

Fig. 17. Stratigraphical columns of the Gigante Formation. This figure is continued on pages 50 to 52.

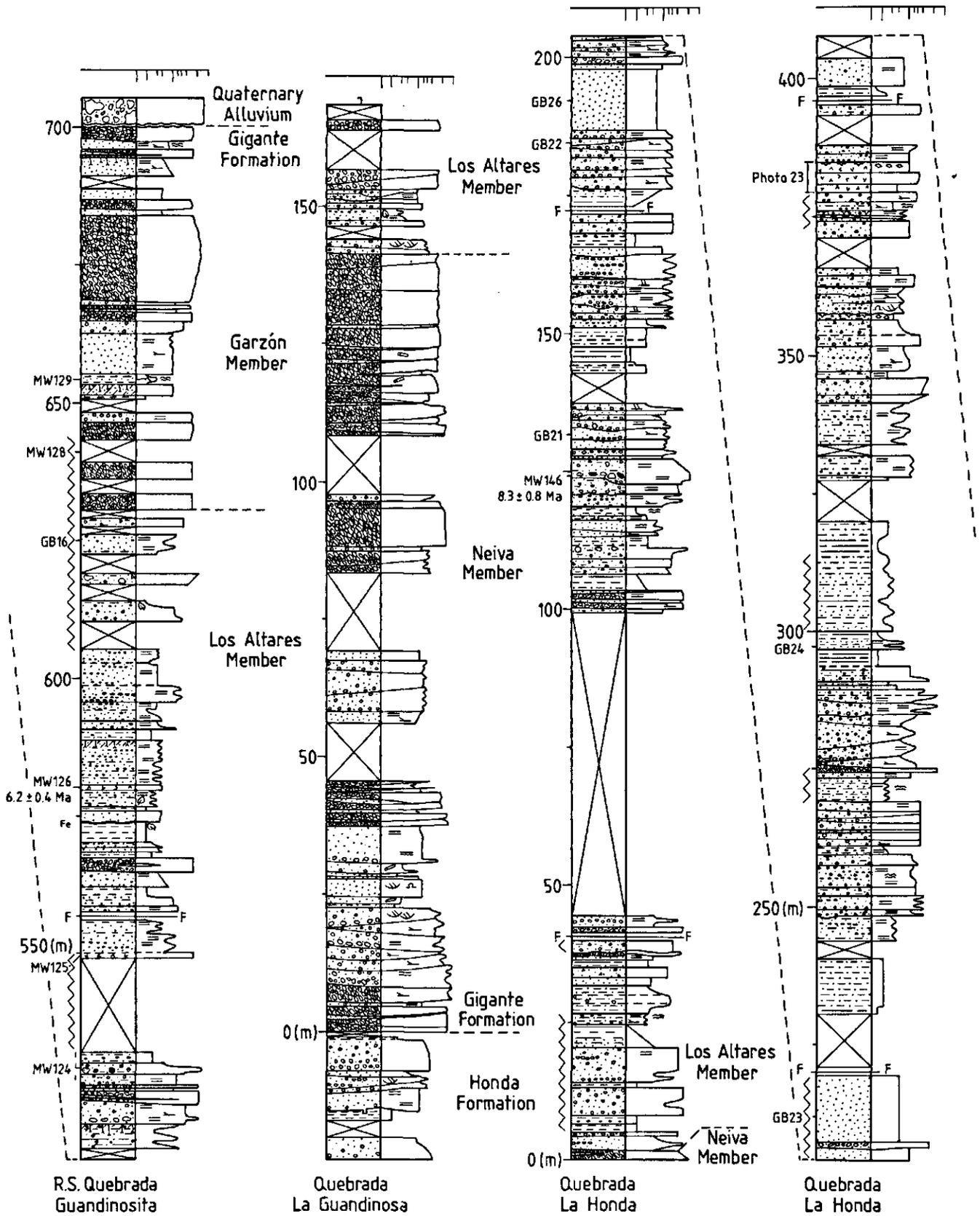


Fig. 17. Continued.

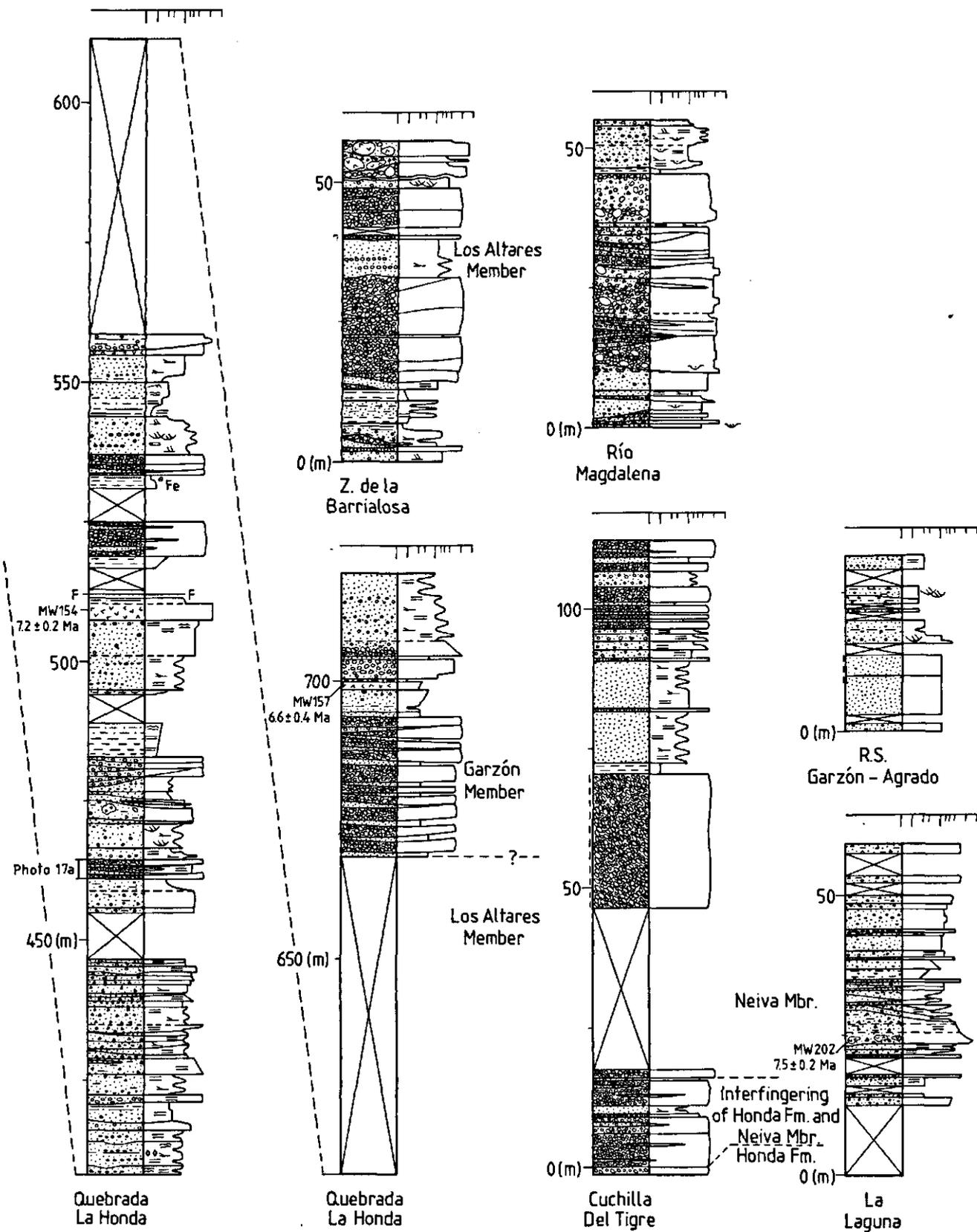
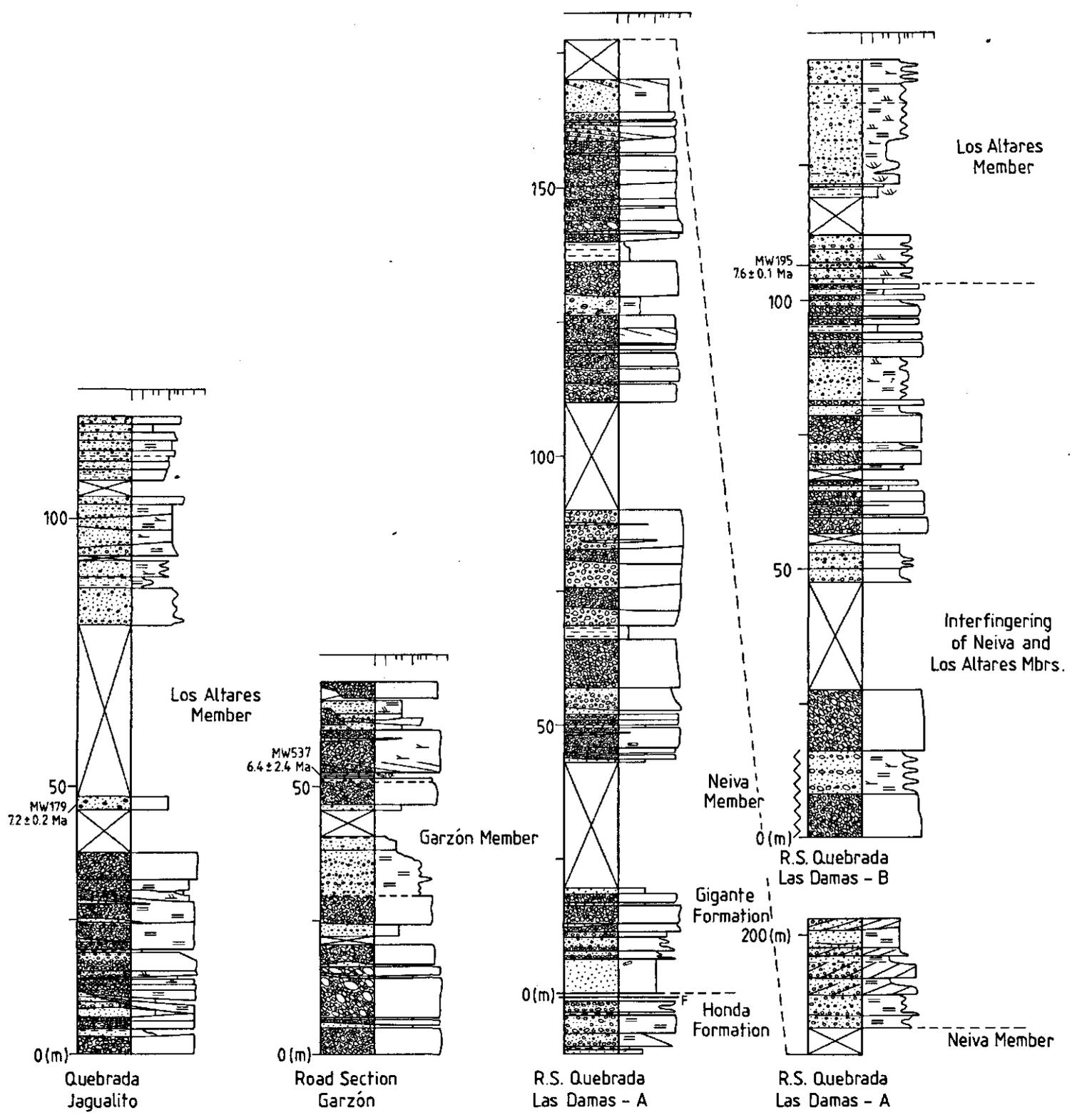


Fig. 17. Continued.



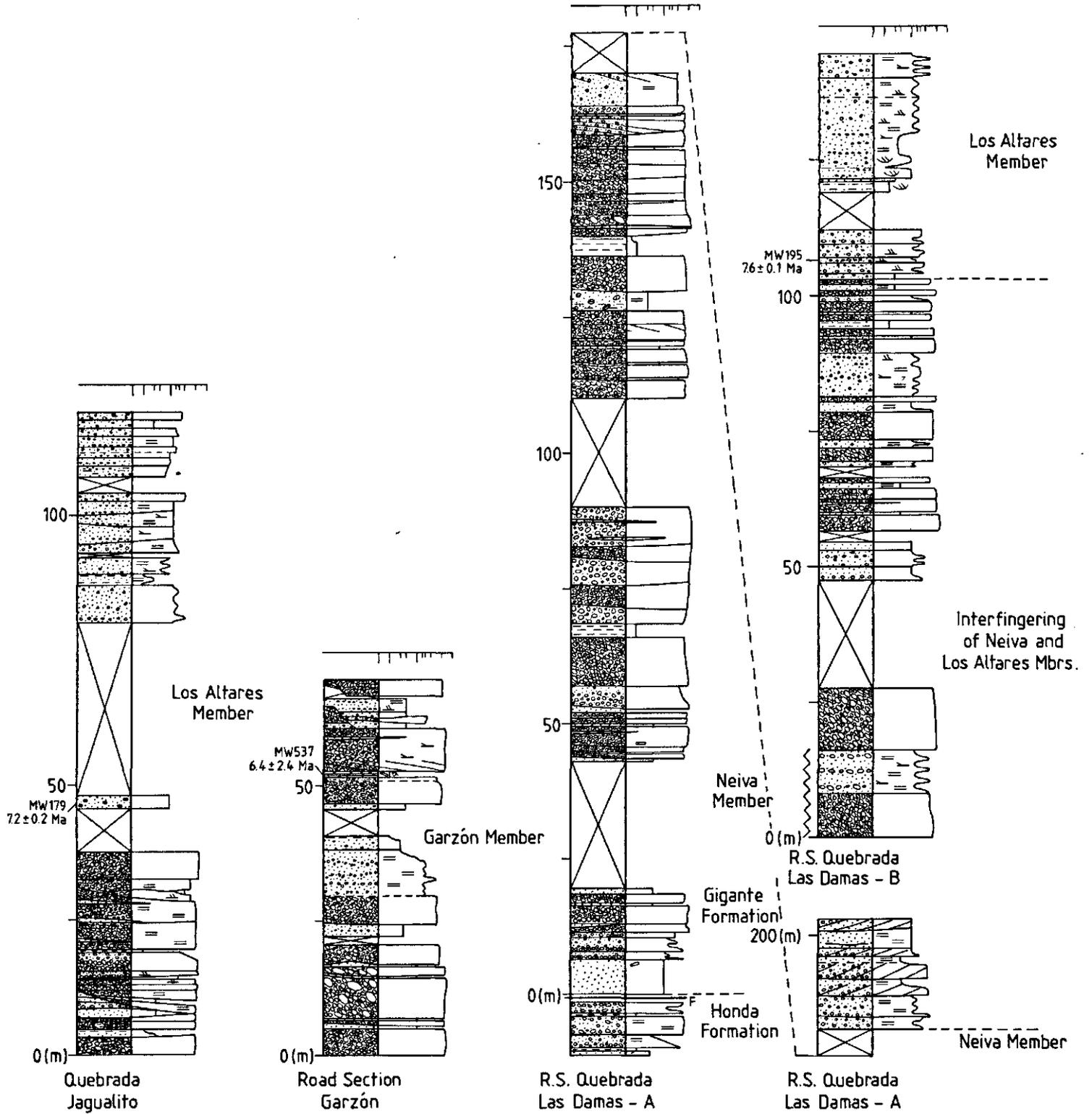


Fig. 17. Continued.

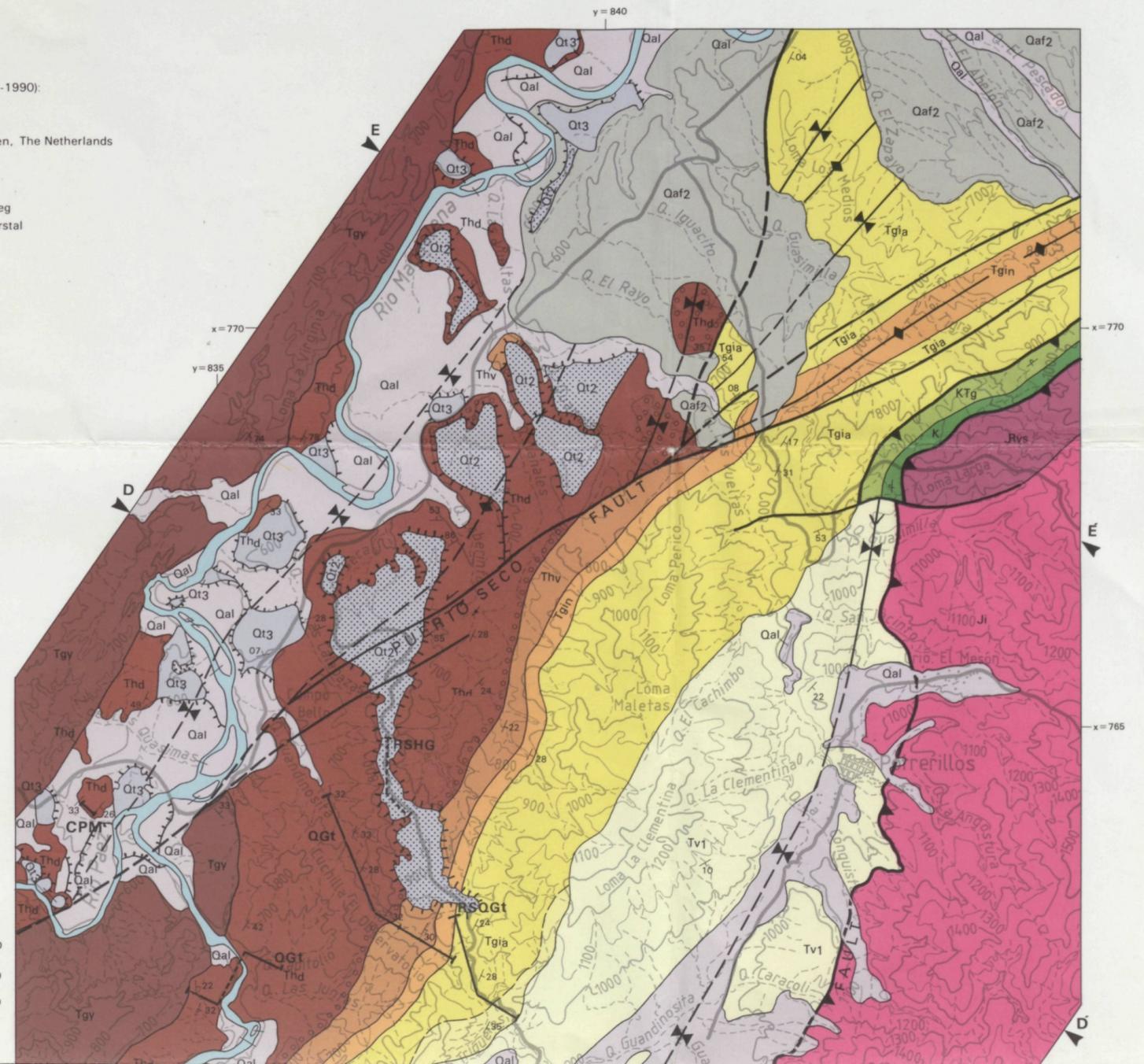
# GEOLOGICAL MAP OF THE S. NEIVA BASIN, COLOMBIA

Appendix 1  
Thesis of A.M. van der Wiel

Origin of Colombian co-ordinates located at latitude 4°35'56" 57 N and longitude 74° 04'51" 30 W. The co-ordinates have been assigned X-values of 1000 000 metres N and Y-values of 1000 000 metres E (Astronomical Observatory of Colombia) The last three digits have been omitted.

Survey and map compilation (1987-1990):  
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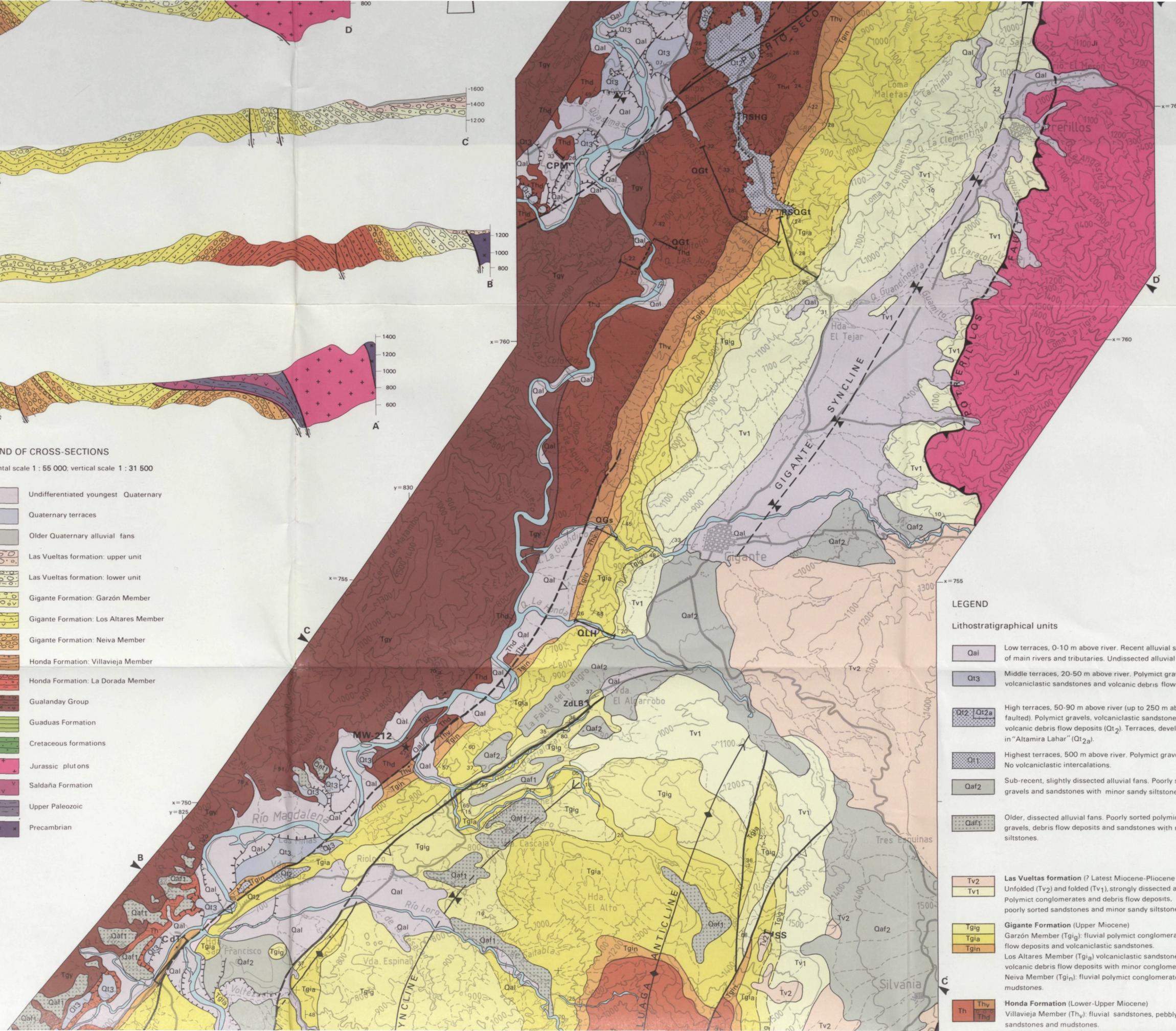
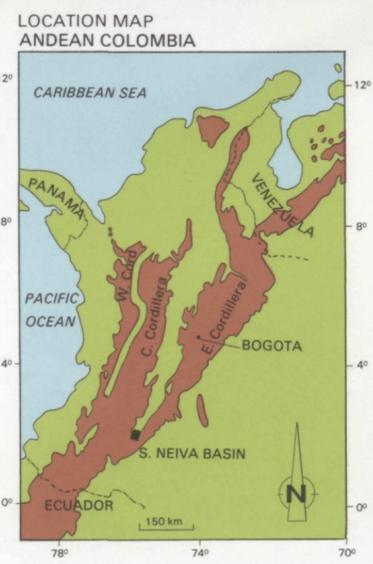
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Topographic base: P.G.M. Versteeg  
Cartography: Th. Jacobs, J. Onderstal



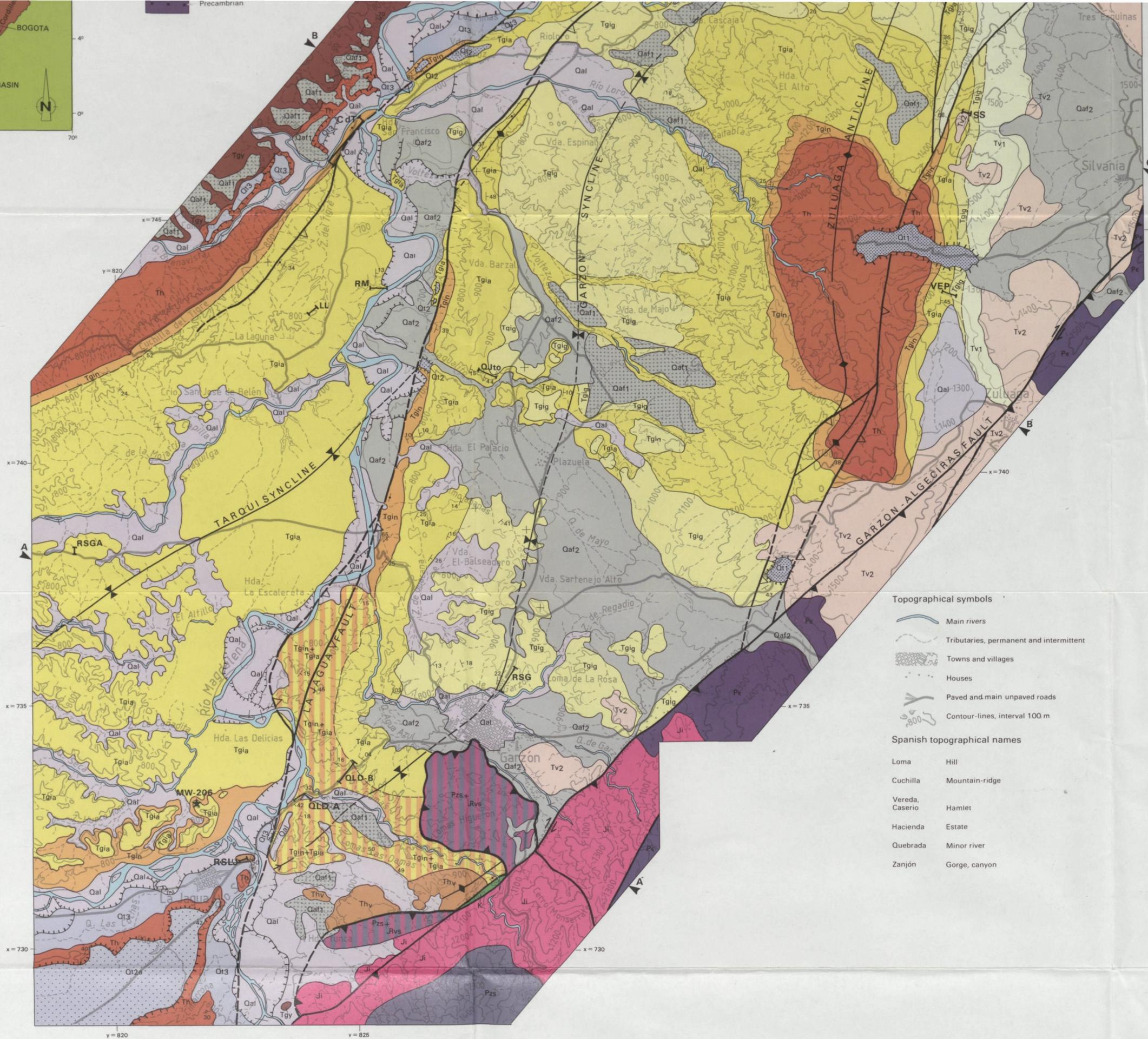
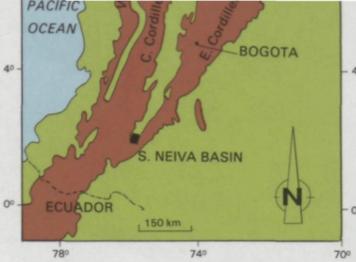


**LEGEND OF CROSS-SECTIONS**  
 Horizontal scale 1 : 55 000; vertical scale 1 : 31 500

- Undifferentiated youngest Quaternary
- Quaternary terraces
- Older Quaternary alluvial fans
- Las Vueltas formation: upper unit
- Las Vueltas formation: lower unit
- Gigante Formation: Garzón Member
- Gigante Formation: Los Altares Member
- Gigante Formation: Neiva Member
- Honda Formation: Villavieja Member
- Honda Formation: La Dorada Member
- Gualanday Group
- Guaduas Formation
- Cretaceous formations
- Jurassic plutons
- Saldaña Formation
- Upper Paleozoic
- Precambrian



- LEGEND**
- Lithostratigraphical units**
- Qal Low terraces, 0-10 m above river. Recent alluvial sediments of main rivers and tributaries. Undissected alluvial fans and scree.
  - Qt3 Middle terraces, 20-50 m above river. Polymict gravels, pumice blocks, volcaniclastic sandstones and volcanic debris flow deposits.
  - Qt2, Qt2a High terraces, 50-90 m above river (up to 250 m above river when faulted). Polymict gravels, volcaniclastic sandstones and volcanic debris flow deposits (Qt<sub>2</sub>). Terraces, developed in "Altamira Lahar" (Qt<sub>2a</sub>).
  - Qt1 Highest terraces, 500 m above river. Polymict gravels and sandstones. No volcaniclastic intercalations.
  - Qaf2 Sub-recent, slightly dissected alluvial fans. Poorly sorted polymict gravels and sandstones with minor sandy siltstones.
  - Qaf1 Older, dissected alluvial fans. Poorly sorted polymict gravels, debris flow deposits and sandstones with minor sandy siltstones.
  - Tv2 Las Vueltas formation (? Latest Miocene-Pliocene ?)
  - Tv1 Unfolded (Tv<sub>2</sub>) and folded (Tv<sub>1</sub>), strongly dissected alluvial fan deposits. Polymict conglomerates and debris flow deposits, poorly sorted sandstones and minor sandy siltstones.
  - Gigante Formation (Upper Miocene)
  - Garzón Member (Tgig): fluvial polymict conglomerates, volcanic debris flow deposits and volcaniclastic sandstones.
  - Los Altares Member (Tgia): volcaniclastic sandstones, ignimbrites and volcanic debris flow deposits with minor conglomerates and siltstones.
  - Neiva Member (Tgin): fluvial polymict conglomerates, sandstones and mudstones.
  - Honda Formation (Lower-Upper Miocene)
  - Villavieja Member (Thv): fluvial sandstones, pebbly sandstones and mudstones.
  - La Dorada Member (Thd): fluvial sandstones, pebbly sandstones and mudstones.



- Las Vueltas formation** (? Latest Miocene-Pliocene ?)  
Unfolded (Tv<sub>2</sub>) and folded (Tv<sub>1</sub>), strongly dissected alluvial fan deposits. Polymict conglomerates and debris flow deposits, poorly sorted sandstones and minor sandy siltstones.
- Gigante Formation** (Upper Miocene)  
Garzón Member (Tg<sub>1g</sub>): fluvial polymict conglomerates, volcanic debris flow deposits and volcanoclastic sandstones.  
Los Altares Member (Tg<sub>2a</sub>): volcanoclastic sandstones, ignimbrites and volcanic debris flow deposits with minor conglomerates and siltstones.  
Neiva Member (Tg<sub>1n</sub>): fluvial polymict conglomerates, sandstones and mudstones.
- Honda Formation** (Lower-Upper Miocene)  
Villavieja Member (Th<sub>v</sub>): fluvial sandstones, pebbly sandstones and mudstones.  
La Dorada Member (Th<sub>d</sub>): mainly fluvial mudstones with intercalations of partly tuffaceous sandstones and pebbly sandstones. Polymict orthoconglomerate at top of sequence.
- Gualanday Group** (Eocene to Upper Oligocene / Miocene)  
Thick sequences of quartz and chert conglomerates and sandstones alternating with thick mudstone successions.
- Guaduas Formation** (Maastrichtian-Paleocene)  
Thick sequences of lagoonal to fluvial mudstones with intercalations of sandstones and minor conglomerates.
- Unspecified Cretaceous formations** (Aptian-Maastrichtian)  
From bottom to top mainly quartz sandstones, black shales and quartz sandstones with intercalations of thinly-bedded porcelanites and chert ("planners")

- Pre-Cretaceous basement**
- Ji** **Jurassic plutons**  
Intermediate to acid intrusives. Principally granodiorites, quartzmonzonites, monzonites, tonalites and granites.
  - Jrvs** **Saldaña Formation** (Upper Triassic-Jurassic)  
Volcanic and volcanoclastic deposits including andesitic to rhyolitic lavas, ignimbrites, volcanic breccias and conglomerates, volcanoclastic sandstones and lutites.
  - Pzs** **Upper Paleozoic**  
Fossiliferous limestones and micaceous siltstones. Quartz sandstones.
  - Pe** **Precambrian**  
Granulites, migmatitic gneisses, augen gneisses, amphibolites, marbles and calc-silicate rocks.

**Topographical symbols**

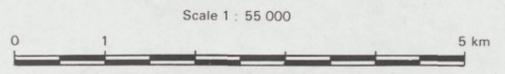
- Main rivers
- Tributaries, permanent and intermittent
- Towns and villages
- Houses
- Paved and main unpaved roads
- Contour-lines, interval 100 m

**Spanish topographical names**

- |                 |                |
|-----------------|----------------|
| Loma            | Hill           |
| Cuchilla        | Mountain-ridge |
| Vereda, Caserio | Hamlet         |
| Hacienda        | Estate         |
| Quebrada        | Minor river    |
| Zanjón          | Gorge, canyon  |

**Geological and geomorphological symbols**

- Geological boundary, certain and approximate
- Strike and dip of bedding plane
- Idem, horizontal
- Idem, vertical
- Idem, overturned
- Anticlinal axis, certain and approximate; direction of axial dip indicated
- Synclinal axis, certain and approximate; direction of axial dip indicated
- Fault, certain and uncertain/buried
- Reverse fault, sawteeth towards upthrown side
- Thrust, sawteeth towards higher element
- Wrench fault with direction of movement
- Terrace escarpment
- Location of cross-section
- Location of stratigraphical section and name of section
- Site of radiometric age determination outside sections



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