Environmental Monitoring Report

Project Number: 38660
January-June 2014

People’s Republic of China: Ningxia Integrated Ecosystem and Agricultural Development Project


This report has been submitted to ADB by the Ningxia Hui Autonomous Region Government and is made publicly available in accordance with ADB’s public communications policy (2011). It does not necessarily reflect the views of ADB.
Loan No.: 2436-PRC

Project Name: ADB Loan Ningxia Integrated Ecosystem and Agriculture Development Project

Environmental Monitoring Report
(First Half of Year 2014)

July 2014
Abstract

This report is the sixth one of a series of annual environmental monitoring reports submitting to the ADB for the Ningxia Integrated Ecosystem and Agricultural Development Project (No. 38660). The report aims at reflecting the monitored present environmental situation of the project implementation region after project implementation over five years.

This report contains the monitored information of filled-in monitoring table sheets from twelve project implementing agencies that were submitted to the PPMO. Those monitoring table sheets are categorized into 4 types (15 items), representing either from a subcomponent implementation agency or unit, or from its implementation stage: WLFP: wetlands, landscape lakes and fishing ponds; FWGO: farmlands, woodlands, grasslands & orchards; CC: subcomponent implementation relating to construction activity and; CO: subcomponent implementation at test running stage or under full operation.

The project has been implemented quite well in general, from the viewpoints of environmental protection and ecological conservation. The environmental situation is fairly good in the whole project implementation region. This is reflected by: no serious environmental pollution event occurred in the whole project implementation region, no large amount of gaseous or liquid pollutants emitted to the surrounding areas, no large amount of solid wastes generated from the construction sites or due to operation activities improperly disposed, no apparent environmental deterioration detected in visage, and no environmental complaint made by general public of project implementation region.

Certain environmental benefits generated gradually since project implementation over five years, mainly displayed in: the rehabilitation and conservation of lake wetland ecosystem improved the wetland eco-environment and maintained wetland biodiversity; although wetland tourists increasing produced pressure on wetland ecosystem, due to adopted integrated control measures of lake water quality pollution, water quality continued in the National Surface Water IV Standard; expanded Helan mountain nature reserve area and increased Helan Mountain forest coverage rate and vegetation coverage further improved the regional environmental quality; the implementation of conservation agriculture effectively prevented water loss and soil erosion; Xixia King Winery has established wastewater treatment plant and started to run at the end of 2012, beef farm has established a biogas digester to handle animal waste from joint breeding units and fattening lot, reduced the pollutant emissions and protected the environment.

Suggested environmental monitoring activities and further mitigation measures for reducing environmental impacts include:

Urge those subcomponent implementation units that have submitted incomplete monitoring table sheets to check and refill in the blank cells and/or incorrect cells in the monitoring table sheets, also urge subcomponent implementation units have specially-assigned person responsible for this task.

Invite professional environmental experts and technicians from the corresponding EPA or research institutions to supervise the monitoring activities of the project. Conduct technical training programs to raise the monitoring capability of the monitoring team of the whole project. Entrust local environmental monitoring department to monitor water quality.

It is needed to purchase (or rent) some necessary equipments and instruments for field
monitoring and/or laboratory analysis and given full play.

Build up wastewater treatment facilities in some subcomponent implementation units according to the original environmental monitoring plan suggested. Some dairy farms did not dispose waste water from breeding lot and milking parlor properly, urge an integrated dairy farm environmental management proposal jointly prepared by consultants and dairy farms.

Establish a proper irrigation system and implement the irrigation management regulations to reduce the soil salinization risks at some subcomponent implementation areas.

Increase integrated environmental management measures of NARB vineyards and dairy farms, including works and equipments.

**Introduction**

This report is the sixth one of a series of annual environmental monitoring reports submitting to the ADB for the Ningxia Integrated Ecosystem and Agricultural Development Project (No. 38660), which has launched since 2010 and will last to 2014.

The project has four components:

(i) IEM capacity and project management,
(ii) Land and water resource management,
(iii) Rural livelihoods improvement, and
(iv) Conservation and tourism.

The outcome of the project is to introduce an integrated ecosystem management (IEM) approach that provides sustainable livelihoods for the population of the project area.

The Project Implementation Agencies (PIAs) include Ningxia Finance Department (NFD) under Ningxia Hui Autonomous Region Government, Ningxia Agriculture Reclamation Bureau (NARB), and Yinchuan Municipality Government (YMG). The PPMO (Project Management Office) attached to the NFD is the executing agency and responsible for environment management during the implementation.

According to the Environmental Monitoring Plan, the project should perform periodical monitoring activities and submit the monitoring report based on the routine monitoring data to ADB regularly. The Report presented here is updated monitoring data based on report prepared by Dr. Muyi Kang, an environment expert performed as technical assistant (TA) from ADB’s assignment¹; the monitoring data within this report, however, are provided by the PMO through a set of investigation table sheets with categorized monitoring indices. The index contents within the table sheets for environmental monitoring were designed by the TA, through several times consultations with a few relevant experts and representatives of implementation agencies from all over the different implementation activities at different implementation locations. Thus, this report supposed to be able to reflect the present environment situation as a whole at project implementation area following five years of project implementation.

The monitoring aspects include air emission, wastewater and solid waste discharge, as well as other physical or chemical pollutants such as noise, odor, dust, etc., relating to project’s

¹ The annual environmental monitoring reports in next few years will be prepared by the PMO itself.
construction and operation activities to surrounding atmosphere, water-body (river channels and wetlands), land surface, and sensitive areas such as residential area, nature reserve or biodiversity and water resources conservation sites.

**Monitoring contents**
The monitoring contents are categorized in 4 situations:

I Monitoring index system for wetlands, including landscape lakes and fishing ponds,

II Monitoring index system for farmlands, woodlands, grasslands & orchards,

III Monitoring index system for construction sites; and

IV Monitoring index system for aquatic, breeding farms or feedlots, dairy, winery, food processing mills in test run or full operation period.

Each of the above 4 situations has, more or less, some different monitoring items designed for that particular situation, which are assembled within 4 different monitoring investigation table sheets, respectively (See appendixes in detail).

**Analysis and illustrations**
The subcomponent implementation agencies have done certain work in implementing the environmental monitoring plan. The filled-in monitoring sheets submitted to the PMO basically are technically workable and fairly complete; showing the environmental situation in the project implementation region is generally good.

1 **On wetland, landscape lake and fishing pond type**
There are in total 4 wetland parks under monitoring (See Appendixes in detail): Shahu Wetland Park, attached to NARB; Mingcui Lake Wetland Park, Baohu Lake Urban Wetland Park and Haibao Lake Park under the supervision of YMG. Those 4 wetlands parks play an important role in biodiversity conservation (through as a transitory habitat for migratory birds), recreational resort for local residents and tourists from faraway, and a production base of aquaculture and agriculture.

Among the 4 wetland parks, Haibao Lake is enlarged, water area that deeper than 50 cm increased due to the increase of Ayre River level, in 2014 planted terrestrial flowers on some bare land, therefore increased the terrestrial plant area; in 2013 implemented lakeside zone vegetation restoration in south lake, increase the terrestrial plant area of Mingcui Lake; Shahu Wetland Park is much larger, even having a nature reserve within. While the area of Mingcui Lake Wetland Park is much smaller, its vegetation is much denser with a coverage reaching to 80%.

EPB of Shizuishan Municipal periodically monitors water quality of Shahu wetland whilst EPB environmental monitoring station of Yinchuan Municipal monitors water quality of Mingcui Lake.

Generally speaking, it can be concluded from the monitoring data, that those wetland parks have operated normally and there are no serious pollutant emissions or apparent pollution events occurred.

Monitoring of water quality shows that, the total N and total P of Shahu wetland is 1.20mg/L and 0.09mg/L respectively, lower total P content compared with the previous period, hinting eutrophication is mitigating; the total N of Mingcui Lake and Haibao Lake is 1.68mg/L and 1.502mg/L respectively and total P is 0.058mg/L and 0.091mg/L respectively, higher lake water
quality compared with the previous period, hinting eutrophication is deteriorating. Haibao Lake is a branching of Ayre River water, no water circulation on the whole, after enhancement and releasing of Haibao Lake in 2013, effectively controlled aquatic plant in the lake, small increment of lake aquatic plant in the first half year of 2014, less plant absorption of N, causing N element higher than the second half of 2013 after water quality monitoring.

The conservation and management of Shahu natural reserve have gained further improvement and won one of “China Top Ten Charming Wetland” in national rating activity.

2 On farmland, woodland, grassland and orchard type
Several implementing units fall into this category, named Maosheng Forage Base, Yuquanying Grape Base, Lianhu Part-fatm, Huangyangtan Farm and Nuanquan Farm attached to NARB, have submitted their monitoring data in table sheet forms. NARB is developing its production scale, especially in expanding the grape plantation area and livestock breeding scale, through the project’s loan funds.

Generally speaking, the vegetation on the subcomponent implementation area grows well and its coverage reaches 48%-62%; the air quality is good; there is no apparent soil erosion; and the groundwater quality is up to the standard. Project area of Yinxi has slight soil salinization.

The PPMO urged project implementing units to contact related EPB or research institution to invite professional environmental experts and technical personnel to supervise project monitoring activities.

3 On construction sites
All the construction activities involved in this project are temporal, normally activating at working season –from late spring through summer to early autumn in a year– and lasting no more than 18 months within 2-3 years. Thus the construction sites are the areas only transitorily existing in the project implementation region.

There are 5 implementation agencies that have submitted their construction site monitoring data: Xixia King Winery of NARB, Shahu Wetland, Helan Mountain Dairy Company, Nuanquan Farm and Mingcui Lake of Yinchuan Municipal. They are in fact the FWGO and WLF type but involve in more or less construction activities in the subcomponent implementation process.

Judging from the monitoring data, in general, there is no serious environmental impact on the surrounding areas or around by the 5 construction sites. No large amount of water pollution and sewage discharged, dairy farming has slight atmospheric pollutants emitted. Yet the construction units where these happened have applied a few mitigation measures, such as transporting the construction solid wastes (rubbish and sludge, etc.) to a designated area spraying water on the pile-ups timely to reduce the dusts, transporting the removed construction solid wastes to a designated area to bury, and smashing pruned plant branches and trunk to spread in the greenbelt, etc.

4 On operation period or test running time at subcomponent implementation units
Totally 4 subcomponent implementation units in this category have submitted their monitoring data: Xixia King Winery, Shahu Lake, Helan Mountain Dairy Company and Helan Mountain Muslim Meat Processing Mill. This means that besides implementation activities mentioned above, these 4 units also involve in some operation or test run activities in the subcomponent implementation process.
Based on the monitoring data, these units operate quite normal and there is no apparent pollution event happened, nor heavy pollutants emitted to surrounding areas. For example, all the 4 units haven’t detected serious odor pollution; and 3 units equipped with wastewater & sewage disposal facilities, the treatment installations have in operation and functionally run well. The water quality from their wastewater outlet ranked at Grade III, showing a fairly good condition. The treatment of processing waste (cortex, paring, stones, branches, rubbish and other wastes) from 3 units is all up to 100%.

Animal waste from Maosheng Forage & Dairy Farm and Helanshan Muslim Meat Processing Mill are disposed as fermented manure to sell. Xixia King Wine Group constructed sewage treatment station and in test run at the moment. Maosheng Forage & Dairy Farm planned to build sewage treatment facilities to conduct treated water recycling and in test run in 2013.

Conclusion

1 The project has been implemented quite well in general, from the viewpoints of environmental protection and ecological conservation. The environmental situation is fairly good in the whole project implementation region, especially good environmental air quality, stable and improved water environmental quality. No serious environmental pollution event occurred in the whole project implementation region, no large amount of gaseous or liquid pollutants emitted to the surrounding areas, no large amount of solid wastes generated from the construction sites or due to operation activities improperly disposed, and no apparent environmental deterioration detected in visage.

2 The environmental benefits generated by the project’s implementation have apparently emerged. In the following years the environmental benefits by the project’s implementation will emerge little by little and be fully visible, since this project itself is a good IEM (integrated ecosystem management approach) practice.

3 A few monitoring table sheets submitted to the PMO by subcomponent implementation units are not fully complete, especially in filling in some of the blanks with monitoring data that are not easily measurable and monitoring whilst some same data due to no big change with the second half of 2013. However, it does not seriously distort and/or affect the whole monitoring results.

Suggestions of adjustment and mitigation measures

Problems

1 A few indices have not been monitored, or more precisely, the indices in monitoring record table sheets have not completely filled in with monitoring data by some of the project implementation agencies. In wetland type, for example, the cells for flora data in the monitoring table sheets from some of the subcomponent implementation units left blanked, whereas the cells for water quality monitoring data from some other units missed, etc. The other implementation types also have one or another or more blank cells left in the monitoring table sheets.

In general, missing data due to blank cells left in monitoring table sheets are common. The possible reasons for causing these include, no enough monitoring experts and/or professional technicians involved in, no special instruments and/or necessary equipments purchased, no regular monitoring on duty, or simply no especially reserved funds for monitoring activities.

2 Some of the figures or data in a few monitoring table sheets are apparently abnormal, which
might be caused by either negligent monitors or amateurish persons who can not undertake the responsibility of monitoring tasks.

**Suggestions**

1. Re-checking all the monitoring table sheets by the PPMO; and urging those subcomponent implementation units that have submitted incomplete monitoring table sheets and those monitors who haven’t completely or responsibly finished their monitoring tasks to refill in the blank cells and/or incorrect cells in the monitoring table sheets.

   If the monitors in implementation units are not competent for taking up the monitoring responsibility or irresponsible when they are on duty, replace them with the competent and responsible ones; and conduct some technical training programs for capacity building to raise the monitoring capabilities and standards of the whole monitoring team of the project.

2. The necessary equipments and instruments for field monitoring and/or laboratory analysis should be provided, either by purchasing or by renting.

3. Setting aside enough funds for environmental monitoring; delivering the monitoring tasks with instrument of awards and punishments that are directly related to the quality of monitoring job done.

4. Enhance the environmental monitoring by increasing the frequency of submitting the monitoring table sheets, for instance, from once to twice a year.

5. Invite a few professional technicians and experts from the corresponding EPB or research institutions to supervise the monitoring activities of the project, and ask them to deliver certain occasional professional instructions or technical consultations to the monitoring team members. Some project monitoring entrust qualified professional monitoring unit to deliver, such as monitoring of water quality.

**Mitigation measures**

1. Build up the wastewater treatment facilities and make them in normal operation in some subcomponent implementation units according to the original environmental monitoring plan.

2. Establish the integrated environmental management measures at some large dairies and wineries, including engineering and equipments. The “dairy farm integrated environmental management experiment and demonstration project” conducted in 2014 shall make a contribution.

3. Establish a proper irrigation system and conduct rational water allocation programs in those areas with soil salinization threats and risks.

4. Deliver the “Shahu Lake water quality improvement experiment and demonstration project”, adopt specific measures to prevent and mitigate lake’s Eutrophication. The project is expected to be completed in 2014.

5. Gradually set up Ningxia Wetland Monitoring System, continue to deliver wetland monitoring training in Yinchuan wetland combined with project equipment procurement and in 2014, establish long-acting wetland ecological monitoring mechanism.
### Monitoring Indices for Wetlands, Including Landscape Lakes and Fishing Ponds

**Water Quality**

<table>
<thead>
<tr>
<th>Index</th>
<th>WLFP</th>
<th>Location</th>
<th>Type</th>
<th>Subcomponent</th>
<th>Environmental Impact</th>
<th>Hydric Substrate</th>
<th>Hydrophytes</th>
<th>Terrestrial Plants</th>
<th>Invasive Exotic Species</th>
<th>Plant Pest &amp; Disease</th>
<th>Water Avian Fauna</th>
<th>New Immigrated Water Bird</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations**

- **WLFP**: wetlands, landscape lakes and fishing ponds;
- **FWGO**: farmlands, woodlands, grasslands & orchards;
- **CC**: subcomponent in construction;
- **CO**: subcomponent in operation.

### Table

<table>
<thead>
<tr>
<th>Type of Impact</th>
<th>Name</th>
<th>Location</th>
<th>Area</th>
<th>Area of Water &amp; Wetland</th>
<th>Area of Water, Water Depth &gt; 50 cm</th>
<th>Area of Water, Water Depth ≤ 50 cm</th>
<th>Transparency</th>
<th>pH</th>
<th>Total Salts (mg/L)</th>
<th>Total Nitrogen (mg/L)</th>
<th>Total Phosphorus (mg/L)</th>
<th>Chemical Oxygen Demand (mg/L)</th>
<th>Chlorophyll A</th>
<th>Flora Coverage</th>
<th>Area of Hydrophytes</th>
<th>Annual Increment of Hydrophytes</th>
<th>Area of Terrestrial Plants</th>
<th>Annual Increment of Terrestrial Plants</th>
<th>No. of Invasive Exotic Species</th>
<th>Water Avian Fauna</th>
<th>New Immigrated Water Bird</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>2014/6/30 Shahu Wetland Park</td>
<td>WLFP</td>
<td>8010</td>
<td>4500 1098.3 2.2</td>
<td>9900 1140 100 2073 0.5 8.5</td>
<td>7.587 1.2</td>
<td>0.09</td>
<td>2.9 13.11</td>
<td>13 formations 162 species 20-40</td>
<td>880 0.967</td>
<td>702</td>
<td>1 &gt;133</td>
<td>4</td>
<td>20-240</td>
<td>8.63 0.224</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>2014/6/30 Mingcuihu Wetland Park</td>
<td>WLFP</td>
<td>667</td>
<td>408.9 1.9</td>
<td>473 80 0</td>
<td>258.1 0.6</td>
<td>8.31</td>
<td>7.6</td>
<td>1.68</td>
<td>0.058</td>
<td>23.3</td>
<td>7.685</td>
<td>183</td>
<td>89.5</td>
<td>359</td>
<td>0.5</td>
<td>316</td>
<td>1.9</td>
<td>0</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>Grade</td>
<td>2014/6/30 Baohu Lake Wetland</td>
<td>WLFP</td>
<td>92.6</td>
<td>36.8 2</td>
<td>60 55</td>
<td>0</td>
<td>90</td>
<td>50</td>
<td>4.8</td>
<td>59.4</td>
<td>4</td>
<td>12</td>
<td>0</td>
<td>90</td>
<td>Baohu Lake</td>
<td>92.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>2014/6/30 Haibao Lake Wetland</td>
<td>WLFP</td>
<td>230</td>
<td>210 2.5</td>
<td>570 52</td>
<td>0</td>
<td>20</td>
<td>0.81</td>
<td>8.77</td>
<td>1.502</td>
<td>0.091</td>
<td>127</td>
<td>89</td>
<td>4</td>
<td>171</td>
<td>2.3</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>90</td>
<td>8.09</td>
</tr>
</tbody>
</table>

**Type**

- Hydrology
- Water quality
- Vegetation
- Water Birds
- Soil (in Riparian Zone)

**Abbreviations**

- Grade
- Location
- Area
- Area of Water & Wetland
- Area of Water, Water Depth > 50 cm
- Area of Water, Water Depth ≤ 50 cm
- Transparency
- pH
- Total Salts (mg/L)
- Total Nitrogen (mg/L)
- Total Phosphorus (mg/L)
- Chemical Oxygen Demand (mg/L)
- Chlorophyll A
- Flora Coverage
- Area of Hydrophytes
- Annual Increment of Hydrophytes
- Area of Terrestrial Plants
- Annual Increment of Terrestrial Plants
- No. of Invasive Exotic Species
- Water Avian Fauna
- New Immigrated Water Bird

**Notes**

- Abbreviations
- Grade
- Location
- Area
- Area of Water & Wetland
- Area of Water, Water Depth > 50 cm
- Area of Water, Water Depth ≤ 50 cm
- Transparency
- pH
- Total Salts (mg/L)
- Total Nitrogen (mg/L)
- Total Phosphorus (mg/L)
- Chemical Oxygen Demand (mg/L)
- Chlorophyll A
- Flora Coverage
- Area of Hydrophytes
- Annual Increment of Hydrophytes
- Area of Terrestrial Plants
- Annual Increment of Terrestrial Plants
- No. of Invasive Exotic Species
- Water Avian Fauna
- New Immigrated Water Bird
### Monitoring Index System for Farmlands, Woodlands, Grasslands & Orchards

1. **Regional Coverage of Forest & Grassland**
   - **Area of Forest Land**
   - **Area of Shrubs & Grassland**
   - **Area of Abandoned Farmland**
   - **Area of Cultivated Land**

2. **No. of Invaded Exotic Species**

3. **Pumping Well Discharge**
   - **Nephelometric Turbidity Unit**
   - **Yinxi pH**
   - **Nitrate Concentration (NO\textsubscript{3}--N)**

4. **Integrated Water Quality Index**

5. **% hm\textsuperscript{2}**

6. **Degree t/(km\textsuperscript{2}a)**

7. **Days with Dusts or Blowing Sands, d/a**

8. **Days with Storms, d/a**

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Type</th>
<th>Soil Salinization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/6/30</td>
<td>Yuquanying</td>
<td>Grape Base FWGO</td>
<td>No</td>
</tr>
</tbody>
</table>

**Abbreviations**
- WLFP: wetlands, landscape lakes and fishing ponds
- FWGO: farmlands, woodlands, grasslands & orchards
- CC: subcomponent in construction
- CO: subcomponent in operation

The invasive species in FWGO, according to the monitoring explanation, is a traditional Chinese medicine herb cultivated.
## Monitoring index system for construction sites

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Type</th>
<th>Water pollution &amp; sewage</th>
<th>Atmospheric pollution</th>
<th>Noise pollution</th>
<th>Solid wastes (rubbish &amp; sludge)</th>
<th>Water pollution &amp; sewage</th>
<th>Atmospheric pollution</th>
<th>Noise pollution</th>
<th>Solid wastes (rubbish &amp; sludge)</th>
<th>14 Mitigation measures against potential environmental impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/6/30</td>
<td>Mingcui Lake</td>
<td>CC</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Still cleaned by dredge directly to sedimentation tank through pipeline, dredging in the second half of the year after the secondary precipitation.</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Xixia King Wine Co.</td>
<td>CC</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Locating in distance to residential area, slightly impact to local residents.</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Shahu Lake Wetland</td>
<td>CC</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Transporting to designated area and spraying water on timely to reduce dusts.</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Nuanquan</td>
<td>CO</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Transporting to designated area and spraying water on timely to reduce dusts.</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Helan Mountain Dairy Industry</td>
<td>CC</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Transporting to designated area and spraying water on timely to reduce dusts.</td>
</tr>
</tbody>
</table>

**Abbreviations**

- WLFP: wetlands, landscape lakes, and fishing ponds;
- FWGO: farmlands, woodlands, grasslands & orchards;
- CC: subcomponent in construction;
- CO: subcomponent in operation;
# Monitoring index system for aquatic, breeding farms or feedlots, winery, food processing mills in test run or full operation period

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Type</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Xixia King Wine Co.</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>Yes</td>
<td>In Operation, Normal</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Shahu Wetland Wetland Co.</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>No</td>
<td>IV</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Helan Mountain Dairy Industry</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>Yes</td>
<td>Normal</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Helanshan Muslim Meat Co.</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>Yes</td>
<td>Normal</td>
</tr>
</tbody>
</table>

**Abbreviations**

- WLF: wetlands, landscape lakes, and fishing ponds;
- FWGO: farmlands, woodlands, grasslands & orchards;
- CC: subcomponent in construction;
- CO: subcomponent in operation;

**Table:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Type</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Xixia King Wine Co.</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>Yes</td>
<td>In Operation, Normal</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Shahu Wetland Wetland Co.</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>No</td>
<td>IV</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Helan Mountain Dairy Industry</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>Yes</td>
<td>Normal</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>Helanshan Muslim Meat Co.</td>
<td>CO</td>
<td>No</td>
<td>Good</td>
<td>Yes</td>
<td>Normal</td>
</tr>
</tbody>
</table>

**Indices:**

- Air quality
- Water quality
- Solid waste emission and/or discharge, as well as its disposal treatment

**Disposal of processing residues (skins, peels, stones twigs, garbage and other wastes):**

- Disposal rate: 100%, 75%, 50%, 25%, <25%

**Operation, Normal / suspended**

- Normal
- Suspended

**Integrated Water Quality Index:**

- Waste water & sewage disposal facilities & installations
- Operation, Normal / suspended
- Animal excrement disposal as fermented manure
- Digester in operation
- Fermentation rate
- Disposal rate

**Odor pollution**

- Degree

**Digester in operation**

- Yes, Sale as fermented manure / No, Sale without fermentation

**Operation, Normal / suspended**

- Normal
- Suspended
贷款号：2436-PRC

项目名称：亚行贷款宁夏生态与农业综合开发项

环境监测报告
（2014年上半年）

2014年7月
摘要

本报告是向亚行提交的宁夏生态农业综合开发项目（No.38660）一系列年度环境监测报告的第六份报告。报告旨在反映项目实施地区在项目实施五年后的监测目前环境状况。

本报告包含十二个项目实施机构提交至综合项目办（PPMO）的填写监测表格的监测信息。这些监测表格分为4种类型（有15大项），代表了实施机构或其实施环境。它们是：WLF表：湿地、景观湖和鱼池；FWGO表：农田、林地、草场和果园；CC表：关于建设活动的子项目实施；以及CO表：在测试运行阶段或整体运行的子项目实施。

从环境保护和生态保护的角度来说，项目总体实施良好。在整个项目实施地区，环境状况相当不错，体现在：在整个项目实施地区没有严重的环境污染事件发生，没有大量的气态或液体污染物排放到周边地区，没有来自建设工地或由于运行活动处理不当产生大量的固体废弃物，没有在表发现明显的环境恶化，也没有出现项目实施区域群众对环境问题的投诉问题。

项目实施五年来，逐步显现了一些的环境效益，主要表现在：湖泊湿地生态系统的恢复与保护，改善了湿地生态系统，维护了湿地生物多样性；虽然湿地旅游人员增加对湿地生态系统带来压力，对环境有一定影响，但由于采取了湖泊湿地水质污染综合防治措施，水质继续保持在国家地表水Ⅳ类标准；贺兰山自然保护区面积得到扩大，贺兰山东麓森林覆盖率和植被覆盖率提高，进一步改善了区域环境质量；实施了生态保护农业有效防止了水土流失；西夏王酒厂已建立废水处理厂并于2012年年底开始运行，肉牛场已建立一个沼气处理池来处理联合牛群养殖单位和育肥饲养场的动物粪便，减少了污染物排放量，保护了环境。

为降低环境影响而建议的环境保护活动和采取的进一步减缓措施包括：

要求已经提交不完整监测表格的那些子项目实施单位检查并补充监测表格的空白单元格/或不正确单元格，同时要求子项目实施单位有专人负责此项工作。

从相应的环保局或研究机构邀请专业环境专家和技术人员监督项目的监测活动。进行技术培训项目以提升整个项目监测团队的监测能力。委托当地环境监测部门进行水质监测。

需要采购（或租赁）一些必要的野外监测和/或实验室分析的设备或仪器，并发挥设备作用。

根据原来的环境监测计划的建议，在一些子项目实施单位建立污水处理设施。奶牛场没有妥善处理饲养场和挤奶厅的废水，要求咨询专家与奶牛场共同准备一份奶牛场综合环境管理建议书。

在一些子项目实施地区，建立合理的灌溉系统并实施灌溉管理条例以降低土壤盐碱化风险。

增加宁夏农垦局葡萄园和奶牛场的综合环境管理措施，包括工程和设备。

简介

本报告是向亚行提交的宁夏生态与农业综合开发项目（No.38660）一系列年度环境监测报告的第六份报告，项目开始于2010年并在2014年结束。

项目有四个子项目：

（1）IEM能力建设和项目管理；
（2）土地和水资源管理；
（3）改善农村生计；
（4）保护和旅游。

项目的成果是引进综合生态系统管理（IEM）方法，为项目区人民提供可持续生计。

项目实施机构（PIAs）包括宁夏回族自治区政府下的宁夏财政厅（NFD）、宁夏农垦局（NARB）和银川市政府（YMG）。隶属于宁夏财政厅的PPMO（项目管理办公室）是执行机构，负责实施期间的环境管理。
根据环境监测计划，项目应该执行周期监测活动并定期向行政提交基于日常监测数据的监测报告。

本报告是根据康慕谊博士（亚行指派的技术援助环境专家）撰写的基础上更新检查数据；而本报告中的监测数据，由项目管理办公室通过一套分类监测指标的调查表格提供。环境监测表格中的索引目录是由技援通过与几位相关专家和来自不同实施地点不同实施活动的实施机构代表的几次磋商所设计。因此，本报告应该能够反映实施地区在项目实施五年的总体目前环境状况。

监测方面包括废气排放、废水和固体废弃物排放，以及其它物理或化学污染物，如噪声、气味、灰尘等，关于对周围大气、水体（河道和湿地）、陆地表面，和敏感地区（如住宅区、自然保护区或生物多样性和水资源保护地）影响的项目建设和运营活动。

监测内容

监测内容分为4种状况：

I 湿地的监测索引系统，包括景观湖和鱼池；
II 农田、林地、草场和果园的监测索引系统；
III 建设工地的监测索引系统；
IV 测试运行或整个运行期间的水产、养殖场或饲养场、奶牛场、葡萄酒厂和食品加工厂的监测索引系统。

以上4种情况的每一个，或多或少，有对特定情况而设计的一些不同监测项，分别编入4个不同监测调查表格（详见附件）。

分析和图表

子项目实施机构在实施环境监测计划中已经做了一定的工作。向项目办提交的填写的监测表格基本是技术可行和相对完整的，显示项目实施地区的环境情况总体良好。

1 湿地、景观湖和鱼池类

共计监测四处湿地（详见附件）：隶属于宁夏农垦局的沙湖湿地、银川市政府监督的鸣翠湖湿地公园、宝湖城市湿地公园和海宝湖公园。这四处湿地在生物多样性保护（通过为候鸟提供暂时栖息地）、当地居民和远地游客的休闲度假胜地以及水产养殖业和农业的生产基地中起重要作用。

这四处湿地中，海宝湖面积较前增大，由于艾依河水位提高，海宝湖水深达50cm的水面面积增大，2014年对一些裸露空地种植了陆生花卉，因此增加了陆生植物面积：2013年对南湖实施湖滨带植被恢复项目，鸣翠湖增加了陆生植物面积；沙湖湿地面积大，还包括有一个自然保护区。而鸣翠湖湿地公园相对面积较小，但其植被非常密集，覆盖率高达80%。

石嘴山市环保局对沙湖水质进行定期监测，银川市环保局环境监测站对鸣翠湖水质进行监测。

一般而言，可以从监测数据得出，这些湿地公园运营正常，没有严重的污染物排放，也没有明显的污染事件发生。

沙湖湖水质监测总N、总P分别为1.20mg/L和0.09mg/L，较前期总P含量降低，对照前期表明富营养化程度在减轻；鸣翠湖和海宝湖的湖泊水体水质监测总N和总P分别为1.68mg/L和1.502mg/L，湖水水质较前期监测指标偏高，同时与前期对照表明富营养化程度变差。海宝湖属艾依河水系分支，水体基本上不流通，2013年对海宝湖实施增殖放流后，湖中水草得到有效控制，2014年上半年湖中水草生长量很小，植物对N的吸收较少，造成水质监测后N元素值较2013年下半场偏高。

1 未来几年的年度环境监测报告将由项目办准备。
2 农田、林地、草场和果园类

几个实施单位均属于一个类别，包括宁夏农垦局的茂盛草业基地、硒泉葡萄基地、连湖农场、黄羊滩农场、暖泉农场，以表格形式提交了他们的监测数据。农垦局项目贷款资金发展其生产规模，特别是扩大葡萄种植面积、增加畜牧养殖规模。

一般而言，子项目实施区的植被生长状况良好，植被覆盖率达到48%——62%。空气质量良好；没有明显的土壤流失；地下水水质达到标准。银西项目区有轻度土壤盐渍化。

项目办督促项目实施单位联系相应的监测机构或研究机构邀请专业环境专家和技术人员监督项目的监测活动。

3 建设工地类

本项目中的所有建设活动都是暂时的，通常在作业季节进行——从一年的晚春过夏到初秋——持续时间在2-3年内不超过18个月。因此，建设工地在项目实施地区仅是短暂停留的区域。

八家实施机构已经提交了他们的建设工地监测数据，它们是农垦西夏王葡萄酒公司、沙湖湿地、贺兰山奶业公司、暖泉农场以及银川市鸣翠湖。实际上它们是农田、林地、草场、果园类及湖泊湿地，但是或多或少涉及子项目实施过程的建设活动。

由监测数据看出，大体上，对5个建设工地和周边地区没有产生严重的环境影响。表现在，没有大量的水污染和污水排放，奶牛养殖只有轻微的气态污染物排放。然而这些建设单位已经采取了一些缓解措施，比如运输建设固废（如垃圾和污泥等）到指定区域并及时喷洒水以减少粉尘，拆除的建筑垃圾运送到指定区域掩埋，修剪的植物枝干粉碎后撒进绿植中，等等。

4 子项目实施单位的运营期或测试运行阶段

本类别共有四家子类别实施单位提交了他们的监测数据：西夏王葡萄酒业公司、沙湖、贺兰山奶业公司、贺兰山清真牛羊肉加工厂。这意味这除了上述提到的实施活动，这四家单位还参与子类别实施过程的一些运营期或测试运行活动。

基于监测数据，这些单位操作正常，没有明显的污染事件发生，也没有重污染排放到周边地区。例如，四家单位都没有发现严重的气味污染；其中三家单位配备废水污水处理设施，处理装置运转并且功能运行良好。其废水排放的水质归类为等级Ⅲ，显示良好的状态。三家单位同时处理设备（外皮、削皮、石头树枝、垃圾和其它废弃物）的处理均达到100%。

茂盛草业及奶牛场、贺兰山清真牛羊肉集团的动物粪便经处理作为发酵堆肥出售。西夏王葡萄酒集团建设了污水处理站，目前正在试运行。茂盛草业及奶牛场计划建设污水处理设施，处理的污水循环使用，于2013年运行。

结论

1 从环境保护和生态保护的角度来说，项目总体实施良好。在项目实施地区，环境状况相当不错，尤其是环境空气良好，水环境质量稳定并有所改善。在整个项目实施地区没有严重的环境污染事件发生，没有大量的气态或液体污染物排放到周边地区，没有来自建设工地或由于处理不当的运行产生大量的固体废弃物，没有在外表发现明显的环境恶化。

2 已经明显出现由项目实施产生的环境效益。因为本项目自身是一个良好的IEM（综合生态系统管理制度）实践，未来由项目实施产生的环境效益将逐渐并充分显现。

3 由于子项目实施单位向项目实施的中的一系列监测表格仍然不完整，尤其是用监测数据填写一些空白单元格是不易测量和监测，还有一部分数据与2013年下半数据变化不大，因而使用了同样数据。然而，这并不严重歪曲和/或影响整个监测结果。
### 调整和减缓措施的建议

#### 问题
1. 一些指数没有被监测，或更准确地说，一些项目实施机构监测表格中的指数没有用监测数据完整填写。例如，在湿地类，一些子项目实施单位的监测表格中的植物数据的单元格是空白的，而其它一些单位的水质监测数据单元格未填，等等。其它实施类监测表格中也有一个或另一个或更多的空白单元格。

   总之，监测表格中由于空白单元格而丢失的数据是很常见的。造成这些的可能原因是，没有足够的监测专家和/或专业技术人员参与，没有采购专业的仪器和/或必要的设备，没有定期的监测值班，或干脆没有预留监测活动的专用资金。

2. 一些监测表格中的部分数字或数据明显异常，这可能是由监测者疏忽导致或不胜任执行监测任务责任的业余人员导致。

#### 建议
1. 由综合项目办重新检查所有监测表格：敦促已经提交不完整监测表格的那些子项目实施单位以及没有完全或负责任地完成他们监测任务的那些监测人员补充监测表格中的空白单元格和/或不正确单元格。

   如果实施单位的监测者不能胜任从事监测职责或当值时不负责任，替换有能力并负责任的监测者；进行一些能力建设的技术培训项目以提升整个项目监测团队的监测能力和标准。

2. 通过采购或租赁，应提供必要的田间监测和/或实验室分析的设备和仪器。

3. 留出足够的资金用于环境监测：履行监测任务，有直接关系到完成监测工作质量的奖惩措施。

4. 通过增加提交监测表格频率来加强环境监测，例如，一年提交一次改为两次。

5. 从相应的环保局或研究机构邀请一些专业技术人员和专家监督项目的监测活动，并要求他们向监测团队成员给予特定临时的专业指导或技术咨询。部分项目的监测委托有资质专业监测单位进行，如水质监测。

#### 减缓措施
1. 根据原来的环境监测计划的建议，在一些子项目实施单位建立污水处理设施并使其正常运行。

2. 在一些大型乳制品及葡萄酒厂建设综合环境管理体系，包括工程和设备。2014年开展的“奶牛场综合环境管理试验示范项目”将对此作出贡献。

3. 建立适当灌溉系统并在那些地区对土壤盐碱化威胁和风险进行合理水量分配方案。

4. 开展“沙湖水质改善试验示范”项目，采取针对性措施，防止和减缓湖泊水体富营养化。这个项目将在2014年完成。

5. 逐步建立宁夏湿地监测体系，2014年继续在银川湿地结合项目设备采购，开展湿地监测培训，建立长效的湿地生态监测机制。
湿地监测指标，包括景观湖和钓鱼塘

<table>
<thead>
<tr>
<th>时间</th>
<th>地点</th>
<th>类型</th>
<th>1 水文</th>
<th>2 水质</th>
<th>3 植被</th>
<th>4 水鸟</th>
<th>5 土壤（泥/水）</th>
<th>6 自然保护区</th>
<th>7 水质</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/6/30</td>
<td>沙湖湿地</td>
<td>WLFP</td>
<td>8010</td>
<td>4500</td>
<td>1096</td>
<td>2.2</td>
<td>9900</td>
<td>1140</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>2073</td>
<td>0.5</td>
<td>8.5</td>
<td>7.587</td>
<td>1.2</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9100</td>
<td>10000</td>
<td>13.11</td>
<td>0</td>
<td>20-40</td>
<td>880</td>
<td>0.967</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m</td>
<td>m</td>
<td>hm²</td>
<td>hm²</td>
<td>t/(hm².a)</td>
<td>hm²</td>
<td>t/(hm².a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>鸣翠湖湿地</td>
<td>WLFP</td>
<td>667</td>
<td>408.9</td>
<td>1.9</td>
<td>487</td>
<td>80</td>
<td>0</td>
<td>258</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.9</td>
<td>2</td>
<td>0.6</td>
<td>8.31</td>
<td>7.68</td>
<td>1.68</td>
<td>0.058</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23.3</td>
<td>7.69</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>359</td>
<td>0.5</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.9</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>84</td>
<td>0</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.8</td>
<td>0.2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>667</td>
<td>IV</td>
<td></td>
</tr>
<tr>
<td>2014/6/30</td>
<td>宝湖湿地</td>
<td>WLFP</td>
<td>92.6</td>
<td>36.8</td>
<td>2</td>
<td>60</td>
<td>55</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>60</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.8</td>
<td>59.4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90</td>
<td>8.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20-240</td>
<td>8.63</td>
<td>0.22</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>海宝湖湿地</td>
<td>WLFP</td>
<td>230</td>
<td>210</td>
<td>2.5</td>
<td>570</td>
<td>52</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.5</td>
<td>570</td>
<td>52</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.77</td>
<td>1.502</td>
<td>0.091</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>171</td>
<td>2.3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.1</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>230</td>
<td>IV</td>
<td></td>
</tr>
</tbody>
</table>

缩略词
- WLFP：湿地、景观湖和钓鱼塘
- FWGO：农田、林地、草场
- CC：建设运行的子项
- CO2：碳排放的子项

2014/6/30：数据收集日期

<table>
<thead>
<tr>
<th>地点</th>
<th>类型</th>
<th>1 水文</th>
<th>2 水质</th>
<th>3 植被</th>
<th>4 水鸟</th>
<th>5 土壤（泥/水）</th>
<th>6 自然保护区</th>
<th>7 水质</th>
</tr>
</thead>
<tbody>
<tr>
<td>沙湖湿地</td>
<td>WLFP</td>
<td>8010</td>
<td>4500</td>
<td>1096</td>
<td>2.2</td>
<td>9900</td>
<td>1140</td>
<td>100</td>
</tr>
<tr>
<td>鸣翠湖湿地</td>
<td>WLFP</td>
<td>667</td>
<td>408.9</td>
<td>1.9</td>
<td>487</td>
<td>80</td>
<td>0</td>
<td>258</td>
</tr>
<tr>
<td>宝湖湿地</td>
<td>WLFP</td>
<td>92.6</td>
<td>36.8</td>
<td>2</td>
<td>60</td>
<td>55</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>海宝湖湿地</td>
<td>WLFP</td>
<td>230</td>
<td>210</td>
<td>2.5</td>
<td>570</td>
<td>52</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

综合水质指数：
- 表层土中总离子含量
- 名称：pH、透明度
- 含量：C、N、P、DO、COD、叶绿素A
- 植物群覆盖范围
- 水生植物的增加
- 陆生植物的增加
- 外来入侵物种数量
- 植物病虫害
- 水禽类动物
- 新建或移动的鸟类
- 迁徙鸟类的平均停留时间
- pH
- 综合水质指数

IV：良好

<table>
<thead>
<tr>
<th>地点</th>
<th>类型</th>
<th>1 水文</th>
<th>2 水质</th>
<th>3 植被</th>
<th>4 水鸟</th>
<th>5 土壤（泥/水）</th>
<th>6 自然保护区</th>
<th>7 水质</th>
</tr>
</thead>
<tbody>
<tr>
<td>沙湖湿地</td>
<td>WLFP</td>
<td>8010</td>
<td>4500</td>
<td>1096</td>
<td>2.2</td>
<td>9900</td>
<td>1140</td>
<td>100</td>
</tr>
<tr>
<td>鸣翠湖湿地</td>
<td>WLFP</td>
<td>667</td>
<td>408.9</td>
<td>1.9</td>
<td>487</td>
<td>80</td>
<td>0</td>
<td>258</td>
</tr>
<tr>
<td>宝湖湿地</td>
<td>WLFP</td>
<td>92.6</td>
<td>36.8</td>
<td>2</td>
<td>60</td>
<td>55</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>海宝湖湿地</td>
<td>WLFP</td>
<td>230</td>
<td>210</td>
<td>2.5</td>
<td>570</td>
<td>52</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>
农田、林地、草场&果园的监测指标系统

<table>
<thead>
<tr>
<th>时间</th>
<th>地点</th>
<th>类型</th>
<th>森林&amp;草场</th>
<th>林地面积</th>
<th>灌木&amp;草场面积</th>
<th>草地面积</th>
<th>外来入侵物种数量</th>
<th>土壤盐渍化</th>
<th>土壤侵蚀</th>
<th>气味污染</th>
<th>震动井中的地下水埋藏深度</th>
<th>抽水井排水</th>
<th>按污染指数</th>
<th>硝酸盐浓度</th>
<th>总溶解性固体</th>
<th>pH</th>
<th>硝酸盐浓度</th>
<th>综合水质指数</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/6/30</td>
<td>玉泉营葡萄基地</td>
<td>FWGO</td>
<td>50</td>
<td>1600</td>
<td>200</td>
<td>No</td>
<td>3600</td>
<td>无</td>
<td>无</td>
<td>26</td>
<td>13</td>
<td>5</td>
<td>无</td>
<td>4.8</td>
<td>10.8</td>
<td>80</td>
<td>No</td>
<td>863</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>贺兰山茂盛</td>
<td>FWGO</td>
<td>48</td>
<td>180</td>
<td>933</td>
<td>No</td>
<td>1600</td>
<td>无</td>
<td>无</td>
<td>26</td>
<td>13</td>
<td>5</td>
<td>无</td>
<td>4.8</td>
<td>10.8</td>
<td>80</td>
<td>No</td>
<td>863</td>
</tr>
<tr>
<td>2014/6/29</td>
<td>连湖分场</td>
<td>FWGO</td>
<td>9</td>
<td>230</td>
<td>86</td>
<td>No</td>
<td>1233</td>
<td>无</td>
<td>无</td>
<td>26</td>
<td>13</td>
<td>5</td>
<td>无</td>
<td>6.3</td>
<td>12.4</td>
<td>80</td>
<td>No</td>
<td>863</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>喜羊滩</td>
<td>FWGO</td>
<td>9.3</td>
<td>386</td>
<td>289</td>
<td>No</td>
<td>3560</td>
<td>无</td>
<td>无</td>
<td>26</td>
<td>13</td>
<td>5</td>
<td>无</td>
<td>6.3</td>
<td>12.4</td>
<td>80</td>
<td>No</td>
<td>863</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>暖泉农场</td>
<td>FWGO</td>
<td>9.6</td>
<td>450</td>
<td>860</td>
<td>No</td>
<td>3640</td>
<td>无</td>
<td>无</td>
<td>26</td>
<td>13</td>
<td>5</td>
<td>无</td>
<td>6.3</td>
<td>12.4</td>
<td>80</td>
<td>No</td>
<td>863</td>
</tr>
</tbody>
</table>

缩略词：WLFP：湿地、景观湖和钓鱼塘
FWGO：农田、林地、草场&果园
CC：建设中的子项目
CO：运行中的子项目
I7中的入侵物种，根据检测解释，是一种耕作的传统中草药。
<table>
<thead>
<tr>
<th>时间</th>
<th>地点</th>
<th>类型</th>
<th>13 污染指数</th>
<th>14 潜在环境影响的缓解措施</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>水污染&amp;污水</td>
<td>大气污染</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>鸣翠湖</td>
<td>CC</td>
<td>无</td>
<td>无</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>挖泥船通过管道清理的泥泥直接到沉淀池，二次沉淀后下半年再清淤</td>
<td></td>
</tr>
<tr>
<td>2014/6/30</td>
<td>西夏王葡萄酒业公司</td>
<td>CC</td>
<td>无</td>
<td>无</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>选位远离居民区，只轻微影响当地居民。运送到指定区域并及时喷洒水减少粉尘</td>
<td></td>
</tr>
<tr>
<td>2014/6/30</td>
<td>沙湖湿地</td>
<td>CC</td>
<td>无</td>
<td>无</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>选位远离居民区，不影响当地居民，运送到指定区域并及时喷洒水减少粉尘</td>
<td></td>
</tr>
<tr>
<td>2014/6/30</td>
<td>暖泉农场</td>
<td>CC</td>
<td>无</td>
<td>无</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>选位远离居民区，不影响当地居民，运送到指定区域并及时喷洒水减少粉尘</td>
<td></td>
</tr>
<tr>
<td>2014/6/20</td>
<td>贺兰山奶业公司</td>
<td>CC</td>
<td>无</td>
<td>无</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>选位远离居民区，不影响当地居民，运送到指定区域并及及时喷洒水减少粉尘</td>
<td></td>
</tr>
</tbody>
</table>

缩略词
WLFP：湿地、景观湖和钓鱼塘
FWGO：农田、林地、草地和果园
CC：建设中的子项目
CO：运行中的子项目
### 监测指标

<table>
<thead>
<tr>
<th>时间</th>
<th>地点</th>
<th>类型</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/6/30</td>
<td>西夏王葡萄酒业公司</td>
<td>CO</td>
<td>无</td>
<td>良</td>
<td>有</td>
<td>运行，正常</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>沙湖湿地</td>
<td>CO</td>
<td>无</td>
<td>良</td>
<td>无</td>
<td>无</td>
</tr>
<tr>
<td>2014/6/20</td>
<td>贺兰山奶业公司</td>
<td>CO</td>
<td>无</td>
<td>良</td>
<td>有</td>
<td>运行，正常</td>
</tr>
<tr>
<td>2014/6/30</td>
<td>贺兰山清真牛羊肉集团</td>
<td>CO</td>
<td>无</td>
<td>良</td>
<td>有</td>
<td>运行，正常</td>
</tr>
</tbody>
</table>

### 监测指数

- **空气质量**
- **水质**
- 固体废物排放，及其处理方法
- 加工废料的处理（外皮、削皮、石头、垃圾和其它废弃物）

<table>
<thead>
<tr>
<th>指数</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

### 缩略词

- WLFP：湿地、景观湖和钓鱼塘
- FWGO：农田、林地、草场&果子项目
- CC：建设中的子项目
- CO：运行中的子项目