

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI  
TREPAN LAL S/o SHRI AMRU FOR THE CONSTRUCTION OF OWNER DRIVEN  
CONSTRUCTION FOR HOUSING (ODCH)  
VILLAGE BASRALI, TEHSIL- BARKOT- DISTRICT UTTARKASHI,  
UTTARAKHAND  
KHASARA No. – 9895(b) & AREA – 0.015 ha**

**Date of Inspection: 28/12/13**

In a 'World Bank' funded programme, Government of Uttarakhand has provided teams of Consultant Geologists and Consultant Associate Geologist to Director, Geology and Mining Unit, Uttarakhand for geological studies in proposed site for Owner Driven Construction For Housing (ODCH) in disaster affected districts of Uttarakhand.

Director, Geology and Mining Unit, Directorate of Industries, Uttarakhand has issued an Office Order No. 1612 Aa. Pra./Bhu.Ni./Bhu.Khani.E./2013-14 dated 10<sup>th</sup> December 2013 regarding geological studies in disaster affected five districts of Uttarakhand, Uttarkashi is one of them. Thus, undersigned have taken geological observation during traverses and collected field geological data under the management of cosignatory departmental 'Assistant Geologist'.

In the above mentioned questioned area, the reconnaissance geological investigation was carried out in the presence and co-operation of Shri Dharam Singh Rana, Revenue Sub-Inspector, Gangtadi/Chaptadi. The proposed site is 38Km approx from Tehsil Headquarter Barkot, District Uttarkashi, Uttarakhand. It falls on coordinate – N 30<sup>o</sup> 54.380 E 78<sup>o</sup> 13.310 El. 5948feet. The site is 23Km approx from NH-123 (Delhi-Yamunotri National Highway) on Rajgari-Sarnaul motar marg through 3Km Takhla bridle path on the right bank of river Badiyar and is 2Km approx horizontal distance and ±180m approx vertical distance from the Badiyar river which is flowing in N 135<sup>o</sup> direction..

The site is located on colluvial deposit and man-made cultivated step terraces are present. The thickness of overburden is varying in size at places in between 140-150m approx with boulders embedded in the soil at the proposed site. The boulders are varying in size from 70cm to 1.5m approx are found at and around the proposed site location. The uphill slope at the proposed site is 45<sup>o</sup>-49<sup>o</sup> and the downhill slope is 21<sup>o</sup>-23<sup>o</sup>, then after two terraces the slope gradient increases to 54<sup>o</sup>-56<sup>o</sup> approx, sloping in N 60<sup>o</sup> direction. The proposed site location is covered with thick soil 1.5-2m approx. At around the proposed site location low vegetation is present. At about 120-130m approx distance Takhla nala, a perennial flow is flowing in N 50<sup>o</sup> direction.



**Close view of the proposed site**



**Uphill side view of the proposed site**

At the proposed site, there was no in-situ rocks exposed but, boulders of compact phyllite with quartz vein of varying size are found embedded in the soil.

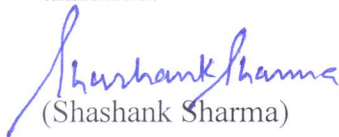
At the proposed site, thick and consolidated soil cover with rock fragments of phyllite varying in size from 2-5cm, with fined grained brownish clayey soil matrix are found. Boulders of varying sizes were embedded in the soil at and around the proposed site. The soil water saturation is low but little seepage is observed at the proposed site. The trees and electric poles near the proposed site are standing straight which shows there is no active movement in the area. The proposed area receives high rainfall during the monsoon season. Around the proposed site habitation is already present. The Takhla bridle path is passing close to the proposed site thus in its support a retaining wall at the toe of the proposed site is already present.

### RECOMMENDATIONS:

1. Inclined retaining wall at the south-western backside with depth of foundation more than the foundation depth of the house, with provisions of weep holes and sufficient gap of about 2-3feet in between the backside retaining wall and the proposed construction should be constructed. And also, proper drainage system between the retaining wall and the wall of house should be developed.
2. The surface drainage should be properly planned through lined drain/pipe, so both rainwater from uphill side as well as waste water from the existing houses to be release safe place at down-hill along a channel.
3. The foundation depth of the houses must be as per the compactness of the overburden material in the proposed site.
4. The retaining wall at the toe of the proposed site should be re-developed with proper inclination and with provision of weep holes at specific distance.
5. The soakpits and toilet foundations must be quiet away from the house so that the foundations are not directly affected from subsidence due to excessive seepage.
6. The premises of house must be made 'pukka' to prevent excessive subsurface seepage and downward percolation of water and differential settlement.
7. Framed structure must be used and light roof should be constructed, as the area falls in the earthquake zone IV, so it is essential that the house must be constructed with latest earthquake resistive techniques, scientific and technically sound craftsmanship with logical and favourable principles of soil mechanics.

### CONCLUSION:

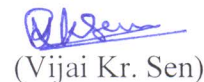
Prima-facie, presently the proposed site of Shri. Trepan lal S/o Shri. Amru is geologically feasible for the proposed construction, only if, the above mentioned recommendations will be followed strictly, otherwise, in their contravention; geological suitability will be deemed annulled.

  
(Shashank Sharma)


Consultant Associate Geologist

**Date:**

**Place: Camp Uttarkashi**

  
(Vijai Kr. Sen)

Consultant Geologist

  
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नक्शा अभ - सरनील मध्ये वसराळी लगे वकला एही वकला तह वकला  
 जिला उत्तरकाशी नीली भूमि परपी फेवीकेट आवास हेत प्रस्तावित भूमि

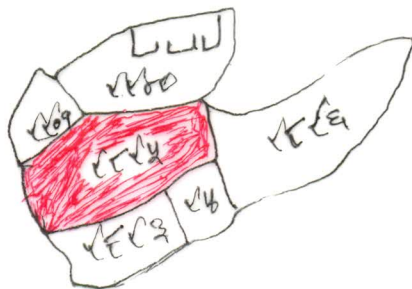
खेत नम्बर	रकबा	खाला संख्या	नाम भूमिधारी	विवरण
1	2	3	4	5
12/1/1	0.015	40	कैरा आदि जयदलाल, अर्जुन तेजनलाल शंभु अमरु आदि	

शुभ  
 शंभु अमरु  
 जयदलाल शंभु अमरु  
 28/12/13

नक्शा अभ सरनील मध्ये वसराळी लगे वकला एही वकला तह वकला जिला  
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तेजनलाल शंभु अमरु

पैमाना 64" = 1 मिल



आलाकार

- 1 प्रस्तावित क्षेत्र
- 2 पूर्व दिशा 12/1/1
- 3 पश्चिम दिशा 12/1/1
- 4 उत्तर दिशा 12/1/1
- 5 दक्षिण दिशा 12/1/1

तेजनलाल शंभु अमरु

शुभ  
 शंभु अमरु  
 जयदलाल शंभु अमरु  
 28/12/13

प्रस्तावित O.D.C.A.

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