 Semi-Annual Environmental Report.</td>
</tr>
</tbody>
</table>

DUTIES:
- to refine and implement the EMP;
- to ensure the mitigation and monitoring measures recommended in the EMPs and EIAs are incorporated into the design and bidding documents;
- to supervise and coordinate implementation of mitigation measures and internal monitoring in construction phase;
- to analyze internal monitoring weekly reports;
- to organize external compliance monitoring;
- to monitor and coordinate environmental supervision;
- to establish, organize and carry out training plan;
- to establish and implement publish consultation plan;
- to prepare semi-annual progress report and annual environmental report with assistance of the Consultant; and
- to undertake other related work as required.
## A1-2: Appointed CSCs’ Environmental Personnel and Performance

from 1 Dec 2009 to 31 May 2010

<table>
<thead>
<tr>
<th>Component</th>
<th>Construction Section</th>
<th>CSC</th>
<th>Key Person</th>
<th>Performance</th>
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<tbody>
<tr>
<td>A. Yangli Phase II Sewers</td>
<td>YGII-01, YGII-02,</td>
<td>Fuzhou Chengjian Construction Supervision Co., Ltd</td>
<td>Wang Li</td>
<td>Conducted environmental supervision; and prepared and submitted 1 monthly supervision report.</td>
</tr>
<tr>
<td></td>
<td>YGII-03, YGII-04,</td>
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<td></td>
<td>YGII-05, YGII-06,</td>
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<tr>
<td></td>
<td>YGII-07, YGII-08,</td>
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<tr>
<td></td>
<td>YGII-09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Lianban Sewers</td>
<td>LG-01, LG-02,</td>
<td>Guangzhou Municipal Engineering Supervision Co., Ltd</td>
<td>Zhang Qingyao</td>
<td>Conducted environmental supervision; and prepared and submitted 6 monthly supervision reports.</td>
</tr>
<tr>
<td></td>
<td>LG-03, LG-04,</td>
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<tr>
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<td>LG-05, LG-06,</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>LG-07, LG-08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Nantai Island Inland</td>
<td>Longjin Yuejin C1,</td>
<td>Fuzhou Minshui Engineering Construction Supervision Co., Ltd</td>
<td>Yang Zhongqi</td>
<td>Little construction activities, and no report was prepared in this reporting period.</td>
</tr>
<tr>
<td>Creeks Rehabilitation</td>
<td>Yuejin C2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Puxia C1, Puxia C2</td>
<td></td>
<td>Luo Yubing</td>
<td>Conducted environmental supervision; and prepared and submitted 6 monthly supervision reports.</td>
</tr>
</tbody>
</table>

**DUTIES:**

- to participate various review meetings and recommend environmental improvement to construction arrangements, technical issues, progress etc.;
- to review environmental performance of construction equipment;
- to supervise the implementation and any changes of mitigation measures;
- to inspect ambient environment and impacts;
- to report and help to deal with any environmental problems or accidents encountered;
- to prepare monthly environmental supervision report and submit to NPMO and the respective IA; and
- to participate in construction completion audit in terms of environmental aspects, and submit related reports or certification as needed.
### A1-3: Appointed contractors’ environmental personnel as of 30 Nov 2009
from 1 Dec 2009 to 31 May 2010

<table>
<thead>
<tr>
<th>Component</th>
<th>Construction Section</th>
<th>Contractor</th>
<th>Environmental Person</th>
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<tbody>
<tr>
<td><strong>A. Yangli Phase II Sewers</strong></td>
<td>YGII-01</td>
<td>Civil Engineering Company of China Construction Fifth Engineering Bureau</td>
<td>Gong Zhiyong</td>
</tr>
<tr>
<td></td>
<td>YGII-02</td>
<td>Fujian Rongshen Municipal Engineering Co., Ltd</td>
<td>Fang Jianlin</td>
</tr>
<tr>
<td></td>
<td>YGII-03</td>
<td>Civil Engineering Company of China Construction Fifth Engineering Bureau</td>
<td>Zhang Youhui</td>
</tr>
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<td></td>
<td>YGII-04</td>
<td>Zhejiang Dacheng Construction Group Co., Ltd</td>
<td>Cheng Yuanzhong</td>
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<td>YGII-05</td>
<td>Beijing House Development Group Municipal Engineering Co., Ltd</td>
<td>Chen Yingying</td>
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<td>YGII-06</td>
<td>Fujian Rongshen Municipal Engineering Co., Ltd</td>
<td>Rao Huiyu</td>
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<td>Beijing House Development Group Municipal Engineering Co., Ltd</td>
<td>Zhuang Guqing</td>
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<td>SCG Bridge Tunnel and Port Construction Co., Ltd</td>
<td>Ye Chaojun</td>
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<td>YGII-09</td>
<td>Fujian Rongsheng Municipal Engineering Co., Ltd</td>
<td>Chen Simin</td>
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<td><strong>B. Lianban Sewers</strong></td>
<td>LG-01</td>
<td>Civil Engineering Company of China Construction Fifth Engineering Bureau</td>
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<td>Shanghai Longyu Construction</td>
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<td>LG-03</td>
<td>Fujian Xinglong Road and Bridge Construction Co., Ltd</td>
<td>Lin Li</td>
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<td></td>
<td>LG-04</td>
<td>Fujian Jingrong Engineering Construction Co., Ltd</td>
<td>Fu Fugen</td>
</tr>
<tr>
<td></td>
<td>LG-05</td>
<td>Shenzhen Construction Co., Ltd</td>
<td>Yang Zhiwei</td>
</tr>
<tr>
<td></td>
<td>LG-06</td>
<td>Beijing House Development Group Municipal Engineering Co., Ltd</td>
<td>Yue Yuxiang</td>
</tr>
<tr>
<td></td>
<td>LG-07</td>
<td>SCG Bridge Tunnel and Port Construction Co., Ltd</td>
<td>Wang Zhen</td>
</tr>
<tr>
<td></td>
<td>LG-08</td>
<td>Chongqing Zhonghuan Construction Co., Ltd</td>
<td>Liu Dingxun</td>
</tr>
<tr>
<td><strong>C. Nantai Island Inland Creeks Rehabilitation</strong></td>
<td>Longjin</td>
<td>Shandong Yellow River Engineering Bureau</td>
<td>Li Xiang</td>
</tr>
<tr>
<td></td>
<td>Yuejin C1</td>
<td>Anhui Water Resources Development Co., Ltd</td>
<td>Guan Yong</td>
</tr>
<tr>
<td></td>
<td>Yuejin C2</td>
<td>Zhejiang Guangchuan Construction Co., Ltd</td>
<td>Wang Dongxu</td>
</tr>
<tr>
<td></td>
<td>Puxia C1</td>
<td>Gezhouba (Group) Shanzia Enterprise Co., Ltd</td>
<td>Ji Liaojuan</td>
</tr>
<tr>
<td></td>
<td>Puxia C2</td>
<td>Xiamen Anneng Construction Co., Ltd</td>
<td>Ling Zhong</td>
</tr>
</tbody>
</table>

**DUTIES:**

- to implement mitigation measures during construction phase;
- to establish internal monitoring plan and detailed action plan as needed;
- to carry out internal monitoring, maintain relevant records, produce weekly reports, and submit to the relevant CSC and IA;
- to participate relevant environmental training;
- to assist with public consultation;
- to assist with resolving environmental problems accoutered in construction; and
- to provide information and undertake other work as required.
APPENDIX 2: IMPLEMENTATION OF MITIGATION MEASURES IN CONSTRUCTION PHASE

2a: Implementation of Mitigation Measures in Construction Phase
for Component A

1. Construction Wastewater Treatment

Wastewater generated in the construction phase comprises the slurry water from pipe jacking, pumped groundwater from excavation and domestic wastewater from workers’ living quarters. The contractors implemented the following measures to prevent the wastewater from causing urban environment pollution.

- The slurry from pipe jacking is settled in containers established at site for sedimentation. All of the containers are emptied daily. The settled sludge is transported by enclosed trucks to designated locations for disposal. The supernatant is reused for pipe jacking or discharged into storm sewers.
- When groundwater is pumped out of excavation pits, it is similarly settled in sedimentation tanks before discharge into storm sewers. In order to avoid any muddy runoff flowing onto streets, brick or sandbag retaining walls have been built to block, and the contractors have taken action to clean the streets should the roads be dirtied.
- Domestic wastewater produced in construction camps is discharged into sewers for treatment at municipal treatment plants.

2. Dust and Exhaust Emission Control

Due to different subsoil conditions and groundwater distribution, some excavation sites are more prone to dust problems than others. Proper arrangements have been made to minimize the excavation areas and to use water spray to reduce dust. For areas where the groundwater table is shallow, the excavated materials are typically slurries and do not create dust nuisance. Covering or water spraying on exposed construction materials is carried out to prevent dust, and the excavated material storage duration is minimized to reduce the impact. Hoarding has been set up along the construction sites for closure, which helps minimize dust problems affecting the vicinity. Construction vehicles for dusty material or solid waste transportation are covered or enclosed with speed control. Periodical vehicular maintenance is carried out, and vehicles with emission exceeding the standards are not permitted to enter the construction sites.

3. Noise Control

Various types of construction machinery are used in construction including grabs, loaders, hoists, drilling machines, air compressors, water pumps, crushers, engines, trucks and so on. Their noise level normally ranges from 90 to 108 dB(A), which indicates they are all highly noisy machinery. Especially when breaking up road surfaces, the noise always creates significant impacts on the surrounding and nearby residents. Pipe jacking is adopted where appropriate in most contracts to reduce road opening, and construction section by section also shortens the duration of noise pollution at each section. Hoarding set up along the construction sites can work as sound barrier to screen out some construction noise. Construction machinery is arranged to be as far away from the residents as possible. Periodic maintenance and spot checks on noise emission are conducted by the contractors for all construction machinery. Working time was restricted from 7:30 am to 6:30 pm, and construction at night time was avoided as much as possible. No large scale construction activities are carried out at sensitive areas or during sensitive hours.
4. **Solid Waste Disposal**

Both pipe jacking and open excavation have been adopted as the key methods in pipe construction under Component A. The solid waste generated in construction mainly includes the excavated material from open trench or caisson excavation, pipe jacking slurry and dredged material from existing sewers. In general, pipe jacking reduces earth excavation. All excavated material has not been reused for backfilling but transported to landfills designated by the local solid waste management authority for disposal as excess excavated material. The slurry, dredged material and other construction wastes were sent to designated landfill. All solid wastes produced in construction were transported off site in a timely manner and in closed containers.

5. **Ecological Impact and Their Mitigation**

Some greenbelts or roads have to be temporarily occupied for construction. In such cases, the contractors have to report to and obtain approval from the relevant government departments. The use of pipe jacking has also reduced ground subsidence. In order to prevent soil erosion, hoarding was set up along the construction sites or retaining walls were built up to block any runoff. No excavation is allowed to be carried out on rainy days, and all solid waste generated during construction is timely transported off site to prevent stock piling at site for too long a period. After the construction is completed, the roads are reinstated. For the disturbed greenbelts, certain compensation is paid to the local garden management authority which is responsible for timely turfing and planting. All these mitigation measures have contributed to soil erosion control and urban ecological environment protection.

6. **Historic Cultural Relics Discovery and Protection**

During the reporting period, there is no report on historic cultural relics and old trees encountered at the construction sites.

7. **Social Impacts and Their Mitigation**

Pipe construction in the urban areas would bring certain inconvenience to local traffic, residents, and public facilities etc. In order to minimize the negative impacts, coordination meetings are held with public representatives for their better understanding of the Project and seeking their feedback and supervision. Besides, hoarding is set up along the construction site to separate the construction activities from social surroundings. Proper construction arrangements are made to avoid affecting existing pipelines and cables, and any affected facilities are timely repaired. Some roads are temporarily occupied for pipe construction, and this has impacts on local traffic. The contractors take active actions to reduce the impacts by constructing road diversions, putting up indication signs and appointing coordinators for traffic diversion and direction.

8. **Construction Camps Environmental Conditions**

The construction camps are apartments rented from local residents with well-equipped facilities and good sanitation. Domestic water comes from the municipal water supply system, and wastewater generated is discharged into local sewers. Domestic refuse from the camps is collected in garbage bins and transported away by the public sanitation department.

9. **Response to Emergencies**

The contractors have established a construction safety system, prepared emergency procedures, and equipped with security facilities. All these measures have been approved by the relevant government departments, and the related documentation is registered in local security examination stations. Security personnel appointed at each construction site conducts frequent inspections in order to timely detect any safety risks. All construction workers have been given safety training, and signed safety commitments. When violations are detected by the supervision engineers, they would be properly dealt with and timely rectified. Such violations are disclosed to all workers as case studies for learning purposes.
10. Environmental Protection and Monitoring Measures Implemented in Yangli WWTP

Construction of the Yangli WWTP Phase II extension was completed in Oct 2008, and operation has since been ongoing. Water quality of the effluent for both Phase I and Phase II can meet Class 1B of the Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant (GB18918-2002). The dewatered sludge was transported to Hongmiaoling Sanitary Landfill Site for disposal. A well equipped laboratory has been set up in the WWTP to carry out regular sampling and testing of influent, effluent and sludge. In addition, online monitoring facilities have been established and connected to FMEPB’s network enabling the wastewater flow and concentrations of COD, NH₃-N and total phosphorus to be continuously monitored by FMEPB. Their water use comes from the municipal water supply system, the wastewater within the WWTP is treated at the WWTP, and domestic garbage is collected and transported to designated landfill site in a timely manner.

2b: Implementation of Mitigation Measures in Construction Phase for Component B

1. Construction Wastewater Treatment

Wastewater generated in the construction phase comprises the slurry water from pipe jacking, pumped groundwater from excavation and domestic wastewater from construction camps. The slurry from pipe jacking is settled in containers, 3 in a series, established at site for primary sedimentation, secondary sedimentation and supernatant storage. All these containers are emptied daily. The settled sludge at the bottom is then transported to designated locations for disposal. Clear supernatant is reused in the pipe jacking operation or discharged into storm drains. Where required, groundwater is pumped out of excavations and is similarly settled in sedimentation tanks before discharge into storm sewers. Domestic wastewater generated is discharged into local sewers.

2. Dust and Exhaust Emission Control

Due to different subsoil conditions and groundwater distribution, some excavation sites are more prone to dust problems than others during construction. Proper arrangements have been made to minimize the excavation areas and to use water spray to reduce dust. For areas where the groundwater table is rather shallow, the excavated materials are typically slurries and do not create dust nuisance. Covering of or water spraying on exposed construction materials is carried out to prevent dust, and the excavated material storage duration is minimized to reduce the impact. Hoarding has been set up along the construction sites for closure, which helps minimize dust problems affecting the vicinity. Construction vehicles for dusty material or solid waste transportation are covered or enclosed with speed control. To control exhaust emission from construction machinery and vehicles, periodical vehicular maintenance is carried out. Vehicles with emission exceeding the standards are not permitted to enter the construction sites.

3. Noise Control

Various types of construction machinery are used in construction including grabs, loaders, hoists, drilling machines, air compressors, water pumps, crushers, engines, trucks and so on. Their noise level normally ranges from 90 to 108 dB(A), which indicates they are all highly noisy machinery. Especially when breaking up road surfaces, the noise always creates significant impacts on the surrounding and nearby residents. Pipe jacking is adopted where appropriate in most contracts to reduce road opening, and construction section by section also shortens the duration of noise pollution at each section. Hoarding set up along the construction sites can work as sound barrier to screen out some construction noise. Construction machinery is arranged to be as far away from the residents as possible. Periodic maintenance and spot check on noise emission are conducted by the contractors for all construction machinery. Working time was restricted from 7:30 am to 6:30 pm, and construction at night time was avoided as much as possible. No large scale construction activities are carried out at sensitive areas or during sensitive hours.
4. Solid Waste Disposal

Pipe jacking, pipe pulling and open excavation have been adopted as the key methods in pipe construction under Component B. The solid waste generated in construction mainly includes the excavated material from open trench or caisson excavation, pipe jacking slurry and, dredged material from existing sewers. All excavated material has not been reused for backfilling but transported to landfills designated by the local solid waste management authority for disposal as excess excavated material. The slurry, dredged material and other construction wastes were sent to designated landfill. All solid wastes produced in construction were transported off site in a timely manner and in closed containers.

5. Ecological Impacts and their Mitigation

Some greenbelts or roads have to be temporarily occupied for construction. In such cases, the contractors have to report to and obtain approval from the relevant government departments. The use of pipe jacking has reduced ground subsidence. In order to prevent soil erosion, hoarding was set up along the construction sites or retaining walls were built up to block any runoff. No excavation is allowed to be carried out on rainy days, and all solid waste generated during construction is timely transported off site to prevent stock piling at site for too long a period. After the construction is completed, the roads are reinstated. For the disturbed greenbelts, certain compensation is paid to the local garden management authority which is responsible for timely turfing and planting. All these mitigation measures have contributed to soil erosion control and urban ecological environment protection.

6. Historic Cultural Relic Discovery and Protection

To-date there is no report on historic cultural relics and old trees encountered at the construction sites.

7. Social Impacts and their Mitigation

Pipe construction in the urban areas would bring certain inconvenience to local traffic, residents, and public facilities etc. In order to minimize the negative impacts, coordination meetings are held with public representatives for their better understanding of the Project and seeking their feedback and supervision. Besides, hoarding or fencing is set up along the construction site to separate the construction activities from social surroundings. Proper construction arrangements are made to avoid affecting existing pipelines and cables, and any affected facilities are timely reinstated.

Designated traffic coordinators have been appointed by the contractors to be responsible for traffic diversion and direction. For some sections, the construction affects the entire width of the road. As such, discussions between the relevant parties were held to work out appropriate road diversion schemes. Also, safety and indication signs, night lighting and bulletin boards are set up to minimize traffic congestion caused by construction.

8. Construction Camps Environmental Conditions

One construction camp is established for each construction section under Component B for about 20 workers on average and 40 to 50 workers at peak time. The camps are apartments rented from local residents with well-equipped facilities and good sanitation. Domestic water comes from the municipal water supply system, and wastewater generated is discharged into local sewers. Domestic refuse from the camps is collected in garbage bins and transported away by the public sanitation department.

9. Response to Emergencies

The contractors have established a construction safety system, prepared emergency procedures, and equipped with security facilities. All these measures have been approved by the relevant government departments, and the related documentation is registered in local
security examination stations. Security personnel appointed at each construction site conducts frequent inspections in order to timely detect any safety risks. All construction workers have been given safety training, and signed safety commitments. Most of the workers execute their work in compliance with the safety rules. Some potential dangers or violation activities were identified by the supervision engineers and properly dealt with and timely rectified.

10. Environmental Protection and Monitoring Measures Implemented in Lianban WWTP

The Lianban WWTP is located in Lianban Village, Gaishan Township, Cangshan District. After the WWTP is completed, it will provide service to an area of more than 90 km² on the Nantai Island, covering the Cangshan District urban area and the other four areas including Gaishan, Chengmen, Jinshan and Jianxin. The WWTP can then treat both domestic and industrial wastewater, which will not only increase the wastewater treatment capacity of the Nantai Island, but also protect some drinking water sources located in Yuancuo to the north of the Min River and in Wulongjiang to the south of the Min River. Both the Lianban sewer network and Lianban WWTP are scheduled to complete by the end of 2010, so that potential impacts caused by untreated wastewater collected through the network to the Min River will then be avoided. The main structures of the WWTP Phase I project are under construction. The contractor has implemented mitigation measures as required by the full EIA for the Lianban WWTP to mitigate any unfavorable impacts produced in the construction phase.

2c: Implementation of Mitigation Measures in Construction Phase for Component C

1. Water Pollution Control

During construction within some original rivers under Component C, cofferdams for river diversion were constructed section by section to prevent re-suspending the river sediment from causing secondary pollution to the downstream areas. The major construction activities were backfilling and river excavation in this reporting period, which produced little wastewater. There is no specific labor camp established along the rivers. Workers are housed in rental residential houses in the urban areas. Domestic water is from the municipal water supply system, and wastewater generated is discharged into local sewers.

2. Dust and Exhaust Emission Control

Water content in the excavated earth in river work is rather high, so there is little dust produced during excavation. When excavation took place in dry and windy weather, the contractors would use water spray to reduce dust in a timely manner. To control exhaust emission from construction machinery and vehicles, periodical vehicular maintenance is carried out by the contractors. Vehicles with emission exceeding the standards are not permitted to enter the construction sites to minimize the impacts of exhaust emission on the ambient air.

3. Noise Control

Various types of construction machinery are used in construction including grabs, loaders, hoists, drilling machines, air compressors, water pumps, crushers, engines, trucks and so on. Their noise level normally ranges from 90 to 108 dB(A), which indicates they are all highly noisy machinery. Construction machinery is arranged to be as far away from sensitive points such as classrooms and residential apartments as possible. Periodic maintenance and spot checks on noise emission are conducted by the contractors for all construction machinery. Construction schedule has been arranged properly to reduce noise impacts on the nearby residents’ living, study and rest.

4. Solid Waste Disposal

As of 31 May 2010, demolition waste still remained at site in Gaohu Village along the Yuejin River, causing negative impacts on traffic and the local residents’ living environment. A dispute
between local residents and district government has prevented FUVCDC from accessing to the site. As such, no improvement to this issue has been made. It is reported by the IA that the material either is meant to be reused or will be transported to some designated landfill sites. It is suggested all reusable material for future backfilling be stockpiled at designated areas, and not spread over areas indiscriminately. Other recyclable waste should be promptly transported off site. All the other demolition waste should be disposed of off site at designated landfills. It is anticipated that the situation will be greatly improved once the actual river rehabilitation work commences. FUVCDC has been requested to coordinate the efforts, to obtain the necessary access, and dispose of the demolition waste off site as soon as possible, so as to facilitate the river rehabilitation work, and restore the local residents’ living environment.

During construction of other rivers, both the excavated earth and the dredged material from river channels are stockpiled along the river bank. It is reported by the contractors that the material is meant to be reused or transported to some appointed landfill sites. The contractors used suitable dredged material to construct temporary retaining walls along the rivers to prevent the dredged material flowing back into the rivers and avoid creating secondary environmental pollution.

5. Ecological Impacts and Their Mitigation

No excavation is allowed to be carried out on rainy days to prevent water and soil loss. Some greenbelts have to be temporarily occupied for construction. In such cases, the contractors have to report to and obtain approval from the relevant government departments. After the construction is completed at some construction sections, the lands are reinstated. In addition, slopes of the channel are reinstated with turfing after the construction of the whole river reaches. This not only contributes to landscaping but also plays a role in protecting the urban ecological environment.

6. Historic Cultural Relics Discovery and Protection

To-date there is no report on historic cultural relics and old trees encountered at the construction sites.

7. Social Impacts and Their Mitigation

River rehabilitation in the urban areas would bring certain inconvenience to local traffic, residents, and public facilities etc. In order to minimize the negative impacts, coordination meetings are held with public representatives for their better understanding of the Project and seeking their feedback and supervision. Besides, hoarding or fencing is set up along the construction site to separate the construction activities from social surroundings.

8. Response to Emergencies

The contractors have established a construction safety system, prepared emergency procedures, and equipped with security facilities. All these measures have been approved by the relevant government departments, and the related documentation is registered in local security examination stations. Security personnel appointed at each construction site conducts frequent inspections in order to timely detect any safety risks. All construction workers have been given safety training, and signed safety commitments. The identified potential dangers or violation activities are properly dealt with and timely rectified.
APPENDIX 3:
ENVIRONMENTAL QUALITY ASSESSMENT IN CONSTRUCTION PHASE

1. Introduction

FEMS has been engaged to undertake the external environmental monitoring exercises involved in the Project. No monitoring exercise is conducted in this reporting period. In order to make preparation of this semi-annual environmental report possible, FEMS has selected relevant information from their regular monitoring data to reflect the basic situation and changes in the environmental quality of the Project area.

2. Water Quality Monitoring and Assessment for the Project Rivers

The project related Longjin and Yuejin rivers are two of the regular monitoring rivers of the FEMS. The monitoring points of them are shown in Figure 1 of the above main text, and the parameters include permanganate index (COD$_{Mn}$) and ammonia nitrogen (NH$_3$-N). In this report, the average monitoring values of three comparable periods, the first halves of 2008, 2009 and 2010, have been selected to reflect the changes of the water quality.

<table>
<thead>
<tr>
<th>Rivers</th>
<th>1st half of 2008</th>
<th>1st half of 2009</th>
<th>1st half of 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NH$_3$-N</td>
<td>COD$_{Mn}$</td>
<td>NH$_3$-N</td>
</tr>
<tr>
<td>Yuejin</td>
<td>16.92</td>
<td>9.7</td>
<td>14.03</td>
</tr>
<tr>
<td>Longjin</td>
<td>17.67</td>
<td>9.9</td>
<td>14.92</td>
</tr>
</tbody>
</table>

Table A3-2: Standards for Basic Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Class V</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD$_{Mn}$ mg/L</td>
<td>≤ 2</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>NH$_3$-N mg/L</td>
<td>≤ 0.15</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Table A3-3: Water Quality Assessment Results of the Project Rivers

<table>
<thead>
<tr>
<th>Rivers</th>
<th>1st half of 2008</th>
<th>1st half of 2009</th>
<th>1st half of 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NH$_3$-N</td>
<td>COD$_{Mn}$</td>
<td>In General</td>
</tr>
<tr>
<td>Yuejin</td>
<td>&gt;V</td>
<td>IV</td>
<td>&gt;V</td>
</tr>
<tr>
<td>Longjin</td>
<td>&gt;V</td>
<td>IV</td>
<td>&gt;V</td>
</tr>
</tbody>
</table>

It can be seen from the above tables and figures that the level of the both NH$_3$-N and COD$_{Mn}$ in this reporting period has become higher than that in the same period of last year, but still lower than that in 2008 before construction commenced. The general water quality is still worse than Class V with NH$_3$-N significantly exceeding the standard. It is believed that the pollution of the
rivers mainly came from direct discharge of untreated domestic wastewater and leachate from domestic garbage indiscriminately discarded along the rivers. The results do not show that Project construction has contributed unfavorable impacts on the river water quality.

3. Ambient Air Monitoring and Assessment for the Project Area

Among the regular air monitoring points of the FEMS, only Fuzhou University, Tea Association and Fuzhou Normal School are located in the Project area. These relevant monitoring points are shown in Figure 1 of the above main text, and the parameter is inhalable particles (PM$_{10}$). In the same way, the average monitoring values of three comparable periods (first halves of 2008, 2009 and 2010) are used to reflect the changes of the air quality. The air monitoring data in the two periods for the three points is presented in Table A3-4, and the comparison can be seen in Figure A3-3.

Table A3-4: Ambient Air Monitoring and Assessment for PM$_{10}$

<table>
<thead>
<tr>
<th>Point</th>
<th>Average Monitoring Values</th>
<th>Standard Value *</th>
<th>Assessment Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st half of 2007</td>
<td>1st half of 2009</td>
<td>1st half of 2010</td>
</tr>
<tr>
<td>FZ University</td>
<td>0.077</td>
<td>0.074</td>
<td>0.075</td>
</tr>
<tr>
<td>Tea Association</td>
<td>0.0913</td>
<td>0.065</td>
<td>0.08</td>
</tr>
<tr>
<td>FZ Normal School</td>
<td>0.082</td>
<td>0.081</td>
<td>0.086</td>
</tr>
</tbody>
</table>

* Annually average value of Class II standard of the Ambient Air Quality Standard (GB 3095-1996)

![Figure A3-3: Comparison of PM$_{10}$ Level](image)

It can be seen from the above table and figure that the level of PM$_{10}$ in this reporting period has become higher than that in the same period of last year but still lower than that in 2008 before construction commenced, and the ambient air quality in the Project area was satisfactory and met the Class II standard of the Ambient Air Quality Standard (GB 3095-1996). The results do not show that Project construction has contributed unfavorable impacts on local ambient air quality.

4. Conclusions

In this reporting period, the general water quality of the Yuejin and Longjin rivers is still worse than Class V, which is mainly due to urban pollution along the rivers. The ambient air quality in the Project area met the relevant standards. The assessment results do not show that the construction of the Project has unfavorable impact on the environment.
### APPENDIX 4:
RESPONSES TO ADB’S COMMENTS ON LAST ENVIRONMENTAL REPORT

<table>
<thead>
<tr>
<th>No.</th>
<th>ADB’s Comments</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>We appreciate your submission of the semi-annual report as of 30 November 2009, which we received on 29 January 2010. The report is overall comprehensive. It is responsive both on the project implementation issues and on items raised by ADB on the previous (May 2009) semi-annual report.</td>
<td>No need to answer</td>
</tr>
<tr>
<td>2</td>
<td>We are pleased to note that the project’s environmental management system progressively improved. For civil contracts there are now appropriate environmental personnel for monitoring, managing, supervising and task reporting. It appears that responsibilities are clearly defined and there is good coordination between responsible parties for the Project.</td>
<td>No need to answer</td>
</tr>
<tr>
<td>3</td>
<td>We are very pleased that external environmental monitoring is now in place and is functioning.</td>
<td>No need to answer</td>
</tr>
<tr>
<td>4</td>
<td>The use of pipe jacking at project sites is appreciated. As the report mentions, this has reduced ground submerging and soil erosion.</td>
<td>No need to answer</td>
</tr>
<tr>
<td>5</td>
<td>It is also appreciated that public consultation is taking place during construction, including public feedback and acceptance of public supervision. This will minimize inconveniences during construction and improve mitigation efforts.</td>
<td>No need to answer</td>
</tr>
<tr>
<td>6</td>
<td>We are also pleased that the B&amp;V environmental management consultant (EMC) conducted much needed follow-up on capacity building training.</td>
<td>No need to answer</td>
</tr>
<tr>
<td>7</td>
<td>Project environmental reporting is steadily improving. There is a need to sustain this positive trend.</td>
<td>No need to answer</td>
</tr>
</tbody>
</table>

**Issues needing further attention**

<table>
<thead>
<tr>
<th>No.</th>
<th>ADB’s Comments</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>We would like to get your attention on the late submission of the report. The report is dated November 2009, but it was submitted to ADB only at the end of January 2010. While this may be an issue of translation, as the report was submitted in Chinese to FPMO, the semi-annual reports should be submitted to ADB on time.</td>
<td>The IAs will strive to timely collect and provide necessary information to facilitate FPMO in submitting future reports to ADB on time.</td>
</tr>
<tr>
<td>No.</td>
<td>ADB's Comments</td>
<td>Responses</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>9</td>
<td>It appears that project construction is facing difficulties in meeting the original schedule for construction due to land acquisition, resettlement progress, and difficult “geological conditions.” Further delays in project implementation could mean greater risks that project-affected people will feel construction related impacts. It would be beneficial to assess the situation and expedite project implementation as soon as possible.</td>
<td>The IAs, DIs, supervision companies, resettlement agencies and contractors are assessing the situation and working towards reducing the delays.</td>
</tr>
<tr>
<td>10</td>
<td>The report needs to be more precise in terms of impact mitigation. In the report, “no significant (secondary) pollution” was mentioned several times. It is not clear what is meant by that. The report has to explain whether the impacts are successfully mitigated, otherwise, it has to describe the issues, propose solutions and the timing of their implementation so that project impacts are mitigated as much as possible. If the scale of certain remaining impacts is beyond the SEIA/EMP expectation, these impacts have to be further addressed and mitigated. Example: first para of 4.2 refers to “no significant impacts”. This phrase is not clear. The following para explains that the potential impacts caused by untreated wastewater discharged will be mitigated by the end of 2010. Does this mean that all the issues raised in the previous para will be addressed?</td>
<td>It has already been described in the Report that mitigation measures were implemented to mitigate construction impacts, which could be demonstrated by the external environmental monitoring results. Nevertheless, remaining impacts produced by road closure, material transport and construction noise in crowded urban areas still affect local traffic and normal living condition to a certain extent. The impacts however are not unduly significant nor causing heavy losses of natural resources, nor beyond the SEIA/EMP expectation. The affected persons have thus far generally been understanding and accepted the construction activities and appreciated the mitigation measures. Therefore, “no significant pollution” means unavoidable but acceptable impacts produced in construction. The second para of Section 4.2 refers to wastewater mitigation measures in the operation period, which has no relation with what happens in the construction period stated in the first para.</td>
</tr>
<tr>
<td>11</td>
<td>Noise impacts are identified as exceeding standards and needing further attention. The report proposes specific measures to mitigate construction noise. Are these recommendations accepted and being implemented.</td>
<td>Comparing with noise produced from a factory, the noise produced in construction site is more difficult to mitigate. Currently in China, there is much civil works being undertaken in urban areas in many cities including Fuzhou. Coupled with urban traffic and other social activities, noise level exceeding standard is widespread in most cities. It is a common and unavoidable situation, but is only temporary while construction is ongoing. Along with construction activities becoming less and less and getting to complete, noise level would gradually go down. The IAs, CSCs and contractors are implementing mitigation measures for the actual situations.</td>
</tr>
<tr>
<td>12</td>
<td>While the reporting of construction supervision companies (CSC) is overall satisfactory, the reporting for the Yuejin and the Longjin rivers contracts under Component C is still pending. The PMO</td>
<td>The IA, FUVCDC will chase the CSC to improve the reporting work, and tighten their supervision to improve work quality and program.</td>
</tr>
</tbody>
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Jun 2010
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<thead>
<tr>
<th>No.</th>
<th>ADB’s Comments</th>
<th>Responses</th>
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<tbody>
<tr>
<td>13</td>
<td>Demolition waste at Gaoqiao Village. ADB supports the proposed solution to ensure that the demolition waste is removed from the project site as soon as possible. Please ensure that the temporary bridge is constructed soonest. While the proposed solution has been identified in the report, the bridge is yet to be erected. Please also ensure that the waste is disposed of to a safe location, i.e., to a controlled landfill.</td>
<td>“Gaoqiao Village” is a typographical error, and should read as “Gaohu Village”. So this item is the same question as the following Item 14. The IA is now coordinating relevant parties including Nanjing Government to try to resolve the demolition waste problem ASAP.</td>
</tr>
<tr>
<td>14</td>
<td>There is a similar issue for Gaohu Village along the Yulin River. The proposed solution in the report is appreciated. Please expedite the start up of the river rehabilitation work, as suggested.</td>
<td>See above Item 13.</td>
</tr>
<tr>
<td>15</td>
<td>Please also follow up on the appropriate storage of dredge material and leakage control for river side excavations.</td>
<td>The contractors normally use suitable dredged material to build temporary retaining walls along the rivers to prevent dredged material flowing back into the rivers.</td>
</tr>
<tr>
<td>16</td>
<td>Please follow up on the request for the Lianban WWTP BOT developer for the implementation and reporting on construction mitigation measures.</td>
<td>Construction of the Lianban WWTP is ongoing. The BOT developer has been implementing mitigation measures according to the approved Environmental Impact Assessment Report.</td>
</tr>
<tr>
<td>17</td>
<td>Appendix 2 states that the agricultural use of sludge is under consideration. There is a need to ensure the safety of sludge reuse through necessary testing and mitigation measures, e.g., batches of sludge that do not meet requirements shall be disposed at a landfill.</td>
<td>All dredged sludge produced in the Project is transported to designated landfill for disposal. Some of the dredged material is used for backfilling. All dewatered sludge from Yangli WWTP is transported to landfill site for disposal. Agricultural use of sludge is presently an initial thinking of the WWTP operators who are well aware of the necessity of testing and mitigation measures before agricultural use.</td>
</tr>
<tr>
<td>18</td>
<td>Of concern is the statement that sludge incineration for energy generation is “identified as a long term option.” The PMO and EMC should exercise caution as this option is highly sensitive, considering its climate change implications. As ADB is careful not to be amiss in this issue, we recommend that you fully consult the consultant team for TA 7083: Urban Wastewater Reuse and Sludge Utilization Policy Study that works on the development of the PRC-wide</td>
<td>Sludge incineration is just an initial thinking of Yangli WWTP operators. All dewatered sludge from the WWTP is transported to landfill for disposal. The WWTP is not part of the ADB Project, we would however inform the operator of ADB’s concern.</td>
</tr>
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<td>No.</td>
<td>ADB’s Comments</td>
<td>Responses</td>
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<td>19</td>
<td>You may also contact the team of the PRC: Wuhan Urban Environmental Improvement Project that successfully work on the issue of sludge beneficial use. The mission leader for the Wuhan project is Mr. Ping Zhuang and his e-mail is <a href="mailto:pzhuang@easen-group.com">pzhuang@easen-group.com</a>.</td>
<td>The WWTP is not part of the ADB Project, we would however inform the operator of ADB's concern.</td>
</tr>
<tr>
<td>20</td>
<td>Please also follow-up closely on the dredged material sampling for its safe beneficial use.</td>
<td>All dredged material produced in the Project is transported to designated landfill for disposal. Some of the dredged material is used for backfilling, which is presently considered the only way for beneficial reuse. No other beneficial use of dredged material is considered in the Project, nor mentioned in the Report.</td>
</tr>
<tr>
<td>21</td>
<td>We would appreciate continuous due diligence throughout project implementation.</td>
<td>We will continue due diligence throughout project implementation.</td>
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APPENDIX 5: PHOTOGRAPHS

Component B: Lianban Sewer Networks

Caisson excavation

Component B: Lianban Sewer Networks

Sewer construction site along green belt

Component B: Lianban Sewer Networks

Reinstated green belt after sewer construction
Component B: Lianban Sewer Networks

The Lianban WWTP construction site

Component C: Nantai Island Inland Creek Rehabilitation

Completed bank of the Puxia River reach near exhibition center

Component C: Nantai Island Inland Creek Rehabilitation

Completed bank of the Puxia River reach near exhibition center