REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE—NATIONAL AGRICULTURAL LABORATORIES

KENYA SOIL SURVEY

LEGEND OF THE EXPLORATORY SOIL MAP OF KENYA
scale 1:1,000,000

(second draft, subject to revision)

by

W.G. Sombroek

Internal Communication No. 22
Kenya Soil Survey, Nairobi
May, 1980

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LEGEND OF THE EXPLORATORY SOIL MAP OF KENYA SCALE 1:1,000,000 (second draft, subject to revision) with an explanatory note

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I. Explanatory note

1. Introduction

This exploratory soil map of Kenya, at printing scale 1:1,000,000, is the fourth attempt of presenting the soils of the country comprehensively. It takes into account the information available at the end of 1979. The first provisional map of the country was included in Milne's provisional soil map of East Africa of 1936, at scale 1.2,000,000 (Milne, 1936). The second map at scale 1:2,000,000, was prepared by Gethin-Jones and Scott for the first edition of the National Atlas of Kenya (Gethin-Jones and Scott, 1959). Essentially the same information was used by Scott for the 1:4,000,000 soil map of East Africa as figuring in Morgan's book on the peoples and natural resources of the region (Scott, 1969).

In all these maps, the soils were presented largely following the "Catena" concept developed by Milne. This concept was used either in its narrow sense (first class catena: a regular sequence of soil types down a slope, derived from the same parent material) or in its wider sense (second class catena: a regular sequence, but derived from different parent materials). The soils terminology applied was basically the early U.S.A. soil classification (Baldwin, Kellogg and Thorp, 1938), which often had a descriptive East African terminology included.

The catena concept was taken a step further, into a "land system" approach, with the preparation of a "Land System Atlas for the western part of Kenya", scale 1:500.000 (Scott, Webster and Lawrence, 1970). In this publication the soils terminology applied was the one developed by the Commission for Technical Cooperation in Africa (CCTA) for the continent as a whole (D'Hoore, 1964).

2. Map compilation and accuracy

It should be stressed that the information contained in the map and its legend is of a schematic and often generalised nature. Only for some areas of the country there existed - at the end of 1979 - published soil surveys at reconnaissance or more detailed level. The data of a number of other surveys were at that time available only in a preliminary form. In both cases, the data had to be strongly compressed to enable presentation on a 1:1,000,000 scale. Much information became "hidden" in this process.

Readers are therefore advised to consult the final maps and reports of these surveys. For more information on these survey areas, the reader is referred to the soil survey inventory maps and the lists of publications as regularly published by the Kenya Soil Survey.

For all areas where such surveys - preliminary or final - did not exist at the end of 1979, the compilation of the mapping pattern and the characterisation of the mapping units is based on scattered observations (surface, augerholes and profile pits) throughout the country. These were carried out during a number of exploratory field trips during the years 1973 to 1977 inclusive. The observation sites were chosen after preceding consultation of existing topographic, geologic and vegetation maps, aerial photographs and especially satellite imagery (ERTS-LANDSAT), to ensure the best degree of representativeness of the sites. The same documents were used for the final delineation of the mapping units. For the characterisation of a mapping unit, the field descriptions and laboratory data of the exploratory trips were compared and compiled (the original forms of these can be consulted at the KSS Data Storage). In some cases, use could also be made of the existing soil data cards of the former EAAFRO soils section at Muguga.

Notwithstanding the above data gathering, there are still a number of mapping units for which the soils information is little more than intelligent guess work. This applies in particular to several units in the northeastern part of the country and also to some areas in the so-called "high-potential" parts of the country west of the Rift Valley. It may be expected that in a decade's time a new edition of the exploratory soil map of the country will be prepared, with far more accurate information, based on ongoing and future KSS survey work.

3. Composition of the legend

In a way, the catena has been maintained in the present map. However, the enlarged scale of mapping allowed in many cases for separate presentation of the main elements of the major catena's. In other cases, the soils are presented as associations or complexes.

The soils pattern in Kenya is very intricate, due to striking differences in altitude, landforms (their shape, stability, age), geology and climate (including past climates). In general, the present map attempts to visualise the complex relation landforms-geology-soils through a methodology as developed by the Kenya Soil Survey from 1972 onwards ("physiographic soil survey").

The landforms, described in a pragmatic rather than strictly geomorphologic way, are the first entry to the legend. They should give the reader of the maps a first insight in the physiography of the country, the altitudes and the slope patterns. The landforms are also reflected in the first capital letter of the mapping unit symbol, where necessary with a rider of lower-case letter and/or a digit (see table 1).

The geological units form the second entry to the legend and are also presented by capitals. Also in this case, the grouping is done pragmatically (see table 2), mainly according to the resistance to weathering of the rock and the richness of the parent material. This allows for a correlation between the type of parent material and the soil formation.

The third entry of the legend describes the main soil, the soil association or the soil complex of the individual mapping units in a descriptive terminology, again applying the standards at present in use at the Kenya Soil Survey for more detailed mapping (KSS Staff, 1980). Such descriptive terminology is applied to allow the interested non-soil specialists (agronomists, planners, extension officers, geography teachers) an insight in the features of the soils concerned, without being put off by the complicated terminology of modern soil taxonomists.

For the latter, however, the scientific classification of the soils is indicated between brackets at the end of the description. This classification is also reflected in the lower-case lettering at the end of the symbols that denote the various mapping units (see details in table 4). This lettering is a divergence from the current practise at the KSS for more detailed mapping, where a pragmatic combination of lower-case letters and digits is applied, denoting a number of soil characteristics. The reasons for this change are the following: a) the practical impossibility to apply these notations, in view of the number of the mapping units of the present map (about 380); b) the confidence gained over the past years with the application of the FAO/Unesco soils terminology c) the possibility for easy correlation of the soils of Kenya with those in neighbouring countries and other tropical and subtropical regions, on the basis of the existing FAO/Unesco "Soil Map of the World" at scale 1:5,000.000 (1974).

4. Soil classification and soil phases

As intimated above, the soil classification applied is the FAO/Unesco soils terminology (FAO 1974), slightly adapted to Kenyan conditions (cf. Siderius and Van der Pouw, 1980). This terminology is not yet a categoric soil classification system in the strict sense of the word, but rather a system of reference between the different existing official classification systems

with an international reach. It was, however, felt at KSS that the terminology provides for an easier understandable and memorable framework of classification than the official systems. It is moreover better suited to highlight the important differences between the Kenyan soils at high categoric level (e.g. Nitosols, Planosols, Solonetzes).

Although the soil classification appears last in the legend, the colours of the map denote the main soils classification-wise, according to the following scheme: light purple: Andosols; dark purple: Nitosols, bright red to bright yellow: Ferralsols; etc.

Finally, a number of properties of the soil or the land that are of direct importance for soil management, such as shallowness, stoniness and salinity are indicated as phases of the soil mapping units. They are reflected by a letter directly underneath the unit symbols, and by screens on the map (see details in table 5).

5. Accompanying maps (under preparation)

The soil map will be accompanied by a map, at the same scale, on the agroclimatological zonation of the country, as prepared by H.M.H. Braun of KSS. It will provide an insight in the intricate pattern of moisture and temperature regimes as they are of importance for agriculture in its broadest sense.

The information of the soil map and the agroclimatology map is combined and translated into a land evaluation key for some major land use alternatives/land utilization types (rainfed arable farming, dry farming, forestry, range management, irrigation).

Again, it should be stressed that the land suitabilities indicated in this key are of necessity of a broad and provisional nature. This is not only because of the restrictions inherent to the small scale of the map, but also because some land qualities have not been taken into account: country-wide maps at the same scale on vegetation/range condition and on surface/ground water resources do not yet exist. Nevertheless, the land suitability indications given should form a provisional guide for planning of the agricultural development of the country, at national, provincial and even district level. For that purpose, copies of a black and white combined version of the soil and agroclimatology maps, at an enlarged scale of 1:500.000 are available at KSS in Nairobi. They may be hand-coloured by the user, following the land evaluation key, to obtain a visual impression on the various land suitabilities.

6. References

Baldwin, M., C.F. Kellogg and J. Thorp, 1938, Soil Classification In: Soils and Man, 979-1001, U.S.D. Agric., Yearbook of Agriculture, 1938.

D'Hoore, J.L., 1964: The soil map of Africa at 1:5,000,000. Explanatory report and map sheets. Commission for Technical Cooperation in Africa, C. C.T. A. Interafrican Pedological Service Joint Project no.11, Publ. 93, Lagos.

FAO/1974: "Soil Map of the World 1:5,000,000. Vol.I. Legend", Unesco, Paris.

Gethin-Jones, G.H. and R.M. Scott, 1959: "Soil Map of Kenya". In: Survey of Kenya (ed.), 1959: "National Atlas of Kenya first edition". Govt. of Kenya.

Kenya Soil Survey Staff: (W.Siderius ed.) Guidelines to Soil Survey and Land Evaluation in Kenya. KSS Miscellaneous Soil Paper (in prep.)

Milne G., 1936: "A provisional soil map of East Africa". East African Agricultural Research Station Amani, Memoirs 38, Tanzania.

Scott, R.M. 1969: "East African soils". In: Morgan, M.T.W. (ed), 1969, "East Africa, its peoples and resources". Oxford University Press. London-Nairobi (revised edition of : Russell, E.W., 1962, "Natural Resources of East Africa". D.A. Hawkins, London)

Scott R.M., R. Webster and C.J.Lawrence, 1971: "A land system atlas of Western Kenya". U.K. Dept. of Agriculture, Univ. of Oxford, Christchurch, England.

Siderius, W. and B.J.A. van der Pouw, 1980, "The application of the FAO/Unesco terminology of the Soil Map of the World legend for soil classification in Kenya. Misc. Paper no. M 15, Kenya Soil Survey, Nairobi.

Table 1. Glossary of landforms

Table 2. Glossary of geology

Symbol	Geology
A	(alluvial) sediments from various sources
B	basic and ultrabasic igneous rocks (basalts, etc)
B^+	like B, but with volcanic ash mixture
D	mudstones
E	aeolian sediments (cover sands)
F	gneisses rich in ferromagnesian) minerals/hornblende gneisses)
G	granites, granodiorites
G^+	like G, but with recent volcanic ash admixture
G/P	like G, but with predominant volcanic ash influence
G/F	biotite-hornblende granites
G/F^+	like G/F, but with volcanic ash admixture
G/R	complex of G and R
I	intermediate igneous rocks (syenite, etc.)
I^+	like I, but with volcanic ash admixture
J	lagoonal deposits
K	siltstones
K/T	complex of K and T
L	limestones/calcitic mudstones/ marls
N	biotite gneisses
N^+	like N, but with volcanic ash mixture
O	Plio-Pleistocene bay sediments
P	pyroclastic rocks
Q	quartzites
R	quartz-feldspar gneisses
S	sandstones, grits, arkoses
T	shales
U	undifferentiated Basement System rocks (predominantly gneisses)
U^+	like U, but with volcanic ash admixture
U/P	like U, but with predominant volcanic ash influence
V	undifferentiated igneous rocks
W	marls
X	various parent materials
X^+	like X, but with volcanic ash admixture
Y	acid igneous rocks (rhyolite, aplite)
Y^+	like Y, but with volcanic ash admixture

Table 3. List of symbols of landform-geology combinations (alphabetically)

Table 4 Glossary of classification units and symbols [1] (sequence according to the "Key to the Soil Units" of the FAO/Unesco legend of their "Soil Map of the World)

o HISTOSOLS
od dystric Histosols

i LITHOSOLS
(no subdivision)

v VERTISOLS
vp pellic Vertisols
vc chromic Vertisols

j FLUVISOLS
jc calcaric Fluvisols
je eutric Fluvisols
jt thionic Fluvisols

z SOLONCHAKS
zo orthic Solonchaks
zt takyric Solonchaks
zg gleyic Solonchaks

g GLEYSOLS
gv vertic Gleysols
gc calcaric Gleysols
gm mollic Gleysols
gd dystric Gleysols
gh humic Gleysols

t ANDOSOLS
tm mollic Andosols
th humic Andosols
tu vitric Andosols
to orthic Andosols

q ARENOSOLS
qf ferralic Arenosols
ql luvic Arenosols
qa albic Arenosols
qc cambic Arenosols
qk calcaric Arenosols
qk calcaro-cambic Arenosols

r REGOSOLS
re eutric Regosols
rt ando-calcaric Regosols
rd dystric Regosols
rc calcaric Regosols

u RANKERS
(no subdivision)

e RENDZINAS
eo orthic Rendzinas
ec cambic Rendzinas

f FERRALSOLS
fr rhodic Ferralsols
fn nito-rhodic Ferralsols
fn nito-humic Ferralsols
fh humic Ferralsols
fa acric Ferralsols
fo orthic Ferralsols

w PLANOSOLS
we eutric Planosols
wv verto-eutric Planosols
ws solodic Planosols
wh humic Planosols
wd dystric Planosols

1) For soil complexes which include many different units a C is used in the symbol of the mapping unit.

Table 4 cont'd

s SOLONETZ

sm mollic Solonetz
sl luvo-orthic Solonetz
so orthic Solonetz
sg gleyic Solonetz

m GREYZEMS

mv verto-orthic Greyzems
mo orthic Greyzems

c CHERNOZEMS

ch haplic Chernozems
ck calcic Chernozems

k KASTANOZEMS

kh haplic Kastanozems

h PHAEOZEMS

hv verto-luvic Phaeozems
hr chromo-luvic Phaeozems
ho ortho-luvic Phaeozems
hg gleyic Phaeozems
hh haplic Phaeozems
ht ando-luvic Phaeozems
ht ando-haplic Phaeozems

x XEROSOLS

xk calcic Xerosols
xh haplic Xerosols
xy gypsic Xerosols

n NITOSOLS

ne eutric Nitosols
nv verto-eutric Nitosols
nt ando-humic Nitosols
nm mollic Nitosols
nh humic Nitosols
nd dystric Nitosols

a ACRISOLS

ah humic Acrisols
ac chromic Acrisols
ai ferralo-chromic Acrisols
ai ferralo-ferric Acrisols
ai ferralo-orthic Acrisols
ao orthic Acrisols
ag gleyic Acrisols

l LUVISOLS

lk calcic Luvisols
lv vertic Luvisols
lc chromic Luvisols
lo orthic Luvisols
li ferralo-ferric Luvisols
li ferralo-orthic Luvisols
li ferralo-chromic Luvisols
lf ferric Luvisols
lg gleyic Luvisols
la albic Luvisols
ln nito-ferric Luvisols
ln nito-chromic Luvisols

b CAMBISOLS

bn nito-chromic Cambisols
bh humic Cambisols
bc chromic Cambisols
bt ando-eutric Cambisols
bt ando-chromic Cambisols
bf ferralic Cambisols
bk calcic Cambisols
be eutric Cambisols
bd dystric Cambisols
bg gleyic Cambisols

Table 5. List of soil phases and key to soil depth classes.

A. List of soil phases

soil depth phases

k petrocalcic phase
50-100 cm deep over petrocalcic material ("kunkar")

K petrocalcic phase
0-50 cm deep over petrocalcic material ("kunkar")

m petroferric phase
50-100 cm deep over petroferric material ("murram")

M petroferric phase
0-50 cm deep over petroferric material ("murram")

p lithic or paralithic phase
0-50 cm deep over rock

rockiness and stoniness phases

r rocky phase
g gravelly phase
s stony phase
b bouldery phase
gm gravel-mantle phase
sm stone-mantle phase
bm boulder-mantle phase

salinity and sodicity phases

a saline phase
o sodic phase
ao saline-sodic phase

B. Key to soil depth classes

0 - 50 cm	shallow
50 - 80 cm	moderately deep
80 - 120 cm	deep
120 - 180 cm	very deep
more than 180 cm	extremely deep

II. LEGEND OF THE EXPLORATORY SOIL MAP OF KENYA

M — MOUNTAINS AND MAJOR SCARPS

MV — Soils developed on olivine basalts and ashes of major older volcanoes

1. MVtm — well drained, moderately deep, dark reddish brown, smeary clay loam, with humic topsoil (mollic ANDOSOLS)
2. MVne — well drained, deep, dusky red to dark reddish brown, friable clay (eutric NITOSOLS)
3. MVbcn — well drained, shallow, dark reddish brown, friable, rocky and stony clay loam (nito-chromic CAMBISOLS, rocky phase)
4. MVbh — well drained, shallow to moderately deep, dark reddish brown, friable, humic, rocky and stony clay loam (nito-humic CAMBISOLS, rocky phase)
5. MVod — imperfectly drained, shallow to moderately deep, dark greyish brown, very friable, acid humic to peaty, loam to clay loam, with rock outcrops and ice in the highest parts (dystric HISTOSOLS, lithic phase; with LITHOSOLS, rock outcrops and ice).
6. MVth — well drained, very deep, dark reddish brown to dark brown, very friable and smeary , clay loam to clay, with thick, acid humic topsoil; in places shallow to moderately deep and rocky (humic ANDOSOLS, partly lithic phase)
7. MVbn — well drained, shallow to moderately deep, dark reddish brown to dark brown, rocky and bouldery, clay loam to clay; in places with humic topsoil (nito-chromic CAMBISOLS; with haplic PHAEOZEMS, lithic phase, LITHOSOLS, eutric REGOSOLS and Rock Outcrops)
8. MVre — well drained, shallow, dark brown, firm, rocky and stony, clay loam (eutric REGOSOLS; with Rock Outcrops)

MP — Soils developed on ashes and other pyroclastic rocks of recent volcanoes

9. MPrt — somewhat excessively drained, shallow to moderately deep, brown to dark brown, firm and slightly smeary, strongly calcareous, gravelly to stony clay loam; in many places saline and/or sodic and with inclusions of lava fields (ando-calcaric REGOSOLS)

MF — Soils developed on Basement System rocks rich in ferromagnesian minerals

10. MFbc — complex of well drained soils, ranging from shallow, rocky and stony to deep, non-rocky and non-stony, dark red to dark brown, friable to firm, sandy loam to sandy clay (chromic CAMBISOLS, partly lithic phase; with eutric REGOSOLS and Rock Outcrops)

MU — Soils developed on undifferentiated Basement System rocks, predominantly gneisses

11. MUbh — well drained, moderately deep, reddish brown to brown, friable, stony sandy clay loam, with humic topsoil (humic CAMBISOLS: with eutric REGOSOLS and Rock Outcrops)

12. MUbc — somewhat excessively drained, shallow to moderately deep, reddish brown, friable, rocky and stony, sandy clay loam (eutric CAMBISOLS with LITHOSOLS, eutric REGOSOLS and Rock Outcrops)

H — HILLS AND MINOR SCARPS

HV — Soils developed on undifferentiated Tertiary volcanic rocks (olivine basalts, rhyolites, andesites)

13. HVi — well drained, shallow, dark reddish brown, friable, very calcareous, bouldery or stony, loam to clay loam; in many places saline (LITHOSOLS; with calcic XEROSOLS, bouldery and saline phase and Rock Outcrops)

14. HVrc — complex of well drained to moderately well drained, shallow to moderately deep, dark brown, firm, stony, clay loam to clay; in places with humic topsoil (eutric REGOSOLS; with verto-luvic PHAEOZEMS, partly lithic phase)

HP — Soils developed on ashes and other pyroclastic rocks of recent volcanoes

15. HPtm — well drained, moderately deep to deep, black, very friable and smeary, very gravelly loam, with humic topsoil (mollic ANDOSOLS)

16. HPbt — somewhat excessively drained, shallow, dark brown to brown, friable and slightly smeary, rocky and stony clay loam (ando-eutric CAMBISOLS, lithic and stony phase; with Rock Outcrops)

17.	HPtm+bt	complex of: - well drained, deep to very deep, dark brown to greyish brown, friable and smeary clay loam, with thick humic topsoil (mollic ANDOSOLS) - soils of unit HPbt
	HI	Soils developed on intermediate igneous rocks (syenites, trachytes, etc.)
18.	HIhv	well drained to moderately well drained, shallow to moderately deep, dark reddish brown to dark brown, firm, bouldery or stony clay, with humic topsoil (verto-luvic PHAEOZEMS, lithic and bouldery phase)
	HB	Soils developed on basic igneous rocks (serpentinites, basalts, nepheline phonolites; older basic tuffs included)
19.	HBi	well drained, very shallow to moderately deep, very dark brown, firm, stony and rocky, clay loam (LITHOSOLS; with verto-luvic PHAEOZEMS, lithic phase and Rock Outcrops)
20	HBbh	somewhat excessively drained, shallow to moderately deep, dark reddish brown, friable, gravelly clay, with acid humic topsoil (humic CAMBISOLS, partly paralithic phase)
21.	HBbn	well drained, shallow, dark reddish brown, friable, rocky and stony clay loam (nito-chromic CAMBISOLS, lithic phase; with Rock Outcrops)
	HY^{+}	Soils developed on acid igneous rocks (rhyolites, aplites), with recent volcanic ash admixture
22.	HY^{+}u	somewhat excessively drained, shallow, dark reddish brown, friable, gravelly clay; in places with humic topsoil, partly acid (RANKERS; with ando-haplic PHAEOZEMS, lithic phase and LITHOSOLS)
	HG	Soils developed on granites
23.	HGrd	complex of somewhat excessively drained, shallow, stony and rocky soils of varying colour, consistence and texture (dystric REGOSOLS; with ferralic CAMBISOLS, lithic phase and Rock Outcrops)

HQ Soils developed on quartzites

24. HQu somewhat excessively drained, shallow, dark brown, very friable, rocky, sandy loam to clay loam; in many places with acid humic topsoil (RANKERS; with LITHOSOLS and Rock Outcrops)

HX Soils developed on various parent materials (mixed igneous and metamorphic rocks)

25. HXbc well drained, shallow, reddish brown, friable, rocky and stony, sandy clay to clay (chromic CAMBISOLS, lithic phase; with eutric REGOSOLS, LITHOSOLS and Rock Outcrops)

HU Soils developed on undifferentiated Basement System rocks, predominantly gneisses

26. HUrc somewhat excessively drained, shallow, reddish brown, friable, rocky or stony, sandy clay loam (eutric REGOSOLS; with Rock Outcrops and calcic CAMBISOLS)

27. HUrd complex of excessively drained to well drained, shallow, dark red to brown, friable, sandy clay loam to clay; in many places rocky, bouldery and stony and in places with acid humic topsoil (dystric REGOSOLS; with LITHOSOLS, humic CAMBISOLS lithic phase and Rock Outcrops)

28. HUbh somewhat excessively drained to well drained, shallow to moderately deep, dark reddish brown to brown, friable, rocky and stony, sandy clay to clay; in many places with acid humic topsoil (humic CAMBISOLS, lithic phase; with LITHOSOLS/ REGOSOLS, chromic LUVISOLS, lithic phase and Rock Outcrops)

29. HUbf somewhat excessively drained, predominantly moderately deep, red, very friable, sandy clay loam to sandy clay; in places rocky (ferralic CAMBISOLS; with rhodic or orthic FERRALSOLS and Rock Outcrops)

HS Soils developed on Jurassic sandstones, grits and conglomerates

30. HSrc well drained, shallow, brown, friable, rocky and stony, sandy clay loam (on hills andplateau rests) (eutric REGOSOLS)

HK Soils developed on fine sandstones, siltstones and sandy limestones (Jurassic-Cretaceous)

31. HKi somewhat excessively drained, shallow, dark brown, friable, rocky and stony clay loam (on hills and plateau rests) (LITHOSOLS)

HL Soils developed on limestones and calcitic mudstones

(sedimentary limestones and calcitic mudstones)

32. HLi somewhat excessively drained, shallow, strongly calcareous, stony clay (on hills and plateau rests) (LITHOSOLS)

(Kambe sedimentary limestone)

33. HLec well drained, shallow to moderately deep, dark brown to yellowish brown, firm, moderately calcareous clay (cambic RENDZINAS)

(crystalline limestones)

34. HLeo somewhat excessively drained, shallow, dark grey, firm, moderately calcareous, stony clay (orthic RENDZINAS)

Hs STEP-FAULTED SCARPS OF THE RIFT VALLEY

HsV Soils developed on undifferentiated Tertiary volcanic rocks (olivine basalts, rhyolites, andesites)

35. HsVi predominantly well drained, shallow, dark reddish brown, friable, strongly calcareous, rocky or stony, clay loam; in many places saline (LITHOSOLS; with Rock Outcrops and XEROSOLS, bouldery and saline phase)

PLATEAUS AND HIGH-LEVEL STRUCTURAL PLAINS

LD Soils developed on Tertiary claystones

(Danissa beds, "intermediate" peneplain)

36. LDfr (m) well drained, deep, dark red, friable clay, over petroplinthite (rhodic FERRALSOLS, petroferric phase)

LL Soils developed on Jurassic limestones

("Muguda surface", structural plain)

37. LLlk (k) well drained, shallow to moderately deep, dark reddish brown, firm, moderately calcareous clay, often over petrocalcic material (on oolithic limestones)
(calcic LUVISOLS, petrocalcic phase)

38. LLi (b) well drained, shallow, dark reddish brown, firm, moderately calcareous, bouldery clay loam (on non-oolithic limestones and calcitic mudstones)
(LITHOSOLS, bouldery phase)

39. LLbk (p) well drained, shallow, red, moderately calcareous, sandy loam (on dolomitic limestones) (calcic CAMBISOLS, lithic phase)

LB Soils developed on Tertiary basic igneous rocks (olivine basalts, nepheline phonolites; older, basic tuffs included)

40. LBxk (bm) well drained, shallow to moderately deep, dark reddish brown, firm, strongly calcareous clay loam, with stony to bouldery surface, partly saline and/or sodic (calcic XEROSOLS, boulder-mantle and saline-sodic phase)

41. LBbc (bm) well drained, shallow, brown, firm, gravelly clay; with stony to bouldery surface (chromic CAMBISOLS, lithic and boulder-mantle phase)

42. LBnv well drained, very deep, dark reddish brown to dark brown, friable to firm, slightly cracking clay; in places with humic topsoil (verto-eutric NITOSOLS; with mollic NITOSOLS)

43. LBhr (p) well drained, shallow to moderately deep, reddish brown, firm clay loam, with humic topsoil (chromo-luvic PHAEOZEMS, partly lithic phase)

44. LBho well drained, moderately deep to deep, dark brown, firm clay, with thick humic topsoil (ortho-luvic PHAEOZEMS)

45. LBhv well drained to moderately well drained, deep, very dark greyish brown, firm and slightly cracking clay, with thick humic topsoil (verto-luvic PHAEOZEMS)

46. LBvc imperfectly drained, deep, very dark greyish brown, very firm, cracking clay (chromic VERTISOLS)

47. LBvp+hv imperfectly drained, deep, black to dark grey, very firm, slightly to strongly cracking clay (pellic VERTISOLS and verto-luvic PHAEOZEMS)

48. LBwc imperfectly drained, deep, dark greyish brown, firm clay (hardpan), abruptly underlying a topsoil of sandy clay loam (eutric PLANOSOLS)

49. LBfn+bn well drained, shallow to very deep, dark red, friable clay; in many places rocky and bouldery (nito-rhodic FERRALSOLS and nito-chromic CAMBISOLS, lithic and/or bouldery phase)

50. LBv+g complex of:
(M) - moderately well drained, shallow, yellowish red to dark yellowish brown, friable, gravelly clay over petro plinthite or rock (50-70%), (murram cuirass soils, with some LITHOSOLS)

- poorly drained, deep to very deep, dark brown to very dark greyish brown, mottled, firm to very firm, cracking clay; in places moderately deep to deep over petroplinthite (VERTISOLS, undifferentiated and vertic GLEYSOLS)

51. LBhv+ w? moderately well drained, very deep, dark greyish brown, firm clay (verto-luvic PHAEOZEMS; with eutric PLANOSOLS)

52. LBfn well drained, very deep, dark red, very friable clay (nito-rhodic FERRALSOLS)

53. LBvp (ao) imperfectly drained to poorly drained, deep to very deep, dark grey to black, very firm, calcareous, saline and sodic, cracking clay (pellic VERTISOLS, saline-sodic phase)

54. LBvp (s) imperfectly drained, very deep, dark grey to black, firm to very firm, bouldery and stony, cracking clay; in places with calcareous, slightly saline deeper subsoil (pellic VERTISOLS, stony phase and partly saline phase)

55. LBvp+eo imperfectly drained, moderately deep to deep, very dark grey to black, firm to very firm, slightly calcareous, cracking clay; in many places with gravelly calcareous deeper subsoil (pellic VERTISOLS and orthic RENDZINAS)

56. LBmv imperfectly drained, very deep, very dark greyish brown to black, very firm, cracking clay, with a topsoil of friable, humic clay loam (verto-orthic GREYZEMS)

LP <u>Soils developed on volcanic ashes and other pyroclastics of recent volcanoes</u>

57. LPht well drained, moderately deep to very deep, dark brown, friable and slightly smeary, clay loam to clay (ando-luvic PHAEOZEMS)

58. LPho well drained, very deep, very dark greyish brown to dark brown, friable clay (ortho-luvic PHAEOZEMS)

59. LPtm well drained, deep to very deep, very dark greyish brown, friable and smeary, loam to clay loam, with a thick humic topsoil (mollic ANDOSOLS)

60. LPht/v complex of :
- well drained, deep to very deep, very dark greyish brown to dark brown, friable and slightly smeary clay loam (ando-luvic PHAEOZEMS)
- imperfectly drained, deep, very dark greyish brown to black, firm, moderately calcareous, slightly cracking clay (verto-luvic PHAEOZEMS)

LI	Soils developed on intermediate igneous rocks (syenites, trachytes, phonolites, etc.)
61. LIfr (m)	well drained, moderately deep to deep, dark red, friable clay, over petroplinthite; with inclusions of small bottomlands of unit BIgh (rhodic FERRALSOLS, petroferric phase)
62. LIfn	well drained, very deep, dark reddish brown to dark red, friable clay (nito-rhodic FERRALSOLS)
LG/F^{+}	Soils developed on biotite-hornblende granites, with volcanic ash admixture
63. LG/F^{+}mo	imperfectly drained, very deep, very dark greyish brown to black, very firm sandy clay, with a topsoil of friable, humic, sandy clay loam to clay loam (orthic GREYZEMS)
LQ	Soils developed on quartzites
64. LQfh	well drained, deep to very deep, reddish brown, friable clay, with acid humic topsoil (humic FERRALSOLS)
LR	Soils developed on quartz-feldspar gneisses
65. LRvp+we	association of: - imperfectly drained, moderately deep, dark greyish brown to black, very firm, gravelly cracking clay; in places saline (pellic VERTISOLS, partly saline phase) - imperfectly drained, moderately deep, dark greyish brown to black, very firm, gravelly clay, abruptly underlying 10-30cm of gravelly sandy clay loam (eutric PLANOSOLS)
Ls	STEP-FAULTED FLOOR OF THE RIFT VALLEY
LsB	Soils developed on Tertiary basic igneous rocks (olivine basalts, nepheline phonolites; older basic tuffs included)
66. LsBbt (b)	well drained, moderately deep, dark reddish brown to reddish brown, friable to firm and slightly smeary, bouldery and stony, clay loam to clay; in places calcareous (ando-chromic CAMBISOLS, bouldery phase; with calcic XEROSOLS)
67. LsBxk	- do - , but mainly calcic XEROSOLS

Lc COASTAL PLATEAUS

LcS Soils developed on Pliocene sandstones (Magarini sands)

68. LcSfa/r well drained, extremely deep, red to dusky red, very friable, sandy clay loam to clay (acric to rhodic FERRALSOLS)

LcE Soils developed on cover sands (mainly derived from Magarini sands)

69. LcEqf excessively drained, very deep, yellowish red to pale yellow, loose, loamy sand to sandy loam (ferralic ARENOSOLS; with albic ARENOSOLS)

LcL Soils developed on limestones (Kambe limestone)

70. LcLnc well drained, deep, dark reddish brown, friable, fine sandy clay (eutric NITOSOLS)

Lu PLATEAU/UPPER-LEVEL UPLAND TRANSITIONS

LuP Soils developed on ashes and other pyroclastic rocks from recent volcanoes

71. LuPth well drained, deep to very deep, dark brown, friable and smeary, sandy clay to clay, with acid humic topsoil (humic ANDOSOLS)

72. LuPtm well drained, deep to very deep, very dark greyish brown, friable and smeary, clay loam, with thick humic topsoil (mollic ANDOSOLS)

R VOLCANIC FOOTRIDGES

(dissected lower slopes of major older volcanoes and mountains)

RV Soils developed on olivine basalts, ashes and other pyroclastic rocks

73. RVi+xk (b) well drained, shallow to moderately deep, dark brown, firm, very calcareous, stony clay loam, with rocky and bouldery surface; in many places saline and sodic; with inclusions of recent lava flows (LITHOSOLS and calcic XEROSOLS, bouldery phase and partly saline-sodic phase)

RB Soils developed on Tertiary basic igneous rocks (basalts, nepheline phonolites; basic tuffs included)

74. RBbn/e (b) well drained, shallow to very deep, dusky red to dark brown, friable, rocky, bouldery, stony or gravelly, silty clay loam to clay (nito-chromic CAMBISOLS and eutric CAMBISOLS, lithic and bouldery phase)

75. RBnh/bh association of:
- well drained, extremely deep, dark reddish brown, friable clay, with acid humic topsoil; on interfluves (humic NITOSOLS)
- well drained, shallow to moderately deep, dark reddish brown to dark brown, friable clay loam to clay, with acid humic topsoil; on valley sides (humic CAMBISOLS, partly lithic phase)

76. RBnt well drained, extremely deep, dark reddish brown to dark brown, friable and slightly smeary clay, with acid humic topsoil (ando-humic NITOSOLS; with humic ANDOSOLS)

77. RBnh well drained, extremely deep, dusky red to dark reddish brown, friable clay, with acid humic topsoil (humic NITOSOLS)

78. RBne well drained, extremely deep, dusky red to dark reddish brown, friable clay; with inclusions of well drained, moderately deep, dark red to dark reddish brown, friable clay over rock, pisoferric or petroferric material (eutric NITOSOLS; with nito-chromic CAMBISOLS and chromic ACRISOLS, partly pisoferric or petroferric phase)

79. RBne+bn well drained, deep to extremely deep, dark reddish brown to dark brown, friable to firm clay; in places gravelly (eutric NITOSOLS and nito-chromic CAMBISOLS; with chromo-luvic PHAEOZEMS)

80. RBhv well drained, moderately deep, dark reddish brown, firm, slightly cracking clay, with humic topsoil (verto-luvic PHAEOZEMS)

81. RBhr well drained, moderately deep to deep, dark reddish brown, friable to firm clay, with humic topsoil (chromo-luvic PHAEOZEMS)

RB^{+} <u>like RB, but with volcanic ash admixture</u>

82. RB^{+}nt+bh association of:
- well drained, extremely deep, dark reddish brown, friable and slightly smeary clay, with acid humic topsoil; on interfluves (ando-humic NITOSOLS)
- well drained, shallow to moderately deep, dark brown, friable, clay loam to clay, with acid humic topsoil; on valley sides (humic CAMBISOLS, partly lithic phase)

RP — Soils developed on ashes and other pyroclastic rocks from recent volcanoes

83. RPtm+bt — association of:
- well drained, very deep, dark reddish brown, very friable and smeary, sandy clay loam to clay, with thick humic topsoil; on interfluves (mollic ANDOSOLS)
- well drained, shallow to moderately deep, dark brown to dark reddish brown, very friable and slightly smeary, clay loam to clay; on valley sides (ando-eutric CAMBISOLS, partly lithic phase)

84. RPhr — well drained, very deep, dark reddish brown, friable to firm, clay, with humic topsoil (chromo-luvic PHAEOZEMS; over buried NITOSOLS)

85. RPtm — well drained, moderately deep to deep, dark yellowish brown, friable and smeary, sandy clay loam to clay loam, with humic topsoil (mollic ANDOSOLS)

F — FOOTSLOPES

FV — Soils developed on colluvium from various volcanic rocks (mainly basalts)

86. FVxk (bm) — imperfectly drained, moderately deep, dark reddish brown to dark greyish brown, friable to firm, strongly calcareous and often moderately saline and strongly sodic, stony clay loam; in many parts with boulder surface (calcic XEROSOLS, boulder-mantle and saline-sodic phase)

87. FVC — complex of well drained to moderately well drained, deep, reddish brown to very dark greyish brown, firm, sandy clay loam to clay; partly with humic topsoil and/or cracking; often moderately calcareous (LUVISOLS, undifferentiated, luvic PHAEOZEMS and chromic VERTISOLS)

FP — Soils developed on colluvium from ashes and other pyroclastic rocks of recent volcanoes

88. FPht — well drained to moderately well drained, very deep, dark brown, friable and slightly smeary clay, with humic topsoil (ando-luvic PHAEOZEMS)

FY+ — Soils developed on colluvium from acid igneous rocks (rhyolites), with volcanic ash admixture

89. FY*hg — moderately well drained to imperfectly drained, deep, dark reddish brown, mottled, friable clay loam, with humic topsoil and deeper subsoil of compact clay (gleyic PHAEOZEMS)

FB — Soils developed on colluvium from basic igneous rocks (serpentinites, basalts, etc.)

90. FBbk — well drained, very deep, dark reddish brown, firm, moderately calcareous clay (calcic CAMBISOLS)

91. FBfn — well drained, deep to very deep, dusky red to dark reddish brown, friable clay, often with humic topsoil (nito-rhodic FERRALSOLS, with verti-mollic NITOSOLS)

FL — Soils developed on colluvium from crystalline limestones

92. FL1v — well drained, very deep, dark brown, firm, moderately to strongly calcareous, slightly to moderately sodic, cracking clay (vertic LUVISOLS, sodic phase)

93. FL1c — well drained, very deep, dark reddish brown, firm, slightly calcareous, slightly cracking clay, with a slightly to moderately sodic deeper subsoil (chromic LUVISOLS, sodic phase)

FQ — Soils developed on colluvium from quartzites

94. FQah — well drained, deep to very deep, reddish brown to yellowish red, friable, sandy loam to clay, often with acid humic topsoil (humic ACRISOLS; with luvic ARENOSOLS)

FU — Soils developed on colluvium from undifferentiated Basement System rocks

95. FUxh — well drained, very deep, brown, friable, slightly to moderately calcareous, coarse loamy sand to sandy clay loam (haplic XEROSOLS; with calcaric ARENOSOLS)

96. FU1c — well drained, very deep, yellowish red to dark reddish brown, friable, coarse loamy sand to sandy clay loam (chromic LUVISOLS; with rhodic FERRALSOLS and luvic/ferralic ARENOSOLS)

97. FUfr — well drained, very deep, dark red, friable, coarse loamy sand to sandy clay loam (rhodic FERRALSOLS; with ferralic ARENOSOLS and ferralo-chromic LUVISOLS)

98. FUqf — complex of well drained, deep to very deep, dark reddish brown to dark yellowish brown soils of varying consistence and texture, in places gravelly and stratified (ferralic ARENOSOLS; with ferralo-chromic/orthic LUVISOLS)

99. FUa — complex of somewhat excessively drained to well drained, deep to very deep, dark red to brown, sandy loam to clay (ACRISOLS, undifferentiated; with ARENOSOLS)

FX — Soils developed on colluvium from various rocks

100. FXlc — well drained, moderately deep to very deep, dark red to reddish brown, friable to firm, sandy clay to clay (chromic LUVISOLS; with rhodic FERRALSOLS)

FS — Soils developed on colluvium from sandstones, grits and conglomerates (Taru, Mazeras)

101. FSql — excessively drained, very deep, reddish yellow, loose, sand to loamysand (luvic ARENOSOLS; with ferralic and albic ARENOSOLS)

F/Y — FOOTSLOPES AND PIEDMONT PLAINS UNDIFFERENTIATED

F/YK — Soils developed on colluvium and alluvium from fine sandstones, siltstones and sandy limestones

102 F/YKbk — well drained, very deep, dark red, friable, moderately calcareous, very fine sandy clay loam (calcic CAMBISOLS)

F/YL — Soils developed on colluvium and alluvium from crystalline limestones

103. F/YLlc +kh — well drained, deep to very deep, dark brown, friable to firm, clay loam to sandy clay; in places calcareous (chromic LUVISOLS and haplic KASTANOZEMS)

F/YU — Soils developed on colluvium and alluvium from undifferentiated Basement System rocks

104. F/YUlc +lv — well drained, moderately deep to deep, red to dark reddish brown, firm, sandy clay loam to clay (chromic and vertic LUVISOLS)

Y — PIEDMONT PLAINS

YV — Soils developed on alluvium from Tertiary/Quaternary volcanic rocks (mainly basalts)

105. YVzo (sm) — moderately well drained, very deep, dark brown to greyish brown, predominantly strongly calcareous, moderately to strongly saline and often sodic, firm, fine sandy loam to clay loam, with stone surface (desert pavement) (orthic SOLONCHAKS, stone-mantle phase)

106. YVlv (o) — well drained, deep to very deep, dark brown, firm clay; in places cracking and/or calcareous, and sodic (vertic LUVISOLS; with calcic LUVISOLS, sodic phase and chromic VERTISOLS, sodic phase)

107. YVbe — well drained, deep to very deep, dark brown, very friable, clay loam to gravelly clay loam (eutric CAMBISOLS)

108. YVbk (ao) well drained, moderately deep to very deep, dark brown, very friable, moderately calcareous, gravelly clay loam, with slightly saline and sodic deeper subsoil; in places over petrocalcic material (calcic CAMBISOLS, saline-sodic phase)

YP Soils developed on alluvium from volcanic ashes and other pyroclastic rocks of recent volcanoes

109. YPtm+ch (r) well drained, shallow to deep, greyish brown to black, very friable and smeary, rocky or bouldery, gravelly sandy clay loam to clay (mollic ANDOSOLS, rocky phase and haplic CHERNOZEMS, stony and partly lithic phase)

YU Soils developed on alluvium from undifferentiated Basement System rocks

110. YUxh (o) moderately well drained, very deep, dark yellowish brown to strong brown, friable, slightly to moderately calcareous and slightly sodic, loamy sand to sandy clay loam (haplic XEROSOLS, sodic phase; with calcaro-cambic ARENOSOLS)

111. YUbk (o) well drained, deep, dark brown, friable, moderately calcareous clay loam, with sodic deeper subsoil (calcic CAMBISOLS, sodic phase)

112. YUli well drained, very deep, dark red, friable, sandy clay to clay (ferralo-chromic LUVISOLS)

113. YUlo well drained, very deep, dark reddish brown to dark brown, friable to firm, sandy loam to sandy clay (orthic LUVISOLS; with luvic ARENOSOLS)

114. YUwv imperfectly drained, very deep, very dark grey to black, very firm, cracking, gravelly clay to clay, with calcareous deeper subsoil; in places gravelly (verto-eutric PLANOSOLS)

115. YUwe poorly drained, very deep, dark greyish brown to very dark grey, mottled, firm to very firm, clay, abruptly underlying a topsoil of friable, sandy clay loam; in places with a sodic deeper subsoil (eutric PLANOSOLS; with solodic PLANOSOLS)

116. YUC complex of moderately well drained to poorly drained, very deep, dark brown to dark grey, firm to very firm, sandy clay to clay; in places stratified, sodic and/or cracking (PLANOSOLS, GLEYSOLS, SOLONETZ, VERTISOLS and FLUVISOLS)

YL — Soils developed on alluvium from crystalline limestones

117. YLli+lv — association of:
- well drained, deep to very deep, dark reddish brown, friable to firm, sandy clay to clay; on convex to straight slopes (ferralo-ferric LUVISOLS)
- moderately well drained, very deep, dark reddish brown to dark brown, firm, moderately calcareous clay, with saline and sodic deeper subsoil; on concave slopes (vertic LUVISOLS, saline-sodic phase)

U — UPLANDS

U1 — UPPER-LEVEL UPLANDS (usually rolling to hilly; altitudes 6500-11,000 feet; about 4000 feet above local base level)

U1Y+ — Soils developed on acid igneous rocks (rhyolites), with volcanic ash admixture

118. U1Y+ht — well drained, deep to very deep, dark reddish brown, friable and slightly smeary silty clay loam, with thick humic topsoil (ando-luvic PHAEOZEMS)

U1I+ — Soils developed on intermediate igneous rocks (syenites , trachytes, andesites), with volcanic ash admixture

119. U1I+nm+hr — well drained, deep to extremely deep, reddish brown, friable clay, with thick humic topsoil ((dystro-) mollic NITOSOLS and chromo-luvic PHAEOZEMS)

U1U — Soils developed on undifferentiated Basement System rocks

120. U1Uu+bh — complex of:
- well drained, shallow, black to very dark brown, acid humic, very friable loam; in places rocky (RANKERS)
- well drained, moderately deep, dark brown, friable clay loam, with a very thick acid humic topsoil (humic CAMBISOLS)

U2 — UPPER MIDDLE-LEVEL UPLANDS (often undulating to rolling; altitudes 5000-8000 feet; about 2500 ft. above base level)

U2B — Soils developed on Tertiary or older basic igneous rocks (basalts, nepheline phonolites, etc.; basic tuffs included)

121. U2Bnm — well drained, extremely deep, dark reddish brown, friable clay, with humic topsoil (mollic NITOSOLS)

122. U2Bnc — well drained, extremely deep, dark reddish brown, friable clay (eutric NITOSOLS)

123. U2Bbn — well drained, shallow to moderately deep, dark reddish brown to dark red, friable clay (nito-chromic CAMBISOLS, partly lithic phase)

124. U2Bnc+bn — complex of soils of units U2Bnc and U2Bbn

125. U2Bnh — well drained, extremely deep, dark reddish brown to dark red, friable clay, with acid humic topsoil (humic NITOSOLS)

U2I^{+} — Soils developed on intermediate igneous rocks (syenites, andesites, etc.), with volcanic ash admixture

126. U2I^{+}nm — well drained, extremely deep, reddish brown, friable clay, with thick humic topsoil ((dystro-) mollic NITOSOLS)

U2Y^{+} — Soils developed on acid igneous rocks (rhyolites), with volcanic ash admixture

127. U2Y^{+}fm — well drained, very deep, dark red to dark reddish brown, friable, sandy clay to clay (nito-rhodic FERRALSOLS)

U2U — Soils developed on undifferentiated Basement System rocks

128. U2U1c — well drained, deep, red, firm sandy clay, with a topsoil of sandy loam (chromic LUVISOLS)

129. U2Uac (r) — well drained, moderately deep to very deep, dark red to reddish yellow, friable to firm, rocky sandy clay loam to clay (chromic ACRISOLS, rocky phase; with CAMBISOLS and FERRALSOLS)

130. U2Uai — well drained, deep, red to yellowish red, friable sandy clay (ferralo-chromic ACRISOLS)

U2G — Soils developed on granites

131. U2Gah — well drained, very deep, dark red to yellowish red, friable to firm, sandy clay to clay, with acid humic topsoil (humic ACRISOLS)

132. U2Gah (r) — like U2Gah, but rocky (humic ACRISOLS, rocky phase)

133. U2Gbh well drained, deep, yellowish red to brown, friable clay loam, with acid humic topsoil (humic CAMBISOLS; with humic ACRISOLS)

U2Q Soils developed on quartzites

134. U2Qhr well drained, very deep, dark reddish brown, friable to firm, sandy clay to clay, with humic topsoil (chromo-luvic PHAEOZEMS)

135. U2Qbh well drained, very deep, reddish brown to brown, friable, sandy clay loam to clay, with very thick acid humic topsoil (humic CAMBISOLS)

U2N Soils developed on biotite gneisses

136. U2Nah+bh well drained, moderately deep to deep, dark reddish brown to dark brown, friable, sandy clay loam to clay, with thick acid humic topsoil; in places shallow and rocky (humic ACRISOLS and humic CAMBISOLS, partly lithic phase; with Rock Outcrops)

137. U2Nnh well drained, extremely deep, dark reddish brown, friable clay, with thick acid humic topsoil (humic NITOSOLS)

U2F Soils developed on hornblende gneisses

138. U2Fnm well drained, extremely deep, dark reddish brown, friable clay, with thick humic topsoil (mollic NITOSOLS)

U2X Soils developed on various rocks

139. U2Xai well drained, very deep, dusky red to yellowish red, friable to firm, clay loam to clay; in places with acid humic topsoil (ferralo-chromic /orthic ACRISOLS)

U2X+ like U2X, but with volcanic ash admixture

140. U2X+ht moderately well drained, moderately deep, reddish brown to red, firm clay loam, with humic topsoil (andо-luvic PHAEOZEMS)

U3 LOWER MIDDLE-LEVEL UPLANDS (often undulating; altitudes 3500-6500 feet; about 1500 feet above local base level)

U3P Soils developed on ashes and other pyroclastic rocks from recent volcanoes

141. U3Ptm well drained, deep to very deep, dark reddish brown, friable and smeary, silty clay to clay, with humic topsoil (mollic ANDOSOLS)

U3B Soils developed on basic igneous rocks (basalts, etc.)

142. U3Bnm well drained, deep to extremely deep, dark red, friable clay, with thick humic topsoil (mollic NITOSOLS; with nito-luvic PHAEOZEMS)

143. U3Bnd well drained, extremely deep, dark reddish brown, friable clay (dystric NITOSOLS)

144. U3Bne well drained, very deep, red to dark red, friable to firm, clay; in places moderately deep over petro-plinthite (eutric NITOSOLS; with rhodic FERRALSOLS, partly petroferric phase)

U3I Soils developed on intermediate igneous rocks (andesites, etc.)

145. U3Ifm well drained, very deep, dusky red to dark red, friable clay (nito-rhodic FERRALSOLS)

146. U3Ibf (p) well drained, shallow to moderately deep, reddish brown to yellowish red, friable, gravelly sandy clay loam to clay loam, over soft rock (ferralic CAMBISOLS, paralithic phase)

U3Y Soils developed on acid igneous rocks (rhyolites, etc.)

147. U3Yhr well drained, deep to extremely deep, reddish brown, friable clay, with humic topsoil (chromo-luvic PHAEOZEMS; with mollic NITOSOLS)

148. U3Yhr+lo well drained, moderately deep to deep, reddish brown to brown, friable, gravelly clay loam to clay; in many places with a humic topsoil (chromo-luvic PHAEOZEMS and orthic LUVISOLS)

U3G Soils developed on granites

149. U3Gah well drained, deep, dark red, friable clay, with acid humic topsoil (humic ACRISOLS)

150. U3Gag imperfectly drained, moderately deep, brown to dark yellowish brown, mottled, friable, gravelly sandy clay loam, in places rocky and shallow (gleyic ACRISOLS, partly paralithic and rocky phase)

151. U3Gai well drained, deep to very deep, brown to dark brown, friable, sandy clay to clay (ferralo-orthic ACRISOLS)

U3G/F Soils developed on biotite/hornblende granites

152. U3G/Ffn well drained, very deep, reddish brown to red, friable clay, with thick acid humic topsoil (nito-humic FERRALSOLS)

153. U3G/Fah/c well drained, moderately deep to deep, yellowish red to red, friable to firm, clay, partly with acid humic topsoil; in places shallow and rocky (humic to chromic ACRISOLS; with LITHOSOLS and Rock Outcrops)

U3Q Soils developed on quartzites

154. U3Qqf complex of somewhat excessively drained to well drained, shallow to very deep, dark reddish brown to yellowish brown, loose to friable, loamy sand to sandy clay loam; in places rocky and stony
(ferralic ARENOSOLS; with orthic FERRALSOLS, ACRISOLS a.o.; partly lithic and stony phase)

U3N Soils developed on biotite gneisses

155. U3Nai well drained, moderately deep to deep, dark reddish brown to brown, friable to firm, sandy clay loam to clay, partly with acid humic topsoil
(ferralo-orthic ACRISOLS; with dystric and humic CAMBISOLS and humic ACRISOLS)

156. U3Nlo well drained, moderately deep to deep, brown to dark yellowish brown, firm sandy clay loam (orthic LUVISOLS)

157. U3Nfr well drained, deep, red, friable clay (rhodic FERRALSOLS; with ferralo-chromic ACRISOLS)

U3F Soils developed on Basement System rocks rich in ferromagnesian minerals

159. U3Ffn well drained, very deep, dark red, friable to firm, clay (nito-rhodic FERRALSOLS)

U3U Soils developed on undifferentiated Basement System rocks

159. U3Ulc+bd complex of well drained, shallow to deep, reddish brown to brown, friable to firm, sandy clay loam to clay
(chromic LUVISOLS and dystric CAMBISOLS, lithic phase)

160. U3Ulo well drained, shallow to moderately deep, strong brown to brown, firm, gravelly to stony, sandy clay to clay loam, over soft rock
(orthic LUVISOLS, partly paralithic phase)

161. U3Ubc well drained, shallow, dark brown to dark yellowish brown, friable, gravelly sandy clay loam to sandy clay, over soft rock
(eutric CAMBISOLS, paralithic phase)

162.	U3Ulc+li	complex of well drained, shallow to deep, red to dark red, friable to firm, sandy clay loam to sandy clay; in places rocky (chromic and ferralo-chromic LUVISOLS; with chromic CAMBISOLS and Rock Outcrops)
163.	U3Ulc/i	well drained, moderately deep to deep, dark red to yellowish red, friable to firm, sandy clay to clay, often with topsoil of loamy sand (chromic LUVISOLS and ferralo-ferric/chromic/orthic LUVISOLS)
164.	U3Uai	well drained, moderately deep to very deep, dark reddish brown to dark yellowish brown, friable to firm, sandy clay to clay; in many places with topsoil of loamy sand to sandy loam (ferralo-chromic/orthic/ferric ACRISOLS; with LUVISOLS and FERRALSOLS)
165.	U3Ufr/o	well drained, moderately deep to deep, dark red to yellowish red, friable, sandy clay loam to clay (rhodic and orthic FERRALSOLS; with ferralo-chromic/orthic/ferric ACRISOLS)
	U3U^{+}	like U3U, but with volcanic ash admixture
166.	U3U^{+}hr	well drained, moderately deep to deep, reddish brown to red, firm, stony sandy clay to clay loam, with humic topsoil (chromo-luvic PHAEOZEMS)
	U3X	Soils developed on various rocks (Kavirondian sediments, often mudstones)
167.	U3Xah/g	imperfectly drained, moderately deep to deep, very dark greyish brown, firm, sandy clay loam to sandy clay; in places mottled and/or with humic topsoil (humic to gleyic ACRISOLS)
168.	U3Xfr/o	well drained, deep to very deep, dark reddish brown to strong brown, friable clay (rhodic to orthic FERRALSOLS)
	U4	LOWER-LEVEL UPLANDS (often gently undulating, altitudes 2500-6000 feet; about 500 feet above local base level)
	U4B	Soils developed on basic igneous rocks (basalts, etc.)
169.	U4Bhv (p)	moderately well drained, shallow to moderately deep, dark brown, firm clay (verto-luvic PHAEOZEMS, lithic phase)

170. U4Bnc well drained, extremely deep, dark red, friable clay (eutric NITOSOLS)

171. U4Bhr well drained, moderately deep, red, firm clay, with humic topsoil; with inclusions of imperfectly drained, deep, dark grey, mottled, very firm clay (chromo-luvic PHAEOZEMS; with gleyic LUVISOLS)

U4I Soils developed on intermediate igneous rocks (andesites, etc.)

172. U4Ilc (m) well drained, moderately deep to deep, dark reddish brown, friable clay; in many places over petro-plinthite (chromic LUVISOLS, partly petroferric phase; with "murram cuirass" soils)

173. U4Ibc (M) well drained, shallow, dark reddish brown to brown, sandy clay loam to gravelly clay, partly over petroplinthite ("murram cuirass" soils (50-75%) and eutric CAMBISOLS, lithic or petroferric phase; with orthic LUVISOLS)

174. U4In/f (M) association of:
- well drained to moderately well drained, shallow soils over petroplinthite (about 50%); on interfluves ("murram cuirass" soils)
- well drained, very deep, dark reddish brown to strong brown, friable clay; on valley sides (dystric/eutric NITOSOLS and orthic FERRALSOLS)

U4Y Soils developed on acid igneous rocks

175. U4Yhg/h well drained to moderately well drained, moderately deep to deep, reddish brown to dark grey, friable clay, with humic topsoil (gleyic and haplic PHAEOZEMS)

176. U4Yh+l (M) complex of predominantly well drained, moderately deep to deep, reddish brown to brown, friable, gravelly clay loam to clay, often with a humic topsoil; in many places shallow over petroplinthite (chromo-luvic PHAEOZEMS and orthic and chromic LUVISOLS; with "murram cuirass" soils)

177. U4Yfo (M) well drained, moderately deep to deep, yellowish red to strong brown, friable clay, over petro-plinthite or rock; in places shallow over petroplinthite (orthic FERRALSOLS, partly petroferric phase; with "murram cuirass" soils)

178. U4Yai (M) well to moderately well drained, shallow, dark reddish brown, stony to gravelly clay over petro-plinthite; in places moderately deep to deep ("murram cuirass" soils (80%); with ferralo-chromic ACRISOLS)

U4G — Soils developed on granites

179. U4Gfo (M) — complex of:
- well drained, moderately deep to very deep, reddish brown to yellowish brown, friable clay, over petro-plinthite (orthic FERRALSOLS, partly petroferric phase; with orthic ACRISOLS)
- moderately well drained, shallow, brown to dark brown soils over petroplinthite (about 30%) ("murram cuirass" soils)

180. U4Gah — complex of:
- well drained, deep, reddish brown, friable, sandy clay loam, with acid humic topsoil (humic ACRISOLS)
- moderately well drained, shallow, dark reddish brown soils over petroplinthite (about 20%) ("murram cuirass" soils)

U4G/R — Soils developed on granites and quartz-feldspar gneisses

181. U4G/Rfo — well drained, deep, strong brown to reddish yellow, very friable, sandy clay loam to sandy clay (orthic FERRALSOLS; with ferralic CAMBISOLS)

U4N — Soils developed on biotite gneisses

182. U4Nfr (M) — association of:
- well drained, moderately deep to very deep, red, very friable, sandy clay to clay, over petroplinthite (rhodic FERRALSOLS, partly petroferric phase)
- shallow soils over petroplinthite (about 50%) ("murram cuirass" soils)

183. U4Nfr — well drained, very deep, dark red to dark reddish brown, very friable, sandy clay loam to clay (rhodic FERRALSOLS)

U4F — Soils developed on Basement System rocks rich in ferromagnesian minerals

184. U4F1c — well drained, moderately deep to deep, dark reddish brown to dark red, friable to firm, sandy clay to clay; in many places with stonelines (chromic LUVISOLS)

U4U — Soils developed on undifferentiated Basement System rocks

185. U4U1c+f — association of:
- well drained, moderately deep to deep, dark red to dark reddish brown, friable to firm, sandy clay to clay; on slopes (chromic LUVISOLS)

- well drained, very deep, light brown to strong brown, very friable clay; on flat interfluves (orthic and xanthic FERRALSOLS)

186. U4Uao (m) complex of well drained to imperfectly drained, shallow to moderately deep, dark red to dark yellowish brown, firm, non-rocky to rocky, non-stony to stony sandy loam to clay, partly over pisoferric material (orthic ACRISOLS, pisoferric phase; with chromic LUVISOLS and eutric CAMBISOLS, lithic phase)

187. U4Ufr well drained, very deep, red to dark red, very friable to friable, clay (rhodic FERRALSOLS)

U4X Soils developed on various rocks (Kavirondian sediments, often mudstones)

188. U4Xfo/r (M) well drained, moderately deep to very deep, dark red to strong brown, friable clay; in places shallow over petroplinthite (orthic to rhodic FERRALSOLS, partly petroferric phase; with "murram cuirass" soils (10-40%))

189. U4Xhh (M) moderately well drained, moderately deep, dark brown to dark greyish brown, friable gravelly clay, over petroplinthite, with humic topsoil; in places shallow over petroplinthite (haplic PHAEOZEMS, petro-ferric phase; with murram cuirass soils (10-40%))

U UPLANDS, UNDIFFERENTIATED LEVELS

UV Soils developed on undifferentiated volcanic rocks (mainly basalts)

190. UV1c (s) well drained, shallow to moderately deep, dark reddish brown, firm, rocky and stony clay (chromic LUVISOLS, lithic and stony phase)

191. UVrc (sm) well drained, shallow, dark brown, friable, strongly calcareous, stony loam, often strongly saline and moderately sodic; with stone mantle (desert pavement); (dissected older piedmont plain) (calcaric REGOSOLS, stone-mantle and saline-sodic phase)

192. UVht well drained, very deep, dark reddish brown to very dark greyish brown, friable and slightly smeary clay, with humic topsoil (ando-luvic PHAEOZEMS)

193. UVne+bc (b) complex of:
- well drained to imperfectly drained, moderately deep to very deep, dusky red to very dark greyish brown, friable to firm, clay loam to clay; in many places stony and bouldery and/or

cracking; with severe gully erosion and many rock outcrops (eutric NITOSOLS; with chromic CAMBISOLS, bouldery phase, VERTISOLS and Rock Outcrops)

- somewhat excessively drained, shallow, dark reddish brown, gravelly and bouldery clay loam (on volcanic cones) (chromic CAMBISOLS, lithic and bouldery phase)

194. UVhr+vc (p) complex of:
- well drained, shallow to moderately deep, reddish brown, friable, stony and gravelly clay loam, with humic topsoil (chromo-luvic PHAEOZEMS, partly lithic phase)
- imperfectly drained, moderately deep, very dark greyish brown to black, very firm cracking clay (chromic VERTISOLS)

UB Soils developed on basic igneous rocks (basalts, etc.)

195. UBlc+hv (s) association of:
- well drained, deep to very deep, dusky red to dark reddish brown, friable, stony, clay loam to clay (chromic LUVISOLS; stony phase)
- imperfectly drained, deep to very deep, dark brown to very dark greyish brown, firm, calcareous, saline and sodic, stony, cracking clay (verto-luvic PHAEOZEMS, stony and saline-sodic phase)

196. UBbk (b) well drained, shallow to moderately deep, dark greyish brown, friable to firm, calcareous, very rocky and bouldery clay (calcic CAMBISOLS, lithic and bouldery phase)

UB/P Soils developed on basic igneous rocks (basalts, etc.) with predominant volcanic ash influence

197. UB/P1n well drained, deep to very deep, dark reddish brown to dark red, firm clay; with inclusions of imperfectly drained, moderately deep, dark greyish brown clay (nito-ferric/chromic LUVISOLS; with gleyic LUVISOLS, partly lithic or pisoferric phase)

UP Soils developed on pyroclastic rocks

198. UPtm well drained, very deep, dark reddish brown to dark brown, very friable and smeary, silty clay loam, with humic topsoil (mollic ANDOSOLS)

UU — Soils developed on undifferentiated Basement System rocks

199. UUrc (gm) — well drained, shallow, brown, friable, strongly calcareous and moderately to strongly sodic and saline, gravelly sandy clay loam with gravel mantle (desert pavement) (calcaric REGOSOLS, gravel-mantle and saline-sodic phase; with gleyic SOLONETZ)

Uc — COASTAL UPLANDS

UcK — Soils developed on fine sandstones and siltstones (Mariakani sandstone and Upper Maji-ya-Chumvi beds)

200. UcKws — imperfectly drained, deep to very deep, yellowish brown, mottled, firm, fine sandy clay loam to clay, abruptly underlying 20-100 cm of fine sand to fine sandy loam; with sodic deeper subsoil (solodic PLANOSOLS)

201. UcKqa/1 — well drained, deep to very deep, pinkish grey to brown, very friable, fine sand to loamy fine sand (albic to luvic ARENOSOLS)

202. UcKbc (p) — well drained, shallow, dark brown to dark yellowish brown, fairly stony, fairly rocky, fine sandy clay loam to clay (eutric CAMBISOLS, lithic phase; with orthic LUVISOLS)

203. UcKao — well drained to imperfectly drained, deep, yellowish red to dark brown, friable, fine sandy clay loam to fine sandy clay, with a topsoil of loamy fine sand to fine sandy loam (orthic ACRISOLS)

204. UcKlo — well drained, deep, dark brown to yellowish brown, firm, very fine sandy clay loam to clay, with topsoil of loamy very fine sand to very fine sandy loam; in places with abrupt transition and sodic deeper subsoil (orthic LUVISOLS; with solodic PLANOSOLS)

UcS — Soils developed on coarse sandstones and grits (Mazeras sandstone and Shimba grit)

205. UcSai+q — complex of:
- well drained to imperfectly drained, very deep, dark red to dark greyish brown, friable to firm, sandy clay to clay, with topsoil of loamy sand to sandy loam (ferralo-chromic/orthic ACRISOLS; with gleyic LUVISOLS)

- excessively drained to imperfectly drained, very deep, red to light yellowish brown, loose, sand to loamy sand (ferralic to luvic ARENOSOLS)

206. UcSfr/o well drained, very deep, red to dark red and strong brown, friable, sandy clay loam to sandy clay, with topsoil of loamy sand to sandy loam (rhodic and orthic FERRALSOLS)

UcT Soils developed on shales

207. UcTbc+hv association of:
- well drained to imperfectly drained, shallow to moderately deep, yellowish brown to very dark grey, firm to very firm clay; in dissected parts (eutric CAMBISOLS, partly lithic phase)
- imperfectly drained, deep, dark grey to olive grey, very firm clay, with humic topsoil and sodic deeper subsoil; on interfluves (verto-luvic PHAEOZEMS, sodic phase; with vertic CAMBISOLS, sodic phase)

UcO Soils developed on Plio-Pleistocene bay sediments (Marafa beds)

208. UcOsm imperfectly drained to poorly drained, moderately deep to deep, dark yellowish brown to light olive brown, moderately calcareous, firm to very firm, sandy clay to clay, with humic topsoil; in places saline and sodic (mollic SOLONETZ; with orthic RENDZINAS and verto-luvic PHAEOZEMS)

UcI Soils developed on intermediate igneous rocks rich in ferro-magnesian minerals (intrusives)

209. UcIne well drained, extremely deep, dark red to yellowish red, friable clay (eutric NITOSOLS)

UcX Soils developed on undifferentiated sedimentary rocks (Mazeras and Mariakani sandstones and Marafa beds)

210. UcXl complex of well drained to moderately well drained, moderately deep, reddish brown, friable to very firm, sandy loam to clay loam; partly with humic topsoil and/or sodic subsoil (undifferentiated LUVISOLS; with verto-luvic PHAEOZEMS)

Up UPLAND-PLAIN TRANSITIONAL LANDS

UpB Soils developed on basic igneous rocks (basalts,etc.)

211. UpBwv+vc moderately well drained to imperfectly drained, moderately deep to very deep, very dark grey to

dark greyish brown, firm clay
(verto-eutric PLANOSOLS and chromic VERTISOLS)

UpB^{+} Like UpB, but with volcanic ash admixture

212. UpB^{+}we+ve association of:

- imperfectly drained, deep, very dark greyish brown to very dark grey, very firm clay, abruptly under-lying a topsoil of friable silty clay loam; on straight to convex slopes (eutric PLANOSOLS)
- imperfectly drained, deep, very dark greyish brown to very dark grey, very firm, cracking clay; in places sodic; on flat interfluves (chromic VERTISOLS)

UpY^{+} Soils developed on acid igneous rocks (rhyolites), with volcanic ash admixture

213. UpY^{+}we+hr association of:

- poorly drained, deep, very dark grey, very firm, cracking clay, often abruptly underlying a topsoil of friable humic loam; on flat parts (eutric PLANOSOLS; with chromic VERTISOLS)
- well drained, moderately deep, dark reddish brown, firm clay loam, with humic topsoil; on slopes (chromo-luvic PHAEOZEMS)

UpF Soils developed on gneisses rich in ferromagnesian minerals

214. UpFvp complex of well drained to imperfectly drained, shallow to very deep, dark red to black, friable to firm, cracking clay; in places sodic (pellic VERTISOLS, with verto-eutric NITOSOLS, verto-eutric PLANOSOLS and orthic SOLONETZ, partly lithic phase)

UpN Soils developed on biotite gneisses

215. UpNwv+vp association of:

- imperfectly drained, moderately deep to deep, dark brown to dark grey, firm, sandy clay to clay; on convex to straight slopes (verto-eutric PLANOSOLS)
- imperfectly drained, very deep, very dark greyish brown to black, firm to very firm, cracking clay, with calcareous and sodic deeper subsoil; on concave slopes (pellic VERTISOLS, sodic phase)

UpN^{+}	Like UpN, but with volcanic ash admixture
216. UpN^{+}hv	imperfectly drained, deep, very dark greyish brown to black, firm clay, with sodic deeper subsoil (verto-luvic PHAEOZEMS, sodic phase)
217. UpN^{+}we	imperfectly drained, deep, dark greyish brown to dark grey, very firm, sandy clay to clay, abruptly underlying a topsoil of friable loam (eutric PLANOSOLS)
UpU	Soils developed on undifferentiated Basement System rocks
218. UpUlc+we	association of: - well drained, deep to very deep, dark reddish brown, friable to firm, sandy clay loam to sandy clay, with calcareous deeper subsoil; on upper, convex slopes (chromic LUVISOLS) - imperfectly drained, deep to very deep, dark grey to black, firm to very firm, clay, abruptly underlying a topsoil of friable sandy clay loam; on lower, straight slopes (eutric PLANOSOLS)
P	PLAINS
Pn	NON-DISSECTED EROSIONAL PLAINS
PnB	Soils developed on basic igneous rocks (basalts, etc.)
219. PnBvp/c (o)	imperfectly drained, very dark greyish brown to dark grey or black, very firm, moderately calcareous and moderately to strongly sodic, cracking clay (pellic to chromic VERTISOLS, sodic phase)
220. PnBbc (b)	well drained, shallow, very dark reddish brown, slightly calcareous, stony and bouldery, clay loam to clay (chromic CAMBISOLS, bouldery and lithic phase)
221. PnBfn	well drained, very deep, dark reddish brown to dusky red, friable clay; in places bouldery (nito-rhodic FERRALSOLS)
PnB^{+}	Like PnB, but with volcanic ash admixture
222. PnB^{+}vp	imperfectly drained, deep, very dark greyish brown to black, very firm, cracking clay, with calcareous deeper subsoil; in places saline and sodic (pellic VERTISOLS, partly saline-sodic phase)

223. PnB^{+}wv imperfectly drained, deep, dark brown to dark grey, firm, sandy clay to clay (verto-eutric PLANOSOLS)

PnG^{+} Soils developed on granites, with volcanic ash admixture

224. PnG^{+}we imperfectly drained, deep, dark greyish brown, mottled, very firm, gravelly clay loam to clay, abruptly underlying a thick topsoil of friable loam (eutric PLANOSOLS)

PnG/P Soils developed on granites, with predominant volcanic ash influence

225. PnG/Pws imperfectly drained, moderately deep, very dark greyish brown, very firm, slightly sodic, gravelly clay, abruptly underlying a topsoil of friable loam (solodic PLANOSOLS)

PnN^{+} Soils developed on biotite gneisses, with volcanic ash mixture

226. PnN^{+}wv imperfectly drained, deep, brown to dark grey, firm clay, with calcareous and sodic deeper subsoil (verto-eutric PLANOSOLS, sodic phase)

227. PnN^{+}mv imperfectly drained, deep, very dark grey to very dark greyish brown, very firm clay (hardpan), with a topsoil of friable clay loam (verto-orthic GREYZEMS)

PnF Soils developed on Basement System rocks rich in ferromagnesian minerals

228. PnFfr well drained, deep to very deep, dusky red to dark red, friable sandy clay (rhodic FERRALSOLS)

229. PnFlc+hl well drained, moderately deep, dark reddish brown, firm, slightly calcareous, sandy clay loam (chromic LUVISOLS and ortho-luvic PHAEOZEMS)

PnL Soils developed on crystalline or sedimentary limestones and gypsiferous rocks (Plio-Pleistocene Wajir-El Wak beds)

230. PnL1k (K) imperfectly drained, shallow to moderately deep, strong brown to pale brown, firm, strongly calcareous, sandy loam to loam, over petrocalcic material; in many places stony (calcic LUVISOLS, petrocalcic phase)

231. PnLi imperfectly drained, shallow, pale brown, firm, moderately calcareous, stony loam, over petrocalcic or petrogypsic material (LITHOSOLS; with calcic CAMBISOLS, petrocalcic phase)

232. PnLbc well drained, moderately deep, dark reddish brown, friable clay (chromic CAMBISOLS)

PnU Soils developed on undifferentiated Basement System rocks

233. PnUli well drained, moderately deep to deep, dark red to strong brown, friable to firm, sandy clay loam to clay (ferralo-chromic/orthic LUVISOLS)

234. PnUfr/o well drained, deep to very deep, dark red to strong brown, friable , sandy clay to clay (rhodic and orthic FERRALSOLS)

235. PnUvp (o) imperfectly drained, deep, black to very dark grey, very firm, slightly to moderately sodic, cracking clay (pellic VERTISOLS, sodic phase)

236. PnUlo (ao) moderately well drained to imperfectly drained, moderately deep, dark brown to dark reddish brown, very firm, moderately calcareous, slightly to moderately sodic and slightly saline, clay loam to sandy clay, with topsoil of strongly sealing sandy loam to sandy clay loam (orthic LUVISOLS, saline-sodic phase)

PnU^{+} Soils developed on undifferentiated Basement System rocks, with volcanic ash admixture

237. PnU^{+}sl imperfectly drained, moderately deep, dark brown, extremely firm, moderately calcareous, moderately sodic and slightly saline, clay loam to sandy clay (hardpan), with topsoil of strongly sealing sandy loam (luvo-orthic SOLONETZ)

238. PnU^{+}hv (ao) moderately well drained, deep, yellowish red, firm, slightly calcareous, slightly saline and moderately sodic, slightly cracking clay, with thick humic topsoil (verto-luvic PHAEOZEMS, saline-sodic phase)

239. PnU^{+}lv+vc well drained to imperfectly drained, deep to very deep, dark reddish brown to very dark greyish brown, friable to firm, slightly calcareous clay; in many places cracking (vertic LUVISOLS and chromic VERTISOLS)

240. PnU^{+}lf well drained, moderately deep to very deep, dusky red to dark brown, friable to firm, sandy clay loam to clay (ferric LUVISOLS)

PnU/P Soils developed on undifferentiated Basement System rocks with predominant volcanic ash influence

241. PnU/Plv (ao) moderately well drained, very deep, dark reddish brown to dark brown, firm, strongly calcareous, slightly saline and moderately sodic, slightly cracking clay (vertic LUVISOLS, saline-sodic phase)

242. PnU/Phv (ao) imperfectly drained, very deep, very dark greyish brown, very firm, moderately calcareous, slightly saline and moderately sodic, slightly cracking clay
(verto-luvic PHAEOZEMS, saline-sodic phase)

PnX Soils developed on various rocks (Kavirondian sediments, often mudstones)

243. PnXwe/s imperfectly drained to poorly drained, deep, dark grey, firm clay, abruptly underlying a topsoil of friable silt loam; in many places with a sodic deeper subsoil
(eutric and solodic PLANOSOLS)

244. PnXsl imperfectly drained, very deep, very dark brown to black, firm, moderately sodic clay
(luvo-orthic SOLONETZ)

245. PnXwe (M) complex of:
- poorly drained, deep, dark grey, mottled, firm clay, abruptly underlying a topsoil of friable silt loam (eutric PLANOSOLS)
- moderately well drained to imperfectly drained, shallow soils over petroplinthite ("murram cuirass" soils)

PnK/T Soils developed on siltstones and shales (Lower Maji-ya-Chumvi beds), slightly dissected

246. PnK/Tbo (p) well drained, shallow, dark reddish brown to very dark brown, firm, fine sandy clay loam to clay (eutric CAMBISOLS, lithic phase; with LITHOSOLS)

PnK Soils developed on fine sandstones and siltstones (Mariakani sandstone), slightly dissected

247. PnKlo (o) well drained, very deep, brown, friable to firm, sandy clay loam to clay, with sodic deeper subsoil; in places with a very thick topsoil of loamy sand to sandy loam
(orthic LUVISOLS, sodic phase)

PnT Soils developed on shales (Lower Maji-ya-Chumvi beds and Taru carbonaceous shales)

248. PnThv (o) imperfectly drained, moderately deep to deep, dark greyish brown, very firm, cracking, fine sandy clay to clay; with a strongly calcareous and moderately sodic deeper subsoil
(verto-luvic PHAEOZEMS, sodic phase)

249. PnTvp (ao) imperfectly drained, very deep, very dark grey to black, very firm, strongly calcareous, moderately saline and sodic, cracking clay
(pellic VERTISOLS, saline-sodic phase)

Pns		Soils developed on gritty sandstones
250.	PnSq1	well drained, deep, yellowish red to reddish brown, friable, loamy sand to sandy clay loam (luvic ARENOSOLS; with orthic LUVISOLS)
251.	PnSi (gm)	well drained, shallow, dark brown, friable, gravelly sandy clay loam, with gravel surface (desert pavement) (LITHOSOLS, gravel-mantle phase)
252.	PnS1o	well drained, deep, strong brown to dark brown, firm, sandy clay loam to clay, with a topsoil of loamy sand to sandy loam (orthic LUVISOLS; with orthic ACRISOLS)
253.	PnS1c	well drained, deep, red, firm, sandy clay loam to clay (chromic LUVISOLS)
Pd		DISSECTED EROSIONAL PLAINS
PdU		Soils developed on undifferentiated Basement System rocks
254.	PdUbk (p)	complex of well drained, shallow to moderately deep, dark red to yellowish brown, non to moderately calcareous, stony sandy clay loam, over petrocalcic material or quartz gravel (calcic CAMBISOLS, lithic or petrocalcic phase; with chromic LUVISOLS, petric phase)
255.	PdUbc (p)	well drained, shallow, dark red to yellowish red, stony loamy sand to clay (chromic CAMBISOLS, paralithic and stony phase; with ferralic ARENOSOLS, lithic phase)
PdW		Soils developed on marly limestones, gypsiferous shales and sandy limestones (Jurassic Shangalla and Asaharbito beds of Mandera)
256.	PdWxg (s)	well drained, deep, pale brown to yellowish brown, firm, strongly calcareous and often gypsiferous, stony loam (gypsic XEROSOLS, stony phase)
PdX		Soils developed on undifferentiated sedimentary rocks
257.	PdXbc (p)	complex of well drained, shallow, dark reddish brown to strong brown, non to moderately calcareous, firm, gravelly and stony loam to sandy clay loam, partly over petrocalcic material (chromic CAMBISOLS to orthic LUVISOLS, lithic or paralithic phase; with calcic CAMBISOLS, petrocalcic phase)

PdN Soils developed on biotite gneisses

258. PdNhv (p) well drained to moderately well drained, shallow, dark brown to black, gravelly and stony clay (verto-luvic PHAEOZEMS, lithic and stony phase)

PdV Soils developed on various volcanic rocks

259. PdVhr (p) well drained, predominantly shallow, dark reddish brown to dark brown, friable to firm, sandy clay loam to clay loam; in places rocky (chromo-luvic PHAEOZEMS, lithic phase; with Rock Outcrops)

Ps SEDIMENTARY PLAINS (mainly from sheetwash)

Ps1 HIGHER-LEVEL PLAIN ("RED SAND" PLAIN)

Ps1U Soils developed on sheetwash and aeolian deposits from undifferentiated Basement System rocks

260. Ps1Uli well drained, deep to very deep, dark red to dusky red, friable, sandy loam to sandy clay loam (ferralo-chromic LUVISOLS; with ferralic ARENOSOLS)

261. Ps1Uqf as Ps1Uli, but very deep and loamy sand to sandy loam (ferralic ARENOSOLS)

262. Ps1Uai as Ps1Uli, but predominantly more acid (ferralo-chromic ACRISOLS; with ferralic ARENOSOLS and ferric LUVISOLS)

263. Ps1Uai+Ps20s1 complex of soils of units Ps1Uai and Ps20s1 (unit 275)

Ps1K Soils developed on sheetwash and aeolian deposits from fine sandstones, siltstones and sandy limestones

264. Ps1Kqc well drained, deep, red, friable, loamy fine sand to fine sandy loam (cambic ARENOSOLS)

265. Ps1Kws+s1 imperfectly drained, very deep, red to reddish brown, firm, slightly calcareous, moderately saline and moderately sodic sandy clay, abruptly underlying a topsoil of loamy sand (mainly on sediments from Mariakani sandstone?) (solodic PLANOSOLS and luvo-orthic SOLONETZ, saline phase)

Ps1S Soils developed on sheetwash sediments, possibly derived mainly from Taru grits

266. Ps1S1o well drained, very deep, dark brown to reddish brown, friable, sandy clay loam to sandy clay (orthic LUVISOLS)

Ps2 MIDDLE-LEVEL PLAINS
"ENCLOSED" PLAIN

Ps2F Soils developed on sediments from Basement System rocks rich in ferromagnesian minerals

267. Ps2F1f well drained, deep to very deep, red to dark red, friable to firm, sandy clay to clay, over pisocalcic material (on sheetwash and fluviatile sediments) (ferric LUVISOLS)

268. Ps2F1c well drained, very deep, dark reddish brown to dark red, friable to firm sandy clay; in places moderately calcareous (on sheetwash and lacustrine sediments) (chromic LUVISOLS; with calcic LUVISOLS)

Ps2S Soils developed on sheetwash sediments from Taru grits and coarse to fine-grained sandstones

269. Ps2S1k (k) moderately well drained, deep, dark reddish brown, firm, slightly calcareous, sandy clay to clay, over pisocalcic material (calcic LUVISOLS, pisocalcic phase)

Ps2U Soils developed on sheetwash sediments mainly from undifferentiated Basement System rocks

270. Ps2Uxh (o) well drained, very deep, brown to dark reddish brown, friable, slightly calcareous, sandy loam to clay loam, with a sodic deeper subsoil (haplic XEROSOLS, sodic phase)

271. Ps2Us1 imperfectly drained, very deep, dark reddish brown to reddish brown, very firm, moderately calcareous, slightly saline and very strongly sodic, sandy clay loam to clay (hardpan), with a topsoil of loamy sand to sandy loam (luvo-orthic SOLONETZ)

Ps2U Soils developed on sheetwash sediments mainly from undifferentiated Basement System rocks, with admixture of sediments from olivine basalts and possibly old lacustrine deposits

272. Ps2Uso imperfectly drained to poorly drained, deep, brown, extremely firm, moderately calcareous, slightly saline and excessively sodic, sandy clay loam to clay (hardpan) (orthic SOLONETZ)

273. Ps2Uzo poorly drained, deep, dark reddish brown, firm, moderately calcareous, moderately saline clay, with crusted (puffed) surface (orthic SOLONCHAKS)

274. Ps2Uso+Dqk complex of soils of units Ps2Uso and Dqk (unit 372)

"SEALING LOAM" PLAIN

	Ps20	Soils developed on Plio-Pleistocene bay sediments (Marafa beds), (little or not remodelled; flat surface, dot pattern)
275.	Ps20s1	imperfectly drained, moderately deep, brown, extremely firm, moderately calcareous, non-saline but moderately sodic clay loam (hardpan), with a thin topsoil of sealing sandy loam (luvo-orthic SOLONETZ)
276.	Ps20gc (o)	poorly drained, deep, dark grey, firm, moderately calcareous, slightly sodic clay, with soft surface (calcaric GLEYSOLS (?), sodic phase)
277.	Ps20vp (o)	poorly drained, deep, black to very dark grey, calcareous, and probably sodic, firm to very firm, cracking clay (?) (pellic VERTISOLS, sodic phase)
278.	Ps20sg	imperfectly to poorly drained, deep, greyish brown, extremely firm, slightly calcareous, moderately sodic and moderately saline, slightly cracking clay, with a very thin topsoil of sandy clay loam (gleyic SOLONETZ, saline phase)
279.	Ps20s1+sg	association of soils of unit Ps20s1 on flat parts and soils of unit Ps20sg in depressional parts (braiding pattern, transitional to the Ps3 level)
	Ps20	Soils developed on sheetwash sediments from Plio-Pleistocene bay sediments (Marafa beds)
280.	Ps20ws	imperfectly drained, deep, brown, extremely firm, slightly calcareous, non saline but slightly sodic, clay loam (hardpan), abruptly underlying a thick topsoil of sealing sandy loam (gently sloping, parallel drainage) (solodic PLANOSOLS)
	Ps3	LOWER-LEVEL PLAIN ("GREY CLAY" PLAIN)
	Ps3V	Soils developed on sediments mainly from volcanic rocks
281.	Ps3Vso	moderately well drained to imperfectly drained, very deep, dark brown, firm, strongly calcareous, non to slightly saline but strongly sodic, sandy clay (orthic SOLONETZ)
	Ps30	Soils developed on remodelled Plio-Pleistocene bay sediments (Marafa beds)
282.	Ps30s1 (a)	imperfectly drained, deep, brown, very firm, moderately calcareous, moderately saline and moderately sodic clay loam (hardpan), with a thin topsoil of strongly sealing sandy clay loam (luvo-orthic SOLONETZ, saline phase)

283. Ps30so (a) imperfectly drained to poorly drained, very deep, dark greyish brown, very firm, slightly calcareous, moderately to strongly saline and predominantly strongly sodic clay (hardpan); in places strongly calcareous and/or gypsic (orthic SOLONETZ, saline phase and gypsic/calcic phase)

284. Ps30xh (a) moderately well drained, very deep, greyish brown to reddish brown, firm, slightly calcareous, clay loam to clay, non to slightly saline and/or sodic till about 100 cm (haplic XEROSOLS, saline phase)

285. Ps30vp (a) poorly drained, very deep, very dark grey to black, very firm, slightly calcareous, moderately saline and moderately sodic, cracking clay (pellic VERTISOLS, saline-sodic phase)

Ps3A Soils developed on sediments from various sources

286. Ps3Aqc well drained, very deep, reddish brown, non to slightly calcareous, non-saline and non-sodic, fine sand to fine sandy loam (cambic ARENOSOLS)

287. Ps3Abk well drained, very deep, dark reddish brown, very firm, strongly calcareous, slightly saline and slightly sodic, clay, with soft surface (calcic CAMBISOLS, saline-sodic phase)

Ps SEDIMENTARY PLAINS OF UNDIFFERENTIATED LEVELS

PsE Soils developed on cover sands

288. PsElk/o (o) well drained, very deep, reddish brown, friable, moderately calcareous, moderately sodic sandy clay loam, with a thick topsoil of loamy sand (calcic to chromic LUVISOLS, sodic phase)

289. PsElk+Dqk complex of soils of units PsElk and Dqk (unit 372)

PsW Soils developed on sediments from marl deposits (Asaharbito beds)

290. PsWxg (a) moderately well drained to imperfectly drained, pale brown, firm, strongly calcareous and gypsiferous, slightly saline, slightly cracking clay loam (gypsic Xerosols, saline phase)

Pv VOLCANIC PLAINS

PvB Soils developed on alluvium from early Pleistocene olivine basalts (and pyroclastic rocks)

291. PvBxk (sm) well drained, deep, dark red, friable, strongly calcareous, non-saline but moderately sodic, clay loam, with stone surface (desert pavement) (calcic XEROSOLS, stone-mantle and sodic phase)

292. PvBzo (o) imperfectly drained, deep, dark reddish brown to dark greyish brown, firm, strongly calcareous, moderately saline and strongly sodic, clay (orthic SOLONCHAKS, sodic phase)

293. PvBvp (a) poorly drained, deep, dark grey, very firm, moderately saline and sodic, cracking clay (pellic VERTISOLS, saline phase)

294. PvBlc (b) well drained, very deep, dark red, friable, stony and bouldery clay (chromic LUVISOLS, bouldery phase)

295. PvBne well drained, extremely deep, dusky red to dark reddish brown, friable clay (eutric NITOSOLS)

PvP Soils developed on ashes and pumice from Recent volcanoes

296. PvPwe poorly drained, deep, black, very firm clay, abruptly underlying a topsoil of friable loam; with a calcareous deeper subsoil (eutric PLANOSOLS)

297. PvPws imperfectly drained, moderately deep to deep, firm to very firm, slightly sodic, silty clay loam to clay, abruptly underlying a thick topsoil of friable silt loam to clay loam (solodic PLANOSOLS)

298. PvPrt excessively drained to well drained, very deep, dark greyish brown to olive grey, loose to very friable, stratified, calcareous, fine sand to fine sandy loam or silt (ando-calcaric REGOSOLS)

299. PvPsg (a) imperfectly drained, very deep, yellowish brown to olive grey, friable, slightly saline and slightly sodic, sandy loam to silt loam, with a brittle and strongly sodic deeper subsoil ((ando-) gleyic SOLONETZ, saline and fragipan phase)

300. PvPtm (o) somewhat excessively drained, very deep, strong brown to dark yellowish brown, very friable and smeary, slightly sodic, gravelly sandy clay loam (mollic ANDOSOLS, sodic phase)

301. PvPtv well drained, moderately deep to deep, brown to dark brown, very friable, loam to sandy clay loam (vitric ANDOSOLS)

302. PvPto (description pending)

Pc COASTAL PLAINS

Pc1J Soils developed on higher-level lagoonal deposits (Kilindini sands)

303. Pc1Jqa/f excessively drained to well drained, very deep, reddish yellow to white, loose, sand to loamy sand (albic and ferralic ARENOSOLS)

304. Pc1Js1+1v (ao) imperfectly drained, deep to very deep, very dark greyish brown to olive brown, mottled, firm to very firm, sandy clay to clay; moderately calcareous and moderately saline/sodic throughout or in deeper subsoil (ortho-luvic SOLONETZ and vertic LUVISOLS, saline-sodic phase)

305. Pc1Jws imperfectly drained, very deep, brown, very firm, sandy loam to sandy clay loam, abruptly underlying a thick topsoil of friable loamy sand; slightly to moderately sodic in deeper subsoil; with inclusions of many small bottomlands of unit BJhg F (unit 343) (solodic PLANOSOLS)

Pc2J Soils developed on lower-level lagoonal deposits (Kilindini sands)

306. Pc2JC complex of very deep soils of varying drainage condition, colour, consistence, texture and salinity (albic ARENOSOLS, orthic FERRALSOLS, gleyic LUVISOLS, solodic PLANOSOLS, pellic VERTISOLS)

307. Pc2Jsg (a) imperfectly to poorly drained, very deep, grey to brown, mottled, very firm clay (hardpan); slightly calcareous and strongly saline and sodic throughout or in deeper subsoil (gleyic SOLONETZ; with gleyic or verto-luvic PHAEOZEMS, saline-sodic phase)

308. Pc2J1g/a (o) moderately well drained, very deep, yellowish brown to greyish brown, mottled, very firm, sandy loam to sandy clay loam, with a very thick (60-100cm) topsoil of light brownish grey to yellow, friable loamy sand; with inclusions of many small bottomlands of BJwh (unit 344) gleyic to albic LUVISOLS, sodic phase; with ferralo-chromic LUVISOLS, dystric or solodic PLANOSOLS and cambic ARENOSOLS)

Pc3J Soils developed on aeolian deposits (reworked) lagoonal deposits)

309. Pc3Jfo well drained, very deep, yellowish red, very friable, fine sandy loam to fine sandy clay loam (orthic FERRALSOLS)

PcL — Soils developed on raised-coral-reef limestone, with admixture of lagoonal deposits

310. PcLfr — well drained, deep, dark red to reddish brown, friable, sandy clay loam to sandy clay, with topsoil of loamy sand (rhodic FERRALSOLS)

311. PcLws — imperfectly drained, deep, greyish brown, mottled, firm, slightly calcareous, non to slightly saline and slightly sodic, sandy clay loam (hardpan), abruptly underlying a thick topsoil of friable loamy sand (solodic PLANOSOLS)

312. PcLi (p) — well drained, shallow, dark brown to dark reddish brown, rocky, sandy clay loam to sandy clay (LITHOSOLS; with ferralic CAMBISOLS, lithic phase)

P1 — LACUSTRINE PLAINS

P1E — Soils developed on sediments from pyroclastic rocks and olivine basalts (upper level of Chalbi)

313. P1Bz (gm) — imperfectly drained, deep, moderately calcareous, strongly saline, gravelly clay loam, with fine gravel surface (desert pavement) (SOLONCHAKS, undifferentiated, gravel-mantle phase)

P1L — Soils developed on sediments from limestone (middle level of Chalbi)

314. P1Li (K) — imperfectly drained, shallow, greyish brown, friable, excessively calcareous, fine sandy clay loam, over massive petrocalcic material (LITHOSOLS; with calcic CAMBISOLS, petrocalcic phase)

P1A — Soils developed on sediments from various sources (lower level of Chalbi)

315. P1Azt — poorly drained, deep, very firm, excessively saline, cracking clay (takyric SOLONCHAKS)

316. P1Azo — very poorly drained, deep, firm, excessively saline clay, with puffed, salty surface (orthic SOLONCHAKS)

317. P1Az (o) — poorly drained, very deep, dark greyish brown, friable to firm, moderately calcareous, moderately saline and strongly sodic, loam to clay loam, with common low sand dunes; in places gypsiferous (SOLONCHAKS, undifferentiated)

P1V — Soils developed on sediments from volcanic ashes and other sources

318. P1Vzo+so (k) — complex of moderately well drained to imperfectly drained, shallow to deep, strongly calcareous,

318. cont'd. strongly saline and strongly sodic soils of varying colour, consistence and texture; over pisocalcic or petrocalcic material (higher level of Amboseli) (orthic SOLONCHAKS and orthic SOLONETZ, petrocalcic phase)

319. P1Vzg (o) poorly drained, very deep, black to very dark olive grey, mottled, very firm, strongly calcareous, strongly saline and strongly sodic clay (lower level of Amboseli) (gleyic SOLONCHAKS, sodic phase)

320. P1Vs (a) imperfectly drained to poorly drained, very deep, dark greyish brown to dark brown, firm to very firm, slightly to moderately calcareous, slightly to moderately saline, but moderately to strongly sodic, silt loam to clay, often with humic topsoil (subrecent lake sides of the central Rift Valley) (SOLONETZ, undifferentiated, saline phase)

321. P1Vvc (o) imperfectly drained to poorly drained, very deep, dark grey to dark greyish brown, very firm, slightly calcareous, non to slightly saline but moderately sodic, cracking clay (upper level of Lambwe valley) (chromic VERTISOLS, sodic phase)

322. P1Vsm very poorly drained, very deep, very dark grey, very firm, slightly to moderately calcareous, gypsiferous, slightly saline but strongly sodic clay, with humic topsoil (lower level of Lambwe valley) (mollic SOLONETZ)

P1P <u>Soils developed on sediments mainly from volcanic ashes</u> (Gamblian lake of the Central Rift Valley)

323. P1Pht+bg complex of:

- well drained, moderately deep to deep, dark brown, friable and slightly smeary, fine gravelly, sandy clay loam to sandy clay, with humic topsoil (ando-haplic PHAEOZEMS)
- imperfectly drained, moderately deep to deep, strong brown, mottled, firm and brittle, sandy clay to clay (gleyic CAMBISOLS, fragipan phase)

P1D <u>Soils developed on sediments from lacustrine mudstones</u>

324. P1Dvc (o) poorly drained, shallow to deep, very dark brown to very dark grey, firm to very firm, slightly sodic, cracking clay (upper level of Kano plains) (chromic VERTISOLS, sodic and partly lithic phase)

325. PlDvp (o) poorly drained, very deep, very dark grey to black, very firm, slightly sodic, cracking clay, with calcareous deeper subsoil (lower level of Kano plains) (pellic VERTISOLS, sodic phase)

Pt SEDIMENTARY PLAINS OF UPPER RIVER TERRACES

PtL Soils developed on sediments mainly from limestones and marls

326. PtLqk well drained, very deep, dark red, friable, strongly calcareous, loamy sand to sandy loam; in places clayey (calcaric ARENOSOLS; with calcic XEROSOLS)

PtO Soils developed on sediments mainly from Plio-Pleistocene bay sediments

327. PtOso (a) moderately well drained to imperfectly drained, very deep, dark reddish brown to dark brown, firm, moderately calcareous, moderately saline and moderately to strongly sodic, slightly cracking clay (orthic SOLONETZ, saline phase)

PtU Soils developed on sediments mainly from undifferentiated Basement System rocks

328. PtUbe well drained to moderately well drained, deep, dark brown, friable to firm, slightly calcareous, clay loam to clay (eutric CAMBISOLS)

329. PtUlk well drained, deep, dark reddish brown to reddish brown, friable, sandy clay loam to sandy clay, over pisocalcic material (calcic LUVISOLS, pisocalcic phase)

Pf SEDIMENTARY PLAINS OF LARGE ALLUVIAL FANS

Pf1 OLDER FANS

Pf1U Soils developed on sediments mainly from undifferentiated Basement System rocks

330. Pf1U1 well drained, very deep, dark red to dark brown, firm, sandy clay loam to clay (LUVISOLS, undifferentiated)

Pf1O Soils developed on sediments mainly derived from bay sediments

331. Pf1Osl (a) complex of well drained to imperfectly drained, very deep, reddish brown to grey, firm clay soils of varying calcareousness, salinity and sodicity, in many places with strongly scaling topsoil; with inclusions of well drained, very deep, brown,

331. cont'd. loose loamy sand (levee complex) (luvic-orthic SOLONETZ, saline phase; with solodic PLANOSOLS, saline phase, chromic VERTISOLS, saline-sodic phase and cambic ARENOSOLS)

332. Pf10xk well drained, very deep, reddish brown, friable to firm, slightly to moderately calcareous, sandy clay to clay, with saline and sodic deeper subsoil (basin lands) (calcic XEROSOLS, partly saline-sodic phase)

Pf2 YOUNGER FANS

Pf20 Soils developed on sediments mainly derived from bay sediments

333. Pf20so (a) moderately well drained, very deep, dark reddish brown to dark brown, firm, moderately calcareous, moderately to strongly saline and strongly sodic, sandy clay to clay (levee complex) (orthic SOLONETZ, saline phase; with orthic SOLONCHAKS, sodic phase)

334. Pf20vc (ao) imperfectly drained, very deep, dark reddish brown to dark greyish brown, firm, moderately calcareous, moderately to strongly saline and strongly sodic, cracking clay (basin lands) (chromic VERTISOLS, saline-sodic phase)

B BOTTOMLANDS

BV Soils developed on infill from undifferentiated volcanic rocks

335. BVok poorly drained, deep, very dark greyish brown, firm, moderately to strongly calcareous and slightly sodic clay, with humic topsoil (calcic CHERNOZEMS)

336. BVv+z imperfectly drained, deep, dark brown to olive grey, firm to very firm clay soils of varying calcareousness, salinity and sodicity; in many places cracking (VERTISOLS and SOLONCHAKS, undifferentiated)

337. BVv imperfectly drained, very deep, dark brown to dark grey, firm, slightly to moderately saline, moderately sodic, cracking clay; in many places calcareous (chromic and pellic VERTISOLS, saline-sodic phase)

BP Soils developed on infill from volcanic ashes

338. BPwh imperfectly drained to poorly drained, moderately deep, dark greyish brown, mottled, very firm clay loam (hardpan), abruptly underlying a topsoil of acid humic friable loam (humic PLANOSOLS)

EI		Soils developed on infill from intermediate igneous rocks (phonolites)
339.	EIgm (m)	poorly drained, moderately deep, dark grey to grey, mottled, firm clay, with humic topsoil; in many places over petroplinthite (mollic GLEYSOLS, partly petro-ferric phase)
EL		Soils developed on infill from limestones
340.	ELch	poorly drained, deep, very dark grey to very dark brown, firm, moderately calcareous, clay loam to clay, with humic topsoil (haplic CHERNOZEMS)
341.	ELzt	imperfectly drained to poorly drained, deep, greyish brown to dark reddish brown, strongly calcareous and probably strongly saline, cracking clay loam (takyric SOLONCHAKS)
BS		Soils developed on infill from Taru sandstones
342.	BSsl	imperfectly drained to poorly drained, very deep, dark brown to dark grey, firm to very firm, sodic clay, with a calcareous and saline deeper subsoil (luvo-orthic SOLONETZ)
BJ		Soils developed on infill from lagoonal deposits (Kilindini sands)
343.	BJhg	imperfectly drained to poorly drained, very deep, light brownish grey to brown, mottled, firm to very firm, clay; in places sodic and cracking (higher-level depressions) (gleyic PHAEOZEMS; with verto-luvic PHAEOZEMS and pellic VERTISOLS, sodic phase)
344.	BJwh	poorly drained, very deep, greyish brown, mottled, very firm clay (hardpan), abruptly underlying a topsoil of friable humic sandy clay loam (lower-level depressions) (humic PLANOSOLS)
BU		Soils developed on infill mainly from undifferentiated Basement System rocks
345.	BUwd	complex of imperfectly drained to poorly drained, very deep, very dark grey to brown, mottled, friable to firm, sandy clay to clay, often abruptly underlying a topsoil of friable, sandy clay loam; in places saline and sodic (dystric PLANOSOLS; with pellic VERTISOLS, vertic and humic GLEYSOLS and plinthic ACRISOLS)
346.	BUgd	complex of imperfectly drained to very poorly drained, very deep, very dark grey to dark greyish brown, mottled, firm clay; in places peaty or with acid humic topsoil (dystric GLEYSOLS; with eutric PLANOSOLS and some dystric HISTOSOLS)

347.	BUvp	poorly drained, very deep, dark greyish brown to black, very firm, slightly calcareous, cracking clay; in many places with a saline and sodic deeper subsoil (pellic VERTISOLS, partly saline-sodic phase; with cutric or vertic GLEYSOLS)
348.	BUvc (ao)	imperfectly drained, very deep, dark grey to dark brown, very firm, slightly to moderately calcareous, moderately sodic clay, with a saline deeper subsoil (chromic VERTISOLS, saline-sodic phase)
349.	BUso	imperfectly drained to poorly drained, very deep, brown to dark brown, very firm, slightly calcareous, strongly sodic clay (orthic SOLONETZ)
A		FLOODPLAINS
AV		Soils developed on sediments from various volcanic rocks and pyroclastics (Rift Valley floodplains)
350.	AVz	poorly drained, very deep, greyish brown to light olive brown, friable, strongly calcareous, strongly saline and slightly to moderately sodic, silt loam to clay (SOLONCHAKS, undifferentiated; with FLUVISOLS, saline-sodic phase)
351.	AVjc (o)	well drained, very deep, very dark greyish brown to dark yellowish brown, friable, stratified, micaceous, moderately to strongly calcareous, non to slightly saline but moderately sodic, loam to clay (calcaric FLUVISOLS, sodic phase)
AP		Soils developed on sediments mainly from volcanic ashes
352.	APjc	well drained to moderately well drained, very deep, dark greyish brown to yellowish brown, friable stratified, silty clay loam to clay; in places slightly to moderately saline and slightly to moderately sodic (cutric FLUVISOLS, partly saline-sodic phase)
AB		Soils developed on sediments mainly from olivine basalts
353.	ABjc (ao)	imperfectly drained, very deep, dark brown to dark reddish brown, firm, moderately to strongly calcareous, stratified clay loam to clay, with a deeper subsoil of varying salinity and sodicity (calcaric FLUVISOLS, saline-sodic phase)

AO — Soils developed on sediments mainly from bay sediments (older floodplains)

354. AOgv (ao) — imperfectly drained, very deep, dark grey, very firm, slightly calcareous, cracking clay, with slightly to moderately saline/sodic deeper subsoil (vertic GLEYSOLS, saline-sodic phase)

AL — Soils developed on sediments mainly from limestones and marls

355. ALjc+zg — association of:
- well drained, very deep, dark reddish brown to dark brown, micaceous, strongly calcareous, stratified soils; on recent deposits (calcaric FLUVISOLS)
- imperfectly drained to poorly drained, very deep, brown, mottled, firm, strongly calcareous, strongly saline and strongly sodic, sandy clay loam to silty clay; on subrecent deposits (gleyic SOLONCHAKS, sodic phase)

AU — Soils developed on sediments mainly from crystalline Basement System rocks

356. AUje — well drained to imperfectly drained, very deep, brown to dark brown, friable, slightly calcareous, micaceous, sandy loam to clay loam; in places with a saline-sodic deeper subsoil (eutric FLUVISOLS)

AA — Soils developed on sediments from various sources (recent floodplains)

357. AAjc — well drained to imperfectly drained, very deep, dark brown to yellowish brown, stratified, strongly calcareous, micaceous, predominantly loamy soils (calcaric FLUVISOLS)

358. AAjc (a) — like AAjc, but slightly to moderately saline

359. AAvc (ao) — imperfectly drained to poorly drained, very deep, dark reddish brown to dark greyish brown, firm to very firm, cracking clay; in many places mottled and with a calcareous, saline and sodic deeper subsoil (chromic VERTISOLS, saline-sodic phase)

360. AAjc+vc (ao) — complex of soils of units AAjc and AAvc

361. AAlk+vp (ao) — association of:
- well drained, very deep, dark reddish brown to dark brown, friable to firm, calcareous, sandy clay loam, with saline and sodic deeper subsoil; on higher parts (calcic LUVISOLS, saline-sodic phase)

361. cont'd. - imperfectly drained, very deep, very dark grey, firm, moderately calcareous, moderately saline and moderately to strongly sodic, cracking clay; on lower parts (pellic VERTISOLS, saline-sodic phase)

362. AAlk (ao) imperfectly drained, very deep, dark brown, firm, strongly calcareous, moderately saline and strongly sodic clay, with a topsoil of sandy clay loam (calcic LUVISOLS, saline-sodic phase)

363. AAbk (K) moderately well drained, shallow to moderately deep, strongly calcareous, sandy clay to clay loam, over petrocalcic material (calcic CAMBISOLS, petrocalcic phase)

364. AAvp (ao) poorly drained, very deep, very dark grey, very firm, moderately calcareous, slightly saline and slightly to moderately sodic, cracking clay (pellic VERTISOLS, saline-sodic phase)

365. AAgm poorly drained, deep, very dark grey, mottled, firm clay, with a sulfidic deeper subsoil (mollic GLEYSOLS, thionic phase)

366. AAjt very poorly drained, deep, dark grey, soft (unripe) strongly saline and strongly sulfidic, clay (thionic FLUVISOLS)

367. AAgh poorly drained, deep, dark greyish brown, mottled, firm clay, with acid humic topsoil (humic GLEYSOLS)

368. AAje complex of well drained to imperfectly drained, very deep, dark greyish brown to dark reddish brown, stratified soils of varying consistence and texture (eutric FLUVISOLS)

S MISCELLANEOUS LAND TYPES

SWAMPS

369. Szg poorly drained to very poorly drained, very deep, dark greyish brown to dark olive grey, firm to very firm, strongly calcareous, strongly saline and strongly sodic clay; in many places with fragipans at various depths (gleyic SOLONCHAKS, sodic phase and partly fragipan phase)

370. Sgh very poorly drained, very deep, very dark grey to black, firm, cracking clay, with acid humic topsoil (seasonal swamps) (humic GLEYSOLS)

371. Sg+o very poorly drained, very deep, dark grey to black, firm clay, with acid humic topsoil; in many places peaty (permanent swamps) (humic GLEYSOLS and dystric HISTOSOLS)

D		DUNES
372.	Dqk	excessively drained, very deep, brown, loose, moderately calcareous, loamy sand to sandy loam (calcaro-cambic ARENOSOLS)
373.	Dqc	excessively drained, very deep, brown to pale brown, loose, sand to loamy sand (cambic ARENOSOLS)
374.	Dbk (a)	well drained, very deep, dark brown, friable or brittle, strongly calcareous, moderately saline, sandy clay loam, with fragipans at various depths (calcic CAMBISOLS, saline and fragipan phase)
375.	Dqk+P1Az	complex of soils of units Dqk and P1Az
La		LAVA FLOWS
376.	La	excessively drained, exceedingly bouldery to stony, extremely rocky land (Boulders and Rock Outcrops)
W		BADLANDS
WO		Badlands developed on Plio-Pleistocene bay sediments (Marafa beds)
377.	WOs	excessively drained, brown, very firm, strongly sodic, gravelly clay loam to sandy clay of varying depth; strongly eroding and strongly sealed (SOLONETZ, undifferentiated)
WX		Badlands developed on various older lacustrine and volcanic rocks
378.	WXs (sm)	excessively drained, reddish brown, strongly calcareous, slightly to moderately saline and strongly sodic, silt loam to clay loam of varying depth; strongly eroding and often with gravel or stone surface (SOLONETZ, undifferentiated; with calcic XEROSOLS, LITHOSOLS, a.o.; stone-mantle phase)
Z		COASTAL OR LAKE-SIDE BEACH RIDGES
Z1		Soils developed on older coastal beach ridges
379.	Z1fr	well drained, very deep, red, very friable, sandy clay loam (rhodic FERRALSOLS)
Z2		Soils developed on younger coastal beach ridges often covering coral rock
380.	Z2ai (o)	moderately well drained, very deep, dark brown to reddish brown, firm to very firm, often moderately sodic, sandy clay loam, underlying

380. cont'd.		a thick topsoil of friable loamy sand; in places shallow over coral rock (ferralo-chromic/orthic ACRISOLS, sodic phase; with solodic PLANOSOLS)
	Z3	Soils developed on beach ridges along Lake Victoria
381.	Z3z	imperfectly drained, very deep, dark brown to greyish brown, friable, sandy loam to sandy clay of varying salinity and sodicity; with inclusions of loose sand to loamy sand soils (SOLONCHAKS, undifferentiated; with ARENOSOLS undifferentiated)
T		MANGROVE SWAMPS
382.	Tjt+zg	very poorly drained, very deep, olive to greenish grey, soft (unripe), excessively saline and moderately to strongly sodic, loam to clay, often with sulfidic material (thionic FLUVISOLS and gleyic SOLONCHAKS)
V		MINOR VALLEYS
383.	VC1	complex of well drained to poorly drained, deep, dark reddish brown to black, firm, silty clay to clay; in places calcareous and/or cracking
384.	VC2	complex of well drained to imperfectly drained, shallow to moderately deep, dark reddish brown to very dark greyish brown, firm, slightly to moderately calcareous, rocky, stony, or gravelly clay.