Environmental Monitoring Report

Project Number: 46062-002
August 2016

PRC: Gansu Baiyin Integrated Urban Development Project

Prepared by Gansu Baiyin Project Management Office

Asian Development Bank

Environmental Monitoring Report

ADB Loan No. 3202-PRC
1st Annual Report (period from July 2015 to June 2016)
August 2016

PRC: Gansu Baiyin Integrated Urban Development Project

Prepared by Baiyin Project Management Office and HJI Group Corporation for the Asian Development Bank. Environmental monitoring by Baiyin City Environmental Protection Bureau Environment Monitoring Station

CURRENCY EQUIVALENTS
(as of August 2016)

CNY1.00	=	$0.15
$1.00	=	CNY6.62

NOTE

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I. INTRODUCTION

A. Report Purpose and Rationale

1. This Environmental Monitoring Report was prepared by the Consultants from HJI Group USA, third party environment monitor & supervision institution (Baiyin City Environmental Protection Bureau Environment Monitoring Station) and Baiyin Municipal Project Management Office (BMPMO) for Gansu Baiyin Integrated Urban Development Project. It is the first EMR based on supervision report by the third-party environment supervision institution and site survey results by consulting team, covering the period of July 2015 to June 2016.

2. This report presents project implementation progress, EMP implementation, supervision and monitoring institution configuration; environmental monitoring results; public participation; the grievance redress mechanism (GRM); as well an assessment of environmental impact mitigation measures implemented within and nearby the construction sites by the contractors during the construction in the project cities.

B. Project Objective and Components

3. The information summary of the Gansu Baiyin Integrated Urban Development Project financed by ADB is shown in **Table I.1**.

Table I.1: Project Key Data

Loan No.	3202-PRC
Project Name	Gansu Baiyin Integrated Urban Development Project
Borrower	People's Republic of China (PRC)
Executing Agency	Baiyin Municipal Government (BMG)
Loan Agreement Signing Date	27 Februay 2015
Loan Effective Date	25 May 2015
Estimated Project Completion Date	31 December 2019
Loan Closing Date	30 June 2020
Last ADB Mission Review Date	8 – 9 July 2015
Project Implementing Aagencies	(i) Liuchuan Industrial Park Management Committee; (ii) Baiyin Municipal Public Security Bureau Traffic Police Detachment; (iii) Baiyin Public Transportation Company; (iv) Jingyuan County Bureau of Human Resources and Social Security
Project Investment and Financing Plans	The total estimated investment is $ 212.66 million, of which ADB loans $ 100 million, the rest is the counterpart fund.

4. The project aims at promoting an inclusive and environmentally sustainable development in Baiyin. The outcome will be accelerated industrial transformation and economic diversification of Baiyin.

5. The project has four outputs:

(i) **Output 1: Liuchuan Industrial Park infrastructure development** – (i) a new water supply facility with treatment capacity of 60,000 cubic meters per day, a 14.4-kilometer (km) water transmission pipeline, and a 14.0-km water distribution pipeline network and other related facilities for water supply; (ii) a new wastewater treatment facility with treatment capacity of 35,000 cubic meters per day, sludge treatment facilities and other auxiliary systems, and a 37 km wastewater collection pipelines network and related facilities; and (iii) a 6.0-km road with related facilities including energy-saving streetlight, one bridge and one box culvert passing under the Beijing–Tibet expressway.

(ii) **Output 2: Technical and vocational education and training enhancement** – (i) development of long–term and short–term courses in Jingyuan County Secondary Vocational School and Jingyuan employment training centers; (ii) strengthen the labor market information system including information and communication technology equipment, a computer software and training for public employment services; and (iii) teacher training and workshops for competency-based skill training courses development.

(iii) **Output 3: Intelligent transportation systems installation** – (i) an intelligent traffic command center, signal control equipment, electronic police/video monitoring and violation recording/traffic guidance equipment and an operational software; and (ii) an operation center for the intelligent public bus service, public transport onboard equipment, stop and depot equipment, and an operational software.

(iv) **Output 4: Enhanced environmental management and capacity development** – (i) develop an environmental management system (EMS) that will be ISO 14001 certified for the LIP and pursue accreditation of an eco-industrial park under the PRC national standard by 2025; and (ii) strengthen institutional capacities for the project management and operation by providing expert support and advice on (a) project management including contract management, financial management, safeguard and social monitoring and capacity development activities on ADB regulations; and (b) design and implementation of the TVET subproject. The consulting services will support public awareness activities on subjects including road safety and provide training, seminars, workshops, and study tours on public financial management, industrial park development strategy and its environmental management, and innovative infrastructure financing options including public–private partnership.

C. Project Implementation Progress

6. **Liuchuan Industrial Park infrastructure development:** this output includes 15 civil works packages. Till report period, 3 civil works packages completed bidding process， including Wastewater: Construction Site Preparation Work (WW-C01), Wastewaer Collection Pipeline -1 (WW-C04) and Wastewaer Collection Pipeline - 2 (WW-C05).

7. The details include:

Wastewater: Construction Site Preparation Work (WW-C01)

8. The contract of Wastewater: Construction Site Preparation Work (WW-C01) was signed on October 19 2015. The contract term is 120 days. The main content of the contract is site formation for a new WWTP with the total area of the site of 12 ha. The construction was

completed.

Wastewater Collection Pipeline -1 (WW-C04) and Wastewater Collection Pipeline - 2 (WW-C05)

9. The main content of the two contracts is installing the wastewater collection pipeline with the total length of 37km. The installed pipeline length is about 24,169 m (including 1,250 m pressure pipeline along Dasha River), 403 sets of brick check wells. The completed contract value is CNY 23.40 million. About 19.61 million CNY was paid as counterpart fund.

10. The left 11 civil works packages and 2 equipment packages for Liuchuan Industrial Park infrastructure development are still under preparation or design phase.

11. The basic information of the implemented contract is listed in **Table I.2**:

Table I.2: The implemented contracts basic information

Contract	No.	Contractor	Supervision firm	Contract signing
Wastewater: Construction Site Preparation Work (WW-C01)	WW-C01	The 21st Metallurgical Construction Limmited Corporation	Gansu Xingchi Construction Supervision Co., Ltd.	2015/10/19
Wastewater Collection Pipeline -1	WW-C04	Gansu Mechanization Construction Engineering Co., Ltd.		2015/3/20
Wastewater Collection Pipeline -2	WW-C05	Zhongye Jingcheng Engineering Technical Co., Ltd.		2015/3/20

12. Technical and vocational education and training enhancement – this output includes 1 civil works package: the bidding document of TVET training center upgrade (TV-C01) is still under preparation.

II. INSTITUTIONAL SETUP AND RESPONSIBILITIES FOR EMP IMPLEMENTATION AND SUPERVISION

A. Institutional responsibilities for environmental management

13. **Executive Agency.** Baiyin Municipal Government (BMG) is the project **Executing Agency (EA)**. The EA is responsible for communication with ADB, loan on-lending and repayment, as well as supervision and guidance of the Baiyin Project Management Office (BPMO) and implementing agencies (IAs) during the project implementation. A **Project Leading Group (PLG)** has been established, chaired by the mayor and comprises senior officials from relevant government agencies, to facilitate inter-agency coordination, and resolve any institutional problems affecting project implementation at municipal level.

14. **Project Management Offices.** The **Baiyin Project Management Office (BPMO)** established under the BMG and based on Baiyin Development and Reform Commission will be in charge of project coordination, will (i) ensure provision of counterpart funding, (ii) engage and supervise engineering design institutes, tendering company and the project management consulting service during project implementation, and (iii) report on progress to BMG and ADB. With regard to environment, BPMO will appoint an environmental management lead (EML) to coordinate environmental issues associated with each infrastructure component, subcomponent and contract package. The EML will take charge of (i) coordinating the implementation of the EMP and developing implementation details; (ii) supervising the implementation of mitigation measures during project construction and operation; (iii) ensuring that environmental management, monitoring, and mitigation measures are incorporated into bidding documents, construction contracts and operation management plans; (iv) submitting annual EMP monitoring and progress reports to ADB; (v) coordinating the local grievance redress mechanism (GRM); and (vi) responding to any unforeseen adverse impact beyond those mentioned in the DEIA, the project IEE and the EMP. The EML will be technically supported by the loan implementation environment consultant (LIEC) and they will jointly check the overall implementation of environmental management provisions of the EMP.

15. **Liuchuan Industrial Park Management Committee (LMC)** will be the Implementing Agency (IA) of Project component 1 (basic infrastructure in LIP) and the Environmental Management System (EMS) subcomponent of Project component 4. LMC will (i) establish an environment management unit (EMU) to coordinate EMP implementation. The EMU will also coordinate EMS subcomponent implementation; (ii) contract the Baiyin City Environmental Protection Bureau Environment Monitoring Station to conduct regular environment monitoring during project implementation in accordance with the monitoring plan defined in Table EMP-5; (iii) engage the construction supervision companies (CSCs) including environment supervision staff to supervise civil works contractors. Both the Baiyin Transport Police Department and the Baiyin Transport Management Company will be the IAs for the ITS component, while the Jingyuan county human resource and social security bureau will be the IA for the TVET component, which will comply with the related requirement of EMP during the implementation of the project.

16. **Loan implementation environment consultants (LIEC).** A LIEC has been hired under the loan implementation consultancy services. The LIECs advise the PMOs, contractors and the CSCs on all aspects of environmental management and monitoring for the project. The LIECs (i) assist the PMOs to update the EMP and environmental monitoring

program; (ii) verify the implementation of the mitigation measures specified in the EMP; (iii) review internal and compliance monitoring reports and prepare annual environment performance/monitoring report; (iv) provide training to PMOs, CSCs, contractors on environmental laws, regulations and policies, SPS 2009, EMP implementation, GRM, etc; (v) identify any environment-related implementation issues, propose necessary corrective actions, and reflect these in a corrective action plan; and (vi) undertake site visits as required.

17. **Construction contractors.** Construction contractors are responsible for implementing relevant mitigation measures and internal monitoring during construction with the help of CSCs and under the supervision of the city EPBs. Each contractor must appoint an environment, health and safety officer (EHSO) to supervise the implementation of the on-site environment, health and safety management plan (EHSMP).

18. **Construction supervision companies (CSCs).** CSCs are selected through PRC bidding procedure by the PMOs. The CSCs are responsible for supervising construction progress and quality, and EMP implementation on construction sites. Each CSC must at least one environmental engineer on each construction site to: (i) supervise contractor's EMP and EHSMP implementation performance; (ii) conduct internal environmental inspection and monitoring; (iii) fill out monthly environmental performance forms to be submitted to the PMO.

19. **Environmental monitoring stations (EMS).** Baiyin Environmental Monitoring Station (BEMS) has been engaged to conduct the periodic environmental monitoring work. The first monitoring report has been submitted to the PMO and the consultants, and the LICE has prepared the external environmental monitoring report base on the provided monitoring data and the ADB's requirement.

20. The following table lists staff and personnel of the PMO, as well as the LIEC in charge of EMP implementation, supervision and monitoring (status August 2016).

Table III.1: Main EMP implementation responsibilities (Status August 2016)

Agency/Institution	Person in charge	Contact information (email, phone)
PMO	*Zhang Shixiong*	*Mail: 2861645463@qq.com; Cell: 15193065485*
LMC	Wang Chong	Mail: 2653854918@qq.com; Cell: 18089431681
LIEC	Wang Zhe	Mail: zwang@hjigroup.com, Cell: 15620800703,

III. COMPLIANCE WITH ENVIRONMENT RELATED PROJECT COVENANTS

21. Compliance with covenants defined in the Loan Agreement and Project Agreement that directly or indirectly refer to environment, health and safety, and the implementation of the EMP, is rated **satisfactory.** The project complies with most covenants, with some not yet due. A list of loan covenants and compliance status is shown **Table III.1** below.

Table III.1: Compliance with environment related project covenants

Covenants	Reference to Loan Documents	Status of Compliance
LOAN AGREEMENT		
The Borrower shall cause BMG not to award any Works contracts until: the BMG and PIAs have incorporated the relevant provisions from the EMP into the Works contract.	Schedule 4 Procurement of Goods, Works and Consulting Services General 7	Being complied with.

Covenants	Reference to Loan Documents	Status of Compliance
PROJECT AGREEMENT		
a) GPG and BMG shall ensure, and cause the PIAs to ensure, that the preparation, design, construction, implementation, operation and decommissioning of the Project, components, subcomponents and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the IEE, the EMP, and any corrective or preventative actions (i) set forth in a Safeguards Monitoring Report; or (ii) subsequently agreed between ADB, GPG and BMG. GPG and BMG shall cause the PIAs to incorporate such respective mitigation and monitoring measures into the design and bidding documents and construction contracts.	SCHEDULE Execution of Project; Environmental, Social and Financial Matters - Environment	Being complied with
b) GPG and BMG shall ensure that a Water Source Protection Zone will be developed and enforced in the Yellow River upstream of the Project's water supply intake location, meeting the Borrower's standards before commencement of regular operations of the water supply plant (excluding testing period).		Not yet due
c) GPG and BMG shall cause LMC to implement the necessary noise mitigation measures along the project road according to the requirements specified in the EMP and applicable national environmental protection regulations.		Not yet due
d) GPG and BMG shall cause LMC to ensure that (i) an environment management unit (EMU) is established under LMC; and (ii) this EMU is provided necessary budgetary and human resources to develop, implement and maintain an environmental management system (EMS) for the Liuchuan Industrial Park (LIP). BMG and LMC shall be fully committed to the goals and objectives of the EMS program including the ISO14001 certification by 2020, and eco-industrial park accreditation under the PRC Standard for Sector-Integrated Eco-Industrial Parks (HJ 274-2009) by 2025.		Partly complied with (EMS is not established yet.)
e) GPG and BMG shall ensure, and cause LMC to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to: ➢ comply with the measures relevant to the contractors set forth in the IEE, the EMP, and the RP (to the extent they concern impacts on the respective affected people under the Environmental Safeguards and the Involuntary Resettlement Safeguards during construction), and any corrective or preventative actions set forth in (i) a Safeguards Monitoring Report or (ii) subsequently agreed between ADB and BMG; ➢ monitor relevant environmental impacts caused by the construction and installation activities and report to the project management office; ➢ make available a budget for all such environmental and social measures; ➢ provide LMC with a written notice of any unanticipated environmental, or resettlement and social risks or impacts that arise during construction, implementation or	Execution of Project; Environmental, Social and Financial Matters - Safeguards-Related Provisions in Bidding Documents and Works Contracts	Being complied with

Covenants	Reference to Loan Documents	Status of Compliance
operation of the project that were not considered in the IEE, the EMP, and the RP;		
f) GPG and BMG shall ensure that separate safeguards grievance redress mechanisms acceptable to ADB are established in accordance with the provisions of the IEE and RP at its project management office, within the timeframes specified in the relevant IEE and RP, to consider safeguards complaints.	Execution of Project; Environmental, Social and Financial Matters - Safeguards Grievance Redress Mechanism	Has been established

IV. ASSESSMENT OF PROJECT READINESS

22. The project's readiness in terms of environmental management was assessed by the LIEC based on the indicators listed below and derived from the project EMP (Table EMP-4). Project readiness is rated **satisfactory**. Environmental commitments are being carried out and environmental management systems are in place for civil work contracts that have been awarded. Environment supervision is in place (as described in Section III of this report).

Table IV.1: Project Readiness Assessment Indicators (adjusted from EMP, Table A2.10)

Indicator	Criteria	Assessment	*Comments*
EMP update	• The EMP was updated after technical detail design, and approved by ADB	***Yes***	*The updated EMP is included in this 1st EMR (Aug 2016)*
Compliance with loan covenants	• The borrower complies with loan covenants related to project design and environmental management planning	***Yes***	*See Section IV.*
Public involvement effectiveness	• Meaningful consultation completed	***Yes***	*See Section VIII.*
	• GRM established with entry points	**Yes**	
Environmental Supervision in place	• Environmental Management Unit established by LMC • LIEC contracted • Environment specialist appointed by BPMO • Environment monitoring center (EMC) and CSCs contracted by LMC • Community environment supervisors (CES) confirmed and informed	***Yes*** ***Yes*** ***Yes*** ***Yes*** ***Yes***	
Bidding documents and contracts with environmental safeguards	• Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances • Bidding documents and contracts incorporating the impact mitigation and environmental management provisions of the EMP • Environmental requirements of EMP included in contract documents for construction contracts	Yes Yes Yes	*See Section III*
EMP financial support	• The required funds have been set aside by	Yes	

Indicator	Criteria	Assessment	*Comments*
	contractors, LMC and BPMO to support the EMP implementation		

V. ENVIRONMENTAL MITIGATIONS MEASURES IMPLEMENTED IN THE REPORTING PERIOD

23. All contractors, prior to construction, prepared **site-EMPs** on the basis of the project EMP. Contractors and the CSCs assigned specific personnel for their daily environmental management and supervision on site during construction. The LIEC conducted site visits, reviewed the site-EMPs prepared by the contractors, as checked the contractors compliance with the EMP and their site-EMPs, which is rated generally satisfactory. A detailed assessment of the project's compliance with the updated EMP for the pre-construction and construction phases is presented in **Table V.1** and **Table V.2**, respectively. Main measures implemented during construction (for contracts under implementation, see Table II.1) are highlighted below:

- Noise control: Construction activates are prohibited between 20:00 – 6:00. In noise sensitive areas, such as schools, hospitals and residential areas, low noise machineries should be used, and construction time must be strictly controlled; placement of temporary fence hoards or noise barriers to shield noise sources during construction if necessary.

- Dust control: Watering of road and construction site during windy days; Cover construction material/earth transport trucks before leaving the site; The trucks must follow the route approved by supervision engineers and local EPB; Particular attention should be paid to dust suppression adjacent to sensitive receptors such as schools, hospitals or residential areas; materials should be stored in appropriate places and covered.

- Solid waste: The domestic waste will be timely collected and carried to the places appointed by local public sanitary authority;

- Waste: All waste produced by the project should be handled in accordance with the requirements of the national environmental protection administration and the IA. All the construction vehicles and machineries should be periodic maintained; the oil and lubricating oil shall not be contaminated the ground and river; install the oil-water separator in the washing and refueling area; storage of fuel in quarantine area.

- Water and wastewater: Wastewater during construction must be treatment and controlled, recycled water will be used to spray for dust control; Latrines and seepage pits will be installed in any camps;

- Traffic congestion: Contractors considered impacts to traffic during construction. A traffic control and operation plan will be prepared and be approved by local traffic management administration prior to construction; the plan will include diverting or scheduling construction traffic to avoid morning and afternoon peak traffic hours, regulating traffic at the road crossings, building interim roads, selecting transport routes to reduce disturbance to regular traffic; reinstating the roads and opening to traffic as soon as completion of the construction.

- Emission from construction machinery: Asphalt plants and mixers will be sited as far away as possible (at least a minimum of 200 m downwind) from the nearest residential areas and other sensitive receptors; Vehicles and construction machinery should be properly maintained and will comply with emission standards.

- Soil erosion: An erosion protection plan will be developed and approved prior to construction; disturbed surfaces, such as borrow and fill areas, compacted pipeline trenches and cut banks will be properly sloped and/or revegetated to minimize erosion; limit construction and/or material handling during rain events and high winds to minimize wind erosion.

Table V.1: Updated EMP mitigation measures (pre-construction phase), Compliance Assessment

Potential Impacts and Issues	**Mitigation Measures defined in the EMP**	***Implementation status and compliance with EMP***
EMP implementation capacities	Appoint qualified environment specialist within the BPMO (environment management lead, EML); Contract loan implementation environment consultant (LIEC) within loan administration consultant services; Conduct environment management training Establish EMU under LMC Contracting of environmental monitoring center to conduct environment impact monitoring; Contract CSCs	*No significant change with that in the FSRs* *Partially complied with* *Complied with*
	Updating EMP	*The updated EMP is incorporated in this 1st EMR.*
Contract Documents	Prepare environment section in the terms of reference for bidders; Prepare environmental contract clauses for contractors, namely special conditions (e.g., reference to EMP and monitoring table).	*Environmental section was included in TOR for bidders, environmental clauses were included in contracts (Complied with)*
Grievance Redress Mechanism (GRM)	Development and implementation of GRM; Identify GRM entry points and brief them of their role.	*Yes*
Construction site planning	Develop CS-EMPs, responding to all clauses and requirements of this EMP, and including sub-plans such as: Site Drainage and Soil Erosion Management Plan Spill Management Plan; Waste Management Plan; Temporary Traffic Management Plan; Occupational Health and Safety Plan; Nomination of an Environmental Health and Safety officer in contractor's team	*Partially complied with*

Table V.2: Updated EMP mitigation measures (construction phase), Compliance Assessment

Media	Issue	Mitigation Measures defined in the updated EMP	*Implementation status and compliance with EMP*
Impact on soil	Excessive earthwork, inadequate spoil management	Manage earthwork and spoil in accordance with the water and soil conservation plan (2013); Use surplus soil within LIP for land leveling; Dispose excess spoil at designated spoil disposal site, at K4+870 of the water transmission line.	**Complied with** The excessive earthwork was used for other land preparation works in LIP.
	Soil erosion	Minimize trench width and depth to reduce spoil generation; Minimize duration of open trenches, and backfill immediately following pipe laying; Use settling ponds, silt fences and screens to prevent sediment transport; Construct intercepting ditches and drains to prevent runoff entering construction sites, and divert runoff from sites to existing drainage; Strip and stockpile topsoil, and cover or seed temporary soil stockpiles; graded soil must be separately stockpiled from other materials and be readily recoverable for reinstatement; Limit construction and material handling during periods of rains and high winds; Properly slope or re-vegetate disturbed surfaces, such as compacted pipeline trenches and cut banks; Slope stability must be undertaken and drains and sediment barriers must be installed as necessary and maintained until final reinstatement is completed; and Appropriately set up temporary construction camps and storage areas to minimize the land area required and impact on soil erosion.	**Complied with** Limit construction during periods of high winds. Water spray for dust control.
	Soil contamination	Properly store petroleum products, hazardous materials and wastes on impermeable surfaces in secured and covered areas, and use the best management practice to avoid soil contamination; Remove all construction wastes from the site to approved waste disposal sites; Establish emergency preparedness and response plan; and Provide spill cleanup measures and equipment at each construction site and require contractors to conduct	**Complied with** Petroleum waste collected in specific tank, cleaned by Jingyuan County Environment & Sanitary Office once a month

		training in emergency spill response procedures.	
Impact on hydrology and water quality	Surface and groundwater pollution caused by excessive siltation (soil erosion), accidental spills, construction wastewater disposal	During bridge construction, pump slurry to shore and properly dispose cutting materials; Develop contingency plans to control oil and other dangerous substances (Spill Management Plan) as part of the CS-EMP; Collect wastewater from construction activities in sedimentation tanks, retention ponds, and filter tanks to remove silts and oil; Equip all areas where construction equipment is being washed with water collection basins and sediment traps; Fuel storage, maintenance shop and vehicle cleaning areas must be stationed at least 500 m away from the Dasha River and the Yellow River; Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces, and provided with bunds and cleanup installations; Contractors' fuel suppliers must be properly licensed. They shall follow proper protocol for transferring fuel and the PRC standard of JT3145-88 (Transportation, Loading and Unloading of Dangerous or Harmful Goods); Locate labor camps at least 500 m from surface water bodies; Install mobile toilets and on-site wastewater pre-treatment systems at construction camps along with proper maintenance protocols. Monitor water quality (for pollutants such as SS, CODcr, oil, and grease) in the Dasha River and the Yellow River in accordance with the EMP monitoring program to identify and confirm results of the impact assessment and effectiveness of adopted mitigation measures	**Complied with** Fuel followed proper protocol for transferring fuel and the PRC standard of JT3145-88 (Transportation, Loading and Unloading of Dangerous or Harmful Goods)
Ambient Air	Dust (TSP) during construction; fumes and PM from asphalt mixing plant, vehicles	Spray water on construction site and roads to reduce dust from earthwork excavation, transport, loading and uploading and stacking; Avoid construction activities during strong windy days as possible; Transport the spoil and other solid waste in a timely manner. Cover the construction materials during temporary stacking and transport to avoid spillage and dust; The asphalt pavement construction should be done when the weather condition is conducive for pollutant diffusion; Maintain vehicles and construction machineries to a high standard to ensure efficient running and fuel-burning and compliance with the PRC emission standards (GB18352-2005, GB17691-2005, GB11340-	**Complied with** During construction water spray twice a week; limit construction during Winter period with high wind.

		2005, GB2847-2005, and GB18285-2005). Undertake regular site inspections and air quality monitoring in accordance with the monitoring plan;	
Noise	Excessive construction noise at sensitive receptors, including Nanshanwei village, Zhanghiachuan village, Xintian village residential houses within LIP,	Sensibly schedule construction activities, avoid noisy equipment working concurrently; Select advanced quiet equipment and construction method, and tightly control the use of self-provided generators; Maintain equipment and machinery in good working order; Undertake regular equipment maintenance, ensure compliance with PRC standard of GB 12523-2011; Operate between 06:00H-20:00H only and reach an agreement with LMC and LIP management and nearby residents regarding the timing of heavy machinery work, to avoid any unnecessary disturbances; Nighttime works should only be conducted in exceptional cases, and a permit should be obtained for that purpose; potentially affected people should be informed in advance; Control speed of bulldozer, excavator, crusher and other transport vehicles travelling on site, adopt noise reduction measures on equipment, strengthen equipment repair and maintenance to keep them in good working condition; Limit the speed of vehicles travelling on site (less than 8 km/h); Install noise-attenuation windows for 84hh along the project road where non-compliance with Category 2 in Environmental Quality Standards for Noise(GB3096-2008) is anticipated/monitored; Monitor noise within LIP and at nearby sensitive areas at regular intervals (as defined in the monitoring plan); Conduct monthly interviews with residents living adjacent to construction sites to identify community complaints about noise, and seek suggestions from community members to reduce noise annoyance. Community suggestions will be used to adjust work hours of noise-generating machinery.	**Complied with** Winter operate 9:00-18:00; Summer operate 8:00-17:00, construction area is 2 km away from the nearest resident area;
Vibration	Excessive vibration, especially at night	Operate between 06:00H-20:00H only and reach an agreement with LMC and nearby residents regarding the timing of heavy machinery work, to avoid excessive vibration impacts.	**Complied with** Winter operate 9:00-18:00; Summer operate 8:00-17:00, construction area is 2 km away from the nearest resident area;
Solid Waste	Municipal solid waste from	Maximize reuse/recycling of construction wastes;	**Complied with** Domestic waste

	workers camps, construction solid waste	Transport construction waste in enclosed containers; Establish enclosed waste collection points on site, with separation of domestic waste and construction waste and hazardous wastes; Set up centralized domestic waste collection point and transport offsite for disposal regularly by sanitation department; Use licensed contractors to remove wastes from the construction sites; Dispose spoil at designated disposal site. Backfilled area if not being used must be planted with vegetation to prevent soil erosion; Prohibit burning of waste.	collected in specific tank, cleaned by Jingyuan County Environment & Sanitary Office once a month
Flora and Fauna	Damage to flora and fauna resources	Protect existing vegetation near construction sites; Properly backfill, compact and re-vegetate pipeline trenches after pipeline installation; Protect existing trees and grassland during road, bridge, treatment plant and pipeline construction; where a tree has to be removed or an area of grassland disturbed, replant trees and re-vegetate the area immediately after construction; Only native plant species of local prevalence will be used for re-vegetation; and Identify, demarcate and protect sites where small animals, reptiles, and birds of common species live such as vegetated roadside areas, trees, inner areas of bridges and river riparian zones, etc.	**Complied with** The greening is planned to be built along both sides of the road. The greening will start after the road construction.
Socio-economic considerations	Physical Cultural Resources	Contractor must comply with PRC's Cultural Relics Protection Law and Cultural Relics Protection Law Implementation Regulations if such relics are discovered, stop work immediately and notify the relevant authorities, adopt protection measures and notify the Security Bureau to protect the site.	**Complied with** None.
Health and safety	Occ. health and safety	Provide a clean and sufficient supply of fresh water for construction sites and for all camps, offices and workshops; Provide an adequate number of latrines and other sanitary arrangements at construction sites and work camps, and ensure that they are cleaned and maintained in a hygienic state; Garbage receptacles at construction sites and camps will be set up, which will be periodically cleared to prevent outbreak of diseases; Provision of personal protective equipment (PPE) that is fit for the task to prevent injury and maintain hygiene standards. Workers should be trained in the correct selection, use and maintenance of PPE. An emergency response plan to take actions on accidents and emergencies will be prepared, including	**Complied with** Provide sufficient personal protective equipment to all workers. Provide safety training for employment of workers, provide periodically class iii safety education and disease prevention.

		environmental and public health emergencies associated with hazardous material spills and similar events; A fully equipped first-aid base in each construction camp will be organized; A records management system that will store and maintain easily retrievable records against loss or damage will be established. It will include documenting and reporting of occupational accidents, diseases, and incidents. The records will be reviewed during compliance monitoring and audits; Ensure that occupational health and safety matters are given a high degree of publicity to all persons regularly or occasionally on each construction site. Posters will be displayed prominently in relevant areas of the site; and Train all construction workers in basic sanitation, general health and safety matters, and on the specific hazards of their work. Implement site HIV/AIDS and other communicable diseases awareness and prevention program to target the local community and construction workers.	
	Community health and safety	Develop and implement temporary traffic control and operation plans, approved by local traffic management departments; Carefully and clearly mark pedestrian-safe access routes; If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours; Inform residents and businesses in advance through media of the construction activities, given the dates and duration of expected disruption; Place clear signs at construction sites in view of the public, warning people of potential dangers, informing on the GRM, and raising awareness on safety issues.	**Complied with** Construction area is a developing industrial park, traffic flow is small, road network is ok.
Environment management system (EMS) subcomponent implementation	Poor environment management of industrial park	Review, revise and finalize EMS proposal (defined in IEE, Appendix 2); Develop the EMS for LIP according to the design framework including policies, standards practices, budget, monitoring etc. Submit to ADB and BPMO for review and approval.	**Complied with Baiyin Monitoring Station monitored and proved report monthly.**

VI. SUMMARY OF ENVIRONMENTAL MONITORING

A. Monitoring plan and responsibilities

24. The project monitoring program focuses on the environment within the project's area of influence. Contractors and CSCs are conducting daily **internal environmental inspections and monitoring**. Inspection and monitoring results are documented in monthly internal environment inspection reports, submitted to the PMO and the LIEC (included as Appendix 2 to this EMR).

25. **Site inspections and EMP compliance verification** is conducted by the loan implementation environment consultants (LIEC) jointly with the PMO staff. The verification is done by means of construction site visits, reviewing contractors' monthly construction progress reports and specific conversations with contractors and CSCs. Results of the site inspections and EMP compliance verification are reported through the EMR (i.e., this report).

26. The local environmental monitoring stations (EMSs) were contracted by the project IAs to conduct **environment compliance monitoring** at construction sites, in accordance with the updated environment monitoring program show in **Table VI.1**, which is derived from the original monitoring plan defined in the EMP of the CEIA.

Table VI.1: Updated environmental compliance monitoring program

Subject	Parameter	Location	Frequency
Ambient air quality	TSP, SO2, NO2, PM10	At boundaries of all construction sites and at baseline monitoring points	1 day (24-hr continuous sampling), quarterly during construction period
Noise	LAeq	At boundaries of all construction sites and at baseline noise monitoring points	2 times per day (day time and night time); quarterly during construction period
Surface water quality	pH, COD, BOD5, TP, TN, SS, TPH	At baseline water monitoring points W1 and W2 (Dasha River), W3 and W4 (Yellow River)	1 time per day; quarterly during construction period
Soil quality	TPH, selected heavy metals	At baseline soil monitoring points	Quarterly during construction period
Soil erosion	Soil erosion protection measures, soil erosion intensity	12 locations as defined in the water and soil erosion control plan, including: raw water intake pump, preliminarily WTP, secondary WTP, WWTP, Xihuan road (2), spoil disposal sites (2), work camp, undisturbed sites with original topographical features (3).	Quarterly during construction period

Source: Adapted from project EMP, monitoring plan.

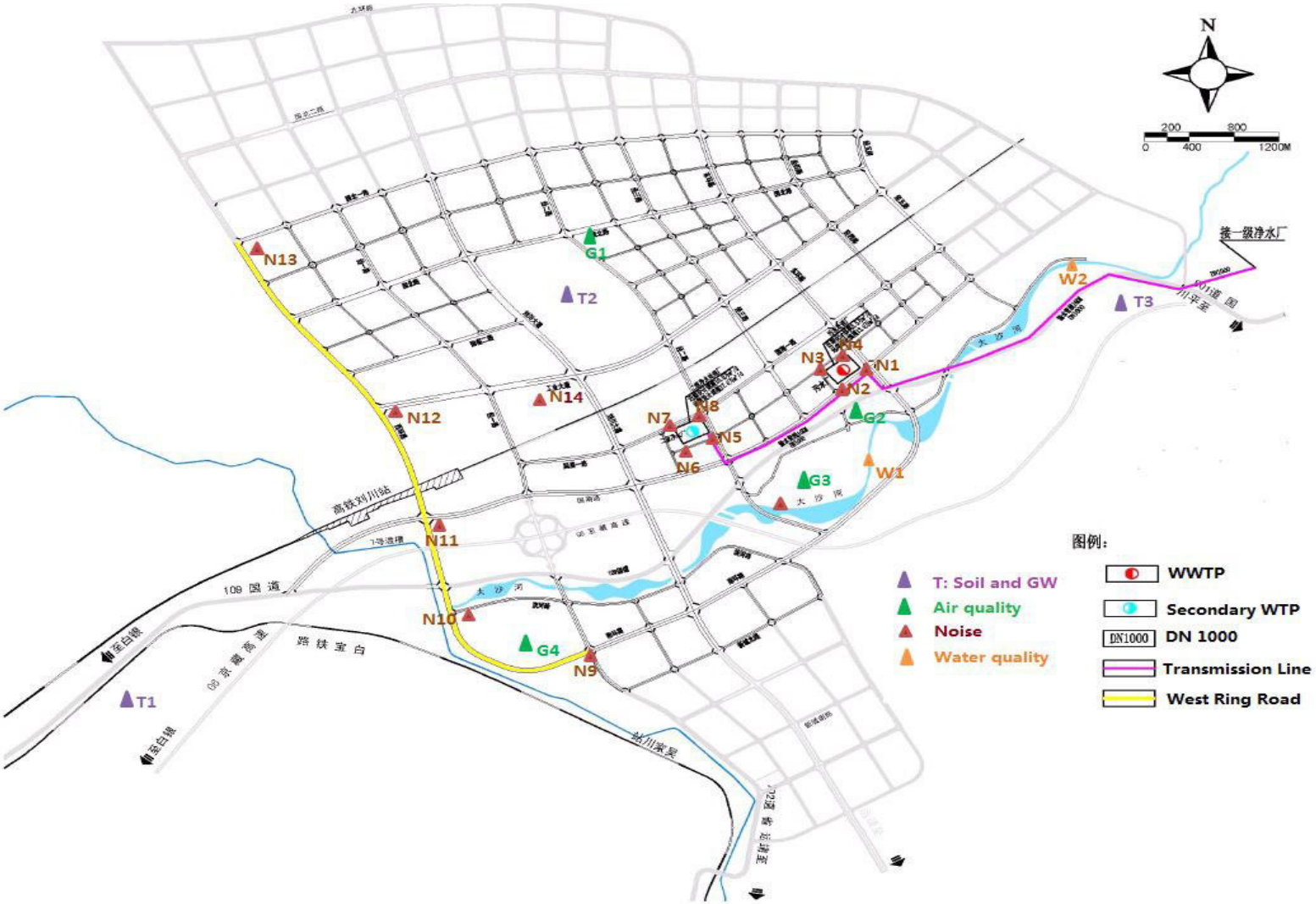

Figure VI.1: Monitoring Locations (EMP)

B. Environmental quality targets

27. Based on the local environmental functional zoning specified by both municipal EPBs, the applicable national standards are listed in **Table VI.4** below for evaluation of the monitoring results.

Table VI.4: Applicable environment quality standards

Item	Parameter	Standard Values	Standard
Ambient Air (villages, residential areas adjacent to construction sites)	TSP	Daily average 0.30 mg/m^3	GB3095-2012 (Ambient Air Quality Standard) Grade II
	PM10	Daily average 0.15 mg/m^3	
	NO2	Daily average 0.08 mg/m^3	
	SO2	Daily average 0.15 mg/m^3	
Ambient noise (Villages, residential areas adjacent to construction sites)	Leq(A)	Daytime 65dB(A); Nighttime 55 dB(A)	GB3096-2008 (Urban Area Noise Standard) Grade III
Noise at Boundaries of Construction Sites	Leq(A)	Daytime 70dB(A); Nighttime 55 dB(A)	GB12523-2011 (Noise Standard at Construction Boundaries)
Surface water Quality (mg/L)	pH	6-9	GB 3838-2002 - Grade III
	COD_{Cr}	20	
	BOD5	4	
	SS	-	
	TP	0.2	
	TN	1	
Soil (mg/kg)	pH	6-9	Environmental quality standard for soils GB 15618—1995 Grade II
	Cu	100	
	Pb	350	
	Zn	300	
	Cd	0.6	
	As	20	
	Hg	1	
	Cr	350	
	Ni	60	

Source: CEIA; Environmental monitoring r*eports.*

C. Monitoring Results

28. **Surface water.** There are four monitoring locations (W1 and W2 (Dasha River), W3 and W4 (Yellow River)). The monitoring results of Dasha River all meet the PRC National Surface Water Standard of GB 3838-2002– Grade III, except TN. And the monitoring results of Yellow River all exceed the PRC National Surface Water Standard of GB 3838-2002– Grade V.

(**Table VI.6**).

Table VI.6: Surface water Monitoring Result

Sampling Date	Item	W1	W2	W3	W4	GB 3838-2002 - Grade III	GB 3838-2002 - Grade V
November 2015	pH	7.82	7.85	7.42	6.55	6-9	6-9
	SS	13	15	35	42	-	-
	COD	12	13	152	103	20	40
	BOD5	2.2	2.2	28.6	20.3	4	10
	TP	0.08	0.09	2.38	1.25	0.2	0.4
	TN	1.72	1.75	42.1	37.0	1	2
April 13 2016	pH	7.38	7.01	8.03	8.02	6-9	6-9
	SS	41	28	22	26	-	-
	COD	8	5	18	14	20	40
	BOD5	2.2	1.6	6.1	5.0	4	10
	TP	0.07	0.05	0.24	0.91	0.2	0.4
	TN	1.38	1.29	7.66	5.29	1	2

Source: Environmental Monitoring Report from Baiyin Municipal EMS

29. **Air quality.** Air quality was monitored at four points at the boundaries nearby the Liuchuan Industrial Park, which is shown in **Figure VI.1** above. The monitoring results are listed in **Table VI.8,** showing that the average daily concentrations of TSP, PM10, SO2and NO_2 all meet the national ambient air quality standard of GB3095-2012-Grade II.

Table VI.8: Ambient Air Monitoring Result during Construction

（Daily Average- mg/m^3）

Location	Sampling Date	TSP	PM_{10}	SO_2	NO_2
G1	Nov. 10 2015	0.216	0.058	0.017	0.015
G2	Nov. 10 2015	0.318	0.121	0.020	0.024
G3	Nov. 10 2015	0.243	0.072	0.016	0.018
G4	Nov. 10 2015	0.287	0.086	0.011	0.020
G1	Apr. 13 2016	0.222	0.040	0.012	0.016
	May. 20 2016	0.258	0.047	0.010	0.020
	Jun. 15 2016	0.266	0.052	0.008	0.022
G2	Apr. 13 2016	0.266	0.072	0.010	0.020
	May. 20 2016	0.248	0.088	0.006	0.025

	Jun. 15 2016	0.267	0.076	0.008	0.020
G3	Apr. 13 2016	0.259	0.062	0.010	0.019
	May. 20 2016	0.212	0.054	0.008	0.021
	Jun. 15 2016	0.260	0.061	0.008	0.018
G4	Apr. 13 2016	0.330	0.074	0.011	0.022
	May. 20 2016	0.311	0.091	0.007	0.023
	Jun. 15 2016	0.249	0.047	0.009	0.025
Grade II Standard		*0.30*	*0.15*	*0.15*	*0.08*

Source: Environmental Monitoring Report from Baiyin Municipal EMS

30. **Noise.** Fourteen monitoring locations were selected for the noise monitoring (**Figure VI.1**), and the monitoring results are shown in **Table VI.9** below, which shows that all the monitoring data meet the National Ambient Noise Standard of GB3096-93 Grade III.

Table VI.9: Noise (Leq[dB(A)])

No.	Nov. 10 2015 (Daytime)	Nov. 10 2015 (Nighttime)	Nov. 11 2015 (Daytime)	Nov. 11 2015 (Nighttime)	Apr. 13 2016 (Daytime)	Apr. 13 2016 (Nighttime)	May 24 2016 (Daytime)	May 24 2016 (Nighttime)	Jun. 15 2016 (Nighttime)	Jun. 15 2016 (Nighttime)
N1	42.8	44.9	41.9	41.4	47.2	40.6	43.1	41.1	41.8	41.2
N2	43.6	40.2	42.3	40.4	47.0	38.8	47.3	44.1	45.8	39.9
N3	43.6	44.0	39.3	40.2	48.9	39.9	46.5	40.5	47.6	41.2
N4	42.5	41.2	40.6	42.3	50.2	44.7	47.7	42.4	53.2	43.3
N5	43.9	41.8	38.9	39.9	49.1	37.0	47.0	38.6	47.5	41.8
N6	45.5	43.2	39.6	41.5	49.0	38.1	46.6	38.9	48.7	38.9
N7	46.0	45.8	39.0	39.2	42.6	36.1	47.2	35.3	43.4	38.8
N8	44.0	43.2	39.0	39.7	48.1	41.6	48.4	38.2	47.4	41.5
N9	44.0	44.7	38.4	44.2	47.9	39.1	44.7	40.1	46.7	41.0
N10	45.2	45.1	40.8	40.4	46.3	34.0	47.0	37.2	44.4	40.4
N11	46.9	44.7	41.4	44.2	45.0	35.3	48.4	40.0	44.4	41.8
N12	47.6	51.5	43.8	44.1	50.6	42.4	49.8	44.2	48.8	42.2
N13	43.1	45.2	42.7	43.6	51.8	43.5	46.3	43.6	50.7	47.6
N14	45.4	46.3	41.8	42.7	49.2	39.6	47.5	41.6	47.2	42.3
	65	*55*	*65*	*55*	*65*	*55*	*65*	*55*	*65*	*55*

Source: Environmental Monitoring Report from Baiyin Municipal EMS

31. **Soil.** Three monitoring locations were selected for the 0-20 cm surface soil monitoring

(**Figure VI.1**), and the monitoring result is shown in **Table VI.10** below. The monitoring result shows that all the monitoring data meet the national soil Standard Grade II of GB15618-1995.

Table VI.10: Monitoring Data of Soil (Leq[dB(A)])

Item	November 2015			April 13 2016			GB 15618 – 1995 Grade II
	T1	T2	T3	T1	T2	T3	
pH	8.50	8.45	8.55	8.48	8.46	8.52	6-9
Cu	21.6	20.3	19.5	21.1	24.7	24.3	100
Pb	28.3	26.2	25.3	19.9	24.1	23.5	350
Zn	24.3	22.3	20.2	17.8	21.4	20.8	300
Cd	0.31	0.25	0.21	0.237	0.255	0.343	0.6
As	12.0	8.6	7.2	11.6	9.2	8.0	20
Hg	0.0330	0.0196	0.0134	0.0251	0.0220	0.0154	1
Cr	144	128	120	180	141	194	350
Ni	35.1	32.4	30.6	40.3	37.3	41.6	60

Source: Environmental Monitoring Report from Baiyin Municipal EMS

VII. PUBLIC CONSULTATION, GRIEVANCE REDRESS MECHANISM

32. **Public consultation during EIA** for each subproject has been conducted during preparation of the domestic EIAs and the IEE in accordance with the PRC Interim Guideline on Public Consultation in EIA (2006) and ADB's SPS (2009). Information disclosure and public consultation included: two rounds of internet/newspaper disclosure; numerous meetings with key stakeholders, including representatives of the affected public, local authorities and sector specific organizations; informal visits to communities and households in the project areas; questionnaire surveys; and a wider stakeholder meeting attended by affected people and other concerned stakeholders.

33. **Public consultation during reporting period.** In the reporting period, there was no public consultation activity in project cities.

34. A **grievance redress mechanism (GRM)** was established in project city in compliance with ADB's SPS (2009) requirement to prevent and address community concerns and assist the project to maximize environmental and social benefits. The GRM was presented and discussed with potentially affected persons during public consultation.

VIII. INSTITUTIONAL STRENGTHENING AND TRAINING

35. A capacity building and training program has been defined in the project EMP, which addresses immediate training needs, i.e. training needed for project personnel in order to ensure that contractors and CSCs are well versed in environmentally sound practices and are able to undertake all construction with the appropriate environmental safeguards. The plan defined in the project EMP has been reviewed by the PMOs and the LIEC, and was updated see Table VIII.1).

36. In the reporting period, there was no training about environment. In second half of 2016, the LIECs will conduct training focusing on EMP adjustment and implementation.

37. The contractor and CSC's monthly standard forms for recording environmental management and mitigation measures were distributed to all the contractors and the CSCs by the consultants, which were required to be submitted to the PMO, PIUs and the consultants monthly with the signatures of managers and environmental engineers of contractors and CSCs.

Table VIII.1 Short-term Capacity Building and Training Program (adapted from Project EMP)

Topic	Attendees	Date and Venue	Times
EMP adjustment and implementation	BPMO, LMC, contractors, CSCs, BEPB	October 2016	Twice - Once prior to, and once after one year of project implementation
Grievance Redress Mechanism	BPMO, LMC, contractors, CSCs, BEPB	October 2016	Twice - Once prior to, and once after one year of project implementation
Environmental aspects of facilities operation	LMC, O&M unit	2017	Once during project operation

IX. ISSUES, CORRECTIVE ACTIONS, RECOMMENDATIONS

38. The project implementation progress is relatively smooth and the construction quality is satisfactory. As the project management procedures become more clear for implement units, the project implementation will get more improvements.

39. EMP implementation is generally satisfactory. Contractors have assigned staff in charge of daily environment, health and safety inspections. Construction Supervision Companies have been contracted. Monthly internal monitoring reports are being prepared by contractors and CSCs, and submitted to the PMOs, which have established environment management units (EMUs). Grievance Redress Mechanisms (GRMs) have been setup in both PMOs. So far, no complaints have been filed.

X. APPENDICES

1. Photos
2. Site Inspection / Monitoring Reports

Appendix 1: Pictures from the construction sites

Pic1 Dust control advertisement

Pic2 A Covered Vehicle Traveling on the Water Sprayed Road

Appendix 2:Three constructors and CSCs' monthly internal monitoring reports