

World Bank Financed Project  
New Countryside Project in Yellow  
Mountain • Anhui • P. R. China

**ANHUI YELLOW MOUNTAIN NEW  
COUNTRYSIDE DEMONSTRATION  
PROJECT**

**Environment Management Plan**

(For Appraisal)

**Huangshan New Countryside Project Management Office**

**June 2013**

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# **1 General**

## **1.1 Project Overview**

- (1) Project Name: Anhui Yellow Mountain new countryside demonstration project
- (2) Constructed by: Huangshan new countryside project management office
- (3) Construction location: The project construction site distributes in 3 Districts, 4 Counties and 68 villages in Huangshan City, including 3 villages in Tunxi District, 8 villages in Huizhou District, 12 villages in Huangshan District, 20 villages in Shexian County, 7 villages in Xiuning County, 6 villages in Yixian County and 12 Villages in Qimen County.
- (4) Construction contents includes: such infrastructure construction projects as rural road traffic, rural water supply and drainage works, small-scale water conservancy facilities and tourism supporting facilities; cultural resource protection and utilization project; characteristic industry construction project and capability construction project
- (5) The total planned investment estimate for this project is of RMB 917,660,000. The project period is of 5 years.

## **1.2 Compilation Purpose**

The purpose for establishment of Environmental Management Plan (EMP) is to prepare a set of feasible and sustainable as well as operable environment countermeasures on technology and finance respectively to be applied in project construction and operating so as to reduce the negative influence on society and environment by project as much as possible as well as solve the remained environment problems through environment countermeasures.

The Environmental Management Plan (EMP) is established to list out the environment countermeasures to be taken during project construction and operating as well as measures on monitoring and mechanism so as to avoid or control the negative influence on environment by project as well as put forward the specific actions to implementation measures. The Environmental Management Plan will be a vital linking between environment countermeasures and measures determined in the environment impact and environment evaluation to reach the purpose of environment

countermeasures through the action in the environment management plan.

### **1.3 Basis of preparation**

#### **1.3.1 Environmental and social policies of WB**

- (1) Environmental Assessment (OP/BP4.01), which will be applied to the project;
- (2) Physical Cultural Resources (OP4.11), which will be applied for the protection of PCRs in the project areas;
- (3) Disclosure of Information (BP17.50), which will be applied to the project;
- (4) Pest Management (OP4.09), which will be applied to the project because the project areas are concerned with agricultural components.
- (5) Involuntary Resettlement (OP4.12), which will be applied because the project involves a small amount of land acquisition and resettlement;
- (6) Natural Habitats (OP4.04), which will be applied because the Project involves natural habitats, though the impact is very little;
- (7) Forestry (OP4.36), which will not be applied because the Project will not have impacts on the health and quality of forests, nor affect the rights and welfare of people and their level of dependence upon or interaction with forests, nor aim to bring about changes in the management, protection, or utilization of natural forest or plantations.
- (8) Safety of Dams (OP4.37), water supply schemes taking water from reservoirs and rehabilitatoin of a number of small farm ponds.
- (9) Indigenous People (OP4.10), which will not be applied because the Project does not involve indigenous population
- (10) Projects on International Waterways (OP7.50), which will not be applied because the Project does not involve international waterways
- (11) Projects in Disputed Areas (OP7.60), which will not be applied because the Project does not involve disputed areas
- (12) IFC EHS Guidelines.

### **1.3.2 National laws, regulations and rules**

- (1) *Law of the People's Republic of China on Environmental Protection*, December 1989;
- (2) *Law of the People's Republic of China on Appraising of Environment Impacts*, October 2002;
- (3) *Law of the People's Republic of China on Prevention and Control of Pollution from Environmental Noise*, October 1996;
- (4) *Law of the People's Republic of China on Prevention and Control of Air Pollution*, September 2000;
- (5) *Law of the People's Republic of China on Prevention and Control of Water Pollution*, June 2008;
- (6) *Law of the People's Republic of China on Prevention and Control of Pollution from Solid Waste*, April 2005;
- (7) *Law of the People's Republic of China on Land Administration*, August 1998;
- (8) *Law of the People's Republic of China on Water and Soil Conservation*, December 2012;
- (9) *Law of the People's Republic of China on Protection of Wildlife*, November 1988;
- (10) *Forest Law of the People's Republic of China*, April 1998;
- (11) *Law of the People's Republic of China on Protection of Cultural Relics*, October 2002;
- (12) *Law of the People's Republic of China on Urban and Rural Planning*, October 2007;
- (13) *Regulations on the Administration of Construction Project Environmental Protection*, November 1998;
- (14) *Regulations on the Management of Landscape and Famous Sceneries*, September 2006;
- (15) *Categorized Administrative List of Environmental Impact Assessment for Construction*, *Environmental Protection Department Order No. 2*, September 2, 2008;

- (16) *Decision of the State Council on Implementing the Scientific Outlook on Development and Strengthening Environmental Protection*, Guofa [2005] No. 39, February 2006.
- (17) *Tentative Measures for Public Participation in Environmental Impact Assessments*, State Environmental Protection Administration, February 2006.

### **1.3.3 Local regulations and rules**

- (1) *Ordinance on Environmental Protection in Anhui Province*, November 1, 2010;
- (2) *Ordinance of Anhui Province on Agro-ecological Environment Protection (the revised manuscript)*, June 29 2006;
- (3) *Measures for the Implementation of Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes in Anhui Province*, June, 2006;
- (4) *Measures for the Implementation of Law of the People's Republic of China on Land Administration in Anhui Province*, June, 2004;
- (5) *Implementation Guideline of the People's Government of Anhui Province for the Implementation of Decision of the State Council on Implementing the Scientific Outlook on Development and Strengthening Environmental Protection*, Wanzheng [2006] No. 71, September 2006;
- (6) *Measures for the Implementation of Law of the People's Republic of China on Water And Soil Conservation in Anhui Province*, June, 2004;
- (7) *Measures for the Implementation of Pilot Work for Environmental Supervision of Construction Projects in Anhui Province*, April 2012.

### **1.3.4 Basis of Technical Documents**

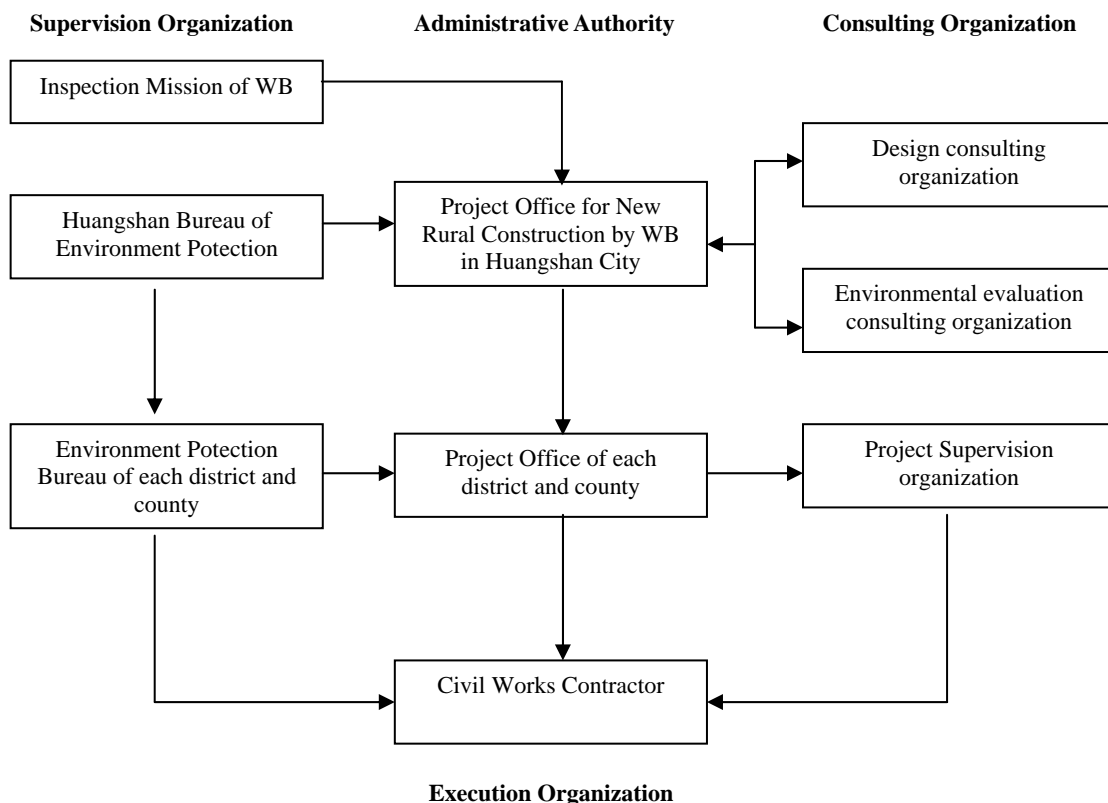
- (1) *General Programme of Technical Guidelines for Environmental Impact Assessment (HJ2.1-2011)*;
- (2) *Atmospheric Environment of Technical Guidelines for Environmental Impact Assessment (HJ2.2-2008)*;
- (3) *Surface Water Environment of Technical Guidelines for Environmental Impact Assessment (HJ/T2.3-93)*;

- (4) *Acoustic Environment of Technical Guidelines for Environmental Impact Assessment (HJ2.4-2009)*;
- (5) *Ecological Environment of Nature Resource Development of Technical Guidelines for Environmental Impact Assessment (HJ19-2011)*;
- (6) *The Feasibility Research Report of Anhui Huangshan New Countryside Pilot Construction Project with World Bank Loan*; Shanghai Municipal Engineering Design Institute (Group) Co., Ltd., June 7, 2013.

## 2 Environmental Protection Management System

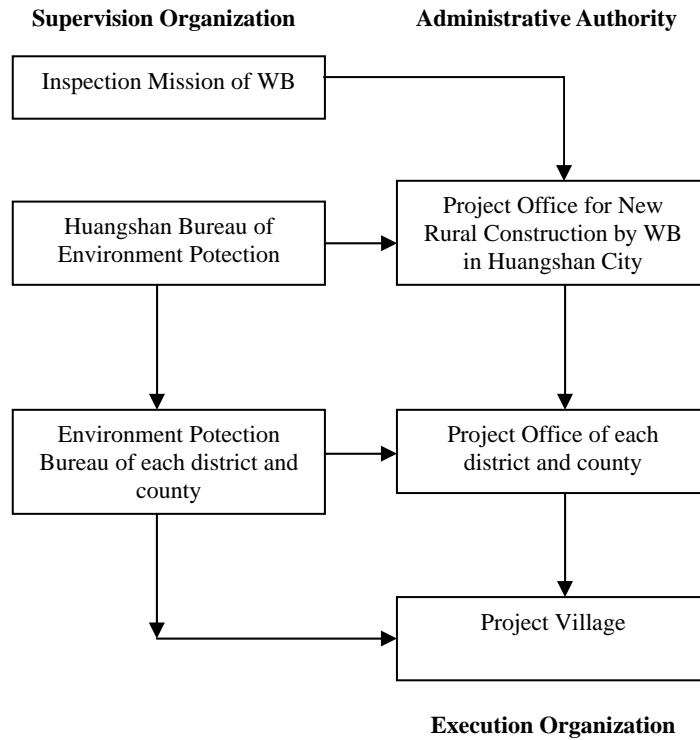
### 2.1 Setting for Environmental Protection Management System

Based on the stipulation of *Environmental Protection Law of PRC* and *Management Regulations on Environmental Protection for Construction Project* (No. 253 Decree of State Council) and the requirements of actual works, the dedicated environment management authority for this demonstration project for new countryside construction in Huangshan should be established to be responsible for the environment management work of project. The relevant organizations for environment protection in this project may be divided into administration authority, monitoring authority, execution organization and consulting service organization. The setting for environment management organization for project refers to Figure 2.1-1 and Table 2.1-1 below.



**Figure 2.1-1 Framework Figure for Environment Management Organization Construction Phase of Project**





**Figure 2.1-2 Framework Figure for Environment Management Organization Operation Phase of Project**

**Table 2.1-1 Composition Organization of Environment Management System**

Organization Property	Organization Name	Main Responsibilities
Administrative Authority	Project Office for New countryside Construction by WB in Huangshan City	Designate the dedicated environment managers to act as the principal of environment management authority for this project and be responsible for the environment protection work on the stage of project planning, design and implementation as well as determine the work procedure so as to meet the requirements of environment evaluation and environment management from inland and WB and ensure that the environmental protection measures in EMP are to be implemented smoothly. Designate the compliant hotline clerks to be responsible for recording and sorting for compliant telephone and reporting it towards headman as well as reporting the solution towards the public. Make an overall coordination to the later operation, maintenance and management of the works in each district and county.
	Project Office of each district and county	Designate the dedicated environment supervisor to be mainly responsible for guaranteeing that the environmental protection implementation regulations are earnestly and effectively implemented during project implementation and operating to enable that the adverse influence on environment by project is reduced to the minimum or acceptable degree and enable that the environment efficiency is to be played sufficiently, various funds required for environmental protection work implementation; being responsible for sorting and archiving for relevant files. Guide the maintenance and management during the works operation in the district or county.

<b>Organization Property</b>	<b>Organization Name</b>	<b>Main Responsibilities</b>
Supervision Authority	Inspection Mission of WB	Designate the environment technology expert to supervise and inspect the implementation of environmental protection regulation.
	Competent administration department for environmental protection at different levels	The administration supervision management authority supervises and inspects whether the working procedure of project meets the requirements of Chinese environment management and whether the pollution prevention measures meet Chinese environmental protection.
Execution Organization	Civil Works Contractor	Designate the site environment engineer and implement the environmental protection measures in EMP so as to meet the environmental protection requirements by WB and local Competent Administrative Department being in charge of environment protection as well as compile and submit the environment monthly during the construction .
	Project Village	Responsible for the maintenance and management during the works operation.
Consulting Service Organization	Environmental evaluation consulting organization	Accept the entrusting and compile the implementation regulation on environmental protection for road and supporting infrastructures
	Design consulting organization	Accept the entrusting and compile the feasible study report and construction design proposal so as to guarantee that the measures and proposal in the environmental protection implementation plan are implemented into the compiling achievements.
	Project Supervisor	Accept the entrusting and perform the supervising management for contractor's daily production activities.

## **2.2 Responsibilities for Each Organization in Environment Management System**

The environment management system of demonstration project for new countryside construction in Huangshan covers the project management organization, supervision organization, implementation organization and consulting service organization; these organizations jointly consist of complete environment management system for project, but undertake different work contents as well as are provided with different responsibility scopes.

The project is developed under the organization and leadership of Project Office for New countryside Construction by WB in Huangshan City (for short “Municipal Project Office”) and Project Office at each district and county, the design consulting organization and environment evaluation consulting organization accept the entrusting from Municipal Project Office and provide the consulting services; the project supervision organization accepts the entrusting from Project Office at each district and

county to perform the daily supervision for implementing condition on environmental protection measures by civil works contractor during the construction; The environment expert group from WB and competent administration department for environmental protection at different levels perform the supervision for management organization and implementation organization of the project according to the laws so that the project construction conforms to the requirements of relevant stipulations in China and WB on such aspects as implementing work procedure and pollution prevention measures.

### **2.2.1 Administrative Authority**

#### (1) Project Office for New countryside Construction by WB in Huangshan City

Project Office for New countryside Construction by WB in Huangshan City is an overall planning organization being responsible for environmental protection work on the stage of planning, design and implementation as well as determining that the working procedure meets the requirements on environment evaluation and environment management from inland and WB so as to ensure the requirements of environmental protection measures.

Main work responsibilities of dedicated environment managers (composed by branch leader, employed environmental protection experts and environmental protection hotline staffs) designated by Municipal Project Office are as follows:

Compile and supervise the implementation for relevant environmental management regulations and systems;

Inspect and coordinate the work of environment managers in each district and county;

Be responsible for arranging the investigation activities of environment experts from WB and report towards the WB as well as implement the environment management requirements and suggestions of WB.

- a. Organize and implement the environment management training plan;
- b. Employ, organize, arrange and assist the environment experts group and other consulting.
- c. Municipal Project Office designates the dedicated environmental protection personnel (Branch Leader and environment management principal) should inspect the implementing condition of environmental protection measures once every month

semiannually at least, the inspection contents should cover the environmental protection inspection record on environmental protection, record condition for environment supervision inspection list of project and archiving condition for environment rectification notification and feedback informaton, the inspection results should be filed for reference.

d. Be responsible for the record and sorting for compliant contents during construction and operating and report it towards the Project Office as well as solve the treatment results to solve the compliant problems from the public.

e. Summarize the summary report on the environment management stage (semiyearly report) or other special reports, submit it towards WB for review, and coordinate with other relevant departments to solve major environment problems.

f. Make an overall coordination to the later operation, maintenance and management of the works in each district and county.

#### (2) Project Office in District (County)

The Project Office at each district and county is of core organization for project environment management, its main task to guarantee that the environmental management plan is earnestly and effectively implemented during the project implementation and operating so as to enable that the adverse influence on environment by project is lowered to the minimum or acceptable degree as well as enable that the environment effectiveness of project is played fully.

The main work task for environmental protection personnel (composed of branch leader and professional technicians having the basic knowledge on environmental protection and environment management) designated by the Project Office at each district and county covers:

a. Implement various funds required by environmental protection work for project.

b. Urge and guarantee the implementation of environmental protection design measures required in EMP; the project design should meet the requirements of EMP.

c. Urge and guarantee the environmental protection measures proposed in this environmental protection implementation regulation included in the contracting contract for project construction.

d. Inspect the implementing condition of environmental protection measures monthly

at least; the inspection contents should cover the record condition of project supervision checklist, environment rectification notification and archiving condition for feedback information, etc. and the inspection results should be recorded for filing.

e. Employ, supervise and coordinate the project supervision; review the project supervision report.

f. Special environment work (management for borrow pit and spoil yard)

g. When the measures taken by the contractor are unfavorable, the fine to contractor shall be performed.

h. Compile the summary report (semiannual report) or other special report on the environment management stage.

i. Receive and accept the environment work inspection (including the inspection for WB project).

j. Others (document management, department coordination, publicity and reporting, etc.)

k. Guide the maintenance and management during the works operation in the district or county.

### **2.2.2 Supervision Organization**

#### **(1) Environment Inspection Mission from WB**

According to the loan agreement requirements between China Government and WB, WB assigns the inspection mission to be responsible for implementing the special inspection for project execution and inspect the execution condition of project loan agreement and implementation condition of environment management plan, the specific work shall be charged by the environmental technical experts from inspection mission.

#### **(2) Competent Administrative Authorities for Environmental Protection at Different Levels**

Competent Administrative Authorities for Environmental Protection at Different levels shall perform the environmental supervision management for this project throughout the whole process according to the law, including review and approval for environment impact evaluation report as well as supervision and management on environment protection on each stage during commissioning and operating period,

meanwhile, each Competent Administrative Authorities for Environmental Protection at Different levels and environment supervision authority shall perform the spot check for the environmental protection measures taken by the contractor and inspect the onsite environment supervision report; if such behaviors as environment destruction and the construction not conforming to the environmental protection measures proposed according to environment assessment as well as review and approval requirements appear during construction, the rectification measures should be proposed.

### **2.2.3 Execution Organization**

Each project contractor is of execution organization of project and also is of the execution organization for environmental protection measures during the construction. During project construction stage, the environmental protection is of contractor's responsibility. It is stipulated in Article 19.1 of Contract Regulations on Civil Works Evaluation issued by FIDIC that, in the whole process of project construction, completion and repair for other defects, the contractor should take all reasonable steps so as to protect the site and adjacent environment and avoid the pollution and noises or other consequences caused by construction producing the injury or barrier on personnel or properties. In the construction process of this project, the contractor shall play the key function on implementation for environment management, pollution control and prevention measures, therefore, the following requirements should be performed for contractor:

- a. Select the contractor with certain strength so as to ensure that the environment management plan is executed effectively.
- b. It is required that the contractor and the construction supervisor must receive the training on environment protection and environment management prior to construction.
- c. The mitigation measures on environment impact in the EMP during above-said project construction period must be included into contractor's bidding document and also included into the construction contract finally to be served as the contract requirement of project contractor.
- d. It is required that the contractor shall perform the monitoring for environment activities and should provide the environment monthly once every month. The project supervision organization shall perform the supervision and review.

e. The contractor is required to designate 1 full-time environment staff for the project. These environment staffs should accept the training according to the training plan so as to qualify their work.

f. In the process of construction, the contractor is required to communicate and negotiate with the masses in the project area and the bulletin board shall be erected on each construction unit to notify, meanwhile, the linkman and contact telephone should be provided so that the masses offer the complaints and suggestions for construction activity.

Each project village shall establish a work team with the township head as the director and each project village director as the vice director to be responsible for the maintenance and management during the works operation.

#### **2.2.4 Consulting Service Organization**

##### **(1) Environment Assessment Consulting Organization**

Through accepting the entrusting and in combination with the practical condition of project, compile such environment evaluation document as EMP.

##### **(2) Design Consulting Organization**

Through accepting the entrusting, compile the feasibility study report and construction design proposal so that the measures and proposal in the EMP are lodged into the compilation achievements.

##### **(3) Project Supervision Organization**

Entrusted by Project Office at district and county, the Project Supervision Organization performs the onsite monitoring management on contractor's construction area and living camp. The Project Supervision Authority must allocate the corresponding environment supervisor so as to ensure that the contractor observes the requirements of relevant laws and regulations on environmental protection in China during the construction as well as ensure that the contractor implements various environmental protection measures specified in the EMP.

The main responsibilities cover:

a. After accepting the entrusting, the Project Supervision Authority should formulate the technical proposal on project environment supervision based on the requirements of consulting organization and competent administrative department for

environmental protection; meanwhile, the environment supervision members, technical proposal and entrusting contract should be reported towards competent administrative department for environmental protection for filing.

b. Verify whether the environmental protection design scheme for construction project conforms to the requirements of consulting organization, consulting organization for competent administrative department for environmental protection and relevant technical specifications as well as put forward the written modification opinions towards the construction organization and design organization.

c. Review and approve the onsite environment management plan for contractor.

d. Supervise and inspect the domestic sewage treatment, production wastewater treatment, protection measures for water loss and soil erosion measures, control measures for exhaust gas, dust and noises and treatment measures for production and domestic garbage as well as epidemic prevention measures.

e. Regularly fill in each checklist in the Appendix of environmental protection implementation regulation ( once weekly at least); the inspection record should be recorded for filing.

f. Put forward the rectification and reform program as well as trace and implement it while encountering relevant environmental protection issues during construction activity.

g. Prevent contractor's activities or behaviors violating the environmental protection.

h. Once the construction behaviors of civil works contractor don't meet the environmental protection requirement so as to cause adverse environmental influence and receive relevant environmental protection complaints from project area, develop the corresponding investigation and report it towards the town's project organization as well as seek the solutions. Meanwhile, the rectification notification on environmental protection should be issued towards the contractor, and the contractor should be supervised to take corresponding rectification measures.

i. Ensure that the contractor compiles and submits the environment monthly during construction period as well as put forward the handling suggestions. When the construction environment measures don't meet the requirement, give the rectification opinions for the contractor. When the rectification meets the requirements of environmental management plan, the inspection on this month may be qualified; when



the rectification fails, report it towards Project Office at each district (county) and coordinate the rectification measures. Such relevant documents as rectification notification and rectification opinions feedback should be archived for filing.

j. Compile the project supervision monthly during construction period and attach the contractor’s environment monthly during construction period as well as report them towards the Project Office at each district and county.

k. Observe the influence on environment around the construction area by the construction activities to determine whether the additional protection measures are required to be taken. If the measures taken by the contractor are unfavorable, it is suggested that the Project Office at the district or country should fine the contractor.

### 2.3 Personnel Allocation Required for Environment Management

In order to better fulfill the responsibilities of environment management, it is suggested that each management authority allocates relevant personnel according to the requirements of Table 2.3-1.

**Table 2.3-1 List to Allocation for Environment Management Principal and Main Responsibilities**

<b>Organizations</b>	<b>Personnel Allocation and Qualification Requirement</b>	<b>Main Responsibilities of Personnel</b>
Project Office for New countryside Construction by WB in Huangshan City	Branch leader: 1 person, acted by main principal of municipal Project Office concurrently; Principal for project environment management : 1 person, having relevant professional senior title on environmental profession; Environmental protection hotline staff : 1 person, having basic knowledge on environmental protection.	Ensure that the project planning, design and environmental protection on the program meet the requirements on environment evaluation by inland and WB; be responsible for establishing and coordinating the relationship among each department; inspect and guide the implementing condition for environmental protection measures; Be responsible for record and handling for environmental protection complaints as well as solution towards the public.
Project Office at each district and county	Branch leader: 1 person/district /county, acted by environment manager of Project Office at each district (county)concurrently; Principal for project environment management : 1 person/district /county, full-time personnel allocated at each district/county, having basic knowledge on environmental protection and management.	Compile and implement the project environment planning and yearly plan; supervise, inspect and accept the complement condition on environmental protection measures; contact and coordinate as well as implement the environment management affairs with superior project management authority and competent environment authority;
Civil works contractor	Site environment engineer: 1 person/contractor, obtain the	Organize and lodge various environmental protection measures in the EMP in the construction

Organizations	Personnel Allocation and Qualification Requirement	Main Responsibilities of Personnel
	corresponding practice qualification	area; perform the inspection, recording and archiving for lodging condition for environmental protection measures; accept the supervision from environment supervision organization as well as management and supervision authorities at different levels.
Project supervision organization	Branch leader: 1 person /supervision organization, being acted as by the principal of project supervision organization concurrently; Environment supervisor: each supervision organization should designate 1 person in the district (county) charged by him, and the corresponding practice qualification should be obtained.	Compile the environment supervision plan; specify the supervision contents; it is entrusted by the Employer to supervise and inspect the implementation conditions and effects for environmental protection measures so as to timely solve the produced environment problems as well as archive the inspection results for filing.

## 2.4 Management on Environment Management Documents

It is of great significance for implementation of environmental protection implementation regulation to properly perform the management work for environment management documents. The main environmental management documents are listed in Table 2.4-1.

**Table 2.4-1 List to Main Environmental Management Documents**

Compiled by	Documents List	Remark
Project Office for New countryside Construction by WB in Huangshan City	Inspection record on implementing condition for environmental protection measures	Inspection contents cover the inspection record on environmental protection by town project organization, record condition for project environment supervision checklist as well as archiving condition for environment rectification notification and feedback information; once semiannually;
Project Office at each district and county	Inspection record on implementing condition for environmental protection measures of project	Inspection contents cover record condition on project environment supervision checklist as well as archiving condition for environment rectification notification and feedback information; once monthly;
Project supervision organization	Site checklist prior to construction approaching	Filling prior to construction approaching
	Environment checklist for construction site	Once weekly
	Project supervision monthly	Once monthly ( attached with contractor's environment monthly during construction period )
	Rectification notification sheet and rectification record for environmental protection	Irregularly
	Environmental protection checklist prior to project completion and delivery	Environmental protection checklist prior to project completion and delivery

Compiled by	Documents List	Remark
Contractor	Environment monthly during construction	Once monthly

### **3 Mitigation Measures and Implementation Plan**

The Environmental Management Plan is formulated to implement the environmental protection suggests and measures proposed by Environmental Impact Statement; the requirements is raised for management and supervision, etc. during project implementation (design and construction) and operation.

#### **3.1 Requirement for Environmental Management on Different Stage**

##### (1) Design stage

Design organization should lodge the environmental protection measures proposed in EMP into the design for construction drawing; the environmental management department of development organization should be responsible for the review work for engineering design plan on environmental protection measures and shall be subject to the supervision from local environmental protection administration.

##### (2) Bidding and tendering stage

The development organization formulates the action plan and management methods for environmental protection implementation during construction period according to the environmental protection suggests and measures proposed in the environment evaluation statement as well as compile them into the bidding document and the contract of contracting project; contractor's bidding document should cover the contents on environmental protection and civilized construction, and the contract winning the bidding should include the relevant clauses on environmental protection suggests and measures of proposed in the environmental impact statement.

##### (3) Construction period

Development organization organizes and develops the publicity, education and training work on environmental protection, organizes and implements the action plan on environmental protection for project, timely deals with the environmental pollution accidents and pollution disputes as well as accepts the supervision and guide from environmental protection administration.

The development organization should also require engineering supervision institution assigning environment supervision engineer with certain environmental protection knowledge and skills to charge the environmental management and monitoring during

construction, mainly including the water environment protection, construction noises and dust pollution.

Contractor should accept development organization and local environmental protection administration's monitoring and guidance, implement the environmental protection and civilized construction measurement according to bidding document and construction contract. Each contractor should have at least one full-time environmental professional to supervise and manages the implementation of environmental protection measures.

After construction ends, the development organization should completely inspect the implementation of project's environmental protection measures and environment recovery for construction site, urge the contractor to timely withdraw from the temporary occupation field, dismantle the temporary facilities and recover the broken land and vegetations.

#### (4) Operation period

The environmental protection management, monitoring and the environmental protection engineering measures required to be supplemented during operation period shall be implemented by Operations Management Institution.

### **3.2 Mitigation Measures and Implementation Plan**

In order to ensure that the environment countermeasures can be came into play efficiently, the mitigation measures and implementation plan of the project are prepared according to environmental impact assessment report, referring to List 3.2-1 to 3.2-7. Besides, due to complex composition of this project, small scale for each single project and consistent requirement for construction and environmental protection, the evaluation team independently draws up the general implementation regulation on environmental protection to be served as Appendix I of environmental management plan. According to the requirements of the WB's Business policy – Pest Management" (OP 4.09), in order to enhance the monitoring and preventive work plant diseases and insect pests' monitor on "Demonstration Project for New countryside Construction by WB Loan in Huangshan of Anhui", specially draw up the Pest Management Plan(PMP) to be served as the Appendix 2 of environmental management plan. According to the requirements of the WB's Business policy –Physical Cultural Resources" (OP 4.11), in order to enhance the physical cultural

resources protection work on “Demonstration Project for New countryside Construction by WB Loan in Huangshan of Anhui”, specially draw up the Physical Cultural Resources Management Plan (PCRMP) to be served as the Appendix 3 of environmental management plan.

**Table 3.2-1 Summary List on Environment Management Plan for Supporting Facility Project of Road and Bridge**

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
A(1) Newly-built road Changshi road between Changxicun and Shitancun (3145m in length, 4.5m in width); Hongfeicun road (1400m in length, 4.5m in width); Jiekoucun road (600m in length, 4.5m in width); Mulihong road(2860m in length, 3.5m in width, about 1400m newly-bulit);	Design period	<ul style="list-style-type: none"> <li>- Unreasonable route selection may influence protection area/natural habitat/sensitive point</li> <li>- Unreasonable route selection, subgrade design, temporary land settings will increase the destroy of cultivated land and forestland</li> <li>- Problem on coordination of road and natural landscape</li> <li>- Insufficient road drainage deign will influence its use</li> </ul>	<ul style="list-style-type: none"> <li>- The route shall keep off protection area/natural habitat/sensitive point</li> <li>- The scheme shall be approved by related department</li> <li>- Compile RAP</li> <li>- Combine road deign and landscape</li> <li>- The road design shall include sufficient drainage facility</li> <li>- The measure shall be shown on design requirement</li> </ul>	<ul style="list-style-type: none"> <li>- Scientific research organization</li> <li>- Design organization</li> </ul>	<ul style="list-style-type: none"> <li>- The county bureau of transportation shall review route selection scheme after the completion of route selection;</li> <li>- the county bureau of transportation shall review road design scheme after the completion of road design</li> </ul>	<ul style="list-style-type: none"> <li>- District and county transportation bureau</li> </ul>	<ul style="list-style-type: none"> <li>- Incorporate into design cost</li> </ul>
	Construction period	<ul style="list-style-type: none"> <li>- Delay for recover of excavation slope of road will influence stability of landscape and slope</li> <li>- Construction will influence old trees and famous tress</li> <li>- Common influence on environment and society in construction (land occupation, vegetation, soil and water loss, construction camp, dust, noise, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>- Works protection and ecological protection measures shall be taken for excavation slope of road in time</li> <li>- Construction organization shall conduct detailed field survey before commencement, and shall be protected found old and famous trees: take such protective measures to protect old tress as setting signboard, adding fence etc.</li> <li>- Execute the <i>General Environmental Implementation Codes and Water and Soil Cconservation Scheme</i></li> </ul>	<ul style="list-style-type: none"> <li>-Construction organization</li> </ul>	<ul style="list-style-type: none"> <li>- Daily Supervision of construction supervisor</li> </ul>	<ul style="list-style-type: none"> <li>- Construction supervisor</li> <li>- Employer organization</li> <li>- Environmental protection bureau</li> </ul>	<ul style="list-style-type: none"> <li>- Environmental measure cost shall be incorporated into construction contract</li> <li>- Construction supervision Cost</li> </ul>
	Operating period	<ul style="list-style-type: none"> <li>- Traffic safety</li> <li>- Road maintenance (slope stability/collapse, drainage)</li> <li>- Influence on public facility of village caused by tourists (garbage, waste water)</li> </ul>	<ul style="list-style-type: none"> <li>- Timely maintain the road, safety facility and mark of road</li> <li>- Village committee shall appoint person to periodically check the stability situation of road slope</li> <li>- Provide enough facility for waste water, garbage disposal</li> </ul>	<ul style="list-style-type: none"> <li>- Village committee</li> </ul>	<ul style="list-style-type: none"> <li>- Supervision of township government</li> </ul>	<ul style="list-style-type: none"> <li>-Township government</li> </ul>	<ul style="list-style-type: none"> <li>-Village committee self-raised funds</li> </ul>

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
A(2) Rebuilding and expansion road 66 villages are involved to rebuilding and expansion road project, total distance is 303.455km, among which, village in and out of arterial road is 44.455km, contacting road between village and groups is 135.4km, road within village is 80.7km, production and operation road (machinery plowing road) is 30.8km, replenish protective facility road is 10.7km	Design period	<ul style="list-style-type: none"> <li>- Unreasonable of temporary ground settings will increase destroy of cultivated land and forestland</li> <li>- Insufficient road drainage deign will influence its use</li> <li>- Road materials is discordant to surrounding buildings/landscape</li> </ul>	<ul style="list-style-type: none"> <li>- Road safety, drainage and landscape shall be fully considered in design</li> <li>- The pavement of some streets with historical and cultural features shall be used traditional building materials (Waibianxicun, Xixinancun, Lingshancun, Guocun, Xinfengcun, Xucun, Changxicun, Beiancun, Zhanqicun, Hongfeicun, Zhangtancun, Sucun, Huaqiaocun, Yanjiaocun, Wanxincun, Huangcun, Pingshancun, Tuanjiecun, Huanglongcun, Lixicun, Liuducun, Lunkengcun, Taoyuancun, Zhukoucun etc.). Design organization shall negotiate with local department and check if the road deign in accordance with local planning.</li> </ul>	<ul style="list-style-type: none"> <li>- Scientific research organization</li> <li>- Design organization</li> </ul>	- The county bureau of transportation shall review road design scheme after the completion of road design	- District & county transport bureau	- Incorporate into design cost
	Construction period	<ul style="list-style-type: none"> <li>- Clean muck and gravel on existing pavement</li> <li>- Influence on ancient and famous tress caused by construction</li> <li>- Common influence on environment and society in construction (land occupation, vegetation, soil and water loss, construction camp, dust, noise, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>- Muck and gravel shall be used as fill of added passing bay.</li> <li>- Construction organization shall conduct detailed field survey before commencement, and protect found old and famous trees: take such protective measures to protect old tress as setting signboard, adding fence etc.</li> <li>- Execute the <i>General Environmental Implementation Codes and Water and Soil Cconservation Scheme</i></li> </ul>	- Construction organization	- Daily supervision of construction supervisor	- Construction supervisor and employer organization - Environmental protection bureau	<ul style="list-style-type: none"> <li>- Environmental measure cost shall be incorporated into construction contract</li> <li>- Construction supervision cost</li> </ul>
	Operation period	<ul style="list-style-type: none"> <li>- Traffic safety</li> <li>- Road maintenance (slope stability/collapse, drainage)</li> <li>- Influence on public facility of village caused by tourists</li> </ul>	<ul style="list-style-type: none"> <li>- Timely maintain road and safety facility and mark of road</li> <li>- Village committee shall appoint person to periodically check the road slope</li> <li>- Provide enough facility for waste water, rubbish disposal</li> </ul>	- Village committee	- Supervision of township government	-Township government	- Village committee self-raised capital



Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
A(3)Bridge works 64 bridges were newly built in this time, which distributes in 27 villages, including 6 large bridge, other 58 bridges are all medium-small bridges for going out of production and living of residents	Design period	- Unreasonable route selection may influence protection area/natural habitat/sensitive point - Oversize (width and length) of bridges may cause may increase of vehicles - Bridges may destroy surrounding landscape	- The route shall keep off protection area/natural habitat/sensitive point - The bridge of Waibianxi, Yongfengcun, Huaqiaocun, Wanxincun shall be arch bridge due to landscape. - The scheme shall be reviewed by related department - Combine bridge design and landscape	- Scientific research organization - Design organization	- The county transportation bureau shall review bridge design scheme after the completion of bridge design	- District & county eransportation bureau	- Incorporate into design cost
	Construction period	- Influence on water caused by bridge construction - Common environmental and social impact in construction	- Strengthen construction management, take protective and management measures for oil leakage of constructional machinery - The construction shall be conducted at dry season or level period as soon as possible; advanced environmental protection construction technology shall be used. - Sedimentation basin shall be provided to drain waste sediment produced in drilling of bridge construction after precipitating and disposing. - Execute the <i>environmental codes of practice for construction</i>	- Construction party	- Daily supervision of construction supervisor	- Construction supervisor and employer organization - Environmental protection bureau	- Environmental measure cost shall be incorporated into construction contract - Construction supervision cost
	Operation period	- Bridge maintenance problem	- Periodically check the safety of bridge	- Village committee	- Supervision of township government	- Township government	- Village committee self-raised funds
A(4) Streetlight works and three-wire grounding works	Construction period	-Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	- Execute the <i>environmental codes of practice for construction</i>	-Construction organization	- Daily supervision of construction supervisor	-Construction supervisor -Employer organization - Environmental protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction Supervision Cost

<b>Classification of Subitems</b>	<b>Implementation period</b>	<b>Environment Influence /Risk</b>	<b>Mitigation Measures</b>	<b>Execution Organization for Mitigation Measures</b>	<b>Monitoring /Supervision Plan</b>	<b>Execution Organization for Supervision Measures</b>	<b>Mitigation Measures and Monitoring Expenses</b>
	Operation period	- Streetlight maintenance problem - Maintenance problem of three-wire grounding works	- Replace damaged streetlight - Check the safety of line	- Streetlight shall be in charge of village committee - Three-Wire Grounding works shall be in charge of power supply company and communication operator	- Supervision of township government	- Township government	- Village Committee self-raised funds

**Table 3.2- Summary Sheet for Environmental Management Plan of Village Water Supply and Drainage Project**

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
B(1) Water supply works	Design period	- The water supply source is from reservoirs(Su Village,Yanjiao Village), so the reservoir may be unsafe. - Dependability issues of water supply source (water quantity and water quality)	- Prepare dam safety plan. - Execute water source protection measures (mark, management)	- Scientific research organization - Design organization	- The water conservancy bureau take charge of dam safety - The Water conservancy bureau shall review the water supply scheme after the completion of water supply	- District & county water conservancy bureau	- Incorporate into design cost
	Construction period	- Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	- Execute the <i>Environmental codes of practice for Construction</i>	- Construction organization	- Daily supervision of construction supervisor	- Construction Supervisor - Employer organization - Environmental protection bureau	- Environmental measure cost shall be incorporated into construction contract - Construction supervision cost
	Operation period	- Quality of supplied water - Safety problem of dam taking reservoir as water source	- Maintain water supply facility, periodically check quality of supplied water - Periodically check the safety of dam	- Manager for Water Treatment Facility	- Routine supervision by village committee	- Village committee	- Drawing from water cost
B(2) Rainfall and sewage pipe	Construction period	- Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	- Execute the <i>environmental codes of practice for construction</i>	- Construction organization	- Daily supervision of construction supervisor	- Construction supervisor - Employer organization - Environmental protection bureau	- Environmental measure cost shall be incorporated into construction contract - Construction supervision cost
B(3) Sewage treatment works	Design period	- If the location selection of sewage treatment facility is reasonable - The waste water produced by tourist is not considered into	- The treatment facility shall keep off water source protection area and intake in selecting location - The treatment facility shall be	- Scientific research organization - Design organization	-The water environmental protection bureau shall review the sewage treatment scheme after the completion of design of	- District & county water conservancy bureau	- Incorporate into design cost

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
		sewage treatment facility	set at edge of village as soon as possible - The scale of treatment facility shall be available for quantity of tourist		sewage treatment facility		
	Construction period	-Common Environmental and Social Impact in Construction (Vegetation, Water and Soil Loss, Construction Camp, Dust, Noise etc.)	-Execute <i>Environmental codes of practice for Construction</i>	- Construction organization	-Daily supervision of construction supervisor	- Construction supervisor - Employer organization - Environmental protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	-If the effluent quality meet drainage standard -Treatment for sediment produced by water treatment facility	-The village committee shall appoint person to strengthen operating management to ensure the standard emission of sewage treatment facility. -Provide standby equipment, establish emergency incident plan to prevent bad result of incident - The sediment shall be monitored once after operating, and can be used only meet <i>Control standards for pollutants in sludges from agricultural use (GB4284-84)</i>	- Village committee	- Monitor quality of effluent	- Local environmental protection bureau	- Drawn from water cost

**Table 3.2-3 Summary Sheet for Environmental Protection Management Plan of Small-Scale Water Conservancy Facility**

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
C(1) Bank protection works and quay	Design period	- Bank harmony between protection material and surrounding landscape	-Pay a attention to the selection of material in designing, ecological concrete with good landscape and placed rockfill shall be used for bank-protection as soon as possible;	- Scientific research organization -Design organization	-The water conservancy bureau shall review the design scheme after the completion of design of bank-protection engineering	-District & county water conservancy bureau	-Incorporate into design cost
	Construction period	- Influence on water caused by construction - Influence on animals and plants caused by construction - (P66) - Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	-construction shall be conducted in dry season -Minimize construction period as soon as possible so that reducing the disturbance to water -Execute <i>environmental codes of practice for construction</i>	-Construction organization	-Daily supervision of construction supervisor	- Construction supervisor -Employer organization - Environmental protection bureau	-environmental measure cost shall be incorporated into construction contract -Construction supervision cost
C(2)River course cleaning works	Design period	- Disposal for riverway sediment	-The matter cleaned from Riverway treatment engineering mainly are sand-stone flowed from hilly area, which can be used for other engineering of this project, such as road construction, bank-protection filing etc. -The low-lying abandoned site in the periphery is used for padding the ground.	Feasibility Study organization -Design organization	-The water conservancy bureau shall review the design plan after completion of Riverway cleaning plan	- District & county water conservancy bureau	-Incorporate into design cost
	Construction period	- Influence on water caused by construction - Disposal location and fetor influence of cleaning matter from Riverway with sediment - Common environmental and	-Construction shall be conducted at dry season -Pool cleaning machine with reamer with small radius shall be used in construction so as to reduce disturb	-Construction Organization	-Daily supervision of construction supervisor	-Construction supervisor -Employer organization - Water conservancy	-Environmental measure cost shall be incorporated into construction contract

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
		social impact in construction (vegetation, water and soil loss, Construction camp, dust, noise etc.)	radius in mud digging. -The abandoned site is mainly selected for clearing substances at the Riverway with sludge substrate to be used for padding the ground, it is suggested that the site should be selected over 100m down the wind direction away from such sensitive target for environmental air as settlement . -Execute <i>environmental codes of practice for construction</i>			bureau - Environmental protection bureau	-Construction supervision cost
C(3)Hilly pool desilting and reinforcing	Design period	- Disposal for pool bottom mud -Safety of Pool	-The low-lying abandoned site in the periphery is used for padding the ground. -Safety measures shall be established by qualified engineer	- Scientific research organization - Design organization	- The water conservancy bureau shall review the design plan after completion of hilly pool desilting and reinforcing design	- District & county water conservancy bureau	- Incorporate into design cost
	Construction period	- Disposal of bottom mud (location etc.) - Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	-The qualified construction team shall be employed to construct, qualified supervising organization shall be employed to supervise engineering. -The abandoned site is mainly selected for clearing substances at the Riverway with sludge substrate to be used for padding the ground, it is suggested that the site should be selected over 100m down the wind direction away from such sensitive target for environmental air as settlement . -Execute <i>Environmental codes of practice for Construction</i>	- Construction organization	- Daily supervision of construction supervisor	- Construction supervisor - Employer organization - water conservancy bureau - Environmental protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	- Safety of hilly pool	-Execute established safety	- Hilly pool manager	-Routine supervision by	-Village committee	-Beneficial farmer

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
			measures(operating and maintenance plan, emergency plan)		village committee		fund
C(4) Diversion weirs	Design period	- Influence the access of aquatic life - Safety of intake structure	-Rubber dam, shutter dam and lift dam which influence aquatic life lightly shall be used. -Safety measures shall be established by qualified engineer	- Scientific research organization - Design organization	-The water conservancy bureau shall review the design plan after completion of storage dam design	- District & county water conservancy bureau	-Incorporate into design cost
	Construction period	- Influence the access of aquatic life in construction period - Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	-Construction shall be conducted in dry season -The qualified construction team shall be employed to construct, qualified supervising organization shall be employed to supervise engineering. -Execute <i>Environmental codes of practice for Construction</i>	-construction organization	-Daily supervision of construction supervisor	- Construction supervisor -Employer organization - Water conservancy bureau - Environmental protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
C(5) Irrigation canal, irrigation pumping station	Construction period	- Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)	-Execute <i>Environmental codes of practice for Construction</i>	-Construction organization	-Daily supervision of construction supervisor	- Construction supervisor -Employer organization - Environmental protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	- Clean and maintenance of irrigation canal, irrigation pumping station	-Periodically clean and maintain head of canal	- Pump station manager	-Routine supervision of village committee	-Village committee	-Beneficial farmer fund

**Table 3.2-4 Summary Sheet for Environmental Management Plan of Tour Supporting Facilities**

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
D(1) Tourist reception facility (parking lot, public toilet, square, reception center, greening etc.)	Design period	<ul style="list-style-type: none"> <li>- Harmony between tourist accommodation facility and surrounding landscape</li> <li>- Unreasonable location of parking lot and tourist reception center may affect the rest of villagers</li> <li>- Unreasonable location of public toilet may cause opposition of villagers</li> <li>- Ecological diversity for greening</li> </ul>	<ul style="list-style-type: none"> <li>-Hui culture and building feature shall be considered into design of tourist facility, ecological porous pavement shall be used</li> <li>-The parking lot and tourist reception center may be built near edge of village</li> <li>-The location of public toilet may keep off houses of villagers</li> <li>-Requirement for greening of trees(use native tree/vegetation, ecological diversity)</li> </ul>	<ul style="list-style-type: none"> <li>- Scientific research organization</li> <li>-Design Organization</li> </ul>	<ul style="list-style-type: none"> <li>- Tourist reception facility shall be reviewed by village committee after completion of its design</li> </ul>	<ul style="list-style-type: none"> <li>- Village committee</li> </ul>	<ul style="list-style-type: none"> <li>- Incorporate into design cost</li> </ul>
	Construction period	<ul style="list-style-type: none"> <li>- Common environmental and social impact in construction (vegetation, Water and soil loss, construction camp, dust, noise etc.)</li> </ul>	<ul style="list-style-type: none"> <li>-Execute <i>Environmental codes of practice for Construction</i></li> </ul>	<ul style="list-style-type: none"> <li>- Construction organization</li> </ul>	<ul style="list-style-type: none"> <li>- Daily supervision of construction supervisor</li> </ul>	<ul style="list-style-type: none"> <li>- Construction Supervisor</li> <li>- Employer organization</li> <li>- Environmental protection bureau</li> </ul>	<ul style="list-style-type: none"> <li>-Environmental measure cost shall be incorporated into construction contract</li> <li>- Construction supervision cost</li> </ul>
	Operating period	<ul style="list-style-type: none"> <li>- Disposal for produced waste water and solid waste</li> </ul>	<ul style="list-style-type: none"> <li>-Provide enough sewage/rubbish treatment facility</li> </ul>	<ul style="list-style-type: none"> <li>- Tourism Co.</li> <li>- Villager manager</li> </ul>	<ul style="list-style-type: none"> <li>- Daily Supervision of District and County Tourism Committee</li> </ul>	<ul style="list-style-type: none"> <li>- District &amp; county tourism committee</li> </ul>	<ul style="list-style-type: none"> <li>-Capital drawn from business turnover</li> </ul>
D(2)Tour wharf	Design period	<ul style="list-style-type: none"> <li>- Harmony between tourist facility (wharf etc.) and surrounding landscape</li> <li>- Unreasonable design of wharf may influence flood discharge of Riverway.</li> </ul>	<ul style="list-style-type: none"> <li>-The wharf is laddering wharf</li> </ul>	<ul style="list-style-type: none"> <li>- Scientific research organization</li> <li>- Design organization</li> </ul>	<ul style="list-style-type: none"> <li>- The water conservancy bureau and marine bureau shall review the design scheme after the completion of wharf design</li> </ul>	<ul style="list-style-type: none"> <li>-District &amp; county water conservancy bureau</li> <li>- District &amp; county marine bureau</li> </ul>	<ul style="list-style-type: none"> <li>-Incorporate into design cost</li> </ul>



Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
	Construction period	<ul style="list-style-type: none"> <li>- Influence on water caused by construction</li> <li>- Common environmental and social impact in construction (vegetation, water and soil loss, construction camp, dust, noise etc.)</li> </ul>	<ul style="list-style-type: none"> <li>-The construction shall be conducted in dry season</li> <li>-Execute <i>Environmental codes of practice for Construction</i></li> </ul>	<ul style="list-style-type: none"> <li>- Construction organization</li> </ul>	<ul style="list-style-type: none"> <li>-Daily supervision of construction supervisor</li> </ul>	<ul style="list-style-type: none"> <li>- Construction supervisor</li> <li>- Employer organization</li> <li>- Environmental protection bureau</li> </ul>	<ul style="list-style-type: none"> <li>- Environmental measure cost shall be incorporated into construction contract</li> <li>- Construction supervision cost</li> </ul>
	Operating period	<ul style="list-style-type: none"> <li>- Safety of ships at wharf</li> </ul>	<ul style="list-style-type: none"> <li>-Person shall be appointed to conduct safety management for ships at wharf</li> </ul>	<ul style="list-style-type: none"> <li>- Tourism Co. or village committee</li> </ul>	<ul style="list-style-type: none"> <li>-District &amp; county transport bureau and district Marine Bureau shall periodically check the safety and performance of tour ships</li> </ul>	<ul style="list-style-type: none"> <li>- District &amp; county transport bureau</li> <li>-District &amp; county marine bureau</li> </ul>	<ul style="list-style-type: none"> <li>- Capital drawn from business turnover</li> </ul>

**Table 3.2-5 Summary Sheet for Environmental Management of Physical Cultural Resource**

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
E(1)Historic building maintenance/repair	Design period	-Improper design and wrong repair method will destroy the historical value of physical cultural resource	-The experts shall participate in field survey and consultant -The design party shall be with corresponding qualification grade -Compile repair design plan for each old building needing repair -The repair design plan shall be submitted to resource bureau with corresponding grade for approval	- Scientific research organization -Design organization	- Culture relics bureau with corresponding grade shall assess the resource conservation design scheme after the completion of design	- Culture relics bureau with corresponding grade	- Incorporate into design cost
	Construction period	-Improper construction will destroy old building	-The bidder shall compile construction scheme. Construction organization with relevant qualification shall be selected through inviting bids -The repair construction shall be undertaken by construction organization with relevant qualification. -Supervision shall be undertaken by supervision organization with relevant qualification. -Relevant department shall check and accept it after completion of repair	-Construction organization	-The supervisor shall strictly conduct supervision according to requirement of laws and regulations related to old building repair.	- Construction supervisor -Employer organization -District & county cultural relics bureau	- Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	-Improper maintenance may cause negative effects -Utilization plan for cultural relics does not conform to village protection plan	-Strengthen utilization and maintenance for old building -Strengthen ability training for management staff for old building	- Public property cultural relics bureau take charge of management -Private property cultural relics bureau take charge of management	- Routine supervision of cultural relics Bureau -	- District & county cultural relics bureau	- Cultural relics protection cost for public property -Self-raised cost for private property user
E(2) Repair of	Design period	-Improper design and	-The Bridge Safety Appraisal Report	- Scientific research	-Culture relics bureau and	- District & county	-Incorporate into

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
historic bridge		wrong repair method will destroy the structural safety and historical value of physical cultural resource	reviewed by Transport Bureau shall be obtained before design -the repair plan shall be compiled by professional designer of bridge and cultural resource protection staff -The design plan shall be submitted to transport bureau with relevant grade for approval.	organization - Design organization	transport bureau shall review the bridge repair design scheme after completion	transport bureau - District & county cultural relics bureau	design cost
	Construction period	-Improper construction will destroy old bridge	-The bidder shall compile construction scheme. construction organization with relevant qualification shall be selected through inviting bids -Repair construction shall be undertaken by construction organization with relevant qualification. -The Supervision shall be undertaken by supervision organization with relevant qualification. -Relevant department shall check and accept it after completion of repair	- Construction organization	-Routine Supervision of construction supervisor	- Construction Supervisor -Employer Organization - District and County Cultural Relics Bureau	- Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	-Improper management and maintenance may destroy old bridge -	-Strengthen the daily management of old bridge -Strengthen daily management for old bridges -Strengthen ability training for management staff for old building	- Village vommittee	-Routine supervision of transport bureau and cultural relics bureau	- District & county transport Bureau - District & county Cultural Relics Bureau	- Village committee self-raised funds
E(3) Protection for old and famous trees (including village grove)	Design period	- Improper maintenance measure for old trees may cause negative effects	-The forestry expert shall be invited to participate in compiling of protection plan -the plan design shall be submitted to forestry bureau with relevant grade for approval	- Scientific research organization - Design organization	- The protection plan shall be reviewed by Forestry Bureau	- District & county forestry bureau	- Incorporate into Design Cost

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
	Construction period	- The construction may affect grove and old and famous tress at village	-The construction organization shall conduct detailed field survey before commencement, the construction area shall keep off old and famous tress -The found old and famous tress near construction site shall be protected; setting signboard, adding fence etc. -The Supervision shall be undertaken by supervision organization with relevant qualification. -Relevant department shall check and accept it after completion of repair	- Construction organization	-Construction supervisor	- Construction supervisor - Employer organization - District & county forestry bureau	- Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	- Improper management and maintenance may cause destroy and steal of tress	-Strengthen daily management for old tress and grove; -Strengthen ability training for management staff for old building	- Village committee	- Routine supervision of forestry bureau	- District & county forestry bureau	- Village committee self-raised funds

**Table 3.2-6 Summary Sheet for Environmental Management Plan of Special Industry Project**

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
F(1)Rural inn and product trading market	Design period	- Unreasonable location of trading market may influence villagers to use	- The trading market shall be convenient for villager to use	- Scientific research organization - Design organization	- The trading market design shall be approved by village committee	- Village committee	-Incorporate into design cost
	construction period	-Common environmental and Social Impact in Construction (Vegetation, Water and Soil Loss, Construction Camp, Dust, Noise etc.)	-Execute the <i>Environmental codes of practice for construction</i>	-Construction organization	- Routine supervision of construction supervisor	-- Construction Supervisor -Employer organization -Environmental protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction supervision Cost
	Operating period	- Rubbish produced by trading market	- The rubbish gathering unit shall be added for trading market	- Village committee	- Routine supervision of township government	-Township government	- Village Ccommittee self-raised funds
F(2)Characteristic industry base	Design period	- The location of industry base is conflicting with relevant overall planning and sensitive area - The exotic species of afforestation tree species brought may influence local environment - New increase of planning area may cause increase of usage amount of chemical pesticide	- The location shall conform to land utilization overall plan, and keep off sensitive area - The local tree species shall be used for afforestation tree species - Compile <i>Pest Management Plan</i>	- Scientific research organization - Design organization - Environmental assessment organization	-The location of industry base shall conform to requirement of agricultural bureau and land and resource bureau	- District & county agricultural bureau - District & county land and resource bureau	-Incorporate into design cost
	Construction period	- The increase of plan area(especially in slope) may cause water and soil loss, loss of vegetation, destroy of landscape - Common Environmental And Social Impact in Construction (Vegetation, Water and Soil Loss, Construction Camp, Dust, Noise etc.)	- Execute the <i>Environmental codes of practice for construction and water and social conservation plan</i>	- Construction organization	- Routine supervision of construction supervisor	- Construction supervisor -Employer organization - Environment protection bureau	- Environmental measure cost shall be incorporated into construction contract -Construction supervision cost

Classification of Subitems	Implementation period	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
	Operating period	- The new increase of planning area may cause increase of usage amount of chemical pesticide	- Take comprehensive pest control technology - Execute comprehensive pest control publicity and training - <i>Pest Management Plan</i>	- Pest control professional institute - Farmer households - Pesticide dealer	- The agricultural bureau shall strengthen guidance for agricultural pest control and inspection for pesticide usage - The professional institute shall be entrusted to manage and supervise pest management	- District & county agricultural bureau - Employer organization	- Pest control management cost
F(3)Tea processing factory	design period	-The unreasonable location may influence tea grower to use	-location of tea processing factory shall be convenient for tea grower to use	- Scientific research organization - Design organization	-The design of tea processing factory shall be approved by village committee after completion	- Village committee	-Incorporate into design cost
	Construction period	-Common Environmental And Social Impact in Construction (Vegetation, Water and Soil Loss, Construction Camp, Dust, Noise etc.)	-Execute the <i>General Environmental Codes of practice for construction</i>	- Construction organization	-Routine supervision of construction supervisor -	- Construction supervisor - Employer organization - Environment protection bureau	-Environmental measure cost shall be incorporated into construction contract -Construction supervision cost
	Operating period	-The fuel of tea processing factory may damage environment	-The processing factory shall use such clean energy as electricity/gas to proceed tea	-Owner of processing factory	-Routine supervision of village committee	- Village committee	-Capital drawn from business turnover

**Table 3.2-7 Summary Sheet for Environmental Management Plan of Project related to Natural Habitat**

Project Village	Involved natural habitats	Project Contents	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
Fuxi village, Huizhou District	Tianhu Provincial Natural Protection Area	<ul style="list-style-type: none"> <li>-2273m road hardening(road for village production and living)</li> <li>-conduct hardening treatment using existing 3m subgrade, set 4 passing bays, new retaining wall shall be built for some road section</li> <li>-New drainage ditch and circular culvert shall be built for some road section</li> <li>-Add safety facility as crash barrier, warning pile,convex mirror etc.</li> </ul>	<ul style="list-style-type: none"> <li>-The project is located within experimental area of natural protection area</li> <li>-Conform to overall planning of natural protection area, obtained approval of competent department of protection area---Anhui provincial forestry bureau, conform to specification of laws and regulations</li> <li>-The area of protection occupied by project is about 0.03 mu. the area of protection directly influenced by project is about 3ha,accounts for 0.07% of protection area</li> <li>-Do not increase traffic flow and vehicle speed,improve safety of road,the road can be used as fire path of protection area</li> </ul>	<ul style="list-style-type: none"> <li>-Execute <i>environmental codes of practice for construction</i></li> <li>-The construction organization must contact with protection area management bureau before commencement for coordinating issues about construction site etc., range of occupied land shall be strictly controlled in construction, so that reducing destroy for soil and vegetation around operating area.</li> <li>-The construction material stockyard cannot set at Tianhu natural protection, all construction camp and construction materials stockyard shall be set at Sipingcun beyond protection area.</li> <li>-strengthen management and monitoring in construction period, list this item into key point of construction supervising</li> </ul>	<ul style="list-style-type: none"> <li>- Construction organization</li> <li>- Supervising organization</li> </ul>	<ul style="list-style-type: none"> <li>-Protection area management station shall supervise construction operation</li> </ul>	<ul style="list-style-type: none"> <li>- Tianhu natural protection area management station</li> <li>- Huizhou district environmental protection bureau</li> </ul>	<ul style="list-style-type: none"> <li>- Environmental measure cost shall be incorporated into construction contract</li> <li>- Construction supervision cost</li> </ul>

Project Village	Involved natural habitats	Project Contents	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
Shuxi village Huangshan District	Tianping Lake National Wetland Park	<p>-The new bridge with length of 170m and net width of 4.5m,full-width of 5.0m shall be built at location of existing bridge after the existing bridge is removed, the bridge in simply support hollow slab bridge plan shall be used, with deck elevation of 121.5m;the existing road shall be elevated 5.5m within 650m.</p> <p>-Chuanyang Road safety project is 6000m in length, keep existing subgrade and pavement, rebuild road shoulder ,add warning pile and fence for 15 passing bays.</p> <p>-Hardened Chuanliulu is 120m in length and 3.5m in width, hardened road between villages is 1797m in length and 1.5-3m in width</p> <p>-The streetlight shall be installed for main roads along 15 village groups</p>	<p>-The project is located within wetland park</p> <p>-Conform to overall planning of Tiaiping lake national wetland park, obtained approval of competent department of wetland park---Anhui Provincial Forestry Bureau, conform to specification of laws and regulations</p> <p>-The Shibichen Bridge of Shuxi village shall be rebuilt at existing location, passing bays shall be added at part of Chuanyang road project, few wild grass ground at roadside will be occupied(about 0.09 ha),area of wetland indirectly influenced by construction noise is about13.04ha, accounts for 0.013% of Taipinghu national wetland park.</p> <p>-Do not increase traffic flow and vehicle speed, improve safety of road, the road can be used as path for management of wetland</p>	<p>-Execute <i>environmental codes of practice for construction</i></p> <p>-The construction organization must contact with wetland park management bureau before commencement for coordinating issues about construction site etc., range of occupied land shall be strictly controlled in construction so that reducing destroy for soil and vegetation around operating area.</p> <p>-Temporary retaining plate shall be provided at where near to part of Shuxi village Chuanyang road safety project to ensure the muck from entering water</p> <p>-Villager house and abandoned building land around village shall be used as construction site as soon as possible, all construction materials and construction camp shall be far away Taiping lake 200m</p> <p>-Strengthen management and monitoring in construction period,list this Shuxi village item into key point of construction supervising</p>	<p>- Construction organization</p> <p>- Supervising organization</p>	<p>- Tianping lake national wetland park office shall supervise construction operation</p>	<p>-Taiping lake state wetland park management office</p> <p>- Huangshan district environmental protection bureau</p>	<p>-Environmental measure cost shall be incorporated into construction contract</p> <p>-Construction supervision cost</p>



Project Village	Involved natural habitats	Project Contents	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
Xiong village, She county	HuaShan Mysterious Grottoes-Zhejiang national landscape and famous scenery	<p>-Road project: harden the roads from Shandou to Shuan Village. This road belongs to village group road and is 1540 m long and 3.5 m wide. It provides production and living service to village residents. Now this road belongs to earth road and is difficult to pass on rainy days, so it should be hardened. The current subgrade is utilized in designed to harden the pavement.</p> <p>-Road lamp project: the road lamps are designed and installed on the main access road of into village along the Xiong Village and main road the village.</p> <p>-Water supply project: This design is a new large open well is constructed to get the shallow waterground on the flood land of west bank at 2600 m in Xinjiang upstream of Anhui-Hangzhou Express Bridge. One elevated water basin is constructed at Xiaokangshan and Hangbutou respectively. The well water is promoted to the elevated water basin via the pump station for supply water to the village residents. The water distribution piping is constructed and the hydrants are configured in the centralized resident area and ancient building area.</p> <p>-Water conservancy works: clear three flood drainage ditches, rehabilitate the protection bank of the flood drainage ditch and rehabilitate irrigation ditches .</p> <p>-Cultural resource protection and utilization: 9 ancient buildings will be protected, including China-Chinese cooperation 1st institute, China-Chinese cooperation 2th</p>	<p>-All projects of Xiong village are located in HuaShan Mysterious Grottoes-Zhejiang national landscape and famous scenery.</p> <p>-All projects aim to improve the traffic and service facilities and tourism condition of the scenic area. All projects meet the general planning of HuaShan Mysterious Grottoes-Jianjiang landscape and famous scenery, are approved by the City and Urban and Rural Planning Bureau of Huangshan city and meet the requirements in the laws and regulations.</p> <p>-All road construction projects of Xiong village in Shexian county aim to harden existing roads. Only the water well and lifting pump room of water supply project occupy a small number of flood land (about 0.01 ha). A small number of lands will be occupied in the water supply and water drainage projects, including shrub on the side of the road (about 0.7 ha).</p> <p>-The project can improve the residential environment of</p>	<p>-Execute <i>environmental codes of practice for construction</i></p> <p>-The construction organization must contact with scenery management bureau before commencement for coordinating issues about construction site etc., range of occupied land shall be strictly controlled in construction so that reducing destroy for soil and vegetation around operating area.</p> <p>-Strengthen management and monitoring in construction period, list this Xiong village item into key point of construction supervising.</p> <p>-To deal with possible increase of tourists, the Administration Committee of Huashan Mysterious Grottoes-Jianjiang landscape and famous scenery should synchronously add enough rubbish collection device.</p>	<p>- Construction organization</p> <p>- Supervising organization</p>	<p>- The Administration Committee of Huashan Mysterious Grottoes-Jianjiang landscape and famous scenery shall supervise construction operation</p>	<p>-The administration committee of Huashan Mysterious Grottoes-Jianjiang landscape and famous scenery</p> <p>- She county environmental protection bureau</p>	<p>-Environmental measure cost shall be incorporated into construction contract</p> <p>-Construction supervision cost</p>

Project Village	Involved natural habitats	Project Contents	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
		<p>institute, Caoguanxia House, Caojian New House, Caoxi House, Caoxian House and Hangbu Chengshandu Ancestral Hall of Hangbu, Wangguangmo House and Yibentang. In addition, the Caozhenhua House, Caoshouchen House and Caominghui House are reconstructed as the Anhui style. These ancient buildings will be rehabilitated and improved due to aging and damage.</p> <p>-Fitting tourism project: one new 60 m2 tourism public toilet. The public toilet is close to the exercise plaza and parking site to better provide some services to the tourists and surrounding residents.</p>	<p>local residents at the village and improve the reception capability of Huashan Mysterious Grottoes-Jianjiang landscape and famous scenery in the traffic, water supply and water drainage.</p>					
Yanjiao village, Xiuning county	Qiyunshan national landscape and famous scenery	<p>-(1) Qiyunshan Yuehuajie at the top</p> <p>-Road project: the road from Yuehuajie to the tunnel cross (300 m long and 2.5 m wide) is based on the current subgrade and the red stone slab is paved. The walking street of Yuehuajie is finished based on the current subgrade (2350 m long and 1.7 m wide). The damaged stone slab is replaced. The protection rail is set at the steep slope. The Qiyunshan walking street is finished uniformly (2500 m long and 1.7 m wide) based on the current subgrade. The damaged stone slab is replaced. For the Yuehuajie Namugu road (1053 m long and 1.7 m wide), the subgrade is leveled and the blue stone slab is paved. The line 3 underground project is along Yuehuajie at the Yanjiao village.</p> <p>-Water supply project: the well is set in the</p>	<p>-All projects of Yanjiao village are located within Qiyunshan national scenic area.</p> <p>-All the projects aims to improve the traffic, service facilities and tourism conditions of the scenery. The project meets the general planning of Qiyunshan scenery, is approved by the administration committee of Qiyunshan landscape and famous scenery and meets the requirements in the laws and regulations.</p> <p>-All road construction projects aim to harden existing roads. Only the lifting pump room of water supply project and</p>	<p>-Execute environmental codes of practice for construction.</p> <p>-The construction organization must contact with scenery management bureau before commencement for coordinating issues about construction site etc.. The construction organization should protect ecology protection and humanistic resources, range of occupied land shall be strictly controlled in construction so that reducing destroy for soil and vegetation around operating area.</p> <p>-Strengthen management and monitoring in construction</p>	<p>- Construction organization</p> <p>- Supervising organization</p>	<p>-The administration committee of Qiyunshan landscape and famous scenery shall supervise construction operation</p>	<p>-The administration committee of Qiyunshan landscape and famous scenery</p> <p>- Xiuning county environmental protection bureau</p>	<p>-Environmental measure cost shall be incorporated into construction contract</p> <p>-Construction supervision cost</p>

Project Village	Involved natural habitats	Project Contents	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
		<p>south bank at 500 m upstream of the Hengjian Nankeng water dam. The well is constructed together with L1 lifting pump room. L2 lifting pump room is set around the upward road of the current scenery (elevation of about 260.00 m) for easy construction, maintenance and management. The old pump rooms around the Qiyunshan reservoir drainage outlet will be eliminated. The water purifying plant and L3 lifting pump room will be constructed here. The original water are lifted by two levels and transferred to the water purifying plant for processing. The old water pool is low (elevation of 489.35 m), so the water pressure can not meet the user requirement. The higher Sangufeng (elevation of 511.80 m) is selected for construct of high water pool in this design. The processed purified water is lifted by L3 via the pump room at the water purifying plant, transferred to the high water pool and transferred to the user. In rich supply seasons, the reservoir capacity can meet the supply requirement. In the supply lack seasons, L1 and L2 lifting pump room boosts the Hengjian original water to replenish water to Qiyunshang reservoir.</p> <p>-Water drainage project: Total 1660 m d200 waste pipe and 400 m d100 waste pipe are paved. 860 m d600 rain pipe is paved on the new road along the Yuehuajie.</p> <p>-Cultural relics protection project: including the Dongyan Temple Court protection and utilization, Ertianmen protection and utilization and Tiangongfu protection and</p>	<p>new public toilet occupy a small number of forest land (about 0.03 ha). A small number of lands will be occupied in the water supply and water drainage projects, including shrub and forest vegetation (about 0.5 ha).</p> <p>-The project can improve the residential environment of local residents at the village and improve the Qiyunshan tourist reception capability in the traffic, water supply and water drainage.</p>	<p>period, realize cultural construction. List this Yanjiao village item into key point of construction supervising.</p> <p>-Fully consider passage requirement of a large number of the tourists, add guide marks and realize security, order and smoothness during the construction.</p> <p>-To deal with possible increase of tourists, the administration committee of Qiyunshan landscape and famous scenery should synchronously add enough rubbish collection device.</p>				

Project Village	Involved natural habitats	Project Contents	Environment Influence /Risk	Mitigation Measures	Execution Organization for Mitigation Measures	Monitoring /Supervision Plan	Execution Organization for Supervision Measures	Mitigation Measures and Monitoring Expenses
		<p>utilization project.</p> <p>-Tourism fitting project: 3 public toilet, totally 80 m<sup>2</sup>.</p> <p>-(2) Qiyun village project at the foot</p> <p>-Road project: finish the old street of villages at the foot (2000 m long and 2-2.5 m wide), renovate old cement concrete pavement, washing and napping, pave cement; crush the damages stone slab and base of the old stone slab road and replace it with the bluestone slab.</p> <p>-Water supply project: replace the main water supply pipe of the village group at the foot with 1294 m dn110PE water supply pipe alone with the old road reconstruction, newly add one integrated disinfecting equipment. The processing scale is 15 m<sup>3</sup>/h.</p> <p>-Water conservancy project: the repair 230 m bank protection by using the dry masonry block stone scheme based on the actual condition of our village and repair the upstream and downstream of the Dengfeng bridge. Each water wharf is 18 m long and 5 m wide. Set 1.5 m*1.5 m stone-buried concrete foundation and pave five-step rectangular stone slab on the surface.</p> <p>-Fitting project: the total area of exercise plaza of Yanjiao group in Yanjiao village is 720 m<sup>2</sup>.</p>						

## **4 Environment Monitoring Plan**

### **4.1 Monitoring purpose**

Environment Monitoring includes two stages of construction period and operation period. Its main purpose is to comprehensively and promptly master pollution dynamic of proposed project, learn the change and influence scope resulted from the engineering construction in the project area and environment quality dynamic in operation period and timely feedback information to competent authority to provide a scientific basis for environmental management of the project.

### **4.2 Monitoring Institution**

As environment monitoring in construction period and operation period involves multiple aspects such as noise, water and ecology, etc and the providing of monitoring personnel and apparatus are quite complicated, so the development organization shall entrust a qualified monitoring institution to complete the work.

### **4.3 Monitoring plan**

The monitoring emphases are water quality, environmental noise and ambient air. Routine monitoring is required to be carried out by a combination of fixed spot & unfixed spot and timed & untimed samplings. Therefore, the monitoring time of different monitoring spots shall be adjusted on the basis of construction time. Refer to Table 4.3-1, 4.3-2 and 4.3-3 for the specific monitoring plan.

**Table 4.3-1 Environment Monitoring Plan (Water Quality)**

Stage	Monitoring spot	Monitoring item	Monitoring frequency	Monitoring period	Sampling time	Implementing Institution	Responsible Institution
Construction period	Hongshui River in Xinjiangcun, Jindaixi River in shuyuancun, Fengle River in Qiashecun, Caoxi River in Fuxi village, Fuxi River in Yangcun, Machuan River in Zhongduncun, Fengxi River in Xinfengcun, Fuzi River in Fuaicun, Lian River in Yuliangcun, Changyuan River in Changxicun, Xinan River in Jiekoucun, Jinfoshan River in Langsicun, Jishui River in Bishancun, Qingxi River in Miaolincun, Hexi River in Miaolincun, Changjiang River in Xiangtancun	SS Petroleum Permanganate index or COD <sub>cr</sub>	During desilting or revetment engineering construction, twice per year, which can appropriately be increased as required by construction	One day	Twice per day	Qualified monitoring Institution entrusted by employer	Project Company
Operation period	Water sources and outlets of each water supply facility	Water temperature, dissolved oxygen, pH, permanganate index, ammonia, total phosphorus, fluoride, volatile phenol, petroleum, fecal coliform	Once before operation	One day	Once per day		
	Water sources and outlets of ten selected water supply facility		Once per year	One day	Once per day		
	Water inlet and outlet of each sewage treatment facility	COD <sub>cr</sub> , BOD <sub>5</sub> , NH <sub>3</sub> -N, TP	Once per year	One day	Once per day		

**Table 4.3-2 Environment Monitoring Plan (Ambient Air)**

Stage	Monitoring place	Monitoring item	Monitoring frequency	Monitoring period	Sampling time	Implementing Institution	Responsible Institution
Construction period	Each district or county selects one village with more infrastructure quantities	TSP	During the construction , twice per year, which can appropriately be increased as required by the construction	Three days	Continuous TPS sampling for 12 hours	A qualified monitoring Institution entrusted by employer	Project Company

**Table 4.3-3 Environment Monitoring Plan (Environment Noises)**

Stage	Monitoring place	Monitoring item	Monitoring frequency	Monitoring period	Sampling time	Implementing Institution	Responsible Institution
Construction period	Each district or county selects one village with more infrastructure quantities	L <sub>Aeq</sub>	During the construction , 4 times per year, which can be increased as required by the construction	One day	Twice separately in one day and one night	A qualified monitoring Institution entrusted by the employer	Project Company

In addition to normal monitoring carried out by specialized persons from specialized monitoring institution in accordance with the relevant stipulation during construction period, the contractor and engineering supervising organization shall also perform daily environment monitoring, and the specific methods are as follows:

- a. Conduct noise monitoring around the construction machinery and the sensitive spots by portable noise meter;
- b. Check construction road, the storage yard of powder material, disturbed earth' surface and raise dust condition resulted from trucks which transporting materials by visual observation;
- c. Check the River water quality of the upstream and downstream in the construction site of bridges and small water conservancy facility and the water quality of Rivers, streams, lakes, irrigation canals, lakes and fish ponds, which accept the sewage from construction site and construction camp by observation.

The contractor and the project supervising organization shall submit the report on environmental protection to district or county project offices and city project office monthly. In addition, when an unexpected environmental pollution accident occurs, they are required to immediately report to the project offices so as to project offices

and the contractor can take appropriate pollution control measures, including professional monitoring Institution for monitoring, etc.

Monitoring personnel from contracting bid and engineering supervision organization must be trained before conducting environment monitoring work. All requirements about monitoring and reporting work shall be incorporated into the bidding document, and eventually be written into the contract.

#### **4.4 Monitoring costs**

According to estimation, total cost of environment monitoring in construction period is RMB 130000 per year, including the cost of sudden accident monitoring is RMB 10000 per year, so the environment monitoring cost budgeted in construction period is RMB 650000.

Environment monitoring cost during operation period is RMB 100000 per year.

#### **4.5 Environment monitoring report**

##### **4.5.1 Environment Monitoring report in construction period**

During construction period new countryside construction project office of Huangshan bank and all district or county project offices shall entrust a qualified environment and district or county project offices shall entrust a qualified environment monitoring station to monitor atmospheric, noise, and nearby surface water and shall submit a report to the local environmental protection department. This report contents shall includes works progress, main construction contents and methods, remarks of environmental impacts caused and implementation conditions of mitigation measures of environmental impact. Environment monitoring station entrusted shall prepares environment monitoring report during the project construction in every quarter and report to project offices, Huangshan Bureau of environmental protection and the relevant district or county environmental protection agencies.

##### **4.5.2 Environment monitoring report during operation period**

In operation period of the project, conduct environment monitoring for the project operation conditions in accordance with the requirements of environmental evaluation, and timely submit monitoring report to local environmental protection department.

The contents of the monitoring report mainly include:



- a. Monitoring time, frequency, spot, monitoring item and methods;
- b. Monitoring data and statistical analysis

## **5 Personnel Training**

### **5.1 Training added in construction period**

The successful implementation of the proposed project environmental management plan depends on environmental management and personnel's knowledge and experience. At the same time, science and technology are always developing and progressing, therefore, it is essential to train personnel and strengthen and improve organizations continuously. Personnel training can be performed at home and abroad. And those countries that have mature highway construction and operation management system shall be chosen as foreign training sites, and for domestic training, the experts from universities, environmental research institutions and professional consultancy agencies shall be invited to give lessons.

Engineering contractor and project supervision organizations must strengthen the self-checking about environmental protection, though such a self-checking is not ultimate purpose, but it can help to establish the consciousness of environmental protection; meanwhile, it can facilitate environmental management and supervision organizations to do better monitoring. In order to enable the contractor and the personnel from supervision organizations to do better a better self-checking, the contractor and the personnel from supervision units as well as their superiors must be trained.

The specific contents of the personnel training plan are shown in Table 5.1 1.

Teaching contents includes:

- (1) The State and Anhui province laws and regulations, the documents and the relevant requirements related to environmental protection and water and soil conservation, etc in the project construction and management;
- (2) Environmental protection measures proposed in this works design and environmental protection requirements in construction period;
- (3) Environmental protection guideline during construction period of this works.

### **5.2 Training added during operation period**

Full-time and part-time staff training added in construction period is organized and

implemented by development organization. The relevant environmental protection experts from universities, scientific research institutes and operations management units can be invited to lecture or short-term training class can be attended. Environmental protection personnel training plan is shown in Table 5.1-1.

**Table 5.1-1 List of Personnel Training Program**

Training form	Stage	Training contents	Personnel	Total	Period	Cost (RMB)
Foreign training	Construction period	Environmental management and the relevant policy	4 persons from WB Office	One month	2013~2014	24000
Domestic training	Construction period	1. The State and Anhui province environmental protection laws, regulations and policy; 2. Knowledge of environment protection and the protection of cultural relics related to the project; 3. Environmental management plan of this works in construction period; 4. Environmental protection measures proposed in the design 5. Daily Environment Monitoring method;	2 persons each from each contractor and each project supervising organization. About 200 persons.	Three days	After determining the contractors and before contracting	40, 000
		Contingency plans and measures for environmental management	2-3 persons each from each municipal project office and each districts or counties project offices. About 20 persons.	Three days	2013	40,000
	Operation period	Water plant and wastewater treatment facilities management, operators	About 50 persons	Three days	After completing construction and before works operation	100,000
Total			274 persons	930		780, 000

## **6 Others**

### **6.1 Information communication, summary and report**

#### **6.1.1 Information communication**

Environmental management requires that the necessary information communication shall be performed between different departments and different posts within the organization, meanwhile, the organization shall also announce the relevant information towards the outside (the relevant parties and societal public, etc).

Internal information communication can be performed in multiple manners such as meetings and internal bulletins, etc. But one official meeting must be conducted each month and all the communication information shall be recorded and filed.

External information communication shall be performed once per half-year or one year. The communication information with cooperating organizations shall be formed the minutes and shall be filed.

#### **6.1.2 Record**

For the sake of the effective operation of environmental management system, the organization must establish a perfect record system and keep several following records:

- a. The requirements of laws and regulations;
- b. Various approved documents;
- c. Environmental factors and the relevant environmental impacts;
- d. Training activity;
- e. Inspection and assessment work;
- f. Monitoring data;
- g. Environmental inconformity items and the execution condition of corrective and preventive measures;
- h. The information of the relevant parties;
- i. Audit and review record.

In addition, the necessary controls including record identity, collecting, cataloging, filing, saving, managing, maintaining, inquiring, storage life, disposing of the records and other steps shall be conducted to the above various records.

### **6.1.3 Report**

In the process of the project, contractors, engineering supervision organizations, Environment Monitoring organizations and the project offices shall record project progress, environmental management plan (EMP) implementation and environmental quality monitoring results, etc and report them timely to relevant departments. The content mainly includes three following parts:

- a. Engineering supervision organization and contractors shall make detailed records for EMP implementation and promptly report to the project office;
- b. Project progress reports (such as monthly, quarterly, annual report, etc.) prepared by project offices must include EMP progress contents, such as EMP implementation progress and execution effects, etc;
- c. Annual EMP execution report of the project must be finished before March 31 next year and submitted to WB.

EMP execution report may include the following main contents:

- a. The implementation condition of training program;
- b. Project progress status;
- c. If any complaints from the public, record the main contents of the complaint, solution and public satisfaction;
- d. EMP execution plan next year.

## **6.2 Persistent Public Participation Plan and Dispute Complaint Channel**

### **6.2.1 Persistent public participation plan**

During construction period and within 3 years after operation, every six months conduct a random return investigation to each environment-sensitive target, every year hold a public participation site survey meeting in more concentrated areas of environment-sensitive targets.

According to the site survey, evaluate public satisfaction, and analyze the relevant opinion and improve the environmental mitigation measures when necessary.

### **6.2.2 Dispute complaint channel**

#### (1) The establishment and composition of complaint organization

In order to better guarantee the affected people's legal rights, complaint mechanism will be established so as to provide a convenient, transparent, fair and effective complaint channel for affected people. Therefore, environmental impact complaint acceptance leading team is established, and the related personnel from Huangshan WB new countryside construction project office will be made as the team leader. Team members are from municipal project office, the relevant district or county environmental protection bureau and environment monitoring organization, etc. Below environmental impact complaint acceptance leading team, complaint acceptance office is established in Huangshan project office; and complaint acceptance suboffices of the relevant districts or counties are established, which located in the relevant district or county project offices. Daily complaints will be collected and sorted out by complaint acceptance suboffices and summarized by complaint acceptance offices. Complaint acceptance (suboffices) offices and the relevant responsible organizations after negotiation will put forward treatment suggestions.

#### (2) Complaint procedure

Within one week after works commencement, complaint acceptance leading team and the offices will start to accept the external complaints, meanwhile open up private complaint telephone and complaint mail box. The specific complaint procedure is as following:

When affected people deem his rights involving any aspects of environmental protection are violated, they can complaint to the complaint acceptance office in written or oral form. If the complaint is oral, the complaint acceptance office shall make detailed record and sort it out, and submit treatment suggestions within two weeks.

If the complainant is not satisfied with the suggestions of the complaint acceptance office, within one month after receiving treatment suggestion, he (she) can complaint directly to the Huangshan WB new countryside construction project office and the

relevant district or county environmental protection bureau in written form. Huangshan project office and the relevant district or county environmental protection bureau shall handle this problem within three weeks.

If the complainant is still not satisfied with the treatment of Huangshan project office and the relevant district or county environmental protection bureau, after receiving the treatment he (she) can complaint to Huangshan bureau of environmental protection or according to *Civil Procedure Law Of The People's Republic Of China*, directly to local people's court, and the court will hear and decide the dispute.

### **6.3 Liability of Default in Construction Period**

Construction contractor shall perform contract agreement and duly complete works construction on time in accordance with the quality. Caused by contractor's own reasons for construction quality non-compliance with the agreement, the employer reserves the right to request repair, reworking and reconstruction by the constructor within a reasonable time limit. The so-called “a reasonable time limit” means the time required by the constructor to completing repair, reworking and reconstruction for free according to the actual situation of the project quality non-compliance with the agreement, and according to the construction period determined by the relevant state provisions and the contents agreed in the relevant contract document. Both repair and reworking & rebuilding performed by the constructors are all free, and employer shall not be required to pay the price any longer.

If the contractor hands over working results exceeding the time limit agreed in the contract resulted from construction delay which caused by repair, rework and rebuilt to the project due to the contractor's responsibility, he (she) shall bear the liability of default of overdue delivery. If the contractor gives rise to environmental pollution event and environment damage event due to not in accordance with the requirements of environmental management plan execution, his liability shall be investigated in accordance with the law and the deposit paid according to the construction cost will be impounded as a punishment.

Supervisors shall perform the contract. During the construction period of main body of the works; the present time of the supervisors in the construction site must be more than 80% of the construction working day. If the supervisor is not in place as required, the deposit paid according to the supervision cost will be deducted as a punishment.

In the process of works construction, if the supervisor fails to fulfill his responsibility, which causes environmental pollution event and environmental damage event, his liability will shall be investigated in accordance with the law.

#### **6.4 Environmental Protection Investment**

On the whole, this works is an environmental improvement project, but in the process of the construction and operation, it has a certain influence on the environment. To eliminate or reduce the environmental impact, it is required to invest in environmental protection. According to the environmental protection countermeasures proposed in this report, direct environmental protection infrastructure investment of this works estimated is RMB 19.9966 million (including soil and water conservation investment of RMB 10.7066 million), and the detail are shown in Table 6.4-1.



**Table 6.4 -1 Environmental Protection Engineering Investment Estimation Table**

Serial No.	Name of project cost	Total	Remarks
1	<b>Part I: project cost</b>		
1-1	Raise dust control during construction	68	Estimated on the basis of RMB 10,000 per village
1-2	Control for noise pollution during construction, mainly temporary sound insulation measures etc.	68	Estimated on the basis of RMB 10,000 per village
1-3	Control for water pollution during construction, including grit chamber and temporary septic tank etc.	136	Estimated on the basis of RMB 20,000 per village
1-4	Control for solid waste pollution during construction, including temporary stock dump of construction waste and dustbin etc.	102	Estimated on the basis of RMB 15,000 per village
1-5	Reservation of wildlife conservation	30	
2	<b>Part II: preliminary work and environmental management cost</b>		
2-1	Preparation of EIA report	74	
2-2	Preparation of water and soil conservation report	40	
2-3	Environmental monitoring during construction	65	Refer to Table 4.3-1, Table 4.3-2 and Table 4.3-3
2-4	Personnel training cost	78	Refer to Table 5.1-1
2-5	Implementation management of environmental management plan during construction	50	Estimated on the basis of RMB 100,000 per year
2-6	Environmental supervision cost	100	Estimated on the basis of RMB 200,000 per year
2-7	Physical cultural resources management during construction phase	68	Estimated on the basis of RMB 10,000 per village
2-8	Preparation cost of environmental protection acceptance report for project closeout	50	
3	<b>Part III: water and soil conservation cost</b>		
3-1	Newly increased cost of water and soil conservation measures	861.8	Quoted from the report of Water and Soil Conservation Plan
3-2	Water and soil conservation supervision cost	24	
3-3	Water and soil conservation monitoring cost	30	
3-4	Compensation fee of facility for water and soil conservation	154.86	
	<b>Total</b>	1999.66	