

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF**  
**SHRI JAGMOHAN SINGH S/O SHRI NARENDRA SINGH FOR THE**  
**CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION HOUSING (ODCH)**  
**VILLAGE- NAGANGAON, TOK- TIMRALI, TEHSIL- BARKOT, DISTT.-**  
**UTTARKASHI**  
**KHASARA NO – 5425 & AREA – 0.020 ha**

**Date of Inspection: 19-12-2013**

## **1. INTRODUCTION:**

In a 'World Bank' funded programme, Government of Uttarakhand has provided teams of Consultant Geologists and Consultant Associate Geologists to Director, Geology and Mining Unit, Uttarakhand for geological studies in proposed sites for Owner Driven Construction House (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 traversed and collected field geological observations 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 Bharat Singh Rawat, Revenue Sub-Inspector, Nagangaon, for proposed site of Shri Jagmohan Singh S/o Shri Narendra Singh, Village Nagangaon, Tok Timrali, Tehsil- Barkot, Khasara No- 5425, and Area- 0.020 ha. The site is 12km approximately from Tehsil Barkot, District Uttarkashi, Uttarakhand and is approachable 9km by NH-123 (Delhi-Yamunotri National Highway) and then 3km via Nagangaon-Masalgaon Motor road. The site is 60-70m by bridle path from the Nagangaon road. It falls on coordinates – N 30°50.546' E 78°15.220' and elevation 1397m. The site is on the right bank of river Yamuna and is about 400-500m approximate distance from the Yamuna river bank, in South direction. No plot boundary is present and the site is highly populated.

## **2. GEOMORPHOLOGY OF THE PROPOSED AREA:**

The proposed site is situated on a flat terrace about 80-100m downhill in West direction from the Nagangaon-Masalgaon Motor road. The uphill slope is 55°-60° towards West direction up to 40-50m from the site and the downhill slope is 20°-22° towards West direction from the site. The overburden thickness in the proposed site is about 20-30m approximately and the soil matrix is composed of brown colored silty clay. The Badiyar River is 60-70m approximately from the site in Northwest direction flowing in South direction. The proposed site is less vegetated.

### **3. REGIONAL GEOLOGY AND GEOLOGICAL OBSERVATION AROUND THE CONSTRUCTION SITE:**

Uttarkashi valley exhibits characteristic rugged topography of the Lesser Himalayan terrain. The ground elevations generally vary between 1150m to 2000m above msl. The hill slopes in the area are generally observed to comprise of rocky outcrops, rocky cliffs and mantle of colluviums. The hill slopes in the area is generally moderately steep ( $25^{\circ}$ -  $35^{\circ}$ ) to steep ( $36^{\circ}$ -  $45^{\circ}$ ) while few escarpments or cliffs ( $> 50^{\circ}$ ) are also present. Uttarkashi town is located in the Lesser Himalayan geotectonic block and it is bound by two major Thrust fault i.e. Main Central Thrust (MCT) and Srinagar Thrust (ST). The MCT can be traced to the northeast of Uttarkashi while the Srinagar Thrust lies in the southwest. Phyllite, metabasic and quartzite of Garhwal Group are exposed around the area.

Geologically, the area falls in the region of rocks of Bhatwari-Barkot Formation (= Chail) of Ramgarh Group of Lesser Himalayan terrain, the rocks are mainly phyllites, quartzites with intrusion. It should be emphasized that the quartzites, phyllites and metabasics (= Chail) directly underlying the crystalline are a typical phenomenon for all the Himalayas.

No in-situ rocks found near the proposed site. The site is consolidated and stable.

### **4. GEOTECHNICAL OBSERVATION OF THE PROPOSED CONSTRUCTION SITE:**

The proposed area is on a flat alluvial deposit man made terrace. The general slope of the site is  $5^{\circ}$ - $10^{\circ}$  towards Southwest direction. The soil here is brown colored silty clay material with thickness of 2-4m. The Nagangaon-Masalgaon motor road and some houses in the NE direction have been constructed within the past 5 years. The proposed site depending on the geotechnical observations is stable for the construction of the house.



**A side view of the proposed site from West direction.**

## 5. RECOMMENDATIONS:

Based on above surface geological observations of the proposed area the following remedial measures for construction of a geologically suitable house are recommended:

1. Retaining wall of 2m height must be constructed at the backside in NE direction of the plot with proper weep holes at specific distance for better stability of the plot.
2. A gap of about 0.5-1.0m must be kept between the backside retaining wall and the backside wall of the proposed house.
3. The foundation depth of the houses must be as per the compactness of the overburden material in the proposed site.
4. The back, sides and premises of the houses must be made cemented to prevent subsurface seepage and a proper drainage system to be developed.
5. The area falls in Lesser Himalayan earthquake zone IV so the houses must be erected with latest earthquakes resistive techniques, and scientific and technically sound craftsmanship.

## 6. CONCLUSION:

Prima-facie, the proposed site of Shri Jagmohan Singh S/o Shri Narendra Singh 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.

*Anupriya*

(Anupriya Shah)  
Consultant Associate Geologist

**Date:** 25<sup>th</sup> Dec 2013

**Place:** Camp Uttarkashi

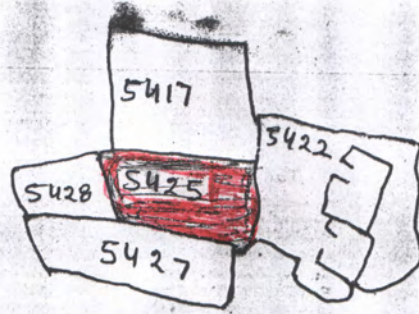
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नाममा मोजा नगाणगाव मध्ये टिमटाली गावे तसेच २५५ जो देवी कामदा हे प्रमाणित परिवार हेड प्री कॅम्पसिबल अवन निर्माण कला जाहेत हे,



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- (४) पश्चिम दिशा में खसरा नं० ५४२८ भगतसिह जादि

मार्ग कर्ता  
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राज्य नगाणगाव  
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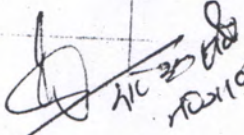
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राज्य नगाणगाव  
महाराज

नकल खासतः भोजपुर जिले के मध्य टिकराना तोक, पट्टी  
 तहसील बड़कोट, जिला उत्तरकाशी जहां पर देवी आपदा प्रभावित परिवार हेतु  
 प्रीफेब्रिकेट भवन निर्माण हेतु भूमि प्रस्तावित की जा रही है।

खसरा नम्बर	क्षेत्रफल हे० में	खतौनी संख्या	खाता नम्बर	भूमिधर का नाम/पिता/पति का नाम	विवरण
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