SFG2445 V1

World Bank Jiangxi Poyang Lake Basin Water Environment Management Project

Consolidated Environmental Management Plan

Consignor：Jiangxi Province Office of Urban Construction & Foreign Capital Utilization

Consignee：CERI eco Technology Co., Ltd. Beijing

2016.8

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ANNEX

1 General Introduction

1.1 Overview

The environmental management plan is completed by the appropriate supplement and modification on the basis of "World Bank Poyang Lake basin water environment management project-environmental impact Assessment report". The environmental management plan as an independent document, includes all the environmental protection actions to be implemented in project design period, construction period and operation period.

It provides a guideline and framework for the project to implement the mitigation measures, environmental management and environmental monitoring in the construction and operation periods. The main contents include:

*Project Overview

*Potential Environmental Impact of the Project

*Organizations and Responsibilities

*Environmental Management Plan

*Environmental Monitoring Program

*Environmental supervision

1.2 Purpose of EMP

The purpose of the preparation of EMP for World Bank Poyang Lake basin water environment management project is to

Strive to make practical and feasible measures to prevent, reduce, alleviate or compensate the adverse environmental impacts and enhance the favorable environment impacts, to improve project selection, site selection, planning, designing, implementation and other activities. In other words, to take measures in the whole process of the project, to mitigate and manage the negative environmental impacts, and to assess the actual effect of mitigation measures through the implementation of environmental monitoring plan. And make suggestions for further improvement of mitigation measures based on monitoring results, to meet the relevant environmental requirements of the country, Jiangxi province and the World Bank.

2 Brief Introduction

2.1 Project Origin

In order to protect the good ecological environment, guard the "Green mountains and rivers " of Jiangxi, further strengthen ecological civilization construction, consolidate the ecological advantages, and effectively improve the ecological environment while the social economy development is accelerated, Jiangxi province intends to use the world bank loan to implement the Poyang Lake basin water environment management project in Jiangxi province, specifically involving Duchang County, Jiujiang, Poyang and Yugan County, Shangrao, Fengxin and Jing'an County, Yichun, Jishui County, Ji'an, and Shangli County, Pingxiang. Among them, 3 counties (Duchang, Poyang, Yugan) located in the central area of Poyang Lake, 1 county (Jishui) located in the middle reaches of the main river flowing into Poyang Lake, 2 counties (Fengxin, Jing'an) near the tributaries of the main river flowing into Poyang Lake, 1 county (Shangli) close to the source of Poyang Lake tributaries. Integrated pollution control and ecological safety improvements in these 7 counties can reduce the pollutants flows into key water area and then flows into Poyang Lake Basin, provide a guarantee for the Poyang Lake water ecological security.

2.2 Project Component

The project consists of 4 sub projects:

1) Poyang Lake Basin Management Reinforcement;

2) River and Lake Water Environment Remediation and Domestic Wastewater Management System Enhancement;

3) Solid Waste Collection and Transport System;

4) Project Implementation Support.

The details of each sub project are listed in Table2-1.

2.3 Project investment

The total investment is 1.443571 billion yuan yuan, proposed to apply for the World Bank loans of $150 million (exchange rate $1 = 6.6 yuan, equals to 990 million yuan), matching funds of453.571 million yuan, Financed by the up level government support and local government. The capital using and financing plan plan of the total investment included in each countie’s report.

2.4 Implementation plan

The project will implement in accordance with the principle of unified planning, phased

implementation, crossing construction and phased delivery.The project construction period is 5 years, start from January 2018 and finish at the end of December 2022 with the acceptance.

Table 2-1 Project components

County	Sub project Name	Component	Construction work	Scale
Duchang county	Duchang county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water Environmental Monitoring System Establishment, Staff Training; System Perfection, Supporting Facilities Perfection, Facilities Maintenance, Information Interaction, Public Participation And Incentive Mechanism	New construction of: ● 1 house for county water environment monitoring system, 3levels, 1250m^2; ● 2 water environment automatic monitoring stations at river boundary monitoring section; ● 7 water environment automatic measuring and reporting points.
		River and lake water environment remediation	Zoujiazui lake water system ecological environment improvement by source control and pollution interception, lake dredging, Low impact development facility and Wetland construction etc.,	● About 8000m^3 of Zoujiazui lake dredging with depth about 0.3m; ● New construction of 4.0km sewage interception pipeline line for Zoujiazui lake with DN600～DN800 ● About 0.8km wetland revetment, ● 26.82ha of total wetland protection area; ● The pilot transformation of sponge city : 1.7km rain water pipeline for Furongshan Avenue with d1000～d1800; ● New construction of 5000m^2 sunken green space in Furongshan industrial area ● New construction of 10000m^2 pedestrian permeable pavements ● Reconstruction of about 2000m^2 permeable pavements of public parking spaces
		Domestic	Drainage pipe network systems	New construction of:

County	Sub project Name	Component	Construction work	Scale
		wastewater management system enhancement	improvement, and the wastewater collection rate enhancement	● 20.10 km wastewater pipeline with DN400～DN1200, ● 8.74km rain water pipeline with d800～d1500, ● Short term wastewater collection of 30 thousand m^3/d, and long term wastewater collection of 52 thousand m^3/d.
		Solid waste collection and transport system	Construction of 3 township solid waste collection and transport system, Construction of 1 intelligent cloud platform for domestic waste collection, transport and treatment system	New construction of 3 waste transport station： ● Beishanxiang waste transport station with the transport scale of 22 t/d, ● Wangdunxiang waste transport station with the transport scale of 29.0 t/d, ● Dashuxiang waste transport station with the transport scale of 25 t/d.
		Project implementation support	Equipment configuration, capacity building etc.	
Poyang county	Poyang county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water Environmental Monitoring System Establishment, Staff Training; System Perfection, Supporting Facilities Perfection, Facilities Maintenance, Information Interaction, Public Participation And Incentive Mechanism Promotion of Soil Testing And Formula Fertilizer technology in plantation; Prohibition of scale culture in Livestock Farming; Promotion of traditional culture mode “graze by man and raised by nature” in	Conversion of existing houses of Poyang Lake National Wetland Park into water environment monitoring system: ● 1 new water quality automatic monitoring station, ● 8 automatic measuring and reporting points

County	Sub project Name	Component	Construction work	Scale
			aquaculture, Prohibition of “3nets”,No permission to Feed, Promotion of "oil to gas" in the existing motor vessels to prevent the oil pollution in tourism.	
		River and lake water environment remediation	Pearl Lake water system ecological environment improvement by pollution control measures like Ecological Sewage Interception Channel and Constructed wetlands	New construction of ● 101 Constructed wetlands, total area of 154765.02m^2; ● 95.85km ecological Sewage Interception Channel
		Domestic wastewater management system enhancement	Underground integrated treatment facilities and Supporting Pipe Network construction for each of the 35 Village Around Pearl Lake water body.	New construction of ● 35underground integrated treatment facilities: using Facultative-aerobic MBR (FMBR) process; total wastewater treatment scale of 2600t/d, namely, 22 of 50t/d and 11of 100t/d, 1 of 150t/d, 1 of 250 t/d; ● 101.22 km DN300～DN400 wastewater pipeline, including 42.1km pressure pipeline.
		Project implementation support	Equipment configuration, capacity building etc.	
Yugan county	Yugan county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	● Conversion of existing houses of Yugan county EPA into water environment monitoring system: ● New construction of 7 automatic measuring and reporting points ; ● Abolition of 22 ha of fish ponds, with the subsidy of 1 million 200 thousand yuan
		River and lake	Pipa Lake water environment improvement	New construction of

County	Sub project Name	Component	Construction work	Scale
		water environment remediation, domestic wastewater management system enhancement	by measures like source control and pollution interception, water diversion project and ecological remediation.	● 5562.8m DN300-DN400 wastewater pipeline around the Pipa Lake, with the short term wastewater collection of 1.6 thousand m^3/d, and long term of 1.9 thousand m^3/d; ● 1 integrated prefabricated pumping station at the diversion channel port c, with the scale of Q=7200m3/d in Biwa Ko; 1 new outlet sluice, the replacement of the 3 current bad operated sluices; ● 2100m ecological concrete slope protection, ● 1816m ecological engineering materials slope protection, ● 1297m natural slope plants slope protection, Reconstruction of ● 2165m existing slope protection; ● 40000m^2 virescence project 30000m^3 dredging of Pipa Lake drainage channel; 3000m^3 of intensive purification of river channel.
		Solid waste collection and transport system	Improvement of the solid waste collection and transport system around the Pipa lake.	● Cancelling of the waste transport stations at huanhudongroad and 2nd Middle School gate; ● Converting the waste transport station at Municipal Administration Bureau into a waste collection point; ● New construction of a waste collection point;.
		Project implementation support	Equipment configuration, capacity building etc.	
Fengxin county	Fengxin county	The Poyang Lake	Water environmental monitoring system	● Using existing EPA houses for water environment

County	Sub project Name	Component	Construction work	Scale
	Water environmental management	basinmanagement reinforcement	establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	monitoring system, ● 2 container type river and lake Water quality automatic monitoring stations .
		Domestic wastewater management system enhancement	Perfection of Wastewater interception pipeline and supporting pumping station in North county and South county	New construction of ● 22.27km DN400-DN1000 wastewater pipeline, ● 13.15km d600-d1800 rainwater pipeline ● 3 integrated prefabrication pumping stations, short term wastewater collection of 15 thousand m3/d, and longterm of 20 thousand m3/d; Dredging and covering of 3 Open drainage channel- in the north county with the dredging quantity of : ● 2400 m^3 for Dazhai channel； ● 3480 m^3 for northzhizhen channel； ● 7600m^3 for South channel.
		Project implementation support	Equipment configuration, capacity building etc.	
Jing'an county	Jing'an county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; 开展"the Poyang Lake basin water environment vulnerability research ", " Poyang Lake water environment management financing mechanism research"2 个课题研究; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information	New construction of ● 1 house for county water environment monitoring system, 3levels, 1250m^2; ● 2 water environment automatic monitoring ● 7 automatic measuring and reporting points machine box

County	Sub project Name	Component	Construction work	Scale
			interaction, Public participation and incentive mechanism	
		Domestic wastewater management system enhancement	Perfection of drainage pipe network systems in the new north county and old South county area	New construction of ● 29.24km DN200-DN600 wastewater pipeline; ● 17.59km d200-d1800 rainwater pipeline, With the shorterm wastewater collection of 9.8thousand m^3/d, and long term of 16.6 thousand m^3/d;
		Solid waste collection and transport system	Solid waste collection and transport system improvement and intelligent cloud platform building for Waste collection and transportation.	Reconstruction of 2 waste point: ● Nangang Road waste pit, ● Qinghu Road waste point, Equipped with the garbage box of better sealing performance; 1620 waste bins; 2 compression waste vehices; 4 hanging barrel type tricycles; 2 waste recycling vehices; 1 back hanging barrel waste collection vehices, etc..
		Project implementation support	Equipment configuration, capacity building etc.	
Jishui county	Jishui county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	New construction of ● 1 house for water environment monitoring system, 3levels, 1250m2; ● 2 water environment automatic monitoring stations at river boundary monitoring sections, 2 levels, 153.5m^2 each; ● 4 water environment Automatic measuring and reporting points

County	Sub project Name	Component	Construction work	Scale
		Domestic wastewater management system enhancement	Drainage pipe network systems and supporting pumping station perfection of South county area and old township area.	New construction of ● 27400m DN200-DN600 wastewater pipeline along the road; ● 15200m d600-d2000 rainwater pipeline (channel), with the shorterm wastewater collection of 13thousand m^3/d, and long term of 20 thousand m^3/d; ● 3 integrated prefabrication wastewater Pumping Station with the scale of 1500m3/d, 2500m3/d, 5000m3/d respetively Expansion the treatment scale of： 1 existing Pumping Station from 10 thousand m^3/d to 1thousandm^3/d.
		Project implementation support	Equipment configuration, capacity building etc.	
Shangli county	Shangli county Water environmental management	The Poyang Lake basinmanagement reinforcement	Water environmental monitoring system establishment, staff training; System Perfection, Supporting Facilities Perfection, Facilities maintenance, Information interaction, Public participation and incentive mechanism	Using existing houses of Shangli county epafor water environmentmonitoring and dispatching system
		Solid waste collection and transport system	Construction of 6 township solid waste collection and transport systems, Construction of 10 township intelligentcloud platforms for Waste collection and transportation.	New construction of 6 waste transport station: ● Yangqi Xiang waste transport station（29.0t/d） ● Changping Xiang waste transport station（43.5t/d） ● Futian Town waste transport station（25.2t/d） ● Penggao Town waste transport station（21.6t/d）

County	Sub project Name	Component	Construction work	Scale
				● Dongyuan Xiang waste transport station（42t/d） ● Chishan Town waste transport station（47.3t/d） ● 87 waste collect points, one for each Village.
		Project implementation support	Equipment configuration, capacity building etc.	

3 Environmental Protection Targets and Complied Standards

3.1 Environmental Protection Targets

3.1.1 Noise and Air Environmental Protection Targets

According to EIA team's field investigation, the noise, ambient air protection targets of each sub project are listed in Table3-1.

Table 3-1 Noise, ambient air protection targets

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
Duchang County	**1) normal environmental sensitive point of reception**						
	Wastewater Pipeline Improvement Project	Construction Period	Construction Dust, Construction Machinery Noise, Etc.	Zhanghe Village	Upstream area of Zoujiazui lake basin, West side of wastewater pipeline	10	20 Households
				Chengbeichuntian	Midstream area of Zoujiazui lake basin, Both east and south side of the wastewater pipeline	70	200 Households
				Dawanlv Village	Midstream area of Zoujiazui lake basin Both east and south side of the wastewater pipeline, North side of Wanli Avenue	10	180 Households
				Xuzongshi Village	Midstream area of Zoujiazui lake basin, Both South and East side of the wastewater pipeline	10	180 Households
				Zhaoshengmian Village	Downstream area of Zoujiazui lake basin, West side of the wastewater	10	30 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					pipeline		
				Yangjianggang	Downstream area of Zoujiazui lake basin, West side of the wastewater pipeline	10	50 Households
				Zoujiazui	Downstream area of Zoujiazui lake basin, West side of the wastewater pipeline	10	220 Households
				Xiawanlvjia	Both the south and East side of Wanli Avenue	20	200 Households
				Ruanlonggao Village	North side of Wanli Avenue	15	200 Households
				Changlingzhou Village	South side of Wanli Avenue	20	100
				Huimin Neighbourhood	South side of Wanli Avenue	15	200 Households
				Tongshu Village	Both the south and East side of Wanli Avenue	15	220 Households
				Caojia Village	North side of Wanli Avenue	15	50 Households
				Yangguan Neighbourhood	South side of Yingbin Avenue	20	200 Households
				Xianghuo Village	Northeast side of the Donghu Avenue, west side of the wastwater pipeline	15	150 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Shiqiaoshao Village	Northeast side of the Donghu Avenue, west side of the wastwater pipeline	15	100 Households
				Shijihuating	Northeast side of the Donghu Avenue, north side of the wastwater pipeline	20	200 Households
				Yingzuibanchen Village	Northeast side of the Donghu Avenue, east side of the wastwater pipeline	80	100 Households
				Shenjia	Northeast side of the Donghu Avenue, north side of the wastwater pipeline	15	50 Households
				Defujiayuan	Northwest side of the Donghu Avenue, north side of the wastwater pipeline	40	180 Households
				Xiangyangsan Village	Northwest side of the Donghu Avenue, east side of the wastwater pipeline	15	80 Households
				Zhoujiazui	North side of Donghu Avenue	15	30 Households
				Zhaojiazui	South side of Donghu Avenue	40	20 Households
				Tupuchen Village	South side of Donghu Avenue	20	15 Households
				Dayanhuang Village	South side of Donghu Avenue	15	100 Households
				Chenjialong Village	South side of Donghu Avenue	15	50 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Huapu Internatisnal Mansion	South side of Donghu Avenue	20	200 Households
				Luojialing Village	North side of Donghu Avenue	15	120 Households
				Liufang Village	South side of Donghu Avenue	40	80 Households
	Water System Ecological Remediation And Protection Project	Construction Period	Construction Dust, Construction Machinery Noise 等	Zhaoshengmian	West side of Zoujiazui water system	30	30 Households
				Yyangjiagang	West side of Zoujiazui water system	30	50 Households
				Zoujiazui	West side of Zoujiazui water system	15	220 Households
				Shaojiazhe	East side of Zoujiazui water system	180	50 Households
				Shao Village	East side of Zoujiazui water system	100	120 Households
				Bajiazui	Northeast side of Zoujiazui water system	30	120 Households
				Siguayan	East side of Zoujiazui water system	20	120 Households
	2) key environmental sensitive point of reception						
	Wastewater	Construction	Construction	Duchang County Central	Downstream area of Zoujiazui lake basin	10	In

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
	Pipeline Improvement Project	Period	Dust, Construction Machinery Noise Etc.	Kindergarten			Construction
				Duchang Experimental Primary School	Downstream area of Zoujiazui lake basin south side of wastewater pipeline	80	5500 People
				Duchang 3rd Primary School	North side of Wanli Avenue	15	4000 People
				Maternal And Child Health Care Hospital Of Duchang County	North side of Wanli Avenue	15	262 People
				Qinjiafan Primary School	South side of Wanli Avenue	40	1500 People
				Union Hospital	South side of Donghu Avenue	15	300 People
	Domestic Waste Collection And Transportation Project	Operation Period	Odor of Operation Period	Bachuantang	Beishanxiang waste transport station east side of	200	10 Households
				Yanggang Village	North side of Wangdunxiang waste transport station	70	3 Households
				Matang Village	South side of Dashuxiang waste transport station	20	10 Households
Poyang County	**1) normal environmental sensitive point of reception**						
	Wastewater Treatment Station, Pipeline And Ecological	Construction Period	Construction Dust, Construction Machinery Noise Etc.	Zhongnao	East side of the Village's wastewater treatment station	100	400 People
				Tangli	East side of the Village's wastewater treatment station	120	700 People
				Yaoli Village	East side of the Village's wastewater	100	450 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
	Sewage Interception Chann 土建工程				treatment station		
				Miaozui Village	East side of the Village's wastewater treatment station	100	460 People
				Caojiazui	East side of the Village's wastewater treatment station	130	1200 People
				Ligongnao Village	South side of the Village's wastewater treatment station	100	650 People
				Dating	East side of the Village's wastewater treatment station	110	400 People
				Hujia Village	South side of the Village's wastewater treatment station	120	1300 People
				Zhaojia	East side of the Village's wastewater treatment station	100	500 People
				Caojia	East side of the Village's wastewater treatment station	120	1500 People
				Zhoujai	East side of the Village's wastewater treatment station	130	1300 People
				Dukou	West side of the Village's wastewater treatment station	100	600 People
				Luyitang (Tongxing)	East side of the Village's wastewater treatment station	120	900 People
				Hengtouzui	East side of the Village's wastewater	100	600 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					treatment station		
				Zhuyundun	East side of the Village's wastewater treatment station	130	1000 People
				Luye Village	East side of the Village's wastewater treatment station	100	450 People
				Dazong	East side of the Village's wastewater treatment station	110	300 People
				Huangbiquan	East side of the Village's wastewater treatment station	130	1000 People
				Hupen Village	East side of the Village's wastewater treatment station	150	800 People
				Pantaozui	South side of the Village's wastewater treatment station	150	800 People
				Chenli Village	South side of the Village's wastewater treatment station	150	1200 People
				Wangjia	East side of the Village's wastewater treatment station	130	400 People
				Zhanjia	East side of the Village's wastewater treatment station	120	900 People
				Shengshan	East side of the Village's wastewater treatment station	100	1300 People
				Hushan	West side of the Village's wastewater	120	300 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
					treatment station		
				Bantangxu	West side of the Village's wastewater treatment station	120	1300 People
				Meihu	South side of the Village's wastewater treatment station	100	300 People
				Shizishan	East side of the Village's wastewater treatment station	120	200 People
				Gaohu	East side of the Village's wastewater treatment station	100	200 People
				Jiangjia Village	East side of the Village's wastewater treatment station	100	3155 People
				Tangjia	West side of the Village's wastewater treatment station	100	1300 People
				Houfan	South side of the Village's wastewater treatment station	100	500 People
				Jingtang Village /Qiangfan	East side of the Village's wastewater treatment station	120	700 People
				Yujia	South side of the Village's wastewater treatment station	100	700 People
				Maojia Village	South side of the Village's wastewater treatment station	120	200 People
Yugan	**1) normal environmental sensitive point of reception**						

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
County	Pollution Interception	Construction Period	Construction Dust, Construction Machinery Noise Etc.	Pipazhou Neighbourhood	Northwest side of the old Municipal Administration bureau waste transport station	100	100 People
				Guankou Village	Pipeline works	20	250 People
	Wastewater Pumping Station	Operation Period	Noise	Pipazhou Neighbourhood	East side of the Pumping Station	100	100
Fengxin County	**1) normal environmental sensitive point of reception**						
	Pipeline Works	Construction Period	Construction Period Dust, Construction Period Mechanical Noise	Zhonghe Jiayuan	West side of Yingxing Avenue	30	130 Households
				Bishui Jiayuan	West side of Yingxing Avenue	56	120 Households
				Victoria Huating	North side of Tonghua Avenue	28	110 Households
				Yage Chuntian	South side of Xisha Road	33	280 Households
				Weixing Binjiang Huacheng	West side of Jiutiange Road	113	220 Households
				Qingtian Residential Area	North side of Fengchuan Road	31	65 Households
				Xinyuancheng	East side of Guangshi Road	82	50

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
							Households
				Longshan Neighbourhood	West side of Guangshi Road	14	90 Households
				Zhongxian Heanlidu	East side of Longshan South Avenue	70	130 Households
				Jinqiaomingju	East side of Nongmin Street	30	90 Households
				Biyunhuayuan	North side of Shuyuan Road	47	135 Households
				Wenxinjiayuan	North side of Shuyuan Road	40	190 Households
				Xingguang Modern City	South side of Shuyuan Road	35	360 Households
				Chi'an Town	Fuyun street	15	60 Households
		Operation Period	Pumping Station Noise	Weixing Binjiahuacheng	North side of Jiutiange electric pumping station for irrigation	80	220 Households
				Hengchang Huayuan	South side of Huangshagong pumping station for drainage	70	80 Households
	2) key environmental sensitive point of reception						
	Pipeline Works	Construction Period	Construction Period Dust,	Fengchuan 2nd Primary School	Fengchuan Road South side of	90	1800 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
			Construction Period Mechanical Noise	Fengxin County 3rd Middle School	North side of Longshan East Avenue	120	3300 People
Jing'an County	**1) normal environmental sensitive point of reception**						
	Pipeline Works	Construction Period	Construction Dust, Construction Machinery Noise	Liaohe Huayuan	North side of Hougang Road	50	100 Households
				Minsheng Fuyuan	North side of Huancheng south Road	100	300 Households
				Meilu Huayuan	West side of Shi Road	10	80 Households
				Luojia Xincun	West side of Shi Road	100	100 Households
				Financial Bureau Dormitory	East side of Shi Road	10	200 Households
				Phoenix Garden	East side of Nangang Road	50	80 Households
				Nanhong Neighbourhood	South side of Linongxiaoxiang2	20	80 Households
				Weilan Jiayuan	South side of Linongxiaoxiang2	10	325 Households
				Xinyuan Huayuan	Southeast side of Denggao Road	10	60

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
							Households
				Jinlingguoji	Southeast side of Denggao Road	10	200 Households
				Qinghuayuan	South side of Baofen Avenue	10	10 Households
				Rijing Huayuan	South side of Baofen Avenue	10	80 Households
				Guiduxuan	South side of Baofen Avenue	50	20 Households
				Haili Huating	South side of Baofen Avenue	200	50 Households
				Meilu Huating	South side of Baofen Avenue	10	135 Households
				Shuianyuyuan	South side of Baofen Avenue	30	245 Households
				Dianlixincun	East side of Shuangxi Avenue	20	300 Households
				Fund Raising Room Of National Tax Bureau	West side of Xuefu Avenue	20	20 Households
				Fengxi Huayuan	West side of Zian Road	20	20 Households
				Shuanglong Huayuan	West side of Zian Road	20	20

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
							Households
				Public Rental Housing	West side of Zian Road	20	/
				Nong1, Nong2 Resettlement Housing	West side of Zian Road	20	/
	2) key environmental sensitive point of reception						
	Pipeline Works	Construction Period	Construction Dust, Construction Machinery Noise	Jing'an Vocational School	South side of Hougang Road	20	1500 People
				Jing'an Hospital Of Traditional Chinese Medicine	South side of Hougang Road	10	200 People
				Jing'an County 1st Primary School	East side of Shi Road	10	700 People
				Jing'an 3rd Middle School	East side of Yabei Road	10	400 People
				Jing'an Middle School	North side of Xuefu Avenue	15	1000 People
				Jing'an 2nd Primary School	West side of the Intersection of Xuefu Avenue and Chengbei Avenue	20	1000 People
Jishui County	**1) normal environmental sensitive point of reception**						
	Pipeline Works	Construction Period	Construction Period Dust, Construction Machinery Noise	Shanshui Haocheng	West side of Wanli Avenue	18	1000 Households
				Yulongwang	West side of Wanli Avenue	155	1800 Households
				Xinchengyihao	East side of Wanli Avenue	10	250 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Jiyang Neighbourhood	South side of Tongshi Road	20	550 Households
				Hanwenyuan Neighbourhood	East side of Yongji Road	18	500 Households
				Chengshi Huayuan Neighbourhood	West side of Huayuan Road	13	420 Households
				Shidaishangmao Neighbourhood	East side of Wenmingbei Road	117	150 Households
				Wenshui Neighbourhood	East side of Wenmingbei Road	17	170 Households
				Hanlinyuan Neighbourhood	West side of Longhua Middle Avenue	23	40 Households
				Tianchengyipin Neighbourhood	East side of Longhua Middel Avenue	99	500 Households
				Shiyang Neighbourhood	West side of Longhua Middle Avenue	13	85 Households
				Qinzhang Huayuan	East side of Longhua Middel Avenue	72	170 Households
				Yangmingyuan Neighbourhood	South side of Wenhuadong Road	13	80 Households
				Longfu Yuan Neighbourhood	North side of Wenjiao Road	9	120 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Xinlongyuan Neighbourhood	South side of Wenfengdong Avenue	58	70 Households
				Binjiang International City	East side of Wenfengdong Avenue	17	800 Households
				Boshi Yuan	North side of Shuinan Road	18	130 Households
	Pumping Station	Operation Period	Equipments Noise	Shuinanbei Village	West side of Enjiang Bridge wastewater Pumping Station	30	20 Households
				Wenshui Village	Northeast side of Xiaojiangkou wastewater pumping station	20	30 Households
				Enjiangbeiroad North Neighbourhoods	North side of Enjiangbei Road wastewater Pumping Station	130	35 Households
	2) key environmental sensitive point of reception						
	Pipeline Works	Construction Period	Construction Period Dust, Construction Machinery Noise	Jishui County People's Hospital	East side of Wanli Avenue	186	500 People
				Jishui County Siyuan Experimental School	East side of Wanli Avenue	107	4775 People
				Jishui Jinshi School	North side of Tongshi Road	10	4157 People
				Jishui Aimin Hospital	North side of Wenshui Avenue	14	200 People
				Jishui County Central Kindergarten	East side of Wenming South Road	17	200 People
				Jishui County Maternal And	South side of Renwen Road	17	400 People

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
				Child Health Care Hospital			
				Jishui 3rd Middle School	West side of Longhua Middle Avenue	14	3650 People
				Jinggangshan Economic And Trade School	East side of Longhua Middel Avenue	12	1700 People
				Jishui Hospital Of Traditional Chinese Medicine	North side of Wenhua East Road	29	300 People
				Chengdong Primary School	South side of Wenhua East Road	124	300 People
				Jishui County 2nd Middle School	North side of Wenhua East Road	99	3300 People
				Jishui 3rd Middle School	South side of Wenhua East Road	170	3650 People
				Wenfeng Primary School	West side of the Wenfeng middle Avenue	10	1500 People
				Jishui County Experimental Primary School	South side of Wenjiao Road	20	3000 People
				Jishui 4th Middle School	Southwest side of Shuinan Road	48	1555 People
				Jishui Middle School	East side of Wenshan Avenue	32	4300 People
				Wenfeng Health Center	West side of Wenshan Avenue	10	20 People
Shangli County	Waste Transport Project	Construction Period And Operation	Construction Period: Exhaust Gases	Muchong Village	West side of the Chishan town waste transport station	220	10 Households
				Mingshan Village	West side of the Futian town waste transport station	110	3 Households

Sub Project Involved	Project's Contents	Impact Periode	Impact Factor	Sensitive Point Of Reception	Location	Distance (m)	Households/ People
		Period	Construction Noise; Operation Period: Noise, Odor	Taitang Village	North side of the Changing xiang waste transport station	50	12 Households
				Guanshang	North side of the Yangqixiang waste transport station	50	5 Households
				Penggao Village	North side of the Penggao town waste transport station	120	8 Households
				Dongyuan Village	West side of the Dongyuanxiang waste transport station	50	3 Households

3.1.2 Water Environment Protection Targets

The water environment protection targets of each sub project are listed in Table1-3-2. The protection targets of drinking water sources are listed in Table3-3.

Table 3-2 Water environment protection targets

Sub project	Name of protection targets	Water quality Class	Function of water body	Engineering works Involved
Duchang county	Zoujiazui lake	Class Ⅴ	General landscape water	Zoujiazui lake water environment improvement by source control and pollution interception, lake dredging, low impact development facility and Wetland construction etc.,
Yugan county	Huhui River, Pipa Lake	Class Ⅲ	Landscape Entertainment water	Pipa Lake water environment improvement by measures like source control and pollution interception of Pipa Lake, Huhui River Water Diversion Project and Ecological remediation,
Fengxin county	South side of Liao River	Class Ⅲ	Landscape Entertainment water and irrigation water area	Water quality Management improvement by engineering or non-engineering measures, to reduce pollutant influent of South Liao River
	South channel	Class Ⅲ	Plan to be the Landscape water, currently is wastewater discharge channel	Dredging and covering of 3 Open drainage channel-North zhizhen Channel, South Channel and Dazhai Channel in the north county
	Dazhai channel	Class Ⅲ	Plan to be the Landscape	

Sub project	Name of protection targets	Water quality Class	Function of water body	Engineering works Involved
			water, currently is wastewater discharge channel and irrigation water	
	Beizhizhen channel	Class Ⅲ	Plan to be the Landscape water, currently is wastewater discharge channel and irrigation water	
Jing'an county	South tributary of North Liao River (Shuangxi Section)	Class Ⅳ	Industrial water area	Water quality Management improvement by engineering or non-engineering measures, to reduce influent pollutants of East Liao River
	South tributary of North Liao River (Xiangtian Section)	Class Ⅲ	Landscape Entertainment water area	
	East tributary of North Liao River (Renshou Section)	Class Ⅳ	Industrial water area	
Jishui county	Ganjiang river(Jishui Section), Enjiang River	Class Ⅲ	Landscape Entertainment water	Water quality Management improvement by engineering or non-engineering measures, to reduce influent pollutants of Ganjiang river and Enjiang River
Shangli County	Lishui River	Class Ⅲ	Landscape Entertainment water	Water quality Management improvement by engineering or non-engineering measures, to reduce influent pollutants of Lishui River

Table 3-3 Drinking Water sources protection targets

No.	Protection targets Name	Water area Involved	Scope of the Protection area	Water consumption scale (10,000m^3)	Project contents inside the protection area		Distance of wastewater treatment station outlet to the boundary of protection area (m)	Water quality Target	Water body function	Relations between Wastewater treatment station effluent and protection targets
1	Water sources protection conservation area of Pearl Lake, Poyang Lake wetland park	Pearl Lake	Pearl Lake water area	/	None		/	Class III	Drinking Water sources	Effluent treated up to standards at each station to discharge into the Pearl Lake, to avoid the direct discharg into the Pearl Lake and reduce the water pollution
2	drinking Water sources protection area Pearl Lake, Poyang county	Pearl Lake	Grade 1 protection area: water or land within a radius of 500m	211.72	Wastewater treatment station	8, Shizishan, Ligongnao, Potangxu, Meihu, Caojia Village, ZhongNao Viliage, Tanli Village Bantangxu	100	Class III	Drinking Water sources	16 wastewater treatment stations within the , protection area. Effluent outlets of wastewater treatment stations
					Constructed wetland	6, With No. Of 46, 47, 48, 49, 81, 82	/			

3	Water sources protection area of Zhongtang Tap Water plant Sishilijie Town	Pearl Lake	centered as the water intake point; grade 2 protection area: grade 1 protection area: water or land area within the scope of 2500m outwards the first grade protection area boundary	3	Wastewater treatment station	7, Caojiazui, Hupen Village, Wangjia, Ahanjai, Pantaozui , Huangbiquan , Chenli Village	100	Class III	Drinking Water sources	located 100m outside the grade 2 protection area of Drinking Water sources; No outlet should be set up inside the grade 1 and grade 2 water sources protection area of water plant.
					Constructed wetland	4，with the No. Of 24, 29, 31, 90	/			
4	Water sources protection area of Yongchang Tap Water plant Sishilijie Town	Pearl Lake		20	Wastewater treatment station	8, Luye Village, Caojiazui, Pantaozui, Hupen Village, Huangbiquan, Chenli Village, Wangjia, Zhanjia，	100	Class III	Drinking Water sources	
					Constructed wetland	5,With No. of 25, 26, 27, 28, 91	/			
5	Water sources protection area of Pozhong Tap Water plant Gaojialing Town	Pearl Lake		5.4	Wastewater treatment station	6, Pantaozui, Hupen Village, Huangbiquan, Chenli Village, Zhuyedun , Luye Village , Caojiazui	100	Class III	Drinking Water sources	
					Constructed wetland	7, With No. Of 18, 19, 20, 21, 22, 23, 88	/			
6	Water sources protection area of Tuanlinxiang Tap Water plant	Pearl Lake		3.8	Wastewater treatment station	6 , Pantaozui, Hupen Village, Huangbiquan, Chenli Village, Wangjia Village , Zhanjia	100	Class III	Drinking Water sources	

						Village ,				
					Constructed wetland	21, With No. Of 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 38, 39, 40, 41, 42, 43, 44, 95, 96, 97	/			
7	Water sources protection area of Shuanggang town Tap Water plant	Pearl Lake		30	Wastewater treatment station	1, Maojia Village ,	100	Class III	Drinking Water sources	
					Constructed wetland	14, With No. Of 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 99	/			
8	Water sources protection area of Zhuhuxiang Tap Water plant	Pearl Lake		6	Wastewater treatment station	3, Dukou Village , Zhoujia Village , Caojia Village	100	Class III	Drinking Water sources	
					Constructed wetland	10, With No. Of 1, 2, 3, 4, 5, 6, 83, 84, 85, 86 wetland,	/			

3.1.3 Ecological Environment Protection Targets

Ecological environment protection targets of each sub project are listed in Table3-4.

Table 3-4 Ecological environment protection targets

No.	Project Name	Protection Targets	Description Of Protection Targets
1	All Sub Project	Terrestrial Plant	Plant loss caused by permanent and temporary land occupation of the project
		Aquatic life	Fishes in the project occupied water area and other aquatic organisms
		Wild Animal	Wild Animals within the Project Impact Scope
2	Poyang County sub Project	Poyang Lake National Wetland Park	Plants and animals, landscape diversity and ecosystem diversity within the Project Impact Scope

3.1.4 Social Environment Protection Targets

Social environment protection targets of the project are listed in Table3-5。

Table 3-5 Social environment protection targets

No.	Impact factor	Protection targets
1	Pipeline network excavation	Project construction has impacts on the travel and safety of Residents, schools, hospitals，commercial activities along the existing road, water supply, power supply and other municipal service facilities.
2	Project land occupation	Local economy, residents affected by the land expropriation
Sub project		All Sub projects

3.2 Complied Standards for Environmental Protection

3.2.1 Environmental quality standards

The Environmental, Health, and Safety Guidelines (EHS) of International Finance Corporation (IFC) include the standard and requirement of Air Emissions, Environmental Noise, Wastewater, Waste Management, Occupational Health and Safety, etc.

The standards applied to the project is identified through the comparison and analysis of the National standards of China and the WB's Environmental, Health, and

Safety Guidelines. And the details are as follows.

3.2.1.1 Atmospheric environment

According to EHS, ambient air quality should compliance with the national standard. If there is no standard set by the state legislation, the project should implement the latest WHO Air quality guidelines or other internationally recognized reference standards, see table 1-2. China has promulgated the "Ambient Air Quality Standards" (GB3095-2012), the project is located in the environmental air categories two area of in china, this project should comply with the Grade 2 standard of ambient air quality standards (GB3095-2012), and the projects involveing waste transport station should be in compliance with the relevant NH_3, H_2S standards in Hygienic Standards for the Design of Industrial Enterprises (TJ36-79). The specific standard values are listed in Table3-6.

Table 3-6 EHS Ambient Air Quality Standards（μg/m3）

Item	Average cycle	Guideline value	Standard
SO_2	24h	125（Phase I target value） 50（Phase II target） 20（Guideline value）	WHO Air quality guidelines
	10min	500（Guideline value）	
NO_2	1a	40（Guideline value）	
	1h	200（Guideline value）	
PM_{10}	1a	70（Phase I target value） 50（Phase II target value） 30（Phase III target value） 20（Guideline value）	
	24h	150（Phase I target value） 100（Phase II target value） 75（Phase III target value） 50（Guideline value）	
$PM_{2.5}$	1a	35（Phase I target value） 25（Phase II target value） 15（Phase III target value） 10（Guideline value）	
	24h	75（Phase I target value） 50（Phase II target value） 37.5（Phase III target value）	

		25（Guideline value）	

Table 3-7 Ambient air quality standards(μg/m3)

Index	Average value of 1h	Average value of 24h	Annual value	Standard	Sub project
SO_2	500	150	60	Ambient air quality standards (GB3095-2012) Grade 2 standard	All Sub projects
NO_2	200	80	40		
TSP	-	300	200		
PM_{10}	-	150	70		
$PM_{2.5}$	-	75	35		
NH_3	200(one time value)	-	-	Hygienic Standards for the Design of Industrial Enterprises (TJ36-79)	Duchang county, Shangli county
H_2S	10(one time value)	-	-		

After comparision, the NO_2 1h average value and annual value of National Standard are consistent with the EHS Guideline value; The PM_{10}1h average value and annual value of National Standard are consistent with the EHS Guideline value; The PM2.5 24h average value and annual value of National Standard are consistent with the EHS Phase I target value; and the SO_2 24h average value is lower than EHSPhase I target value. According to EHS, ambient air quality should compliance with the national standard. Therefore，the project will comply with the standard in Table3-7.

3.2.1.2 Water environment

According to the Jiangxi Province surfacewater (environment) Function zoning, the environmental quality standards for surface water of each sub project should be in compliance with the Environmental quality standards for surface water (GB3838-2002) (Table3-8).

Table 3-8 Environmental quality standards for surfacewater (mg/L, ph not included)

Standard / Index	Environmental quality standards for surface water (GB3838-2002) standard value		
	ClassⅢ	ClassⅣ	ClassⅤ
Ph	6~9	6~9	6-9
DO	≥5	≥3	≥2

Index \ Standard	Environmental quality standards for surface water (GB3838-2002) standard value		
	ClassⅢ	ClassⅣ	Class Ⅴ
Permanganate index	≤6	≤10	≤15
COD	≤20	≤30	≤40
BOD_5	≤4	≤6	≤10
TN	≤1.0	≤1.5	≤2.0
NH_3-N	≤1.0	≤1.5	≤2.0
TP	≤0.2(lake, Reservoir 0.05)	≤0.3(lake, Reservoir 0.1)	≤0.4 (lake, Reservoir 0.2)
Petroleum oil	≤0.05	≤0.5	≤1.0
Sulfide	≤0.2	≤0.5	≤1.0
Fecal coliform	≤10000	≤20000	≤40000
Applicable water body	Pearl Lake, Huhui River, South Liao River, South channel, Dazhai channel, North Zhizhen channel, South tributary of North Liao River(Xiangtian section), Ganjiang river(Jishui section), Enjiang River, Lishui River	South tributary of North Liao River(Shuangxi section), North tributary of North Liao River (Renshou section), Pipa Lake	Zoujiazui lake
Applicable sub project	Poyang county, Fengxin county, Jing'an county, Jishui county, Shangli county	Jing'an county, Yugan county	Duchang county

3.2.1.3 Noise

The environment quality for noise should be in compliance with the standard limit of China's National Standard for Noise, and the WB's EHS guideline (Table3-9).

Table 3-9 Comparison of Environmental quality standard for noise (db(A))

Environmental quality standard for noise (GB3096-2008)				EHS Noise guideline		
Zone	Function zone	Daytime 6:00~22:00	Nighttime 22:00~6:00	Receptor	Daytime 7:00~22:00	Nighttime 22:00~7:00
Areas for residential, medical and health, cultural education, scientific research design and office	Class 1	55	45	Residential office; culture and education;	55	45
Mixed area of residential, commercial and	Class 2	60	50	Industrial ; commercial facilities	70	70

industrial						
Both side of the main transportation road	Class 4 A	70	55			

As the Environmental quality standard for noise (GB3096-2008) is more strict than EHS guideline for Noise through the comparison analysis the guideline value and the time scope, the EHS standard, the project will be in compliance with the Environmental quality standard for noise (GB3096-2008).

The environment quality standard for noise applicable for each sub project are listed in Table3-10.

Table 3-10 Environmental quality standard for noise(db(A))

Standard / Class	Environmental quality standard for noise (GB3096-2008)		
	Class 1	Class 2	Class 4A
Daytime	55	60	70
Nighttime	45	50	55
Applicable sub project and scope	Duchang(Beishanxiang, Dashuxiang , Wangdunxiang), Poyang county, Shangli county	Duchang(County town), Jishui county(project area outside the Class 4A area), Jing'an county, Yugan county, Fengxin county	Jishui county(Enjiang Bridge Head wastewater pumping station, Wenshan Avenue wastewater pumping station, Enjiangbei Road wastewater pumping station), Jing'an county, both side of the main transportation roads , Fengxin county, both side of the main transportation roads

3.2.1.4 Sediment

There are 3 sub projects involve sediment dredging. They are Duchang, Yugan and Fengxin. There is no current standard system of dredging sediments in China. The mostly used standards for sediments are Environmental Quality Standard for Soils (GB/15618-1995), Control standards for pollutants in sludges from agricultural use (GB4284-84), Interim Standard of Soil Quality Assessment for Exhibition Sites" (HJ350-2007) 及 Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland(CJ/T362-2011), etc.. In United States sludge standard is Standard Sludge Treatment and Utilization "(Part 40CFR 503), issued by EPA; in EU, it is Principles of Sludge Used for Agricultural Purposes (Directive) (86/278/EEC) (EU) issued by European Standardization Committee;

The EIA did a comparative analysis of the domestic and overseas sludge standards.

Table 3-11 Domestic and overseas sludge standards comparision（mg/kg）

Standard \ item	Grade	pH	Cd	Cu	Pb	Cr	Zn	Ni
Environmental Quality Standard for Soils (GB/15618-1995)	1	Natural Bacground	0.20	35（farmland，etc.）；—（orchard）	35	90（paddy field, dry land）	100	40
	2	<6.5	0.30	50（farmland，etc.）；150（orchard）	250	250（paddy field）；150（dry land）	200	40
		6.5~7.5	0.30	100（farmland，etc.）；200（orchard）	300	300（paddy field）；200（dry land）	250	50
		>7.5	0.60	100（farmland，etc.）；200（orchard）	350	350（paddy field）；250（dry land）	300	60
	3	>6.5	1.0	400（farmland，etc.）；400（orchard）	500	400（paddy field）；300（dry land）	500	200
Control standards for pollutants in sludges from agricultural use (GB4284-84)	1	＜6.5	5	250	300	600	500	100
	1	≥6.5	20	500	1000	1000	1000	200
Interim Standard of Soil Quality Assessment for Exhibition Sites" (HJ350-2007)	A	—	1	63	140	190	200	50
	B	—	22	600	600	610	1500	2400
Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland(CJ/T362-2011)	1	5.5~8.5	20	1500	1000	1000	3000	200
Standard of Sludge Treatment and Utilization" (40CFR Part 503)（US）	1	—	85	4300	840	—	7500	420
Principles of Sludge Used for Agricultural Purposes"（Directive 86/278/EEC）（EU）	1	—	20~40	1000~1750	750~1200	—	2500~4000	300~400

Note: 1. According to "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84), if dried sludge reaching the standard is to be used, generally the amount is less than 2000kg per acre each year;

2. According to "Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland" (CJ/T362-2011), if sludge reaching this standard is to be used, the total annual amount of sludge used in forestland shall not surpass 30t/hm^2. The water centent rate of the sludge shall be ≤60%.

Above standards are all controlling standards of pollutants that claim a majority of heavy

metals. Therefore, this report mainly makes a contrast of heavy metals. Take the example of Zn. Comparing its maximum permissible limit value of all standards, the lowest shall be 500 mg/kg (pH>6.5) of the III class of the "Environmental Quality Standard for Soils" (GB/15618-1995). In an increasing sequence of the value, it is respectively the 1000 mg/kg of "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84), the 1500 mg/kg of the B class of "Interim Standard of Soil Quality Assessment for Exhibition Sites" (HJ350-2007), the 3000 mg/kg of "Disposal of Sludge from Municipal Wastewater Treatment Plant—Quality of Sludge Used in Forestland" (CJ/T362-2011), the 2500 mg/kg ~4000 mg/kg of EU principles, and the highest 7500 mg/kg of the American standard.

In brief, in terms of the maximum permissible limit of density, the "Environmental Quality Standard for Soils" (GB/15618-1995) claims the lowest amount, followed by that of "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84), the II class of "Interim Standard of Soil Quality Assessment for Exhibition Sites" (HJ350-2007), and "Disposal of Sludge from Municipal Wastewater Treatment Plant — Quality of Sludge Used in Forestland" (CJ/T362-2011), as well as the European Union standard and American standard. From this, the "Environmental Quality Standard for Soils" (GB/15618-1995) and "Control Standards for Pollutants in Sludges from Agricultural Use" (GB4284-84) in our country are the strictest among all the standards. The evaluation of the generality and hazard of the sludge can refer to other national standards or the American and EU standards.

If the heavy metal indexes of the sediments do not reach the class III of the "Environmental Quality Standard for Soils" (GB/15618-1995), while reach the American standard and other sludge standards，this report concludes that the sludge does not belong to hazardous waste, and can be treated as general sludge.

3.2.2 Standard for pollutants emmissions

3.2.2.1 Air pollutants

Dust should be in compliance with the the Fugitive Emission Monitoring concentration value of the Integrated emission standard of air pollutants (GB16297-1996) (Table3-12). The Main air pollutants in Operation period is the odor from the waste transport station, which should be in compliance with the Fugitive Emission grade 2 standard of Emission standards for odor

pollutants(GB14554-93)(Table3-13).

Table 3-12 Atmospheric pollutant emission standard(mg/m3)

Standard / Pollutants	Integrated emission standard of air pollutants (GB16297-1996) Fugitive Emission Monitoring concentration value	
Particulate	Monitoring points	Concentration
	Maxium concentration point in vicinity	1.0
Applicable sub project	All Sub project	

Table 3-13 Emission standards for odor pollutants (mg/m3)

Standard / Pollutants	Emission standards for odor pollutants (GB14554-93) Fugitive Emission boundary standard value (for new construction, reconstruction and extension)
NH_3	1.5
H_2S	0.06
Applicable sub project	Duchang county, Yugan county, Jing'an county, Shangli county

3.2.2.2 Water pollutants

Table 3-14 Wastewater discharge standard (mg/L, ph not included)

Index / Standard	Discharge standard of pollutants for municipal wastewater treatmentplant (GB18918-2002)	Discharge standard of pollutants for Poyang Lake Eco-economic Zone (DB36/852-2015)	Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010)
	Grade 1B	Pollutants discharge value for wastewater treatment system in Lakeside Control Development Zone	Grade B
COD	60	50	500
BOD_5	20	/	350
SS	20	10	400
Animal and vegetable oils	3	1	100
Petroleum oil	3	1	20
Anionic surfactant	1	/	20

Index \ Standard	Discharge standard of pollutants for municipal wastewater treatmentplant (GB18918-2002)	Discharge standard of pollutants for Poyang Lake Eco-economic Zone (DB36/852-2015)	Wastewater Quality Standards for Discharge to Municipal Sewers (GJ343-2010)
	Grade 1B	Pollutants discharge value for wastewater treatment system in Lakeside Control Development Zone	Grade B
TN(in N)	20	15	70
NH3-N	8(15)	8	45
TP(in P)	1.5	0.5	8
Colourity (Dilution ratio)	30	/	70
Ph	6~9	/	6.5~9.5
Count of faecal coliforms (Count/L)	10^4	/	/
Sub project and scope	Wastewater treatment plants of Duchang, Jing'an, Fengxin, Yugan and Jishui county	Wastewater treatment station of Poyang county sub project	Zoujiazui Public Toilet and domestic wastewater of monitoring houseing and wastewater of industrial park

Note：numbers outside bracket is the control standards for Water temperature >12℃, numbers inside bracket is the control standards for Water temperature ≤12℃

3.2.2.3 Noise

The construction noise control standard for each sub project should be in compliance with the Emission standard of environment noise for boundary of construction site (GB12523-2011); the operation Noise for waste transport station and wastewater treatment station should be in compliance with the Class 1 and Class 2 standard of Emisson standard for industrial enterprises noise at boundary(GB12348-2008)(Table3-13).

Table 3-15 Emission Standards for Noise db(A)

Item	Emisson standard for industrial enterprises noise at boundary (GB12348-2008)			Emission standard of environment noise for boundary of construction site (GB12523-2011)
	Class 1	Class 2	Class 4	Construction site noise discharge standard
Daytime	55	60	70	70
Nighttime	45	50	55	55
Sub project and scope	Duchang county, Poyang county, Shangli county	Yugan county, Fengxin county, Other project area in Jing'an county, Jishui county	Fengxin county(Jiutiange electric pumping station for irrigation, Huangshanggang electric pumping station for drainage), Jishui county(Enjiang Bridge head wastewater pumping station, Wenshan Avenue wastewater pumping station, Enjiangbei Road wastewater pumping station)	All Sub project

3.2.2.4 Solid waste

Solid waste disposal should be in compliance with the Standard for pollution control on the storage and disposal site for general industrial solid wastes(GB18599-2001). The disposal of hazardous waste from the project monitoring Laboratory should be in compliance with the Standard for pollution control on hazardous waste storage(GB18597-2001), and meet the requirements of EHS and the WB's related safeguard policy.

4 Environmental Protection Management Plan

4.1 Environmental Management Organizations and Responsibilities

The project environmental management organization is set as detailed in Figure 4-1 and Table 4-1. The responsibilities and staffing of the organizations are shown in Table 4-2

Table 4-1 Composition of The Environmental Management System

Type of organization	Name of organizations	Missions of organizations
Management organization	Province PMO	Assign special environment manager to be responsible for environmental protection work in the planning, designing and implementation phase of the project; Determine the working procedure to meet the requirements of the domestic and the World Bank for environmental assessment and environmental management; Coordinate and supervise the implementation of the environmental management plan.
	County PMO	Assign special environmental engineer, to be responsible for daily environmental supervision and management during the project construction period and operation period; To be responsible for environmental acceptance and routine monitoring after the project completion. To minimize the adverse impact of the project on the environment to a minimum or an acceptable degree; At the same time, to make sure the environmental benefits of the project be fully exerted; To be responsible for the funds that the implementation of the project environmental protection work required for; And to be responsible for the Organizing and archiving of relevant documents.
	Owner of each Sub project	Assign Environmental protection staff, to be responsible for the environmental management during the project operation period.
Supervisory organization	World Bank Inspection Group	Send environmental experts, supervise and inspect the implementation of environmental protection practices.
	Administrative departments of environmental protection at all levels	Government administrative supervision institution, to supervise and inspect the work procedure of the project to meet the requirements of the environmental management in china, and supervise and inspect that the pollution control measures in the process of implementation can meet the needs of China's environmental protection.
Implementation organization	Construction unit	Appoint on site environment engineer, to implement the environmental protection and soil and water conservation contents stipulated in the contract terms and bidding documents, to meet the requirements of the World Bank and the local department of Environmental Protection Administration for environmental protection. And to prepare and submit monthly Environmental report

Type of organization	Name of organizations	Missions of organizations
		in construction period.
Consulting services	EIA Consulting unit	Accept the Commission, and prepare the project environment report.
	Design Consulting unit	Accept the commission, prepare the Feasibility Study Report and construction design, and ensure that the measures in the environmental management plan be included in the result documents.
	Environmental supervision unit	Accept the Commission, supervise and manage the daily construction activities of the construction unit.
Monitoring organizations	Environmental monitoring agency	Qualified environmental monitoring agency, to be responsible for the environmental monitoring work of the project in construction and operation period.

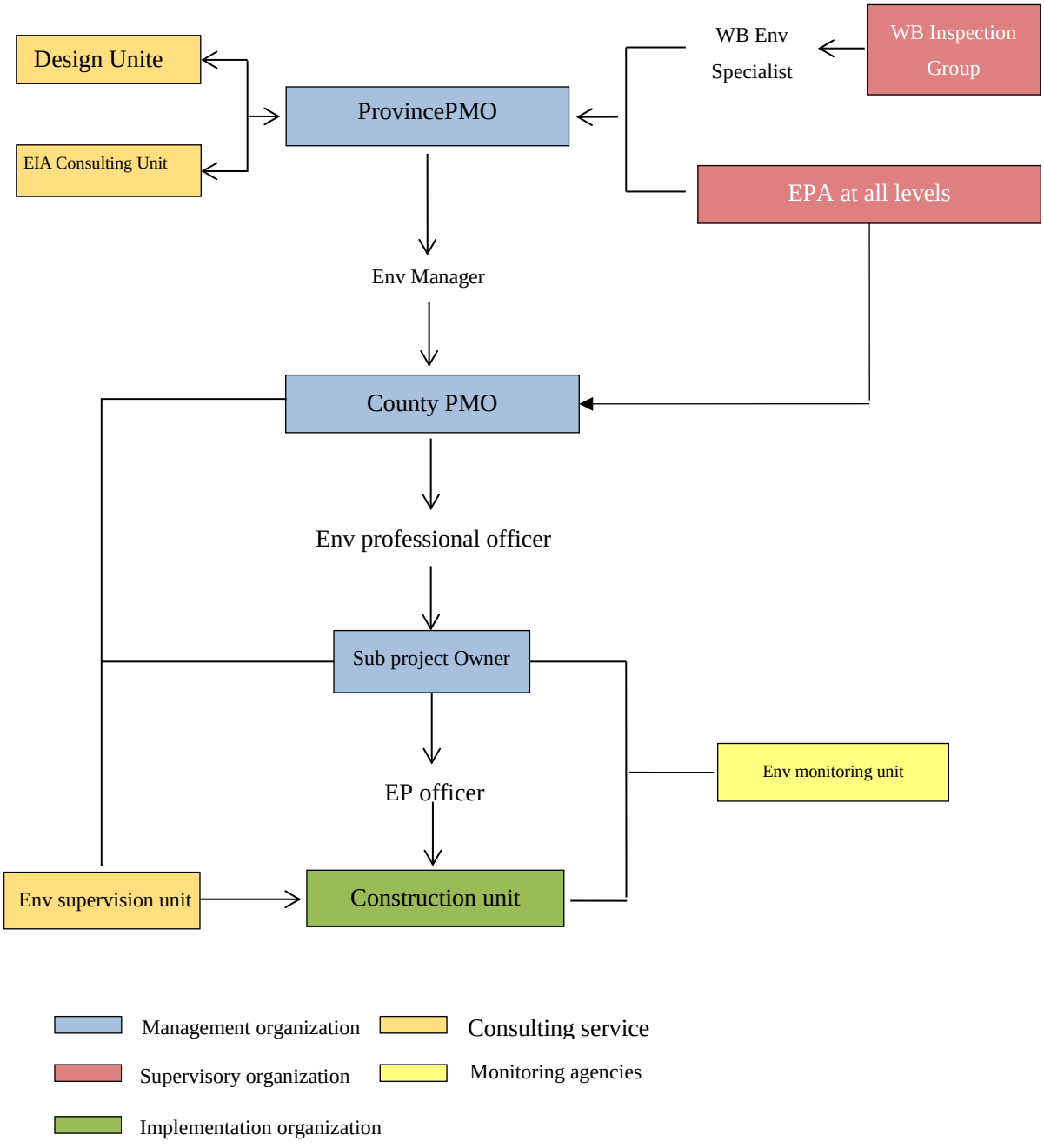

图4-1 Environmental Management Organization Framework

Table 4-2 Organization Responsibility and Staffing of Environmental Management System

Name of organization	Type of organization	Staffing	Responsibility of organizations
Administrative departments of environmental protection at all levels	Supervisory organization	some	1. Whole process of environmental monitoring and supervision of the project in accordance with the law, including: the approval of the project environmental impact assessment report (including sub project environmental assessment work), environmental monitoring and supervision and management in the construction and operation period.
World Bank	Supervisory organization	1	1. The World Bank sends the inspection group to carry out special inspection to the project each year; 2. Check the implementation of the project loan agreement, the implementation of the environmental management plan.
Province PMO	Management organization	1	1. Supervise the implementation of the "environmental management plan"; 2. Supervise and coordinate the implementation of domestic and World Bank environmental management requirements; 3. Submit the relevant reports to the World Bank in every half year; 4. Check the county environmental management work; 5. Coordinate with other departments to solve major env ironmental problems; 6. Commission the external environment experts group to carry out inspections of the project.
County PMO	Management organization	1	1. To supervise the implementation of the environmental management rules and regulations of the sub project; 2. To include the environmental protection measures in the environmental management plan into the construction contracts; 3. To hire, supervise and coordinate the project supervision (qualification, responsibility, management); 4. To organize the implementation of environmental management training program; 5. To organize special research or related research work; 6. To keep complaint contents records in the construction and operation period, to answer the solution to the public, solving the problem of public complaints; 7. To review of environmental supervision and environmental consulting reports; 8. To submit a report (forms) to the provincial office in each quarter; 9. To sign the site verification table reported by construction units and supervision units, to verify the environmental sensitive issues, and to file. 10. To accept environmental work inspection (including the World Bank project inspection).
Owner of each Sub project	Management organization	1	1. To supervise the implementation of the environmental management rules and regulations of the sub project; 2. To hire, supervise and coordinate the project supervision (qualification, responsibility,

Name of organization	Type of organization	Staffing	Responsibility of organizations
			management); 3. To organize special research or related research work; 4. To keep complaint contents records in the construction and operation period, to answer the solution to the public, solving the problem of public complaints; 5. To review of environmental supervision and environmental consulting reports; 6. To submit a report (forms) to the provincial office in each quarter; 7. To sign the site verification table reported by construction units and supervision units, to verify the environmental sensitive issues, and to file. 8. To accept environmental work inspection (including the World Bank project inspection).
EIA	EIA Consulting unit	Some	1. To carry on the onsite investigation to each project, carry on the EIA; 2. To be responsible for the preparation of the "environmental management plan".
Environmental supervision unit	Consulting services	1-2	1. The project supervision engineer will be commissioned by the provincial PMO or the county PMO 2. Supervision and inspection of the sewage treatment, construction wastewater treatment, protection measures for water and soil erosion, control measures exhaust gas, dust, noise, construction, domestic waste, sanitation and epidemic prevention, etc. in the construction area; 3. To regularly fill the inspection list of environmental management in the annex; 4. To put forward the corrective action plan and follow up the implementation, upon the environmental issues the construction units encountered in the construction activities, including issue of the rectification notice, the rectification check list, checking the file archiving; 5. To submit weekly report on the implementation of the project to the county PMO.
Construction unit	Implementation organization	Some	1. To develop environmental protection measures during the construction period; 2. To accept the supervision and inspection of the project engineer, the bank and the environmental protection departments at all levels in environmental protection; 3. To establish a feedback mechanism, to complete the rectification in 3 working days after receiving the notice of rectification, (to complete the rectification in 10 working days when it need to coordinate the management organization) 4. To complete the construction site verification form with the project supervision before construction, and report to the county PMO; 5. The construction unit should report the implementation of the project to the project supervision engineer.
Environmental	Monitoring	Some	1. To carry on the environmental monitoring in accordance with the "environmental monitoring plan" in

Name of organization	Type of organization	Staffing	Responsibility of organizations
monitoring agency	organization		the project construction and operation period, archiving and reporting to each County PMO.

4.2 Environmental Management Tasks at All Stages of the Project

Project environment management has different working contents at different stages of project implementation, as shown in figure 4-2.

The most important task of the environmental management plan is to ensure that the proposed environmental protection measures are effectively implemented, including:

① To make sure that the environmental protection measures in the environmental management plan are included in the contract of project design and construction;

② To supervise the implementation of environmental protection measures by construction units in the construction period, and check the effectiveness and the implementation of environmental protection measures through the environmental supervision unit.

③ The mechanisms of checking, reporting and archiving for environmental management plan. To reflect the timeliness of the work by checking the daily work.

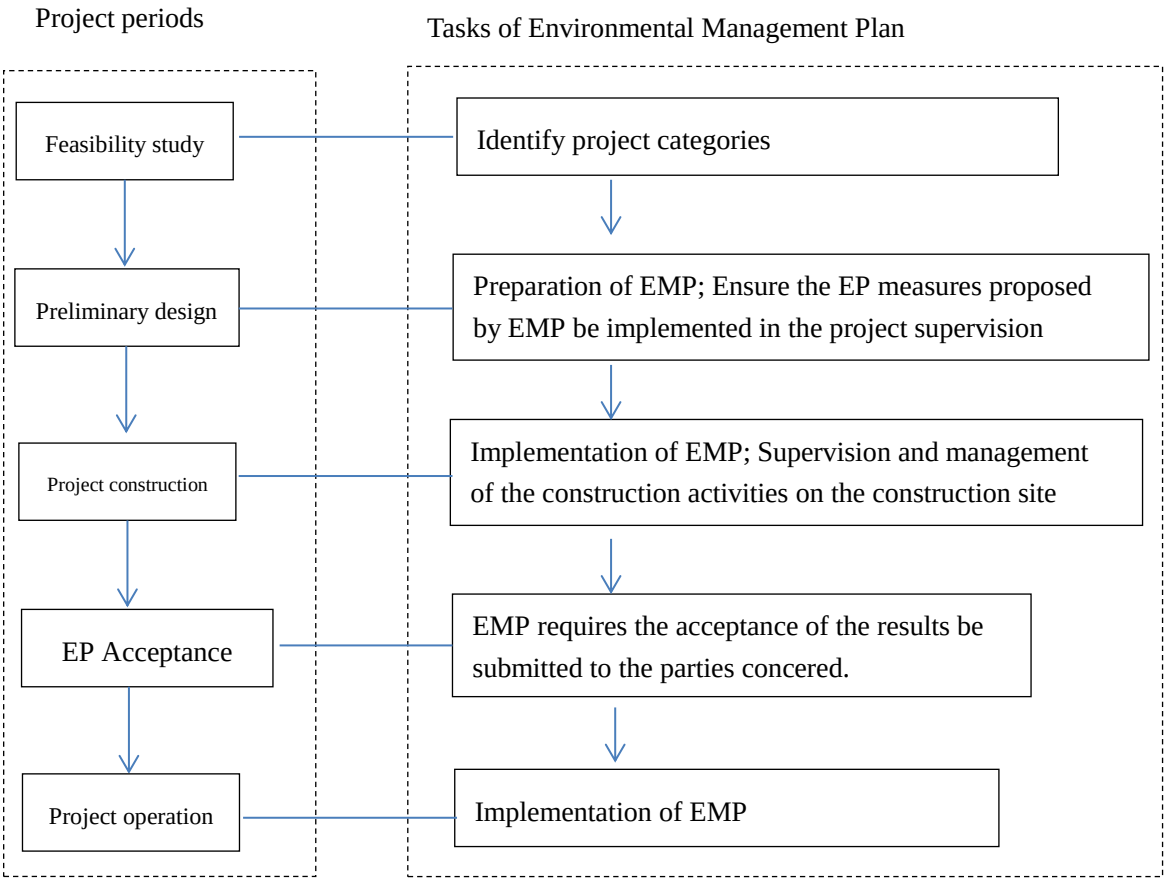

图4-2　Tasks of Environmental Management in different periods

4.3 Environmental Supervision

4.3.1 Purpose of Supervision

During the construction period, the project should carry out environmental supervision in construction period according to the design requirements of environmental protection, to take overall supervision and inspection of the implementation and effect of environmental protection measures taken by construction units, and deal with and solve the temporary environmental pollution incidents in time.

4.3.2 Supervision Contents

The project supervision should follow the guidelines, policies, laws and regulations of the state, local government and the World Bank on environmental protection, supervise the contractor to implement the relevant environmental protection provisions in the project contract.Main responsibilities are:

(1) Establishing environmental supervision plan, developing environmental supervision projects and content.

(2) Responsible for the examination and approval of the the environmental provisions of the construction bidding documents.

(3) Supervising the contractor to prevent and mitigate the environmental pollution and the farmland and wildlife destruction caused by the construction work and to prevent the occurrence of fire.

(4) In combination with the investigation of monitoring data, comprehensive supervision and inspection of the implementation and the actual effect of the environmental protection measures tanken by construction unit and timely handling and solving of temporary environmental pollution incidents.

(5) Comprehensive inspection of the treatment, recovery of the residue field, construction site the construction unit responsible for, mainly including slope stability, construction site recovery, landscaping and greening rate and so on.

(6) Responsible for the implementation of the environmental monitoring; Review the relevant environmental reports; according to the water quality, ambient air, noise and other monitoring results, putting forward the corresponding requirements to the channel construction management, to minimize the adverse impact of the project construction to the environment.

(7) Making good supervision records and reports in the daily work, participate in the final acceptance.

4.3.3 Work flow of the EMP implementation by environmental supervision in construction period

Environmental supervision is not only an important part of environmental management, but also has the relative independence, an independent environmental supervision organization should be set up, and commited by the unit with supervision qualifications, which will supervise, review and assess the implementation of environmental protection measures taken by construction units in accordance with the terms of the contract and the state environmental protection laws, regulations, policy requirements, also the environmental monitoring data and the results of inspections. And timely detect and correct the construction

behaviours that violat the environmental protection provisions of the contract or the national environmental protection requirements The environmental supervisor shall inspect the construction site at least once a week, fill in the environmental inspection checklist of construction period of and archive it, put forward rectification program for the relevant environmental problems existed in the construction activities of the construction units, and follow up the implementation, report every half year to the PMO environmental manager and World Bank environment experts. The working flow of environmental supervision during construction period is shown in Figure 4-3

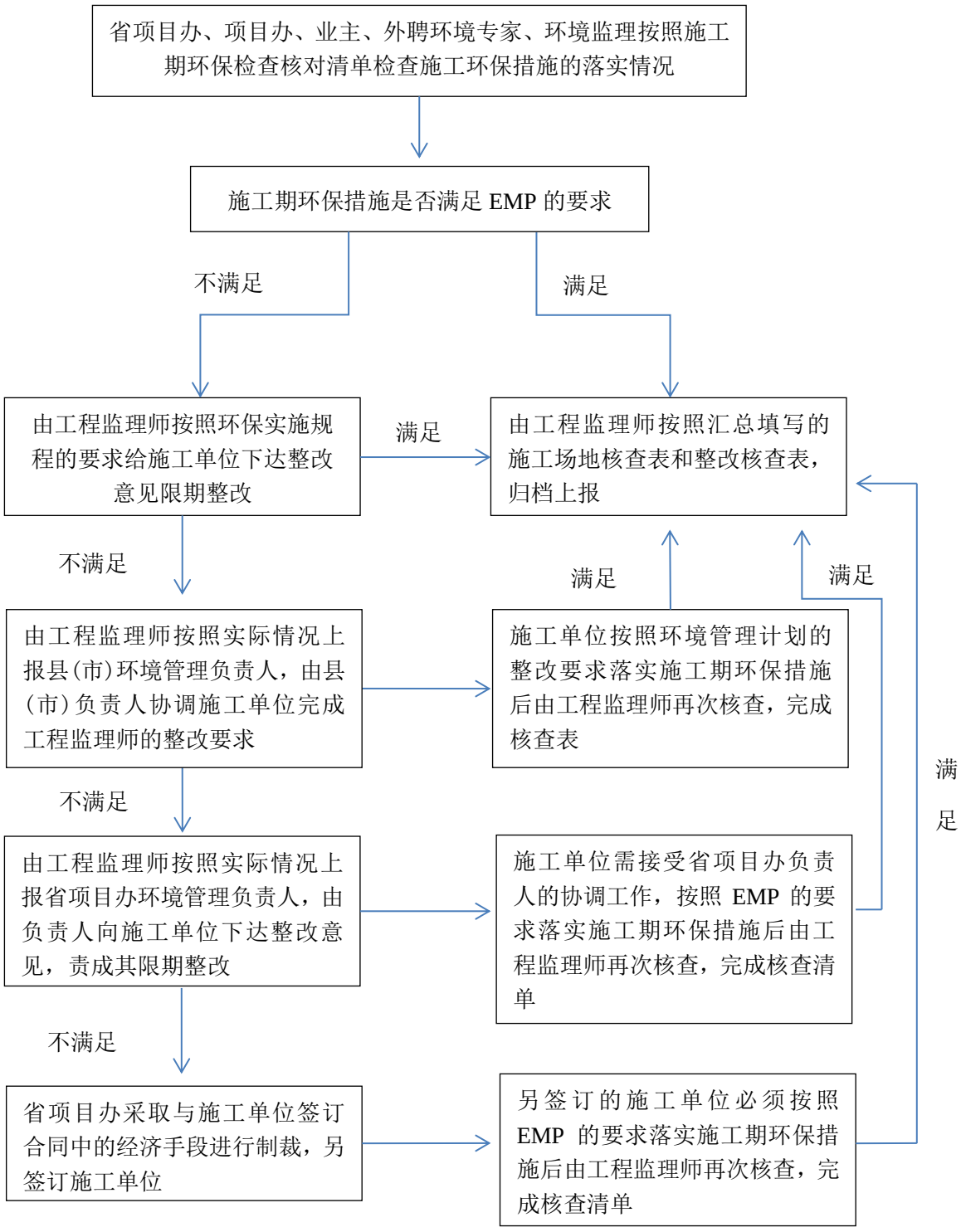

图4-3 Work Flow of Environmental Supervision During Construction Period

4.4 Environmental management plan and mitigation measures

4.4.1 Common Environmental management plan and mitigation measures

The project involves the comprehensive management of water environment, wastewater collection, wastewater treatment, solid waste treatment, solid waste collection and transport, public participation and capacity building, the impacts on environment in the construction and operation stages has similarity, mitigation measures are also similar. The common general mitigation measures for all the sub projets are summarized in Table 4-3.

Table 4-3 Common EMP And Mitigation Measures In Construction Period

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Preparation period					
Tendering and bidding	——	1, Environmental Management Plan（EMP）should be included in the biding documents 2, Environmental Management Plan（EMP）should be in the contracts with contractor, engineering supervision unit and environment to be implemented.	——	Provincial PMO, County PMO	——
Prior to construction	——	1, Timely inform the public about the information like construction plan, environmental impact statement, pavement construction, temporary bus routes,etc.. 2, Public should be noticed about the public facilities failures caused by the construction, such as plumbing, electricity, telephone, bus routes failure, at least five days in advance by way of notice announcement in construction point, bus station, affected regions. 3, Establishment of specialized land acquisition office to make land acquisition and resettlement plan, and Strictly implement the land requisition compensation scheme according to the national and local policies on land acquisition and relocation. 4, Optimizing the design, minimize the scale of land acquisition and	——	Province PMO, County PMO	——

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		demolition in design, and adopt advanced measures of environmental protection to avoid secondary pollution brought by environmental projects; 5, On the basis of public consultation, ensure that migrants' livelihood will not deteriorate due to the project construction; 6, Formulating and implement preferential charging policy for impoverished groups; 7, Pipe laying should shorten construction duration as much as possible to reduce unfavorable impacts. If possible, offer certain compensation to affected residents and shop owners; 8, Pipline shall be connected with sewage of households within the construction and residential area from the source; 9, Since the project area enjoys developed water system and abundant water, drainage project should be in line with local conditions to ensure construction quality and life time; 11, Issue regulations on economic activities within lake area; 12,Integrate technology to promote synchronized development of ecological protection and economic growth in the lake area; 13, Conducting participatory activities 14, Carrying out training on environmental knowledge and public health education 15, Capacity building: The project managers and constructors should launch training on World Bank social and safeguard policies to better implement the project; 17, Building the mechanism of follow-up project management; 18, It is proposed that residents' intension of "NIMBY" should be taken into consideration. The sites of waste collection, transfer, and treatment facilities shall not be either too near or too far from residential areas to avoid high cost of waste transportation. The core principle is to conduct more consultation and communication with residents to ensure their			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		recognition of waste treatment project. 19, Due to adopted tax distribution system, financial budget of village and town (township) is very tight. Thus, the project funds should prefer the rural regions to support waste transfer system construction there. Meanwhile, the local government should not be responsible for too much project expenditure. 20, Technology plays a crucial role in improving the efficiency of waste treatment. Scientific treatment of waste should be conducted in terms of technology either in simple garbage landfill sites or in new garbage treatment plants, to prevent leakage and pollution.			
Land occupation	Land acquisition and resettlement	1, In the planning stage, when optimized selection for schemes was conducted, much consideration was put into the impact of project construction on the local socioeconomic , which was set as a key factor in the optimized selection for schemes; 2, Design was optimized. To reduce the demolition immigrants, existing national and local roads were used to connect planned construction area; 3, The design was optimized to occupy wasteland and state-owned land and reduce the occupancy of arable land.	Included in the Resettlement Budget	Design unit, County PMO	Provincial PMO, County Land Bureau
Construction period					
Earthwork excavation; Site Site prEPBration; Waste soil and slag storage	**Destruction of vegetation;** **Influence of crop production;** **Disturbance of wild animals activities;** **Influence of landscape;** **Cause of Soil and water loss;** **Cause of geological**	1, Scientific layout arrangement of construction site；Minimal land occupation; and restoration of the temporary occupied areas in accordance with the original land use type after the construction. Reasonable selection of construction period; To avoid the rainy season, rainy days as far as possible； Setting enclosure blocks around construction area to prevent construction materials, construction waste into surface water. 2, Soil drainage ditch should be set around the construction site according to the topography and geomorphology condition, and provided with the soil grit chamber at the outlet point to slow down the water flow and	70	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau, Water

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
	disasters, etc..	settle down the sands. 3, In Combination of the key and gnenral soil and water conservation work, the engineering measures and plant measures. Taking engineering measures as the guide,and exerting the quick acting,effect of engineering measures and water and soil conservation supporting of plant measures. Plant measures play a long-term and stable role of soil and water conservation, greening and landscaping project area surrounding environment. 4, To Strengthen publicity and education, prohibit to cut down the forest, hunt wild animals; During construction, if rare and endangered plants, ancient and local famous trees and plants is found, it should be reported to the relevant dEPBrtments and take protection measures locally; To control construction noise, to reduc the interference of construction noise to animals. 5, When stripping topsoil in the construction process, layered excavation, layered stacking should be employed, with timely removal of temporary facilities, loose of the soil compaction Layered backfill of the soil and Restoration of vegetation should be done after completion of construction. The appropriate type of vegetation in the region should be selected according to the local climate characteristics, slope rate and geological condition. 6, Fire monitoring of the construction area involving the forest; Strengthen the investigation of key protected plants, ancient and famous trees with the regional distribution. Strict management of construction work may cause fire. During the period of forest fire prevention, it is forbidden to use fire in the mountain area. 7, Protection of the litter leaf layer and organic matter in the surface soil, Backfill to damaged area, to promote the growth of native plants. 8, Using the local grass and vegetation to cover the erosion or barren areas, or hardening the soil surface in this region. 9, Erosion control measures should be taken before the advent of the			Bureau

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		rainy season in order to carry out the next. Construction work. Corresponding erosion measures should be completed for each complete construction point. 10, In all construction sites, before vegetation restoration, deposition control facilities should be set to slow down the runoff rate, change the direction of flow, settle the sands and so on. These deposition control facilities include material heap, stone road, grit tank, straw bag, hedgerows and mud slag heap etc.. 11, By laying ditch, berm, grass fence and stone piles and other measures to prevent water rushed into the construction site or interfering with site. 12, Maintain and continue to use erosion control until the vegetation is fully recovered 13, When necessary,Sprinkle water on the soil road, excavation area, filler and soil storage area to reduce wind erosion.			
Material processing and transportation, etc.	Impacts of dust, transport vehicle exhaust emissions on the ambient air	1. Using advanced construction process; dust cleaning equipment; speed control of vehicles; exhaust gas control of vehicles and coals; Water spraying on construction area (4~5times/d); clean energy like LPG, electricity for construction people; strengthen of the construction area virescence and labor protection for construction people; all of above will reduce the ambient air impact. 2, Vehicle wash platforms are set up at the inner side of the entrances and exits for material and waste transport vehicles, meeting the following requirements: Anti overflow Block around the patform to prevent the overflow of the Vehicle wash wastewater. Vehicles should wash the tires and vehicle body before leaving the construction area,. The hight of Material and waste loaded on the transport vehicles, should not exceed over the edge of the vehicle. Truck bodyshould be covered with tarpaulin or use the sealed hopper. 3, Use of commercial concrete and asphalt, no onsite concrete mixing station and asphalt Mixing Station. 4, Transport vehicles, bulldozers, excavators should be driven in low	100	Construction Unit	Province PMO, County PMO, Project ower, County EPB

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		speed when passing by the Village and entering the construction area; meanwhile the construction machinery should be kept in good maintenance and normal working to reduce the emissions exhaust gases. 5, Set up the Dust screen around the construction area, especially for those close to residential areas, hospitals and schools. 6, Try to reduce the dust and particulate generation, to avoid the impact on the living and commercial activities of the residents living around, Focusing on protection of sensible people (such as children, the elderly and so on).			
Solid waste of construction (earthwork, construction waste, etc.)	Soil and water loss; River channel blocking; Water body pollution etc..	**I, Earthworks：** 1, In the early stage of construction, the excavation of the site must be carried out. Make full use of the terrain's natural drop, try to avoid digging at high place and filling at deep points. 2, As for the excavated earthwork, soil can be used for land preparation in later cultivation project, and rocks can be used for the foundation stone for the stone Irrigation, side ditch, etc., shall not be arbitrarily placed. 3, Temporary storage site for earthworks should be reasonably arranged, away from the environment sensitive points of reception like residents, schools, should be located in downwind or lateral wind direction of of the urban and residential area's summer dominant wind;Temporary stacking of earthwork should be rolled and covered by felt cloth and other waterproof, windproof measures should be taken.。 4, Soil drainage ditch should be set around the temporary storage site, and provided with the soil grit chamber at the outlet point to slow down the water flow and settle down the sands. **II, Construction waste ：** 1, Comprehensive classification and recovery of recyclable waste should be carried out(scrap metal, scrap materials, packaging bags should be sold to scrap yards, waste brick should be used as road base material). 2, Waste that can not be recovered should be timely transported to local	40	Construction Unit	Province PMO, County PMO, Project ower, County EPB

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		construction waste landfill site. Transport vehicles Should be sealed in the transport process, to avoid falling. 3, Temporary dumping site should take the waterproof, windproof measures.			
Domestic waste of Construction camp	Easy to corrupt, stink, grow of mosquitoes, breed of bacteria, damage the environment even release toxic gases	**Domestic waste bin should be set up in construction area, daily cleaned, collected, and classified by specific people, then collected and transported by the local sanitation dEPBrtment.**	10	Construction Unit	Province PMO, County PMO, Project ower, County EPB
Construction wastewater	Water environment pollution	1, The wastewater is used for sprinkling for construction dust etc., shall not be discharged into the water body; Slurry produced in the construction process is pumped to the settling tank by slurry pump, solidified by drainage and evaporation, shall not be discharged into the water body. Wastewater of mechanical equipments washing is treated by the oil sEPBrating tank, then used for sprinkling for construction dust, and shall not be discharged into the water body. 2, The construction site layout should take full account of drainage needs; be as far as possible from river water; ensure that the construction site, warehouse, storage site of diesel oil are not set within the 500m range of the river; avoid pollutants to flow into the river during the operation time, especially the leak by land or surface water during the rainy season. 3, In the course of construction, the work area should be clean, sewage and pollutants should not enter into the excavation trench, leading to sewage infiltration. 4, If the oil needs to be stored on site, impervious treatment must be done to the warehouse. Measures should be taken for oil storage and use to prevent water pollution from oil escaping, emitting, dropping and leakage. 5, Foundation construction should be done in the non flood season as far	100	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Water Bureau

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		as possible to reduce the influence of shallow groundwater depth on construction.			
Domestic wastewater	Water environment pollution	1, Existing domestic wastewater treatment systems nearby the construction area are proposed to treat the domestic wastewater of project construction people, No discharge into the water body. 2, SeEPBge prevention measures should be taken for the domestic waste storage room addcording to the relevant requirements.	20		
Noise generated by construction machineries, transport vehicles, and other construction activities	Impacts of noise on nearby environment and construction personnels	1, Setting up no honking warning sign on the noise sensitive road sections; Using low noise devices; Control of noise point source, transmission route, traffic noise and so on; Equipped with anti noise ear plug for construction personnel; Reasonable arrangement of construction time. Reasonable arrangement of construction time according to Emission standard of environment noise for boundary of construction site(GB12523-2011); Avoiding multiple high noise equipments working at the same time; Avoiding the noise sensitive time to the surrounding environment; Arrangement of the high noise equipment working in the daytime as possible; Reducing nighttime transportation, Strict prohibition of construction at nighttime (22：00~6：00). The construction which has to be at nighttime, must obtain the approval of the local environmental protection dEPBrtment, and prior communication with the residents, taking noise reduction measures (such as setting noise barrier) at the same time, to reduced he influence of construction noise on the residents to a minimum. 3, All construction vehicles' speed should not exceed 25 km / h on the the road outside the construction site. 4, All construction vehicles' speed should not exceed 15 km / h in the construction site. 5, Try to maintain the noise of machinery and equipment below 90 dB as much as possible	50	Construction Unit	Province PMO, County PMO, Project ower, County EPB

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		6, Setting up temporary noise barriers at the side of the sensitive point of reception(including schools, hospitals, nursing homes, etc.) when high noise equipments construction. 7, Using correct measures to reduce the noise and vibration impacts caused by the construction.			

Table 4-4 Operation period Common EMP and mitigation measures

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Operation period					
Domestic wastewater	Surface and ground water pollution	Wastewater collected by the municipal pipeline and discharged to the municipal wastewater treatment plant for treatment; In the area without pipeline, Wastewater collected by the closed vehicle, and shipped to the municipal wastewater treatment plant for treatment.	50	County PMO, Project ower,	County EPB
Equipment noise	Impacts of noise on nearby environment	Measures of sound insulation, shock absorption for equipment	100	County PMO, Project ower,	County EPB
Domestic waste	Influence of landscape; River channel blocking; Water body pollution etc.	Collected and transported to waste transport station, or handed over to municipal department for treatment	20	County PMO, Project ower,	County EPB

4.4.2 Environmental management plan and mitigation measures for ecologically sensitive area

The sub project of Poyang County involves 2 ecologically sensitive areas - Poyang Lake National Wetland Park and Pearl Lake drinking water source in Poyang County. The project environmental management plan and mitigation measures for ecologically sensitive area are listed in

Table 4-5.

Table 4-5 EMP and mitigation measures for ecologically sensitive area in construction period

Name of Ecologically sensitive area	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Design period						
National Wetland Park	Constructed wetland, Ecological sewage interception channel	Alien species invasion	1, Selection of indigenous tree species and shrubs, for Constructed wetland and ecological sewage interception channel instead of introduction of new exotic trees and invasive tree species; 2, Selection of native species in water ecological remediation, in the principles of biological diversity, which is benefit for construction of a stable ecosystem; 3,Selection of Species that have significant effects on the improvement of the ecological system, to meet the requirements of water purification.	——	Design unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau
Construction period						
All the Ecologically sensitive areas	Construction preparation and organization	——	1, Propaganda and education for workers before construction; Strengthen the protection of the ecological sensitive area; Prohibit the behavior of destructing ecological environment, such as destruction of trees, grass, Illegal hunting for wild animals. 2, In the process of project construction, construction should be in strict accordance with the construction drawings, should not expand the scope. The construction area should be strictly defined, non-construction personnel should not enter the construction area. Optimize the construction sequence and construction site design, minimize the disturbance of the surface and the destruction of vegetation area. 3, Soil taking and dumping field, abandon slag field, material dumping field, mixing field and construction camp are forbidden to set up in the ecological sensitive area; Mainly use local personnel for	——	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau, Water Bureau

Name of Ecologically sensitive area	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
			construction, non local construction workers should rent the local housing; Try to use the existing road or choose the wasteland, avoiding crossing or occupying of forest land			
National Wetland Park	Wastewater treatment, waste collection, processing and transport	Impacts on water quality, birds, amphibians, aquatic organisms, etc.	1, Prevention and control measures of impacts on mammals and amphibians ① The project area should be divided into several sections in the construction periods, and keep enough distance between sections, to provide enough space for mammals and amphibians to escape. ② Discharge of construction period wastewater should be toward away from the protected area side as far as possible to reduce the impact of sewage on mammals and amphibians. ③Mechanical stirring system, sand system should be installed with silencer pad, equipped with sound insulation room or cover, and periodic inspection and maintenance should be done in strict accordance with the operation requirements of the mechanical equipment to reduce noise caused by improper lubrication of equipment; and to reduce the impacts of noise on mammals and amphibians. ④ Publicity and education should be done to the construction personnel,enhancing the awareness of wildlife conservation,to prevent the occurrence of hunting phenomenon,and reduce the impact of personnel on mammals and amphibians. 2, Prevention and control measures of impacts on birds According to the analysis of the impact of the project construction on birds in Wetland Park, the main measures are: ① In the construction period, construction tasks should be arranged as little as possible during the time period of more birds in the area (from October to next March), while the construction intensity should be increased in order to finish the work on time during the time that	——	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau

Name of Ecologically sensitive area	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
			the birds is away from the area.; ② avoid the construction at night. ③Mechanical stirring system, sand system should be installed with silencer pad, equipped with sound insulation room or cover, and periodic inspection and maintenance should be done in strict accordance with the operation requirements of the mechanical equipment to reduce noise caused by improper lubrication of equipment; and to reduce the impacts of noise on on birds. ④ Construction and living areas should be far away from the protected areas, and install the curtain to block the light to reduce the impact of night light on birds. ⑤ Strengthen the management of construction activities and personnel during the construction period; Strengthen the publicity of environmental laws and regulations; Compilation of bird knowledge manual, make knowledge popularization in the area, improve the birds protection consciousness of the construction personnel. Reduce the impact of personnel disturbance on birds. 4, use native plants and prohibit the introduction of exotic species.			
Water source protection area	Wastewater treatment, waste collection, processing and transport	Impacts on water quality, birds, amphibians, aquatic organisms, etc.	1, To inform the construction personnel of Poyang County the Pearl Lake water body function for drinking water, Centralized drinking water source protection area and water source protection and conservation area of Wetland Park; Strengthen the awareness of water conservation for construction personnel; Strengthen environmental protection education for construction personnel; Strict restrict personal hygiene behavior of construction personnel; Prohibite the construction personnel to swim. 2) Prohibition of the establishment of the material field, waste dumps, construction camps, etc. in the centralized drinking water source protection area; Try to avoid the concentrated distribution area	——	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Water Bureau

Name of Ecologically sensitive area	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
			of the agricultural irrigation ditch as far as possible. 3) Set up necessary temporary drainage ditch, dredging the construction wastewater, using the sedimentation tank to reuse the wastewater in the construction. 4) when excavation at the rain and road surface runoff, temporary sedimentation tank should be set up, to settle down the sands. A geotechnical cloth fence is arranged at the water outlet side to intercept the sands once again. Sedimentation tank should be flattened when the construction complete. 5) The construction of temporary road must be with smooth drainage to prevent the massive sandy mud from flowing into the Pearl Lake by the storm. 6) Prohibition of dumping of waste water, waste, waste, waste rock and other solid waste into Pearl Lake. 7) Slurry produced in the construction process is pumped to the settling tank by slurry pump, solidified by drainage and evaporation, shall not be discharged into the water body. 8) Wastewater of mechanical equipments washing is treated by the oil sEPBrating tank, then used for water sprinkling for construction dust, and shall not be discharged into the water body. 9) In the course of construction, the work area should be clean, sewage and pollutants should not enter into the excavation trench, leading to sewage infiltration. 10) Construction should be done in the non flood season as far as possible to reduce the influence of shallow groundwater depth on construction; 11) Regular inspection and maintenance of construction machinery to prevent oil leakage. 12) Local residents houses are rented as the construction camp. Existing domestic wastewater treatment systems nearby the			

Name of Ecologically sensitive area	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
			construction area are proposed to treat the domestic wastewater of project construction people, No discharge into the water body. SeEPBge prevention measures should be taken for the domestic waste storage room addcording to the relevant requirements. 13, SeEPBge prevention measures should be taken for the domestic waste storage room addcording to the relevant requirements.			

Table 4-6 EMP and mitigation measures for Ecologically sensitive area in operation period

Ecologically sensitive area 名称	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Operation period						
National Wetland Park	Wastewater treatment, waste collection, processing and transport	Impacts on water quality, birds, amphibians, aquatic organisms, etc.	1, Prohibit of Dumping of domestic waste and sewage discharge in the wetland protection area and its periphery protection zone 2, Prohibit of dangerous chemicals vehicles passing on the roads in the scenic area.	——	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau
Water source protection area	Wastewater treatment, waste collection, processing and	Impacts on water quality, birds, amphibians, aquatic organisms,	1, Prohibit of Dumping of domestic waste and sewage discharge indrinking water source protection area. 2, Same with article2 of Wetland Park	——	Construction Unit	Province PMO, County PMO, Project ower,

Ecologically sensitive area 名称	Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
	transport	etc.				County EPB, Water Bureau

4.4.3 Environmental management plan and mitigation measures for sub project of river and lake water environment remediation

The sub project of river and lake water environment remediation involves 4 counties- Duchang County, Poyang County, Yugan County and Fengxin County. Specificly, it involves Zoujiazui Lake in Duchang County, Pearl Lake in Poyang County, Pipa Lake and Huhui River in Yugan County,and 3 open drainage channels in Fengxin County- North Zhizhen Channel, South Channel and Dazhai Channel. The sub project environmental management plan and mitigation measures in Construction period and Operation period are listed in Table 4-7.

Table 4-7 EMP and mitigation measures for sub project of river and lake water environment remediation

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Design period					
Ecological revetment, water purification and aquatic ecosystem remediation	Alien species invasion	**1, Selection of indigenous tree species and shrubs, for ecological revetment instead of introduction of new exotic trees and invasive tree species;** **2, Selection of native species in water ecological remediation, in the principles of biological diversity, which is benefit for construction of a stable ecosystem;** **3, Selection of Species that have significant effects on the improvement of the ecological system, to meet the requirements of water purification.**	——	Design unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau, Water Bureau, County Sanitation Department
Construction period					

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Dredging	Surface water pollution; Imapacts on aquatic animals and plants Imacts of abandoned sludge on Environment	1, Duchang county ① Dredging should be done in dry season. ② The plan is using long arm excavator to excavate the sediment after cofferdam building, water drainage and sediment air dry up. ③ When the sludge takes the spot in the lake as the dump site, the closed bottomland shaped during the drought period of the lake region can be utilized to set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials. ④ Inside the dump site, there should be outlet of water, which should be located from the outlet of sludge as far as possible. It is better for the water outlet to set up at the dead angle of the dump site so as to take full advantage of the space to store the sludge. Meanwhile, factors including the storage capacity, area, geometrical shape of the dump site and the discharge channel outside the dump site should be taken into comprehensive consideration. The water outlet should also satisfy the requirement of the monitoring of residual water and emergency treatment of the residual water which does not meet the discharge standard. ⑤ Emergency treatment facilities should be set up for residual water, including emergency tank and emergency dosing facility. If the site conditions permit, the emergency tank should be set up near the dump site. According to the actual site conditions, the capacity of the tank can be designed to store residual water for 2 to 4 hours. The tank should also be equipped with impermeable materials. Thus it can be utilized as an emergency storage and treatment place for the residual water which does not reach the standard in accidents or emergency circumstances. If the site conditions do not permit, flocculating agent and dosing facilities should be	120	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Water Bureau, County Sanitation Department

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		prepared for emergency treatment of the residual water so as to satisfy the need of increasing dosing amount in emergency circumstances. ⑥ In the dump site, it can adopt the drainage method of gradual ditching to dewater the sediments and discharge the water into the west part of the lake through the existing channels. ⑦ During rain seasons, the top of the dump site should be covered with tarpaulins to prevent rain wash. ⑧ Regularly spray deodorants towards the aired sludge so as to reduce its influence on the ambient air. ⑨ Try to reduce the temporary land occupation and make timely removal. ⑩ Sediment is directly transported to wasteland in Gulingshan'ao Wangdunxiang in closed vehices for surface applications, the coverd with soils and greenings, ro reduce water and soil loss, see in water and soil conservation measures. ⑪ Set the enclosure and warning signs at the wasteland in Gulingshan'ao Wangdunxiang to prevent the public from entering. ⑫ Seditmentin the dumping site of the wasteland in Gulingshan'ao Wangdunxiang should be air dried and coverd with soills and rennings. ⑬ The garbage in the dredging water should be collectied in bins and handed over to the county sanitation department to transport to County waste treatment plant for treatment.. 2, Sediment in Yugan county ① Environmental cutter suction dredger is adopted; Try to shorten the construction time, reduce the disturbance to the water body; The residual water after sludge's dewatering will be treated through dosing and flocculating. After reaching the standard, it			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		will be discharged into Pipa waterbody. ② Dredging sediment is used for woodland in Changgangling after centrifuge dehydration and drying treatment, water content of below 60%.The woodlandarea with sludge surface applications can not be used for cultivation of vegetables, grain and other crops. ③ Use the wasteland in south side of the effluent channel as the dump site, set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials. ④ Inside the dump site, there should be outlet of water, which should be located from the outlet of sludge as far as possible. It is better for the water outlet to set up at the dead angle of the dump site so as to take full advantage of the space to store the sludge. Meanwhile, factors including the storage capacity, area, geometrical shape of the dump site and the discharge channel outside the dump site should be taken into comprehensive consideration. The water outlet should also satisfy the requirement of the monitoring of residual water and emergency treatment of the residual water which does not meet the discharge standard. ⑤ Emergency treatment facilities should be set up for residual water, including emergency tank and emergency dosing facility. If the site conditions permit, the emergency tank should be set up near the dump site. According to the actual site conditions, the capacity of the tank can be designed to store residual water for 2 to 4 hours. The tank should also be equipped with impermeable materials. Thus it can be utilized as an emergency storage and treatment place for the residual water which does not reach the standard in accidents or emergency circumstances. If the site conditions do			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		not permit, flocculating agent and dosing facilities should be prepared for emergency treatment of the residual water so as to satisfy the need of increasing dosing amount in emergency circumstances. ⑥ The sediments after dewatering should be timely cleaned and transported. It should be covered by tarpaulins when it is in dewatering process or is temporarily piled so as to prevent the sludge from being washed back into Pipa Lake by rain and polluting the water. ⑦ Regularly spray deodorants towards the aired sludge so as to reduce its influence on the ambient air. ⑧ Try to reduce the temporary land occupation and make timely removal. ⑨ Dredging sediment is transported to Changgangling and Xiaoganghe woodland near the XiSan Road Yuting Town, and used for surface application, then be covered with soils and greenings to prevent the water and soil loss, see in water and soil conservation measures. ⑩ Set the enclosure and warning signs around the woodland, and take measures to prevent water soil loss. ⑪ The garbage in the dredging water should be collectied in bins and handed over to the county sanitation department to transport to County waste treatment plant for treatment.. 3, Sediment in Fengxin county ① River channel dredging should be done in dry season; Try to shorten the construction time, reduce the disturbance to the water body. ② Dredging sediment is used for woodland in Yuantou Zu Huangxi Village, Ganzhou Town after dehydration with water content of			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		below 60%. The woodlandarea with sludge surface applications can not be used for cultivation of vegetables, grain and other crops. Block is set to reduce water and soil loss. ③ Use the wasteland as the dump site, set up dams of which the section form is usually sloping. Soils in woven bags, grinded soils and stones, as well as other materials can be used to set up the dams. The inner side of the dams should be laid with impermeable materials. ④ Inside the dump site, there should be outlet of water, which should be located from the outlet of sludge as far as possible. It is better for the water outlet to set up at the dead angle of the dump site so as to take full advantage of the space to store the sludge. Meanwhile, factors including the storage capacity, area, geometrical shape of the dump site and the discharge channel outside the dump site should be taken into comprehensive consideration. The water outlet should also satisfy the requirement of the monitoring of residual water and emergency treatment of the residual water which does not meet the discharge standard. ⑤ Emergency treatment facilities should be set up for residual water, including emergency tank and emergency dosing facility. If the site conditions permit, the emergency tank should be set up near the dump site. According to the actual site conditions, the capacity of the tank can be designed to store residual water for 2 to 4 hours. The tank should also be equipped with impermeable materials. Thus it can be utilized as an emergency storage and treatment place for the residual water which does not reach the standard in accidents or emergency circumstances. If the site conditions do not permit, flocculating agent and dosing facilities should be prepared for emergency treatment of the residual water so as to satisfy the need of increasing dosing amount in emergency			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		circumstances. ⑥ The sediments after dewatering should be timely cleaned and transported. It should be covered by tarpaulins when it is in dewatering process or is temporarily piled so as to prevent the sludge from being washed back into water body by rain and polluting the water. ⑦ Regularly spray deodorants towards the aired sludge so as to reduce its influence on the ambient air. ⑧ Try to reduce the temporary land occupation and make timely removal. ⑨ Sludge surface application for woodland, thencovered with soil and greenings to reduce water and soil loss.,See in water and soil conservation measures. ⑩ Set the enclosure and warning signs around the woodland with sudge applications to prevent the public from entering; ⑪ The garbage in the dredging water should be collectied in bins and handed over to the county sanitation department to transport to County waste treatment plant for treatment.			
Lakeshore restoration	Water body pollution	1, Construction materials field should be away from the surface water as far as possible, and the general materials temporary stacked in the water near due to the engineering requirement must be covered and fenced up. 2, The waste oil and other solid waste in the construction are forbidden to dump or throw into the water, should be promptly transported to the designated location.	40	Construction Unit	Province PMO, County PMO, Project ower, County EPB, Water Bureau, County Sanitation Department

4.4.4 Environmental management plan and mitigation measures for sub project of domestic wastewater management system enhancement

The sub project of domestic wastewater management system enhancement involves 5 counties - Duchang County, Poyang County, Yugan County, Fengxin County, Jing'an County and Jishui County. The sub project Environmental management plan and mitigation measures listed in Table 4-8.

Table 4-8 EMP and mitigation measures for sub project of domestic wastewater management system enhancement in construction period

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Design period					
Pipeline design	——	1, Select appropriate pipes, according to the specific circumstances of the city, and ensure the quality and service life of the pipe. 2, Foundation of pipeline drainage project must meet the design requirements, where cannot reach the design requirements, it must be treated accordingly. 3, Foundation construction should be in strict accordance with the design requirements of the width, thickness and strength to guarantee the quality.		Design unit	Province PMO, County PMO, Project ower, County EPB, Water Bureau
Construction period					
Pipeline construction	Disruption of municipal services like water and electricity Disruption of municipal services like water and electricity	1, Public should be noticed about the public facilities failures, such as water, electricity, gas and bus routes disruptions, at least five days in advance by way of notice announcement in construction point, bus station and affected regions. 2, Based on the well construction organization, ensure the construction progress, shorten the construction period as far as possible，keep safety construction, complete as soon as possible and restore the municipal services.			
	Traffic obstruction; Impacts on Traffic safety and commercials along the street	(1) The civil contractor should make the traffic management planning in negotiation with the local traffic administration before construction. The construction unit should provide the information like construction time table, transportation detour route, temporary bus lines and housing	200	Construction Unit	Province PMO, County PMO, Project

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		demolition on the construction sign board； (2) Set warning sign in front of entrance of each construction section, road intersection, road corner, road lane change point and traffic channel etc., noted relevant traffic restrictions, such as entering the construction area, speed limit, height limit, etc.. (3) In principle，construction at nighttime (22：00~6：00) is strictly prohibited. The construction which has to be in the nighttime, must obtain the approval of the local environmental protection department, and have prior communication with the residents, and take noise reduction measures (such as setting noise barrier) at the same time, to reduced he influence of construction noise on the residents to a minimum. (4) Except for special circumstances, to reduce the traffic pressure on the surrounding roads, Earthwork vehicles should try to avoid traffic rush hour of the city, and appropriately arrange the night time transport. The working hours of ther construction vehicles going in and out of the construction site need reasonable adjustments according to the factors affecting traffic flow, such as seasons, weather, holidays and emergent events. (5)For project of construction period > 30 days, the construction site boundary should be blocked in a closed way according to the local conditions; The enclosure block should use color steel plate material. The enclosure height should be ≥2.5 m for construction site in the general area, and ≥3m for construction site in the sensitive area. (6) Enclosure blocks should be straight, uniform, clean and no damage, the appearance should be coordinated with the surrounding environment; (7) For the road occupation construction site，the straight rigid metal screen enclosure blocks should be set up within the 5 meters sight			ower, County EPB, Water Bureau, County traffic control department

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		distance of road intersection, without blocking the vision of vehicle driver and the pedestrians, and ensure the traffic safety. All kinds of items are Prohibited to be piled up within the 5 meters sight distance range. (8) When the enclosure is less than 5m away from residential or the construction point is less than 15 meters away from the sensitive buildings like residentials, hospitals, schools, etc., noise reduction measures like the increase of enclosure height should be taken, and the enclosure height of the sensitive area should reach 3 meters; and the 5 meters areas outside the construction site should be kept clean. (9) Within 1 meters of the inner side of the enclosure, no material like tools, earthwork etc., should be piled up. (10) It is prohibited to use enclosure as the support for retaining walls or other facilities and equipments; (11) When construction along the road and passing through the entrance and exit of the residents, try to minimize the impact on nearby residents and vehicles, by half width construction, finishing as early as possible. Soil should be timely covered after half width construction, if not, steel plates should be covered on the trench at the end of the day to ensure normal traffic and safety. (12) Establish full-time "traffic picket post", and full time traffic safety, civilized construction team, responsible for ensuring the implementation of traffic safeguard measures, management and maintenance of the traffic safeguard measures during the construction period, maintaining the traffic order of construction section, and helping to solve traffic problems during construction. (13) During construction, vehicles and personnel in and out of the construction site should strictly comply with traffic regulations, obey the			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		directions of traffic management department; Accept supervision and inspection of traffic management department and investor, if problems impact traffic were found, the rectification should be immediately carried out (14) During construction，Pay attention to safety and civilization construction and the implementation of anti-disturbing measures, especially measures of prevention and control of dust, Noise control, and mud and earth management.Contact the units and neighborhoods along the project in advance to gain their understanding and support, ensure the smooth construction. (15) In the preparation of construction organization design, take the coordination of traffic measures as one of the construction organization design. Before the implementation of the work, Contact with the traffic department, introduce and report the general situation of the project, construction scheme, general layout, and engineering materials and earthwork transportation plan. Ask the traffic department for support and guidance to improve and perfect the traffic plan, formulate the implementation details. (16) On the road with live traffic, when it is required to open or lift the the cover of Blind shaft, the foldable Construction road bar should be set up at the boundary of working area (17) Prohibit the use of red and white flags, safety isolation rope or other material instead of the construction road blocks. (18) The construction bar should be set as the long side section of the channel steel base toward the construction work area; Need to set the construction channel; If a channel is required between the construction bars and construction area, the channel width should be≥0.6m; (19) For the Building (structure) surface painting, refreshing, or cleaning construction, construction road bar should be use for the full enclosure.			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		All kinds of mechanical equipment, tools, materials should be placed within the scope of the enclosure. (20) For road construction without temporary traffic measures or unfinished project, it is strictly prohibited to remove construction road bar; (21) For pipeline construction in focus area, the section construction of "Excavation, Laying and Fixing" should be used, the full length excavation at the same time is strictly prohibited. (22) For construction occupying urban road, the relevant provisions of traffic departments and road management departments should be abide by. Complete the relevant formalities for examination and approval, and set the temporary access roads according to specifications; (23) Construction period should strictly comply with the licensing requirements, No unauthorized account of the road, or beyond the licensing required construction period (24) For construction occupying urban road, having impacts on vehicle and pedestrian access, temporary access road shall be set up in accordance with the regulations, in particular, for the temporary access to the hospital, it should be convenient for hospital ambulance safely access; Construction in kindergarten, school sections, after setting up temporary access road, the construction site should be strictly enclosed. Children or babies are prohibited from entering the construction area; (25) For construction occupying pedestrian sidewalks，the strong, smooth and continuous sidewalk with pro side security envelope at the side near the entrance or exit of commercials, enterprises, office buildings, hospitals, schools, kindergartens, nursing homes, or			

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		residentials, etc., to guarantee safe passage for pedestrians; (26) Excavation of ditch or Pipeline trench on urban roads, cannot be completed on the same day and need to be used as a road, the construction unit shall implement the steel plate covering construction; (27) Support reinforcement scheme should be after security argument, and approved by investor; the thickness of covered steel plates should be ≥0.03m. the edges of the Steel plates and metal slope frame should be polished to ensure that no angle or burr, and ensure the safety of personnel and vehicles; (28) When trench (PIT) excavation width≥0.8 m, the covered steel plate should be supported by the metal profile bar underneath.			

Table 4-9 EMP and mitigation measures for sub project of domestic wastewater management system enhancement in operation period

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Operation period					
Pipeline leakage	Water environment pollution	1, Establish a set of network supervision system, with timely pipeline dredging and replacement of damaged pipe network, avoid the sewage escaping, emitting, dropping and leakage，which will pollute the surface and ground water around.			
Accident discharge of Industrial Park wastewater	Affect the normal operation of the sewage treatment plant.	1, Set up monitoring wells in the drainage outlet of industrial park, monitor the water quality of industrial park in long term. 2, If any abnormal water quality phenomena happen, find reasons from the primary pollution sources of catchment system; related enterprises should take emergency measures to control the discharge of microorganism and poisonous substances.			
Risk and Prevention	Safety and risk of inspection well overhaul	1, Before clearing the well, warning signs should be set up, surface obstacles be removed to ensure the traffic flow; Non-operating personnel	100	Project ower	Province PMO,

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
	and clearing out, Such as the risk of methane gas to maintenance personnel	should be evacuated before uncover the well. 2, It is prohibited to use steel, iron drill etc. to pry the manhole cover in hard way, in case of causing combustion or explosion 3, Use of motor pumping sewage, the electric leakage of the motor, power lines, knife switch etc. should be checked to avoid electric shock accident 4, Before the operation personnel go down into the well dredging, natural ventilation should be used in advance, to eliminate harmful gases like carbon monoxide, carbon dioxide, hydrogen sulfide, methane, the operation personnel should use the instrument to check and make sure it is harmless, safe, then start the downhole operation; 5, Downhole operation personnel should wear anti-static clothing, keys and other hard metal material is prohibited under the pool; 6,The operator on the ground should hold a safety belt and keep in touch with the downhole personnel at any time; 7, After clearing, promptly put back the manhole cover and repair it; If it cannot be completed in the same day, set up warning signs or set protection around.			County PMO, Water Bureau, County Sanitation Department
Maintenance and management	——	1 Inspection well should be Regularly cleaned and slag removed; And regular inspection and timely maintenance, is required to ensure that the sewage interception pipeline and Inspection well is smooth and sound. 2, Garbage, dirt, debris shall not be dumped into the inspection wells; Do not pile up the debris or build house on the inspection well, and unauthorized alterations to the sewage pipeline is prohibited. 3, Inspection well should usually be covered by cover plate to prevent odor and accident. 4, Fire operation should be prohibited near the inspection well. 5, Manhole sludge must be transported to the professional treatment plan designated by the Department of environmental sanitation for treatment, being well recorded to avoid cross contamination.	50	Project ower	Province PMO, County PMO, Water Bureau, County Sanitation Department

4.4.5 Environmental management plan and mitigation measures for Sub project of wastewater treatment

The sub project of wastewater treatment involves only Poyang County, including the construction of 35 wastewater treatment station and 101 constructed wetlands, the specific measures for Environmental management plan and mitigation are listed in Tabel 4-10.

Table 4-10 Environmental management plan and mitigation measures for Sub project of wastewater treatmens

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Design period					
Design of wastewater treatment station	——	1, General layout of rural sewage treatment project Should be determined after technical and economic comparison and based on the functions and procedures of the buildings and structures, combined with the site topography, meteorological and geological conditions and other factors, and. And it should be convenient for construction, maintenance and management; 2, Within the treatment works, the building shapes should be simple and beautiful, materials should be Appropriate selected, and the effect of the building and structures should be coordinated with the surrounding environment; 3, The buildings of production management and living facilities should be centrally arranged, their location and orientation should be reasonable, and should maintain a certain distance with the treatment structures; 4, Structures should be centrally arranged respectively according to the actual situations as far as possible; Spacing of treatment structures should be compact, reasonable, and should meet the needs of the construction, equipment installation, various pipelines laying and maintenance management requirements; 5, Process flow, vertical design should make full use of the original terrain, meet the requirement of drainage unobstructed, energy consumption reduced, and earthwork Balanced. 6, Based on the needs, Set up the site in the right place to put the material,	——	Design unit	Province PMO, County PMO, Project ower, County EPB, Water Bureau, County Sanitation Department

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		spare parts, waste residue and other materials as well as parking. 7, The uniform water distribution device is arranged between the processing structures in parallel operation, and a switching communication pipe canal is arranged between each processing structure system; 8, All pipes and channels should be overall arranged, avoid interfering with each other.Pipe gallery should be set up with complex pipeline.Water and mud conveying and gas transmission pipeline layout between processing buildings should be in accordance with the short length of pipe/canal, small head loss and smooth flow, and should not be easy to be blocked and convenient for dredging. The connection among the sewage treatment structure, in the right conditions, should be by open channel.			
Design of Constructed wetland	——	1, Constructed wetland should make full use of favorable conditions of the natural environment, constructed wetland function and process requirements, considering the landscape role of the constructed wetland in engineering area and water reuse planning, combined with the terrain, wind direction, geological conditions and hygienic protection distance and other factors, to make reasonable arrangement, and compact layout. 2, The greening should be combined with the local natural conditions and select the appropriate plant. The green coverage should be in compliance with the requirements of the local city, while preventing the alien plants invasion; 3, Wetland plant height and landscape coordination of each unit should be considered.	——	Design unit	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau, Water Bureau, County Sanitation Department
Operation period					
management and maintenance of constructed wetland	——	1, According to various extreme conditions such as heavy rain, flood, drought, freezing period and so on, and the water level can be adjusted, Backwater phenomenon shall not appear in the water inlet nor the flooding phenomenon at the outlet end. 2, When the constructed wetland appeared short flow, the water level should be adjusted; 3, After planting, the constructed wetland must be filled with water to	500	Project ower	Province PMO, County PMO, Project ower, County EPB, Forestry Bureau, Water Bureau, County Sanitation

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		promote the development of plant roots, water level needs to be regulated at the initial stage. 4, After the establishment of the plant system, the continuous supply of sewage should be guaranteed to ensure the aquatic plants density and healthy growth 5, Management like seedlings replant, Weed removal, Timely harvest diseases and insect pests Control should be done based on the growth of plants, herbicides, pesticides, etc. shall not be used. 6, For large scale constructed wetland wastewater treatment project, device for the utilization of plant biological energy should be considered. 7, Take insulation measures for constructed wetland to ensure that the water temperature is not less than 4℃; 8, The depth of frozen soil is tested on a regular basis to grasp the operation status of the constructed wetland system; 9, Enhance pretreatment to reduce the pollution load of the constructed wetland system; 10, the concentration of suspended solids in the constructed wetland system should be controlled; 11, Proper use of intermittent operation mode; 12, Partial replacement of the substrate of constructed wetland system.			Department

Table 4-11 EMP and mitigation measuresfor Sub project of wastewater treatment in operation period

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Operation period					
Management and	____	1, According to various extreme conditions such as heavy rain, flood, drought, freezing period and so on, and the water level can be adjusted,	30	Project ower	Province PMO, County PMO,

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
maintenance of constructed wetland, ecological sewage interception channel		Backwater phenomenon shall not appear in the water inlet nor the flooding phenomenon at the outlet end. 2, When the constructed wetland appeared short flow, the water level should be adjusted; 3, After planting, the constructed wetland must be filled with water to promote the development of plant roots, water level needs to be regulated at the initial stage. 4, After the establishment of the plant system, the continuous supply of sewage should be guaranteed to ensure the aquatic plants density and healthy growth 5, Management like seedlings replant, Weed removal, Timely harvest diseases and insect pests Control should be done based on the growth of plants, herbicides, pesticides, etc. shall not be used. 6, For large scale constructed wetland wastewater treatment project, device for the utilization of plant biological energy should be considered. 7, Take insulation measures for constructed wetland to ensure that the water temperature is not less than 4℃; 8, The depth of frozen soil is tested on a regular basis to grasp the operation status of the constructed wetland system; 9, Enhance pretreatment to reduce the pollution load of the constructed wetland system; 10, the concentration of suspended solids in the constructed wetland system should be controlled; 11, Proper use of intermittent operation mode; 12, Partial replacement of the substrate of constructed wetland system.			County EPB, Forestry Bureau, Water Bureau, County Sanitation Department
Project of wastewater treatment station and supporting	Wastewater leakage of Pipeline;Water environment pollution	1, With timely pipeline dredging and replacement of damaged pipe network, avoid the sewage escaping, emitting, dropping and leakage，which will pollute the surface and ground water around.	——	Project ower	Province PMO, County PMO, County EPB, Water Bureau, County Sanitation

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
pipeline					Department
	Risk and Prevention	1, Before clearing the well, warning signs should be set up, surface obstacles be removed to ensure the traffic flow; Non-operating personnel should be evacuated before uncover the well. 2, It is prohibited to use steel, iron drill etc. to pry the manhole cover in hard way, in case of causing combustion or explosion 3, Use of motor pumping sewage, the electric leakage of the motor, power lines, knife switch etc. should be checked to avoid electric shock accident 4, Before the operation personnel go down into the well dredging, natural ventilation should be used in advance, to eliminate harmful gases like carbon monoxide, carbon dioxide, hydrogen sulfide, methane, the operation personnel should use the instrument to check and make sure it is harmless, safe, then start the downhole operation; 5, Downhole operation personnel should wear anti-static clothing, keys and other hard metal material is prohibited under the pool; 6,The operator on the ground should hold a safety belt and keep in touch with the downhole personnel at any time; 7, After clearing, promptly put back the manhole cover and repair it; If it cannot be completed in the same day, set up warning signs or set protection around.	——	Project ower	Province PMO, County PMO, County EPB, Water Bureau, County Sanitation Department
	Maintenance and management	1, 1, Professional training of operating personnel and certificates required for posts; 2, Clear define the responsibilities and regulations of each position; The operation and maintenance of the main equipment; 3, Strengthen routine laboratory analysis, Operators must be able to understand the changes in water quality based on water quality analysis to change the operating conditions, achieving the best operating conditions and reducing operating costs;	——	Project ower	Province PMO, County PMO, County EPB, Water Bureau, County Sanitation Department

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		4, Establish a complete management organization and a complete set of management measures; 5, Establish a more advanced automatic control system； 6, System maintenance, maintenance system, regular or fixed time maintenance and repair work, in order to improve the integrity of the equipment. 7, Inspection well should be Regularly cleaned and slag removed; And regular inspection and timely maintenance, is required to ensure that the sewage interception pipeline and Inspection well is smooth and sound. 8, Garbage, dirt, debris shall not be dumped into the inspection wells; Do not pile up the debris or build house on the inspection well, and unauthorized alterations to the sewage pipeline is prohibited. 9, Inspection well should usually be covered by cover plate to prevent odor and accident. 10, Fire operation should be prohibited near the inspection well. 11, Manhole sludge must be transported to the professional treatment plan designated by the Department of environmental sanitation for treatment, being well recorded to avoid cross contamination.			

4.4.6 Environmental management plan and mitigation measures for sub project of solid waste collection and transport system

The sub project of solid waste collection and transport system involves 4 counties - Duchang County, Yugan County, Jing'an County and Shangli County. It will construct 9 new waste collection and transport stations, 3 in Duchang County and 6 in Shangli County. The Environmental management plan and mitigation measures for sub project of solid waste collection and transport system are listed in Tabel 4-12.

Table 4-12 EMP and mitigation measures for sub project of solid waste collection and transport system in Construction period

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Design period					
Site selection	——	1, In accordance with urban and rural environmental health professional planning; 2, Transfer stations should be close to the main road to facilitate the waste vehicles in and out; 3, Transfer stations should be in the place with better water and power conditions and sewage discharge pipelines. 4, Transfer stations should not be located in a place where exerts threat to traffic safety or easy to cause traffic congestion.	——	Design unit	Province PMO, County PMO, Project ower, County Sanitation Department, County EPB
Structural requirements	——	1, Process site selection of transfer stations should be in accordance with the principles of high efficiency, energy saving, environmental protection, safety, hygiene and so on. 2, Once entering into the transfer station, waste should be directly dumped in the waste tank to prevent waste landing. 3, The appearance, the tone of the transfer station should be coordinated with the surrounding environment. 4, Construction structure of transfer station should guarantee the effective control of pollution of the waste collection operation 5, wastewater collection system should meet the requirements of corrosion resistance, seepage control and so on.		Design unit	Province PMO, County PMO, Project ower, County Sanitation Department, County EPB
Construction period					
Construction	Common impacts of construction	Use General construction requirements for environmental management (See Annex)	100	Project ower	Province PMO, County PMO, County Sanitation Department, County EPB

Table 4-13 EMP and mitigation measures for sub project of solid waste collection and transport system in operation period

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
Operation period					
Waste receiving, unloading, and storage	Environmental sanitation, Unreasonable classification and disposal of waste	1, Waste station shall make operation, maintenance and safety operation procedures, and operate according to the operation procedures;; 2, Transfer stations should be kept clean and tidy, collecting containers should be cleaned regularly; Bacteria, mosquitoes and flies should be killed by spraying biological control bacteria, use light, liquid disinfection and sterilization system; Machinery, equipment, and site cleaning should be on a regular basis, to ensure that the surface is clean, no dirt and leachate are attached. Both inside and outside of the transfer station should be regular drugged to eliminate mosquitoes. 3, The operation management personnel and operators of transfer station must have pre job training to master the process flow of the transfer station, technical requirements, and main technical specifications and operational management requirements for facilities, equipment; 4, Transfer station strictly open in accordance with the provisions of the time; 5, Operating personnel should randomly check the garbage composition, prohibit the hazardous waste, and prohibited substances. 6, Classification of recycled materials and organic wastes for recycling and compost; 7, No debris piling up in the transfer station. 8, Waste collection container should have no deformity, damage with good sealing, and cleaning outside	12	Project ower	Province PMO, County PMO, County Sanitation Department, County EPB
Leachate, cleaning wastewater, and domestic wastewater	Surface and ground water pollution	1, Waste transport vehicle using closed vehicle, with installation of waste leachate collection device; 2, Set seepage collecting tank to collect sewage and leachate of waste transfer station, which is discharged into the municipal sewage treatment plants by pipeline after precipitated, or on a regular basis transported to the waste treatment plant leachate treatment station for	120	Project ower	Province PMO, County PMO, County Sanitation Department, County EPB

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		processing through the sanitation closed tanker.			
Odor	Ambient air pollution	1, Waste transfer stations use high energy reactive oxygen ion removal method and spray dust removal treatment for waste gas; 2, Wash the equipment and the ground of the transfer station regularly to reduce the odor; 5, Choose the vehicle and container with the minimum emission during the waste receiving, unloading, processing and storage. 6, Clean up waste transfer stations and nearby roads regularly, and spray water to control the dust if necessary; 4, All biological waste should be cleaned up quickly, make sure the waste of the day be treated at the same day. 5, Use deodorant spray if necessary; 6, Plants with deodorant and sterilizing efficacy are planted around the perimeter. 7, Waste transfer vehicles should be closed to prevent leakage or waste; 8 , Make and optimize the waste transportation routes, try to avoid the impact of exhaust gas on the sensitive points like school hospital and along both sides of the road.	120	Project ower	Province PMO, County PMO, County Sanitation Department, County EPB
Solid waste transport	Ambient air pollution; Odor impact and Traffic safety	1, Strengthen the management and maintenance of waste transport vehicles, reduce vehicle accident rate; 2, Transporting personnel shall receive professional training and having certificates; 3, Waste transfer vehicles should be closed to prevent leakage or waste; 4, Make and optimize the waste transportation routes, try to avoid the impact of exhaust gas on the sensitive points like school hospital and along both sides of the road. 5, Emergency measures or contingency plans for the occurrence of an accident.	24	Project ower	Province PMO, County PMO, County Sanitation Department, County EPB, County traffic control department
Operation and management	Impacts on Occupational health	1, Any operator must wear the appropriate protective equipment to be on duty, such as protective clothing, gloves, breathing mask, non-slip shoes should be provided for waste transport workers, and hard ground	24	Project ower	Province PMO, County PMO, County

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		safety shoes for all workers. Safety production management personnel should check the wearing of labor protective equipment at any time. The staff do not wear labor protection supplies according to the provisions shall not be on duty; 2,Eating, smoking and drinking water in the vicinity of the waste transfer station is prohibited; 3, Provide immunity to the staff and conduct health monitoring (e.g. hepatitis B and tetanus); 4, Maintain waste transfer station at a good clean state; 5, In case of cut and bruised situation, seek medical treatment immediately. Wrap the wound in order to avoid contact with the waste. 6, waste transfer stations to be completely closed up, in order to prevent domestic or wild animals exposed to refuse, otherwise it will cause the spread of the livestock disease and zoonotic disease, and spread to wild animals. 7, Waste transport station , collection point should have operation, maintenance and safety operation procedures, and operate according to the operation procedures; Establish a sound emergency rescue plan; 8, The operation management personnel and operators of transfer station must have pre job training to master the process flow of the transfer station, technical requirements, and main technical specifications and operational management requirements for facilities, equipment; 9, Pre job and regular occupation health knowledge training should be well done, especially knowledge training related with the emergency rescue; 10, In accordance with the relevant provisions of the state, the workers engaged in post exposed to occupation hazards should have occupation health examination before, during and after posts, and be truthfully informed with the results. It is not allowed to arrange workers who do not have occupational health examination to engage in operations exposed to occupational hazards.			Sanitation Department, County EPB

Activities	Potential impacts	Mitigation / prevention measures	Investment estimate (10,000Yuan)	Enforcement agencies	Supervision agencies
		11, Transfer stations should be kept clean and tidy, collecting containers should be cleaned regularly;Bacteria, mosquitoes and flies should be killed by spraying biological control bacteria, use light, liquid disinfection and sterilization system; Machinery, equipment, and site cleaning should be on a regular basis, to ensure that the surface is clean, no dirt and leachate are attached. Both inside and outside of the transfer station should be regular drugged to eliminate mosquitoes 12, Operating personnel should randomly check the garbage composition, prohibit the hazardous waste, and prohibited substances.			

4.4.7 Related Project Environmental Management Plan

Project related projects involving the units that are under construction, proposed extension and to be environmentally acceptance, the environmental management plan are listed in the table below.

Table 4-14 Related Project Environmental Management Plan

Project Name	Stage	Construction progress	EMP	Investment estimate（10000Yuan）	Executive organization	Supervisory organization
Duchang County Wastewater Treatment Plant	Proposed extension	Present scal of 20000t/d，proposed PhaseII extension of 40000t/d，longterm extension of 80000t/d	Investigate and report on the progress of the construction every half year	——	Duchang County PMO , Project Owner	Provincial PMO
Duchang County waste comprehensive treatment Plant	Pending acceptance	The trial operation stage, plan for the acceptance of environmental protection in 2016 September	After environmental acceptance, Requests the Duchang County waste comprehensive treatment Plant to provide the environmental protection acceptance approval documents and the acceptance monitoring	——		

Project Name	Stage	Construction progress	EMP	Investment estimate（10000Yuan）	Executive organization	Supervisory organization
			report			
Jiujiang second domestic waste treatment plant	Proposed extension	Plan to start Phase II in 2016 and put into use in 2017	Investigate and report on the progress of the construction every half year	——		
Yugan County domestic waste Landfill	Pending acceptance	Has built a total capacity of 950000m^3，plan for the acceptance of environmental protection in the second half year of 2016	After environmental acceptance, Requests the Yugan County domestic waste Landfill to provide the environmental protection acceptance approval documents and the acceptance monitoring report	——	Yugan County PMO , Project Owner	
Jing'an County Wastewater Treatment Plant	Proposed extension	Has built a total scale of 1.00000m^3/d，plan to extend to 20000m^3/d	Investigate and report on the progress of the construction every half year	——	Jing'an County PMO , Project Owner	
Jing'an County domestic waste Landfill	Under acceptance	Environmental acceptance on going	After environmental acceptance, Requests the Jing'an County domestic waste Landfill to provide the environmental protection acceptance approval documents and the acceptance monitoring report	——		
Jishui Wastewater Treatment Plant	Proposed extension	Has finished the 1st phase (Step 1)（10000m3/d），the the 1st phase (Step 2)（10000m3/d）is under construction, expected to be completed by the end of this year, and start operation with the scale of 20000m^3/d，total design scale of 40000m^3/d	Investigate and report on the progress of the construction every half year	——	Jishui County PMO , Project Owner	
Pingxiang municipal solid waste	Under construction	Started in Oct 2015，expected to be completed by the beginning of the year	Investigate and report on the progress of the construction	——	Shangli County	

Project Name	Stage	Construction progress	EMP	Investment estimate（10000Yuan）	Executive organization	Supervisory organization
incineration plant		2017 and start trial operation	every half year; After environmental acceptance, Requests the Pingxiang municipal solid waste incineration plant to provide the environmental protection acceptance approval documents and the acceptance monitoring report		PMO , Project Owner	

5 Environmental Monitoring Plan

5.1 Monitoring Purpose

Environmental monitoring includes two stages of construction period and operation period. The purpose is to fully grasp the pollution dynamics of the proposed project in a timely manner, to understand the impact of project construction on the environmental quality of the region, the impact scope and the dynamic of the environmental quality, to timely feedback to the competent department of environmental protection, and to provide scientific basis for the environmental management of the project.

5.2 Monitoring Implementation

According to the environmental impact prediction results, take the sensitive points with more contamination as monitoring points.

According to the pollution situation of the construction period and operation period, the monitoring content should select the surface water,

ambient air and noise, which are more easily to be affected. The monitoring factors are determined according to the pollution characteristics in the engineering analysis. The monitoring method should use the corresponding Monitoring analysis method of "Environmental Monitoring Technical Standard", which is issued by the Ministry of environmental protection. The assessment standards use the relevant standards in the EIA. Monitoring organization should be the Qualified environment Monitoring units. The the responsible organizations in the construction period are County PMOs. The responsible organizations in operation period are the project owners. The supervisory organizations are environmental protection departments at all levels.

5.3 Environmental Monitoring Plan

5.3.1 Sub project of Duchang County

Environmental Monitoring Plan for Sub project of Duchang County is listed in Table 5-1.

Table 5-1 Environmental Monitoring Plan for Sub project of Duchang County

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period（5Years）	Ambient Air	2 for dust：Duchang County 3rd Primary School, County Maternal And Child Health Care Hospital	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Duchang County Construction Bureau	Duchang County EPB
		2 for odor：Bajiazui Village and Siguayan Village	NH_3, H_2S	2round/year, 1day/round, 1time/day	0.25	1	0.5（1year）			
	Noise	4：Duchang County Experimental primary school ,	LeqdB（A）	6round/year, 1day/round,	0.04	0.32	1.6			

Monitoring Period	Environmental elements		Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
			Duchang County 3rd Primary School, County Maternal And Child Health Care Hospital, Qinjiafan primary school		2time/day，Each time for day and night						
	Surface Water		1：Zoujiazui Lake	water temperature, pH, DO, COD, BOD, Permanganate index, NH3-N, TP, TN	2round/year, 1day/round, 1time/day	0.25	0.5	2.5			
			1: Tail water outlet	Water volume , SS, Turbidity, Permanganate index, TP , TN , NH3-N , Heavy metals	2round/year, 1day/round, 1time/day	0.25	0.5	0.5（1year）			
	Sediment		2:	Water content , Organic matter , Heavy metals	1round/year, 1day/round, 1time/day	0.5	1	1（1year）			
	Subtotal (10000 Yuan)							11.1			
Operation Period（by 3Years ）	Ambient Air		3：Nearest residential area from transfer stations in Beishan Xiang, Wangdun Xiang and Dashu Xiang	TSP, H_2S, NH_3	2round/year, 1day/round, 1time/day, ,	0.5	3	9		Duchang County Construction Bureau	Duchang County EPB
	Water Quaility	Online Monitoring	9：2 river boundary section monitoring points; 7 automatic measuring and reporting points	water temperature, pH, DO, COD, BOD, Permanganate index, NH3-N, TP, TN, Chlorophyll a	Online Monitoring	——	——	——			

Monitoring Period	Environmental elements		Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
		Waste collection and transport project	3：Wastewater collection pond of transfer stations in Beishan Xiang, Wangdun Xiang and Dashu Xiang	pH, SS, COD, BOD_5, NH3-N	2round/year, 1day/round, 1time/day	0.25	1.5	4.5			
		Pipeline Project	1：Industrial Park pipeline outlet	pH, COD, BOD_5, NH3-N	6round/year, 1day/round, 1time/day	0.25	1.5	4.5			
	Noise		3：Boundaries of transfer stations in Beishan Xiang, Wangdun Xiang and Dashu Xiang	LeqdB（A）	2round/year, 1day/round, 2time/day，Each time for day and night	0.04	0.24	0.72			
	Subtotal (10000 Yuan)							14.22			
Total (10000 Yuan)								25.32			

5.3.2 Sub Project of Poyang County

Environmental Monitoring Plan for Sub project of Poyang County is listed in Table 5-2。

Table 5-2 Environmental Monitoring Plan for Sub project of Poyang County

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air	2：Construction area of Zhuhu Xiang and Tuanlin Xiang	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Owner	Poyang County EPB
	Noise	2：Construction area of Zhuhu Xiang and Tuanlin Xiang	LeqdB（A）	6round/year, 1day/round, 2time/day ，Each time for day and night	0.04	0.48	2.4			
	Subtotal (10000 Yuan)						7.4			
Operation Period (by 3 years)	Water Quaility	outlets of 35 wastewater treatment stations	COD, BOD, NH3-N, TP, TN	1round/year, 1day/round, 1time/day	0.5	17.5	52.5		Owner	Poyang County EPB
		Project Automatic Water Quaility monitoring points and automatic measuring and reporting points	water temperature, pH, DO, COD, BOD, Permanganate index, NH3-N, TP, TN	Routine monitoring	——	——	——			
	Subtotal (10000 Yuan)						52.5			
Total (10000 Yuan)							59.9			

5.3.3 Sub Project of Yugan County

Environmental Monitoring Plan for Sub project of Yugan County is listed in Table 5-3。

Table 5-3 Environmental Monitoring Plan for Sub project of Yugan County

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air	2 for Dust：Pipazhou community and Guankou Village	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Owner	Yugan County EPB
		1 for Odor	NH_3, H_2S	2round/year, 1day/round, 1time/day	0.25	1	0.5（1year）			
	Water Quaility	2：Pipa Lake, Huhui River	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day	0.25	0.5	2.5			
		1: Tail water outlet	Water volume , SS, Turbidity, Permanganate index, TP , TN , NH3-N , Heavy metals	2round/year, 1day/round, 1time/day	0.25	0.5	0.5（1year）			
	Noise	2：Pipazhou community and Guankou Village	LeqdB（A）	2round/year, 1day/round, 1time/day，1 time in the daytime	0.02	0.04	0.2			
	Sediment	2	Water content , Organic matter , Heavy metals 等	1round/year, 1day/round, 1time/day	0.5	1	1（1year）			
Noise	Subtotal (10000 Yuan)						12.5			

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Operation Period (by 3 years)	Water Quaility	7 Automatic measuring and reporting points	water temperature, pH, DO, COD, BOD, NH3-N, TP, TN,	Online Monitoring	——	——	——		Owner	Yugan County EPB
	Noise	2：Sewage pumping station, Diversion pump station	LeqdB（A）	1round/year, 1day/round, 2time/day Once each for day and night	0.04	0.08	0.24			
	Subtotal (10000 Yuan)						0			
Total (10000 Yuan)							12.5			

5.3.4 Sub Project of Fengxin County

Environmental Monitoring Plan for Sub project of Fengxin County is listed in Table 5-4。

Table 5-4 Environmental Monitoring Plan for Sub project of Fengxin County

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air	2：Fengchuan 2nd Primary School, Fengxin County 3rd Middle School	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Owner	Fengxin County EPB
		3 for odor：Dazhai	NH_3, H_2S	2round/year,	0.25	1.5	1.5			

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
		Cannal,South Canal and Dam of Beizhizhen Canal		1day/round, 1time/day			（1year）			
	Noise	2：Fengchuan 2nd primary school, Fengxin County 3rd Middle School	LeqdB（A）	2round/year, 1day/round, 2time/day，Each time for day and night	0.04	0.16	0.8			
	Water Quality	①3：South Canal, Dazhai Canal, Beizhizhen Canal	Water temperature, pH, DO, COD, BOD_5, Permanganate index, NH3-N , TP , TN	2round/year, 1day/round, 1time/day	0.25	0.5	2.5			
		3: Tail water outlets of each of 3 Dumping sites	Water volume , SS, Turbidity, Permanganate index, TP , TN , NH3-N , Heavy metals	2round/year, 1day/round, 1time/day	0.25	1.5	1.5 （1year）			
	Seditment	3	Water content , Organic matter , Heavy metals	1round/year, 1day/round, 1time/day	0.5	1.5	1.5 （1year）			
	Subtotal (10000 Yuan)						6.3			
Operation Period (by 3 years)	Water Quaility online or routine test	2：Project automatic monitoring points： 1 at the Fengxin County Tap water intake point；1 at the Liao River junction of Fengxin County and Anyi County	water temperature, pH, DO, COD, BOD, Permanganate index, NH3-N, TP, TN	Online or routine test , once a month /a	——	——	——		Owner	Fengxin County EPB
	Subtotal (10000 Yuan)						——			

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Total (10000 Yuan)							6.3			

5.3.5 Sub Project of Jing'an County

Environmental Monitoring Plan for Sub project of Jing'an County is listed in Table 5-5。

Table 5-5 Environmental Monitoring Plan for Sub project of Jing'an County

Monitoring Period	Environmental elements		Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air		2：Jing'an Hospital and Jing'an 1st primary school	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Owner	Jing'an County EPB
	Noise		2：Jing'an Hospital and Jing'an 1st primary school	LeqdB（A）	6round/year, 1day/round, 2time/day，Each time for day and night	0.04	0.48	2.4			
	Subtotal (10000 Yuan)							7.4			
Operation Period（3 年）	Water Quaility	Online Monitoring	2：South tributary of North Liao River Junction of Jishui County and Fengxin County; North tributary of North Liao River Junction of Jishui County and Anyi County	water temperature, pH, DO, COD, BOD, Permanganate index, NH3-N, TP, TN, Chlorophyll a	Online Monitoring	——	——	——		Owner	Jing'an County EPB
		Pipeline Project	1：Industrial Park pipeline outlet	pH, COD, BOD_5, NH3-N	2round/year, 1day/round,	1	2	6			

Monitoring Period	Environmental elements		Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
					1time/day						
	Subtotal (10000 Yuan)							6			
Total (10000 Yuan)								13.4			

5.3.6 Sub Project of Jishui County

Environmental Monitoring Plan for Sub project of Jishui County is listed in Table 5-6。

Table 5-6 Environmental Monitoring Plan for Sub project of Jishui County

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air	2：Jishui County People's Hospital, Jishui County Experimental Primary School	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Owner	Jishui County EPB
	Noise	2：Jishui County People's Hospital, Jishui County Experimental Primary School	LeqdB（A）	6round/year, 1day/round, 2time/day，Each time for day and night	0.04	0.48	2.4			
	Subtotal (10000 Yuan)						7.4			

Monitoring Period	Environmental elements		Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air		2：Jishui County People's Hospital, Jishui County Experimental Primary School	TSP	2round/year, 1day/round, 1time/day	0.25	1	5	Qualified Organization	Owner	Jishui County EPB
	Noise		2：Jishui County People's Hospital, Jishui County Experimental Primary School	LeqdB（A）	6round/year, 1day/round, 2time/day，Each time for day and night	0.04	0.48	2.4			
Operation Period (by 3 years)	Water Quaility	Online Monitoring	2：South tributary of North Liao River Junction of Jishui County and Fengxin County; North tributary of North Liao River Junction of Jishui County and Anyi County	water temperature, pH, DO, COD, BOD, Permanganate index, NH3-N, TP, TN	Online Monitoring	——	——	——		Owner	Jishui County EPB
		Pipeline Project	1：Industrial Park pipeline outlet	pH, COD, BOD_5, NH3-N	6round/year, 1day/round, 1time/day	1	2	6			
	Subtotal (10000 Yuan)							6			
Total (10000 Yuan)								13.4			

5.3.7 Sub Project of Shangli County

Environmental Monitoring Plan for Sub project of Shangli County is listed in Table 5-7.

Table 5-7 Environmental Monitoring Plan for Sub project of Shangli County

Monitoring Period	Environmental elements	Monitoring point layout (number)	Monitoring items	Monitoring frequency	Unit Price (10000 Yuan/round)	Annual cost (10000 Yuan/Year)	Period cost (10000 Yuan/Year)	Monitoring Organization	Responsible Organization	Supervisory Organization
Construction Period (5 years)	Ambient Air	6：Construction site of 6 waste transport stations	TSP	2round/year, 1day/round, 1time/day	0.25	1.5	9	Qualified Organization	Owner	Shangli County EPB
	Noise	6：Construction site of 6 waste transport stations	LeqdB（A）	1round/year, 1day/round, 2time/day，Each time for day and night	0.04	0.24	1.2			
	Subtotal (10000 Yuan)						10.2			
Operation Period (by 3 years)	Ambient Air	6：6 waste transfer stations	TSP, H_2S, NH_3	2round/year, 1day/round, 1time/day	0.5	6	18		Owner	Shangli County EPB
	Noise	6：Boundaeies of 6 waste transfer stations	LeqdB（A）	1round/year, 1day/round, 1 for daytime	0.1	1.2	3.6			
	Subtotal (10000 Yuan)						21.6			
Total (10000 Yuan)							31.8			

5.3.8 Related Projects

Environmental Monitoring Plan for Related Projects is listed in Table 5 -8，

The Owner of the related projects is responsible for the Monitoring costs associated with the related project, which is not included in the Monitoring costs of the project.

Table 5-8 Environmental Monitoring Plan for Related Projects

No.	Item	Name of Related Projects	Monitoring Item	Monitoring point layout	Monitoring items	Monitoring frequency	Monitoring Organization	Responsible Organization	Supervisory Organization
1	Duchang County	Duchang County Wastewater treatment plant	Water Quality	2：inlet, outlet	pH, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day	Qualified Organization	Owner of Related projects	Duchang County EPB
			Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Sludge	Outshipping Sludge	Heavy metal（As, Hg, Pb, Cr, Cu）Water content	2round/year, 1day/round, 1time/day			
		Duchang County Waste Comprehensive Treatment plant	Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Ground Water Quaility	2：Upstream and downstream of the plant	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
			Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
		Jiujiang second municipal solid waste landfill site	Odor	5：Four boundaris and the nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Ground Water Quaility	2：upstream and downstream area of the plant	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
			Water Quaility	2：inlet and outlet of the wastewater treatment plant	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			

2	Yugan County	Yugan County Wastewater treatment plant	Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day	Qualified Organization	Owner of Related projects	Yugan County EPB
			Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Sludge	Outshipping Sludge	Heavy metal（As, Hg, Pb, Cr, Cu）Water content	2round/year, 1day/round, 1time/day			
		Yugan County Municipal Solid Waste Sanitary Landfill	Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Ground Water Quaility	2：Upstream and downstream of the plant	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
			Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
3	Fengxin County	Fengxin County ChengdongWastewater treatment plant	Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day	Qualified Organization	Owner of Related projects	Fengxin County EPB
			Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Sludge	Outshipping Sludge	Heavy metal（As, Hg, Pb, Cr, Cu）	2round/year, 1day/round, 1time/day			
4	Jing’an County	Jing’an County Wastewater treatment plant	Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day	Qualified Organization	Owner of Related projects	Jing’an County EPB
			Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			

			Sludge	Outshipping Sludge	Heavy metal（As, Hg, Pb, Cr, Cu）Water content	2round/year, 1day/round, 1time/day			
		Jing'an County Domestic solid waste landfill	Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Ground Water Quaility	2：Upstream and downstream of the plant	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
			Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			
5	Jishui County	Jishui County Wastewater treatment plant	Water Quaility	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day	Qualified Organization	Owner of Related projects	Jishui County EPB
			Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Sludge	Outshipping Sludge	Heavy metal（As, Hg, Pb, Cr, Cu）Water content	2round/year, 1day/round, 1time/day			
6	Shangli County	Pingxiang city solid waste incineration plant	Exhaust gas	1：Exhaust gas emission point	Dust, SO_2, NO_X, CO, HCl, Dioxins, Hg and its compounds,Cd, Ta and its compounds, Pb, particulate matter,,Sb, As, Pb, Cd, Cr, Cu, Mn, Ni and its compounds, smoke and dust, smoke humidity, temperature, smoke quantity	2round/year, 1day/round, 1time/day	Qualified Organization	Owner of Related projects	Shangli County EPB
			Odor	5：4 boundaris and 1 nearest residents	NH_3, H_2S	2round/year, 1day/round, 1time/day			
			Wastewater	2：inlet, outlet	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP,	2round/year, 1day/round,			

					Permanganate index	1time/day			
			Ground Water Quaility	2：Upstream and downstream of the plant	pH, SS, COD, BOD_5, NH3-N, Petroleum oil , TN, TP, Permanganate index	2round/year, 1day/round, 1time/day			

6 Personnel Training

6.1 Training Purpose

The purpose of environmental management training is to ensure the smooth and effective development of environmental management, make relevant personnel familiar with the contents and procedures of environmental management, improve the environmental management ability of environmental management personnel, and ensure the effective implementation of environmental protection measures. Environmental management and environmental supervision are the main objects of environmental capacity building. Their training is part of the technical support for the project. Training courses also train the staff of construction units and workers in the implementation process of the project. Before the construction of the project, all construction units, operation units and construction supervisors are required to participate in mandatory environmental, health and safety training.

6.2 Training Objects

Training objects are: all staff of environmental management office, all staff of environmental supervision units, representatives of environmental monitoring agency, and representatives of the main contractor, etc..

6.3 TRaining Contents

1, Master and use of the World Bank’s environmental policy and domestic environmental protection laws and regulations, environmental standards;

2, World Bank’s environmental management mode and the environmental provisions of the loan agreement;

3, Project environmental impact assessment and environmental management plan;

4, Project environmental management regulations (mainly the environmental management regulations for the construction period);

5, Responsibilities and mutual relations among environmental management personnel, environmental supervision personnel, environmental monitoring personnel, and the contractors;

6, Preparation of environmental management work report,, environmental supervision work report, environmental monitoring report and the contractor monthly report.

6.4 Training Program

In the Environmental management plan, training funds of construction period is proposed to be included in the project budget, and the training funds of operating period to be included in the operation and maintenance costs. The capacity building and training plan see table 6-1.

Table 6-1 Capacity building and training plan

Training subject	Training object	Specific training content	times	days/ times	Person of each sub project/time	Budget (10000 Yuan)
Construction Period						
Environmental regulations and policies	County（city） PMO, Project Owner, Construction unit	Ⅰ Environmental protection laws and regulations	1	1	3	12
		Ⅱ Environmental policy and planning	1	1	3	
		Ⅲ World Bank environmental management	1	1	3	
Implementation of environmental management plan	Construction unit, Project Owner	Ⅰ Environmental protection duty of project construction period	1	0.5	4	12
		Ⅱ Main task of environmental protection in project construction period	1	0.5	4	
		Ⅲ Main contents of environmental protection during construction period	3	0.5	4	
		Ⅳ Environmental management plan (including environmental management procedures)	2	0.5	4	
		Ⅴ Improvement or amendment of environmental management plan	1	0.5	4	
		Ⅵ Internal Monitoring method, data collection and processing, etc.	1	0.5	4	
Subtotal of Construction period						**24**
Operation Period						
Environmental monitoring and inspection, report	Project owner	Environmental protection facilities, ecological restoration, environmental quality Monitoring, compilation report	2	1	2	12

Training subject	Training object	Specific training content	times	days/ times	Person of each sub project/time	Budget (10000 Yuan)
Environmental protection facilities, measures	Project owner	Ⅰ Rules and regulations for environmental safety	2	1	2	12
		Ⅱ Emergency plan	2	1	2	
Subtotal of Operation Period						**24**
Total						**48**

7 Cost Estimate of Environmental Management Plan

The estimated cost of the project environment management plan is about15.3006 million yuan, total investment 1 billion and 443.571 million yuan, accounting for 1.1% of the total investment

Table 7-1 List of cost of project environment management plan 10000Yuan

Name of Sub Project	Environmental management costs	Environmental monitoring costs		Training fee	Total cost of EMP implementation
		construction period	Operation period		
Duchang county	265	11.1	14.22	8	298.32
Poyang county	142	7.4	52.5	8	209.9
Yugan county	263	9.7	0.24	8	280.94
Fengxin county	224	6.3	0	8	238.3
Jing'an county	151	7.4	6	8	172.4
Jishui county	89	7.4	6	8	110.4
Shangli county	180	10.2	21.6	8	219.8
Total	1314	59.5	100.56	56	1530.06

8 Information

Environmental management requires the necessary information exchange in the different departments and positions of PMO, owners, contractors, operators within the organization. At the same time, it requires to inform the outside (related parties, the public, etc.) organizations about the relevant information. The internal information exchange can be carried out in various ways, such as meeting, internal presentation and so on. But there must be 1 formal meeting a month, and all communication information should be recorded and filed. External information communication is carried out 1 time every six months or 1 years. The information exchange with the cooperative unit needs to form a summary and archive.

9 Documentation

For the effective operation of the environmental management system, the organization must establish a sound documentation system, and keep the records in the following aspects:

(1) Requirements of laws and regulations;

(2) Permit;

(3) Environmental factors and related environmental impact;

(4) Training;

(5) Inspection, verification and maintenance activities;

(6) Monitoring data;

(7) Effectiveness of corrective and preventive measures;

(8) Information about the relevant parties;

(9) Audit;

(10) Review.

In addition, it is necessary to control above kinds of records, including the identification, collection, cataloging, archiving, storage, management, maintenance, query, storage, disposal etc..

10 Reporting

In the course of project implementation, Contractors, operators, monitoring units, environmental supervision engineers and PMO should record the progress of the project, EMP implementation, environmental monitoring results, etc., and timely report to the relevant department. Mainly includes the following six parts: maintenance, query, preservation period, disposal etc..

（1）The project Environmental Supervision Engineer should make detailed monthly records on the implementation of EMP, timely submit weekly and monthly project report to the owner and Province PMO. The implementation of environmental protection measures, development of environmental monitoring, as well as monitoring data should be included in the weekly and monthly report,

（2）Contractors and operators should keep the detailed project progress and EMP implementation in the quarterly record, and timely send the Quarterly Report to the Province PMO, at the same time carbon copy to the provincial Environmental Protection Bureau.

（3）Monitoring unit should submit the monitoring report in time to the contractor (operator) and environmental supervision engineer upon the completion of the monitoring mission.

（4）PMO will promptly submit project progress report to Province PMO, and report to the provincial environmental protection bureau. The project progress report

(such as monthly report, quarterly report, annual report etc.) prepared by PMO must includ the contents of EMP progress, such as the EMP implementation progress and effect, especially the environmental monitoring results, etc..

（5）If illegal events on environmental protection happens, environmental supervision engineer and PMO should notify the local environmental protection administrative department, and escalate report as necessary.

（6）Annual EMP executive report of the project must be completed and submitted to WB by March 31st of the following year. The EMP executive report may include the following main contents:

a, Implementation of training plan;

b, Project progress, such as the construction progress of wastewater treatment station, waste transfer station and the completion length of pipeline laying, etc.;

c, The implementation of environmental protection measures, environmental monitoring and the main monitoring results;

d, Public complaints, if there is a complaint, the main contents of the complaints, solutions and public satisfaction should be recorded;

e, EMP implementation plan for the next year.

11 Public Grievance Redress and Project Change Mechanisms

1, Public Grievance

The proposed project should collect the residents' opinions by seminars and questionnaires during the environmental impact assessment period. The public can reflect their views through seminars, or filling out the questionnaire issued by the EIA unit, or taking the initiative to ask for questionnaire and make an advice; or sending a letter, call, fax or email to the construction unit or the EIA unit, or going to the Environmental Protection Bureau or the petition office of the project District;

During the construction or operation period, the public can reflect their views by sending a letter, call, fax or email to the construction unit or the investor, or going to the Environmental Protection Bureau or the petition office of the project District.

In implementation, after receiving the environmental complaint or the rectification notice of administrative department, the external supervision unit, Construction unit or investor should be immediately in conjunction with the design and other relevant departments to organize visits and investigations, making rectification according to the actual situation and making the rectification program

publicity, to solve the environmental protection disputes and problems.

2, Environmental requirements in case of Project Changes

According to environmental monitoring reports and inspections of supervision institutions, the environmental management plan will make targeted adjustments for mitigation measures to further improvem the environmental management activities.

If a significant deviation from the contents of the environmental management plan is found in the examination, or changes in the project cause a huge negative impact on the environment, or the number of adverse environmental impacts significantly increases, PMO will immediately consult the environmental agencies and the World Bank to set up an environmental assessment team for additional environmental assessment. And if necessary, additional public consultation should be carried out. The modified environmental impact report, including the environmental management plan, shall be submitted to the Environmental Protection Agency for approval. And submitted to the bank after approval. The implementation organizations and the contractor shall be informed about the revised environmental management plan, and carry out the implementation in accordance with the the revised contents.

Annex1 General Environmental Management Regulations on Construction Activities

1. Overview

First, the construction unit and construction personnel shall implement mitigation measures proposed in this regulation to prevent inconvenience to or influence on the lives of local residents, and to reduce the project impacts on the environment during construction and operation periods;

Second, remedial measures which cannot be effectively carried out during construction shall be implemented when the project is completed:

1) Vegetation landscape of all affected areas shall be timely rehabilitated via grass planting and afforestation, etc;

2) Rubble and silt left by waterway construction shall be cleaned up to ensure smooth water flow in drains and culverts;

3) Waste gravels shall be cleared and remaining construction materials shall be properly disposed in all construction sites;

4) The borrow area shall be restored.

2. Construction personnel's Code of Conduct and Environmental Standards

This section shall be combined with national and local laws and regulations, being a guideline for construction personnel's behavior. Before breaking ground, the construction unit shall develop project construction plans, in which detailed rules for the implementation based on the specification shall be clarified. Only after engineer-in-charge's approval of the plan shall the construction begin.

2.1 Prohibited Behaviors

The following behaviors are prohibited at the construction site or in surrounding areas:

1) Logging outside the construction site;

2) Hunting, fishing, capturing wild animals, and picking plants;

3) Using unapproved toxic materials, including lead-based paint and asbestos, etc;

4) Influencing other art buildings and architectures of historical value;

5) Triggering house fires;

6) Drunk constructing.

2.2 Traffic

Selection of routes to the construction site shall be approved by the engineer-in-charge. Appropriate vehicles shall be chosen according to local road level and load capacity shall be limited to avoid damage to local roads and bridges. For damage to local roads and bridges caused by overload, the construction unit shall be responsible for the repair under the consent of the engineer-in-charge.

Vehicles with heavy emissions or strong noises should not be used. At completed areas, noise reduction devices shall be installed under normal operation.

During the implementation of the contract, the construction unit, under engineer-in-charge's consent, may take necessary traffic control measures.

2.3 Construction Personnel and Construction Camp

Whenever possible, the construction unit shall recruit local workers and offer them appropriate training.

The construction camp shall be set at the place easy to rent local houses. Domestic sewage cannot be discharged arbitrarily but disposed via surrounding existing sewage treatment system to avoid affecting nearby rivers.

The construction unit shall establish a set of system and methods for on-site construction materials storage and generation and disposal of solid waste.

The construction unit shall provide substitute fuel while prohibit the use of wood in the camp for cooking or heating.

The on-site layout scheme shall be approved by the engineer-in-charge.

The construction unit should ensure that the construction site, warehouses, storage yards, and manufacturing equipment are not set within 500m to the river. Pollutants running into the river, especially the leakage via land or surface water during the rainy season, shall be avoided; lubricant should be recycled; in surrounding areas channels shall be dug out, at the exit of which settling pond or oil collecting pond shall be set up.

When preparing molding construction materials, construction personnel are prohibited to use wood to heat up.

Production and living areas shall be set independently in accordance with the unit's bidding section. Living areas, based on actual construction conditions, shall be set at a high location among the bidding section. The construction camp consists of living and office welfare facilities, constructing and processing plants, construction warehouses, simple repair stations and other ancillary facilities.

2.4 Waste Management and Soil Erosion

Solid waste, sanitation and hazardous waste can be effectively controlled by implementing the following measures:

2.4.1 Waste Management

1) Reduce the generation of wastes which require treatment and disposal;

2) Identify and classify the generated wastes. Were there hazardous wastes, then storage, collection, transportation and disposal must be conducted in accordance with appropriate procedures.

3) Identify and arrange treatment zones and clearly label them with what materials and substances are allowed for storage.

4) The construction unit must not dispose any waste in any environmentally sensitive area.

5) Construction wastes (including excavated soil) shall be transported to the designated disposal sites (shall be 300m away from the rivers, creeks, lakes or wetlands). Solid waste recycle-and-classify system shall be set up at designated disposal sites to dispose wastes, scrap metal, waste engine oil and the rest construction materials generated during the construction.

5) Comprehensive classification and recycling of recyclable wastes (scrap iron, scrap steel and materials packing bags sold to scrap yards; waste bricks used as materials for road base) shall be conducted. Wastes that cannot be recycled shall be timely transported to the designated construction waste dump site. During the process, sealed transportation shall be ensured and scattering be avoided. When temporary stacking is needed, waterproof, windproof and other measures shall be conducted.

6) For recyclable wastes, the recycling shall be conducted only after on-site identification and assessment and approval of the engineer-in-charge.

During the construction, any residue or sludge stacking on the ground near the construction site should be removed immediately. The stacking area should then be restored to the level approved by the engineer-in-charge.

Throughout the construction period (including preparation, maintenance, demolition and residue clean-up periods) and under the guidance of engineer-in-charge, there shall be a schedule for transportation, and measures to emergencies should be considered.

Inside the construction area, garbage bins for domestic wastes which have daily clearing, collection and classification shall be set, and the transportation of wastes commissioned to the Sanitation Department.

2.4.2 Soil Erosion Control:

Rationally choose the construction period and try to avoid rainy season or construction in raining days. Set up construction enclosure surrounding the work site to prevent construction materials and wastes from leaking into the surface water.

Set up earthen drainage ditch around the construction site on the basis of its terrain conditions. And set up an earthen grit chamber at the outlet of the ditch, slowing down the water and settling sand.

Combine key control with surface protection, and engineering measures with phtyto measures. Emphasize in engineering measures to realize its quick effect and guarantee function. Phtyto measures are auxiliary ones for soil and water conservation, conserving soil and water in a long term and stable manner, meanwhile afforesting and beatifying ambient environment.

Protect leaf layer and organic matters of the land surface and backfill them to the damaged areas to promote the growth of native plants.

Cover the eroded barren areas with native grasses and trees, or harden the soil surface of such areas.

Proper erosion control measures shall be conducted before the rainy season, in order to better carry out the next works. Corresponding erosion measures shall be prepared at each construction point upon the completion of their subprojects.

In all construction sites, there shall be sedimentations control facilities to slow down the water, change the flow direction and settle silts before the vegetation is restored. Such facilities include material piles, stone pathways, settling pits, straw bales, hedgerows and sludge piles, etc.

Use ditches, berms, grass fences and stone piles and other measures to prevent the water from rushing into the construction site or affect on-site work.

Maintain and continue to adopt erosion control measures till the vegetation is fully restored.

Spray water on earthen roads, excavation areas, filling areas and earthwork areas if necessary to reduce wind erosion.

2.4.3 Protection Area:

Identify and designate the equipment protection area (at least 15m away from rivers, streams, lakes and wetlands); fuel shall be stored in an appropriate location, which shall be admitted by the engineer-in-charge.

Make sure all equipment are used only within the designated protected area;

never dump the used oil on the ground, or into the water, sewer or drainage system.

All spilled wastes and collected oil shall be disposed in accordance with standard environment procedures or guidance. Fuel storage and backfilling areas shall be set 300m away from the intersection of drainage buildings and important water bodies, or be set under the guidance of the engineer-in-charge.

2.5 Earthworks and Side Slope Excavation and Filling

Reasonably arrange the earthworks, especially the work during the rainy season. During the construction, the side slope shall be kept solid and firm so as not to interfere other areas outside the construction area. In particular, continuous construction shall be conducted during the rainy season to complete as soon as possible the excavation and filling of the same section. Try to avoid slope erosion caused by interruption of construction due to rainy days and other reasons.

Build intercepting ditch and drainage ditch at the top and the bottom of the slope and plant grass or other plants according to the drawings to protect the slope from erosion. The Intercepting ditch shall be located higher than the slope being excavated to reduce the runoff so as not to erode the slope.

Excavated soils and stones and other materials that cannot be utilized shall be transported to the designated location after obtaining the consent of the engineer-in-charge.

The disposal site cannot be set at the place which may cause landslides, nor should it affect other agricultural plants or private lands. In addition, prevent piling materials from rushing into the surface water through rainfalls or other media. Drainage ditch shall be set up around the stacking area under the guidance of the engineer-in-charge.

2.6 Borrow and Storage Areas

Consent of the engineer-in-charge shall be obtained when opening new borrow areas at the land surface, river or utilized lands. The borrow area shall not be located in places which may damage natural or artificial drainage facilities. River borrow areas shall not be located in places which may erode or destroy the riverbed, or tend to bring a lot of sand to the downstream.

The construction unit shall ensure that all used borrow areas have a firm and solid side slope and bear a neat and level ground. No stagnant water shall be left in the drainage ditch so as not to attract mosquitoes.

Sand and gravels excavated from the river should be transported far enough for

stacking. The depth of excavation of each borrow area shall not be greater than one-tenth of the width of the river, to avoid drying up rivers or eroding or damaging the riverbed. It needs the engineer-in-charge's consent to borrow soil from which the vegetation will be destroyed. When doing this, use effective dust treatment equipment and try to avoid environmentally sensitive spots or residential spots.

Each Borrow area and spoil area shall meet the following requirements:

1) Identify and classify borrow and spoil areas, and ensure that the distance between them and sensitive areas (e.g. high and steep slopes, easy-to-erosion land, areas where waste water directly goes into the sensitive water) is larger than 15m.

2) Ensure that the soils are all excavated in admitted and designated borrow areas.

3) The topsoil of newly excavated borrow areas shall be retained and be backfilled into the hole after excavating usable soils and restore the areas into flat lands or slopes; build terraces on some steep slopes to prevent soil erosion.

4) The excess topsoil shall be compacted on which vegetation shall be planted. Topsoil or residues containing organic matters are allowable for covering the surface in suitable areas to facilitate the restoration of vegetation. Native plants are easier to grow.

5) Prevent soils from rushing into the drainage ditch if there had already been one in this construction area.

6) Once the work is completed, all the waste residues generated during the construction should be cleaned from the site.

2.7 Wastewater Control

1. Construction Wastewater

Construction wastewater: the wastewater disposed by settling pond can be used for mixing concrete and watering to reduce dust, and cannot be discharged into nearby water bodies; slurry generated during the construction shall be disposed in the settling pond via mud pump and to be solidified through drainage and evaporation, and the slurry cannot be discharged into nearby water bodies; wastewater generated from washing machinery and equipment, after disposed by oil-separating sedimentation tank, can be used for watering the construction site to reduce dust, and cannot be discharged into nearby water bodies.

Drainage shall be taken into full account in terms of the layout of the construction site, which shall also be away as far as possible from the river. Ensure

that the construction site, warehouses, storage areas of diesel oil and bitumen, and facilities for manufacturing bitumen are more than 500m away from the river. Prevent pollutants from entering the river when operating the facilities, and avoid the leakage via land or surface water during the rainy season.

During the construction, the on-site ground shall be kept clean. Prevent wastewater or pollutants from entering the ditches, thus leading to the penetration of wastewater.

If on-site oil storage is needed, then anti-seepage treatment must be conducted in the warehouse. Measures should be carried out for storage and use in order to avoid the phenomena of evaporating, emitting, dripping leaking, or polluting water bodies.

Try to construct the infrastructure in the non-flood season to reduce influence of shallow groundwater level on the construction.

2. Domestic Sewage

Domestic sewage from the construction personnel shall be disposed via surrounding existing residential sewage treatment system, and cannot be discharged arbitrarily. Anti-seepage and anti-loss measures shall be conducted in accordance with relevant requirements for temporary garbage storage room.

2.8 Noise and Dust Control

To control noise and dust, the construction unit shall meet the following requirements:

1) Adopt advanced construction techniques; use wet process for crushing gravels and concrete; be equipped with dust collection device; control vehicle speed and exhaust emission from cars and coals; spray water at the construction area when needed (4 to 5 times a day is available); construction teams shall use liquefied petroleum gas, electricity and other clean energy; enhance afforestation of the construction site and strengthen labor protection for construction personnel. All these will reduce the negative impacts on ambient air.

2) At the inner side of entrance and exit for vehicles transporting materials and spoil, a car washing platform shall be established, surrounded by barriers to prevent the leakage of wastewater from washing cars. Before leaving the site, the tires and body of vehicles must be washed in the washing platform. Any sludge is not allowed to be attached to vehicles' surface. Materials and spoil shall not exceed the upper edge of the vehicle ledge during transportation, and the vehicle hopper shall be covered with a tarpaulin or be sealed.

3) Concrete mixing station and asphalt mixing station cannot be set inside the construction site; use commodity concrete and asphalt.

4) Transporting vehicles, bulldozers, excavators and other vehicles shall slow down when passing by villages or entering the construction site. Furthermore, regular repair and maintenance should be conducted to ensure vehicles' normal function and to reduce exhaust emissions.

5) Set up dust-proof barriers around the work area, especially at places close to residential areas, hospitals and schools.

6) Try to minimize the generation of dust and particulate matter in order to avoid the impact on the surrounding residential and business practices; focus on protecting vulnerable populations (such as children, the elderly, etc.).

7) Set up warning signs and use low-noise equipment at acoustic environment sensitive sections; control noise source, media of noise transmission, and traffic noise; offer construction personnel anti-noise earplugs; reasonably arrange construction time and other measures.

8) Reasonably arrange construction time according to Standards for Ambient Noise Emission at Construction Site Boundary (GB12523-2011). Simultaneous operation of a large number of high-noise equipment and construction at sensitive time shall be avoided whenever possible. Try to arrange daytime operation of high-noise equipment and reduce nighttime transportation. Construction at night (22:00 - 6:00) is prohibited. Construction activities that must be carried out at night shall be approved by relevant local environmental protection department and negotiation in advance with local residents should be achieved. In addition, noise reduction measures shall be implemented (such as installing sound barriers) to minimize the impact of construction noise on local residents.

9) The speed of all construction vehicles outside the work site must not exceed 25 km/h.

10) The speed of vehicles inside the construction site must not exceed 15 km/h.

11) Try to keep the noise lower than 90 decibels of the machinery and equipment.

12) More stringent measures shall be carried out in sensitive areas (including residential areas, hospitals, nursing homes, etc.) to prevent harsh noises.

13) Appropriate measures shall be adopted to reduce the influences of construction noise and vibration on ambient environment.

2.9 Social Impact

Scientifically arrange the construction site and minimize the occupation of land. Temporary occupied area will be restored according to its original land using type after construction is completed.

Reasonably arrange temporary stacking areas of earthworks and stones which shall be away from environment sensitive spots like residential spots and schools, etc.

Timely inform the public of the construction plans, environmental impact statement, construction access roads, temporary bus route, demolition announcement and other information.

Limit nighttime construction. When construction at night is necessary, ensure the schedule is clear and reasonable and inform affected residents in advance to let them take necessary precautions.

When public facilities (such as water pipes, electricity system, telephones, bus routes, etc) cannot work properly due to the construction, affected residents shall be informed at least five days in advance through the form of notice posting at the construction site, bus stops and the affected areas.

2.10 Construction Safety

Responsibilities of the construction unit include protecting every individual surrounding the site, namely to avoid impacts on individual's personal safety and property caused by the construction. The construction unit has the responsibility to comply with national and local safety regulations and take all necessary measures to avoid accidents. Measures may include:

1) Setting up noticeable safety signs at construction access roads and the entrance and exit of the construction site;

2) Dispatching personnel to guide the traffic near schools in the students' rush hour;

3) Setting up sufficient traffic warning signs (including painting, frames and markers, etc.), road signs and guardrails to ensure the safety of pedestrians during the construction period;

4) Providing safety training to all construction workers before the construction is initiated;

5) Providing construction workers with and force them to use personal protective equipment and clothes (such as goggles, gloves, masks, dust cover, and helmet, etc.);

6) Equipping each site with a safety information bulletin; warning signs shall be

set up in the chemicals storage warehouse;

7) Requiring all workers to know the safety information about various materials and clarify to the construction personnel the possible risks for them and their families (especially for pregnant women or families planning a pregnancy) when using these materials, and encourage workers to share relevant information;

8) Making sure that the waste oil or other toxic materials are disposed by specially trained workers;

9) Suspending the construction when encountering heavy rains or other emergencies;

10) Ensuring that the electrical equipment and machinery shall be able to withstand a certain level of earthquake.

2.11 Disposal of Cultural Relics and Heritage Sites during Construction Period

During excavation and construction, if heritage sites, historic sites, human remains, grave yard or individual graves were found, disposal shall be conducted according to the following procedure:

1) Stop construction activities at the discovery site;

2) Draw and mark the discovery location and area;

3) Protect the site to prevent any possible damage to cultural relics. When movable cultural relics or sensitive fossil remains were found, personnel shall be set to ensure their safety until the local relevant government departments or national cultural relics management department take over the charge;

4) After cultural relics were found, the finder shall, within 24 hours, inform the patrolling supervision engineer who will be in charge of contacting local relevant government departments or national cultural relics management department;

5) Before deciding follow-up works, the local relevant government departments or national cultural relics management department will charge for the protection and conservation of the discovery site and cultural relics. Experts from the national cultural relics management department will prepare preliminary assessment on the cultural relics based on related cultural relics assessment criteria, namely from aspects of aesthetic, historical, scientific, social and economic value, to analyze the value and significance of the discovery;

6) Local relevant government departments and national cultural relics management department will decide how to handle the discovery, which includes how to modify construction plan (for example, when immovable cultural relics with

cultural or archaeological sense were found), and how to save, repair and utilize the heritage sites, etc.;

7) Local relevant government departments shall deliver written materials to the project manager and inform treatment decisions on the cultural relics;

8) In order to protect the safety of cultural relics and heritage sites, the construction shall be resumed only after obtaining permission of local government or the national cultural relics management department.

2.12 Hazardous Waste

If hazardous waste or suspected hazardous waste (asbestos-containing substances generated from disposal of construction waste) might be generated in the construction site, the construction unit needs to develop a hazardous waste management plan, which, after engineer-in-charge's approval, applies to all personnel involved in disposal and transportation work. Works to clear and dispose hazardous construction waste shall be conducted by specially trained personnel in accordance with national and provincial regulations or universally accepted procedures.

2.13 Health Service and HIV/AIDS Education

The construction unit shall provide workers with basic first aid services and emergency facilities, including medical devices and mode of operation for personal use. Injured workers shall be treatable before being sent to the hospital.

The construction unit has the responsibility to develop a plan to prevent the spread of sexual diseases (especially HIV/AIDS) among workers.

The construction unit shall add health plan outline into its construction plan, offering workers advice to keep healthy during the construction. The outline shall be approved by engineer-in-charge before the construction is initiated.

3 Environmental Supervision Measures

The engineer-in-charge/construction supervisor shall ensure the implementation of above requirements. Non-compliance of the contract will lead to suspension of the construction or other sanctions until the issue has been resolved under the engineer-in-charge's satisfied manner. The construction unit shall also follow relevant national and local regulations related to environment, public health and safety.

Annex 2 Checklist of Construction Site before Commencement of Work

Serial No.	Environmental Problem	Check Result (Marked with "√)	Remark
1	Whether the project involves natural habitat, material culture resources, involuntary resettlement and other World Bank safeguard policies	Yes □ No □ Not Involve □	
2	Whether there are important vegetation and trees within the scope of project land occupation	Yes □ No □ Not Involve □	
3	Whether project construction road will cause significant impacts on going out of surrounding residents	Yes □ No □ Not Involve □	
4	Whether there are the public (residential community, school, hospital, office area, etc.) vulnerable to the impacts of work construction nearby the project	Yes □ No □ Not Involve □	
5	May cause the deterioration in the quality of life of nearby town	Yes □ No □ Not Involve □	
6	Whether project construction needs to interrupt municipal services (including water, electric power, telephone, bus line, etc.)	Yes □ No □ Not Involve □	
7	Whether project construction needs demolition	Yes □ No □ Not Involve □	
8	Whether rainy season will be affected by flood	Yes □ No □ Not Involve □	
9	Whether land outside project areas is temporarily occupied	Yes □ No □ Not Involve □	
10	Whether electric power, telecommunications and other municipal service lines are involved within and nearby the scope of project construction	Yes □ No □ Not Involve □	
11	Whether there is surface water body within and nearby the scope of project construction	Yes □ No □ Not Involve □	
Others		Yes □ No □ Not Involve □	

Annex 3 Checklist of Construction Site Environment

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project		Name of Work Site				
Contract Number and Name		Check Result (Marked with "√")				Remark
Inspect Item		Yes	No	Not Involve		
1. General Requirements	1.1 Whether effective measures for preventing and controlling atmospheric pollution, water and soil pollution and noise pollution as well as for improving environmental health are in place in construction organization design of the project					
	1.2 Whether environmental protection, environmental health management and inspection system for construction site are established					
	1.3 Whether environmental protection, environmental health management and inspection for construction is recorded					
	1.4 Whether operating personnel are provided with necessary protective equipment and effective occupational-disease-prevention measures are taken					
	1.5 Whether the personnel engaged in occupational-disease-inductive operation are provided with regular physical exam and training (with relevant physical exam certificate and training record)					
	1.6 Whether diet health, sunstroke prevention, cooling, cold protection, warmth keeping, gas poisoning prevention and epidemic prevention for operating personnel are in place in combination with seasonal characteristics					
	1.7 Whether education training and assessment for operating personnel at construction site contain laws and regulations relating to environmental protection and environmental health (with related records and documents)					
	Others (shall specify)					
2. Site Layout and Temporary Facilities Construction	2.1 Whether the construction area at the construction site is clearly separated from office area and living area and whether relevant isolation measures are taken					
	2.2 Whether the construction area is neat and orderly					
	2.3 Whether the access of the construction site is marked with enterprise name or enterprise logo, whether the visible place of main access is set with project profile plate meeting the requirements					
	2.4 Whether the public is informed in advance when the construction needs to interrupt municipal services (including water, electric power, telephone, bus line, etc.)					
	2.5 Whether the existing building and infrastructure are utilized as temporary facilities of the construction site					
	2.6 Whether newly built temporary house is reasonable in land occupation and meets safety and fire control requirements (with related certificates)					
	2.7 Whether the construction of temporary facilities					

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project			Name of Work Site			
Contract Number and Name			Check Result (Marked with "√")			Remark
	Inspect Item		Yes	No	Not Involve	
	uses clay bricks					
	2.8 Whether oil, chemical solvent and other items stored at the construction site set special warehouse and warning signs					
	2.9 Whether anti-seepage treatment is made for the ground of oil and chemical warehouse, and whether such emergency treatment materials as absorption bag/sands/bits of wood are in place in the warehouse					
	2.10 Whether collective staff dormitory is set in unfinished building					
	2.11 Whether temporary facilities are demolished within one month upon completion of the construction work					
	Others (shall specify)					
3. Operating Conditions and Environmental Safety	3.1 Whether enclosed color steel fence with the height of no less than 2.5m is set at the construction site, and whether the height of sensitive section is no less than 3.m					
	3.2 Whether the construction site sets qualified bulletin board, indicating environmental protection and civilized construction system, and disposal process for emergencies, etc.					
	3.3 Whether the construction unit takes protective measures to ensure the safety of buildings, structures and underground pipelines adjacent to construction work					
	3.4 Whether tall scaffolding, tower crane and other large machinery and equipment at construction site keep a safe distance from overhead transmission conductor, and whether high voltage line adopts insulating material for safety protection					
	3.5 Whether mandatory safety protection measures are taken for sidewalks and vehicle access surrounding construction work, and whether lighting indicating device is set in the nighttime					
	3.6 Whether visible safety warning sign meeting national standard is set at dangerous section of the construction site					
	3.7 Whether the construction site adopts corresponding safety technology measures based on season change to achieve civilized and safe construction conditions					
	3.8 Whether fire extinguishing equipment is kept in good condition, and whether escape way is without obstruction					
	Others (shall specify)					
4. Dust Pollution Control	4.1 Whether construction site road reasonably utilizes the existing or proposed road in and surrounding the site					
	4.2 Whether hardening treatment is made based on its usage when constructing new road, and whether the road section producing dust controls dust by sprinkling					

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project			Name of Work Site			
Contract Number and Name			Check Result (Marked with "√")			Remark
	Inspect Item		Yes	No	Not Involve	
	4.3 Whether materials are piled up together at construction site					
	4.4 Whether the second location selected to pile up materials is reasonable					
	4.5 Whether site material storage area, processing area and large molding storage area are flat and solid					
	4.6 Whether fine particle granular materials and the materials easy to float in the air at construction site adopt sealed storage, and whether shielding measures are taken for their handing and transportation					
	4.7 Whether covering, solidifying or greening measures are taken for earthwork piled up together					
	4.8 Whether spoil is utilized or transported to designated disposal sites					
	4.9 Whether bare ground at office area and living area of the construction site controls dust by sprinkling and is greened and beautified based on the actual situation					
	4.10 Whether earth, waste and construction garbage are transported using closed vehicles					
	4.11 Whether the facilities washing vehicles are set at the access of the construction site, and whether the road between vehicle washing facilities and the exit of the site is paved with concrete, asphalt, straw mattress or broken brick hardcore to avoid bringing silt out of the site					
	4.12 Whether the construction site uses ready-mixed concrete and ready-mixed mortar					
	4.13 Whether dust prevention and dust removal measures are taken when conducting concrete and mortar mixing operation					
	4.14 Whether earth backfill, transportation and other construction that may produce dust pollution are prohibited in the weather with force four wind					
	Others (shall specify)					
5. Harmful Gas Emission Control	5.1 Whether all kinds of wastes are burned at construction site					
	5.2 Whether construction vehicles and mechanical equipment are kept in good condition, and whether the exhaust gas emitted meets the emission standard provided by the state					
	5.3 Whether decoration materials adopt building materials qualified through the verification of legal detection unit (with certificate of conformance)					
	5.4 Whether wood board and other wood materials used for interior decoration are prohibited from using asphalt, coal tar class anti-corrosive and moisture-proof finishing agent.					
	5.5 Whether the kitchen in living area is installed with					

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project			Name of Work Site			
Contract Number and Name			Check Result (Marked with "√")			Remark
	Inspect Item		Yes	No	Not Involve	
	lampblack treatment facilities as required					
	Others (shall specify)					
6. Water Pollution Control	6.1 Whether sedimentation tank is set at the place washing mixer foreground and transport vehicles at construction site					
	6.2 Whether wastewater is directly drained into municipal sewage pipe network or river					
	6.3 Whether wastewater is recycled or used for dust suppression through sprinkling after secondary precipitation					
	6.4 Whether sediment disposal is conducted when sediment in sedimentation tank reaching 1/4 depth of the tank, whether sediment in sedimentation tank is cleared and transported to designated place					
	6.5 Whether the canteen sets separation tank, and whether qualified cleaning unit is entrusted to timely clear it away					
	6.6 Whether closed waste food bin is set outside the canteen and is cleared away in a timely manner					
	6.7 Whether septic tank of temporary toilet set at construction site conducts anti-seepage treatment					
	6.8 The construction site shall set drainage ditch. Whether waste water is drained into municipal sewage pipe network or river after precipitation, and whether drainage ditch is smooth					
	Others (shall specify)					
7. Noise Pollution Control	7.1 Whether the requirements of construction time is strictly followed					
	7.2 Whether surrounding residents are informed of nighttime continuous construction, and whether related formalities for nighttime continuous construction are handled					
	7.3 Whether shielding, closing and greening measures for noise absorption and noise insulation purposes are taken for the construction site					
	7.4 Whether low noise equipment are adopted and maintenance for the equipment is well conducted					
	7.5 Whether the equipment producing noise are set at the side far away from residential community					
	7.6 Whether noise reduction measures such as enclosing are taken to the equipment producing noise					
	7.7 Whether such measures as speed limit and no honking are taken for construction vehicles					
	7.8 Whether the equipment (air compressor, electric generator, etc.) producing noise are placed in enclosed equipment room					
8. Waste Control	8.1 Whether the construction site sets enclosed refuse storage area, and whether construction waste and domestic garbage are stored separately and cleared					

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project					
Name of project		Name of Work Site			
Contract Number and Name		Check Result (Marked with "√")			Remark
Inspect Item		Yes	No	Not Involve	
	away and disposed according to the provisions				
	8.2 Whether corresponding container or pipe transportation are adopted for the removal of construction waste in buildings				
	8.3 Whether wastes produced from construction, demolition and site cleaning are disposed separately, recovered and recycled				
	8.4 Whether construction waste cleaning unit holds waste disposal qualification and business license approved by relevant authority				
	8.5 Whether abandoned oil and chemical solvent are stored in a centralized way, and entrusted to qualified unit for disposal				
	8.6 Whether construction equipment has obvious oil spatter				
	8.7 Whether the construction camp has set enclosed refuse storage area to collect the workers' domestic garbage, which shall be timely cleared away as required.				
	8.8 Whether septic tank is timely cleared and buried with land upon completion of the construction				
	8.9 Whether the dredging is conducted during dry season				
	8.10 Whether the sludge is desiccated and transferred to wasteland for application in sealed vehicles				
	8.11 Whether the temporary dump site and the vacant land are afforested				
	8.12 Whether the applied wasteland adopts water conservation measures like enclosure and the like as well as measures to prevent water and soil erosion				
	8.13 After the construction, whether the temporary stocking places and surface of wasteland are afforested				
	8.14 Dosage consumption during the construction should meet the water quality requirements for discharging residual water. Keep the residual water quality under strict surveillance, and decide dosage parameter and whether adopt emergency dosage measures basing on the on-site test and monitoring results				
	8.15 Dredging project doesn't allow under-excavation; Dredging area should reach the designed depth, meanwhile, strictly control the project volume of ultra-depth. When the construction units conduct the measurements after the dredging, supervising engineer should inspect the measuring equipment and supervise the measurements beside the construction units				
	8.16 Ten-day reports on dredging project, monthly progress reports, and summary of the project should be submitted to supervising engineer by construction units				
	8.17 Whether cofferdam of stocking places and residual				

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project			Name of Work Site			
Contract Number and Name			Check Result (Marked with "√")			Remark
	Inspect Item		Yes	No	Not Involve	
	pond adopt measures to prevent permeation					
	8.18 Whether residual water emergency response facility is set up, including measures like setting up accident reservoir and emergency chemical addition equipment					
	8.19 Whether the stocking places adopt the gradual ditching drainage method for dehydration					
	Others (shall specify)					
9. Soil Erosion and Control	9.1 Whether utilize the existing legal borrow area and the waste abandoning place determined by local sanitation department					
	9.2 Whether newly built borrow area obtains approval from relevant authority, and whether protective measures are taken to the side slope of borrow area					
	9.3 Whether surface soil is cleaned and stored to ensure that it is used for vegetation restoration upon completion of the construction					
	9.4 Whether intercepting ditch and headrace are built to lead water flow formed in rainy season away to avoid the washout of surface runoff to work					
	Others (shall specify)					
10. Preservation of Cultural Relics	10.1 In case cultural relics or suspected cultural relics is found during construction period, the construction shall be immediately stopped and the site shall be well protected, while at the same time reporting to local administrative department of cultural relics for disposal, the construction can be resumed only after disposal of relevant department					
	Others (shall specify)					
11. Vegetation Protection	11.1 Whether such behavior as cutting down trees outside construction site exists					
	11.2 Whether the layout of construction site is reasonable (judging from the point of the damage caused by work implementation to vegetation)					
	11.3 Whether effective measures are taken for the vegetation damaged and bare soil caused due to the construction to avoid soil erosion and loss (adopting such measures as covering with gravels, planting fast-growing grass, etc.)					
	11.4 Whether original vegetation area destroyed is restored or reasonably greened upon completion of the construction					
	11.5 Whether alien species are introduced when conducting ecological restoration and greening for vegetation					
	Others (shall specify)					

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project			Name of Work Site			
Contract Number and Name			Check Result (Marked with "√")			Remark
Inspect Item			Yes	No	Not Involve	
12. Risk Prevention	12.1 Whether accident prevention plan is formulated					
	Others (shall specify)					
13. Occupational Health	13.1 Whether warning signs or warning instructions are set at operating post, equipment and place vulnerable to occupational hazards					
	13.2 Whether operating personnel wear ear plugs for hearing protection when conducting high noise construction work					
	13.3 Whether anti-corrosive and waterproof operation in basement where good natural ventilation cannot be guaranteed are equipped with mandatory ventilation facilities. Whether the operating personnel wear respirator or protective mask in the workplace with toxic or harmful gases					
	13.4 Whether the operating personnel wear dust mask in the workplace with dust					
	13.5 Whether the operating personnel wear protective mask, goggles, gloves and other personal protective equipment when conducting welding operation					
	13.6 Whether the construction site is equipped with sunstroke prevention and cooling supplies when conducting high temperature operation, and the work-and-rest timetable shall be reasonably arranged					
	Others (shall specify)					
14. Hygiene and Disease Control	14.1 Whether staff meals, drinking water and rest area at construction site are in compliance with health standards (with health certificate)					
	14.2 Whether dormitory, canteen, bathroom and toilet are equipped with ventilation and lighting facilities, and maintained by special personnel					
	14.3 Whether construction site dormitory meets the requirement of setting open type window; the beds in the dormitory shall not exceed two layers, a wide bed for a number of people is strictly prohibited					
	14.4 Whether the canteen obtains effective sanitary license issued by relevant authority, whether canteen workers hold effective health certificate					
	14.5 Whether the canteen is located far away from toilet, refuse storage area, toxic and harmful pollution sources					
	14.6 Whether the canteen sets independent food preparation room and storage room, whether the lower part of door leaf sets rat guard no less than 0.2m					
	14.7 Whether toilet, sanitation facilities, drainage ditch and damp area are regularly disinfected (with related records)					
	14.8 Whether the living area sets closed container with					

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project						
Name of project			Name of Work Site			
Contract Number and Name			Check Result (Marked with "√")			Remark
Inspect Item			Yes	No	Not Involve	
	regular fly killing and timely clearing					
	14.9 Whether the construction site sets health center, equipped with health kit, commonly used drugs and bandage, tourniquet, neck collar, stretcher and other emergency equipment					
	14.10 When construction personnel develop infectious diseases, food poisoning and acute occupational poisoning, whether it is timely reported to the epidemic prevention department and competent department in charge of construction of the locality, and disposed according to relevant regulations stipulated by the epidemic prevention department					
	Others (shall specify)					
15. Traffic Safety	15.1 Whether safe driving is emphasized on drivers and safety education & training is carried out regularly					
	15.2 Whether driving time is limited, and drivers take turns in driving; whether driving on dangerous road and in dangerous time is avoided					
	15.3 Whether the parts used for vehicle maintenance are approved by the manufacturer, and whether vehicle parts are purchased timely for maintenance purpose					
	15.4 Whether separation of people and vehicles are achieved					
	15.5 Whether cooperate with local community and competent authority to improve road signs and strengthen the visibility of road signs					
	15.6 Whether traffic safety and pedestrian safety education are carried out in the communities surrounding project construction and the communities nearby school					
	15.7 Whether materials are purchased locally as far as possible					
	15.8 Whether drivers operating the vehicles hold driving license					
	Others (shall specify)					
Others (shall specify)						

The construction stage when inspecting:_____Date of inspection: _____

Time of inspection: _____

Weather record: _____

Signed by on-site inspector: _____ Signed by environmental supervisor: _____

Description: ①The problem observed, unqualified situation described, corrective and preventive actions and suggestions put forward can be filled in remark.

②If it is found through on-site inspection that measures are unqualified and need to be improved, environmental supervisor shall immediately issue "Environmental Rectification Notice" to the contractor and record the serial number of "Environmental Rectification Notice" in Remark. The

Checklist of Construction Site Environment for World Bank-financed Duchang County Water Environment Management Project					
Name of project		Name of Work Site			
Contract Number and Name		Check Result (Marked with "√")			Remark
Inspect Item		Yes	No	Not Involve	
detailed corrective actions carried out by the contractor shall be recorded separately. ③As for the specific subproject and environmental problems, local environmental situation and construction content can be combined to make appropriate adjustment to this form and to adopt appropriate environmental protection measures.					

Annex 4 Environmental Rectification Notice

Environmental Rectification Notice
No.: _____ Contract No. and name: _____ Name of subproject: _____ Name of Work Site: _____ Current construction stage: _____
The problems existing in on-site inspection: Checked by: _____ Date: _____
The contractor analyzes the reasons and formulates rectification plan: Contractor in charge: _____ Date: _____
Opinion of environmental supervisor: Responsible person on environmental supervisor side: _____Date:_____
Opinion of competent department of environmental protection (when necessary): Contact person: _____ Date: _____
Modification deadline: Completed as of _____ Contractor in charge: _____ Date: _____ Responsible person on environmental supervisor side: _____Date:_____
Conclusion after review: Rechecked by: _____ Date: _____

Map 1 Emergency Handling Flow Chart in case of Discovering Cultural Relics