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Development Initiative

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GIS and National Statistics
The Experience of the
Statistical Institute of Belize

Background: GIS at the SIB

Census Mapping was introduced in 2010

Equipment used were Garmin eTrex which collected delineation of ED landmarks such as Road Networks and River Networks where possible; and navigation.

Satellite Imagery was purchased from Instituto Nacional De Estadistica y Geografia (INEGI), Mexico for priority areas.

Map on the left was created and used by enumerators only to see ED boundaries
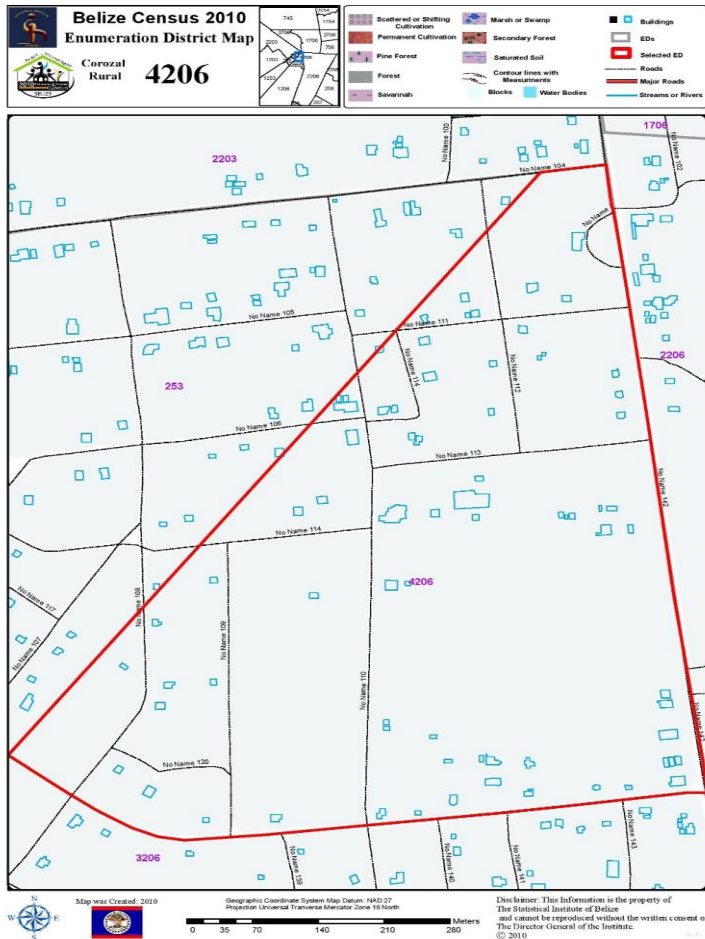
Mapping for Census

The SIB established the GIS Unit within the System Development & Data Processing Department

Function of the GIS unit

- Updating the enumeration district spatial database

- Assist with the design and implementation of a Master Sample Frame

- Increasing the accuracy and effectiveness of census and survey data collection

- Building an accurate geo-statistical database

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Mapping Method

1. Digitize Building Footprint from Open Imagery (Google, OSM, BING, ESRI)

2. Digitize Road Network from Imagery
   - *Assist with Creation of Blocks*

3. Creation of Web Map in SIB Collect
   - *Download web map on SIB Collect, installed on tablets*

4. Conduct ground verification exercise to validate/update building footprint and road network

5. Collect attribute information (land-use and videos) of each building footprint

6. Videos of buildings within a block were taken and pictures extracted and attached to corresponding buildings.

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Map
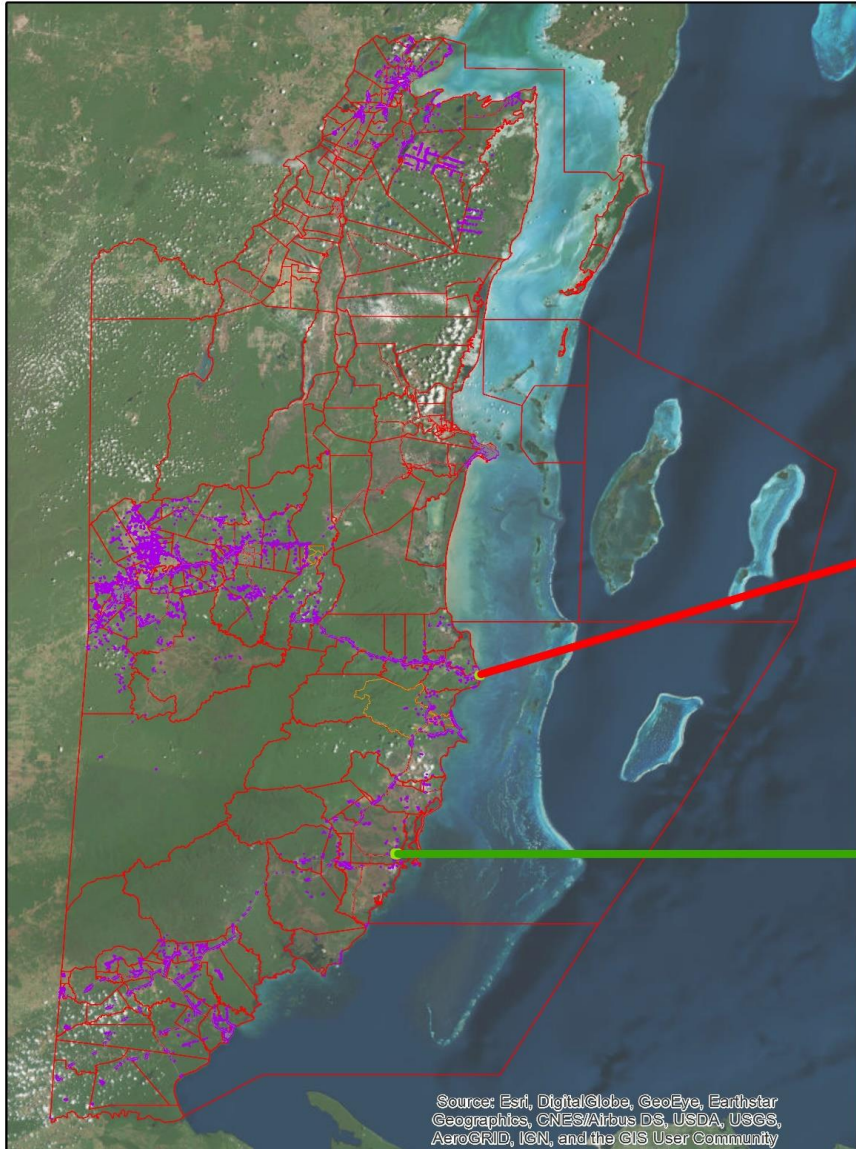
Enumeration District 801
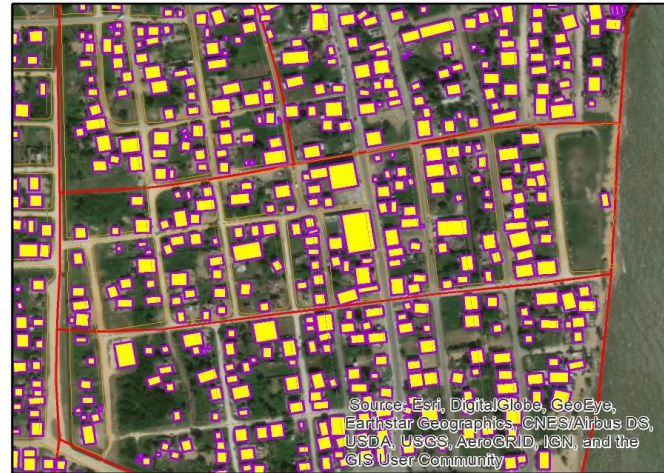
Enumeration District 5210

ED Boundaries

Blocks

Building Footprints

*Footprints clickable to see building image and attribute data collected

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GIS Software and Hardware

- **SIB Collect:** In-house built mobile app for data collection and viewing

- **Postgres with PostGIS module:** Spatial data repository

- **ArcGIS Desktop and QGIS:** Desktop spatial data editing software

- **Tablet:** For field data collection

- **Server:** Hosts SIB Collect web services and Spatial Database

Linking of Building Footprint with Survey Solutions

1. Enumerator, uses SIB Collect to Navigate to Buildings in their assigned Enumeration District.

2. Enumerator is in front of the building, he/she will click on the building footprint on the App map which will show a pop-up box with information. The Pop-up box shows:
   - Building Identifier (BID)
   - Building Picture
   - Land Use (Resident, Business…)

3. The Lister/Enumerator copy the BID and switches to the Survey Solutions CAPI app, opens a survey form and enters the BID, then follows questions regarding Census 2020/Survey.

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Future Linking of GIS and Statistical Data

Business Register
- Taking place November 2020
- Businesses will be sent a web form for them to pin their address spatially

Belize National Statistical System
- Including Spatial attribute data in indicators

Remote Sensing and R Programming to Automate Functions
- Updating building footprints
- Assigning building use data

Conclusion

The SIB experience is one we believe that is shared with many of our regional counterparts.

Progress made has been through much investment, trial and error, and assistance from international partners.

Potential in CARIGEO to facilitate the development of GIS capacities and utilizing to its full capacity.

Ultimately, **to empower data users by making geospatial data available and accessible – web maps/apps and platforms – this is coupled with open data policies and addressing issues of confidentiality, privacy and security**

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Thank you!

DATE