

**DEPARTMENT OF MINES, MINERALS & GEOLOGY**  
**GOVERNMENT OF SIKKIM**  
**GANGTOK**



**ANNUAL PLAN (2009-2010)**  
**DEMAND NO. 25**



**DEPARTMENT OF MINES, MINERALS & GEOLOGY**  
**GOVERNMENT OF SIKKIM**  
**GANGTOK**

**ANNUAL PLAN (2009-2010)**

The total budget for the Annual Plan 2009-10 is estimated to the tune of Rs 260.00 Lakhs, detail breakup of which is as follows:-

**DEMAND NO. 25**

		<b>(Rs. in Lakhs)</b>
	<b>REVENUE SECTION</b>	240.00
<b>1</b>	<b>001-DIRECTION &amp; ADMINISTRATION</b>	75.00
	a SALARIES	40.00
	b TRAVEL EXPENSES	08.00
	c OFFICE EXPENSES	11.00
	d RENT, RATES & TAXES	1.00
	e MACHINERY & EQUIPMENT	10.00
	f CAPACITY BUILDING	5.00
<b>2</b>	<b>004 - RESEARCH &amp; DEVELOPMENT</b>	50.00
<b>3</b>	<b>102 - OTHER MINERAL EXPLORATION</b>	50.00
	<b>62.00.70 SEALING OF MINES UNDER MINERAL</b>	65.00
	COMMISSION	
<b>4</b>	<b>CAPITAL SECTION - 4853</b>	20.00
	01-004-71CONSTRUCTION OF LABORATORY	20.00
	<b>TOTAL</b>	<b>260.00</b>

## **OBJECTIVE:**

The Mines, Minerals & Geology Department was established in the year 1976 with a view to investigate mineral resources of the State, carryout geological study of unstable areas and to regulate mining activities in the State. The Department has been entrusted with the responsibility of conservation and development of minerals resources of the State, regulation and development of Major Minerals, granting of Prospecting Licences and Mining Leases for Major Minerals, collection of royalties on Major Minerals, geological study of unstable areas and suggesting remedial measures to the concerned departments, examination of the stability and suitability of land for infrastructural development and civil structures of public and government, geo-environmental studies etc.

## **ADMINISTRATIVE STRUCTURE:**

The department is headed by a Secretary and it is manned by Geologists, Mining Engineers, Chemists, Surveyors and Scientific Assistants and supported by Administrative and Accounts Staff. There are three wings in the Department, namely Geology, Mining and the Laboratory.

The Geologists are engaged in the investigation of various mineral deposits and mineral resources of the State, Geological study of unstable areas and development of remedial measures for control of landslides and erosion.

The Mining Engineers are engaged in contour Survey and Drilling activities as well as regulation of mining activities and Geo-Engineering works. So far, the Sikkim Mining Corporation is the only agency carrying out mining in the state.

The Laboratory is the backbone of Geologists and Mining Engineers, where chemical analysis of rock, minerals and soil samples are carried out. The Laboratory is also engaged in the physio-chemical and bacteriological analysis of water samples.

The department also provides consultancy service to various sister departments and other public & private sectors for foundation studies and stability ratings for civil constructions.

## **ACHIEVEMENTS OF THE DEPARTMENT**

Brief report on investigation of mineral deposits of the State and geo-technical studies carried out so far are produced as under:-

### **1. COAL:**

Coal deposits in the form of small pockets have been found in parts of South and West Sikkim and the total coal reserve estimated so far is about 3.00 lakhs tones. Exploratory drilling was carried out at few places such as Chisopani and Namchi area of South and Reshi areas of West Sikkim. The chemical analysis of the coal samples is not very encouraging however, further study and drilling at few locations in Rangit Window zone needs to be carried out to exactly assess the anthracitic to sub-anthracitic coal shows of Sikkim for future development.

### **2. LIMESTONE:**

Limestone finds extensive use in the manufacture of cement and deposits of Limestone have been investigated in Mangalbarey, Namgoan, Tinkitam, Chumboong areas of West Sikkim. However, the quantum of the deposits of Limestone has not been estimated thus far.

### **3. MARBLE:**

Marble is extensively used as a decorative building stone and its occurrence has been found in Chungthang valley and around Changu Area. Investigation of marble deposits in Chungthang valley was carried out and a total reserve of 30.00 million tones of marble has been estimated.

### **4. QUARTZITE:**

Quartzite is used in the manufacture of glass, ceramics and abrasives. Good deposits of quartzite have been found in Mansari in West Sikkim and Manpur in South Sikkim. Mining lease was granted to a private party for mining of quartzite in Mansari, however, the private company is defunct at present.

## **5. GRAPHITE:**

Graphite is extensively used in the manufacture of Paints, Pigments and Dry batteries. The occurrence of this mineral has been found in Chitre and Dareli areas of West Sikkim and Tsunthang in North Sikkim. A preliminary investigation of the occurrence of graphite in the above areas has been carried out.

## **6. GARNET:**

The investigation of Garnet was carried out during Field Season 1996-97 in part of East District mainly in Lingdok-Kabi-Phodong section. Occurrence of garnet was observed within Schists, a high-grade metamorphic rocks. The crystals of Garnet have been found to be highly fractured and twisted due to tectonic movements. Further study on the occurrence of garnets is presently kept at abeyance.

In addition to the above minerals, preliminary investigations of the deposits of Talc, Sillimanite, Dolomite and Kyanite were also carried out.

## **7. GEO-TECHNICAL STUDY/INVESTIGATION:**

Sikkim is a young mountainous State with abundant rainfall. Occurrence of landslides and their negative effect on Transport and communication systems are a common and regular feature in this Himalayan State. Every year, landslides erode a sizeable part of cultivable land and forest cover and has become the root cause of loss of life and property. The ill effects of such events on the socio-economic condition of the masses, therefore, need not be overemphasized. Keeping in view of this recurring nature of the Nature, the State Department of Mines, Minerals and Geology has been making systematic geological and geo-technical investigation of unstable slopes and areas subject to sinking and landslides. Detail study of selected slides and stability study of various areas of the state are being carried out and the remedial measures suggested. The Reports on such Geological Studies and Investigation are regularly submitted to the Government.

In addition to above, the department has been entrusted with the work of carrying out stability study of housing sites in all parts of the State.

**DEPARTMENT OF MINES, MINERALS & GEOLOGY**

**GOVERNMENT OF SIKKIM**

**ANNUAL PLAN 2009-10**

An Annual Plan size of Rs.260.00 lakhs has been proposed for the Department of Mines, Minerals & Geology for the financial year 2009-10.

Detail break up of the Plan Proposals 2009-10 is as under:-

**(I) 2853-REVENUE SECTION**

**1. DIRECTION & ADMINISTRATION-**

**Rs.75.00 Lakhs.**

This sum proposed to meet up expenditures on departmental overheads, payments of salaries and medical advances, payment of Rents Rates & Taxes and payment of Travel Expenses, purchase of office equipments, stationeries, computers, computer software's for GIS and replacement of old vehicles. Provision for recruitment/ appointment of Geologist & Assistant Mining Engineer is kept in financial year 2009-10 under Salary Head (Plan).

Detail break-up of expenditure under different Head is indicated as under: -

		(Rs. in Lakhs)
I	SALARIES	40.00
II.	TRAVEL EXPENSES	8.00
III.	OFFICE EXPENSES	11.00
IV	RENT, RATES & TAXES	1.00
V.	MACHINERY & EQUIPMENT	10.00
VI	CAPACITY BUILDING	5.00
	<b>TOTAL</b>	<b>75.00</b>

**1. RESEARCH & DEVELOPMENT-**

**RS. 50.00 Lakhs**

This provision is proposed with a view to take up detail geological studies and contour survey of various land slides, geo-environmental appraisals of important towns and road –sections along the National Highway 31 A and the State Highways. The Schemes proposed to be taken up under the concerned Head of Account are:-.

1. Assessment and Analysis of spring water sources of Sikkim.
2. Geological and Geo-Technical Study of area between 2<sup>nd</sup> Mile and Tsomgo, Section of JN Road, East Sikkim. (Continuing Scheme)
3. Geological and Contour Mapping of Ranka & Surrounding areas, East Sikkim. (Continuing Scheme: - year of completion of the scheme is fixed as 2011.)
4. Geological and Contour Survey of Taktse & Surrounding area, East Sikkim. (Continuing Scheme: - year of completion of the scheme is fixed as 2011.)
5. Preliminary Geo-Technical Study of Landslides between Niya Dara & Lingmoo area, south Sikkim. (Continuing Scheme: - year of completion of the scheme is fixed as 2011.)
6. Geological and Geo-Technical Study of major landslides along various road sections of National Highway 31A and the State highways.
7. Implementation of Geo-Engineering remedial measures at selected landslides of the state as a mitigative / control measure (Will be taken up subject to availability of fund.)
8. Site Inspection, preparation and issue of land Stability Reports on Constructions sites (Will continue on requisition basis).
9. Field Testing and Monitoring of selected Natural Spring Water sources (Continuing Scheme).
10. Operation and up-gradation of Geo-technical Laboratory. The laboratory is proving highly useful in engineering property estimation of rocks and soils.

11. Geological and Geo- technical Study of the road section along National Highway 31A from Rangpo to Ranipool, East Sikkim (deferred during financial year 2008-09 to 2009-10 due to lack of fund).
12. Procurement of high end Seismographs and Establishment of an Earthquake Monitoring Station at Gangtok (Urgent requirement, need to establish with budgetary support).
13. Study and identification of water recharge and seepage zones in and around parts of draught prone areas of South Sikkim on a purely pilot project basis.
14. Rock Bolting / Anchoring works at selected land slide areas in the State.
15. Updating of Contour Survey and Geo-technical data of Namchi Town South Sikkim (Deferred due to insufficient budgetary support in the past, it will be taken up during 2009-10).

**OTHER MINERAL EXPLORATION-**

***Rs. 50.00 Lakhs***

1. Contour Survey, mapping and delineation of dolomite around parts of Reshi, Phurchachu area of West Sikkim & Wak and Tinkitam areas of South Sikkim (Continuing Scheme will be completed during 2009-10).
2. Feasibility studies for installation and operation of lime kiln by calcination of dolomite and limestone (Continuing Scheme).
3. Identification and grade assessment of construction materials of different areas (proposed during Financial Year 2009-10).
4. Purchase of survey equipments and up-gradation of Survey Cell of the Department (Continuing).
5. Purchase of chemicals and glassware for geo-chemical analysis of rock and minerals samples and physio-chemical and bacteriological analysis of water samples (Continuing).
6. Geo-chemical analysis of rock and minerals samples (Continuing).
7. Feasibility study and geo-environmental appraisal of sand and river borne stone quarrying on either sides of river banks on a Research

and Development basis (deferred from 2008-09 owing to unavailability of sufficient budgetary support).

8. Delineation of pocket/ Lensoidal deposits of Talc along Kongri-Dhupidara area - South Sikkim (deferred during 2008-09 due to unavailability of sufficient budgetary support).

No new schemes are proposed as schemes already started are pending completion due to inadequate budgetary provision during Financial Year 2007-08 and 2008-09.

**SEALING OF MINES UNDER MINERAL COMMISSION      **RS. 65 Lakhs****

The mining operations at Bhotang (SMC-Rangpo) and Pacheykhani mines have come to a close. As per the Mineral Conservation and Development Rules (MCDR) of Government of India, it is mandatory to seal the mine openings created during extraction of minerals (Rule 23 A & Rule 23 (5) of MCDR – 1988).

Accordingly, an estimate amounting to Rs. 5.00 crores has been prepared and submitted to the Government of Sikkim. A sum of Rs. 2.00 crores was provided during 2007-08 and 2008-09 fiscal years and another sum of Rs. 65.00 Lakhs is proposed for 2009-10. The sealing work is expected to complete within a period of Five years.

**(II) 4853-CAPITAL SECTION.**

**(a) CONSTRUCTION OF LABORATORY-      **Rs. 20.00 Lakhs.****

The department possesses heavy equipments such as compressors drilling machines, grouting machines and other accessories, most of which are kept in the open in the departmental land at Sikkim Mining Corporation, Rangpo. For the security and safety of these machines and their proper upkeep a store is proposed to be constructed to house the machine in the Sikkim Mining Corporation Complex at Rangpo.