PROPOSAL FOR RECONNAISSANCE SURVEY (G-4) OF REE MINERALIZATION IN JEERAWAL(W)-ROHUA BLOCK, TEHSIL-REODAR, (48.6 SQ.KM AREA), DISTRICT-SIROHI, RAJASTHAN. (PART OF TOPOSHEET NO 45D/06)

COMMODITY: REE Mineralization

BY

FCI ARAVALI GYPSUM & MINERALS INDIA LIMITED
2, WEST PATEL NAGAR, CIRCUIT HOUSE ROAD RATANADA,
JODHPUR, RAJASTHAN

PLACE: JODHPUR

DATE: 14th July, 2025

Summary of the REE Mineralization block proposed for Reconnaissance Survey (G-4)

General Information about the block

	Features	Details
	Block ID	Jeerawal(W)-Rohua block
	Exploration Agency	FCI Aravali Gypsum and Minerals India Ltd.
	Commodity	REE mineralization
	Mineral Belt	Erinpura granite, Jalore granite, and granite porphyry of Malani volcanics.
	Time to complete the project	10 months
	Objectives	The objectives of the current program are: 1. Prepare a geological map at a 1:12,500 scale and map the REE-bearing host rock and basic intrusives, its structural features, and lateral extension. 2. To collect bedrock and pit samples for REE concentration through chemical analysis and evaluate the block for further course of action. 3. To evaluate the block for the possibility of upgrading it to G-3 and facilitate the Central Government in auctioning the block.
	Whether the work will be carried out by the proposed agency or through sourcing, and details thereof. Components to be outsourced and the name of the outsourcing agency	The work will be carried out by the proposed agency.
	Name/Number of Geoscientists	2 (1 Field Geoscientists and 1 HQ Geoscientist)
	Expected Field days (Geology, surveyor)	150
1.	**Location**	The proposed block area partly falls under Survey of India Toposheet numbers 45D/06, in and around the villages of Raipur, Rohua, and Jeerawal, Tehsil-Reodar, District-Sirohi, Rajasthan.

<table>
<tr><td></td><td>Latitude and Longitude</td><td colspan="3">Coordinates of Corner Points of Jeerawal (W)-Rohua Block<table><tr><th>Points</th><th>longitude</th><th>latitude</th></tr><tr><td>A</td><td>24°41'54.39"N</td><td>72°22'2.94"E</td></tr><tr><td>B</td><td>24°39'22.35"N</td><td>72°24'15.37"E</td></tr><tr><td>C</td><td>24°40'20.81"N</td><td>72°25'34.73"E</td></tr><tr><td>D</td><td>24°37'54.51"N</td><td>72°27'46.63"E</td></tr><tr><td>E</td><td>24°38'50.24"N</td><td>72°28'55.57"E</td></tr><tr><td>F</td><td>24°43'49.64"N</td><td>72°24'32.28"E</td></tr></table></td></tr>
<tr><td></td><td>Villages</td><td colspan="3">Raipur, Rohua, Jeerawal</td></tr>
<tr><td></td><td>Tehsil/ Taluk</td><td colspan="3">Reodar</td></tr>
<tr><td></td><td>District</td><td colspan="3">Sirohi</td></tr>
<tr><td></td><td>State</td><td colspan="3">Rajasthan</td></tr>
<tr><td>2.</td><td>Area (Square Kilometers)</td><td colspan="3"></td></tr>
<tr><td></td><td>Block Area</td><td colspan="3">48.6 sq km</td></tr>
<tr><td></td><td>Forest Area</td><td colspan="3">38 sq. km protected forest area</td></tr>
<tr><td></td><td>Government Land Area</td><td colspan="3">Data not available</td></tr>
<tr><td></td><td>Charagaha</td><td colspan="3">Data not available</td></tr>
<tr><td></td><td>Private Land Area</td><td colspan="3">Data not available</td></tr>
<tr><td>3.</td><td>Accessibility</td><td colspan="3"></td></tr>
<tr><td></td><td>Nearest Rail Head</td><td colspan="3">Raniwara Railway Station is 49.6 km away from Rohua village via Rj SH 11.</td></tr>
<tr><td></td><td>Road</td><td colspan="3">The Rohua area is located 18 km NW of Revdar via NH168. Motorable metalled roads are available in this area.</td></tr>
<tr><td></td><td>Airport</td><td colspan="3">The nearest airport to the Rohua area is Jodhpur, which is 256 km from this area via NH 62 and NH 168.</td></tr>
<tr><td>4.</td><td>Hydrography</td><td colspan="3"></td></tr>
<tr><td></td><td>Local Surface Drainage Pattern (Channels)</td><td colspan="3">The general slope of the block is south-westernly. Sipu and Sukli are two rivers with a few other nullahs/surface runoff flowing in the west and southwestern direction. The watercourses are ephemeral in nature.</td></tr>
<tr><td></td><td>Rivers/Streams</td><td colspan="3">Regionally, this area is drained by the Sipu/Sukli river, a tributary of the Luni river, flowing from the western slopes of Mount Abu and the Silari hills, and flows parallel to Mount Abu before joining the West Banas River in Gujarat. During drought years, there is no runoff.</td></tr>
<tr><td>5.</td><td>Climate</td><td colspan="3"></td></tr>
<tr><td></td><td>Mean Annual Rainfall</td><td colspan="3">On an average the area receives low to moderate (48 to 229 mm) rainfall</td></tr>
<tr><td></td><td>Temperatures (Minimum)
Temperatures (Maximum)</td><td colspan="3">Minimum temperatures upto 10^0 C (Dec-Jan)
Maximum temperatures upto 45^0 C (May-June)</td></tr>
<tr><td>6.</td><td>Topography</td><td colspan="3"></td></tr>
<tr><td></td><td>Topo-sheet Number</td><td colspan="3">45D/06</td></tr>
</table>

	Morphology of the Area	Overall flat to undulatory topography with hills in the eastern part of the block. Minimum altitude is 265m whereas the max. altitude of the hill reaches upto 660m. The block consists of an alluvial cover with exposures of granitic rocks at places.
7.	**Availability of baseline geoscience data**	
	Geological Map (1:50K)	Available in NGDR
	Geochemical Map	Available
	Geophysical Map (Aeromagnetic, Ground geophysical, Regional as well as local scale GP maps)	Available (Gravity & Magnetic) in NGDR
8.	**Justification for taking up Reconnaissance Survey/ Regional Exploration**	FS: 2017-18: The geochemical report of toposheet no. 45D/06 by GSI highlights the northeastern region, particularly northwest of Jeerawal, as anomalous for elevated concentrations of U (22.12 ppm), Th (63 ppm), Pb (35 ppm), and Ta (5.51 ppm), associated with Erinpura granite, Jalore granite, and Malani volcanic granite porphyry. Similarly, high values of K_2O, Rb (253 ppm), Y (101 ppm), and Sn (15.46 ppm) are concentrated in the same lithological units in the northeastern part. Notably, extremely high levels of Zr (2776 ppm) and Hf (100.70 ppm) have been recorded near Jeerawal over granites and Barechi over quartzite-mica schist and marble. These patterns suggest a strong geochemical enrichment linked to the granitic and metamorphic lithologies in the area. FS: 2021-22: A reconnaissance survey by GSI in the Jeerawal–Sanpur area identified significant U, Th, Zr, and REE mineralization in granitoid rocks through detailed EPMA analysis. Granodiorite samples showed the highest total REE (TREE) concentration at 372 ppm among felsic rocks. Out of 113 bedrock samples collected, 15 samples recorded TREE values greater than 500 ppm, indicating substantial REE enrichment in the area. The proposed block is adjacent to this area with similar lithology. Anomalous values of LREE La(373.97 ppm), Ce(666.12 ppm), Pr(74.33 ppm), Nd(286.71ppm), Eu(2.52 ppm)) are found to occur over Erinpura granite, Jalore granite, and granite porphyry near Jirawal, Bhilda, and Barechi over quartzite, marble, and micaceous quartzite. FS:2018-19 – The Geophysical survey of toposheet 45D/06 reveals a NE-SW trending high gravity anomaly zone with high magnetic response, which is indicative of an underlying basic intrusive body. Two lineaments are interpreted in this zone near Lalpura and Jeerawal. Based on the above research work, FAGMIL proposed the Jeerawal(W)-

		Rohua block to carry out detailed geological mapping and delineate the REE mineralized zone in this area.

PROPOSAL FOR RECONNAISSANCE SURVEY (G-4) FOR REE MINERALIZATION IN JEERAWAL(W)-ROHUA BLOCK, TEHSIL-REODER, DISTRICT-SIROHI, RAJASTHAN

1.0.0 INTRODUCTION

1.1.1. Rare Earth Elements (REEs) are a set of 17 chemically similar elements that consist of 15 lanthanides (elements with atomic numbers 57 to 71) along with scandium (Sc, atomic number 21) and yttrium (Y, atomic number 39). Although these elements are not particularly rare in the Earth's crust, they tend to occur in low concentrations and are difficult to extract economically in large quantities. REEs are classified into two categories based on their atomic properties: 1. light rare earth elements (LREEs), including elements such as lanthanum, cerium, praseodymium, neodymium, promethium, samarium, and europium; and 2. Heavy-rare-earth elements (HREE), such as gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium.

1.1.2 Rare Earth Elements (REE) are characterized by high density, high melting point, and high thermal conductivity. These unique properties of REEs make them essential in a wide variety of modern technological applications. They are used in the production of permanent magnets, batteries, electronics, renewable energy technologies (such as wind turbines and solar panels), electric vehicles, and in military applications. Despite their significance in technological advancement, the extraction and refining of REEs are complex and energy-intensive processes, and the supply of these materials is limited to only a few countries.

1.2.0. IMPORTANCE OF REES IN THE INDIAN SCENARIO AND ITS PRESENT STATUS

1.2.1. In the context of India, Rare Earth Elements are increasingly recognized as crucial for the nation's technological and industrial advancement. With the growing demand for electronic devices, renewable energy solutions, and electric vehicles, India is becoming more dependent on REEs. In Global Economies like the USA, Australia, and Canada, the value chain for processing and beneficiation of REE is much better developed. As a result, such countries segregate and select fewer REE elements from the total 17 REE elements as per their present criticality. In India, the value chain of REE is yet to be fully developed. Hence, in the first instance, all the REEs are considered critical minerals (Ministry of

Mines, June 2023). The major sources of REE in India are - (i) from different sources like Carbonatites, Tuffs, Cherts etc. (ii) from beach sands. The resource estimate of monazite from beach sand in India is 11.93 Mt, having 55%-65% of rare earth oxides. At present, the country's demand is met through domestic production by IREL (India) Limited and through imports from countries like China, Japan, South Korea, and the USA.

1.3.0. BACKGROUND

1.3.1. The Exploration for strategic, critical, rare metals, rare earth elements, PGE, and precious metals is given top priority by the Government of India after the amendment of the MMDR Act 2015. Keeping this in view, the present proposal is being put up for Preliminary Exploration (G-4 stage exploration) for REE mineralization in and around the Jeerawal- Rohua area, Sirohi, Rajasthan.

1.3.2. In order to meet the REE demand of the country and to reduce the dependency on imports, FAGMIL prepared a proposal of the Jeerawal(W)-Rohua block for G-4 level of exploration and put up to the upcoming meeting of TCC, NMET for technical evaluation. Hence the proposal is being put up for reconnaissance survey, which may facilitate Central government for auctioning of the block.

2.0.0 BLOCK DESCRIPTION

2.1.0 The Jeerawal (W)-Rohua Block is falling under toposheet no. 45D/06 with an area of 134 sq. km. The block is located in and around the villages – Raipur, Rohua, and the western part of Jeerawal Tehsil – Reodar, Sirohi, Rajasthan. The location map is provided in Annexure-I. The coordinates of the corner points of the block area are provided in the table below (dd:mm:ss.ss).

Co-ordinates of Cardinal Points for Jeerawal(W)-Rohua Block, Tehsil: Reodar, Dist: Sirohi (Table -1).

Points	longitude	latitude
A	24°41'54.39"N	72°22'2.94"E
B	24°39'22.35"N	72°24'15.37"E
C	24°40'20.81"N	72°25'34.73"E
D	24°37'54.51"N	72°27'46.63"E
E	24°38'50.24"N	72°28'55.57"E
F	24°43'49.64"N	72°24'32.28"E

2.2.0 LOCATION AND ACCESSIBILITY

2.2.1 The Rohua area is located 18 km NW of Revdar via NH168. Motorable metalled roads are available in the area.

2.2.2 The nearest railway station is Raniwara Railway station which is 49.6 km away from Rohua village via Rj SH 11.

2.3.0 PHYSIOGRAPHY

2.3.1 The block features predominantly flat to slightly undulatory topography, with hilly terrain confined to the eastern part. Elevation ranges from a minimum of 265 meters to a maximum of 660 meters at the hilltops. The area is largely covered by alluvium, with scattered exposures of granitic rocks in the middle-eastern part of the block.

2.3.2 The major drainage system in the area includes the Sipu Nadi and its tributaries, Sukli Nadi and Dior Nadi. Sipu Nadi flows from north to south before turning southwest, while Sukli Nadi originates from the Jeerawal hill range, flowing initially northwest, then north to south, and eventually southwest to join the Sipu Nadi. These rivers are fed by numerous seasonal streams emerging from the Jeerawal hills in the west and minor strike ridges in the north. Most of these streams remain dry for most of the year, becoming active only during the monsoon. The overall drainage pattern in the plains and gently undulating terrain is dendritic, with tributaries typically joining the main channels at acute angles.

2.3.3 The area experiences a typical semi-arid climate characterized by extreme temperature variations and low rainfall. According to the Köppen climate classification, it falls under the BShw category, indicating a semi-arid climate with steppe vegetation, while the Thornthwaite classification places it in the DAw group, also reflecting semi-arid conditions. Summers, lasting from March to June, are intensely hot and dry, with temperatures reaching up to 45°C, while winters (December to February) can be quite cold, with temperatures dropping to around 8°C. The region receives an average annual rainfall of approximately 328 mm, the majority of which occurs during the short southwest monsoon season from July to September. Hot winds are common in summer, and winters can be severe.

2.4.0 FLORA & FAUNA

2.4.1 The semi-arid to arid climate of the region supports sparse vegetation, with no dense

forest cover except for open scrub, mixed jungle in the northwestern part, and the Rohua protected forests area in the east and middle part of the block. Vegetation varies with topography and soil, ranging from grasses and shrubs to trees such as babul (*Acacia arabica*), neem (*Azadirachta indica*), mango (*Mangifera indica*), cactus, and dhak (*Butea frondosa*). Extensive cultivation is practiced in the plains, with both Rabi and Kharif crops, including maize, pulses, gram, groundnut, wheat, jowar, cumin, and pomegranate. Wildlife is limited but includes species like nilgai, monkeys, foxes, wild dogs, wild boars, rabbits, and various snakes, along with colorful birds such as peacocks and kingfishers..

3.0.0 REGIONAL GEOLOGY

3.1.0 The southwestern expanse of Rajasthan is largely underlain by the Meso- to Neoproterozoic formations, including the Delhi Supergroup associated with the South Delhi Fold Belt (SDFB), as well as younger Post-Delhi intrusives like the Erinpura Granite and the Malani Igneous Suite (Sinha Roy, 1984). The earliest geological description of this region, formerly known as Sirohi State, was provided by Hacket in 1889, who grouped the local rocks under the Aravalli Series, correlating them with those around Udaipur. Coulson (1933) later produced a comprehensive geological map of the Sirohi area, identifying widespread metasedimentary sequences dominated by phyllite, mica-schist, marble, and minor quartzite interlayered with volcanic rocks. He considered these rocks part of the Aravalli System of Archaean age, a view supported by Heron (1938).

Subsequent investigations by Gupta et al. (1980) and Roy and Sharma (1999) revised this classification. They demonstrated that the so-called Aravalli System to the west of the Aravalli range actually comprises two distinct lithostratigraphic units: (i) a metamorphosed and intensely deformed sequence, and (ii) a younger, largely undeformed, unmetamorphosed sequence of felsic volcanics and associated sediments. The former was designated as the Sirohi Group by Gupta et al. (1980), stratigraphically positioned above the Delhi Supergroup. The latter sequence, lying above the Sirohi Group, was identified as the Punagarh Group in the Pali District and the Sindreth Group in the Sirohi District.

The Sirohi Group itself is further divided into the Jiyapura, Reodar, and Khiwandi formations (Gupta et al., 1980, 1997). The Sindreth Group is characterized by bimodal volcanic flows, primarily felsic with a minor mafic base, accompanied by volcanoclastic layers, as well as localized deposits of conglomerate, arkose, and shale (Gupta et al., 1980, 1997; Roy et al., 1999).

Rocks of the Delhi Fold Belt have undergone multiple deformation and metamorphic episodes, reaching amphibolite facies, and were intruded by post-collisional granitoids, particularly the Erinpura Granite (Heron, 1938). These granitoids, dated between 860–830 Ma (Choudhary et al., 1984; Deb et al., 2001; van Lente et al., 2009), are widespread across both the southern DFB and its foreland. A common deformational phase affected both the Erinpura intrusives and the Sirohi metasediments, imparting NW–SE oriented foliations aligned with the regional structural trend.

This tectonic fabric is overlain by younger felsic volcanic rocks and intruded by the 770–750 Ma granitoids of the Malani Igneous Suite. These granitoids, ranging from gneissic to porphyritic types, were originally grouped under the Erinpura Granite by Coulson (1933), Heron (1953), and later studies (Gupta et al., 1980, 1997; Sinha Roy et al., 1998). The Erinpura Granite exhibits a spectrum of lithologies, from coarse porphyritic granitoids to strongly banded gneisses, occasionally enclosing metasedimentary inclusions.

The onset of Malani magmatism (~750 Ma) began with an extensive volcanic phase, producing felsic flows, rhyolitic tuffs, ash beds, and breccias. This phase also included mafic components such as basalt and andesite. It was succeeded by contemporaneous plutonic activity, resulting in the emplacement of the Jalor, Siwana, and Mirpur granites. These volcanic products are intruded by several mafic and felsic dykes trending NNW–SSE.

The western and southwestern sectors of the region are mantled by extensive Quaternary deposits of windblown sand, soil, and alluvium, forming the southeastern limit of the Thar Desert.

3.1.1 The Delhi Fold Belt exhibits a complex deformational history characterized by three distinct phases: F_1 and F_2 folds, which are coaxial, and a subsequent F_3 phase that introduces cross-folding (Naha et al., 1984). In contrast, the structural complexity in the Sirohi Group is relatively subdued, typically exhibiting a single generation of schistosity and a corresponding down-dip lineation (Roy and Sharma, 1999). Both the Delhi Supergroup and the Sirohi Group have experienced regional metamorphism, reaching greenschist facies conditions (Gupta et al., 1980, 1997).

Table -2. Generalized stratigraphic succession of southwestern Rajasthan (after Gupta et al., 1997 and Sinha Roy,1984).

LITHOLOGY	FORMATION	GROUP	SUPERGROUP	AGE

Fine Aeolian sand and silt with occasional Kankar	Thar Desert			Holocene
Rhyolite porphyry	Malani Intrusive	Sankra dykes	Malani Igneous Suite	Neoproterozoic
Granite porphyry	Malani Intrusive			
Dolerite	Malani Intrusive			
Granite	Mirpur Granite	Jalore Plutonics		
Biotite Granite	Jalore Granite			
Volcanics breccias, ash bed and agglomerate rhyolite	Kailana felsic volcanics	Jodhpur volcanics		
Granite, Coarse grained granite, Medium grained granite, Fine grained granite, Granite gneiss, Migmatites	Erinpura granite and gneiss			Neoproterozoic
Quartz vein	Intrusive			
Basic meta-volcanics	Goyali	Sindreth	Delhi	Palaeoproterozoic to Mesoproterozoic
Mica schist marble quartzite	Reodar	Sirohi		
Biotite schist migmatite	Jiyapura			
Base not exposed				

3.2.0 GEOLOGY AND STRUCTURE OF THE BLOCK AREA

3.2.1 Granitic rock is exposed in the middle-eastern part of the block which is intruded by mafic dykes, quartz veins and granite porphyry. The other part of the block is occupied by fine aeolian sand and silt with occasional kankar of the Thar Desert Fm.

Table-3. Lithostratigraphic sequence of the proposed Jeerawal(W)-Rohua block.

LITHOLOGY	FORMATION	GROUP	SUPERGROUP	AGE
Fine Aeolian sand and silt with occasional Kankar	Thar Desert			Holocene

<table>
<tr><td>Quartz porphyry, Granite porphyry, Mafic dykes, Diorite dyke</td><td>Malani Intrusive</td><td rowspan="2">Sankra dykes</td><td rowspan="2">Malani Igneous Suite</td><td rowspan="2">Neoproterozoic</td></tr>
<tr><td>K-feldspar granite</td><td>Jalore Granite</td></tr>
<tr><td>Coarse grained granite, Medium grained granite, Fine grained granite, Granite gneiss, Sheared granite, Muscovite bearing foliated granite, Biotite granite</td><td>Erinpura granite and gneiss</td><td colspan="2"></td><td>Neoproterozoic</td></tr>
<tr><td colspan="5">Base not exposed</td></tr>
</table>

4.0.0 PREVIOUS WORK/ BACKGROUND INFORMATION

3.1.2 FS: 2017-18: The geochemical report of toposheet no. 45D/06 by GSI highlights the northeastern region, particularly northwest of Jeerawal, as anomalous for elevated concentrations of U (22.12 ppm), Th (63 ppm), Pb (35 ppm), and Ta (5.51 ppm), associated with Erinpura granite, Jalore granite, and Malani volcanic granite porphyry. Similarly, high values of K_2O, Rb (253 ppm), Y (101 ppm), and Sn (15.46 ppm) are concentrated in the same lithological units in the northeastern part. Notably, extremely high levels of Zr (2776 ppm) and Hf (100.70 ppm) have been recorded near Jeerawal over granites and Barechi over quartzite-mica schist and marble. These patterns suggest a strong geochemical enrichment linked to the granitic and metamorphic lithologies in the area.

3.1.3 FS: 2021-22: A reconnaissance survey by GSI in the Jeerawal–Sanpur area identified significant U, Th, Zr, and REE mineralization in granitoid rocks through detailed EPMA analysis. Granodiorite samples showed the highest total REE (TREE) concentration at 372 ppm among felsic rocks. Out of 113 bedrock samples collected, 15 samples recorded TREE values greater than 500 ppm, indicating substantial REE enrichment in the area. The proposed block is adjacent to this area with similar lithology.

3.1.4 Anomalous values of LREE La(373.97 ppm), Ce(666.12 ppm), Pr(74.33 ppm), Nd(286.71ppm), Eu(2.52 ppm)) are found to occur over Erinpura granite, Jalore granite, and granite porphyry near Jirawal, Bhilda, and Barechi over quartzite, marble, and

micaceous quartzite.

3.1.5 The Geophysical survey of toposheet 45D/06 reveals a NE-SW trending high gravity anomaly zone with high magnetic response, which is indicative of an underlying basic intrusive body. Two lineaments are interpreted in this zone near Lalpura and Jeerawal.

4.2.0 OBSERVATION AND RECOMMENDATIONS OF PREVIOUS WORK

4.2.1 The geochemical report of Toposheet 45D/06 exhibit Anomalous values of LREE La(373.97 ppm), Ce(666.12 ppm), Pr(74.33 ppm), Nd(286.71ppm), Eu(2.52 ppm)) are found to occur over Erinpura granite, Jalore granite, and granite porphyry near Jeerawal, Bhilda, and Barechi over quartzite, marble, and micaceous quartzite.

4.2.2 The Geophysical survey of toposheet 45D/06 reveals a NE-SW trending high gravity anomaly zone with high magnetic response, which is indicative of an underlying basic intrusive body. Two lineaments are interpreted in this zone near Lalpura and Jeerawal.

4.2.3 Therefore, based on the geochemical and geophysical report, it is recommended that further investigation should be accomplished and the rock samples are to be tested for chemical analyses to establish the presence of REE mineralization above its cut off grade.

5.0.0 PROPOSED EXPLORATION SCHEME

5.1.0 The exploration program is proposed in accordance with the objective set for the reconnaissance survey (G-4) of the block. The Exploration shall be carried out as per Minerals (Evidence of Mineral Contents) Amendment Rules, 2021. Accordingly, the following scheme of exploration is formulated in order to achieve the objectives. In accordance with the objective set for the Jeerawal(W)-Rohua Block, the following scheme of exploration has been formulated. The details of different activities to be carried out are presented in subsequent paragraphs**.**

5.2.0 THE EXPLORATION IS PROPOSED WITH THE FOLLOWING OBJECTIVES:

- Preparation of Geological map on 1:12,500 scale.
- To map the intrusives and delineate the REE mineralized zone.
- To facilitate the Central government for the auction of the block.

5.3.0 GEOLOGICAL MAP

5.3.1 The geological map (1:12,500 scale) will be prepared. Rock types, their contact, and structural features will be mapped. Dykes and veins of alkaline rocks will be demarcated. This map will be used as base map for future work.

5.4.0 **GEOCHEMICAL MAPPING**

5.4.1 Bed Rock Sampling (Grab/Chip/Channel/Soil): Systematic bedrock and channel sampling in the area will be carried out. The systematic channel samples and pitting/trenching samples may help in defining the mineralized zones.

5.5.0 EXPLORATORY MINING (PITTING)

5.5.1 Pitting (excavation) shall be carried out in the potential zones identified based on the results of geological mapping and geochemical sampling. A provision for deep pitting in weathered granitoid rocks of up to 5m and a total volume of 50 cubic meters has been approved in 11th TCC-II meeting. w

5.6.0 LABORATORY STUDIES

Chemical Analysis:

5.6.1 ICP-MS analyses will be carried out for the REE and trace element concentration in 150 rock samples including 75 surface and 75 pit samples.

5.6.2 Petrological Studies: Approximately 10 specimens will be studied.

5.6.3 Mineralographic Studies: Approximately 10 specimens will be studied.

6.0.0 QUANTUM OF WORK

6.1.0 The details of the quantum of work for the Jeerawal (W)- Rohua REE Block, Tehsil-Reodar, Dist. Sirohi, is furnished below:

Table No. 3

S. No.	**Item of Work**	**Unit**	**Target**
1.0	**Large scale (LSM) Geological mapping (1:12500), Surveying, sampling**	sq. km.	48.6
2.0	**Mineral Investigation (Pitting)**		
a)	Excavation of pit up to 5.0m depth	per cubic meter	50
5.0	**Laboratory Studies (Chemical Analysis)**		
5.3	**Whole rock studies**	per sample	30

5.4	**Petrological & Mineralographic studies**		
a)	Preparation of thin section	per sample	10
b)	Study of thin section for petrography	per sample	10
c)	Digital photomicrograph of thin section & XRD	per sample	10
6.0	**Geological Report Preparation**	Nos	1

7.0.0 COST ESTIMATE

7.1.0 Tentative Cost has been estimated based on the Schedule of Charges (SoC) of projects funded by National Mineral Exploration Trust (NMET) w.e.f. 01/04/2020. The total approved cost in **11th TCC-II** is Rs. **58.75 Lakhs**. The summary of cost estimates for the Reconnaissance Survey (G-4 Level) is given in Table 4, and details of costs are given in Annexure-IV. The tentative Time schedule/action plan for the proposed Reconnaissance Survey (G-4) for REE is given in Table No.5.

Table-4. Estimated Cost for The Reconnaissance Survey (G-4) of REE Minerals in Jeerawal (W)-Rohua Block, Tehsil-Reodar, District: Sirohi, Rajasthan

S.N	Item of Work	Total Amount (Rs)
A	Geological Work (Mapping, Excavation, & Sampling)	**28,46,236**
B	Excavation	**2,66,500**
C	Laboratory Studies (ICPMS, XRD, Petrography)	**15,12,025**
D	Geological Report Preparation	**2,31,238**
E	Preparation of Exploration Proposal (5 Hard copies with a soft copy)	**92,495**
G	Peer review Charges	**30,000**
H	Total Estimated Cost without GST	**49,78,494**
I	Provision for GST (18% of GST)	**8,96,129**
J	Total Estimated Cost with GST	**58,74,623 OR 58.75 LAKHS**

Table-5. The tentative time schedule/action plan for the proposed Reconnaissance Survey (G-4) for REE Minerals.

Time schedule for the Reconnaissance Survey (G4) in Jeerawal(W)-Rohua Block for the REE, Sirohi, Rajasthan

Total Area-48.6 Sq.Km: Estimated time - 10 months													
		Months											
Sr. No	**Activities**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	Camp Mobilisation												
2	Geologist Days Field												
3	Pitting												
4	Laboratory Studies												
5	Sampling Party												
6	Camp Demobilisation												
7	Geologist Party in HQ												
8	Geologist Report Writing with Peer Review												
*The commencement of the project shall be deemed effective from the date the exploration acreage is made available, along with the receipt of all necessary statutory clearances													
*Any time lost due to monsoon conditions, agricultural activities, forest clearance delays, or local law and order issues shall be considered an addition to the above timeline.													

8.0.0 References

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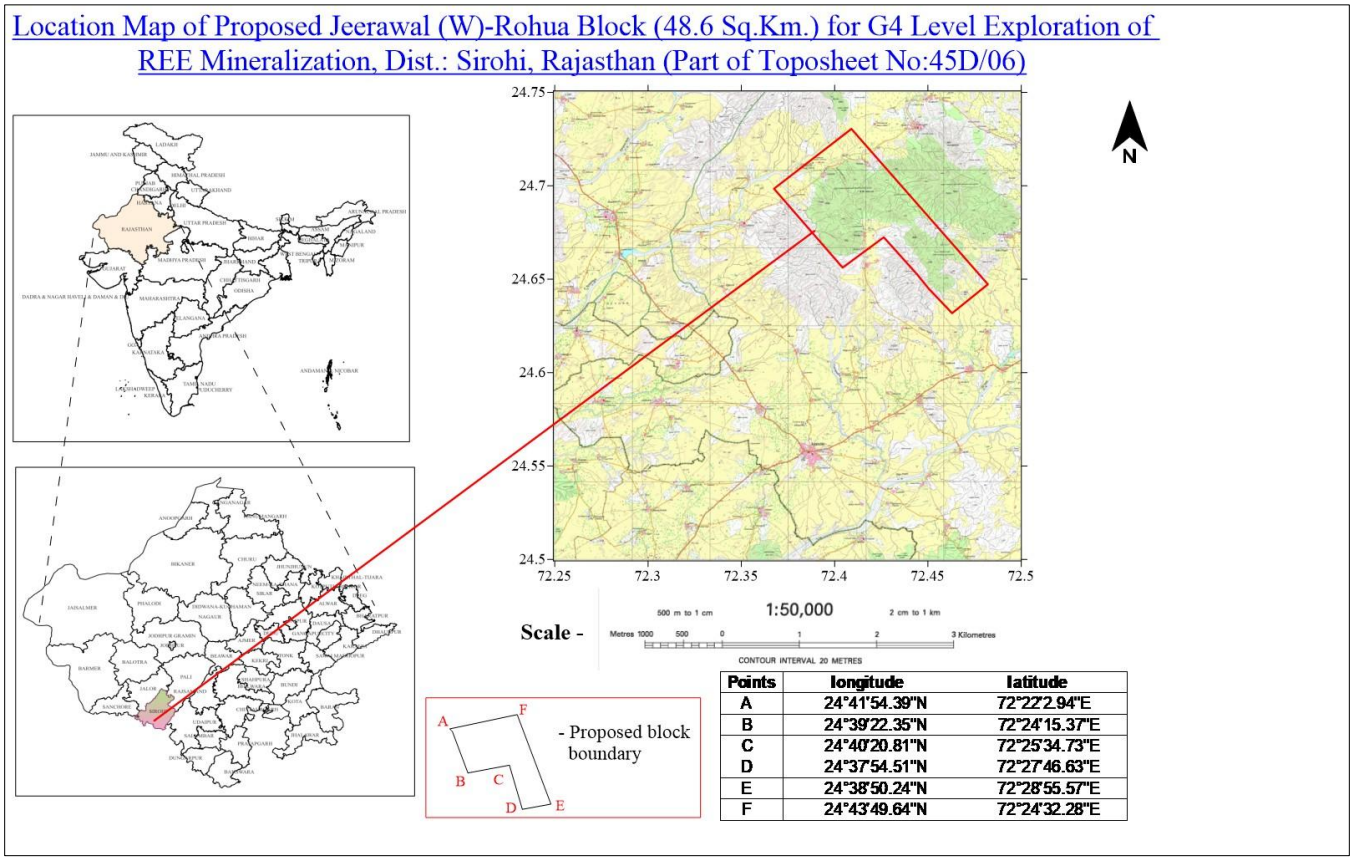
Annexure -I



Points	longitude	latitude
A	24°41'54.39"N	72°22'2.94"E
B	24°39'22.35"N	72°24'15.37"E
C	24°40'20.81"N	72°25'34.73"E
D	24°37'54.51"N	72°27'46.63"E
E	24°38'50.24"N	72°28'55.57"E
F	24°43'49.64"N	72°24'32.28"E

Figure 1. Location map of Jeerawal (W) -Rohua REE block, Tehsil-Reodar, Dist. – Sirohi, Rajasthan

Annexure -II

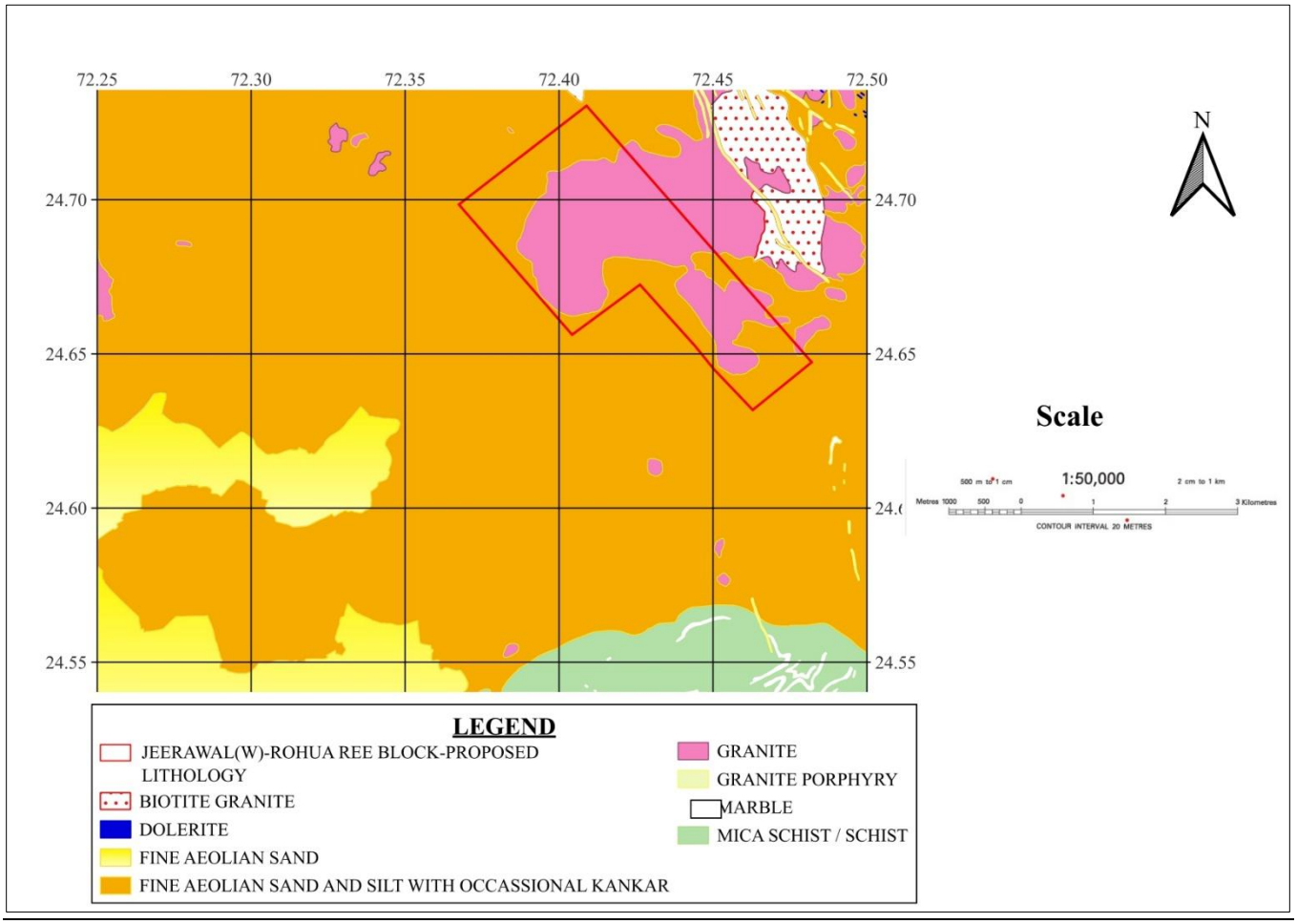


Figure 2. Geological map in and around the Jeerawal(W)-Rohua area at a scale of 1:50,000. (after GSI)

FCI Aravali Gypsum and Minerals India Ltd.

COST SHEET

Annexure – III

COST SHEET FOR RECONNAISSANCE SURVEY (G-4) FOR REE IN JEERAWAL(W)-ROHUA BLOCK, TEHSIL-REODAR, DISTRICT: SIROHI, RAJASTHAN							
Total Area - 48.6 Sq Km; Completion Time - 10 Months							
S.N	**Item of Work**	**Unit**	**Rates as per NMET SoC 2020-21**		**Estimated Cost of the Proposal for**		**Remarks**
			SoC-Item - Sl No.	**Rates as per SoC**	**Qty.**	**Total Amount (Rs)**	
A	**GEOLOGICAL WORK**						
1	**Mapping ,Excavation, & sampling**						
a	Charges for one Geologist per day at HQ for monitoring, data processing etc.	day	1.3	**9,000**	**60**	**5,40,000**	
b	Charges for one Geologist per day at field for mapping, channel sampling and logging.	day/geologist	1.3	**11,000**	**150**	**16,50,000**	
c	Labour Charges(2 Nos) for one Geologist; (Base rate - Rs.541/-+PF Rs.64.92/-+ESI-Rs.17.58/-+Bonus- Rs.45.07/-+EL-Rs.3.30/-=Rs. 698.87/-)	day	5.7	**541**	**300**	**1,62,300**	Amount will be reimbursed as per the notified rates by the Central Labour Commissioner or the respective State Govt.. whichever is higher, calculated on the basis of 2 parties
d	Charges for Sampler (1 party) (for pit sample)	one sampler per day	1.5.2	**5,100**	**24**	**1,22,400**	
e	Labour Charges(4 Nos) for one Geologist; (Base rate - Rs.541/-+PF Rs.64.92/-+ESI-Rs.17.58/-+Bonus- Rs.45.07/-+EL-Rs.3.30/-=Rs. 698.87/-)			**541**	**96**	**51,936**	
2	**Survey**						

a	Topographical Survey	day	1.6.1a	**8300**	20	166000	
a	Determination of boundary points and base station by DGPS	Per Point of observation	1.6.2	**19,200**	**8**	**1,53,600**	4 Boundary Points & 4 Base stations
					Total - A	**28,46,236**	
B	**EXCAVATION**						
1	Pitting (Upto 5m)	per Cu.m	2.1.3	**5,330**	**50**	**2,66,500**	The dimention of the pit will be decided by the geologist after cosidering the lithology
					Total - B	**2,66,500**	
C	**LABORATORY STUDIES**						
1	**Chemical Analysis**						
	a Elemental composition (34 elements)	Nos.	4.1.14	**7,731**	**150**	**11,59,650**	
	Check samples External ICPMS from another Institute to cross check						
	b. Elemental composition (34 elements)		4.1.14	**7,731**	**15**	**1,15,965**	
	xrf		4.1.15a	**4,200**	**30**	**1,26,000**	
1	External checking for XRF (10%)		4.1.15a	**4,200**	**3**	**12,600**	
2	**Petrographic Study**						
i	Preparation of thin section	Nos	4.3.2	**1,549**	**10**	**15,490**	
ii	Study of Thin Section	Nos	4.3.4	**4,232**	**10**	**42,320**	
3	**Mineragraphic Study**	Nos					
ii	XRD study	Nos	4.5.1	**4,000**	**10**	**40,000**	
					TOTAL - C	**15,12,025**	
					Sub Total (A to C)	**46,24,761**	
E	**Geological Report Preparation**		5.2	**For the projects upto Rs. 50 Lakhs : A Minimum of Rs. 1.5 lakhs or 5% of the work whichever is more**	1	**2,31,238**	EA has to submit the final Geological Report in Hard Copies (5 Nos) and the soft copy to NMET.

F	**Preparation of Exploration Proposal (5 Hard copies with a soft copy)**	**5 Hard copies with a soft copy**	5.1	**2% of the Cost or Rs. 3.8 Lakhs whichever is lower**	1	**92,495**	EA has to submit the Hard Copies and the soft copy of the final proposal along with Maps and Plan as suggested by the TCC-NMET in its meeting while clearing the proposal.
G	**Peer review Charges**		As per EC decision			**30,000**	
H	**Total Estimated Cost without GST**					**49,78,494**	
I	**Provision for GST (18% of GST)**	**%**				**8,96,129**	GST will be reimbursed as per actual and as per notified prescribed rate
J	**Total Estimated Cost with GST**					**58,74,623**	
				or Say Rs. In Lakhs		***58.75***	
Note - If any part of the project is outsourced, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC.							