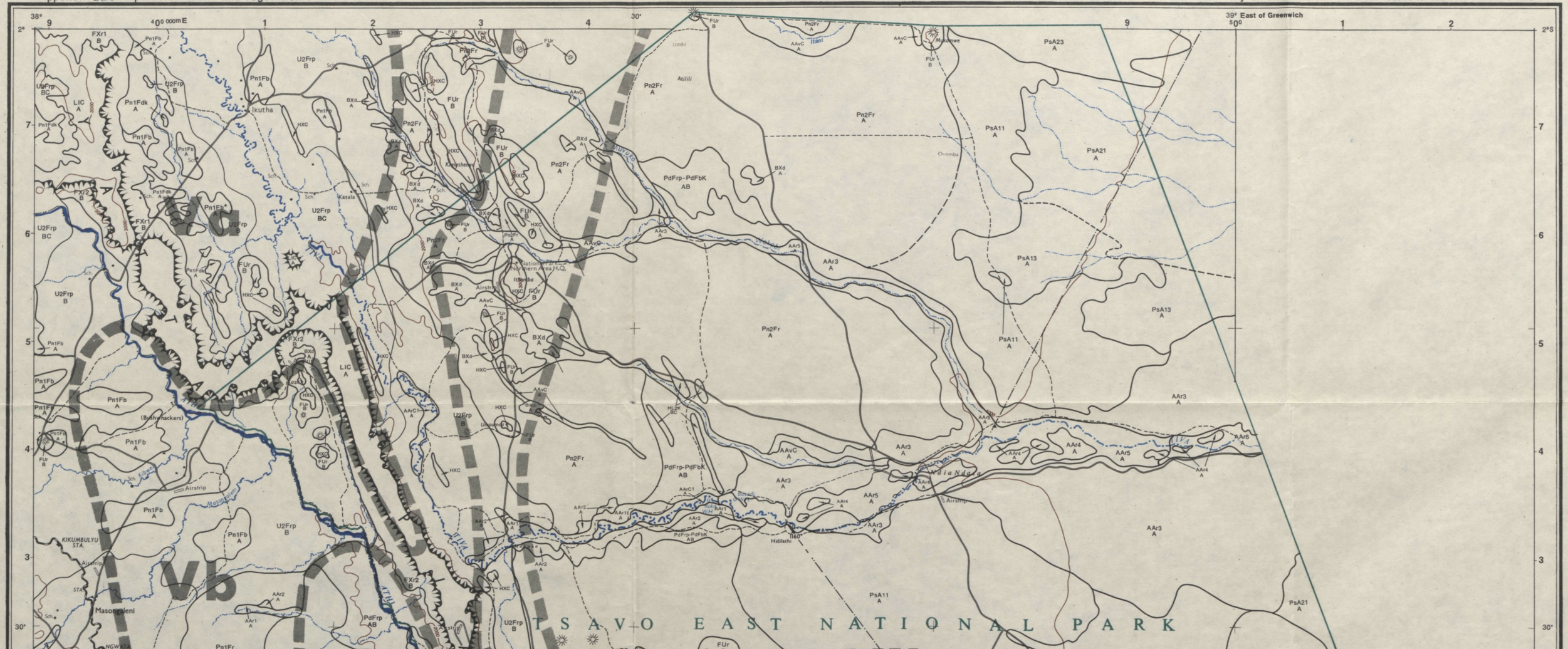
MAP SHEETS 175,176,183 and 184

Appendix 2ato Report No.7'Soils and vegetation of the Tsavo area.''

RECONNAISSANCE SOIL MAP OF THE MTITO ANDEI AREA

Ministry of Agriculture -Kenya Soil Survey
Ministry of Tourism and Wildlife-Tsavo Research Station-WOTRO*



*Netherlands Foundation for the Advancement of Tropical Research

Printed by Printing and Packaging Corporation Limited, Likoni Road, P.O. Box 30157, Nairobi.

Scale 1:250,000

KILOMETRES 5 4 3 2 1 0 5 10 15 20 25 30 35 40 45 KILOMETRES

Base map compiled and simplified from parts of Survey of Kenya topographical map sheets SA–37–10 and SA–37–11 scale 1:250,000

LEGEND+

MOUNTAINS (relief intensity 300–1200m, slopes over 16%)

MU **Soils developed on various gneisses**

MUC ☐ complex of somewhat excessively drained, shallow to moderately deep, reddish brown to light red, rocky and stony soils of varying texture; in places with humic topsoil
(eutric REGOSOLS, lithic phase and humic CAMBISOLS)

HILLS AND LOW RIDGES (relief intensity 10–300m, slopes from 5% to over 16%)

HX **Soils developed on various parent materials**

HXC ☐ complex of somewhat excessively drained, shallow, reddish brown to greyish brown, rocky and stony soils of varying texture
(eutric and dystric REGOSOLS, lithic and stony phase)

HL **Soils developed on crystalline limestone**

HL2K ☐ well drained, shallow to moderately deep, dark greyish brown to dark yellowish brown, calcareous, very stony, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

HP **Soils developed on pyroclastic deposits** (Quaternary volcanics)

HPC ☐ complex of well drained, shallow to moderately deep, dark greyish brown to black, very friable, calcareous, gravelly soils of varying texture, in places rocky and stony

FOOTSLOPES (at the foot of mountains, hills and plateaus, slopes 2-6%)

FU **Soils developed on colluvium derived from various gneisses**

FUr ☐ well drained, very deep, dark red, friable, sandy clay loam to sandy clay
(rhodic FERRALSOLS and FERRAL ± chromic LUVISOLS)

FX **Soils developed on colluvium derived from various parent materials**

FXr1 ☐ well drained, very deep, dark red, friable, sandy clay to clay **(rhodic FERRALSOLS)**

FXr2 ☐ well drained, deep to very deep, dark red to reddish brown, friable to firm, sandy clay loam to sandy clay
(chromic LUVISOLS)

PLATEAUS (slopes less than 2%)

LI **Soils developed on phonolite** (Tertiary volcanics)

LIC ☐ complex of:
–well drained, moderately deep to very deep, dark red, friable clay; in places bouldery
(rhodic FERRALSOLS)
–well drained, shallow to moderately deep, dark red, friable, rocky, bouldery clay
(ferralic CAMBISOLS, lithic and stony phase)

UPLANDS (major rivers deeply incised, slopes 2–8%)

KITHIOKO–MULANGO LEVEL (altitude 700–900m, slopes less than 4%)

U2F **Soils developed on gneisses rich in ferromagnesian minerals**

well drained, moderately deep to deep, dark red to dark

PdFrp-PdFbK ☐ complex of:
–soils of unit PdFrp
–well drained, shallow, yellowish brown, calcareous, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdFbK-PdFrP ☐ complex of:
– soils of unit PdFbK (see second component of previous complex)
–well drained, shallow, dark reddish brown to dark red, stony, gravelly, sandy clay loam, over quartz gravel **(ferralic CAMBISOLS and chromic LUVISOLS, paralithic or petric phase)**

PdSt **Soils developed on fine to coarse-grained sandstones and arkoses** (Taru grits)

PdStC ☐ complex of:
– well drained, shallow, dark reddish brown, stony, gravelly, sandy clay loam
(chromic CAMBISOLS and chromic LUVISOLS, paralithic phase)
–well drained, shallow, yellowish brown, calcareous, stony, gravelly, sandy clay loam, over petrocalcic material **(calcic CAMBISOLS, petrocalcic phase)**

PdT **Soils developed on carbonaceous shales** (Maji-ya-Chumvi beds)

PdTC ☐ complex of:
– well drained, shallow, strong brown, slightly stony, sandy clay **(orthic LUVISOLS, lithic phase)**
– well drained, shallow, yellowish brown, calcareous, gravelly loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

SEDIMENTARY PLAINS (Nyika level: altitude 200–500m, slopes less than 2%)

PsA1 **Soils developed on unconsolidated, sandy sediments** (Quaternary superficial deposits)

PsA11 ☐ well drained, deep to very deep, dark reddish brown to dark red, firm sandy clay, with sodic deeper subsoil
(ferric LUVISOLS, sodic phase)

PsA12 ☐ well drained, very deep, dark brown to reddish brown, friable, sandy clay loam to sandy clay
(orthic LUVISOLS)

PsA13 ☐ imperfectly drained, very deep, red to reddish brown, firm sandy clay, with calcareous, saline and sodic, deeper subsoil; abruptly underlying a topsoil of loamy sand
(solodic PLANOSOLS and orthic SOLONETZ, saline phase)

PsA14p ☐ well drained, moderately deep to deep, dark red, friable sandy loam to sandy clay, over quartz gravel
(rhodic FERRALSOLS, petric phase)

PsA2 **Soils developed on unconsolidated, clayey sediments** (Plio-Pleistocene bay deposits)

PsA21 ☐ poorly drained, very deep, brown to dark brown, very firm, calcareous, saline and sodic clay, with topsoil of loamy sand to sandy loam; in places mottled
(orthic and gleyic SOLONETZ, saline phase)

PsA23 ☐ very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, saline and sodic clay; in places cracking
(pellic VERTISOLS, saline–sodic phase and vertic SOLONETZ, saline phase)

AArC1 ☐ complex of very deep, brown to very dark brown, stratified soils of varying drainage, consistence and texture **(eutric and vertic FLUVISOLS)**

AAv **Soils developed on subrecent deposits in broad alluvial valleys**

AAv1 ☐ well drained, deep, dark reddish brown to red, friable to firm, sandy clay to clay, over petrocalcic material
(chromic LUVISOLS, petrocalcic phase)

AAv3K ☐ moderately well drained, shallow, calcareous, sandy clay to clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

AAvC ☐ complex of moderately well drained to poorly drained, very deep, dark brown to dark reddish brown, firm to very firm, sandy clay to clay; in places calcareous, saline and/or sodic **(orthic LUVISOLS, sodic phase and orthic SOLONETZ, saline phase)**

BOTTOMLANDS (slopes less than 2%)

BX **Soils developed on various parent materials**

BXd ☐ very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, cracking clay, with saline and sodic deeper subsoil
(chromic and pellic VERTISOLS, saline-sodic phase)

LAVAFLOWS (slopes less than 5%)

LaB **Soils developed on olivine basalts** (Quaternary volcanics)

LaBT ☐ excessively drained, exceedingly stony to bouldery, rocky land with infills of humic soil material

+ *For the Mtito Andei and Voi sheets one combined legend was prepared. The legend of this sheet however describes only the mapping units occurring on this sheet.*

The descriptions denote the characteristics of the subsoil (usually the B–horizon). Where the topsoil differs from this subsoil by two or more textural classes, it is also described.

All gneisses and crystalline limestone mentioned in the legend belong to the Basement System rocks

The names between brackets reflect the soil classification according to the 1974 FAO/UNESCO legend for their "Soil Map of The World". Prefixes marked with * are tentative terms awaiting international agreement on nomenclature.

KEY TO SLOPE CLASSES

slope %	slope class symbol+	name of macrorelief
0-2	A	flat to very gently undulating
2-5	B	gently undulating
5-8	C	undulating
8-16	D	rolling
16-30	E	hilly

+ *not indicated for mountains, hills, minor scarps and lava flows*

KEY TO DEPTH CLASSES

U2F **Soils developed on gneisses rich in ferromagnesian minerals**

U2Frp — well drained, moderately deep to deep, dark red to dark reddish brown, friable to firm, sandy clay to, clay, over quartz gravel **(chromic LUVISOLS, petric phase)**

PLAINS

NON–DISSECTED EROSIONAL PLAINS

KITHIOKO-MULANGO LEVEL (altitude 700-900m, slopes less than 4%)

Pn1F **Soils developed on gneisses rich in ferromagnesian minerals**

Pn1Fb — well drained, very deep, light brown to strong brown, very friable clay **(xanthic and orthic FERRALSOLS)**

Pn1Fr — well drained, deep to very deep, dark red, friable to firm, sandy to clay **(FERRAL ± chromic LUVISOLS)**

Pn1Fdk — poorly drained, moderately deep, dark greyish brown to black, very firm, saline and sodic, cracking clay, over pisocalcic material **(pellic VERTISOLS, saline–sodic and petric phase)**

Pn1R **Soils developed on quartz–feldspar gneisses**

Pn1Rb — well drained, very deep, reddish brown to yellowish red, firm, sandy clay loam to sandy clay, with topsoil of sandy loam **(orthic ACRISOLS)**

NYIKA LEVEL (altitude 200–600m, slopes less than 2%)

Pn2F **Soils developed on gneisses rich in ferromagnesian minerals**

Pn2Fr — well drained, deep to very deep, dark red to dusky red, friable sandy clay **(rhodic FERRALSOLS)**

Pn2Frp — like Pn2Fr, but moderately deep over quartz gravel **(rhodic FERRALSOLS, petric phase)**

DISSECTED EROSIONAL PLAINS (Nyika level: altitude 200 – 600m, slopes 1–5%)

PdF **Soils developed on gneisses rich in ferromagnesian minerals**

PdFrp — well drained, moderately deep, dark red, friable to firm, sandy clay loam to sandy clay, over quartz gravel **(chromic LUVISOLS, petric phase)**

KEY

- soil mapping symbol
- U2Frp — depth class symbol
- BC — slope class symbol
- soil boundary
- soil boundary (uncertain)
- slope class boundary
- ecological zone boundary
- 1 Sq. cm — 625 ha
- all weather road
- railway
- railway station
- bridge
- motorable track
- provincial boundary
- district boundary
- park boundary
- building
- Sch — school
- river
- W.H — water hole
- 2000 / 1000 — contours V.I. 1000 ft.
- scarp
- hill top
- crater

VOLCANIC PLAINS (slopes less than 5%)

PvV **Soils developed on pyroclastic deposits and olivine basalts** (Quaternary volcanics)

PvV1P — well drained, shallow to moderately deep, dark greyish brown, friable, calcareous, gravelly sandy loam **(mollic ANDOSOLS, stony and petric phase)**

PvV2P — well drained, shallow to moderately deep, greyish brown to black, friable, clay loam to clay **(LITHOSOLS and haplic CHERNOZEMS, partly lithic phase)**

FLOODPLAINS AND ALLUVIAL VALLEYS (slopes less than 2%)

AAf **Soils developed on alluvial fan deposits**

AAf1 — well drained, very deep, red to dark red, firm, sandy clay loam to clay **(chromic LUVISOLS)**

AAr **Soils developed on recent to subrecent river deposits**

AAr1 — well drained, deep, dark reddish brown to dark red, firm, sandy clay **(chromic LUVISOLS)**

AAr2 — poorly drained, deep, dark brown to very dark grey, very firm, saline and sodic, cracking clay **(pellic and chromic VERTISOLS, saline-sodic phase)**

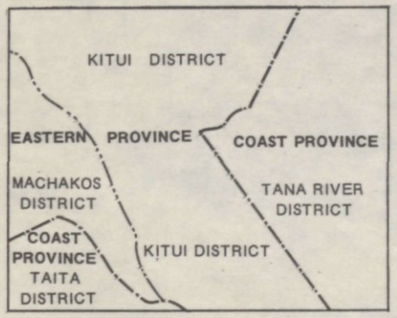
AAr3 — well drained, deep, reddish brown to dark reddish brown, friable, sandy clay loam to sandy clay, over pisocalcic material **(calcic LUVISOLS, petric phase)**

AAr4 — well drained, very deep, dark yellowish brown, very friable, sandy loam to sandy clay loam **(eutric CAMBISOLS)**

AAr5 — poorly drained, very deep, brown to very dark brown, very firm, cracking clay **(chromic VERTISOLS)**

AAr6 — poorly drained, very deep, brown to very dark brown, very firm, stratified clay **(eutric FLUVISOLS)**

ADMINISTRATIVE BOUNDARIES



places cracking **(pellic VERTISOLS, saline–sodic phase and vertic SOLONETZ, saline phase)**

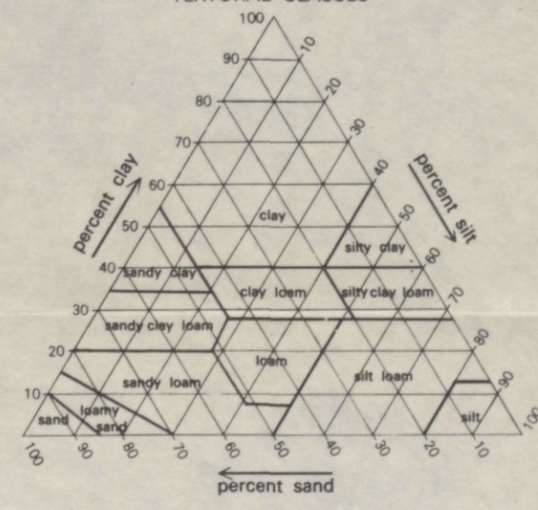
+ *not indicated for mountains, hills, minor scarps and lava flows*

KEY TO DEPTH CLASSES

thickness soil in cm	symbol + over rock or quartz gravel	symbol + over petrocalcic/pisocalcic material	name
0 - 50	P	K	shallow
50 - 80	p	k	moderately deep
80 - 120			deep
more than 120			very deep

+ *if a complex of depth class occurs within one unit, only the symbol of the shallowest depth class is indicated*

TEXTURAL CLASSES



ECOLOGICAL ZONES

ZONE	ratio r/Eo (%)	mean annual rainfall (mm)	Vegetation* group of communities	Vegetation* variants
IV	37–41	750–900	Combretum zeyheri	
Va	30–37	625–750	Commiphora - Lannea / Commiphora - Acacia / Acacia-Schoenefeldia	Dalbergia melanoxylon
Vb	22–30	500–625		Grewia fallax Grewia forbesii
VIa	16–22	375–500		Sericocomopsis pallida Digitaria macroblephara
VIb	11–16	250–375		Terminalia orbicularis Tetrapogon bidentatus

* *see chapter 4 of the report*

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SOIL SURVEY AND MAP PREPARATION

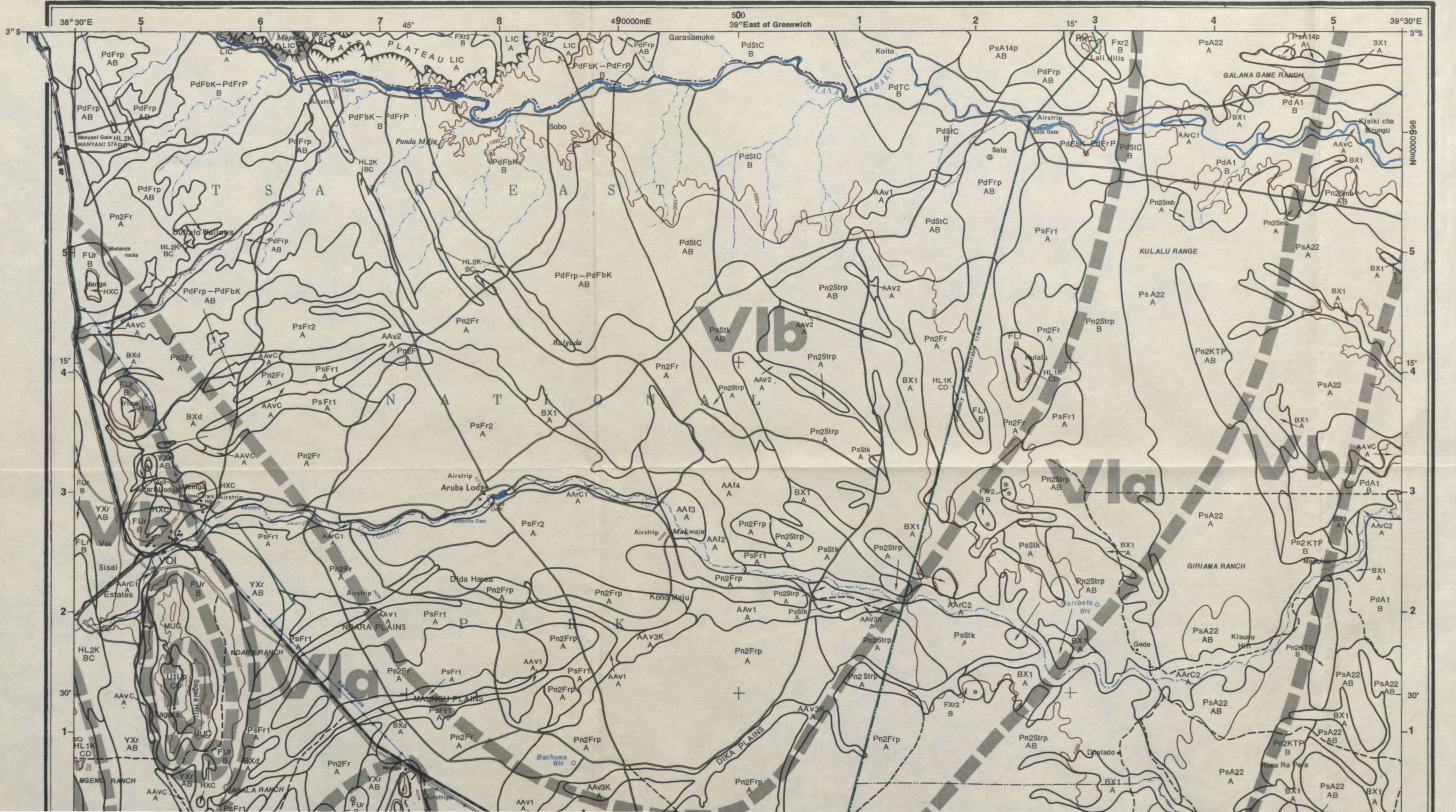
soil survey and map compilation (1975 – 1978)	W. van Wijngaarden[1]
soil correlation	W.G. Sombroek[2]
map correlation	B.J.A. van der Pouw[2]
cartography	D.M. Olulo[2]

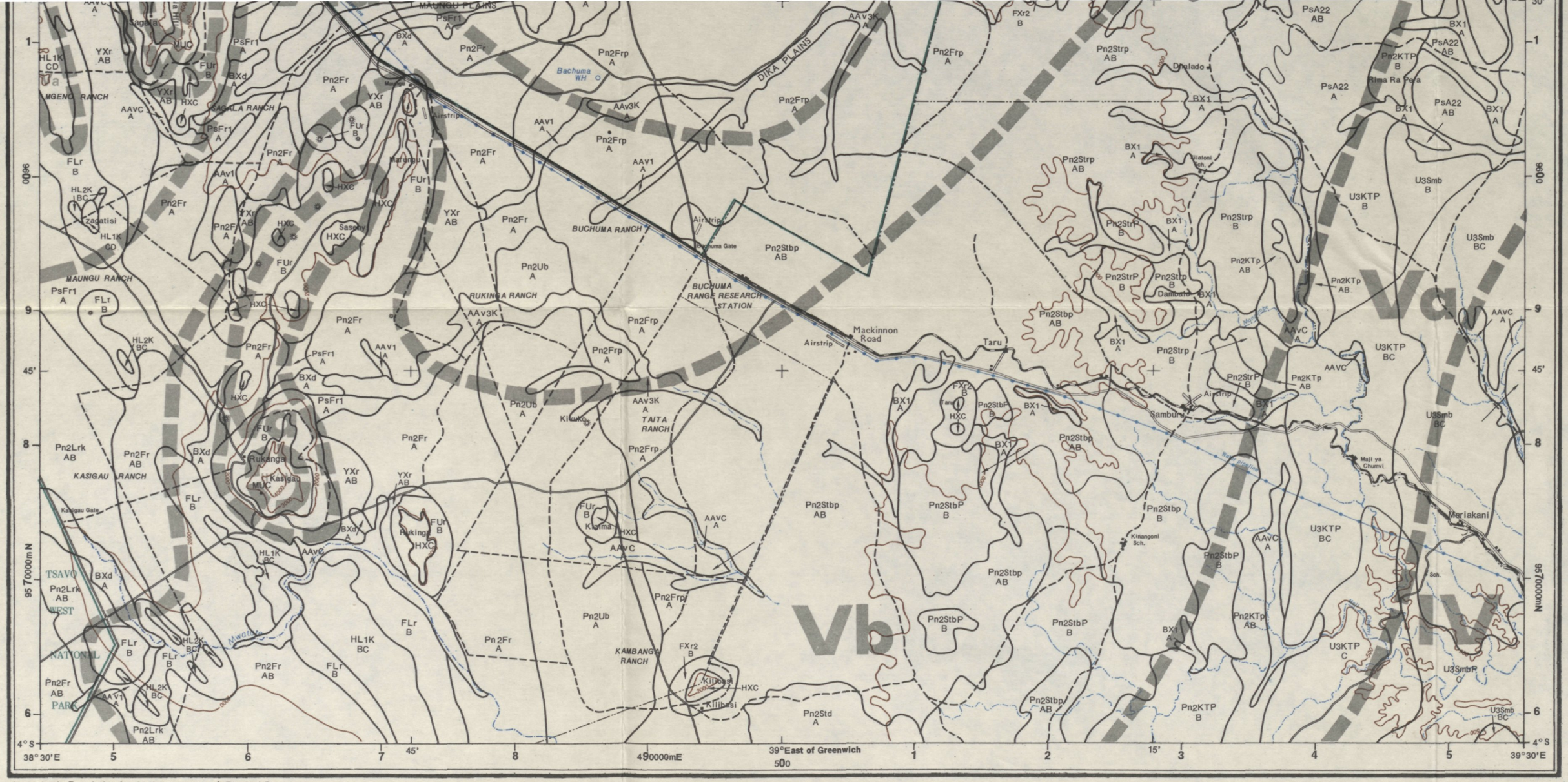
1) *Tsavo Research Project* – WOTRO
2) *Kenya Soil Survey*

RECONNAISSANCE SOIL MAP OF THE VOI AREA

MAP SHEETS 190, 191, 196 and 197
Appendix 2b to Report No. 7 "Soils and Vegetation of the Tsavo Area"

Ministry of Agriculture-Kenya Soil Survey and
Ministry of Tourism and Wildlife-Tsavo Research Station-**WOTRO***





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Scale 1:250,000

KILOMETRES 5 4 3 2 1 0 5 10 15 20 25 30 35 40 45 KILOMETRES

LEGEND+

MOUNTAINS (relief intensity 300–1200m, slopes over 16%)

MU Soils developed on various gneisses

MUC ☐ complex of somewhat excessively drained, shallow to moderately deep, reddish brown to light red, rocky and stony soils of varying texture; in places with humic topsoil
(eutric REGOSOLS, lithic phase and humic CAMBISOLS)

HILLS, MINOR SCARPS AND LOW RIDGES (relief intensity 10–300m, slopes from 5% to over 16%)

HL Soils developed on crystalline limestone

HL1K ☐ well drained, shallow, black, gravelly loam, over petrocalcic material or rock **(orthic RENDZINAS)**

HL2K ☐ well drained, shallow to moderately deep, dark greyish brown to dark yellowish brown, calcareous, very stony, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

HX Soils developed on various parent materials

HXC ☐ complex of somewhat excessively drained, shallow, reddish brown to greyish brown, rocky and stony soils of varying texture
(eutric and dystric REGOSOLS, lithic and stony phase)

FOOTSLOPES (at the foot of mountains and hills, slopes 2–6%)

FU Soils developed on colluvium derived from various gneisses

FUr ☐ well drained, very deep, dark red, friable, sandy clay loam to sandy clay **(rhodic FERRALSOLS and FERRAL*- chromic LUVISOLS)**

FX Soils developed on colluvium derived from various parent materials

FXr2 ☐ well drained, deep to very deep, dark red to reddish brown, friable to firm, sandy clay loam to sandy clay
(chromic LUVISOLS)

FL Soils developed on colluvium derived from crystalline limestone

FLr ☐ well drained, deep to very deep, dark red to dark reddish brown, friable to firm, sandy clay **(chromic LUVISOLS)**

PLATEAUS (slopes less than 2%)

Ll Soils developed on phonolite (Tertiary volcanics)

LIC ☐ complex of:
– well drained, moderately deep to very deep, dark red, friable clay; in places bouldery **(rhodic FERRALSOLS)**
– well drained, shallow to moderately deep, dark red, friable, rocky and bouldery clay **(ferralic CAMBISOLS, lithic and stony phase)**

PIEDMONT PLAINS (long slopes, 1–3%)

YX Soils developed on alluvium derived from undifferentiated gneisses and crystalline limestone

YXr ☐ well drained, very deep, dark red, friable, sandy clay to clay
(FERRAL*- chromic LUVISOLS)

UPLANDS (major rivers deeply incised)

SAGALA LEVEL (altitude approximately 1300m, slopes 5–16%)

U1U Soils developed on undifferentiated gneisses

U1Up ☐ well drained, moderately deep to very deep, dark red to dark reddish brown, firm clay **(chromic*ACRISOLS)**

NYIKA LEVEL (altitude 150-250m, slopes 2-8%)

U3KT Soils developed on siltstones and shales (Maji-ya-Chumvi beds)

U3KTP ☐ well drained, shallow, dark reddish brown to very dark brown, sandy clay loam **(eutric CAMBISOLS, lithic phase)**

U3Sm Soils developed on fine - grained sandstones (Mariakani sandstone)

U3Smb ☐ well drained, deep to very deep, dark brown to yellowish brown, firm, sandy clay loam to clay, with topsoil of sandy loam
(orthic LUVISOLS)

U3SmbP ☐ like U3Smb, but shallow to moderately deep, fairly rocky and fairly stony

PLAINS

NON–DISSECTED EROSIONAL PLAINS

NYIKA LEVEL (altitude 200-600m, slopes less than 2%)

Pn2F Soils developed on gneisses rich in ferromagnesian minerals

Pn2Fr ☐ well drained, deep to very deep, dark red to dusky red, friable sandy clay **(rhodic FERRALSOLS)**

Pn2Frp ☐ like Pn2Fr, but moderately deep over quartz gravel
(rhodic FERRALSOLS, petric phase)

Pn2KT Soils developed on siltstones and shales (Maji-ya-Chumvi beds)

Pn2KTP ☐ well drained, shallow, dark reddish brown to very dark brown, sandy clay loam to clay **(eutric CAMBISOLS, lithic phase)**

Pn2KTp ☐ imperfectly drained, moderately deep to deep, dark greyish brown, very firm, cracking, sandy clay to clay, with calcareous and sodic deeper subsoil
(vertic* PHAEOZEMS, sodic phase)

Pn2Sm Soils developed on fine - grained sandstones (Mariakani sandstone)

Pn2Smb ☐ well drained, very deep, brown, friable to firm, sandy clay loam to sandy clay, with sodic deeper subsoil
(orthic LUVISOLS, sodic phase)

SEDIMENTARY PLAINS (Nyika level: altitude 200–500m, slopes less than 2%)

PsF Soils developed on material derived from gneisses rich in ferromagnesian minerals

PsFr1 ☐ well drained, deep to very deep, red to dark red, friable to firm, sandy clay to clay **(ferric LUVISOLS)**

PsFr2 ☐ well drained, very deep, dark red to dark reddish brown, friable to firm, sandy clay **(chromic LUVISOLS)**

PsSt Soils developed on material derived from fine to coarse - grained sandstones and arkoses (Taru grits)

PsStk ☐ well drained, moderately deep to deep, dark reddish brown, firm, sandy clay to clay, over pisocalcic material
(calcic LUVISOLS, petric phase)

PsA1 Soils developed on unconsolidated sandy sediments (Quaternary superficial deposits)

PsA14p ☐ well drained, moderately deep to deep, dark red, friable, sandy loam to sandy clay, over quartz gravel
(rhodic FERRALSOLS, petric phase)

PsA2 Soils developed on unconsolidated clayey sediments (Plio-Pleistocene bay deposits)

PsA22 ☐ poorly drained, very deep, dark greyish brown to black, very firm, calcareous, sodic clay; in places saline and/or cracking
(orthic and vertic* SOLONETZ, partly saline phase)

DISSECTED EROSIONAL/SEDIMENTARY PLAINS (Nyika level: altitude 200–600m, slopes 1–5%)

PdF Soils developed on gneisses rich in ferromagnesian minerals

PdFrp ☐ well drained, moderately deep, dark red, friable to firm, sandy clay loam to sandy clay, over quartz gravel
(chromic LUVISOLS, petric phase)

PdFbK ☐ well drained, shallow, yellowish brown, calcareous, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdFrp–PdFbK ☐ complex of soils of units PdFrp and PdFbK

PdFbK–PdFrP ☐ complex of :
– soils of unit PdFbK
– well drained, shallow, dark reddish brown to dark red, stony and gravelly sandy clay loam, over quartz gravel
(ferralic CAMBISOLS and chromic LUVISOLS, paralithic or petric phase)

PdSt Soils developed on fine to coarse - grained sandstones and arkoses (Taru grits)

PdStC ☐ complex of:
– well drained, shallow, dark reddish brown, stony, gravelly sandy clay loam
(chromic CAMBISOLS and chromic LUVISOLS, paralithic phase)
– well drained, shallow, yellowish brown, calcareous, stony and gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdT Soils developed on carbonaceous shales (Maji-ya- Chumvi beds)

PdTC ☐ complex of:
– well drained, shallow, strong brown, slightly stony, sandy clay **(orthic LUVISOLS, lithic phase)**
– well drained, shallow, yellowish brown, calcareous, gravelly loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdA Soils developed on unconsolidated clayey sediments (Plio-Pleistocene bay deposits)

PdA1 ☐ imperfectly drained, very deep, strong brown to greyish brown, firm to very firm, sodic, sandy clay to clay; in places saline **(orthic SOLONETZ, partly saline phase)**

FLOODPLAINS AND ALLUVIAL VALLEYS (slopes less than 2%)

AAf Soils developed on alluvial fan deposits

AAv Soils developed on subrecent deposits in broad alluvial valleys

AAv1 ☐ well drained, deep, red to dark reddish brown, friable to firm, sandy clay to clay, over petrocalcic material
(chromic LUVISOLS, petrocalcic phase)

AAv2 ☐ moderately well drained, very deep, dark brown, friable, calcareous, sandy clay to clay **(calcic CAMBISOLS)**

AAv3K ☐ moderately well drained, shallow, calcareous, sandy clay to clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

AAvC ☐ complex of moderately well drained to poorly drained, very deep, dark reddish brown to dark brown, firm to very firm, sandy clay to clay; in places calcareous, saline and/or sodic
(orthic LUVISOLS, sodic phase and orthic SOLONETZ, saline phase)

BOTTOMLANDS (slopes less than 2%)

BX Soils developed on various parent materials

BXd ☐ very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, cracking clay, with saline and sodic deeper subsoil **(chromic and pellic VERTISOLS, saline-sodic phase)**

BX1 ☐ very poorly drained, very deep, dark brown to dark grey, firm to very firm, sodic clay, with calcareous and saline deeper subsoil **(orthic SOLONETZ, saline phase)**

+ *For the Mtito Andei and Voi sheets one combined legend was prepared. The legend of this sheet however describes only the mapping units occurring on this sheet.*

The descriptions denote the characteristics of the subsoil (usually the B–horizon) Where the topsoil differs from this subsoil by two or more textural classes, it is also described.

All gneisses and crystalline limestone mentioned in the legend belong to the Basement System rocks

The names between brackets reflect the soil classification according to the 1974 FAO/UNESCO legend for their "Soil Map of The World". Prefixes marked with * are tentative terms awaiting international agreement on nomenclature.

KEY TO SLOPE CLASSES

slope %	slope class symbol+	name of the macrorelief
0-2	A	flat to very gently undulating
2-5	B	gently undulating
5-8	C	undulating
8-16	D	rolling
16-30	E	hilly

+ *not indicated for mountains, hills and minor scarps*

KEY TO DEPTH CLASSES

thickness soil in cm	symbol+ over rock or quartz gravel	symbol+ over petrocalcic/ pisocalcic material	name
0-50	P	K	shallow
50-80	p	k	moderately deep
80-120			deep
more than 120			very deep

+ *if a complex of depth classes occurs within one unit, only the symbol of the shallowest depth class is indicated*

TEXTURAL CLASSES

Pn2F Soils developed on gneisses rich in ferromagnesian minerals

Pn2Fr — well drained, deep to very deep, dark red to dusky red, friable sandy clay **(rhodic FERRALSOLS)**

Pn2Frp — like Pn2Fr, but moderately deep over quartz gravel **(rhodic FERRALSOLS, petric phase)**

Pn2U Soils developed on undifferentiated gneisses

Pn2Ub — well drained, deep to very deep, yellowish red, very friable, sandy clay to clay **(orthic FERRALSOLS)**

Pn2L Soils developed on crystalline limestone

Pn2Lrk — well drained, moderately deep to very deep, dark red to dark reddish brown, firm, sandy clay to clay, over petrocalcic material **(calcic and chromic LUVISOLS, petrocalcic phase)**

Pn2St Soils developed on fine to coarse - grained sandstones and arkoses (Taru grits)

Pn2Strp — well drained, moderately deep to deep, red to dark red, friable sandy clay, over quartz gravel **(chromic LUVISOLS, petric phase)**

Pn2StrP — like Pn2Strp, but shallow to moderately deep

Pn2Stbp — well drained, moderately deep to deep, dark reddish brown to dark brown, firm, sandy clay to clay, over quartz gravel or pisoferric material **(orthic and chromic* ACRISOLS, petric or pisoferric phase)**

Pn2StbP — like Pn2Stbp, but shallow to moderately deep

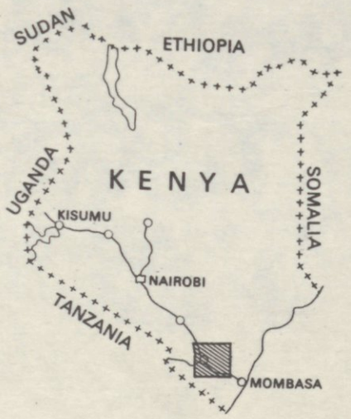
Pn2Std — poorly drained, very deep, black, very firm, calcareous, cracking clay, with saline and sodic deeper subsoil **(pellic VERTISOLS, saline-sodic phase)**

KEY

- soil mapping symbol
- U3SmbP — depth class symbol
- BC — slope class symbol
- soil boundary
- soil boundary (uncertain)
- slope class boundary
- ecological zone boundary
- 1 Sq. cm = 625 ha

- all weather road
- track
- railway
- railway station
- international boundary
- provincial boundary
- district boundary
- building
- Sch school
- bridge
- river
- pipeline
- 2000 / 1000 contours V.I. 1000 ft.
- hill top
- scarp
- park boundary

NB. Most of the roads and tracks are in approximate alignment.



brown, firm to very firm, sodic, sandy clay to clay; in places saline **(orthic SOLONETZ, partly saline phase)**

FLOODPLAINS AND ALLUVIAL VALLEYS (slopes less than 2%)

AAf Soils developed on alluvial fan deposits

AAf2 — moderately well drained, very deep, dark brown, firm sandy clay, with sodic deeper subsoil **(orthic LUVISOLS, sodic phase)**

AAf3 — imperfectly drained, very deep, dark brown, very firm, sandy clay to clay, with saline deeper subsoil **(orthic LUVISOLS, saline phase)**

AAf4 — poorly drained, very deep, dark greyish brown, very firm, calcareous, saline and sodic clay **(orthic SOLONETZ, saline phase)**

AAr Soils developed on subrecent to recent river deposits

AArC1 — complex of very deep, brown to very dark brown, stratified soils of varying drainage condition, consistence and texture **(eutric and vertic* FLUVISOLS)**

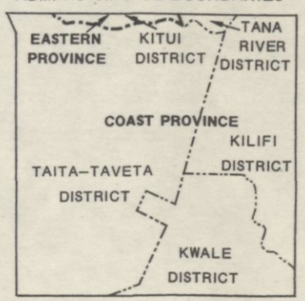
AArC2 — complex of very deep, brown to very dark brown soils of varying drainage condition, consistence and texture; in places saline and sodic

ECOLOGICAL ZONES

ZONE	ratio r/Eo (%)	mean annual rainfall (mm)	Vegetation* group of communities	Vegetation* variants
III/IV	?	?	Semi - deciduous montane forest (undifferentiated)	
IV	37–41	750–900	Diospyros - Manilkara	Carissa edulis
Va	30–37	625–750	Diospyros - Manilkara Commiphora - Lannea	Commiphora species Dalbergia melanoxylon
Vb	22–30	500–625	Commiphora–Lannea Commiphora–Acacia Acacia Schoenefeldia	Grewia fallax Grewia forbesii
VIa	16–22	375–500		Sericocomopsis pallida Digitaria macroblephara
VIb	11–16	250–375		Terminalia orbicularis Tetrapogon bidentatus

** See chapter 4 of the report*

ADMINISTRATIVE BOUNDARIES



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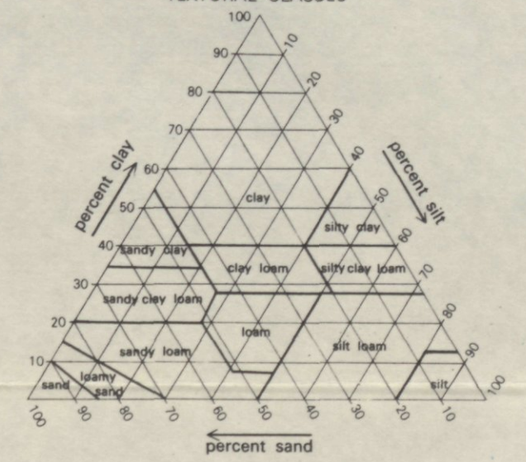
TEXTURAL CLASSES



SOIL SURVEY AND MAP PREPARATION

soil survey (1975–1978)	W. van Wijngaarden [1], W.G. Sombroek [2], H.C.K. Kinyanjui [2]
soil correlation	W.G. Sombroek [2]
map compilation	W. van Wijngaarden [1]
map correlation	B.J.A. van der Pouw [2]
cartography	P.M. Maingi [2]

1) Tsavo Research Station - WOTRO
2) Kenya Soil Survey