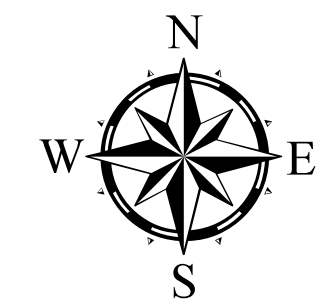
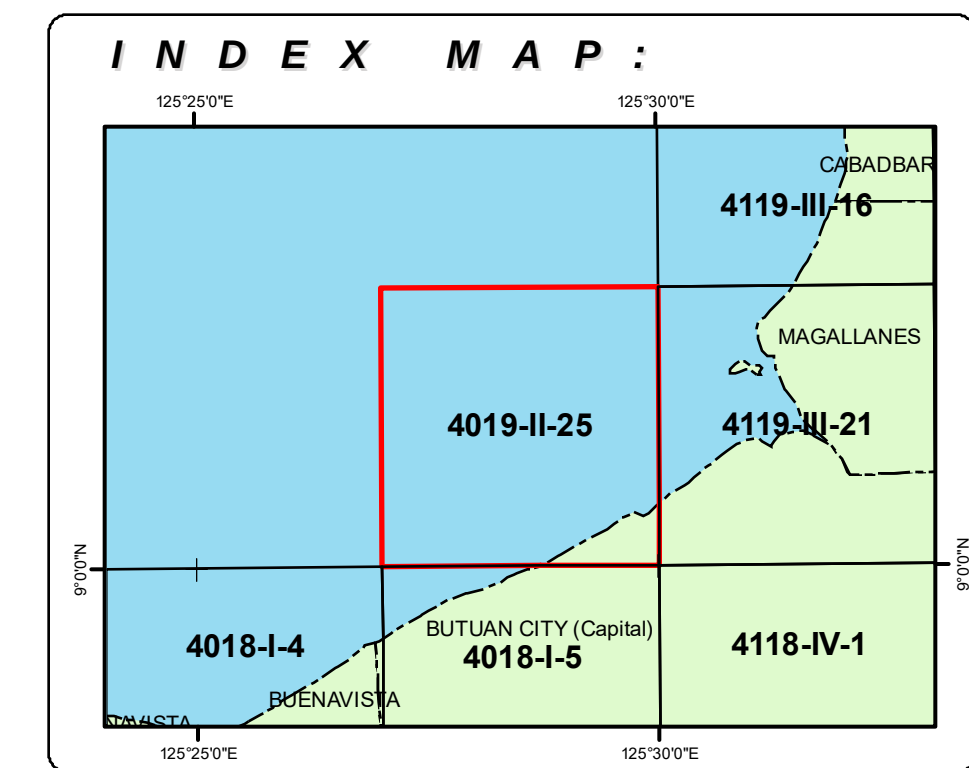
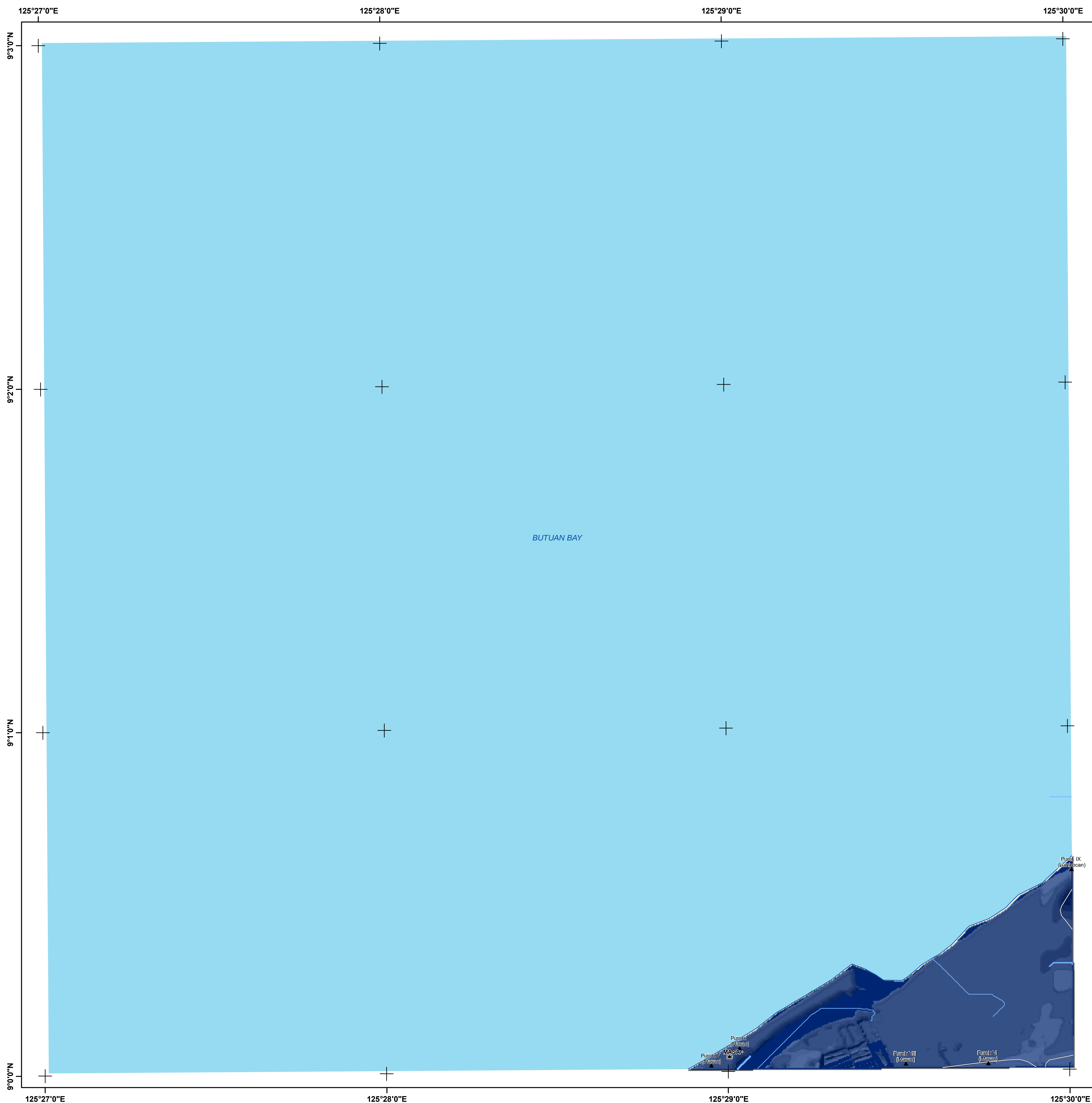




DETAILED LANDSLIDE AND FLOOD HAZARD MAP OF BUTUAN CITY (CAPITAL), AGUSAN DEL NORTE, PHILIPPINES 4019-II-25 MASAO QUADRANGLE



LEGEND :

- | | | | |
|--|--------------------|--|---------------------------------|
| | Main road | | Barangay center location |
| | Secondary road | | Purok/Sitio location (Barangay) |
| | Track; trail | | School |
| | River | | Hospital |
| | Municipal boundary | | Church |
| | Contour (meter) | | Proposed relocation site |

Landslide

- | | |
|--|--|
| | Very high landslide susceptibility
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 landslide susceptibility
Areas usually with steep to very steep slopes and underlain by weak materials. Areas with numerous old/inactive landslides. |
| | Moderate landslide susceptibility
Areas with moderately steep slopes. Soil creep and other indications of possible landslide occurrence are present. |
| | Low landslide susceptibility
Gently sloping areas with no identified landslide. |
| | Debris flow / Possible accumulation zone
Areas that could be affected by landslide debris. |
| | Active landslide |
| | Inactive landslide |
| | Landslide area with mitigating measure |
| | Rock fall/Rock slide prone area |
| | Old landslide deposits |
| | Recent landslide deposits |
| | Areas susceptible to ground subsidence/sinkhole development |
| | Creep |
| | Tension crack |
| | Gully |
| | Riverbank erosion |

Flood

- | | |
|--|--|
| | Very high flood susceptibility
Areas likely to experience flood heights of greater than 2 meters 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 area along river banks; also prone to flashfloods. |
| | High flood susceptibility
Areas likely to experience flood heights of greater than 1 up to 2 meters 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 area along river banks; also prone to flashfloods. |
| | Moderate flood susceptibility
Areas likely to experience flood heights of greater than 0.5m up to 1 meter and/or flood duration of 1 to 3 days. These areas are subject to widespread inundation during prolonged and extensive heavy rainfall or extreme weather condition. Fluvial terraces, alluvial fans, and infilled valleys are areas moderately subjected to flooding. |
| | Low flood susceptibility
Areas likely to experience flood heights of 0.5 meter or less and/or flood duration of less than 1 day. These areas include low hills and gentle slopes. They also have sparse to moderate drainage density. |

- | | | | |
|--|----------------------------------|--|-----------------------|
| | Direction of rising floodwater | | Flood depth (meter) |
| | Direction of receding floodwater | | Flashflood exit point |



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
MINES AND GEOSCIENCES BUREAU
North Avenue, Diliman, Quezon City

ALL RIGHTS RESERVED
PUBLISHED DECEMBER 2015

Data Sources :
MGB Geohazard Assessment Team
Lands Geological Survey Division
Geosciences Division MGB Regional Office XIII
National Mapping and Resource Information Authority

GIS Processing :
Lands Geological Survey Division

Coordinate System :
Spheroid : Clark 1866
Projection : Transverse Mercator
Datum : Luzon 1911

Mapping scale 1:10,000