IVANHOE MINES MONGOLIA INC LLC

OYU TOLGOI PROJECT

REPORT FOR THE IMPLEMENTATION OF ENVIRONMENTAL PROTECTION PLAN-2004

December 2005

Version	Managed by	Written by	Date	Description
1		J.Oyusuvd	2004.12.25	Report

STATEMENT ON RECEIVING REHABILITATION WORK ON OT SITE AREA OF IMMI

Oyu Tolgoi December 29th, 2004

Ya. Sanjmyatav, Environmental State Inspector in Khanbogd soum, in the presence of B.Altantsetseg, Environmental officer of IMMI, Mick Waller, earthmoving and maintenance manager of IMMI, Amar, geotechnical worker of IMMI, and Baterdene, safety officer of IMMI, carried out an audit of rehabilitated drilling sites, trenches, the box cut, the shaft sinking area, the surface around the shaft, mud, rock piles, magazine protections, solid and liquid waste points, exploration camp areas, sewage farms of the camps, living and industrial water supply wells, and dust control works. The following conclusions have been made after the inspection:

1. According to the Environment Protection Plan for 2004, this year 8 810 800 tugrugs in total has been paid to the Khanbogd soum as a local tax payment:
   - 6 810 800 tugrugs was paid for water usage, transport, and local road usage
   - 800 000 tugrugs was paid for gravel use
   - 1 200 000 tugrugs was paid for the land used for the mining camp
2. On the 23rd of August, 2004, an audit was carried out at the water exploration drilling areas in Khanbogd soum. The local authority has reviewed the rehabilitation work and accepted area back according to an audit wording on rehabilitation work of the water exploration bore holes sumps.
3. Environmental officers of IMMI regularly cooperate with administration and state environmental inspectors of the soums to comply with the related clauses of Mongolian mineral laws as their duty.
4. During 2004, when extra exploration works were done, the company had submitted environmental supplementary plans each time in accordance with the company's environmental protection plan.
5. The company has submitted the Annual Environmental Report for 2004 on time and it was handed to the local administration.

6. At the OT exploration project, of 665 drilled boreholes, more than 370 sumps and 26 trenches have been backfilled and rehabilitated. Some sumps and boreholes have not been backfilled yet for the purpose of the exploration operation. All backfilling work for the sumps, boreholes and trenches has been done correctly.
7. The working group inspected the shaft sinking operation and checked muck piles, and the sump used for shaft water. Generally, they are working according to the environmental protection supplementary plan.
8. Solid and liquid waste disposal and soil contamination around the OT area has been checked.
   - Solid and liquid waste is sent to the designated points regularly.
   - Waste oil is stored in the tanks, located next to the new fuel farm.
   - Although there is not much waste and soil contamination around the camps, drilling rigs and in common ownership land, in the future all area should be cleaned regularly.
9. Road maintenance work related to the OT project has been checked.
   - Main roads have been improved and signs installed along the roads.
   - Unnecessary roads have been closed to reduce ground damage.
   - Roads are graveled and watered to reduce dust and calcium chloride and magnesium chloride test work should prove to be useful.
10. Rehabilitation work of the borrow pits for gravel and sand has been checked.
11. The rehabilitation work of the old petrol station has been checked.
12. We have checked the two Plant test by naturally plots, at the Box cut spoil. Even though small we conclude that seeding plants by naturally will assist the rehabilitation process around OT site. Unfortunately, the lack of fencing around the Plots has led to vehicular traffic damaging them and spoiling potential results.

We have checked all rehabilitation and environmental protection works around OT area and they are well done.

The following areas require more attention in the future:

1. Backfill all open sumps, trenches and boreholes around OT within the first half of 2005.

2. Reduce and clean up soil contamination from oil spills by drill engines.
3. To choose better design of trenches etc. For example: a open V trench was dug to dispose of ground water from the shaft. But it is not used.
4. More attention for the hygiene condition of water while transporting from the shaft sumps to the box cut. Only use the truck for the transporting shaft water do not use the other waste water truck!
5. Shaft sumps need better design.
6. Finish rehabilitation work of the gravel and sand borrow pits for the local road improvement work.
7. Sort solid waste in accordance to the domestic and industrial rubbish and waste law.
8. Hire permanent trash man to clean the area regularly.
9. Fence the two plantation areas to protect them from damage.
10. Widen the concrete pad around the new petrol farm.

Inspected by:

/Ya. Shanjmyatav/ State Inspector of Environmental in Khanbogd soum …../signed/…..

/B. Altantsetseg/ Environmental officer of IMMI…../signed/…..

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1.MAIN CONCEPT AND OBJECTIVE
1.1.OBJECTIVE

Objective of Environmental protection plan of IMMI is to run its exploration activity in accordance with relating international and Mongolian regulations and the company's environmental management policy.

The company plans and implements environmental protection plan each year in order to establish appropriate environment management within exploration areas.

During 2004, IMMI have approved environmental protection plan addendum while doing additional works related to exploration works in accordance with Environmental Protection Plan.

The company have done inspections cooperated with state environmental inspector of the local area, while carrying out some essential experiments on rehabilitation.

2. LOCATION OF OT PROJECT

Oyu Tolgoi project of IMMI is taking place in Oyu Tolgoi of Javkhlant bag, Khanbogd sum, Umnugobi aimag.
Oyu Tolgoi project is located:

- 640 km away from south of Ulaanbaatar
- 210 km away from east of Dalanzadgad
- 45 km away from west of Khanbogd sum

3.OPERATIONAL ACTIVITIES OF OYU TOLGOI PROJECT
3.1. EXPLORATION

IMMI has continually completed following works in 2004 in the frame of exploration work. Such work includes:

- Geological mapping
- Geochemical sampling
- Geodesy measurements
- Sampling
- Geophysical study
- Geophysical exploration /magnetic and gravity/
- Geophysical exploration /electro and magnetic/
- Drilling

  - Precussion and rotary drilling
  - Diamond drilling
  - Rotary drilling with clay solution
  - Large diameter drilling

- Trenching
- Vertical shaft for technological group samples

3.2. WATER EXPLORATION

IMMI has completed water exploration in these areas since 2002 and collected and analyzed all informations of existing geological and hydrogeological explorations within 100-200 km zone areas from OT. After all these analyzes has choosed more perspective areas such as Galbyn Gobi, Gunii Hooloi and Nariin zag and completed geophysical survey and drilled exploration boreholes for the determine water aquifers, main characteristics and capacity of them. As a results of these surveyes they are choosed Galbyn Gobi and Gunii Hooloi areas which more capacity of water resource and completed detailed hydrogeological surveyes in this areas.

3.3. BULK SAMPLE SHAFT

Vertical shaft process with size of 80 m deep and 3.5 m in diameter is taking place in order to take 250 ton bulk rock sample from ore body of Oyu Tolgoi deposit in order to determine the leach ability of ore minerals in detail.

Vertical shaft shall be blasted every 6 meters and will be concrete lined and then deepened to 12 meters to allow installation of the headframe. At a depth of 30 meters a sinking stage will be installed to provide guidance to the hoisting system. Water inflows will be dealt with by pumping. Following activities have been done during the bulk sample shaft.

- Mobilization
- Excavation, design and construction of shaft collar
    - Prepare storage area for surface ground, mud and loose soil
    - Prepare storage place for explosives
    - Collar cover & collar door
    - Headframe
    - Hoisting equipment, winder and winch foundation
    - Sinking stage
    - Associated electrics

3.4. COAL EXPLORATION

Coal exploration work was completed in Tsagaan Tolgoi, Nomgon sum, Umnugobi aimag May through July in 2004. During the coal exploration work following works have been done.

- Rotary drilling
- Trenching
- Geological mapping
- Sampling

3.5. ENVIRONMENTAL IMPACT ASSESSMENT

The company have prepared Oyu Tolgoi baseline study in 2002 and detailed environmental impact assessment works since 2003. In the frame of Oyu Tolgoi project:

- Report of Oyu Tolgoi to Gashuun Sukhait road and infrastructure corridor. 2004.04

- Report of the ground water use within Galbyn Gobi and Gunii Khooloi ground water resource areas. 2004.12

- To prepare detailed environmental impact assessment report for a mine at Oyu Tolgoi and submit to Ministry of Nature and Environment. Although recommendations, Environmental protection plans and Environmental monitoring plans of reports will be obeyed further.

4. GENERAL PRINCIPLES FOR PROTECTING ENVIRONMENT

4.1.COORDINATION

Environmental officers of the project are responsible for making sure that IMMI is obeying relating regulations of environmental and mineral laws of Mongolia.
Which means that officers need to submit environmentally related issues to relating officers of state organisations and make decisions by them and taking license.
It's required who should mutually cooperate local community and other land owners.

Also, it's essential to pay attention to determine special places within the area before starting activities related to mineral exploration. For example:

- Areas which may be easily affected /spring and small spring etc./
- Exploitation of water resource and its protection
- Settlement areas of herdsmen and their pasture /winter quarter, spring quarter/
- Cultural heritage
- To mutually respect neighbouring land owners and users etc.

4.2. PLANNING

The company should pay attention to environmental and social issues during the exploration work and has to carry out additional plans if required. The most potential impacts on environment and social issues are planned in advance and reflected as below.

- Create new road routes
- Location of exploration camp and to build mine camp /settlement/
- Water resource
- Gas stations
- Waste disposal facilities
- To move local community from licensed area

It's suggested that land disturbance should be as low as possible and need to reflect reduction for rehabilitation measure cost during any exploration work.

5. REPORT OF ENVIRONMENTAL PROTECTION PLAN

In accordance with Mineral Law of Mongolia, that license holders have to submit report of environmental protection plan to Environmental Inspection Department and relating governor of aimag /capital/ and sum /district/. Such report shall include:

- Report of implementation of environmental measures to protect environment and environmental protection plan addendum

- Disturbed areas within licensed area, which resulted from exploration activity during last 12 months
- Rehabilitation of disturbed area
- Estimation of water which used during exploration activity
- Potential impacts on environment due to use of new exploration equipments and technology
- Experiments on mitigating dust and natural growth of plants
- Environmental monitoring plan

5.1. IMPLEMENTATION OF ENVIRONMENTAL PROTECTION PLAN

According to Mineral law, IMMI has prepared "Environmental protection plan for exploration activity", "Environmental protection plan addendum for coal exploration activity" and "Environmental protection plan addendum for bulk sample shaft at Oyu Tolgoi area" and submitted them to MNE and relating local Governor.

All documents related to exploration activity of OT project are copied and located OT camp. /See Attachment 1 /
Attachment 2 refers to environmental protection measures taken in 2004 and its implementation.

1. The company have transferred total of 8 810 800 tugrug to the proper account of Khanbogd sum, including 6 810 800 tugrug for water use fees, vehicle use fees and local road use fees, 800 000 tugrug for gravel use fees and 1 200 000 tugrug for land use fees for mining camp according to Environmental Protection Plan 2004.

2. In accordance with the Labour Law, IMMI transferred the compensation (1,040,000 tugrugs) of 2004 for the vacancy of 4 disabled persons to the Employment office of Umnugobi aimag.

5.2. EXPLORATION

5.2.1. DRILLING

In the frame of OT tolgoi project, drilling machine on vehicle are mainly used and impacts on environment are varying, which depend on capacity of drilling machines and drilling diameter.

Major Pontil, Gobi Drilling, Kan-Asia and Mongolian Drilling Service companies have been working on OT exploration and water exploration works and have drillied total of 665 boreholes and 234544 linear meter in December 05, 2004.

Drilling works completed by drilling company in the frame of Oyu Tolgoi projects

Table 5.2.1

N	Drilling companies	Number of boreholes	Linear meter
1	Major Pontil	318	129449
2	Kan-Asia	92	43877
3	Gobi Drilling	37	17762
4	Mongolian Drilling	23	8719
5	Coal exploration	46	4937
6	Water exploration	149	29800
	Total	**665**	**234544**

After drilling a borehole, PVC pipe is installed in a borehole in order to protect against collapse and that is covered with cement lid with number on it.

In the frame of OT project, vacated drill sites inpection is taken detailed and its results are individually recorded since September 2003.
Inspection work have been done and recorded in 400 drilled areas so far and such work will continue further. In recent years, rehabilitation work of sump became intensive and is started in May in the spring. Table 5.2.2 shows that 370 sump had been buried near Oyu Tolgoi in this year and 4440 m^3 rehabilitation work had been done.

Completed rehabilitation works in the frame of Oyu Tolgoi projects

Table 5.2.2

Project name	Number of boreholes	Trench (total m^3)	Rehabilitated sump and trench	Earth work for rehabilitation m^3
Near Oyu Tolgoi	470	21000 m x 1.5m x 0.7m	370 sump 26 channel	4440 22050
Water exploration	149	-	214 sump	6297
Coal exploration	46	1700m x 3m x 1m	92 sump 5 channel	460 5100
Total	**665**	**27150**	**676 sump 31 channel**	**38347**

5.2.2. TRENCHING

29 trenches with the total size of 24000 m long, 1.5 m deep, 0.7 m wide are digged for exploration purpose since May 2004 near Oyu Tolgoi deposit. To judge from table 5.2.2, total of 26 trenches are buried, 22050 m^3 area are rehabilitated. While digging a trench, top soil are stockpiled on two sides of a trench, separately from lower layer soil. After finishing exploration record, that rehabilitation work shall start with lower layer soil and after that top soil comes. Eventually, rehabilitated sites are scarified in order to let re-seeding to be kept from fluttering.

Photo 1. Rehabilitation work is started with lower layer soil and top soil comes after

Photo 2. Furrows are cut in order to let seeds to be kept from fluttering, after burying a channel

5.3.WATER EXPLORATION

IMMI has choosed more perspective areas such as Galbyn Gobi, Gunii Hooloi and Nariin zag and completed geophysical survey and drilled 149 exploration boreholes and 29800 linear meter for the determine water aquifers, main characteristics and capacity of them.

These boreholes will be protected and monitored every month further.

Rehabilition work of water exploration area are done in January, April, May 2004 and such work includes 214 buried sump, 6297 m^3 earth moving work. (Table 5.3.1.) Also after finalizing water exploration project, camps 1 and 2 within Bulan Sukhai and Shar Khooloi of Khanbogd sum are abolished and their settlement area are cleaned and rehabiltated.

The company have done inspections cooperated with state environmental inspector of the local area, while carrying out some essential experiments on rehabilitation.

The company have done inspection on such work cooperated with state environmental inspector of Khanbogd sum and submitted "report of selective inspection on rehabilitation work of water exploration area" to local administration in August 23, 2004. (See Attachment 3)

Completed rehabilitation works in the frame of water exploration project

Table 5.3.1.

Number of boreholes drilled	Number of rehabilitated sump	Percentage of rehabilitation	Earth moving work m3
Galbyn Gobi - 81	123	100%	3321
Gunii Khooloi - 63	81	100%	2916
Nariin Zag - 5	10	100%	60
149	**214**	**100%**	**6297 м^3**

Photo 3. Galbyn Gobi area. Borehole GG-43. Plants are growing

Photo 4. Gunii Khooloi area. Borehole GH-5 x 4

5.4. BULK SAMPLE SHAFT

The company has been doing following works in accordance with environmental protection plan addendum for bulk sample shaft at Oyu Tolgoi area approved in October 2004.

- Fence within 15 m radius of vertical shaft is surrounded in order to protect it
- An area for stockpiling loose soil resulted from blasting 805 м^2 (35 м x 23 м)
- To remove waste to waste disposal point
- Mining seeping through the ground is drained out of mine by means of pump and used for reducing dust emission around disturbed area.
- Petrol, fuel, oil products and blasting materials are transported and used in accordance with safety regulations
- Environmental monitoring takes place regularly

Photo 5. Bulk sample shaft. Headframe

5.5. COAL EXPLORATION

Rehabilitation work have been done in coal exploration area in May and October 2004 including 92 sump, total of 5 channels with size of 1700m long, 3 m deep and 1 m wide were buried and 5560m^3 earth moving work were done. (Table 5.5.1.) Also coal exploration camp in Tsagaan Tolgoi, Nomgon sum was abolished after coal exploration activity finalized and its settlement area was cleaned and rehabilitated.

The company have done inspection on such work cooperated with state environmental inspector of Nomgon sum in July 23 and October 11, 2004 and submitted "report of inspection on rehabilitation work of coal exploration area" to local administration in. (See Attachment 3)

Completed rehabilitation works in the frame of coal exploration project

Table 5.5.1.

Number of drilled boreholes and channels	Percentage of rehabilitation	Earth moving m3
46 boreholes, 92 sump	100%	460
5 (1700м long x 3м deep x 1м wide)	100%	5100
	100%	**5560**

Photo 6 Trench No1 Photo Trench No2

Photo 7. Trench No1, 2 after rehabilitation work

5.6. SOIL AND VEGETATION

Total of 96.63 ha area have been degraded and gradually eroised so far within Oyu Tolgoi area, which resulted from drilling for exploration purpose, box cut, bulk sample shaft, trenches, areas used for camp site and improved or subroads. (It was 41.63 ha in 2003. A protocol of inspection on rehabilitation work of exploration areas of IMMI. 2004.01.02)

However most soils of Mongolia are eroded due to wind activity and pasture degradation, Gobian soil contains seeds and roots of plants and which possibly to grow during the summer months when moisture resource becomes enough. Oyu Tolgoi area plants are included into Central Asian desert or semi-desert steppe plant species. Vast steppes and small hills of desert are sparsly covered with small bushes and shrubs (<0.5 m). River beds of temporarily running streams, dry ravines and floor soil support some species of trees (elm tree, poplar, tamarix) to grow. Bushes mainly grow near shallow ground water areas. The area has no forest cover.

It's not been observed so far, that soil and vegetation cover is seriously affected within Oyu Tolgoi area and its vegetation condition is included into Baseline study. Measurements of soil and vegetation for monitoring are done during 2002, 2003 and 2004. (10. See environmental monitoring)

5.7. CONTROL ON DUST EMISSION

Following measures are taken in order to mitigate and make sure that dust emission should be as low as possible.

- To water dust producing resource areas by reusing production water or water from excavation in order to reduce dust emission.
- to limit speed of heavy duty trucks on earth road
- to maintain some surface of earth road where necessary

Photo 8. Spraying water on the road, which seeped from vertical shaft

5.7.1. LOCAL ROAD

In september 2004, some sections of the road located in north of Oyu Tolgoi were treated severel times with water, which contained $MgCl_2$ and $CaCl_2$ solution and after that soil of the road was compacted. Now observation is taking place in that area.

The experiment was done through total of 1368 m long road and 10944 m^2 area.

Table 5.7.1.

№	Area (length m x width m)	Chemicals used to compact
1	400x8=3 200 m^2	$MgCl_2$ -96%
2	150x8=1200 m^2	$CaCl_2$ -46%
3	200x8=1600 m^2	$MgCl_2$-96%
4	193x8=1547 m^2	$CaCl_2$ - 46%
5	425x8=3400 m^2	$MgCl_2$-96%
6	Zone for comparative monitoring	not used

Photo 9. 1st section of the road is being sprayed with $MgCl_2$ water solution and compacted

6. EXPLORATION CAMPS

There are 5 camp sites including Khanbogd for local workers and Oyu Tolgoi exploration, drilling companies of Major Pontil, Gobi Drilling and Kan-Asia and also administration building, workshops, sample preparation room, borehole sample preparation shop and airport.

In 2004 the company have occupied 16 000 m^2 area for new camp of mine and now total 346500 m^2 area is occupied for the project activities. Also each exploration camp have been using special hole for waste water.

Structure of these waste water holes was mentioned in Environmental report 2003 and that would continue with such structure in future.

6.1. REUSE OF WASTE

Some kind of household waste from exploration camp can be reused by local community and herdsmen. For example: wastes of wood and metal are classified and located special point.

Also some local residents are still collecting household wastes such as can and bottles of beer and soft drink.

6.2. WASTE CONTAINER

OT project staff are fully provided with bags and containers to dispose waste. Even workers at remote working sites widely use bags and disposed waste transported to waste disposal point.

7. WASTE DISPOSAL POINT

Recently, waste disposal facility is urgently required to be built to remove waste from production activies of exploration camps.
It's been suitable method to dispose waste by digging hole during exploration activity of the company.

7.1. TO BURY OLD WASTE DISPOSAL POINT

Old waste disposal point #2 is officially closed in June 06, 2004 and total of 240 m^3 waste are buried and about 2 ha area are got rid of waste.

7.2. NEW WASTE DISPOSAL POINT

Governor of Khanbogd sum granted permission to establish a new waste disposal point according IMMI request in 2003. In the frame of Oyu Tolgoi project, a total of 4000 m2 waste disposal point is established.

Waste are disposed seperately to a new waste disposal point and channels for liquid waste and holes for sold waste are dug. Bunker for disposing waste oil is installed. A new waste disposal point is:

- 3.4 km away from south-east of OT exploration camp
- 4 km away from east of Umdain Gol
- Distant from cultural heritage
- Distant from wells and winter quarters of herdsmen
- Soil dam was made in order to prevent prevailing wind direction
- Barrier and dam were built in order to prevent people and animal
- That waste disposal point will be used as waste disposal area for concentration plant further on.

Photo 10. Pond for liquid waste: 200m long, 20m wide, 1m deep. (west side)
70m long, 20m wide, 1m deep. (east side). 25-30 tonnes waste water are disposed of daily.

7.2.1 WASTE OIL DISPOSAL POINT

Waste oil is collected in a tank with capacity of 25 tonnes which was located in mechanic shop of Major Pontil drilling company 2002 through 2004. Since October 2004 tanks with capacity of 10 tonnes are installed near gas station and put into operation. OT exploration camp approximately disposes of 500-600 l waste oil in a month.

Photo 11. a.a tank in fence of Major Pontil б.a recently installed tank for waste oil

8. WATER RESOURCE

IMMI supplies exploration activity with borehole water by not seriously affecting water resource of the area before mine activities start.

Shallow wells of herdsmen are not used for exploration activity needs.

Boreholes OTRC 218, 047, 148 and 086 are used for household and production needs in 2004. (See Table 8.1.1)

Photo 12. Well is built on borehole and which supply exploration camp with their water needs.

Boreholes, that supply household and production water needs for Oyu Tolgoi project

Table 8.1.1

Borehole	Coordinates	Depth (meter)	Daily m^3/day	Supply
OTRC 218	649905 4763401	60	138	Water of camp and drilling
OTRC 086	651423 4764681	110	69	Water of drilling
OTRC 047	650822 4763994	88	69	Broken. Borehole was blocked.
OTRC 148	651328 4762688	114	138	Water of drilling

Only bottled pure water is used as drinking water supply for exploration camp.

1. One bottled pure water (0.35 l) x one person x 6 bottles/day x 494 people (December 03, 2004, total number of staff at Oyu Tolgoi) x 365 days = 478.6m^3/year bottled pure water were used.

2. In 2004 total of 40 500 m3 water used for household purpose and total of 119 735$м^3$ water used for production purpose.

3. Table 8.1.2 shows test result of drinking water.

Test results of drinking water used in the kitchen of Oyu Tolgoi project camp

Water test took place in state accredited laboratory in Dalanzadgad in Umnugobi aimag.

Table 8.1.2 2004.08.16

Parameters	Unit	Samples are taken from							Standard	
		1	2	3	4	5			MNS-900-92*	Australian guideline on drinking water
		OT camp kitchen	Major Pontilki tchen	Kan-Asia camp kitchen	OTRC 218 (west container)	OTRC 218 (east container)				
pH		7.6	8.2	7.0	7.0	7.4			6.0-9.0	6.5 – 8.5
Hardness	mg-equ/l	1.0	1.0	1.1	1.0	1.0			<7.0	
Smell	scale	0	0	0	0	0			<2	
Colour	degree	5	5	5	5	5			<20	
Taste	scale	0	0	0	0	0			<2	
Dry residue	mg/l	357	572	387	355	356			1000	
NaCl	%	0.3	0.6	0.4	0.3	0.3				
Iodine	mg/l	0.01	0.05	0.02	0	0.1				0.1
Cl^-	mg/l	50.9	61.5	53.5	64.2	69.0			350	250
F^-	mg/l	1.31	1.01	1.26	0.41	0.56			0.7 – 1.5	1.5
Nitrit NO_2^-	mg/l	0.005	0.006	0.008	0.01	0.04				3.0
Nitrate NO_3^-	mg/l	2.5	2.7	2.6	4.0	4.0			10	50
SO_4	mg/l	63	71	62	69	67			500	500 250
Ca	mg/l	8.0	16.0	6.0	16.0	8.0			100	
Mg	mg/l	7.3	2.4	9.7	2.4	7.3			30	
NH_4	mg/l	0.02	0.01	0.01	0.06	0.03				0.5
Fe	mg/l								0.3	0.3
Cu	mg/l	0	0	0	0	0			1.0	2.0 1.0
Br	mg/l	0.01	0.03	0.01	0	0				
Acidic	mg/l	0.2	0.4	0.3	0.3	0.4				
Alkaline	mg/l	3.8	4.0	3.0	3.0	3.9				
Capability of transmitting electricity	mS/cm	714	1143	787	714	754				

* Mongolian national standard. Drinking water
** Australian guideline on drinking water
*** Bottled water is used as drinking water

9. GAS STATION

Previous gas station in Oyu Tolgoi was disbanded and Petrovis company built new gas station and put it into operation in September 2004.

That gas station was built in accordance with relating regulations and requirements on gas station of Mongolia and has capacity of 350 m^3 fuel.

Photo 13. New gas station

10. ENVIRONMENTAL MONITORING

The Environmental Monitroing Plan (EMP) based on a result of Environmental Impacts Assessment is one of the important document includes a description and schedule for the measurement of environmental parameters required to ensure that IMMI's activities in relation to the Oyu Tolgoi copper-gold deposit area are within the criteria, standards and limits established in the EPP and EIA.

During 2004, the company have been carrying out water, soil, vegetation and air monitoring within Oyu Tolgoi and its surrounding area in accordance with recommendation of Environmental impact assessment.

10.1. WATER MONITORING

Monthly water monitoring determines smell, colour and taste of water and measures depth at reference point and water level of borehole. Chemical test of water are taken seasonally and chemical test of water taken in March, June and December, 2004.

Table 10.1.1 shows names and location of water monitoring point and parameters of physical and chemical tests. Also photo monitoring takes place.

Proposed Water Quality Monitoring Program for Oyu Tolgoi

Table 10.1.1

Locations to monitor	Coordinates	Monitoring Parameters Frequency
Boroo Ovoo Khudag	650569, 4761727	**Quarterly**: pH, TDS (grav), TSS, Total Hardness (CaCO3), Ca, Mg, Na, K, SO_4, NO_2, NO_3, NH_4, As, Cd, Cu, Hg, Pb, Zn, Cr, Fe, Ni, **Monthly:** Water depth from reference point.
Khukh khadnii Bulag	653128, 4757124	
Buuraliin Bulag/zadgai	659748, 4751517	
Maaniin Bulag	660542, 4750617	
Khersiin Khudag	648167, 4764452	**Quarterly**: pH, TDS (grav), Total Hardness (CaCO3) Ca, Mg, Na, K, SO_4, NO_2, NO_3, NH_4,As, Cd, Cu, Hg, Pb, Zn, Cr, Fe, Ni, Taste, smell, colour **Monthly:** Standing Water Level
Ulaan Tolgoin khudag	643670, 4759400	
Khukh Khadnii Khudag	653779, 4756656	
Khoyor modnii khudag	655201, 4765095	
Borehole OTRC 047	650821, 4763994	**Quarterly**: pH, TDS (grav), Total Hardness (CaCO3) Ca, Mg, Na, K, SO_4, As, Cd, Cu, Hg, Pb, Zn, Cr, Fe, Ni, Taste, smell, colour **Monthly:** Standing Water Level
OTRC 068	650526, 4763593	
OTRC 081	650014, 4762272	
OTRC 133	652023, 4762576	
OTRC 104	651881, 4764683	
OTRC 218	649907, 4763397	

2003.06 2003.09

2003.10 2004.06

2004.08 2004.11

Photo 14. Example of photo monitoring which took place Bor Ovoogiin Zadgai/Bulag

10.2. AIR MONITORING

4 times measurement of dust emission on 21 points were succesfully done near Oyu Tolgoi July 2002 through June 2004. These results are summarized and used for creating a model for air quality parameters of Oyu Tolgoi project implementing area.

Table 10.2.1 shows measured areas for air quality monitoring at Oyu Tolgoi and associated reports.

Coordinates near Oyu Tolgoi where air quality monitoring took place

Table 10.2.1

No	Coordinates	Location	Date	Report
1	650990 / 4765357	East Oyu	July-August, 2002	Result of air quality analyze near OT. 2002.07
2	650842 / 4764801	North Oyu		
3	650860 / 4764118	Central Oyu		
4	650351 / 4763164	South-west Oyu		
5	651280 / 4762876	South Oyu		
6	650220 / 4763397	Near OT camp		
7	648981 / 4765216	Airport		
8	651000 / 4767000	3 km away from north of OT camp	2003.06.10-28	Dust measurement. 2003.07
9	654000 / 4764000	3 km away from east of OT camp		
10	651000 / 4760000	4 km away from south of OT camp		
11	648000 / 4764000	3 km away from west of OT camp		
12	648066 / 4764388	West of OT camp	2004.04.16-21	Report of dust measurement near OT
13	650630 / 4767015	North of OT camp		
14	654112 / 4764175	East of OT camp		
15	652649 / 4759876	South of OT camp		
16	650144 / 4763595	Near OT camp		
17	648058 / 4765657	North-west	2004.06.26-2004.07.09	Result of dust measurement near OT. 2004.06
18	652610 / 4766652	North-east		
19	654162 / 4762088	South-east		

20	650700 / 4760869	South-west		
21	650108/ 4764097	Meteorological station		
	Model of air quality parameters of Oyu Tolgoi project area 2004.			

10.3. SOIL AND VEGETATION COVER MONITORING

Soil and vegetation monitoring take place near Oyu Tolgoi every 6 months or in summer and autumn and such activity includes determining plant species, vegetation cover, percentage, soil structure and erosion and recording them.

In May 2003, total of 13 plots with size of 25 x 25 m were chosen for soil and vegetation monitoring in accordance with recommendation of Environmental impact assessment. Photos of the plots were taken and plant species and vegetation cover was recorded. 5 plots are chosen from above mentioned plots according to suggestion of experts in 2004 and they are used for further monitoring.

Soil and vegetation cover monitoring near Oyu Tolgoi

Universal Transverse Mercator (WGS84) system (UTM Zone 48, Northern Hemisphere)
Table 10.3.1.

lat	lon	Plot 25mx25m	2004.02.25-28	2004.07.13-30
4768004	654014	**Plot 4**	Nitraria Sibirica + Salsola passerina	Salsola passerina+ Reamauria songorica+Nitraria sibirica
4768030	654015			
4768026	654039			
4768001	654037			
4759615	647504	**Plot 9**	Nitraria sibirica + Salsola passerina	Kalidium faliofum+(Salsola passerina+Reamauria songorica)+Nitraria sibirica
4759628	647501			
4759637	647525			
4759613	647531			
4767018	648165	**Plot 12**	Nitraria Sibirica + Anabasis brevifolia	Anabasis brevifolia +Salsola passerina+Reamauria songorica+Nitraria sibirica
4767037	648153			
4767053	648174			
4767029	648185			
4767038	654987	**Plot 14**	Salsola passerina+ Anabasis brevifolia + Allium poly	Salsola passerina+ Anabasis brevifolia
4767012	654990			
4767011	655017			
4767037	655013			
4758952	655988	**Plot 15**	Simpegma Regili + Salsola Passerina + Anabasis brevifolia + Reamuria Songorica	Anabasis brevifolia +Salsola passerina+Reamauria songorica
4758926	655979			
4758957	655962			
4758933	655955			

Plot 4 Plot 9

Plot 12 Plot 14

Plot 15

Photo 15. Monitoring areas

11. TRIALS ON REHABILITATION

An experiment took place in some plots within rehabilitated areas which located near Oyu Tolgoi in order to study rehabilitation possibility of plants that grow naturally.

1. 2 plots with size of 30 m long and 4 m wide are located in south and north of stockpiles of Box cut.

2. In drilling field, a plot with size of 4m long, 2m wide

Table 11.1.

Location	**Coordinates**		**Monitoring date**			
			06.20	**08.01**	**09.20**	**11.02**
Box cut North	652367	652383	Photo monitoring	Photo monitoring	Photo monitoring	Photo monitoring
	4765421	4765416				
Box cut South	652451	652454	Photo monitoring	Photo monitoring	Photo monitoring	Photo monitoring
	4765303	4765305				
Drilling field	650976	650977		Photo monitoring		Photo monitoring
	4763845	4763843				

Photo 16. South and north plots of stockpile at the dump of box cut. To judge from result of experiment that plant seeds are growing in north plot of stockpile, but there is a little chance for seeds to grow in south plot of stockpile.

North field. 2004.08.01 North field. 2004.09.20

North field. 2004.09.20

South field. 2004.09.20 South field. 2004.11.02

Photo 17. Prepared plot at rehabilitated drilled area. To judge from result of experiment, plant seeds have grown here blown by wind.

Drilling field. 2004.08.14 2004.11.02

2004.11.02

Apart from that, it's obserbed result of the monitroring that plants grow naturally after a year within rehabilitated area of drilling sites. However, feature of a certain summer and precipitation regime mostly affect it. It's mostly observed that most drilled areas are gradually becoming same as it's previous pristine condition.

12. CULTURAL HERITAGE

Archeological institute of academy of science have surveyed cultural heritage near Oyu Tolgoi in 2002 and prepared a report. The report shall be useful during the production activity.

13. INPECTIONS

During 2004, State organisations have inspected several times to make sure that exploration activies at Oyu Tolgoi project are going in accordance with relating regulations, criterias and Law on Environmental Protection, law on underground earth and Law on EIA.

Also IMMI have been implementing relating articles of Mineral law and law on Environmental protection and cooperating with state environmental inspectors of local authorities according to its duty.

Table 13.1.1 shows above mentioned inspections

Audits and Inspections of Oyu Tolgoi project activities

Table 13.1.1.

No	Date	Where	Inspection	Result
1	2004.01.25	6 people from Ministry of Industry & Trade and State Inspection Agency /SIA/	OT project operation Water project operation	Good
2	2004.04.18	8 people from SIA in UB and SIA in DZ aimag	OT project operation	-
3	2004.04.25	3 people from inspection agency of aimag	Rehabilitation works near OT	Good
4	2004.06.11	3 people from inspection agency of aimag	Rehabilitation works near OT and Gas station	Introduction
5	2004.07.23	State environmental inspector of Nomgon sum, cooperated inspection	Rehabilitation works of coal exploration	Good
6	2004.07.30	State environmental inspector of Khanbogd sum, cooperated inspection	Inspector note for dead livestock near a sump	No compensation
7	2004.08.14	6 people from inspection agency of aimag	OT project operation	Formal requisition 43/11
8	2004.08.23	State environmental inspector of Khanbogd sum, cooperated inspection	Rehabilitation works of water exploration	Good
9	2004.09.11	4 people from State Specialized Inspection agency in UB	OT project operation Drilling operation	Official request
10	2004.09.15	Called to State Specialized Inspection Agency in UB	Required comment	assignment
11	2004.09.22	OT environmental officers	sample taken from drilling liquid	Official letter 1221
12	2004.10.11	Central laboratory of environment	Test result	2004/31
13	2004.10.11	Cooperated inspection, State Environmental inspector of Nomgon sum	Rehabilitation work within coal exploration camp	Protocol
14	2004.11.01	Meeting at inspection agency in aimag	All about OT project operation	Response 1381/01 to Formal requisition 43/11
15	2004.11.01	To: State Specialized Inspection Agency in UB	Response to assignment	Response 1544/01
16	2004.12.29	State environmental inspector of Khanbogd sum	Rehabilitation work of exploration work of Oyu Tolgoi project	Inspector note

Attachment 1

LIST OF REQUIRED DOCUMENTS AT OT SITE	updated on 1 Dec, 04.
1. Certificate of Foreign incorporated company (IMMI) # 00-218	04.09.2001-13.09.2006
2. Register certificate in Mongolia (IMMI)	
3. Certificate of Foreign incorporated company (Red Path) #04-506	10.08.2004 - 10.08.2005
4. Certificate of Eco-Trade company for the EIA of OT project # 04	16.10.2004 - 16.10.2006
5. Certificates of mineral exploration license: - Oyu Tolgoi 6709A - Manakht 6708A - Khukh Khad 6710A - Ulaan uul 6711A	23.12.2003 - for a period of 60 years
6. Land use contract between HB soum and IMMI	28.12.2002 – 28.12.2007
7. Land use certificate 15110012	28.12.2002 – 28.12.2007
8. Order of HB soum Governor on the land to use by foreign incorporated company (first original)	28.02.2002. No34
9. Order of HB soum Governor on the land to use by foreign incorporated company (making changes)	02.07.2004. No34
10. Conclusion of the screening of the Environmnetal Impact in OT project from Ministry of Nature and Environment	13.02.2003. 4/213
11. Permission letter for the waste disposal area from HB soum	14.10.2003
12. Order of HB soum Governor on organizing road improvement work from OT to Gashuun Sukhait check point	10.12.2003 No50
13. Notification of HB soum Governor for the road improvement work on the territory of HB soum	27.12.2004 No 198
14. Permission for Oyu Tolgoi airport	No 219, 204/213, 90/207
15. Permission for Gas stations at Oyu Tolgoi	
16. Contract of Water Use between Khanbogd soum and IMMI	2003, 2004
17. Order of HB soum Governor on making the Water Use contract with IMMI	10.01.2003. No 01
18. Certification of Meteorological Examination and Adjustment for the Weather Station DAVIC at OT site	No 04/001, 03/001, 02/001
19. Inspection note for construction of new settlement engineering facility - Report No.1 on digging out the engineering channels, - Report No.2 on installation of external sewage system and testing, - Report No.3 and Report No.4 on installation of external heating and pure water supply system and testing.	16.09.2004
20. Permission of blasting for the bulk sample shaft	No 97/04
21. Material Safety Data Sheet for chemicals used for OT project drilling	
22. Vacated Drill Site Inspection documents	2003 and 2004

23.	Corrective Action Registries CAR	2004
24.	Environmental Baseline report for OT project	10.2002 04.2004
	Report of Oyu Tolgoi to Gashuun Sukhait road and infrastructure corridor	
25.		
26.	Signed Environmental Protection Plan -2004	2004
27.	Approved EPP for the bulk sample shaft project	09.2004
28.	Report of implementation of environmental protection plan-2003	
29.	Copy of payments for the water, gravel, local road and land usage fees in 2004	
30.	Statements on audit and an accept for the reclamation works done on the Tsagaan tolgoi coal project area. Nomgon soum, South Gobi	23.07.2004 11.10.2004
31.	Audit statement on water exploration bore sites rehabilitation. HB soum	23.08.2004 29.12.2004
32.	Statement on receiving rehabilitation work on OT site area of IMMI . HB soum	

Attachment 2

ENVIRONMENTAL PROTECTION MEASURES -2004

N	Environmental protection works	Quantity	Volume
1	**Natural resource use fees**	8 810 800 tug	
2	**Environmental Protection Plan addendum:** Coal exploration, and bulk sample shaft	2 plans	
3	**In the frame of exploration projects**		
	Rehabilitated sump	676	11 197 m^3
	Rehabilitated trench	31	27 150 m^3
4	**Trials on rehabilitation**		
	At the dump of Box cut	400 m^2	
	At the rehabilitated drilled site	8 m^2	
5	**Near vertical opening area**		
	Build a fence within 15 m radius from edge of bulk sample shaft and signage it	94 m long fence	
	Stockpile for bulk sample	805m^2	
6	**Mitigating dustiness**		
	Reuse waste water and water of mining seeping for reducing dust emission		
	To do experiment on road by spraying water with content of $MgCl_2$ and $CaCl_2$.	About 1.4 km road 10 944 m^2	
	To maintain and signaget the roads between camps	13 km road is improved	
7	**In scale of exploration camps**		
	To bury 2nd old waste disposal point	120 m^2	240 m^3
	Liquid waste point is expanded To create solid waste disposal point Waste oil disposal point	1400 m^2 120 m^2 400 m^2	1400 m^3 240 m^3
	To protect waste disposal points with barrier and signage	60 m	
	Cleaning of surrounding area	permanently	
	To dig hole for waste water		2400 m^3
8	**Monitoring works**		
	Drinking water test	2 times	
	Water monitoring	Monthly and quarterly	
	Vegetation and soil monitoring	2 times	
	Air quality monitoring	2 times	
9	**Inspection**		
	Inspections carried out by state organisations	15 times	
	Inspection of environment and safety from environmental staff	35 times	
	Inspection of hygiene from environmental staff	30 times	
10	**Degraded and gradually eroded areas within Oyu Tolgoi and its surrounding area**		
	Box cut – 5.27 ha Land used for household purpose - 33.5 ha Magazine for blasting material - 0.5 ha Drilling field -2.81 ha New settlement for mine – 16.0 ha Bulk sample shaft – 2.0 ha Dug and buried areas for trenches - 2.0 ha Road network -25 ha **Total 96.63 ha**	**966300 m^2**	

Attachment 3

THE ACT OF AN AUDIT AND AN ACCEPT FOR THE RECLAMATION WORKS DONE ON THE TSAGAAN TOLGOI COAL PROJECT AREA

Tsagaan Tolgoi camp 23 July, 2004

Mrs.Kh.Munkhtuya, State Inspector of Environmental in Nomgon soum and Chris Serginson, Environmental senior officer; J.Oyusuvd, Environmental coordinator and B.Altantsetseg, Environmental officer of IMMI company took the audit on the rehabilitated places of drilling sites and trenches, the camp area, solid and liquid waste disposal pits site, fuel and lubricant store tank and made following conclusions:

1. As current situation of the Tsagaan Tolgoi coal exploration area totally 45 holes drilled between May and 23rd of July 2004, all sumps were covered and upper edge of all boreholes is protected. Some of buried sumps such as 04-06; 04-11; 04-08; 04-07; 04-41; 04-09; 04-39; 04-12; 04-13 and 04-17 had been inspected.
2. By this inspection there were no rubbish and oil spills around holes and drilling sites.
3. All exploration trenches were filled back and sites were clean. The buried trenches of OC-35 and OC-2 had been inspected.
4. According to the Environmental Protection Plan-2004, approx. 20 km of new road was graded and the 2-3 small hills were cut by 1-2 m deep.
5. The pits for the solid waste and grey water have been established and surrounded by fence. The grey water pit size is 3m x 10m and 5-6 m deep. Waste pit size is 2m x 5m and 5 m deep.
6. No spills and spillages at the site of the fuel and lubricant store tank. It is in safe condition.

7. For the purpose of dust controlling, water sprayed on the road, park and camp area.
8. 270000 ₮ was paid for the Water Use to the local income of Nomgon soum according to the legislation.

Executed works for the Environmental Protection and Rehabilitation on the Tsagaan Tolgoi coal exploration area was done sufficiently.

In the further following issues need to be worked:

1. The camp needs to be watched and guarded until the next operation.

2. If the coal exploration project finishes, camp should be down and soum administration shall estimate the Land Use payment.

3. To fill back the pits that are left open now for service purpose after shutting the coal camp.

4. To send back the local well generator, this was used by TsT camp from the soum, urgently.

State Inspector of Environmental
in Nomgon soum

Kh.Munkhtuya /signed and sealed /

Environmental officers
IMMI company

Chris Serginson /signed/
J.Oyusuvd /signed/
B.Altantsetseg /signed/

Attachment 4

AUDIT STATEMENT ON WATER EXPLORATION BORE SITE REHABILITATION

August, 23rd, 2004 Ikh bulag

The audit on drilling sites in Galbiin Govi and Gunii Hooloi was carried out by Ya.Sanjmyatav, State Environmental Inspector in Khanbogd soum, in the presence of B.Altantsetseg, Environmental Officer of IMMI on the 20th and 22nd of August in 2004.

The audit was conducted on the total 75 sumps rehabilitation of 41 bores in 15 drilling sites: 35 sumps of 28 bores in 8 drilling sites, for example: GH 15x1, GH 15x2, GH 15x4, GH 14x4, GH 14X1, GH 6x1, GH 5x1, GH 5x2 etc from 81 sumps of 63 bores in 24 drilling sites in Gunii hooloi and 37 sumps of 14 bores in 7 drilling sites, for example: GG 46, GG 48, GG 45, GG 43, GG 42, GG 16 and GG 14 from 123 sumps of 81 bores in 36 drilling sites in Galbiin Govi.

The sumps and trenches have been back filled, leveled and rehabilitated according to the requirement. All surrounding area in Shar khooloi where Water Camp 2 located during water exploration project has been cleaned well.

Among the sites being under the audit, there are not any drilling sites that require the rehabilitation work again.

From the audit result, it is well-founded that the rehabilitation work complies with the requirement.

Following documents, inspection materials, reports and photos of all audit and rehabilitation work, carried out by IMMI in this water exploration area, have been introduced:

- E-mails and statements of rehabilitation work requirement;
- Water exploration 5 bore sites' rehabilitation work forms, drilled in Nariin zag, Bayan Ovoo soum on the 15th of January, 2004
- Water exploration 22 bore sites' rehabilitation work forms, drilled in Gunii Khooloi in Khanbogd soum between the 22nd - 23rd of April and the 15th - 19th of January in 2004.
- Water exploration 44 bore sites' rehabilitation work forms, drilled in Galbiin Gobi in Khanbogd soum between the 19th -21st of April and the 21st of January – 2nd of February in 2004.
- Report, written on the 16th of February in 2004, about successful completion of 1st stage water exploration bore sites rehabilitation work.
- Report about successful completion of 2nd stage water exploration bore sites rehabilitation work, completed between 19th -23rd of April in 2004.

- Audit report, carried out in all water exploration bore sites in May.
- Statement and rehabilitation supplementary work report, completed according to the audit report.
- Photo- evidences
- Statement about cleaning all area, including surrounding areas after finishing water exploration project in Bulan Sukhai and Shar Khooloi where Water camp #1 and #2 used to be located.
- All above mentioned photos, reports and work have been checked on a computer.

6237 m^3 rehabilitation work has been completed in water exploration 65 bore holes under the frame work of Oyu Tolgoi project.

See the attachment No 1 and 2 for the rehabilitation work of water exploration bore holes.

Written by: / signed / ……. Ya. Sanjmyatav,

State Environmental Inspector in Khanbogd soum
of Umnugovi aimag

/ signed /…… B. Altantsetseg,
Environmental officer, IMMI

Agreed by: / signed / ……. Chris Serginson,
Senior Environmental Officer of IMMI.

/ signed /……. J. Oyusuvd,
Environmental Coordinator, IMMI

IVANHOE MINES MONGOLIA INC LLC

OYU TOLGOI PROJECT

ENVIRONMENTAL DEPARTMENT

2004