



Republic of the Philippines  
Department of Environment and Natural Resources  
**MINES AND GEOSCIENCES BUREAU**  
Regional Office No. XIII

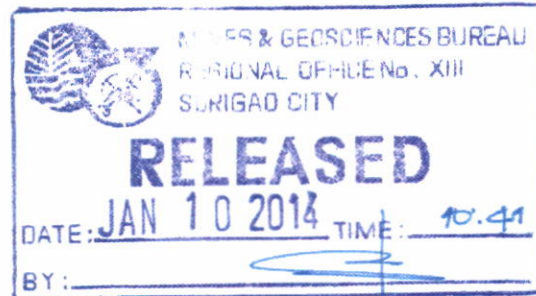
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January 9, 2014

RD-G-14-01-09

**Honorable Johnmark C. Billanes**  
Municipal Mayor  
Municipality of Trento  
Province of Agusan del Sur



Dear Hon. Mayor Billanes,

Respectfully furnishing your end the document entitled "Results of the MGB Landslide and Flood Assessment and Mapping (1:10,000 scale) of the Municipality of Trento, Agusan del Sur". The assessment is in line with the government's effort aimed at reducing, if not totally mitigating the destructive effects and impacts of natural hazards to the populace.

The Office expresses its deep gratitude for the support and assistance rendered to the Geohazard Mapping and Assessment Team of our Regional Office during the conduct of the field survey.

We look forward to a continuing partnership and collaboration with the LGU of Trento, Agusan del Sur in the nation's overall disaster risk reduction program.

Very truly yours,

BY THE AUTHORITY OF THE REGIONAL DIRECTOR:

  
**NOLI N. ARREZA**  
OIC, Mine Management Division



GSD-13-01-Ghz-08

Cc: **DIRECTOR, MGB CO**  
**HON. GOVERNOR, Surigao del Sur**  
**HON. REPRESENTATIVE, 2<sup>nd</sup> District, SDS**  
**Office of Civil Defense, RDRRMC Carag**

**REGIONAL EXECUTIVE DIRECTOR, DENR, R-XIII**  
**PENRO, Agusan del Sur**  
**CENRO, Bunawan, ADS**  
**REGIONAL DIRECTOR, DILG-Caraga**

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"MINING SHALL BE PRO-PEOPLE AND PRO-ENVIRONMENT  
IN SUSTAINING WEALTH CREATION AND IMPROVED QUALITY OF LIFE."

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	Barangay Basa	Barangay Poblacion
	Barangay Cebolin	Barangay Pulang-Lupa
	Barangay Cuevas	Barangay Salvacion
	Barangay Kapatungan	Barangay San Ignacio
	Barangay Langkila-an	Barangay San Isidro
	Barangay Manat	Barangay San Roque
	Barangay New Visayas	Barangay Santa Maria
	Barangay Pangyan	Barangay Tudela



Department of Environment and Natural Resources  
MINES AND GEOSCIENCES BUREAU  
Regional Office No. 12, Surigao City



TRENTO-ADS-1:10,000 SCALE

41-140110-00093

## RESULTS OF THE MGB LANDSLIDE AND FLOOD ASSESSMENT AND MAPPING (1:10,000 SCALE) OF THE MUNICIPALITY OF TRENTO, PROVINCE OF AGUSAN DEL SUR

The Mines and Geosciences Bureau-Department of Environment and Natural Resources (MGB-DENR) conducted landslide and flood assessment and mapping (1:10,000 scale) of areas within the municipality of Trento on October 19, 2013 to November 2, 2013. The assessment is in line with the government's efforts aimed at reducing, if not, totally mitigating the destructive effects and impacts of natural hazards on the populace. Comprising the geohazard assessment team are Joel A. Calugcugan, Melvin A. Mantilla, Elaine L. Galido, geologists from MGB – Caraga Region XIII with the assistance of GSD personnel Mr. Evangelino M. Morales, Jr., Dionesio A. Surigao, Julius A. Sulapas and Samuel A. Jardenil.

The MGB-DENR particularly covered the following areas:

- Puroks 1 to 9 in Barangay Basa
- Puroks 1 to 7 in Barangay Cebolin
- Puroks 1 to 8 in Barangay Cuevas
- Puroks 1 to 15 in Barangay Kapatungan
- Puroks 1 to 9 in Barangay Langkila-an
- Puroks 1 to 8 in Barangay Manat
- Puroks 1 to 6 in Barangay New Visayas
- Puroks 1 to 4 in Barangay Pangyan
- Puroks 1 to 29 in Barangay Poblacion
- Puroks 1 to 12 in Barangay Pulang-Lupa
- Puroks 1 to 9 in Barangay Salvacion
- Puroks 1 to 5 in Barangay San Ignacio
- Puroks 1 to 6 in Barangay San Isidro
- Puroks 1 to 7 in Barangay San Roque
- Puroks 1 to 16 in Barangay Santa Maria
- Puroks 1 to 6 in Barangay Tudela

The assessed areas were rated as having low, moderate, high or very high (critical) susceptibility to landslide. The landslide susceptibility rating parameters are as follows:

**Very High** : Areas usually with steep to very steep slopes and underlain by weak materials. Recent landslides, escarpments and tension cracks are present. Human initiated effects could be an aggravating factor.

**High** : Areas usually with steep to very steep slopes and underlain by weak materials. Areas with numerous old/inactive landslides.

**Moderate** : Areas with moderately steep slopes. Soil creep and other indications for possible landslide occurrence are present.

**Low** : Gently sloping areas with no identified landslides.

Likewise, the assessed areas were also rated as having low, moderate or high susceptibility to flooding. The flood susceptibility parameters are as follows:

**High** : Areas likely to experience flood heights of greater than 1.0 meter and/or flood duration of more than 3 days. These areas are immediately flooded during heavy rains of several hours; include landforms of topographic lows such as active river channels, abandoned river channels and areas along river banks; also areas prone to flashfloods

**Moderate** : Areas likely to experience flood heights of 0.5 to 1.0 meter and flood duration of 1 to 3 days. These areas are subject to widespread inundation during periods of prolonged and extensive heavy rainfall or extreme weather condition. Fluvial terraces, alluvial fans, and infilled valleys are areas subjected to moderate flooding

**Low** : Areas likely to experience flood heights of less than 0.5 meter and/or flood duration of less than one day. These areas include low hills and gentle slopes. They also have sparse to moderate drainage density

The barangay officials were presented with a *Landslide and Flood Threat Advisory* when appropriate. This advisory informs them of their area's susceptibility to landslides and floods and contains the corresponding recommendations.

Summarized below are the results of the assessment of the covered areas:

**Table 1. Results of Landslide and Flood Assessment at Barangay Basa**

Purok	Landslide Susceptibility Rating	Flood Susceptibility Rating	Recommendations
1	None	High	The area is underlain by recent alluvial deposits; Construct proper concrete drainage canals and concrete road on this area to facilitate surface run-off ; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding; Observed for sunken or displaced road surfaces;

			<p>Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquisition of mobile dump trucks and rubber boats are highly recommended for rapid evacuation.</p> <p>Geographic location of Purok 1 situated along Simulao River embankment which is prone to flooding and flash-flood. Concreting of the river-banks and re-channeling are highly recommended. GPS reading is 8°04'13.8"-N/126°03'31.5"-E.</p>
2 Mayniyog	None	High	<p>The area is underlain by recent alluvial deposits; Construct proper concrete drainage canals and concrete road on this area to facilitate surface run-off ; Identify and construct permanent evacuation site which is safe from flooding and landslide; Prohibit settlement along intermittent/perennial creeks/rivers should be implemented which is prone to flooding; Observed for sunken or displaced road surfaces; Develop an early warning (e.g., signages) at (for critical areas only) on steep-slopes where houses situated foot-slopes; Prohibit settlement directly located on foot-slopes; Develop an early warning device/system; Activate BDCC all the time for quick response during emergency; Acquisition of mobile dump trucks and rubber boats are highly recommended for rapid evacuation.</p> <p>Geographic location of Purok 2 "Mayniyog" situated along Simulao River Channel section which is prone to flooding. Concreting of the river-banks and re-channeling are highly recommended. GPS reading is 8°04'41.3"-N/126°04'39.9"-E.</p>
3 Taglubog	None	High	<p>The area is underlain by recent alluvial deposits; Construct proper concrete drainage canals and</p>