
**China: Chongqing New Urbanization
Pilot And Demonstration Project**

Jiulongpo District Component

**ENVIRONMENTAL AND SOCIAL
MANAGEMENT PLAN**

**Chongqing Municipal PMO
CCTEG Chongqing Engineering**

May 2018

Content

1 General	1
1.1 Project background.....	1
1.2 Project description.....	2
1.3 Objective of Environmental Management Plan	5
1.4 Structure of Environmental Management Plan (EMP)	5
2 Environment policies, regulatory and legal framework, and bases for report preparation.....	7
2.1 Regulatory and legal framework of environmental protection	7
2.1.1 Regulatory and legal framework.....	7
2.1.2 Departmental rules	7
2.2 Local laws and regulations.....	9
2.3 Technical specifications for environmental protection	9
2.4 World Bank’s safeguards policies and World Bank Group’s EHS.....	10
2.4.1 World Bank’s Safeguards Policies and their compliance analysis.....	10
2.4.2 WBG EHS Guidelines and relevant provision compliance analysis	11
2.5 Relevant materials of the construction project.....	13
3 Environmental management roles and duties	15
3.1 Organizations participating in environment management	15
3.2 Responsibilities of environment management organizations.....	17
3.3 Environment management responsibilities during construction phase.....	18
3.3.1 Project Office of the World Bank and Jiulongpo District Urban Administration.....	18
3.3.2 Contractor.....	19
3.3.3 Environment Supervision Engineer (ESE).....	19
3.3.4 Independent Environmental Management Consultant (IEMC)	20
3.3.5 Environment Quality Monitoring Consultant (EQMC).....	21
3.4 Contractor management	21

3.5 Environment management organizations during operational phase	22
3.5.1 Jiulongpo District Environmental Protection Bureau	22
3.5.2 Project operator	22
4 Environmental protection measures.....	23
4.1 Environmental protection measures and suggestions during design phase	24
4.2 Environmental protection measures and suggestions during construction phase.....	24
4.3 Environmental protection measures and suggestions during operational phase.....	27
5 Environmental supervision and monitoring program.....	28
5.1 Goals, scope, and stages	28
5.2 Environmental management content.....	28
5.2.1 Environmental supervision before construction	28
5.2.2 Environmental supervision during construction	28
5.2.3 Supervision during the stage of completion.....	29
5.2.4 Environmental management during operational phase	29
5.3 Environmental monitoring plan	29
5.3.1 Purpose	29
5.3.2 Implementation responsibilities	29
5.3.3 Environment monitoring plan	29
5.3.4 Environment monitoring report.....	30
6 Contractor’s environmental specifications	32
6.1 Contractor’s environment protection plan.....	32
6.2 Site facilities	32
6.2.1 Labor employment	32
6.2.2 Requirements of construction camps	32
6.3 Code of Conduct.....	33
6.4 Health and safety	34
6.5 Storage of fuel, oil and hazardous and noxious substances	34

6.6 Waste management	35
6.7 Wastewater and storm water management	35
6.8 Noise control	35
6.9 Information communication with the public during the construction phase	35
6.10 Physical Cultural Resources.....	36
The Contractor may not resume construction unless the relevant authorities have approved.	
7 Information disclosure and public engagement	36
7.1 Public engagement	37
7.2 Complaint and complaint mechanism of environmental management plan	37
7.2.1 Collecting methods of discontents and complaints.....	37
7.2.2 Procedures for complaints and appeals	38
7.2.3 Principle of handling complaints	38
7.2.4 Content and manner for responses to complains	38
7.2.5 Complaints and appeals recording and follow-up feedbacks.....	39
8 Environmental protection training.....	40
8.1 Environmental protection technology and skill training.....	40
8.2 Training modes and training expenses	40
9 Environmental protection investment	42

1 General

This Environmental Management Plan (EMP) shall govern the World Bank Funded Chongqing New Urbanization Pilot and Demonstration Project Jiulongpo District Urban Regeneration Project which is implemented by Jiulongpo District Urban Administration.

The environmental impact of the project has been specified in the report of the *China: Chongqing New Urbanization Pilot and Demonstration Project Jiulongpo District Urban Regeneration Project Environmental Impact Assessment* (EIA). The Environmental Impact Assessment (EIA) Report is prepared by CCTEG Chongqing Engineering Co., Ltd. The EIA Report includes analysis of environmental policies, laws and regulations, project description and engineering analysis, the current natural environment and social environment of the place where the project is located, the current situation of the environmental quality, the project impact prediction and assessment, environmental impact mitigation measures, public consultation and information disclosure, and the environmental management. According to China's existing laws and regulations pertaining to environmental impact assessment as well as OP/BP4.01 (Environmental Assessment) of the World Bank's business policy, this project has been listed as a Category A project and needs carrying out a comprehensive environmental impact assessment study.

The *Environmental Management Plan* meets the requirements of Chinese domestic laws, regulations and technical guidelines, as well as the World Bank safeguard policies, including the *World Bank Group Environmental, Health and Safety Guidelines*. The *Environmental Management Plan* applies the latest available and more economical strategies to achieve the project's impact mitigation targets.

1.1 Project background

The State Council and the Central Committee of the Communist Party of China issued the "State New Urbanization Plan (2014-2020)" on March 16, 2014, which has been the blueprint for China future urbanization and economic development. The new urbanization in Chongqing has a new path of "people first, spatial layout improvement, urban-rural interaction, city and industry integration, ecological civilization, and cultural inheritance". It is to finally fulfill such four tasks as improvement of urban layout and morphology, improvement of cities' ability of sustainable development, promotion of the number of former rural residents granted urban residency, and promotion of the integrated development of urban and rural areas.

The Project is located at a main urban district of Chongqing, Jiulongpo District, which is on the west of the main urban area. Covering a total area of 432 square kilometers, and with jurisdiction over 8 sub-districts and 11 towns, and a total permanent population of 1,186,900.00, such district has Yuzhong District and Nan'an District on the east, Dadukou District on the south, Bishan District and Jiangjin District on the west and Shapingba District on the north.

See Figure 1.1-1 for the geographic location of Jiulongpo District.

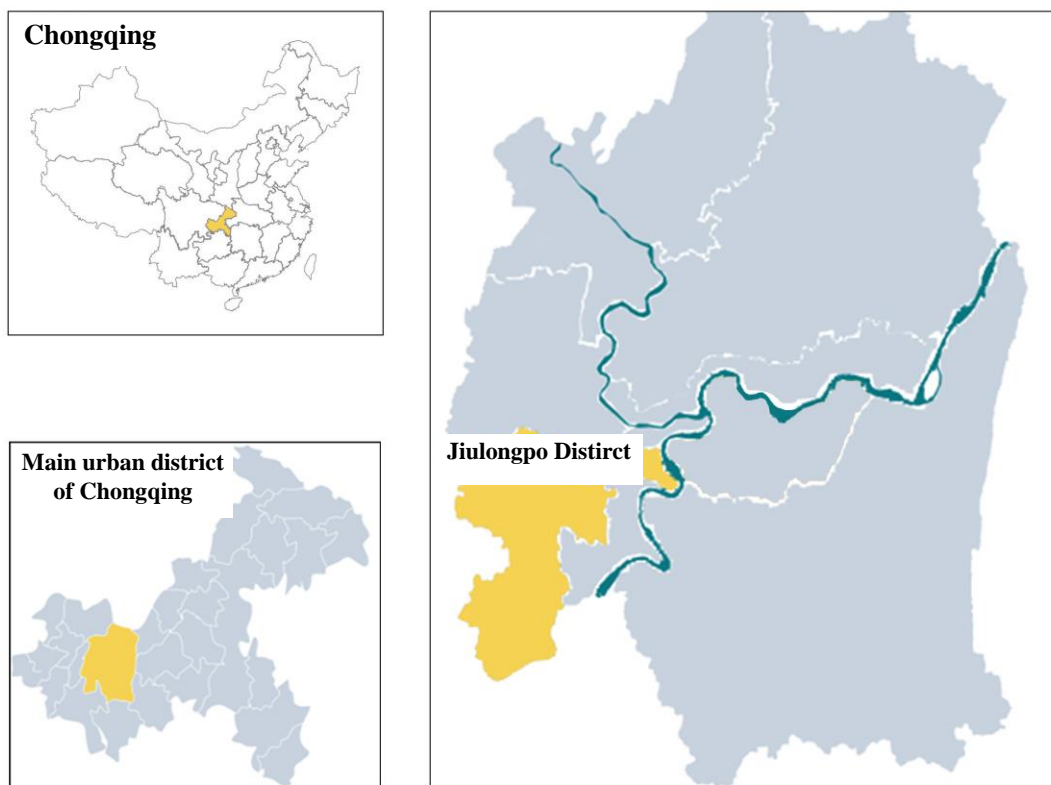


Figure 1.1-1 The geographic location of Jiulongpo District

1.2 Project description

This project content covers two categories in total, wherein see Table 1.2-1 for the project content and see Figure 1.2-1 for the layout plan.

Table 1.2-1 Project construction content

Project type	Sub-project name	Project content	Drawing position index
Pedestrian walkway	Walking footpath project	Newly-built footpath from Caiyun Lake Park, through Olympic Sports Center, to Egongyan Park, with the length of 5.3km.	1
Public space improvements	Yangjiaping Street Committee public space improvement	Newly-built Kanglong Public Green Space with a total area of 2.13 hectares is divided into two lots, of which Lot A covers the area of 15,113m ² and Lot B of 6,171m ² . The main construction content includes: i). Landscape buildings: landscape gallery frame, landscape and leisure pavilion (area); ii). Protection works; iii). Activity site and square; iv) Water and electricity pipe network and facilities; v) Landscape art (sculpture accessories, landscape wall, entrance landscape); vi) Function building and facilities (toilet and finished product management room); viii). Public furniture; ix) Road pavement and line; x). Signage	2
	Erlang Street Committee public space improvement	Newly-built Baitao Road Public Greenbelt with a total area of 2.28 hectares. <i>The main construction content same as above.</i>	3
		Newly-built Wutaishan Citizens' Public Greenbelt with a total area of 4.81 hectares. <i>The main construction content same as above.</i>	4
		Newly-built Longjingwan Public Greenbelt with a total area of 1.28 hectares. <i>The main construction content same as above.</i>	5
	Jiulong Town public space improvement	Improvement of existing Caiyun Lake Wetland Park The park has a total area of 110.26 hectares. <i>The main construction content same as above.</i>	6
	Shiqiaopu Street Committee public space improvement	Newly-built Shimei Citizens' Public Greenbelt with a total area of 4.55 hectares. <i>The main construction content same as above.</i>	7
	Shipingqiao Street Committee public space improvement	Newly-built Taohuaxi Sports Public Greenbelt with a total area of 2.46 hectares. <i>The main construction content same as above.</i>	8
		Newly-built Jiulong Community Park with a total area of 19.31 hectares.	9

Project type	Sub-project name	Project content	Drawing position index
		<i>The main construction content same as above.</i>	
	Huayan Town public space improvement	Newly-built Tiao Huayan Riverside Park with a total area of 1.29 hectares. <i>The main construction content same as above.</i>	10

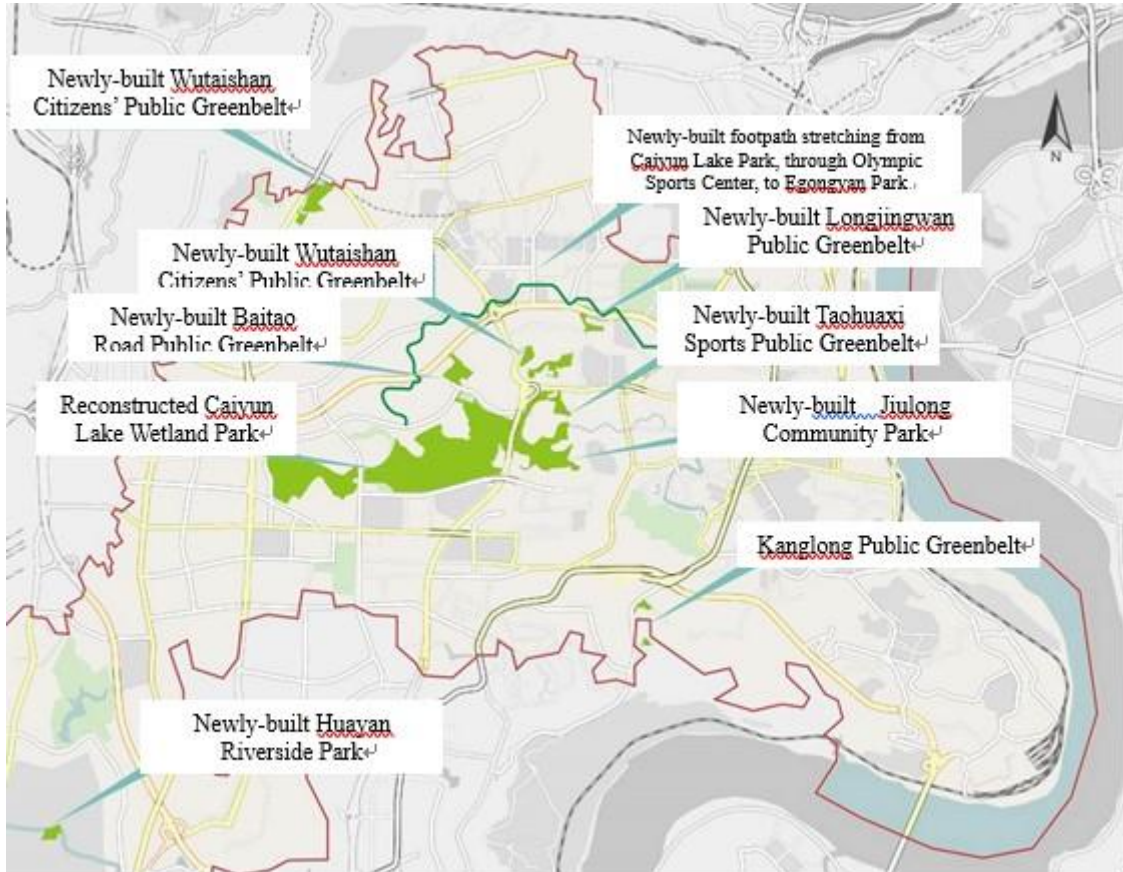


Figure 1.2-1 Jiulongpo District sub-projects layout

1.3 Objective of *Environmental Management Plan*

The *Environmental Management Plan* is to implement relevant mitigation measures to the identified environment impacts, and supervise the effectiveness of such measures during the project life cycle. The *Environmental Impact Assessment* based *Environmental Management Plan* is developed in accordance with Chinese laws, regulations and guidelines pertaining to environment, the World Bank safeguards policies and the best practices of similar projects. The *Environmental Management Plan* is designed to guarantee its consistency with the *Environmental Impact Assessment* to reach the standards with regard to environment protection. The *Environmental Management Plan* effectively meets the supervising requirement, and guides the Project Owner to manage the Contractor and subcontractors.

1.4 Structure of *Environmental Management Plan (EMP)*

The key components of the *Environmental Management Plan (EMP)* include relevant procedures for overall environmental management during the project construction and operation phases. The *Environmental Management Plan* mainly includes:

- Environmental management roles and duties;
- Mitigation measures

-
- Supervision and monitoring program
 - Contractor's environmental specifications
 - Water and soil conservation plan
 - Public engagement program
 - Environmental training and capacity-building program
 - Budget for implementing Environmental Management Plan (EMP)

The *Environmental Management Plan* provides sufficient information for the Project Owner, the Contractor and Subcontractors to implement the *Environmental Management Plan*, with its focus as follows:

- Meet the environmental requirements developed by China, Chongqing and the World Bank;
- To meet all environmental and socio-economic conditions put forward by the state and the Municipal People's Government for project approval, permission and related policies;
- Cultivate and promote the common responsibility for environmental and social performance during the project implementation;
- Improve environmental awareness and knowledge of regulators and project owners (including their contractors) through training and defining the environmental and social management roles and responsibilities of all parties;
- Monitor environmental and social performance throughout the project cycle, and adopt an adaptive management approach to achieve continual improvement in the environment and minimization of environmental impacts in Jiulongpo District;
- Work with local communities and affected interested parties to ensure that they benefit from the project development;

Inform, invite and involve local interested parties to participate in all phases of the project monitoring process.

2 Environment policies, regulatory and legal framework, and bases for report preparation

2.1 Regulatory and legal framework of environmental protection

2.1.1 Regulatory and legal framework

- (1) *Environmental Protection Law of the People's Republic of China* (January 1, 2015);
- (2) *Law of the People's Republic of China on Environmental Impact Assessment* (September 2016);
- (3) *Regulations on the Administration of Construction Project Environmental Protection* (October 2017);
- (4) *Law of the People's Republic of China on Prevention and Control of Water Pollution* (June 2008);
- (5) *Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution* (January 2016);
- (6) *Law of the People's Republic of China on Prevention and Control of Pollution from Environmental Noise* (March 1997);
- (7) *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste* (Amended in November 2016);
- (8) *Law of the People's Republic of China on Water and Soil Conservation* (March 2011);
- (9) *Forest Law of the People's Republic of China* (July 1998);
- (10) *Regulations on Prevention and Control of Geological Disasters* (Decree of the State Council No. 394 in 2003);
- (11) *Land Administration Law of the People's Republic of China* (August 2004);
- (12) *Decision of NPC Standing Committee on Amendment to Twelve Laws like "Law of the People's Republic of China on the Protection of Cultural Relics"* (Presidential Decree No. 5, the People's Republic of China, adopted and released on June 29, 2013 at the Third Session of the Twelfth NPC Standing Committee, and coming into effect as of the day of release).

2.1.2 Departmental rules

- (1) *Administrative Measures on Prevention and Control of Geological Disasters* (Decree of Ministry of Land and Resources No. 4 in 1999);
- (2) *Administrative Measures for Environmental Protection of Traffic Construction Projects*

(Ministry of Transport Decree [2003] No.5);

(3) *Catalogue for Guiding Industry Restructuring (2011 Version)* (as amended in 2013) (Decree No. 21 of National Development and Reform Commission, the People's Republic of China);

(4) *National Outline for Ecological and Environmental Protection* (December 2000);

(5) *Regulations of the People's Republic of China on Scenic Areas* (the State Council Decree No. 474 on September 10, 2006);

(6) *Administrative Measures for National Forest Parks* (the State Forestry Administration Decree No. 27 on May 20, 2011);

(7) *Administrative Measures for Forest Parks* (the State Forestry Administration Decree No. 42 on September 22, 2016);

(8) *List of Wild Animals of National Priority Protection* (as amended the State Forestry Administration Decree No. 7 in February 2003);

(9) *List of Wild Plants of National Priority Protection (first batch)* (as amended the Ministry of Agriculture and the State Forestry Administration Decree No. 53 in August 2001);

(10) *National Ecological Environment Construction Plan* (issued by the State Council in January 1999);

(11) *The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China* (2016);

(12) *List of Classified Management of Environmental Impact Assessment of Construction Projects* (September 2017);

(13) *Opinions on Strengthening Environmental Protection Management of Construction Projects under the Large-scale Development of China's Western Region Program* (HF [2001] No. 4);

(14) *Notice of the State Council on Protecting Forest Resources and Stopping Disafforestation and Abuse of Forest Land* (GFMD [1998] No. 8);

(15) *Notice of the State Council on Further Implementing the Construction of National Green Channel* (GBF [2003] No. 31);

(16) *Decision of the State Council on Implementing the Scientific Outlook on Development and Strengthening Environmental Protection* (GF [2005] No. 39);

(17) *Opinions on Regulating Ecological Environmental Protection of Resource Development*

(HF [2004] No. 24);

(18) *Provisional Methods on Public Participation in Environmental Effect Evaluation* (HF [2006] No. 28);

(19) *Notice on Zoning Key National Areas of Water and Soil Loss Prevention and Control* (the Ministry of Water Resources Notice [2006] No. 2);

2.2 Local laws and regulations

(1) *Regulations of Chongqing on Water Pollution Control for Yangtze River Three Gorges Reservoir Region and Valley* (Chongqing People's Congress Standing Committee Notice [2011] No. 26)

(2) *Regulations of Chongqing on Environmental Protection* (as amended) (Chongqing People's Congress Standing Committee Notice [2010] No. 22);

(3) *The 13th Five-Year Plan for Economic and Social Development of Chongqing* (YFF [2016] No. 6);

(4) *Chongqing Ecological Function Zoning (as edited and revised)* (YF [2008] No. 133);

(5) *The 13th Five-Year Plan for Ecological Civilization Construction of Chongqing* (YFF [2016] No. 34);

(6) *Regulations of Chongqing on Scenic Areas* (Chongqing People's Congress Standing Committee Notice [2008] No. 6);

(7) *Notice of Chongqing Municipal People's Government on Issuing the List of Aquatic Wild Animals of Chongqing Priority Protection* (YFF [1999] No. 65);

(8) *Notice of Chongqing Municipal People's Government on Issuing the List of Terrestrial Wild Animals of Chongqing Priority Protection* (YFF [1999] No. 94);

(9) *Administrative Measures of Chongqing on Forest Parks* (YLZF [2013] No. 14);

(10) *Regulations of Chongqing on Scenic Areas* (as amended in accordance with the *Decision on Amendment to "Regulations of Chongqing on Scenic Areas"* adopted on the 13th Session of Chongqing Fourth People's Congress Standing Committee on September 25, 2014).

2.3 Technical specifications for environmental protection

(1) *Technical Guidelines for Environmental Impact Assessment --- General Principles* (HJ/T2.1-2016);

(2) *Technical Guidelines for Environmental Impact Assessment --- Surface Water Environment*

(HJ/T2.3-93);

(3) *Technical Guidelines for Environmental Impact Assessment --- Groundwater Environment* (HJ610-2016);

(4) *Technical Guidelines for Environmental Impact Assessment --- Acoustic Environment* (HJ2.4-2009);

(5) *Technical Guidelines for Environmental Impact Assessment --- Ecological Impact* (HJ19-2011);

(6) *Technical Guidelines for Environmental Impact Assessment --- Atmospheric Environment* (HJ2.2-2018);

(7) *Technical Guidelines for Environmental Risk Assessment of Construction Projects* (HJ/T169-2004);

(8) *Technical Code on Soil and Water Conservation of Development and Construction Projects* (GB50433-2008)

2.4 World Bank’s safeguards policies and World Bank Group’s EHS

2.4.1 World Bank’s Safeguards Policies and their compliance analysis

World Bank has ten safeguards policies socially and environmentally. Based on the construction nature of this project, the engineering layout, and the assessment scope determined by this environment impact assessment and the field investigation, the project has been checked to determine whether it involves such ten policies, with the results shown in the following table:

Table 2.4-1 Compliance with World Bank safeguards policies

SN	Safeguard Policies	Whether applicable	Compliance
1	OP/BP4.01 <i>Environmental Assessment</i>	Yes	Category A project; Prepared full <i>Environmental Impact Assessment (EIA)</i> and <i>Environmental Management Plans (EMPs)</i> ; Prepared Environmental and Social Management Framework for component 1 Technical assistance activity; and Two rounds of public consultation and information disclosure were conducted as per OP4.01.
2	OP/BP4.04 <i>Natural Habitats</i>	Yes	The project involves the Caiyun Lake National Wetland Park, which is mainly used for public leisure purposes. The scale of the project is relatively small. Only upgrading existing facilities will not affect the ecological functions or landscape of these sensitive areas. Mitigation measures have been incorporated into the EMP. The project will not lead to major transformation or degradation of natural habitats. However, project activities will not cause degradation or significant changes in natural habitats.
3	OP/BP4.36 <i>Forests</i>	No	The project will not have impacts on the health and quality of forests, or affect the rights and welfare of people and their level of dependence upon or interaction with forests. The policy is not

SN	Safeguard Policies	Whether applicable	Compliance
			triggered.
4	OP/BP4.09 <i>Pest Management</i>	No	The project will not involve use or procurement of pesticides directly or indirectly. The policy is not triggered.
5	OP/BP4.11 <i>Physical Cultural Resources</i>	No	Such policy does not be triggered. Based on the cultural relic investigation, the site inspection and the information from the cultural relics management department, there are totally 19 national, municipal and district-level cultural relics protection sites in Jiulongpo District, but the implementation of the project will not have any impact on the known physical cultural resources.
6	OP/BP4.37 <i>Safety Of Dams</i>	No	Such policy does not be triggered. This project does not involve any dams.
7	OP/BP4.10 <i>Indigenous Peoples</i>	No	No IPs affected in the project. The population of the affected areas of the project are mostly of Han ethnicity, or the ethnic majority population in China. Thus, the Indigenous Peoples OP/BP 4.10 is not triggered.
8	OP/BP4.12 <i>Involuntary Resettlement</i>	No	Such policy does not be triggered. The project area involves no involuntary resettlement.
9	OP/BP7.50 <i>Projects on International Waterways</i>	No	Such policy does not be triggered. The project area involves no international waterway.
10	OP/BP7.60 <i>Projects on Disputed Areas</i>	No	Such policy does not be triggered. The project area involves no place of disputes.

According to the analysis of the correlation between the project and World Bank safeguards policy documents, the policy documents relating to this project are OP/BP4.01 (Environmental Assessment) and OP/BP4.04 (Natural Habitat).

2.4.2 WBG EHS Guidelines and relevant provision compliance analysis

The World Bank Group *Environmental, Health and Safety Guidelines* (General Guidelines) and other guidelines apply to this project. The mitigation measures included in the *Environmental Management Plans* of the project are completely in conformity with the requirement of foregoing guidelines. Particularly, the content in such guidelines is basically in line with the laws, regulations, guidelines and construction management rules of China.

Table 2.4-2 Compliance with WBG EHS Guidelines

General Guidelines	Environmental impact assessment/compliance with Environmental Management Plans (EMPs)
If any facility or project is near a recognized ecological sensitive area (for example, a national park), the pollution level increase shall be controlled as far as practicable; in addition, appropriate mitigation measures can also include the utilization of clean fuel or technology, and the	The project involves the ecological sensitive area, so existing municipal facilities shall be used and local residency shall be rented as far as possible during the construction phase, and the clean fuel should be used during the operational phase to reduce the pollution level.

application of comprehensive pollution control measures.	
<p>Dust or particulate matter (PM) is the most common pollutant among irregular emissions. Some operations (for example, transportation and open-air storage of solid materials) and bare soil surface (including unpaved roads) will emit the particulate matter.</p>	<p>The management shall be strengthened, with the wet method operation promoted, barriers erected along the construction site, and the material storage yard fenced and covered; throwing materials from a high place is strictly prohibited. The testing and maintenance of motor vehicles shall be strengthened during the operational phase; automobiles of exhaust exceeding standard shall be prohibited from being on roads; road conditions shall be maintained; the vegetation shall be utilized to purify air.</p>
<p><i>Environmental, Health and Safety Guidelines for Water and Sanitation</i></p>	<p>Environmental impact assessment/compliance with Environmental Management Plans (EMPs)</p>
<p>The industrial wastewater, sanitary wastewater and the wastewater from operations of public works or rain water will be discharged to the public or private wastewater treatment system, and the pretreatment and monitoring requirements of the sewage treatment system such wastewater is discharged to will be met.</p>	<p>During the construction phase, the washing wastewater will be reused after the treatment of the oil separation and grit chamber, without being discharged outside; the sanitary sewage will be collected and pretreated by biochemical pools and regularly sucked to the sewage treatment plant by fecal suction trucks, or directly connected to the municipal sewage pipe network; during the operational phase, the sanitary wastewater from the public space will be all discharged to the sewage treatment plant through the municipal sewage pipe network for treatment.</p>
<p>The rain water shall be separated from the industrial wastewater and the sanitary wastewater to reduce the volume of wastewater which can be discharged after treatment;</p>	<p>The diversion of rain and sewage water will be utilized, with rain water conduits and sewage conduits built separately.</p>
<p>At the most sensitive point, if it is predicted that the noise from the project facilities or the operation activities will exceed relevant noise level, the noise prevention and control measures shall be taken.</p>	<p>The low-noise machines will be used during the construction phase; the construction will be appropriately scheduled, with the night-time construction avoided; construction machines and plant will be appropriately</p>

	arranged inside the site; and the fence will be erected. At the operational phase, the asphalt pavement will be adopted, and trees and grass will be planted; the speed at the road sections along densely populated residential areas and schools will be limited and the signs of no honking will be erected, with acoustic screens built, special funds for noise monitoring and treatment provided and other measures taken to prevent and control the noise.
<i>Environmental, Health and Safety Guidelines for Waste Management Facilities</i>	Environmental impact assessment/compliance with Environmental Management Plans (EMPs)
Collection and transportation of wastes	They will be delivered to the local waste treatment plant for unified treatment
Garbage cans or garbage bags are encouraged to be used by every family or waste collecting stations around buildings; wastes shall be collected regularly and frequently to avoid waste accumulation; vehicles to collect and transport wastes shall be covered to avoid wastes blown away by wind when driving;	They shall be delivered to a fixed point, and shall be gathered and transported by the sanitation department to Jiulongpo District municipal solid waste treatment plant for disposal.
Regular waste collection; Developing cleaning plans for garbage collection vehicles and all the garbage collection containers of the enterprises; Advocating the use of garbage bags to avoid polluting the garbage collection equipment.	
The garbage collection routes shall be optimized to shorten the driving distance, and reduce the total fuel consumption and emission; Forwarding stations will be established for small garbage collection vehicles to gather the collected garbage to large vehicles and deliver to the garbage treatment plant;	

2.5 Relevant materials of the construction project

(1) *World Bank Funded Jiulongpo District Urban Regeneration Project Feasibility Study Report* (China Sustainable Transportation Center in Chaoyang District, Beijing, January 2018);

- (2) *General Plan for Caiyun Lake Wetland Park (2008-2015)*(Planning and Design Institute for Landscape Architecture of Southwest University, August 2008);
- (3) Environmental Impact Assessment Work Contract.

3 Environmental management roles and duties

3.1 Organizations participating in environment management

The implementation of this *Environmental Management Plan* requires the engagement of multiple organizations and departments; each organization plays a different but important role to guarantee the effective environment management for the project.

Such two groups of organizations will be involved in the environment management process: as one group of organizations to be responsible for organizing or implementing the *Environmental Management Plan*, and the other group to enforce standards, laws and regulations pertaining to the project, and supervise the implementation of the *Environmental Management Plan* and the overall environmental performance. See Figure 3.1-1 for the project environment management and supervisory organization frame diagram.

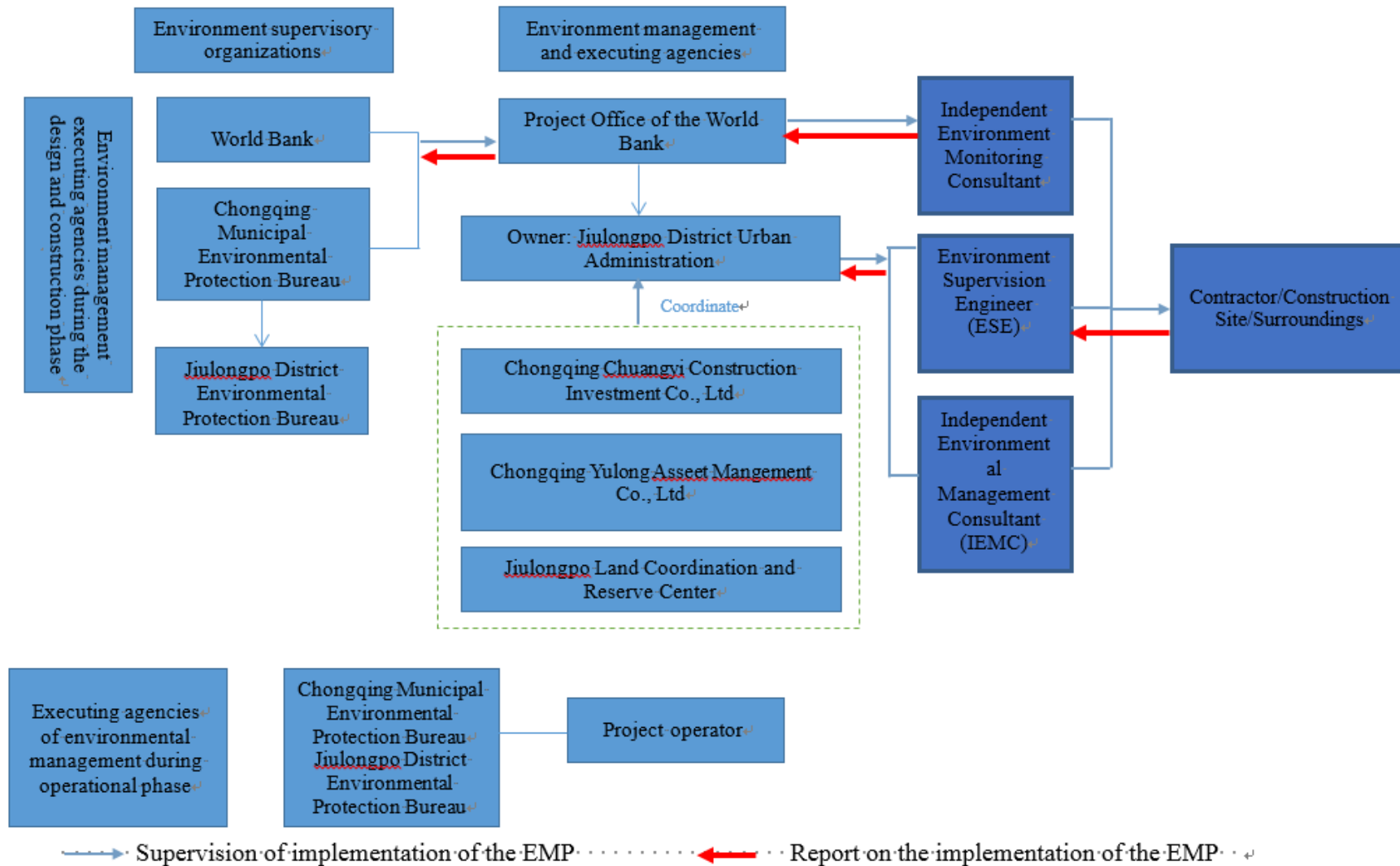


Figure 3.1-1 Environmental management and supervisory organization

3.2 Responsibilities of environment management organizations

See Table 3.2-1 for key environment management responsibilities of each environment management organization.

Table 3.2-1 Environmental supervision and management responsibility list

SN	Organization/unit	Responsibilities
1.	Project Office of the World Bank	<p>Responsible for all the environment management work of the project, including effective implementation of mitigation measures, supervision and monitoring, budget security and report to the World Bank and the local environment bureau;</p> <p>Ensure that measures in the Environmental Management Plan have been included in the bidding documents and the construction contract;</p> <p>Supervise the construction unit to implement the pollution control measures, and timely report any violations to the construction unit;</p> <p>Guarantee that the supervised content of the environmental protection agency is included in the bidding documents and the contract concluded with the Supervision Engineer, supervise and participate in the supervision of the project;</p> <p>Entrust the environment monitoring organization with environment monitoring during the construction phase, and cooperate in the environment monitoring during the construction phase.</p> <p>Organize environmental trainings for the Contractor and the Environment Supervision Engineer.</p>
2.	Jiulongpo District Environmental Protection Bureau	<p>Jiulongpo District Environmental Protection Bureau is responsible for the environmental management and supervision within the development area. Implementation of the monitoring and supervision over environment protection on behalf of Chongqing Municipal Environmental Protection Bureau during the construction and operational phases. Investigate and address the resident disturbance complaints during the construction and operational phases. Guarantee the “three simultaneous”. Guarantee the normal operation of environment protection facilities.</p>
3.	Jiulongpo District Urban Administration	<p>The Project Owner is going to implement the World Bank funded infrastructure construction, including procurement, construction management, implementation of safeguards policies and compliance, monitoring and reporting, etc.</p>
4.	Project operator	<p>Operation of environment protection facilities, environment management and other activities during the operational phase of the project.</p>
5.	Environment Supervision Engineer (ESE)	<p>Review and assess whether the construction design meets the requirement of the environmental impact assessment and the Environmental Management Plan, and in particular review and assess the site environmental management and the required measures used to mitigate impacts;</p> <p>Supervise the site environmental management of the Contractor and provide accurate guidance;</p> <p>Review the Contractor’s implementation of the Environmental Management Plan, and verify and confirm the environment supervisory process, parameters, monitoring locations, equipment and results;</p>

SN	Organization/unit	Responsibilities
		Report the implementation of the Environmental Management Plan; Examine and approve invoices or expenditures according to the implementation of the Environmental Management Plan.
6.	Contractor	Develop detailed Contractor Environment Protection Plan which shall be part of the construction contract. Report new environmental issues or any cultural relics discovered during the construction phase to the Supervision Engineer. Conduct ongoing public consultation during the construction.
7.	Independent Environmental Management Consultant (IEMC)	Project Office of the World Bank (PMO) will employ the IEMC independent from the Environment Supervision Engineer and the Contractor. The IEMC's task is to assess the implementation of the Environmental Management Plan during the project construction phase, advise the Project Owner on management and finally guarantee that the project conforms with the requirements of the Environmental Management Plan.
8.	Environment Quality Monitoring Consultant (EQMC)	The Environment Quality Monitoring Consultant refers to the professional monitoring organization to implement environment quality monitoring in accordance with the Environment Monitoring Plan contained in the Environmental Impact Assessment Report. The Project Owner will employ the Environment Quality Monitoring Consultant to implement the monitoring plan.

3.3 Environment management responsibilities during construction phase

3.3.1 Project Office of the World Bank and Jiulongpo District Urban Administration

As the Project Owners of this project, Jiulongpo District Urban Administration is the specific organization to implement the project and are comprehensively responsible for the management and coordination of the project implementation. The World Bank Project Management Office (PMO) will be responsible for the daily management and coordination of the project implementation, and supervision of the project implementation to meet the requirements of the World Bank. The Project Owner should be responsible for ensuring that the project environmental management conforms with the Environmental Management Plan and relevant regulatory requirements.

The Project Owner's environmental management responsibilities include but are not limited to:

(1) During the project construction, supervise the implementation of various mitigation measures and environmental measures, including making such measures contained in the tender documents and contract, organize the contractor training, implement other environmental management plan, and periodically inspect the construction site.

(2) Employ and supervise environmental monitoring consultants (such as independent environmental management consultants and environmental quality monitoring consultants) to conduct environmental monitoring in accordance with project environmental monitoring plans.

(3) Employ and supervise independent environmental management consultants to provide technical support, including management advice, training, regular field visits and preparation of various reports.

The Project Owner will assign 1 or 2 special environmental workers to take charge of the overall coordination of the implementation of the *Environmental Management Plan*. Such special environmental worker must be familiar with environmental management and environmental regulations and can understand and implement the *Environmental Management Plan*. Their duties include:

(1) Ensure that the project's environmental management meets the requirements of the *Environmental Management Plan* and related regulations. In case of any non-compliance found, appropriate measures should be taken.

(2) Maintain open and smooth communication with the World Bank Project Office (PMO), supervision engineers and contractors on environmental issues.

(3) Review and approve the *Environmental Protection Implementation Plan* of critical project activities, which is prepared by the Contractor and may cause significant environmental impacts.

(4) Regularly inspect all the construction areas according to the requirements of the *Environmental Management Plan*.

(5) Review and archive various reports of the Contractor and the Environment Supervision Engineer on environmental management.

(6) Report to the World Bank Project Management Office (PMO) on the environmental issues of the construction site every month.

3.3.2 Contractor

At any time, the Contractor and its employees should first try to avoid any negative impact of the project construction activities, and second should follow the *Environment Management Plan* and the mitigation measures stipulated in the contract, so as to minimize the damage to and the impact on the environment and the local communities.

The remedial measures not effectively implemented during the construction phase shall be implemented after the completion of the project but before the completion acceptance.

The Contractor shall establish a strong environmental management system to meet the requirements of the mechanism, site measures, monitoring, training and reporting.

Chapter 6 contains detailed environmental specifications for contractors.

3.3.3 Environment Supervision Engineer (ESE)

The Environment Supervision Engineer is an integral part of the Supervision Engineer's functions. Each supervision engineer company will assign at least one Environment Supervision Engineer to each contract/working group. The duties of the Environment Supervision Engineer include:

(1) Review and ensure that the Contractor's construction organization plans meet the *Environmental Management Plan* and project construction requirements in respect of environmental protection and impact mitigation.

(2) For key project activities with potential environmental impact, review the *Environment Protection Implementation Plan* and the *Environment Protection Construction Organization Plan* at the Contractor's construction sites before the final approval of the Project Owner.

(3) Conduct daily on-site inspections and ensure that the Contractor's activities comply with the *Environmental Management Plan* and other relevant regulations; and guide the Contractor to take corrective actions within the period specified by the Environment Supervision Engineer when any non-compliance or inconsistency is found.

(4) The World Bank Project Management Office (PMO) will complete relevant work, if necessary, during the implementation of environmental monitoring and supervision.

(5) Regularly monitor the implementation of the Contractor's environmental management system, including environmental personnel, procedures and reports; check and confirm the environmental supervision procedures, parameters, monitoring sites, equipment and results. In case of any discrepancies found, the Environment Supervision Engineer will instruct the Contractor to take remedial actions, including capacity building and the replacement of the Contractor's environmental staff.

(6) Regularly prepare the environmental supervision report and submit it to the World Bank Project Management Office (PMO) for review and filing.

(7) As a Supervision Engineer, approve various invoices or payments according to the implementation of the *Environmental Management Plan*.

3.3.4 Independent Environmental Management Consultant (IEMC)

The World Bank Project Management Office (PMO) needs to employ an Independent Environmental Management Consultant to provide technical support for environmental protection during construction. Independent Environmental Management Consultants will be independent from the Environment Supervision Engineer and the Contractor, and will directly report work to the World Bank Project Management Office (PMO) and the Project Owners. Independent Environmental Consultants will be headed by a person who can independently and professionally examine all records, procedures and processes. He/she can ask for a small team to assist in the inspection of construction sites (namely, the independent environmental management consultant team). Independent Environmental Management Consultants should have a wealth of knowledge and experience in environmental monitoring and auditing, so that they can provide independent, objective and professional advice on project environmental performance (at least five years of experience). By reviewing various reports, Independent Environmental Consultants should be familiar with project engineering, including the project's *Environmental Management Plan*. Specifically, the Independent Environmental Consultant will be responsible for fulfilling the following duties:

(1) Review and audit all aspects of the *Environmental Management Plan* in an independent, objective and professional manner;

(2) Verify and confirm the accuracy of the monitoring results, the monitoring equipment, monitoring sites, monitoring procedures and sensitive areas;

(3) Conduct random sampling inspection and review the monitoring data, sampling procedures, etc.;

(4) Conduct on-site inspection at random;

(5) Review the recommendations and requirements of the Environmental Impact Assessment according to the implementation of the environment protection measures;

(6) Review the effectiveness of environmental mitigation measures and the project environmental performance;

(7) Verify and prove the feasibility of the construction method, relevant design plans and submitted materials in environment protection as required. When necessary, independent environmental consultants should seek the least impacting option with the designer, the Contractor, and Jiulongpo District;

(8) Examine the findings of any environmental non-compliance;

(9) The effectiveness of quality performance and corrective measures;

(10) According to the non-compliance procedures in the *Environmental Management Plan*, the review result feedback will be given to the World Bank Project Management Office (PMO), the Project Owners and the Environment Supervision Engineer team, and the Supervision Engineer (Environment Supervision Engineer) will be provided with the advice of punishment, shutdown or other punishment measures;

(11) Provide training to contractors, environmental supervision engineers and workers of the World Bank Project Management Office (PMO) before the commencement of and during the project construction;

(12) Assist in preparing the interim environmental monitoring report submitted to the World Bank.

3.3.5 Environment Quality Monitoring Consultant (EQMC)

To closely monitor the environmental quality of the project area and minimize the environmental impact of the construction and operation phases, the Project Owners will employ a professional environmental monitoring consultant to carry out the plan of environmental monitoring in the environmental impact assessment stage. The duties of the Environment Quality Monitoring Consultant (EQMC) include:

- (1) Be familiar with the project engineering and the *Environmental Management Plan*, especially the environmental monitoring plan.
- (2) Environmental monitoring is conducted in a timely and professional manner in accordance with the environmental monitoring plan
- (3) Verify and confirm the criteria for the monitoring results, the monitoring equipment, monitoring sites, monitoring procedures and sensitive areas.
- (4) The monitoring results and suggestions shall be timely submitted to the World Bank Project Management Office (PMO).

3.4 Contractor management

During the construction phase, the Contractor shall be responsible for the control and reduction of environmental impacts, and the thorough implementation of environmental protection measures, including the following measures:

In the pre-qualification stage, the environmental management shall be contained in the certification terms for the qualification of the contractor. Under the same conditions, the bidders with ISO9001 and ISO14001 certification are preferred;

In each construction stage, at least one full-time staff shall be designated to conduct environmental monitoring and monitoring, and the specific environmental protection measures shall be implemented.

During the preparation of the bidding documents, the Owner should have every environmental protection measure contained in the terms of the contract (as specified in the environmental impact assessment and the approved items of the environmental management plan) to ensure environmental protection rules and responsibilities, as well as the corresponding estimate fully understood.

Prior to construction, the Contractor should accept training on environment. Each department should have at least one senior manager and one environmental protection professional to attend the training; such training is provided by experienced consulting agencies well versed in environmental protection and familiar with local management departments. The training shall include:

- (1) Relevant national and local laws and regulations and discharge standards;
- (2) Technical guidance for environmental protection;
- (3) *Environmental Impact Assessment (EIA)* and *Environmental Management Plan (EMP)* of the project;
- (4) Specific requirements, methods and parameters of all monitoring positions;
- (5) Specific requirements for monitoring reports and monitoring data feedback;
- (6) Applicable mitigation measures;
- (7) Public engagement during construction and solutions to public complaints;
- (8) Contractor's responsibility for environmental protection.

The construction supervision engineer company (or companies) shall be designated according to the environmental supervision responsibility and through the appointment of environmental supervision

engineer. The requirements for environmental regulation should also be included in the tender documents and should be ultimately included in the contract to the Supervision Engineer's company.

3.5 Environment management organizations during operational phase

3.5.1 Jiulongpo District Environmental Protection Bureau

(1) Responsible for the supervision and implementation of the environmental management plan of Jiulongpo District;

(2) Responsible for the formulation and development of environmental protection systems and policies for Jiulongpo District;

(3) Responsible for the environmental statistics, pollution source files, and other reports of Jiulongpo District.

(4) Supervise the operation and maintenance of environmental protection communal facilities in the development zone to ensure their normal and stable operation.

(5) Supervise, investigate and address the disturbance to residents and the complaints during the operational phase. Guarantee the “three simultaneous”. Guarantee the normal operation of environment protection facilities.

3.5.2 Project operator

A special environmental management office will be established to be responsible for the implementation of the environmental management plan during the operational phase. The detailed responsibility of the Environmental Management Office include:

(1) Manage the implementation of the environmental protection measures of the project;

(2) Coordinate environmental issues in connection with environmental supervision and management departments and surrounding residents;

(3) Comply with the project environmental monitoring plan, and commission qualified monitoring agencies to regularly monitor the three wastes discharged by the project facilities and the regional environmental quality according to the frequency and point distribution requirements of such monitoring plan;

(4) In case of environmental accidents, the environmental risk emergency disposal can work;

(5) Responsible for reporting environmental management information to the municipal environmental protection bureau and the project management office on time;

(6) Record, file and collate the environmental management files.

4 Environmental protection measures

Based on the key findings in the *Environmental Impact Assessment*, following chapters summarize some outstanding environmental impacts and mitigation measures. It is listed on Table 4.1-1, 4.1-2 and 4.1-3 that main activities and phases, confirmed potential environmental impact and typical mitigation measures, as well as implementation and monitoring responsibilities.

These mitigation measures are in conformity with waste collection and transportation requirements in relevant national laws, regulations, guidelines, rules, World Bank's policies, the *General Guideline for Environment, Health and Safety*, the *Guideline for Water and Sanitary Environment, Health and Safety*, the *Guideline for Environment, Health and Safety of Waste Management Facilities*; so as to solve various impacts during the design, construction and operational phase.

Chapter 6 to 8 explains the detailed management plan related to the contractor specification, training and ability construction, etc.

4.1 Environmental protection measures and suggestions during design phase

Table 4.1-1 List of environmental impacts and mitigation measures during design phase

Links and factors	Potential impacts/issues	Mitigation measures	Implementor	Supervisor	Monitoring indicators	Monitoring frequency
Acoustic environment	Impacts on construction workers	During the construction, reasonable noise isolation and reduction measures shall be taken during the project design to mitigate the impact of construction noise on the field construction workers.	Environmental assessment consultant	World Bank PMO, Jiulongpo District Environmental Protection Bureau	Environmental impact assessment approved by World Bank and Jiulongpo District Environmental Protection Bureau	Before assessment
Atmospheric environment	Impacts of dust from transportation on surrounding residents	Raw materials shall be purchased locally.	Environmental assessment consultant	World Bank PMO, Jiulongpo District Environmental Protection Bureau	Environmental impact assessment approved by World Bank and Jiulongpo District Environmental Protection Bureau	Before assessment
Ecological environment	Impacts of water and soil loss	Each park and footpath system design shall be further optimized, try to balance excavation and filling, reduce work quantity of excavation and filling, reduce surface vegetation damage and reduce new water and soil loss.	Environmental assessment consultant	World Bank PMO, Jiulongpo District Environmental Protection Bureau	Environmental impact assessment approved by World Bank and Jiulongpo District Environmental Protection Bureau	Before assessment
	Impacts of land occupation	The project design shall comprehensively consider the surrounding environment and shall further refine the permanent land occupation design to use land reasonably.				
	Impacts of landscape	The parks shall maintain the natural landscape and harmonize with the surrounding environment as much as possible. To reduce the damage to existing ecological environment, implement greening ecological construction project synchronously during the project design.				

4.2 Environmental protection measures and suggestions during construction phase

Table 4.2-1 List of environmental impacts and mitigation measures during construction phase

Links and factors	Potential impacts/issues	Mitigation measures	Implementation responsibilities	Monitoring responsibilities	Monitoring indicators	Monitoring frequency
Social environment	Cultural relics protection	In the protection scope of cultural relics protection unit, no construction or blasting, drilling, excavation, etc. shall be carried out. If the project scheme involves protection scope of cultural relics protection unit or construction control zone, environmental assessment should firstly consider avoidance measures to avoid impacts on cultural relics protection unit. If it's unable to avoid it, it shall ensure the safety of cultural relics protection unit, verify and publicize the approval from people's government where the cultural relics protection unit is located and obtain consent from cultural relics administration department of superior people's government. Construction or blasting, drilling, excavation, etc. in the protection scope of national key cultural relics protection unit can only be carried out after obtaining approval from people's government of province, autonomous region and municipality with the consent of cultural relics administration department of the State Council. In the construction process, as per relevant cultural relics regulations, if underground cultural relics sites are discovered, the construction organization shall properly protect the site, notify cultural relics management department for rescue and treatment and ensure safe and smooth construction of cultural relics sites.	Contractor	Environmental supervision engineer, independent environmental management consultant	Publicity and training are provided; Record of randomly discovered cultural relics	Daily
Ecological environment	All projects	Before implementation of this project, adopt avoidance measures to avoid lush vegetation; during construction, take ecological mitigation measures to reduce the impact on ecological environment; after construction, recover the temporarily occupied land in time. ④ Adopt the native species to prevent the impact of harmful species.	Contractor	Environmental supervision engineer, independent environmental management consultant	Filed supervision by the environmental supervision engineer; specifications are followed;	Daily

Links and factors	Potential impacts/issues	Mitigation measures	Implementation responsibilities	Monitoring responsibilities	Monitoring indicators	Monitoring frequency
Acoustic environment	Impacts of noise during the construction phase	Reasonably arrange the construction site, reasonably arrange construction machinery, reasonably arrange construction strength and time, set fences around construction site, and select low-noise equipment meeting national standards; prohibit night construction emitting noise pollution in noise sensitive building areas 15 days before and during college entrance examination and entrance examination for secondary school; prohibit construction generating environmental noise pollution within the area 100m away from the examination room during college entrance examination and entrance examination for secondary school; and properly coordinate passage time of construction vehicle. Construction workers shall pay attention to self-protection, and the supervision organization shall properly control noise during the construction phase.	Contractor	Environmental supervision engineer, independent environmental management consultant	Filed supervision by the environmental supervision engineer; specifications are followed;	Monthly
Atmospheric environment	All projects	Construction organization shall formulate dust pollution prevention plan; promote wet method operation in the construction process; repair hard closed enclosure before road construction in sensitive areas; cover easily splashing materials; transport bulk materials in closed manner (covering or shielding); use commercial concrete and modified asphalt concrete for pavement; and adopt liquefied gas as fuel for construction workers.	Contractor	Environmental supervision engineer, independent environmental management consultant	Filed supervision by the environmental supervision engineer; specifications are followed;	Randomly sampling during the peak construction period
Surface water environment	All projects	It's prohibited to directly discharge domestic sewage of construction workers to natural receiving water; construction site shall not be located on the beach; domestic sewage shall be directly discharged to municipal sewage pipeline or regularly extracted to sewage treatment plant by a fecal suction truck. Construction sewage can be recycled after oil separation settlement or be used for water splashing and dust suppression in the construction site and road, without being discharged outside. Carry out environmental protection education in the construction sites and enhance construction management and project supervision.	Contractor	Environmental supervision engineer, independent environmental management consultant	Filed supervision by the environmental supervision engineer; specifications are followed;	/

Links and factors	Potential impacts/issues	Mitigation measures	Implementation responsibilities	Monitoring responsibilities	Monitoring indicators	Monitoring frequency
Solid waste	All projects	Solid waste produced during the construction phase shall be directly transported to surrounding legal spoil area. Domestic garbage produced during the construction phase shall be collected at fixed points and transported regularly.	Contractor	Environmental supervision engineer, independent environmental management consultant	Filed supervision by the environmental supervision engineer; specifications are followed;	Daily

4.3 Environmental protection measures and suggestions during operational phase

Table 4.3-1 List of environmental impacts and mitigation measures during the operational phase

Links and factors	Potential impacts/issues	Mitigation measures	Implementation responsibilities	Monitoring responsibilities	Monitoring indicators	Monitoring frequency
Surface water environment	All projects	Domestic sewage generated in public spaces will be discharged to municipal pipe network.	the Owner of World Bank PMO	Jiulongpo District Environmental Protection Bureau	Specifications are followed	/
Atmospheric environment	All projects	Complete greenbelt construction of the Project; reduce road damage; implement automobile exhaust emission testing system and prevent passage of vehicle with exhaust emission beyond standard.	the Owner of World Bank PMO	Jiulongpo District Environmental Protection Bureau	Specifications are followed; environmental monitoring plan prepared	Quarterly
Acoustic environment	Public space	Set No Honking Area; Plant tall arbors around the parking to reduce noise; Noise produced by assembly, party, recreation, bodybuilding, raising animals and other activities in the area cannot disturb the residents.	the Owner of World Bank PMO	Jiulongpo District Environmental Protection Bureau	Specifications are followed; environmental monitoring plan prepared	Quarterly

5 Environmental supervision and monitoring program

5.1 Goals, scope, and stages

Environmental supervision is an important means to ensure the effective implementation of the environmental management plan. The goal of environmental supervision is to fulfill the obligation of environmental supervision, and serve the project independently, fairly, scientifically and effectively; implement all environmental regulations; and ensure that the project is in accordance with Chinese domestic laws, regulations and policies, the World Bank's technical standards and specifications, and approved design documents, tender documents and supervision and the construction contract, and complies with all the environmental protection and management requirements in the design, construction and operation.

As contracted, every engineering supervision company shall appoint at least one professional environment supervision engineer to supervise the Contractor's work on environmental protection in stages.

The environmental supervision and regulation covers the construction area of the project and the densely populated areas of the project. The environmental supervision and regulation covers the whole process of the construction, including: Construction preparation stage, construction stage and completion stage.

5.2 Environmental management content

5.2.1 Environmental supervision before construction

Prior to construction, the Environment Supervision Engineer should ensure the following work:

Evaluation of the pollution control mechanism: review of treatment and disposal measures for sewage, wastes and solid wastes discharged during construction, including technical options and feasibility.

Review the Contractor's construction land plan to ensure that it contains the following measures:

- (1) Measures to keep roads passable;
- (2) Other measures to interfere with and damage minimization.

Review the environment protection clauses in the construction contract: according to the contract, the Contractor shall meet all requirements for environment protection. During construction, the Contractor shall ensure that supervision, inspection and testing are performed to minimize the pollution during construction.

5.2.2 Environmental supervision during construction

The Environment Supervision Engineer shall supervise the site by stages; for example, whether the construction is carried out in accordance with the provisions of the environmental protection, and whether any provisions have been changed without permission. By monitoring check whether the operation during the construction meets the requirements of environment protection, and whether the project meets the standards of environment protection, and guarantee the effective implementation of such measures. Main content includes:

Supervision over the transportation of the remaining materials, the transportation management, the Contractor's construction plan to ensure the access to the communities or commercial shops, and pedestrian safety measures, etc.

Soil conservation measures should be monitored and water pollution should be minimized during construction. Measures include:

- (1) Soil conservation;
- (2) Implementation of temporary and long-term erosion control measures;

- (3) Reduce precipitation measures (sedimentation tanks and sediment walls);
- (4) Ensure that the designed runoff control measures can be used at appropriate places;
- (5) All sewage treatment facilities are in good condition.

Supervision over production and sanitary sewage treatment: Inspect the production and sewage sources and the progress of sewage treatment and disposal, verify the treatment procedures and final treatment sites, and check and monitor the compliance of the treatment measures with the approved emission standards.

Environmental regulation of air pollution: the air pollution in the project area is mainly caused by the emission of the vehicle exhaust and the dust produced during the construction. Ensure that the Contractor has strictly implemented the dust control measures.

Environmental regulation of noise: Noise reduction measures shall be based on engineering design parameters and permissible noise values.

Environmental regulation of solid waste disposal: the disposal of solid wastes must meet the local requirements of solid waste disposal; take effective cleaning measures to ensure clean and tidy construction site. The Environment Supervision Engineer will also supervise the process of waste slag transportation by the construction waste transportation agency.

Environmental regulation of greening programs: Vegetation protection measures, especially the protection of trees and the implementation of the transplanting measures, and greening programs should also be implemented.

Environmental regulations pertaining to safety and sanitation: ensure that there are adequate safety and sanitation measures in compliance with relevant laws and regulations.

5.2.3 Supervision during the stage of completion

The Environment Supervision Engineer shall supervise and manage the environmental recovery and the operation of all the pollution prevention and control equipment, including:

- Supervise the prepared documents of construction completion;
- Organize the first inspection;

Assisting the World Bank Project Management Office in organizing the project completion acceptance;

Prepare final report of project environmental supervision.

5.2.4 Environmental management during operational phase

The project owner is responsible for the organization and implementation of the environmental monitoring during the operation period.

5.3 Environmental monitoring plan

5.3.1 Purpose

The purpose of the environmental monitoring program is to: monitor the surrounding environmental quality and pollution emission, inspect the implementation of the measures, and provide evidences for environmental mitigation and corrective actions.

5.3.2 Implementation responsibilities

Environmental monitoring during the construction and operational phases will be carried out by a qualified environmental monitoring agency commissioned by the Project Owner.

5.3.3 Environment monitoring plan

As per characteristics of the Project and all construction and operational phases, Table 5.3-1 lists monitoring plan during the project construction and operational phases.

Table 5.3-1 Implementation of environment monitoring plan during the construction and operational phases

Category	Item	Monitoring plans by phases	
		Construction phase	Operational phase
Acoustic environment	Monitoring location	Around the operation site with a large amount of operating equipment, school, residence and other sensitive points	Shiguangli, Zhongfang Nali, Caise Aolin, Zhigao Garden, Yuanyang Xiangpai, Chongqing Dafei Lvzhou, Huayu Jiayuan
	Monitoring factors	Equivalent continuous sound level (L_{Aeq})	Equivalent continuous sound level (L_{Aeq})
	Monitoring frequency	Once/Month	Once/Quarter
Air quality	Monitoring location	The operation site with a large amount of operating equipment	Xietaizi Regular Monitoring Point Yangjiaping Regular Monitoring Point
	Monitoring factors	PM_{10}	NO_2 、 CO 、 PM_{10}
	Monitoring frequency	To perform random sampling during the peak construction phase	1 day per quarter
Surface water environmental	Monitoring location	500m downstream of the Jiulong Community Park of Taohua River	/
	Monitoring factors	SS , petroleum, pH, BOD5, COD	/
	Monitoring frequency	Once/Month	/

5.3.4 Environment monitoring report

(1) Environment monitoring report during the construction phase

The construction phase of project is about 5 years and different phases shall be built as per project content. As per Chinese environment management regulations and business policy requirements of World Bank, the Owner shall prepare *Environment Monitoring Report* and submit it to World Bank and Jiulongpo District Environmental Protection Bureau. The purpose of the report is to make environmental protection department confirm that all environmental protection measures are implemented as per relevant requirements of approved environment monitoring plan so as to control adverse environmental impact in the project plan.

Environmental monitoring report shall include:

- ① Brief description of project schedule;
- ② Setting and responsibilities of environment management organizations;
- ③ Main construction content and methods, environmental impacts and mitigation measures and implementation condition of measures;
- ④ Environment monitoring report;
- ⑤ Public complaints and solutions.

According to construction management provisions, the Contractor and ESE shall submit the periodic environmental report to the Owner during the construction phase.

(2) Environment monitoring report during the operational phase

After the proposed project is put into operation, as per the monitoring plan, World Bank Loan Project Office shall entrust environment monitoring station with qualification to perform environment monitoring. Meanwhile, the annual environmental monitoring report is prepared, and its contents

include: The establishment of the environmental management organization, operation status of the project, the implementation of environmental prevention measures as required by the Environmental Protection Bureau, environmental monitoring (date, frequency, locations, methods, applicable standards, etc.), statistical analysis results of monitoring data and necessary follow-ups. The prepared environment monitoring report shall be submitted to Jiulongpo District Environmental Protection Bureau and World Bank.

6 Contractor's environmental specifications

Note: This Contractor Environmental Specifications will be included in the bidding documents and civil works contracts. As the standard bidding documents (SPD) for national competitive bidding (NCB) is being revised when the ESMP is being prepared. In case the standard SPD has been officially adopted when procurement of civil works starts, relevant provisions in the SPD, such as employers' requirement will be adopted.

The *Contractor Environmental Specifications* provides a set of guidelines, processes and procedures to ensure that the ecological environment will not be impacted by Contractor's activities during the implementation of the project. The Contractor shall follow the guidelines set forth in the document. General environmental issues in connection with Contractor's activities include:

- (1) Site management
- (2) Storage and handling of fuel and materials
- (3) Dust and noise hazard control
- (4) Sewage management
- (5) Waste management

For details of environmental issues related to specific project activities (for example, water and soil conservation plans), see the following sections.

6.1 Contractor's environment protection plan

The Contractor shall hold copies of the *Environmental Management Plan* and shall include the *Environmental Management Plan* in the tender documents. Prior to the commencement of construction, the Contractor shall submit an *Environment Protection Plan* for the construction site and pertaining to its operations to the Environment Supervision Engineer, external environmental management consultants and the Owner for review. Such environment protection plan should cover general environmental impact mitigation measures (as well as specific mitigation measures for response to emergencies), mainly including (but not limited to) the following:

- (1) The general plan of the construction should indicate the operation area, material storage area, fuel storage area and fuel supply area, parking lot, equipment maintenance area and camp area;
- (2) Waste management plan;
- (3) Dust control plan;
- (4) Noise control plan;

6.2 Site facilities

Make sure the construction camp is separated from the surrounding industries. The Environment Supervision Engineer shall be responsible for the production and approval of the construction plan.

6.2.1 Labor employment

- (1) If appropriate, local labors should be given priority.
- (2) The Contractor shall disclose the locations of its operations to the sub-districts and communities in Jiulongpo District.
- (3) Construction workers and the other staff members should have legal employment contracts.
- (4) The Contractor shall provide construction workers with education and training in environment protection and occupational health and safety.

6.2.2 Requirements of construction camps

- (1) The Contractor shall provide the construction workers with safe and suitable accommodations.
- (2) Construction camps should be equipped with separate and complete bath facilities (toilets and shower rooms) respectively for male and female workers. Toilets must be well supplied with water,

soap and toilet paper. All these facilities are required to be clean, sanitary and available. Toilets must be labeled with “men” and “women”.

(3) The kitchen in the construction camp should be supplied with clean water and have good sanitary conditions.

(4) The sanitary sewage of the camp shall not be directly discharged to any water. If it is impossible to connect with the existing municipal sewage pipe network, the sewage should be regularly sucked by the fecal suction truck to the sewage treatment plant for treatment after being collected and pretreated by the biochemical pool; if the municipal sewage pipe network can be connected, the sewage shall be discharged to the municipal sewage pipe network after being collected and pretreated by the biochemical pool.

(5) Construction camps should be equipped with emergency medical facilities. First-aid equipment shall be provided for all camps and managed by special personnel. The first-aid personnel should receive complete first aid training, obtain relevant qualifications, and are able to transfer the injured or patients to the local hospital in time. The above medical and health facilities should be replenished as soon as they are used.

6.3 Code of Conduct

The *Code of Conduct* for construction workers should be developed to emphasize the appropriate behavior, prohibit the drug abuse and alcohol and comply with relevant laws and regulations to reduce the impact on society. The publicity and notice of the *Code of Conduct* should be communicated to every worker. Local communities should also be informed of the *Code of Conduction* of the construction workers. Anyone who fails to observe the *Code of Conduct* shall be subject to disciplinary measures. The *Code of Conduct* includes but is not limited to the following measures:

- (1) All staff members shall comply with national laws and regulations;
- (2) Dangerous goods and dangerous weapons are prohibited on the construction site;
- (3) Pornographic materials and gambling activities are prohibited on the construction site;
- (4) Fighting is strictly prohibited;
- (5) Not to hinder the living and production of neighboring areas and local people;
- (6) Local traditional culture, customs and traditions should be respected.
- (7) No smoking unless in designated areas;
- (8) Appropriate dressing and personal sanitation standards;
- (9) Proper accommodation and sanitary conditions;
- (10) Follow the relevant *Code of Conduct* when visiting neighboring areas and local people.

The following behaviors are prohibited in the construction site and its surrounding areas:

- (1) Harming the wildlife and villagers' livestock in adjacent areas;
- (2) Capturing protected animals or picking protected plants;
- (3) Buy and eat protected animals;
- (4) Impact or destroy objects of historical or architectural value;
- (5) Outdoor fire;
- (6) Drinking during working hours;
- (7) Maintain machines (oil and lubricant supply) outside the designated area;
- (8) Dumping rubbish outside the designated areas;
- (9) Reckless driving on local roads;
- (10) No safety clothing during construction (for example, safety shoes and helmet);
- (11) Having an impact on the people nearby;
- (12) Leakage of pollutants like oil;

(13) Incineration of garbage.

If any contractor, office worker or other staff member is found to have violate the above rules, the person concerned shall be given different levels of disciplinary punishment from verbal criticism to the termination of labor contract.

6.4 Health and safety

(1) The Contractor shall ensure that the project meets all national and local safety regulations and other damage prevention measures;

(2) Prior to construction, the Contractor should provide safety training for the workers;

(3) There should be adequate lighting both in the daylight and at night;

(4) The enclosure should be built around the site to prevent disturbance and checked and maintained during construction.

(5) Without the approval of the Contractor's managers, people without fixed duties shall not enter the construction camp;

(6) Construction camps should be equipped with fire extinguishers and other fire protection equipment;

(7) The Contractor shall provide enough personal safety protection devices for the construction workers (for example, goggles, protective gloves, protective masks, dust guards, safety helmets, ear protectors, helmets, etc.), and ensure they are used in the construction site;

(8) Safety procedures, emergency plans and emergency contact information should be displayed on the construction site bulletin board;

(9) All places with possible danger should give warnings explicitly;

(10) The safety protection distance shall be determined according to relevant regulations;

(11) The Contractor shall take all appropriate measures to prevent risks and ensure that fire protection equipment is provided for the construction site and all camps;

(12) Any engineering requiring open fire may only be carried out at the place as approved by the Environment Supervision Engineer and under his supervision. At the same time, the corresponding fire protection equipment should be put in place;

(13) The Contractor shall provide physical examination to the construction workers every year;

(14) The Contractor shall also provide trainings in basic personal hygiene and epidemic prevention, including respiratory and infectious diseases;

(15) The Contractor shall carry out education activities on disease prevention and treatment (especially the prevention of AIDS and venereal diseases), including the publicity at the construction site and adjacent areas in the form of notices and training classes;

(16) The Contractor shall provide the construction workers with basic first-aid services and emergency measures;

(17) The Contractor shall erect necessary warnings and road speed reduction devices on the construction roads near local communities (if any) to ensure the traffic safety of the nearby residents.

6.5 Storage of fuel, oil and hazardous and noxious substances

(1) All the fuel at the construction site shall be stored and fenced; the storage area shall be 110% of the fuel storage containers. The fuel storage area shall not be near any source of water (namely, up to 100m from the source of water);

(2) Dangerous goods should be stored in a designated storing device. Provisional storage regulations should be developed for dangerous goods like fuel, oil and paint.

(3) Such storage area is for personnel concerned only;

(4) Such storage point should also be protected from vehicle damage and regularly checked for

leaks, damage and contamination;

(5) The maintenance of machines and equipment shall be conducted only in the Contractor's camp. The operating surface (the concrete floor within the enclosed area) must be properly designed to ensure that oil and fuel are collected in the right containers. In case of oil/fuel leakage, the contaminated soil must be moved to the duly approved site for disposal;

(6) To prevent soil and water pollution or erosion by grease, oil, fuel, solvents and chemicals, corresponding preventive measures must always be taken;

6.6 Waste management

(1) During the construction, the Contractor must dispose of the site waste from time to time to the approved waste disposal equipment in an appropriate manner. Construction waste stacking should be minimized as far as possible.

(2) The municipal solid wastes generated by the activities at the Contractor's Camp shall be completely placed in the garbage can (210L steel drums or plastic drums) or the garbage dump car. The Contractor shall ensure that such containers are emptied once a week or when necessary.

(3) All wastes should be placed in the trash can or the waste dump car immediately. No littering in the working area or the Contractor's camp.

(4) Construction wastes must be stored in the Contractor's camp and handled by the Contractor. The contaminated construction scrap must be treated separately.

(5) Incineration of garbage is prohibited on the construction site.

6.7 Wastewater and storm water management

(1) The wastewater from the construction site and camps should not be discharged directly into the surface water body;

(2) If it is impossible to connect with the existing municipal sewage pipe network, the sewage may be regularly sucked by the fecal suction truck to the sewage treatment plant for treatment after being collected and pretreated by the biochemical pool; if the municipal sewage pipe network can be connected, the sewage may be discharged to the municipal sewage pipe network after being collected and pretreated by the biochemical pool.

(3) Rainwater shall not be discharged into the river unless its energy dissipation is measured;

(4) The storm runoff water from the construction sites (temporary drainage facilities) should be distributed equally as far as possible; and its flow rate should be reduced by using gabion boxes, the ripple beds and the low-lying areas.

6.8 Noise control

(1) Limit the construction time in the daytime;

(2) When the construction near local communities is conducted on weekend, only those activities without noise are permitted;

(3) Site workers, visitors and construction workers must be equipped with appropriate hearing protection devices to avoid the impact of the noise on hearing;

(4) The Environment Supervision Engineer must regularly inspect the site to ensure that it is in conformity with the *Occupational Health and Safety*.

6.9 Information communication with the public during the construction phase

Public engagement and complaint registration:

(1) During the construction, the Contractor should maintain open communication with the local government and the people of relevant communities;

(2) Prior to construction, the Contractor shall disclose the project information to the affected parties (for example, local governments, businesses and residents) in the form of a community meeting;

(3) All construction sites shall be marked with relevant project information, including but not limited to:

- ① Project overview;
- ② Construction program;
- ③ Major construction activities;
- ④ Major environment problems and mitigation measures;
- ⑤ The name and telephone number of the Project Manager, Supervision Engineer and environmental protection personnel;

(4) The Contractor and the Environment Supervision Engineer shall communicate with the main sensitive receivers regularly to minimize the adverse effects on them;

(5) All contractors shall provide workers with training in relation to the maintenance of neighboring relationship, communication, local customs and codes of conduct.

(6) Information on complaint channels should be posted at the site entrance;

(7) The office of the construction site shall have a complaint register. All complaints, problems and related issues should be included in the feedback report and shall be reviewed by the Environment Supervision Engineer and the Project Owner units;

(8) Complaints that need to be corrected must be communicated to the parties concerned to ensure that the complainant is satisfied.

6.10 Physical Cultural Resources

(1) It is to provide workers with education of historical relics and the training pertaining to the discovery and protection procedures of historical relics.

(2) If relevant resources are found;

- ① The Contractor shall immediately stop the construction and protect the site;
- ② Report to the Environment Supervision Engineer and the Owner as well as local culture and resource authorities;

③ During the investigation of local authorities, the Contractor shall take appropriate measures to protect the sites of historical relics and shall implement weather protection measures;

The Contractor may not resume construction unless the relevant authorities have approved.

7 Information disclosure and public engagement

7.1 Public engagement

Public engagement has been extensively promoted during the preparation of the *Environmental Impact Assessment* (EIA), whereby public concerns have been reflected in EIA/the *Environmental Management Plan*.

To minimize the impact, communication activities with the affected groups of people will continue throughout the project. The purpose of communication is to provide a two-way information channel, through which the project progress and the implementation of the *Environmental Management Plan* can be promoted to the affected groups, so that the feedback from these groups about the projects under construction can be communicated to the Contractor and the Project Owner unit in a timely manner.

The Contractor shall disclose the information with regard to the content of the project, the main environmental issues and mitigation measures, according to the contact information of the recipient in the project construction site.

This project does not involve resettlement, and the following representations mainly aim at the groups affected by the project.

7.2 Complaint and complaint mechanism of environmental management plan

Complaint and complaint mechanism is a two-way communication between the project builder and the public. It is an important mechanism to reduce the risk and social impact of the project, and also an important way for project information being open and transparent, and engaging public participation. The Project Office has established a transparent, simple and practicable procedures to collect and process discontent and complaint, so as to deal with the dissatisfaction of the masses in an objective and fair manner, and guarantee social management plan can be carried out smoothly.

The main body of appealing is the group affected by the project in the project area, as well as other groups, including construction workers.

Complaints and appeals must be directly or indirectly related to the project.

The objects of complaints and appeals are diversified, mainly referring to local basic-level political organizations or more senior government agencies, project offices, judicial organs, etc.

There are two main methods of complaints and appeals: oral and written. Oral complaint means that the complainant may present problems or difficulties to the project office, sub-district, community, other government departments or related staff in a non-written form. Written appeal means that the plaintiff formally submits a written application to the relevant responsible authority or department, with the signature of the complainant's own basic information, the content and cause of the appeal, the intended solution or other suggestions, etc.

7.2.1 Collecting methods of discontents and complaints

(1) Through the reports of the sub-district offices or the communities, including complaints of the masses, progress, work measures and existing problems;

(2) Through the regular reports about construction situation and problems from the construction unit to the owner construction unit, mainly reflecting how the masses impact the construction through the construction units.

(3) The construction unit shall put up posters in the construction site and camp during the construction, on which the information shall include project overview, construction time, demands for civilized construction, contact telephone number for environmental complaint and others, so that residents can better express their demands;

(4) Coordination of environmental complaints found in the construction site inspection of the

owner construction unit;

(5) Relevant information reflected by external monitoring agencies;

(6) Letters and visits from affected persons;

(7) Situations reflected by the workstation, which is the organization dispatched by the owner construction unit;

(8) Related issues reflected in the work inspection of the environmental protection department;

(9) Special investigation of internal monitoring.

7.2.2 Procedures for complaints and appeals

(1) Phase 1

The complainant shall make oral or written complaints to the resettlement office in the sub-district or community. For the oral complaint, the resettlement office in the sub-district or community must make a written record and give a clear answer within 2 weeks. For the severe problem, if it is necessary to ask for instructions from the higher-level resettlement office, the response of the superior resettlement management department must be sought within 2 weeks.

(2) Phase 2

If the responses of Phase 1 fail to satisfy the complainants, the complainants may appeal to the Project Office within one month of receiving the decision of Phase 1, and the Project Office shall make the decision on the handling of the complaints within 3 weeks.

(3) Phase 3

If the affected persons are still dissatisfied with the responses to Phase 3, they may file a lawsuit in the people's court within 15 days of receiving the responses from the Project Office.

7.2.3 Principle of handling complaints

The public's demands for environmental protection during construction and operation of the project shall be seriously treated. We should fully solicit public opinions, patiently and repeatedly consult with each other, and put forward the handling of opinions in accordance with the principles and standards in the report of national regulations and environmental impact assessment. In case of the unmanageable complaints, we must be timely report and reflect the situation and to the higher-level requisition and resettlement authorities and assist in the investigation.

If the decision of the previous phase does not reply to the appeal question at the specified date, the complainant has the right to appeal.

7.2.4 Content and manner for responses to complains

(1) Content for the Responses to Complains

① A brief description of the complaints.

② Results of fact investigation.

③ The principles and standards of the relevant state regulations and resettlement plans.

④ Handling opinions and their specific basis.

⑤ The complainant has the right to appeal to the higher level resettlement organizations and to the civil court, and the costs are paid by the project unit.

2) Manner for the Responses to Complains

① For the complaints about the individual phenomenon, the written materials of response shall be sent directly to the complainants.

② For the complaints that are frequently reflected, the responses are informed by holding a village meeting or issuing the official documents to the complainants' communities.

No matter how the responses are given, the materials must be sent to the resettlement department of the complainants.

7.2.5 Complaints and appeals recording and follow-up feedbacks

Throughout the project, the basic-level project management organization shall be responsible for the registration and management of the complaint data and processing results, and shall submit them to the Project Office once a month in written form. The Project Office will conduct regular inspections on the complaints handling registration.

8 Environmental protection training

8.1 Environmental protection technology and skill training

(1) In-service training for environmental management personnel

The purpose of in-service training for environmental management personnel is to enhance environment management during the construction phase and operational phase, ensure quality of environmental monitoring and practical and effective environmental management, so as to improve the whole project quality. After participating in position training, environmental management personnel can tell apart main environmental issues during the construction phase, and have a better understanding of existing problems and deficiencies of environmental management, and report to the engineering environmental protection office (department) in time in order to take necessary prevention and control measures as soon as possible. During the construction phase, the project management organization shall invite environmental protection experts or environmental management personnel with similar management experience to explain possible environmental issues and solutions.

(2) Training for construction responsible personnel and construction workers

Before the construction, for the bid winner, the systematic environmental professional knowledge training shall be organized for the responsible personnel and construction workers responsible for construction in order to avoid environmental damages due to misoperation during construction. For contract responsible personnel, the purpose of training is to define the environmental protection responsibilities of the Contractor; for construction workers, the purpose is to ensure the proper construction operation during the construction phase in order to avoid some construction behaviors having unnecessary adverse impacts on the environment. The training is helpful for the project responsible personnel to understand their obligations in environmental protection needed to be assumed and possible consequences of the environmental damage. The construction workers will have a better understanding of the protection level and methods for environmental sensitive areas. Based on the actual situation of the Project, the training for construction workers shall last one week.

(3) During the operational phase of Project, the project management organization shall regularly hold environmental protection knowledge training to facilitate the staff to identify possible environment issues of respective posts and take necessary measures. Each person shall hold the idea of environmental protection.

8.2 Training modes and training expenses

Table 8.2-1 Environmental protection training program

SN	Training objects	Training content	Organizer	Number of trainees	Training and study time	Location	Budget (RMB 10 thousand)
1	Staff of project office and project environmental protection office (department)	Knowledge of environmental protection management	Construction unit	2 persons	15 days	Chongqing	0.6
2	Staff of project office and project environmental protection office (department)	Visit similar domestic project sites so as to learn the mature environmental management experience.	Construction unit	2 persons	5 days	/	0.2
3	Staff of project office and project environmental protection office (department)	Acquire comprehensive knowledge in environmental protection and management and understand the contents of environmental impact report of	Construction unit	2 persons	15 days	Chongqing	0.3

China: Chongqing New Urbanization Pilot and Demonstration Project Jiulongpo District Urban Regeneration Project
Environmental and Social Impact Assessment

SN	Training objects	Training content	Organizer	Number of trainees	Training and study time	Location	Budget (RMB 10 thousand)
		the project.					
4	Site responsible personnel from the supervision organization and environmental supervisor of the project	Knowledge of environmental supervision, content of environmental impact report of the project and corresponding environmental protection design documents of the project.	Construction unit and supervision organization	1 person	15 days	Chongqing	0.3
6	Main technical leaders and construction responsible personnel of the contractor	Knowledge in environmental protection and environment management	Construction unit and Contractor	3 persons	15 days	Chongqing	0.9
7	Construction workers	Knowledge in environmental protection of the project	Construction unit and Contractor	150 persons	5 days	Chongqing	7.5
Total				/	/	/	9.8

9 Environmental protection investment

Budget has been made for implementing *Environmental Management Plan* during the construction and operational phases, as shown in Table 10.1-1. Total budget of environmental investment includes environmental mitigation measures, environmental protection monitoring and management and main works, as well as mitigation and elimination of negative impacts on environment. Notes that many mitigation measures are management practices, and the budget is included in the whole contract and may not be indicated specifically.

The environmental protection investment estimate of the Project is totally RMB 3.7 million and the total investment of the Project is RMB 252.70 million, so the environmental protection investment accounts for 1.46% of the total investment. See the table below for environmental protection project and investment estimate of the Project:

Table 9.1-1 List of environmental protection investment

SN	Phase	Environmental factors	Pollution sources	Environmental protection measures	Environmental protection investment (RMB 10 thousand)
1	Construction Phase	Sewage and wastewater	Flushing wastewater	Set oil separation and sand settlement pond, and recycle wastewater after treatment rather than discharging out.	50
2			Sanitary sewage	Set a biochemical pool for collection pretreatment. The construction camp with conditions, sewage can be directly connected with municipal sewage pipe network; and for the construction camp without conditions, sewage shall be regularly extracted to sewage treatment plant for treatment by a fecal truck.	30
3		Atmospheric pollutants	Dust	Enhance management, promote wet method operation, set baffle, materials storage yard fence and cover it along the construction site; prohibit throwing materials from high places.	60
4		Noise	Noise	Select low-noise equipment; reasonably arrange construction schedule, avoid night construction; reasonably arrange construction machinery and equipment in the site; and set fences.	30
5		Solid waste	Spoil Domestic garbage	Transport spoil to specified slag disposal pit; collect domestic garbages at fixed points and regularly clean it.	40
6		Ecological	Ecological	Arrange construction activities at construction land scope; before	40

SN	Phase	Environmental factors	Pollution sources	Environmental protection measures	Environmental protection investment (RMB 10 thousand)
		environment	environment	construction, strip surface in the land scope and use it as greening soil after construction.	
7			Water and soil conservation	Excavated materials shall be transported for backfilling; set retaining walls, drainage ditches, ecological protection slopes, intercepting drains, sand settlement ponds and plant trees and grass.	Included in investment for main project
8	Operational phase	Air pollutant	Dust, off-gas	Enhance detection and repairing of motor vehicle, prohibit passage of vehicle with off-gas exceeding standard, maintain road conditions and use plants to purify air.	20
9		Noise	Noise	Asphalt pavement, planting trees and grass and set honking prohibition signs.	20
10		Risk prevention measure	/	Speed limit and formulation of emergency plan	/
11	Environmental management	/	Environmental monitoring during the construction phase, environmental management maintenance during the operational phase, etc.		80
12	Total				370

Note: the investment is only the environmental assessment estimate, and the actual investment depends on project estimation.