

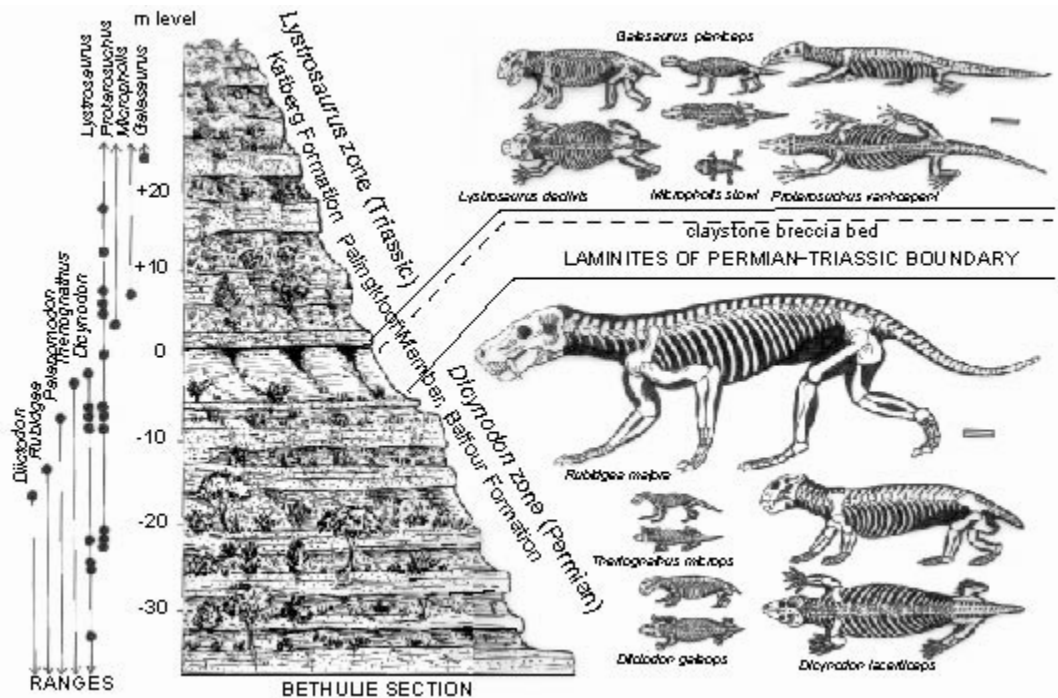
# DATA ON PERMIAN-TRIASSIC BOUNDARY PALEOSOLS IN SOUTH AFRICA

BY

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Table 1. Named Permian and Triassic paleosols from South Africa

Paleosol	stratigraphic level (m) 0= Permian-Triassic boundary	Locality
type Bada clay loam	-21.0	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Barathi loam	+3.6	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Budi clay	+17.2	Carlton Heights (31° 17.702'S 24° 57.093'E)
type Du silt loam	-18.3	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Hom sandy loam	-13.3	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Karie clay	+17.8	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Kuta loam	+0.8	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Patha silty clay loam	+5.0	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Pawa clay loam	-18.5	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Sedibo clay loam	+17.9	Carlton Heights (31° 17.702'S 24° 57.093'E)
type Som loam	-7.1	Lootsberg Pass (31° 51.052'N 24°52.246'E)
type Zam loam	-7.6	Lootsberg Pass (31° 51.052'N 24°52.246'E)
Patha clay	+16.8	Carlton Heights (31° 17.702'S 24° 57.093'E)

Table 2. Type profiles of Permian-Triassic pedotypes

Paleosol	hoz	rock	cm	Field observations	Micromorphology
type Bada clay loam	above	-	+22	fine-grained sandstone, greenish gray (5GY6/1), relict planar bedding, weakly calcareous, abrupt smooth contact to	-
	A		0	siltstone, greenish gray (5GY6/1), with woody root traces, non calcareous, gradual smooth contact to	insepic agglomeroplasmic with clasts of banded ferri-argillans and of mosepic porphyroskelic claystone; relict bedding, few small calciasepic porphyroskelic rhizoconcretions with diffusion ferri-argillans
	Bk		-25	fine-grained sandstone, greenish gray (5BG5/1), with nodules 1.8, 2.1, 2.3, 2.4, & 4.3 cm in diameter, moderately calcareous; gradual smooth contact to	Calciasepic porphyroskelic nodules in insepic agglomeroplasmic matrix; few silicified evaporite (gypsum?) pseudomorphs
type Barathi loam	above	R2771	+23	medium-grained sandstone, light bluish gray (5B7/1), weakly calcareous; planar bedding	granular silasepic unistrial, with some shard-like quartz grains
	A	R2772	0	medium-grained sandstone, greenish gray (5GY6/1); planar bedding weakly calcareous; abrupt smooth contact to siltstone, light olive brown (2.5Y5/3), with fine olive gray (5Y4/2) root traces; non-calcareous; clear smooth to	granular silasepic unistrial, quartzofeldspathic
	C	R2773	-15	medium-grained sandstone, greenish gray (5GY6/1), plane bedded with linguoid ripples; weakly calcareous.	insepic agglomeroplasmic to intertextic, with fine root traces
type Budi clay	above	R2816	+5	medium-grained sandstone, greenish gray (5GY6/1), plane bedded with linguoid ripples; weakly calcareous.	granular silasepic
	A	R2817	0	fine-grained sandstone, greenish gray (5G5/1); linguoid ripples; moderately calcareous; abrupt smooth to	insepic agglomeroplasmic with local diffuse mottles calciasepic porphyroskelic
	C	R2818	-8	silty claystone, greenish gray (5G6/1), with fine clayey root traces and burrows of <i>Macanopsis</i> ; non-calcareous; clear smooth to	insepic agglomeroplasmic with clayey root traces
type Du silt loam	above	-	+6	siltstone, greenish gray (5G5/1); relict bedding; non-calcareous; abrupt smooth to	insepic agglomeroplasmic with mosepic porphyroskelic claystone clasts and calciasepic porphyroskelic rhizoconcretions
	A	R2797	0	siltstone, greenish gray (10Y6/2); with root traces up to 2 mm diameter of light gray (5Y7/2); non-calcareous; relict planar bedding; non-calcareous: abrupt smooth to	-
	C	R2798	-10	medium-grained sandstone, greenish gray (10GY6/1), with root traces up to 2 mm diameter; weakly calcareous	silasepic intertextic unistrial, common clasts of mosepic porphyroskelic claystone
				fine-grained sandstone, greenish gray (10GY6/1); weakly	insepic agglomeroplasmic with varvelike bedding

type Hom sandy loam	above	-	+80	calcareous medium-grained sandstone, light greenish gray (10GY7/1); planar bedding; weakly calcareous; abrupt smooth to	-
	A	R2794	0	fine-grained sandstone, light greenish gray (5GY7/1), with root traces up to 2 mm; weakly calcareous	granular silasepic unistrial
	Bk	R2795	-22	medium-grained sandstone, light greenish gray (5GY7/1), with nodules 5.3, 6.3, 6.4, 6.8, and 8.4 cm diameter; moderately calcareous; gradual smooth to	granular silasepic unistrial, with calcareous nodules altered to zeolites and weathered out
	C	R2796	-54	medium-grained sandstone, light gray (5Y7/1); weakly calcareous	granular silasepic unistrial
type Karie clay	above	R2754	+35	fine-grained sandstone, greenish gray (5G6/1); moderately calcareous, irregular (into large burrows) abrupt to	Calciasepic granular sandstone with claystone clasts that are mosepic porphyroskelic
	A	R2755	0	siltstone, weak red (2.5YR4/2), with large burrow (35 cm diameter and 40 cm depth) filled with sandstone from above; <i>Macanopsis</i> burrows; non-calcareous; diffuse smooth to	mosepic agglomeroplasmic with root trace ferri-argillans
	Bw	R2756, R2757	-25	siltstone, weak red (2.5YR4/2); bowl shaped slickensides and medium blocky subangular peds; non-calcareous; clear smooth to	mosepic porphyroskelic with ferri-argillans, few small micritic rhizoconcretions
	Bk	R2758	-78	siltstone, weak red (2.5YR4/2); with calcareous nodules 0.8, 1.1, 1.5, 1.7, and 2.1 cm diameter and reddish brown (2.5YR4/3) and brown (7/5YR4/4); moderately calcareous; clear smooth to	granular argillasepic in varved matrix, large calciasepic porphyroskelic nodules, with local sparry infill, and both replacive and displacive fabric
type Kuta loam	above	-	+6	siltstone, weak red (2.5YR4/2); relict bedding; non-calcareous medium-grained sandstone, bluish-gray (5B6/1); with common claystone clasts of reddish gray (2.5Y5/1); weakly calcareous; abrupt smooth to	-
	A	R2774, R2775	0	siltstone, bluish gray (5B5/1); clayey root traces up to 10 mm diameter; large burrow filled with medium-grained sandstone of bluish gray (5B6/1); non calcareous; clear smooth to	insepic agglomeroplasmic claystone breccia with mosepic porphyroskelic clasts, and a large burrow with granular silasepic unistrial fabric
	Bw	R2776, R2777	-22	siltstone; reddish gray (2.5YR5/1); non calcareous; clear smooth to	insepic agglomeroplasmic with clasts of banded ferri-argillans and of mosepic porphyroskelic claystone
	Bk	R2778	-48	claystone breccia in medium-grained sandstone matrix, clasts of claystone angular and dark reddish gray (10R4/1) and up to 5 mm across; calcareous nodules 11.8, 16.2, 22.6, 23.4, and 31.2 cm; moderately calcareous; gradual smooth to	Calciasepic porphyroskelic with circumgranular cracking and replacive texture, as well as mosepic porphyroskelic claystone clasts

	C	R2779	-66	medium-grained sandstone, greenish gray (5BG5/1); non-calcareous	Calciasepic granular quartzofeldspathic sandstone
type Patha silty clay loam	above	-	+20	medium-grained sandstone, reddish gray (2.5YR5/1); moderately calcareous; abrupt smooth to	
	A	R2768	0	siltstone, weak red (2.5YR4/2), with clayey root traces of reddish brown (2.5YR4/3) and up to 4 mm diameter; common <i>Macanopsis</i> burrows; non-calcareous; gradual smooth to	insepic porphyroskelic with fine root traces disrupting relict bedding
	Bw	R2769	-6	siltstone, weak red (2.5YR4/2), non calcareous; clear smooth to	insepic agglomeroplasmic with disrupted relict bedding
	C	R2770, R2771	-15	fine-grained sandstone, greenish gray (5G6/1); non-calcareous	granular silasepic unistrial, quartzofeldspathic
type Pawa clay loam	above	R2798	+11	fine-grained sandstone, greenish gray (10GY6/1); weakly calcareous	insepic agglomeroplasmic with varvelike bedding
	A	R2799	-0	shale, greenish gray (10Y6/1), with root traces up to 3 mm diameter of olive gray (5Y5/2); non-calcareous; clear smooth to	insepic agglomeroplasmic with fine root traces
	C	R2800	-13	fine-grained sandstone, light bluish gray (5B7/1) with linguoid ripple marks; stringers of dark reddish gray (10R4/1) siltstone up to 13 mm thick	silasepic intertextic
type Sedibo clay loam	above	R2810	+2	fine-grained sandstone, greenish gray (5GY6/1); linguoid ripples; moderately calcareous; abrupt smooth to	granular silasepic unistrial
	A	R2812	0	siltstone, greenish gray (5GY6/1); with fine root traces and <i>Macanopsis</i> burrows; weakly calcareous; diffuse smooth to	insepic agglomeroplasmic unistrial with varvelike bedding
	Bw	R2813, R2814	-8	clayey siltstone, greenish gray (5GY6/1); weakly calcareous; clear wavy to	insepic agglomeroplasmic, with few calciasepic porphyroskelic rhizoconcretions
	Bk	R2815	-54	siltstone, greenish gray (5G5/1), weathering yellow (10YR7/6); with common 8-15 cm diameter calcareous nodules; moderately calcareous; clear wavy contact to	Calciasepic porphyroskelic with gypsum rosette pseudomorphs
	C	R2816	-95	siltstone, greenish gray (5G5/1); moderately calcareous	insepic agglomeroplasmic with local diffuse mottles
type Som loam	above	-	+11	fine-grained sandstone, bluish gray (5B5/1), non-calcareous; abrupt smooth contact to	calciasepic porphyroskelic
	A	R2781	0	siltstone with fine grained sandstone stringers; bluish gray (5B5/1); has a large (67 cm diameter and 20 cm deep) bowl-shaped and striated borrow like hole; non-calcareous; clear smooth to	insepic agglomeroplasmic, with varvelike bedding, few calciasepic porphyroskelic rhizoconcretions
	Bw	R2782, R2783	-12	siltstone, dark reddish gray (10R4/1), with clayey root traces	mosepic porphyroskelic with silasepic granular

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				up to 32 mm diameter; non-calcareous; diffuse wavy to siltstone, dark reddish gray (10R4/1), with common calcareous nodules 1.8, 2.1, 2.3, 2.6, and 3.2 cm diameter; moderately calcareous; diffuse wavy contact to	metagranotubules
	Bk	R2784	-24		mosepic porphyroskelic with silasepic granular metagranotubules after burrows and ferriorganans after root traces
	C	R2785	-48	siltstone, dark reddish gray (10R4/1); non-calcareous	silasepic intertextic
type Zam loam	A	R2786	0	clayey siltstone, dark reddish gray (10R4/1); with fine (2 mm) hollow rootlets; non-calcareous; clear smooth to	mosepic porphyroskelic with granular silasepic metagranotubules after burrows
	C	R2787	-3	sandy siltstone, reddish gray (10R5/1) with sparse stringers of greenish gray (5BG6/1); non-calcareous	silasepic granular with claystone clasts mosepic porphyroskelic

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Table 3. Detailed description of Lootsberg Pass Permian-Triassic boundary section

level (m) 0=PTr boundary	paleosol	rock	color	Bk depth (cm)	Bk thick- ness (cm)	Calcar- eous- ness	Other comments
+20.5	-	medium-grained sandstone	greenish gray (5G5/1)	-	-	weak	-
+20.0	-	claystone breccia	greenish gray (5G5/1)	-	-	mod.	claystone clasts mainly dark greenish gray (10GY4/1), but some weak red (2.5YR4/2)
+19.9	Budi	fine-grained sandstone	greenish gray (10GY6/1)	-	-	non	root traces up to 2mm diameter and with regular lateral branches dark greenish gray (10GY4/1)
+19.6	Budi	fine-grained sandstone	greenish gray (10GY5/1)	-	-	non	root traces up to 2mm diameter and with regular lateral branches dark greenish gray (10GY4/1)
+19.4	Budi	fine-grained sandstone	greenish gray (10GY5/1)	-	-	non	root traces up to 2mm diameter and with regular lateral branches dark greenish gray (10GY4/1)
+19.2	-	medium-grained sandstone	light greenish gray (5G7/1)	-	-	mod.	-
+18.9	-	claystone breccia	light greenish gray (5G7/1)	-	-	mod	clasts greenish gray (5G5/1) and weak red (2.5YR4/2)
+18.8	Karie A	siltstone	weak red (2.5YR4/2)	-	-	non	blocky subangular ped
+18.0	Karie Bk	siltstone	weak red (2.5YR4/2)	76	23	mod.	rooting depth 99cm, nodules 1.3, 1.6, 1.8, 2.1, and 2.4 cm diameter
+17.9	-	fine-grained sandstone	greenish gray (5G6/1)	-	-	mod.	-
+17.8	Karie A	siltstone	weak red (2.5YR4/2)	-	-	non	large (35 cm diameter and 40 cm deep) sand-filled <i>Histioderma</i> burrow, also 1.5 cm diameter <i>Macanopsis</i> burrows
+17.1	Karie Bk	siltstone	weak red (2.5YR4/2)	78	18	mod.	rooting depth 95 cm; nodules 0.8, 1.1, 1.5, and 2.1 cm in diameter and reddish brown (2.5YR4/3) to brown (7.5YR4/4)
+17.0	-	fine-grained sandstone	weak red (2.5YR5/2)	-	-	non	-
+16.9	Karie A	siltstone	weak red (2.5YR4/2)	-	-	non	relict bedding and fine root traces
+16.3	Karie Bk	siltstone	weak red (2.5YR4/2)	78	16	mod.	rooting depth 95 cm; calcareous nodules 4.8, 4.7, 5.3, 5.6, and 6.2 cm diameter
+16.2	Karie A	siltstone	weak red (2.5YR4/2)	-	-	non	-
+15.6	Karie Bk	siltstone	weak red (2.5YR4/2)	79	15	mod.	rooting depth 85 cm; nodules 6.2, 6.4, 6.5, 7.1, and 7.3 cm diameter
+15.4	Karie A	siltstone	weak red (2.5YR4/2)	-	-	non	-
+14.8	Karie Bk	siltstone	reddish gray (2.5YR5/1)	80	12	mod.	rooting depth 95 cm; nodules 13.4, 14.2, 14.4, and 16.2 cm diameter

+14.6	Kuta A	siltstone	weak red (2.5YR4/2)	-	-	non	large (23 cm diameter by 50 cm deep) <i>Histioderma</i> burrow
+14.2	Kuta Bk	siltstone	reddish brown (2.5YR5/1)	69	17	mod	rooting depth 87 cm; nodules brown (10YR4/2) and 7.4, 8.6, 9.4, 10.4, and 22.3 cm diameter
+14.0	Kuta A	siltstone	weak red (2.5YR4/2)	-	-	non	-
+13.5	Kuta Bk	siltstone	reddish gray (2.5YR5/1)	52	16	mod.	rooting depth 71 cm; nodules 14.4, 16.3, 17.5, 18.2, and 21.3 cm in diameter
+13.3	Patha A	siltstone	weak red (2.5YR4/2)	-	-	non	-
+12.8	-	fine-grained sandstone	greenish gray (5GY6/1)	-	-	weak	linguoid ripples, and wide (3cm) mudcracks
+12.6	Barathi A	siltstone	pale olive (5Y6/4)	-	-	weak	fine (1 mm) root traces olive gray (5Y6/6)
+12.3	-	fine-grained sandstone	greenish gray (5Y5/2)	-	-	non	straight crested and linguoid ripples on different horizons
+12.1	-	medium-grained sandstone	light greenish gray (5G7/1)	-	-	weak	-
+10.3	Barathi A	siltstone	light gray (5Y7/2)	-	-	non	fine (1 mm) root traces olive gray (5Y5/2)
+10.0	-	fine-grained sandstone	pale yellow (5Y7/4)	-	-	non	linguoid ripple marks
+9.7	Patha A	siltstone	light olive brown (2.5Y5/4)	-	-	non	large (36 cm diameter by 31 cm deep) <i>Histioderma</i> burrow
+8.7	Patha C	fine-grained sandstone	light greenish gray (5GY7/1)	-	-	non	-
+8.5	Kuta A	siltstone	weak red (2.5YR4/3)	-	-	non	-
+8.0	Kuta Bk	siltstone	reddish gray (2.5YR5/1)	43	13	mod.	depth of rooting 61 cm; nodules strong brown (7.5YR5/6) and 2.7, 2.8, 3.2, 4.3, and 4.6 cm diameter
+7.6	-	fine-grained sandstone	brown (7.5YR4/2)	-	-	non	interbedded pale brown (10YR6/3) streaks
+7.4	Patha A	siltstone	weak red (2.5YR4/2)	-	-	non	-
+6.8	Patha C	fine-grained sandstone	brown (7.5YR5/3)	-	-	non	-
+6.6	Patha A	siltstone	weak red (2.5YR4/2)	-	-	non	thin fine-grained sandstone interbeds; platy peds
+6.4	Patha C	fine-grained sandstone	brown (7.5YR5/3)	-	-	non	planar bedding
+6.3	Kuta A	siltstone	weak red (2.5YR4/2)	-	-	non	platy peds
+5.9	Kuta Bk	siltstone	reddish gray (2.5YR5/1)	57	13	mod.	depth of rooting 63 cm; nodules strong brown (7.5YR5/6) and 3.6, 3.7, 4.2, 4.8, and 4.9 cm diameter
+5.7	Kuta A	siltstone	weak red (2.5YR4/2)	-	-	non	platy peds
+5.2	Kuta Bk	siltstone	reddish gray (2.5YR5/1)	53	11	mod.	depth of rooting 61 cm; nodules strong brown (7.5YR5/6) and



							3.1, 5.2, 6.1, 6.3, and 7.3 cm diameter
+5.1	Kuta C	fine – grained sandstone	greenish gray (5G6/1)	-	-	non	-
+5.0	Kuta A	siltstone	weak red (2.5YR4/2)	-	-	non	relict laminae of fine-grained sandstone
+4.6	Kuta Bk	medium-grained sandstone	reddish gray (2.5YR5/1)	46	14	mod.	rooting depth is 54 cm; nodules 11.0, 31.2, 33.4, 34.6, and 87.6 cm diameter
+4.2	Patha A	siltstone	weak red (2.5YR4/2)	-	-	non	root traces up to 4 mm diameter; common <i>Macanopsis</i> burrows
+4.0	Patha C	fine-grained sandstone	greenish gray (5G6/1)	-	-	non	-
+3.9	-	medium-grained sandstone	greenish gray (5G6/1)	-	-	weak	-
+3.6	Barathi A	siltstone	light olive brown (2.5Y5/3)	-	-	non	fine (1 mm) root traces olive gray (5Y4/2)
+3.4	Barathi C	medium-grained sandstone	greenish gray (5GY6/1)	-	-	weak	planar bedding
+3.2	Barathi A	siltstone	light yellowish brown (2.5Y6/3)	-	-	non	root traces olive gray (5Y4/2)
+3.0	Barathi C	medium-grained sandstone	bluish gray (5B6/1)	-	-	weak	-
+1.3	-	claystone breccia	bluish gray (5B6/1)	-	-	weak	claystone clasts mostly reddish gray (2.5YR5/1)
+0.8	Kuta A	siltstone	bluish gray (5B5/1)	-	-	non	root traces up to 10 mm diameter
+0.6	Kuta Bw	siltstone	reddish gray (2.5YR5/1)	-	-	non	-
+0.3	Kuta Bk	claystone breccia	dark reddish brown (10R4/1)	48	18	mod.	rooting depth 90 cm; nodules 11.8, 16.2, 22.6, 23.4, and 31.2 cm diameter
0	-	medium-grained sandstone	greenish gray (5BG5/1)	-	-	non	-
-0.2	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	fine-grained sandy interbeds gray (5Y7/2)
-0.4	Zam C	fine-grained sandstone	greenish gray (10GY5/1)	-	-	non	linguoid ripple marks
-0.5	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-0.6	Zam C	fine-grained sandstone	greenish gray (10GY5/1)	-	-	non	-
-0.2	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-1.0	Zam C	fine-grained sandstone	greenish gray (10GY5/1)	-	-	non	-
-1.2	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-1.3	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-1.4	Zam A	siltstone	dark reddish	-	-	non	-

-1.5	Zam C	fine-grained sandstone	gray (10R4/1) dark reddish gray (10R4/1)	-	-	non	-
-1.6	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-1.7	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-1.8	-	fine-grained sandstone	greenish gray (10GY6/1)	-	-	non	-
-1.9	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-2.0	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-2.1	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-2.2	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-2.3	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-2.4	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-2.5	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-2.6	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-2.7	-	medium-grained sandstone	greenish gray (10GY6/1)	-	-	non	linguoid ripple marks; interbedded shale dark reddish gray (10R4/1)
-3.0	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-3.1	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-3.2	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-3.3	Zam C	fine-grained sandstone	dark bluish gray (5B4/1)	-	-	non	-
-3.4	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-3.5	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-3.6	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-3.7	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-3.8	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-3.9	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-4.0	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-

-4.1	Zam C	fine-grained sandstone	dark bluish gray (5B4/1)	-	-	non	-
-4.2	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-4.3	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-4.4	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-4.5	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-4.6	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-4.7	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-4.8	Zam A	siltstone	dark reddish gray (10R4/1)	-	-	non	-
-4.9	Zam C	fine-grained sandstone	dark reddish gray (10R4/1)	-	-	non	-
-5.0	-	medium-grained sandstone	greenish gray (10GY6/1)	-	-	non	linguoid ripple marks; algal-textured layers ferruginized yellowish brown (10YR5/4)
-5.5	-	siltstone	light greenish gray (10G5/2)	-	-	non	-
-5.3	-	medium-grained sandstone	greenish gray (10GY5/2)	-	-	non	planar bedding
-6.1	-	siltstone	light greenish gray (5GY7/1)	-	-	non	linguoid ripple marks; includes fossil footprint layer
-6.3	-	fine-grained sandstone	greenish gray (10GY5/2)	-	-	non	planar bedding
-6.4	Som A	siltstone	greenish gray (10G5/2)	-	-	non	-
-6.6	Som Bk	siltstone	dark reddish gray (10R4/1)	26	39	mod.	depth of rooting 60 cm; nodules are 3.2, 3.6, 4.2, 4.5, and 5.1 cm diameter
-6.9	Som C	fine-grained sandstone	bluish gray (5B5/1)	-	-	non	-
-7.1	Som A	siltstone	bluish gray (5B5/1)	-	-	non	large (67 cm diameter and 32 cm deep) striated burrow, perhaps an exhumed <i>Histioderma</i>
-7.2	Som Bk	siltstone	dark reddish gray (10R4/1)	24	56	mod.	rooting depth is 78 cm; nodules are 1.8, 2.1, 2.3, 2.6, and 3.2 cm diameter
-7.5	Zam A	clayey siltstone	dark reddish gray (10R4/1)	-	-	non	-
-7.6	Zam C	fine-grained sandstone	greenish gray (5BG6/1)	-	-	non	-
-7.7	Zam A	clayey siltstone	dark reddish gray (10R4/1)	-	-	non	-
-7.8	Zam C	fine-grained sandstone	reddish gray (10R5/1)	-	-	non	-
-7.9	Zam A	clayey	dark reddish	-	-	non	-

-8.0	Zam C	siltstone siltstone	gray (10R4/1) reddish gray (10R5/1)	-	-	non	-
-8.1	Zam A	clayey siltstone	dark reddish gray (10R4/1)	-	-	non	<i>Macanopsis</i> burrows
-8.2	Zam C	siltstone	reddish gray (10R5/1)	-	-	non	-
-8.3	Zam A	clayey siltstone	dark reddish gray (10R4/1)	-	-	non	-
-8.4	Zam C	siltstone	reddish gray (10R5/1)	-	-	non	-
-8.5	-	medium- grained sandstone	greenish gray (10BG5/1)	-	-	non	<i>Macanopsis</i> burrows (first in section)
-8.7	Som A	siltstone	bluish gray (5B5/1)	-	-	non	-
-9.0	Som Bk	siltstone	dark reddish gray (10R4/1)	22	35	mod.	rooting depth 56 cm; nodules are 3.5, 4.6, 5.2, 7.3, and 9.5 cm diameter
-9.3	Som C	medium- grained sandstone	bluish gray (5B5/1)	-	-	weak	planer bedding
-9.4	Som A	siltstone	bluish gray (5B5/1)	-	-	non	-
-9.6	Som Bk	siltstone	dark reddish gray (10R4/1)	25	42	mod.	rooting depth 53 cm; nodules are 2.4, 3.7, 4.2, 5.3, and 5.6 cm in diameter
-9.7	Som C	fine- grained sandstone	dark bluish gray (5B4/1)	-	-	mod.	-
-9.8	Som A	siltstone	bluish gray (5B5/1)	-	-	non	-
-10.0	Som Bk	siltstone	dark reddish gray (10R4/1)	22	25	mod.	rooting depth 51 cm; nodules are 1.3, 2.4, 3.2, 3.6, and 4.2 cm in diameter
-10.3	Som C	medium- grained sandstone	greenish gray (10BG6/1)	-	-	weak	-
-10.4	Som A	siltstone	greenish gray (5BG5/1)	-	-	non	drab haloed root traces common as purple color goes to surface in places
-10.6	Som Bk	siltstone	dark reddish gray (10R4/1)	24	53	mod.	rooting depth 78 cm; nodules are 4.8, 5.3, 6.4, 8.2, and 9.1 cm in diameter
-10.8	Som C	medium- grained sandstone	dark greenish gray (5G4/1)	-	-	mod.	-
-10.9	Som A	siltstone	greenish gray (5G5/1)	-	-	non	this is a thin mottled zone with a cradle knoll 1.5 m diameter
-11.0	Som Bk	siltstone	dark reddish gray (10R4/1)	24	51	mod.	rooting depth 72 cm; nodules are 4.8, 5.4, 6.1, 10.2, and 11.7 cm in diameter
-11.3	Som C	fine- grained sandstone	light bluish gray (5B7/1)	-	-	mod.	linguoid ripple marks
-11.5	-	medium- grained sandstone	light bluish gray (5B7/1)	-	-	mod.	-
-11.7	Som A	siltstone	greenish gray (5GY5/1)	-	-	non	root traces up to 10 mm diameter of light gray (5Y7/2)
-11.9	Som Bk	siltstone	dark reddish gray (10R4/1)	28	53	mod.	rooting depth 38 cm; nodules are 1.2, 2.3, 2.8, 3.5, and 4.6

-12.1	Som A	siltstone	dark greenish gray (5GY4/1)	-	-	non	cm in diameter
-12.3	Som Bk	siltstone	dark reddish gray (10R4/1)	24	28	mod.	root traces up to 40 mm of greenish gray (5GY5/1)
-12.6	Som C	medium-grained sandstone	bluish gray (5B6/1)	-	-	mod.	rooting depth 38 cm; nodules are 5.4, 6.2, 7.6, 8.3, and 9.2 cm in diameter
-12.9	-	fine-grained sandstone	light greenish gray (5GY7/1)	-	-	weak	-
-13.4	Hom A	fine-grained sandstone	light greenish gray (5GY7/1)	-	-	weak	planar bedding
-13.6	Hom Bk	medium-grained sandstone	light gray (5Y7/1)	24	42	mod.	root traces up to 20 mm diameter
-13.8	Hom C	medium-grained sandstone	light gray (5Y7/1)	-	-	weak	rooting depth is 53 cm; nodules are 5.3, 6.3, 6.4, 6.8, and 8.4 cm diameter
-14.0	Hom A	fine-grained sandstone	light greenish gray (5GY7/1)	-	-	weak	-
-14.2	Hom Bk	medium-grained sandstone	light greenish gray (5GY7/1)	28	56	mod.	root traces up to 30 mm diameter
-14.7	-	fine-grained sandstone	light greenish gray (5GY7/1)	-	-	weak	rooting depth is 58 cm; nodules are 4.3, 4.4, 5.1, 5.2, and 5.6 cm diameter
-15.3	-	medium-grained sandstone	greenish gray (5GY6/1)	-	-	weak	planar bedding and algal textures
-17.8	Pawa A	siltstone	greenish gray (10Y6/2)	-	-	non	trough cross-bedding, basal lag of conglomerate including compressed carbonized fossil logs up to 12.8 cm wide.
-18.3	Du A	medium-grained sandstone	greenish gray (10GY6/1)	-	-	weak	rooting depth 41 cm, root traces up to 2 mm diameter and light gray (5Y7/2)
-18.4	Du C	fine-grained sandstone	greenish gray (10GY6/1)	-	-	weak	rooting depth 12 cm, root traces up to 20 mm diameter of dark greenish gray (10GY4/1)
-18.5	Pawa A	shale	greenish gray (10Y6/1)	-	-	non	-
-18.6	Pawa C	fine-grained sandstone	light bluish gray (5G7/1)	-	-	weak	rooting depth 17 cm; root traces up to 3 mm diameter of olive gray (5Y5/2)
-18.8	Bada A	siltstone	bluish gray (5B6/1)	-	-	weak	linguoid ripples, with clayey stringers up top 13 mm thick of dark reddish gray (10R4/1)
-19.0	Bada Bk	fine-grained sandstone	bluish gray (5B6/1)	24	45	mod.	mottles of dark reddish gray (10R4/1) up to 1 cm diameter
-19.5	Bada A	siltstone	greenish gray (5G5/1)	-	-	weak	rooting depth 59 cm; at this depth root traces are 5 mm diameter; nodules are pale yellow (2.5Y7/3) and 5.7, 13.2, 14.4, and 28.3 cm in diameter
-19.7	Bada Bk	fine-grained sandstone	greenish gray (5GY6/1)	28	66	mod.	woody root traces up to 1 cm diameter
-20.2	Bada A	siltstone	greenish gray	-	-	weak	rooting depth 76 cm; nodules are 2.7, 2.9, 3.8, 7.3, and 7.8 cm in diameter
							woody root traces up to 1 cm

-20.4	Bada Bk	fine-grained sandstone	(5GY5/1) greenish gray (5GY5/1)	27	62	mod.	diameter rooting depth 72 cm; nodules are 3.2, 3.3, 6.1, 7.4, and 11.6 cm in diameter
-21.0	Bada A	siltstone	greenish gray (5GY6/1)	-	-	weak	-
-21.2	Bada Bk	fine-grained sandstone	greenish gray (5BG5/1)	25	29	mod.	rooting depth 35 cm; nodules are 1.8, 2.1, 2.3, 2.4, and 4.3 cm in diameter
-21.5	-	medium-grained sandstone	light bluish gray (5B7/1)	-	-	weak	planar bedding
-21.6	Pawa A	siltstone	greenish gray (10GY6/1)	-	-	non	rooting depth 21 cm; root traces up to 6 mm diameter with numerous orthogonal laterals.
-21.8	-	medium-grained sandstone	light bluish gray (5B7/1)	-	-	non	linguoid ripple marks and planar bedding
-22.0	Pawa A	siltstone	greenish gray (10GY6/1)	-	-	non	rooting depth 29 cm; mostly fine root traces, but some strata- concordant rhizomes up to 10 mm diameter
-22.3	-	medium-grained sandstone	light bluish gray (5B7/1)	-	-	weak	trough cross bedding, with basal conglomeratic lag
-22.8	Pawa A	shale	pale olive (5Y6/3)	-	-	non	root traces up to 3 mm diameter and copiously branched
-23.1	-	siltstone	light olive gray (5Y6/2)	-	-	weak	linguoid ripple marks and wavy bedding
-23.9	Pawa A	shale	bluish gray (5B5/1)	-	-	non	rooting depth 12 cm; root traces up to 2 mm diameter with abundant orthogonal laterals and light olivgray (5Y6/2)
-24.1	-	fine-grained sandstone	light gray (5Y7/2)	-	-	weak	linguoid ripple marks
-24.4	Bada A	siltstone	bluish gray (5Y7/1)	-	-	non	woody root traces up to 2 cm diameter
-24.7	Bada Bk	siltstone	pale olive (5Y6/3)	23	61	mod.	rooting depth 63 cm; nodules are 3.7, 7.1, 7.4, 7.6, and 8.1 cm in diameter
-25.2	Bada A	siltstone	light bluish gray (5Y7/1)	-	-	non	relict bedding; non-calcareous
-25.4	Bada Bk	siltstone	pale olive (5Y6/3)	17	37	mod.	rooting depth 44 cm; nodules 5.1, 6.3, 6.4, 7.3, and 7.4 cm diameter and pale yellow (5Y7/3); moderately calcareous

*Note:* This section is along the creek on the south side of Lootsberg Pass, near the highway 50 km north of Graaf Riet, Cape Province, South Africa. The section line goes from an area of low waterfalls on the creek at 31° 51.543' S 24° 51.543'E to the boundary laminites exposed 300 m to the north at 31° 50.942' S 24° 52.555'E and then to a waterfall of basal Katberg Sandstone forming a gully right beside the highway at 31° 50.817' S 24° 52.848'E.

Table 4. Measurements of calcic (Bk) horizons of Permian and Triassic paleosols.

level (m) PT =0	level (m) local	depth Bk (cm)	thick- ness Bk (cm)	nodule diameter (mean cm)	Locality	Coordinates (Cape meridian)	Paleosol description
+29.0	-	80	21	6.7	Harrismith	S28.18° E29.03°	Kuta
+28.0	-	88	25	10.2	Harrismith	S28.18° E29.03°	Kuta
+27.0	-	95	16	7.4	Harrismith	S28.18° E29.03°	Kuta
+25.0	-	95	14	8.6	Bergville	S28.52° E29.18°	Kuta
+23.0	-	92	18	5.2	Bergville	S28.52° E29.18°	Kuta
12.9	+39.3	63	-	-	Bethulie	S30° 24.898' E26° 15.724'	Kuta
12.2	+38.5	56	-	-	Bethulie	S30° 24.898' E26° 15.724'	Kuta
7.3	+33.7	48	-	-	Bethulie	S30° 24.898' E26° 15.724'	Kuta
0	+26.3	24	-	-	Bethulie	S30° 24.930' E26° 15.800	Som
-6.1	+20.2	31	-	-	Bethulie	S30° 24.930' E26° 15.800	Som; last <i>Dicynodon</i>
-7.0	+19.3	29	-	-	Bethulie	S30° 24.930' E26° 15.800	Som
-7.6	+18.6	26	-	-	Bethulie	S30° 24.930' E26° 15.800	Som
-8.6	+17.6	24	-	-	Bethulie	S30° 24.930' E26° 15.800	Som
-9.2	+17.0	26	-	-	Bethulie	S30° 24.930' E26° 15.800	Som
-9.8	+16.5	30	-	-	Bethulie	S30° 24.930' E26° 15.800	Som
-14.2	+12.2	29	-	-	Bethulie	S30° 24.930' E26° 15.800	Bada
-15.5	+10.8	30	-	-	Bethulie	S30° 24.930' E26° 15.800	Bada
-16.8	+9.5	31	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada
-17.5	+8.7	28	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som
-20	+6.3	24	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som
-21.3	+5.0	33	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som
-22	+4.3	36	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som
-23.3	+3.0	32	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada; first <i>Lystrosaurus</i>
-24.4	+1.8	24	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada
-25.3	+1.0	28	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada
-29.3	-3.0	24	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada
-29.9	-3.6	25	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som; clastic dike 200/234 cm
-30.6	-4.3	27	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada
-31.9	-5.6	30	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som
-32.5	-6.2	26	-	-	Bethulie	S30° 25.348' E26° 16.366'	Som
-33.3	-7.0	24	-	-	Bethulie	S30° 25.348' E26° 16.366'	Bada; <i>Dicynodon</i> zone
+17.8	+63.5	54	-	-	Carlton Heights	S31° 17.702' E24° 57.093'	Sedibo
+9.7	+50.4	56	-	-	Carlton Heights	S31° 17.702' E24° 57.093'	Kuta
+8.3	+48.8	47	-	-	Carlton Heights	S31° 17.702' E24° 57.093'	Kuta
+7.3	+48.0	50	-	-	Carlton Heights	S31° 17.702' E24° 57.093'	Kuta
+6.2	+46.8	57	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
+5.3	+46.0	55	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
+4.4	+45.2	52	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
+3.3	+44.3	46	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
+2.8	+43.4	48	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
+2.0	+42.7	51	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
+1.2	+41.8	52	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Kuta
0	+40.7	20	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-0.5	+40.2	22	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-1.0	+39.6	23	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-1.5	+39.2	24	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-3.6	+37.0	26	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-5.3	+35.3	25	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-5.8	+34.9	27	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-7.6	+33.0	32	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som; first <i>Lystrosaurus</i>
-9.3	+31.4	25	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som

-9.6	+31.0	27	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-10.1	+30.6	23	-	-	Carlton Heights	S31° 19.994' E24° 17.126'	Som
-11.7	+28.9	35	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Hom
-12.2	+28.5	36	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Hom
-18.0	+22.7	31	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Bada
-18.7	+22.0	25	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Bada
-19.2	+21.4	29	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Bada
-19.8	+20.9	27	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Bada
-20.3	+20.3	30	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Bada
-21.0	+19.6	31	-	-	Carlton Heights	S31° 17.417' E24° 57.508'	Bada; last <i>Dicynodon</i>
+18.8	+39.8	76	23	1.84	Lootsberg Pass	S31°50.817' E24°52.848'	Karie
+17.8	+38.8	78	18	1.12	Lootsberg Pass	S31°50.817' E24°52.848'	Karie
+17.0	+38.0	78	16	5.32	Lootsberg Pass	S31°50.817' E24°52.848'	Karie
+16.3	+37.3	79	15	5.7	Lootsberg Pass	S31°50.817' E24°52.848'	Karie
+15.5	+36.5	80	12	14.1	Lootsberg Pass	S31°50.817' E24°52.848'	Karie
+14.7	+35.7	69	17	11.62	Lootsberg Pass	S31°50.817' E24°52.848'	Kuta
+14.0	+35.0	52	16	17.54	Lootsberg Pass	S31°50.817' E24°52.848'	Kuta
+8.5	+29.5	43	13	3.52	Lootsberg Pass	S31°50.817' E24°52.848'	Kuta
+6.3	+27.3	57	13	4.24	Lootsberg Pass	S31°50.817' E24°52.848'	Kuta
+5.8	+26.8	53	11	5.6	Lootsberg Pass	S31°50.817' E24°52.848'	Kuta
+5.0	+26.0	46	14	39.56	Lootsberg Pass	S31°50.817' E24°52.848'	Kuta
+0.8	+21.8	48	18	21.04	Lootsberg Pass	S31°52.342' E24°51.543'	Kuta
-6.5	+14.5	26	39	4.12	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-7.1	+13.9	24	56	2.42	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-8.8	+12.2	22	35	6.02	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-9.4	+11.6	25	42	4.24	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-9.8	+11.2	22	25	2.94	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-10.4	+10.6	24	53	6.76	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-10.8	+10.2	24	51	7.64	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-11.7	+9.3	28	53	2.88	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-12.3	+8.7	24	28	7.34	Lootsberg Pass	S31°52.342' E24°51.543'	Som
-13.4	+7.6	22	42	4.92	Lootsberg Pass	S31°51.041' E24°52.308'	Hom; first <i>Lystrosaurus</i>
-14.2	+6.8	28	50	6.64	Lootsberg Pass	S31°51.041' E24°52.308'	Hom
-18.7	+2.3	24	45	18.7	Lootsberg Pass	S31°51.041' E24°52.308'	Bada
-19.5	+1.5	28	66	4.86	Lootsberg Pass	S31°51.041' E24°52.308'	Bada; last dicynodont
-20.2	+0.8	27	62	6.32	Lootsberg Pass	S31°51.041' E24°52.308'	Bada
-21.0	0	25	29	2.58	Lootsberg Pass	S31°51.041' E24°52.308'	Bada
-24.4	-3.4	23	61	6.78	Lootsberg Pass	S31°51.041' E24°52.308'	Bada
-25.2	-4.2	17	37	6.58	Lootsberg Pass	S31°51.041' E24°52.308'	Bada; Palingkloof
-381	3233	16	28	4.6	Teekloof Pass	S32°6.675' E21°35.117'	Thermally altered
-382	3232	15	24	0.6	Teekloof Pass	S32°6.675' E21°35.117'	Thermally altered
-383	3231	18	51	23.4	Teekloof Pass	S32°6.675' E21°35.117'	Thermally altered
-384	3230	15	42	1.6	Teekloof Pass	S32°6.675' E21°35.117'	Thermally altered
-401	3213	23	52	5.1	Karoo N.P.	S32°19.544' E22°27.371'	Thermally altered
-402	3212	20	39	7.6	Karoo N.P.	S32°19.544' E22°27.371'	Thermally altered; Steenkampsvatke; <i>base Dicynodon</i> zone
-404	3210	23	19	2.6	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-405	3209	15	33	1.1	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-406	3208	14	34	0.6	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-407	3207	22	13	1.6	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-408	3206	13	20	0.3	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-409	3205	12	18	0.6	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-410	3204	23	16	9.6	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-411	3203	14	23	3.4	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-412	3202	15	21	2.1	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-413	3201	25	32	35.6	Teekloof Pass	S32°10.075' E21°37.459'	Gray on red
-415	3199	16	19	1.7	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled



-416	3198	21	22	8.3	Teekloof Pass	S32°10.075' E21°37.459'	Gray on red
-417	3197	16	29	2.5	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-418	3196	15	31	4.6	Teekloof Pass	S32°10.075' E21°37.459'	Red mottled
-419	3195	16	25	2.6	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-420	3194	15	26	1.2	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-421	3193	24	18	3.2	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-422	3192	16	23	0.9	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-423	3191	22	26	2.6	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-424	3190	15	25	3.2	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-425	3189	14	23	2.1	Teekloof Pass	S32°10.219' E21°37.646'	Red mottled
-426	3188	13	16	1.8	Teekloof Pass	S32°10.642' E21°37.814'	Red mottled
-427	3187	17	16	2.1	Teekloof Pass	S32°10.642' E21°37.814'	Red mottled
-429	3185	22	21	3.4	Teekloof Pass	S32°10.642' E21°37.814'	Red mottled
-430	3184	13	15	10.6	Teekloof Pass	S32°10.642' E21°37.814'	Gray on red
-431	3183	16	15	7.8	Teekloof Pass	S32°10.642' E21°37.814'	Gray on red
-432	3182	22	15	1.3	Teekloof Pass	S32°10.642' E21°37.814'	Red mottled
-433	3181	13	25	3.1	Teekloof Pass	S32°10.642' E21°37.814'	Gray on red
-434	3180	14	27	1.6	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-435	3179	15	23	2.6	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-436	3178	25	15	6.7	Teekloof Pass	S32°10.705' E21°37.643'	Som
-437	3177	14	31	0.8	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-438	3176	13	28	2.6	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-439	3175	22	12	1.8	Teekloof Pass	S32°10.705' E21°37.643'	Som
-440	3174	14	10	2.6	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-441	3173	17	15	8.3	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-442	3172	22	33	4.2	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-443	3171	15	19	4.8	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-444	3170	14	20	3.6	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-445	3169	25	31	6.8	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-446	3168	15	21	1.8	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-447	3167	13	25	2.6	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-448	3166	22	30	3.2	Teekloof Pass	S32°10.705' E21°37.643'	Purple mottled
-449	3165	25	20	6.2	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-450	3164	15	20	1.7	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-451	3163	14	21	2.6	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-452	3162	24	36	12.7	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-453	3161	15	34	5.6	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-454	3160	12	36	3.2	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-455	3159	22	21	6.4	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-456	3158	15	25	1.6	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-457	3157	14	30	1.4	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-458	3156	26	31	7.8	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-459	3155	15	25	3.2	Teekloof Pass	S32°11/142' E21°37.569'	Red mottled
-460	3154	13	24	1.3	Teekloof Pass	S32°11/142' E21°37.569'	Gray on red
-461	3153	24	34	1.6	Teekloof Pass	S32°11/142' E21°37.569'	Gray on red
-462	3152	14	26	2.1	Teekloof Pass	S32°11/142' E21°37.569'	Gray on red
-463	3151	13	23	0.7	Teekloof Pass	S32°11/142' E21°37.569'	Gray on red
-464	3150	21	34	2.3	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-465	3149	19	24	3.6	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-466	3148	13	19	1.9	Teekloof Pass	S32°11/142' E21°37.569'	Som
-467	3147	12	26	2.1	Teekloof Pass	S32°11/142' E21°37.569'	Som
-468	3146	22	34	8.7	Teekloof Pass	S32°11/142' E21°37.569'	Som
-469	3145	13	23	2.6	Teekloof Pass	S32°11/142' E21°37.569'	Som
-470	3144	14	23	2.6	Teekloof Pass	S32°11/142' E21°37.569'	Som
-471	3143	21	12	1.6	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-472	3142	14	20	8.6	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-473	3141	13	25	2.5	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-474	3140	24	12	3.2	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-475	3139	14	26	0.7	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-476	3138	15	20	1.6	Teekloof Pass	S32°11/142' E21°37.569'	Purple mottled
-477	3137	14	18	4.1	Teekloof Pass	S32°11/142' E21°37.569'	Som
-478	3136	17	24	5.1	Teekloof Pass	S32°11/142' E21°37.569'	Thermally altered

-479	3135	22	25	3.1	Teekloof Pass	S32°11.585' E21°37.399'	Gray on red
-480	3134	24	37	5.1	Teekloof Pass	S32°11.585' E21°37.399'	Gray on red
-481	3133	20	34	4.2	Teekloof Pass	S32°11.585' E21°37.399'	Gray on red
-482	3132	23	19	3.2	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-483	3131	22	20	1.6	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-484	3130	21	32	0.5	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-485	3129	22	34	0.9	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-486	3128	21	31	1.3	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-487	3127	22	33	0.7	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-488	3126	21	34	0.6	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-489	3125	22	26	2.1	Teekloof Pass	S32°11.585' E21°37.399'	Purple mottled
-490	3124	22	24	3.1	Teekloof Pass	S32°11.643' E21°37.550'	Som
-491	3123	13	25	4.6	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-492	3122	21	24	6.3	Teekloof Pass	S32°11.643' E21°37.550'	Som
-493	3121	13	32	0.6	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-494	3120	23	42	1.1	Teekloof Pass	S32°11.643' E21°37.550'	Som
-495	3119	15	31	2.4	Teekloof Pass	S32°11.643' E21°37.550'	Som
-496	3118	22	30	1.2	Teekloof Pass	S32°11.643' E21°37.550'	Som
-497	3117	13	32	4.3	Teekloof Pass	S32°11.643' E21°37.550'	Som
-498	3116	22	31	2.1	Teekloof Pass	S32°11.643' E21°37.550'	Som
-499	3115	14	32	0.9	Teekloof Pass	S32°11.643' E21°37.550'	Som
-500	3114	14	21	0.3	Teekloof Pass	S32°11.643' E21°37.550'	Som
-501	3113	22	33	0.9	Teekloof Pass	S32°11.643' E21°37.550'	Som
-502	3112	13	23	0.5	Teekloof Pass	S32°11.643' E21°37.550'	Som
-503	3111	18	26	1.8	Teekloof Pass	S32°11.643' E21°37.550'	Som
-504	3110	16	32	2.6	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-505	3109	20	31	3.6	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-506	3108	22	37	2.1	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-507	3107	14	34	2.5	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-508	3106	22	23	4.2	Teekloof Pass	S32°11.643' E21°37.550'	Purple mottled
-540	3076	22	31	5.6	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-541	3075	30	21	4.3	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-542	3074	13	22	1.6	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-541	3073	22	23	14.3	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-544	3070	15	21	0.4	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-545	3069	19	32	1.6	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-547	3067	15	20	16.2	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-548	3066	19	26	1.4	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-549	3065	18	23	0.6	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered; clastic dikes 29.4/35.6, 24.2/27.3, 19.8/23.5 cm
-550	3064	19	22	6.4	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-551	3063	15	27	5.3	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-552	3062	22	37	6.4	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-553	3061	15	35	3.2	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-554	3060	33	41	12.6	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-555	3059	16	25	3.2	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-556	3058	13	32	2.1	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-558	3056	16	26	3.2	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-560	3054	14	30	2.1	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-561	3053	21	35	1.5	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-563	3051	21	26	8.7	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-564	3050	15	37	3.2	Teekloof Pass	S32°11.781' E21°37.519'	Thermally altered
-572	3042	19	45	13.5	Teekloof Pass	S32°12.045' E21°37.209'	Thermally altered
-573	3041	15	41	3.2	Teekloof Pass	S32°12.045' E21°37.209'	Thermally altered
-574	3040	12	37	2.6	Teekloof Pass	S32°12.045' E21°37.209'	Thermally altered; base Oukloof and <i>Cisticephalus</i> zone
-594	3020	19	15	6.4	Teekloof Pass	S32°12.150' E21°37.126'	Som
-597	3017	15	18	0.7	Teekloof Pass	S32°12.150' E21°37.126'	Som
-599	3015	21	24	0.5	Teekloof Pass	S32°12.150' E21°37.126'	Som; desert rose

-601	3013	16	21	0.9	Teekloof Pass	S32°12.150' E21°37.126'	Som
-602	3012	31	19	1.4	Teekloof Pass	S32°12.150' E21°37.126'	Bada
-603	3011	19	27	1.2	Teekloof Pass	S32°12.150' E21°37.126'	Som
-604	3010	27	29	2.7	Teekloof Pass	S32°12.150' E21°37.126'	Som
-724	2890	32	22	0.7	Teekloof Pass	S32°12.186' E21°37.007'	Som
-725	2889	31	20	1.8	Teekloof Pass	S32°12.186' E21°37.007'	Som
-726	2888	26	11	2.1	Teekloof Pass	S32°12.186' E21°37.007'	Som
-727	2887	37	25	0.5	Teekloof Pass	S32°12.186' E21°37.007'	Som
-731	2883	40	15	0.7	Teekloof Pass	S32°12.186' E21°37.007'	Som
-732	2882	30	16	1.1	Teekloof Pass	S32°12.186' E21°37.007'	Som
-733	2881	47	32	2.1	Teekloof Pass	S32°12.186' E21°37.007'	Som: clastic dikes 25.5/32.4, 38.9/53.3, 21.3/29.2, 28.2/35.1, 27.6/39.4 cm
-752	2862	45	18	1.6	Teekloof Pass	S32°12.216' E21°36.871'	Som
-753	2861	47	20	2.7	Teekloof Pass	S32°12.216' E21°36.871'	Som
-754	2860	34	22	2.5	Teekloof Pass	S32°12.216' E21°36.871'	Som
-755	2859	29	21	3.2	Teekloof Pass	S32°12.216' E21°36.871'	Som
-756	2858	42	25	4.3	Teekloof Pass	S32°12.216' E21°36.871'	Som
-757	2857	30	21	1.2	Teekloof Pass	S32°12.216' E21°36.871'	Som
-758	2856	35	37	1.8	Teekloof Pass	S32°12.216' E21°36.871'	Som
-759	2855	25	16	2.1	Teekloof Pass	S32°12.216' E21°36.871'	Som; base Hoedemaker and <i>Tropidostoma</i> zone
-799	2815	37	17	1.2	Gamka River	S32°22.992' E22°32.778'	Purple mottled
-800	2814	31	25	27.6	Gamka River	S32°22.992' E22°32.778'	Purple mottled
-801	2813	53	7	12.6	Gamka River	S32°22.992' E22°32.778'	Deep purple
-802	2812	33	11	1.6	Gamka River	S32°22.992' E22°32.778'	Purple mottled
-803	2811	37	10	5.4	Gamka River	S32°22.992' E22°32.778'	Purple mottled
-804	2810	47	12	10.6	Gamka River	S32°22.992' E22°32.778'	Purple mottled
-838	2776	25	8	0.9	Lombardskraal	S32°30.641' E22°33.737'	Purple mottled
-839	2775	31	6	0.4	Lombardskraal	S32°30.641' E22°33.737'	Purple mottled
-840	2774	51	18	10.6	Lombardskraal	S32°30.641' E22°33.737'	Deep purple
-841	2773	37	9	8.4	Lombardskraal	S32°30.641' E22°33.737'	Purple mottled
-842	2772	34	10	6.4	Lombardskraal	S32°30.641' E22°33.737'	Purple mottled
-843	2771	41	16	14.2	Lombardskraal	S32°30.641' E22°33.737'	Purple mottled
-844	2770	38	12	1.2	Lombardskraal	S32°30.641' E22°33.737'	Purple mottled
-882	2733	37	12	5.6	Amandelhoogte	S32°47.239' E22°34.738'	Bada
-883	2731	36	25	14	Amandelhoogte	S32°47.239' E22°34.738'	Bada
-884	2730	47	15	16.2	Amandelhoogte	S32°47.239' E22°34.738'	Bada
-887	2727	36	14	15.3	Amandelhoogte	S32°45.388' E22°34.908'	Bada
-888	2726	39	10	2.6	Amandelhoogte	S32°45.388' E22°34.908'	Bada
-889	2725	46	16	10.4	Amandelhoogte	S32°45.388' E22°34.908'	Bada
-891	2723	52	10	9.3	Amandelhoogte	S32°44.880' E22°34.852'	Sedibo
-892	2722	59	14	16.2	Amandelhoogte	S32°44.880' E22°34.852'	Sedibo
-894	2720	39	20	26.4	Amandelhoogte	S32°44.729' E22°34.827'	Purple mottled
-895	2719	34	15	0.9	Amandelhoogte	S32°44.729' E22°34.827'	Purple mottled
-896	2718	36	13	4.5	Amandelhoogte	S32°44.729' E22°34.827'	Purple mottled
-900	2714	46	15	12.3	Good Hope	S32°43.757' E22°34.668'	Deep purple
-901	2713	36	12	3.4	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-902	2712	33	9	1.4	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-903	2711	42	17	4.3	Good Hope	S32°43.757' E22°34.668'	Deep purple
-904	2710	36	12	1.2	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-905	2709	32	11	2.4	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-906	2708	44	10	4.2	Good Hope	S32°43.757' E22°34.668'	Deep purple
-907	2707	37	12	2.6	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-908	2706	32	10	4.2	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-909	2705	52	15	6.3	Good Hope	S32°43.757' E22°34.668'	Deep purple
-910	2704	32	13	0.9	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-911	2703	30	12	1.2	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-912	2702	46	12	10.4	Good Hope	S32°43.757' E22°34.668'	Sedibo
-913	2701	29	11	0.3	Good Hope	S32°43.757' E22°34.668'	Purple mottled

-914	2700	31	12	0.4	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-915	2699	29	12	5.6	Good Hope	S32°43.757' E22°34.668'	Bada
-916	2698	49	15	7.8	Good Hope	S32°43.757' E22°34.668'	Deep gray on purple
-917	2697	32	14	0.9	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-918	2696	34	12	0.7	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-919	2695	47	12	1.1	Good Hope	S32°43.757' E22°34.668'	Sediibo
-920	2694	35	17	5.7	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-921	2693	36	12	4.6	Good Hope	S32°43.757' E22°34.668'	Purple mottled
-922	2692	55	14	3.2	Good Hope	S32°43.757' E22°34.668'	Deep purple
-923	2691	43	13	1.2	Good Hope	S32°43.757' E22°34.668'	Deep purple
-924	2690	44	15	2.5	Good Hope	S32°43.757' E22°34.668'	Deep purple
-930	2684	62	13	12.6	Cypherfontein	S32°33.876' E22°34.218'	Deep purple
-931	2683	32	10	0.6	Cypherfontein	S32°33.876' E22°34.218'	Purple mottled
-932	2682	34	11	1.6	Cypherfontein	S32°33.876' E22°34.218'	Purple mottled
-933	2681	54	15	2.6	Cypherfontein	S32°33.876' E22°34.218'	Deep purple
-934	2680	33	9	1.8	Cypherfontein	S32°33.876' E22°34.218'	Purple mottled
-968	2646	52	12	1.3	Amandelhoogte	S32°49.836' E22°43.482'	Sediibo
-969	2645	55	13	7.2	Amandelhoogte	S32°49.836' E22°43.482'	Sediibo
-976	2640	54	15	6	Del Marr	S32°51.234' E22°34.022'	Sediibo
-979	2637	28	11	1.4	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-980	2634	43	12	6.3	Good Hope	S32°42.405' E22°34.288'	Deep purple
-981	2633	34	15	1.2	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-991	2623	31	7	4.2	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-992	2622	36	9	2.6	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-993	2621	42	13	15.6	Good Hope	S32°42.405' E22°34.288'	Deep purple
-994	2620	51	8	7.8	Scheurfontein	S32°39.465' E22°33.434'	Deep gray on purple
-995	2619	42	9	8.2	Scheurfontein	S32°39.465' E22°33.434'	Deep gray on purple
-996	2618	36	12	6.2	Scheurfontein	S32°39.465' E22°33.434'	Som
-997	2617	37	11	12.6	Scheurfontein	S32°41.348' E22°33.780'	Bada
-998	2616	52	12	7.8	Scheurfontein	S32°41.348' E22°33.780'	Sediibo
-999	2615	36	11	3.3	Scheurfontein	S32°41.348' E22°33.780'	Bada
-1000	2614	36	9	6.7	Scheurfontein	S32°41.348' E22°33.780'	Bada
-1001	2613	52	15	7.8	Scheurfontein	S32°41.348' E22°33.780'	Sediibo
-1002	2612	37	11	2.3	Scheurfontein	S32°41.348' E22°33.780'	Bada
-1003	2611	36	9	4.3	Scheurfontein	S32°41.348' E22°33.780'	Bada
-1004	2610	42	10	6.2	Scheurfontein	S32°41.348' E22°33.780'	Sediibo; base Poortjie
-1014	2600	22	23	2.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1022	2592	24	15	12.2	Good Hope	S32°42.405' E22°34.288'	Bada; base <i>Priostero- gnathus</i> zone
-1033	2581	25	40	0.9	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1034	2580	13	39	0.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1035	2579	14	22	1.2	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1036	2578	26	20	7.2	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1038	2576	14	34	1.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1039	2575	13	33	2.1	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1040	2574	24	26	0.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1043	2571	20	42	0.4	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1044	2570	11	22	0.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1045	2569	32	41	2.1	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1046	2568	13	22	0.6	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1047	2567	13	23	0.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1048	2566	20	28	0.5	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1049	2565	12	20	0.6	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1062	2552	18	22	2.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1063	2551	15	34	1.6	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1064	2550	12	20	2.1	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1065	2549	10	20	1.6	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1066	2548	24	18	4.6	Good Hope	S32°42.405' E22°34.288'	Bada
-1067	2547	10	14	3.2	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1068	2546	13	16	0.4	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1069	2545	25	21	3.3	Good Hope	S32°42.405' E22°34.288'	Purple mottled

-1070	2544	14	22	1.1	Good Hope	S32°42.405' E22°34.288'	Som
-1071	2543	10	22	1.1	Good Hope	S32°42.405' E22°34.288'	Som
-1072	2542	13	36	1.2	Good Hope	S32°42.405' E22°34.288'	Purple mottled
-1073	2541	24	20	8.3	Good Hope	S32°42.405' E22°34.288'	Bada: chert stringers
-1074	2540	24	15	1.2	Good Hope	S32°42.405' E22°34.288'	Som
-1075	2539	13	20	3.6	Good Hope	S32°42.405' E22°34.288'	Som
-1157	2457	32	44	1.1	Tierpoort	S32°53.452' E22°33.112'	Bada
-1158	2456	15	36	0.5	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1159	2455	13	34	0.3	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1160	2454	24	34	0.3	Tierpoort	S32°53.452' E22°33.112'	Bada
-1161	2453	12	26	0.6	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1162	2452	13	25	0.9	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1165	2449	24	37	2.3	Tierpoort	S32°53.452' E22°33.112'	Bada
-1166	2448	11	34	1.2	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1167	2447	13	32	0.9	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1168	2446	21	42	3.2	Tierpoort	S32°53.452' E22°33.112'	Bada
-1169	2445	14	37	1.8	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1170	2444	15	36	1.6	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1171	2443	26	42	1.2	Tierpoort	S32°53.452' E22°33.112'	Bada
-1172	2442	13	32	0.6	Tierpoort	S32°53.452' E22°33.112'	Bada
-1173	2441	14	46	4.2	Tierpoort	S32°53.452' E22°33.112'	Bada
-1174	2440	14	42	3.3	Tierpoort	S32°53.452' E22°33.112'	Purple mottled
-1313	2301	14	48	0.5	Trakaskuilin	S32°54.053' E22°32.890'	Purple mottled
-1314	2300	13	46	0.6	Trakaskuilin	S32°54.053' E22°32.890'	Purple mottled
-1315	2299	23	32	0.9	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1320	2294	11	30	4.3	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1321	2293	15	26	2.7	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1322	2292	21	36	0.8	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1326	2288	14	49	1.5	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1327	2287	13	62	1.3	Trakaskuilin	S32°54.053' E22°32.890'	Purple mottled
-1331	2283	23	36	2.6	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1334	2280	23	43	4.5	Trakaskuilin	S32°54.053' E22°32.890'	Bada
-1387	2227	24	52	26.2	Trakaskuilin	S32°54.140' E22°32.883'	Bada
-1391	2223	12	39	6.2	Trakaskuilin	S32°54.140' E22°32.883'	Bada
-1392	2222	32	34	2.4	Trakaskuilin	S32°54.140' E22°32.883'	Bada
-1393	2221	14	37	10.6	Trakaskuilin	S32°54.140' E22°32.883'	Purple mottled
-1394	2220	13	38	6.2	Trakaskuilin	S32°54.140' E22°32.883'	Purple mottled
-1433	2181	13	35	11.2	Trakaskuilin	S32°54.621' E22°32.838'	Bada
-1434	2180	17	36	4.2	Trakaskuilin	S32°54.621' E22°32.838'	Bada
-1461	2153	13	34	2.6	Trakaskuilin	S32°57.047' E22°32.636'	Purple mottled
-1462	2152	14	33	1.6	Trakaskuilin	S32°57.047' E22°32.636'	Purple mottled
-1463	2151	12	37	9.8	Trakaskuilin	S32°57.047' E22°32.636'	Purple mottled
-1464	2150	13	42	8.3	Trakaskuilin	S32°57.047' E22°32.636'	Purple mottled
-1845	1769	22	61	2.3	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1846	1768	12	42	0.4	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1847	1767	13	22	4.1	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1848	1766	12	38	0.3	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1849	1765	13	34	0.4	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1850	1764	27	36	7.8	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1860	1754	22	37	3.2	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1864	1750	13	52	4	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1865	1749	14	44	3.3	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1866	1748	15	59	2.2	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1867	1747	23	59	1.6	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1868	1746	13	56	2.3	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1869	1745	15	52	4.6	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1875	1741	13	36	2.5	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1876	1740	21	65	3.1	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1877	1739	14	65	0.4	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1878	1738	13	56	2.2	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1879	1737	22	62	1.6	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1880	1736	14	46	0.8	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled

-1881	1733	24	58	4.2	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1882	1732	12	66	0.5	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1883	1731	12	44	0.6	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1884	1730	13	40	0.3	Trakaskuilin	S32°57.403' E22°32.600'	Purple mottled
-1885	1729	23	42	0.7	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1886	1728	15	45	1.2	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1887	1727	13	38	2.1	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1888	1726	25	41	4.6	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1889	1725	12	27	0.7	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1892	1722	14	46	0.3	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1893	1721	22	42	0.9	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1894	1720	14	35	1.3	Trakaskuilin	S32°57.403' E22°32.600'	Bada
-1994	1620	14	45	0.5	Trakaskuilin	S32°58.053' E22°32.549'	Bada
-1995	1619	17	52	0.7	Trakaskuilin	S32°58.053' E22°32.549'	Bada
-1996	1618	17	34	1.2	Trakaskuilin	S32°58.053' E22°32.549'	Bada
-1997	1617	14	32	0.8	Trakaskuilin	S32°58.053' E22°32.549'	Bada
-2003	1611	15	35	0.5	Trakaskuilin	S32°58.053' E22°32.549'	Bada
-2004	1610	17	43	1	Trakaskuilin	S32°58.053' E22°32.549'	Bada
-2005	1609	14	44	2.3	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2006	1608	15	33	2.5	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2007	1607	24	38	3.4	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2019	1595	23	32	1.2	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2020	1594	14	43	1.3	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2021	1593	16	45	4.2	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2022	1592	15	37	6.2	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2034	1580	20	50	0.9	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2043	1571	13	42	0.7	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2074	1570	14	45	0.6	Trakaskuilin	S32°58.874' E22°32.488'	Bada
-2066	1548	22	35	2.1	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2070	1544	23	22	6.7	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2080	1534	12	36	0.7	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2081	1533	14	41	0.4	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2082	1532	13	35	0.3	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2090	1524	16	35	1.1	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2091	1523	15	37	1.8	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2092	1522	13	44	2.1	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2095	1519	22	51	2.4	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2100	1514	14	31	0.4	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2101	1513	13	28	0.3	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2102	1512	26	48	2.5	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2103	1511	13	28	0.5	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2104	1510	15	37	0.7	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2107	1507	14	36	2.6	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2108	1506	22	51	4.3	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2114	1500	16	41	0.9	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2115	1499	14	39	1.2	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2116	1498	21	36	2.4	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2117	1497	13	42	28.6	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2122	1492	13	55	4.6	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2123	1491	16	52	5.6	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2124	1490	11	48	6.3	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2125	1489	23	62	3.2	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2133	1481	11	39	0.4	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2134	1480	13	39	0.3	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2135	1479	12	27	0.5	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2136	1478	15	36	0.4	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2137	1477	32	58	3.7	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2138	1476	13	42	2.5	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2139	1475	24	54	0.7	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2140	1474	15	37	1.1	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2141	1473	12	42	1.1	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2142	1472	14	31	2.2	Trakaskuilin	S32°58.775' E22°32.493'	Bada

-2143	1471	13	32	1.3	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2144	1470	23	37	2.2	Trakaskuilin	S32°58.775' E22°32.493'	Som
-2145	1469	14	54	0.3	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2146	1468	16	53	0.4	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2147	1465	17	42	7.8	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2148	1464	15	51	1.7	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2149	1463	22	38	2.4	Trakaskuilin	S32°58.775' E22°32.493'	Bada
-2150	1462	16	46	1.1	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2151	1461	15	51	0.5	Trakaskuilin	S32°58.775' E22°32.493'	Purple mottled
-2154	1460	10	38	1.2	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2155	1451	13	44	1.7	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2156	1450	14	41	1.3	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2172	1442	18	40	0.4	Trakaskuilin	S32°59.420' E22°32.449'	Bada; desert rose
-2173	1441	12	42	1.4	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2174	1440	10	42	0.7	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2180	1434	13	32	2.6	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2181	1433	12	32	4.5	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2182	1432	10	42	11.2	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2183	1431	18	35	1.1	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2184	1430	13	32	0.7	Trakaskuilin	S32°59.420' E22°32.449'	Bada; desert rose
-2185	1429	11	39	4.2	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2191	1423	10	32	3.6	Trakaskuilin	S32°59.420' E22°32.449'	Bada
-2192	1422	19	52	2.3	Trakaskuilin	S32°59.420' E22°32.449'	Bada; desert rose
-2203	1411	13	37	1.6	Trakaskuilin	S32°59.420' E22°32.449'	Purple mottled
-2204	1410	14	49	0.5	Trakaskuilin	S32°59.420' E22°32.449'	Purple mottled
-2220	1394	15	39	3.6	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2221	1393	11	35	1.2	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2222	1392	22	51	4.6	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2223	1391	12	22	1.2	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2224	1390	10	29	2.3	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2225	1389	21	39	2.7	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2226	1388	14	46	0.3	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2227	1387	14	47	2.6	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2228	1386	12	42	1.5	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2229	1385	22	37	2	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2243	1371	9	39	1.1	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2248	1366	12	46	2.1	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2249	1365	22	39	1.7	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2250	1364	12	46	0.8	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2251	1363	14	52	1.8	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2252	1362	20	36	2.7	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2253	1361	12	58	1.6	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2254	1360	15	36	2	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2255	1359	12	25	0.9	Trakaskuilin	S33°0.563' E22°32.346'	Purple mottled
-2256	1358	16	46	2.1	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2257	1357	17	38	2.5	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2258	1356	22	42	3.2	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2262	1352	20	35	12.6	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2267	1347	12	60	1.1	Trakaskuilin	S33°0.563' E22°32.346'	Purple mottled
-2270	1344	20	61	1.4	Trakaskuilin	S33°0.563' E22°32.346'	Purple mottled
-2271	1343	12	38	2.3	Trakaskuilin	S33°0.563' E22°32.346'	Purple mottled
-2272	1342	13	43	0.3	Trakaskuilin	S33°0.563' E22°32.346'	Som
-2273	1341	11	42	0.9	Trakaskuilin	S33°0.563' E22°32.346'	Purple mottled
-2274	1340	20	42	1.3	Trakaskuilin	S33°0.563' E22°32.346'	Bada
-2279	1335	12	39	0.9	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2280	1334	11	26	1.2	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2281	1333	13	47	2.1	Trakaskuilin	S32°59.613' E22°32.417'	Som
-2282	1332	12	39	4.2	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2283	1331	20	34	6.3	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2294	1320	12	41	1.4	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2304	1308	12	36	0.8	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2305	1307	14	56	1.2	Trakaskuilin	S32°59.613' E22°32.417'	Bada

-2306	1306	20	37	4.6	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2311	1303	24	24	2.6	Trakaskuilin	S32°59.613' E22°32.417'	Purple mottled
-2322	1292	15	38	0.7	Trakaskuilin	S32°59.613' E22°32.417'	Purple mottled
-2323	1291	14	37	4.2	Trakaskuilin	S32°59.613' E22°32.417'	Purple mottled
-2324	1290	14	53	2	Trakaskuilin	S32°59.613' E22°32.417'	Purple mottled
-2327	1287	18	50	6.5	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2328	1286	17	42	2.5	Trakaskuilin	S32°59.613' E22°32.417'	Purple mottled
-2329	1285	21	50	5.6	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2332	1282	17	35	0.4	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2333	1281	13	51	15.2	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2334	1280	25	39	20.1	Trakaskuilin	S32°59.613' E22°32.417'	Bada
-2390	1224	20	38	0.3	Trakaskuilin	S33°1.106' E22°32.308'	Bada
-2391	1223	22	63	1.2	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2392	1222	17	48	1.8	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2397	1217	25	56	2.3	Trakaskuilin	S33°1.106' E22°32.308'	Som
-2398	1216	18	52	0.9	Trakaskuilin	S33°1.106' E22°32.308'	Som
-2399	1215	19	52	2	Trakaskuilin	S33°1.106' E22°32.308'	Som
-2400	1214	15	42	0.4	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2401	1213	13	36	0.8	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2402	1212	22	54	2.1	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2403	1211	16	46	1.3	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2404	1210	14	36	1.2	Trakaskuilin	S33°1.106' E22°32.308'	Purple mottled
-2408	1206	21	43	0.6	Trakaskuilin	S33°1.106' E22°32.308'	Bada
-2409	1205	21	42	0.4	Trakaskuilin	S33°1.106' E22°32.308'	Bada
-2490	1124	20	65	3.4	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2491	1123	20	60	2.1	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2492	1122	13	32	2.5	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2493	1121	12	44	3.1	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2498	1116	20	60	43	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2499	1115	16	59	0.6	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2504	1110	12	34	0.8	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2510	1104	17	63	1	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2511	1103	21	67	4.3	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2512	1102	12	34	0.4	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2513	1101	13	39	0.6	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2514	1100	12	52	4.6	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2515	1099	18	42	3.2	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2516	1098	19	41	1.8	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2517	1097	22	48	15.2	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2521	1093	16	42	1.1	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2522	1092	20	68	1.8	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2523	1091	23	54	2.5	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2524	1090	22	58	1.2	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2525	1089	21	40	0.6	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2529	1085	22	41	1.1	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2532	1082	32	64	2.5	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2535	1079	26	52	0.9	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2536	1078	21	56	1.3	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2537	1077	19	42	0.8	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2538	1076	15	38	2.1	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2544	1070	16	52	3.2	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2545	1069	17	63	1.5	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2546	1068	14	52	0.7	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2547	1067	29	41	1.1	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2548	1066	17	58	1.3	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2549	1065	14	37	1.8	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2556	1058	19	27	0.9	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2557	1057	13	37	1.5	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2558	1056	29	67	3.3	Trakaskuilin	S33°1.299' E22°32.291'	Bada
-2562	1052	18	34	6.3	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2563	1051	22	38	0.7	Trakaskuilin	S33°1.299' E22°32.291'	Purple mottled
-2564	1050	30	63	1.5	Trakaskuilin	S33°1.299' E22°32.291'	Bada



-2676	1038	24	45	3.4	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2577	1037	22	34	4.5	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2578	1036	20	18	1.1	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2580	1034	16	56	0.6	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2581	1033	18	52	0.8	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2582	1032	17	47	22.2	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2585	1029	13	37	0.5	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2586	1028	15	31	0.4	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2590	1024	19	58	0.7	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2591	1023	19	55	0.5	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2598	1016	19	63	7.5	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2599	1015	22	64	8.2	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2609	1005	24	44	5.1	Trakaskuilin	S33°3.191' E22°32.137'	Bada
-2634	980	18	56	2.5	Trakaskuilin	S33°2.555' E22°32.200'	Bada
-2647	967	21	41	2.3	Trakaskuilin	S33°2.336' E22°32.200'	Bada
-2648	966	19	36	1.2	Trakaskuilin	S33°2.336' E22°32.200'	Bada
-2649	965	15	45	1.8	Trakaskuilin	S33°2.336' E22°32.200'	Bada
-2651	963	15	26	3.2	Trakaskuilin	S33°2.336' E22°32.200'	Bada
-2653	961	18	42	1	Trakaskuilin	S33°2.336' E22°32.200'	Bada
-2654	960	21	51	0.6	Trakaskuilin	S33°2.336' E22°32.200'	Bada
-2693	921	18	56	3.2	Trakaskuilin	S33°2.976' E22°32.147'	Bada
-2694	920	21	46	2.5	Trakaskuilin	S33°2.976' E22°32.147'	Bada
-2743	871	24	47	6.2	Modderdrift	S33°3.505' E22°32.101'	Bada
-2744	870	24	49	2.3	Modderdrift	S33°3.505' E22°32.101'	Bada
-2748	866	29	41	1.1	Modderdrift	S33°3.505' E22°32.101'	Bada
-2749	865	19	32	2.3	Modderdrift	S33°3.505' E22°32.101'	Bada
-2751	863	22	44	1	Modderdrift	S33°3.505' E22°32.101'	Bada
-2752	862	24	53	1.3	Modderdrift	S33°3.505' E22°32.101'	Bada
-2754	860	16	64	4.2	Modderdrift	S33°3.505' E22°32.101'	Bada
-2769	845	22	42	2.5	Trakaskuilin	S33°2.156' E22°32.217'	Bada
-2770	844	18	44	7.6	Trakaskuilin	S33°2.156' E22°32.217'	Bada
-2788	826	22	39	4.2	Trakaskuilin	S33°2.156' E22°32.217'	Bada
-2802	812	14	44	0.4	Trakaskuilin	S33°2.156' E22°32.217'	Bada; base <i>Tapinocephalus</i> zone
-2803	811	16	36	0.6	Trakaskuilin	S33°2.156' E22°32.217'	Purple mottled
-2804	810	23	53	3.6	Trakaskuilin	S33°2.156' E22°32.217'	Bada
-2940	674	16	84	4.2	Modderdrift	S33°4.200' E22°32.052'	Bada
-2941	673	15	65	3.2	Modderdrift	S33°4.200' E22°32.052'	Bada
-2939	671	17	24	0.4	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2955	659	17	24	2	Modderdrift	S33°4.200' E22°32.052'	Bada
-2959	655	21	33	3.6	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2960	654	20	40	4.2	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2962	652	15	29	3.1	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2964	650	19	25	2.5	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2965	649	25	53	0.8	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2968	646	19	33	2.1	Modderdrift	S33°4.200' E22°32.052'	Purple mottled
-2969	645	16	46	2.4	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2971	643	27	37	1.3	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2973	641	18	21	0.4	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2974	640	19	31	0.3	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2976	638	23	55	1.8	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2979	635	22	43	2.1	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2985	629	26	40	0.9	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2988	626	27	53	0.5	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-2995	619	29	67	2	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-3002	612	32	66	1.5	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-3006	608	28	55	3.2	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-3008	606	24	49	0.8	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-3006	604	21	47	1.1	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-3002	600	28	46	2.5	Modderdrift	S33°4.200' E22°32.052'	purple mottled
-3167	447	26	42	1.2	Modderdrift	S33°4.419' E22°32.076'	purple mottled
-3172	442	23	44	0.4	Modderdrift	S33°4.419' E22°32.076'	purple mottled

-3170	440	23	36	0.5	Modderdrift	S33°4.419' E22°32.076'	purple mottled
-3174	434	28	38	3	Modderdrift	S33°4.419' E22°32.076'	purple mottled
-3175	433	31	46	2.1	Modderdrift	S33°4.419' E22°32.076'	Som
-3184	430	22	56	1.8	Modderdrift	S33°4.419' E22°32.076'	purple mottled
-3194	420	23	32	2.1	Modderdrift	S33°4.610' E22°32.015'	Bada
-3204	409	24	51	2.7	Modderdrift	S33°4.610' E22°32.015'	Bada
-3208	405	20	31	3.2	Modderdrift	S33°4.610' E22°32.015'	Bada
-3212	401	22	63	1.7	Modderdrift	S33°4.610' E22°32.015'	Bada
-3215	398	19	53	1.5	Modderdrift	S33°4.610' E22°32.015'	Bada
-3218	395	26	50	3.4	Modderdrift	S33°4.610' E22°32.015'	Bada
-3219	394	22	52	0.8	Modderdrift	S33°4.610' E22°32.015'	Bada
-3223	390	25	57	1	Modderdrift	S33°4.610' E22°32.015'	Bada
-3231	383	26	52	2	Modderdrift	S33°4.610' E22°32.015'	Bada
-3234	380	31	51	2	Modderdrift	S33°4.610' E22°32.015'	Bada
-3564	50	29	52	5	Modderdrift	S33°5.054' E22°31.983'	Bada
-3565	49	19	42	4	Modderdrift	S33°5.054' E22°31.983'	Bada; base <i>Eodicynodon</i> zone

*Note:* Only calcareous paleosols are listed here. There were numerous sandstone paleochannels, intervals of non-exposure and non-calcareous Inceptisols and Entisols in the intervals not reported above. Purple-mottled paleosols are a new pedotype comparable in color (dark reddish gray or 10R4/1), drab-haloed root-traces, and development to the Som pedotype, but without the continuous drab surface of that pedotype. Red-mottled paleosols are comparable to purple mottled but weak red (10R4/2). Deep purple paleosols are similar to purple mottled, but with a deeper (more than 40 cm) Bk horizon. Deep gray on purple paleosols are also comparable to Som, but with a deeper (more than 40 cm) Bk horizon. Gray on red paleosols are comparable to Som and Kuta, but with red subsurface horizon (weak red or 10R4/2) and shallow (less than 40 cm) Bk horizon. Thermally altered paleosols are black to dark gray and have nodules replaced and usually weathered out. The sequence of formations sampled includes the Abrahamskraal Formation, then the Poortje, Hoedemaker, Oukloof and Steenskampsvatke Members of the Teekloof Formation in the transect from Modderdrift to Beaufort West and in Teekloof Pass, and the Palingkloof Member of the Balfour Formation and then Katberg Formation in the sections at Lootsberg Pass, Carlton Heights and Bethulie. The biostratigraphic zones include *Eodicynodon*, *Tapinocephalus*, *Pristerognathus*, *Tropidostoma*, *Cisticephalus*, *Dicynodon* and *Lystrosaurus* zones.

Table 5. Point counted grain size data on Permian and Triassic paleosols of South Africa

Description	Hoz.	number	clay	silt	sand	gravel	texture
sandstone on Karie	-	R2754	40.8	32.0	27.2	0	clay
type Karie clay	A	R2755	42.4	32.6	23.6	1.4	clay
	Bw	R2756	39.8	35.0	22.8	2.4	clay loam
	Bw	R2757	34.6	39.4	25.0	1.0	clay loam
	Bk	R2758	40.4	34.4	25.2	0	clay
	C	R2759	25.2	46.2	28.6	0	loam
type Kuta loam	A	R2774	25.2	39.8	32.8	2.2	loam
(burrow)	A	R2775	23.0	41.4	35.6	0	loam
	Bw	R2776	34.6	36.2	29.2	0	clay loam
	Bw	R2777	25.8	35.2	29.4	9.6	loam
	Bk	R2778	27.2	39.6	30.4	2.8	clay loam
	C	R2779	15.4	32.4	51.4	0.4	sandy loam
type Bada clay loam	A	R2804	33.4	35.0	26.4	5.2	clay loam
	A	R2805	33.0	35.6	25.8	5.6	clay loam
	Bk	R2806	30.4	34.8	34.8	0	clay loam
	Bk	R2807	29.2	34.2	31.4	5.2	clay loam
	C	R2808	25.2	31.8	43.0	0	loam
type Patha silty clay loam	A	R2768	40.0	46.8	13.2	0	silty clay loam
	Bw	R2769	33.2	50.0	16.8	0	silty clay loam
	C	R2770	26.0	59.0	15.0	0	silt loam
	C	R2771	23.4	62.6	14.0	0	silt loam
type Barathi loam	A	R2772	25.4	49.4	25.2	0	loam
	C	R2773	19.4	52.2	28.4	0	silt loam
type Som loam	A	R2781	24.2	47.0	28.8	0	loam
	A	R2782	30.2	45.6	24.2	0	clay loam
	Bw	R2783	29.6	55.2	15.2	0	silty clay loam
	Bk	R2784	37.8	40.8	21.6	0	loam
	Bk	R2785	18.8	52.6	28.6	0	silt loam
type Zam loam	A	R2786	26.4	45.0	28.3	0	loam
	C	R2787	22.4	45.8	26.2	5.6	loam
type Hom sandy loam	A	R2794	8.8	30.4	60.8	0	sandy loam
	Bk	R2795	10.4	35.8	53.8	0	sandy loam
	Bk	R2796	6.4	38.0	55.6	0	sandy loam
type Du silt loam	A	R2797	14.0	32.8	53.2	0	silt loam
	C	R2798	22.4	51.6	26.0	0	silt loam
type Pawa clay loam	A	R2799	48.6	30.4	20.6	0.4	clay loam
	C	R2800	27.4	37.6	34.4	0.6	clay loam
sandstone on Sedibo	-	R2810	8.4	36.4	55.2	0	sandy loam
type Sedibo clay loam	A	R2812	38.6	34.6	24.4	2.4	clay loam
	Bw	R2813	40.6	41.4	18.0	0	clay
	Bw	R2814	31.0	38.4	29.8	0.8	clay loam
	Bk	R2815	27.2	44.0	28.8	0	clay loam
	C	R2816	22.0	55.6	22.4	0	silt loam
type Budi clay	A	R2817	42.4	34.4	23.2	0	clay
	C	R2818	34.8	49.8	15.4	0	silty clay loam
Patha clay	A	R2819	41.6	36.6	21.8	0	clay
	A	R2820	36.2	43.2	20.6	0	clay loam
	Bw	R2821	27.2	47.2	24.6	1.0	clay loam
	C	R2822	27.8	51.6	20.2	0.4	silty clay loam
Wapadsberg breccia	-	R2748	30.8	29.0	25.2	15.0	clay loam
Bethulie breccia	-	R2823	28.6	30.2	24.0	17.2	clay loam

Note: These 500 point counts are by Retallack using a Swift Automatic Point counter.

Table 6. Point-counted petrographic data on Permian-Triassic paleosols

Description	hoz	number	clay	cal- cite	maf- ic	musc- ovite	feld- spar	Rock frag- ment	shard- like quartz	quartz	opa- que
sandstone on Karie	-	R2754	39.0	0	0.8	2.0	28.6	9.2	1.4	14.8	4.2
type Karie clay	A	R2755	40.2	2.8	1.6	1.2	25.8	6.6	0.8	18.2	2.8
	Bw	R2756	40.6	0.4	1.0	2.6	28.2	7.8	1.2	17.0	1.2
	Bw	R2757	36.4	0	1.4	1.0	28.8	10.0	1.4	18.6	2.4
	Bk	R2758	39.4	20.0	3.0	0.4	20.4	3.6	0.8	5.0	7.4
	C	R2759	26.4	10.2	2.2	1.0	22.4	14.0	0.4	17.4	6.0
type Kuta loam	A	R2774	26.8	0	1.6	2.2	28.4	14.0	0.8	22.0	4.2
(burrow)	A	R2775	26.0	0	1.6	0.8	21.2	28.4	1.2	17.2	3.6
	Bw	R2776	35.8	0	1.4	2.2	20.6	13.8	1.4	21.6	3.2
	Bw	R2777	25.0	0	1.8	1.2	27.0	17.2	0.0	25.0	2.8
	Bk	R2778	25.6	14.4	1.6	0.2	22.4	9.0	0.6	21.8	4.4
	C	R2779	14.6	9.2	2.2	0.2	17.4	19.6	0.4	32.0	4.4
type Bada clay loam	A	R2804	31.0	0	1.8	0	27.8	17.0	0.2	20.8	1.4
	A	R2805	33.8	1.4	1.4	3.4	24.2	19.2	1.8	13.0	1.8
	Bk	R2806	33.2	2.6	2.6	1.8	22.6	14.2	2.0	20.4	0.6
	Bk	R2807	28.6	5.2	1.4	3.2	25.4	10.8	1.2	21.6	2.6
	C	R2808	27.4	1.6	1.6	3.4	25.6	11.8	1.4	25.4	1.8
type Patha s.cl. I.	A	R2768	38.4	0	1.4	1.6	26.0	10.0	2.4	16.2	4.0
	Bw	R2769	34.6	0.2	1.8	1.0	26.0	10.0	3.8	18.8	3.8
	C	R2770	27.6	0	0.8	1.6	30.4	19.0	1.4	14.6	4.6
	C	R2771	25.0	0	1.4	2.8	27.6	20.4	2.6	15.8	4.4
type Barathi loam	A	R2772	25.0	0	1.2	1.4	32.8	13.4	1.4	21.6	3.2
	C	R2773	21.6	0	1.4	1.2	21.4	22.2	1.2	28.2	2.8
type Som loam	A	R2781	26.4	0	2.2	1.6	28.8	6.8	1.2	24.6	8.4
	A	R2782	29.2	0	1.4	1.0	25.4	11.4	1.6	24.6	5.4
	Bw	R2783	30.8	0.4	0.2	3.4	27.6	8.4	1.8	25.2	2.2
	Bk	R2784	38.0	0	0.6	6.0	27.2	6.0	1.6	17.2	3.4
	Bk	R2785	20.6	0	2.0	1.0	26.8	15.8	1.6	27.6	4.6
type Zam loam	A	R2786	26.6	0	0.2	3.2	24.6	10.0	0.8	28.0	6.6
	C	R2787	23.6	0	1.4	1.8	28.4	13.0	1.2	27.6	3.0
type Hom san. loam	A	R2794	10.4	0	1.0	0.8	19.8	16.6	1.2	46.6	3.6
	Bk	R2795	9.0	0	1.8	1.8	24.6	16.4	0.6	42.0	3.0
	Bk	R2796	8.4	0	0.8	0.8	35.2	11.2	0.8	40.4	2.2
type Du silt loam	A	R2797	15.4	0	0.8	1.2	21.6	16.6	2.2	37.2	5.0
	C	R2798	22.2	0.8	0.2	1.8	22.2	19.0	2.6	28.2	3.0
type Pawa cl. loam	A	R2799	46.2	0	1.4	2.4	24.0	1.2	1.4	21.2	2.4
	C	R2800	25.6	0	1.0	2.4	24.2	13.2	2.6	28.4	2.6
sandst. on Sedibo	-	R2810	8.8	0	2.6	1.2	20.6	24.8	2.0	37.0	3.0
type Sedibo cl. loam	A	R2812	39.0	3.0	0.4	0	20.4	12.0	0.2	22.2	2.8
	Bw	R2813	38.6	5.8	2.6	1.8	24.4	3.2	2.6	17.6	3.4
	Bw	R2814	34.4	0.4	2.4	1.6	29.2	4.6	3.0	21.4	3/0
	Bk	R2815	25.4	35.4	2.0	0	10.2	12.2	0	9.6	5.2
	C	R2816	23.6	9.0	2.4	0	17.8	26.4	0.6	16.6	3.6
type Budi clay	A	R2817	41.8	1.8	0.4	1.0	21.8	10.0	2.0	17.0	4.2
	C	R2818	34.0	0	1.2	0.4	26.6	11.0	1.2	22.6	3.0
Patha clay	A	R2819	39.6	0	1.2	0.4	22.4	13.6	1.2	18.8	2.8
	A	R2820	36.6	2.8	1.6	1.2	28.6	8.0	1.2	19.0	1.0
	Bw	R2821	27.6	2.2	1.4	1.6	25.8	16.0	0.8	20.2	4.4
	C	R2822	29.4	0	1.2	1.2	27.6	12.8	2.2	20.6	5.0
Wapadsberg brecc.	-	R2748	29.0	0.6	0.4	1.0	24.4	16.2	0.6	24.2	3.6
Bethulie breccia	-	R2823	26.6	2.8	0.4	1.0	25.6	16.6	0.6	22.2	4.2

Note: These 500 point counts are by Retallack using a Swift Automatic Point counter

Table 7. Major element geochemical data and bulk density of Permian-Triassic paleosols of South Africa

pale.	hz.	#	SiO <sub>2</sub>	TiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	FeO	MnO	MgO	CaO	Na <sub>2</sub> O	K <sub>2</sub> O	P <sub>2</sub> O <sub>5</sub>	LOI	Total
sstne		R2754	66.33	0.62	14.63	3.72	1.77	0.08	1.18	3.21	2.44	3.05	0.34	3.73	99.46
Karie	A	R2755	68.07	0.65	15.05	4.03	1.48	0.04	1.14	2.13	2.51	3.20	0.32	2.80	100.08
	Bw	R2756	67.95	0.68	15.11	4.27	1.35	0.04	1.20	1.62	2.48	3.25	0.20	2.55	99.5
	Bw	R2757	67.89	0.69	14.94	4.45	1.42	0.04	1.29	1.63	2.37	3.24	0.25	2.62	99.56
	Bk	R2758	66.93	0.62	14.34	3.66	1.16	0.12	1.10	3.60	2.55	2.74	0.21	3.71	99.71
	C	R2759	63.18	0.53	13.07	2.9	1.16	0.21	0.98	7.42	2.6	2.23	0.19	6.51	99.97
Kuta	A	R2774	66.92	0.68	15.57	4.67	1.03	0.04	1.08	1.15	2.35	3.45	0.18	3.08	99.34
	A	R2775	70.45	0.57	14.57	3.44	1.54	0.04	1.08	1.34	2.99	2.75	0.16	2.24	99.82
	Bw	R2776	68.18	0.62	15.03	4.31	1.48	0.05	1.20	1.13	2.52	3.15	0.17	2.59	99.11
	Bw	R2777	67.96	0.63	15.05	4.55	1.67	0.04	1.22	1.20	2.45	3.22	0.17	2.58	99.23
	Bk	R2778	35.41	0.29	7.44	1.79	0.9	1.39	0.65	26.81	1.49	1.45	0.13	22.28	99.2
	C	R2779	67.65	0.70	14.92	4.34	1.22	0.13	1.05	1.75	2.48	3.04	0.19	3.02	99.44
Bada	A	R2804	65.91	0.57	14.96	4.13	2.89	0.07	1.40	2.64	2.30	3.56	0.14	3.62	99.44
	A	R2805	65.45	0.58	14.83	4.33	2.89	0.06	1.47	2.56	2.36	3.4	0.15	3.61	98.96
	Bk	R2806	69.29	0.55	14.8	3.59	2.38	0.05	1.27	1.81	2.59	3.31	0.13	2.89	100.43
	Bk	R2807	68.06	0.60	14.97	4.08	2.83	0.05	1.44	1.75	2.47	3.18	0.14	3.00	99.89
	C	R2808	69.91	0.49	13.71	2.96	1.99	0.07	1.08	2.51	2.69	3.04	0.13	3.03	99.77
error		-	0.10	0.02	0.09	0.05	-	<.01	0.02	0.01	0.03	0.01	<0.01	0.09	0.14

*Note:* Analyses by Bondar Clegg Canada Ltd using XRF and potassium dichromate titration for FeO, with errors 1 standard deviation of 4 analyses of CANMET STSD-2.

Table 8 Trace element composition and bulk density of Permian and Triassic paleosols of South Africa.

paleosol	horizon	Number	Ba	Sr	Y	Nb	Zr	Rb	g.cm-1
sstne		R2754	533	312	34	13	269	146	2.74
Karie	A	R2755	545	320	32	10	317	159	2.73
	Bw	R2756	559	310	38	15	328	162	2.74
	Bw	R2757	549	284	32	12	313	173	2.71
	Bk	R2758	519	346	34	10	317	138	2.71
Kuta	C	R2759	425	388	29	8	221	113	2.73
	A	R2774	888	254	37	16	297	173	2.63
	A	R2775	768	389	35	15	294	151	2.67
	Bw	R2776	819	281	36	8	253	157	2.69
	Bw	R2777	740	273	35	13	269	161	2.72
	Bk	R2778	253	273	34	-5	116	53	2.74
	C	R2779	763	258	35	11	406	153	2.59
Bada	A	R2804	699	364	34	17	221	178	2.71
	A	R2805	731	377	35	15	216	172	2.67
	Bk	R2806	658	400	32	15	238	180	2.68
	Bk	R2807	640	370	33	13	247	157	2.70
	C	R2808	732	444	29	13	233	158	2.68
	error	-	5	2	2	3	3	3	0.04

*Note:* Analyses by Bondar Clegg Canada Ltd using XRF, with errors 1 standard deviation of 4 analyses of CANMET STSD-2. Bulk densities by Nathan Sheldon used clod method and 10 replicates for error.

Table 9. Molecular weathering ratios of Permian and Triassic paleosols of South Africa

	#	Barium/ strontium	Base/ alumina	alumina/ silica	lime+ magnesia/ alumina	ferrous/ ferric iron	soda/ potash	CIA	CIA-K
sstne	R2754	1.089846	1.102889	0.129989	0.602878	2.017515	1.215876	47.55362	53.26970
Karie	A R2755	1.086523	0.953360	0.130303	0.448863	1.290030	1.192129	51.19385	58.03091
	Bw R2756	1.150383	0.898565	0.131053	0.395756	1.027612	1.159759	52.67136	60.03276
	Bw R2757	1.233237	0.912404	0.129693	0.416710	1.041655	1.111739	52.29022	59.60644
	Bk R2758	0.956938	1.149753	0.126270	0.650409	1.031326	1.414454	46.51698	51.46843
	C R2759	0.698795	1.733699	0.121918	1.221777	1.481791	1.772017	36.58047	39.23070
Kuta	A R2774	2.230344	0.797814	0.137121	0.309692	0.628947	1.035257	55.62310	64.18563
	A R2775	1.259517	0.896539	0.121885	0.354657	1.801546	1.652486	52.72762	59.09303
	Bw R2776	1.859388	0.841251	0.129920	0.338589	1.162394	1.215876	54.31090	61.94231
	Bw R2777	1.729265	0.849333	0.130514	0.349956	1.288849	1.156404	54.07355	61.81408
	Bk R2778	0.591222	7.312901	0.123828	6.772502	2.247660	1.561772	12.02949	12.34270
	C R2779	1.886676	0.885192	0.129979	0.391214	0.869127	1.239874	53.04501	60.07256
Bada	A R2804	1.225091	1.067980	0.133768	0.557494	5.180293	0.981922	48.35637	55.23615
	A R2805	1.236997	1.074448	0.133538	0.564509	4.460808	1.054951	48.20559	54.75561
	Bk R2806	1.049442	0.969302	0.125882	0.439347	4.371895	1.189244	50.77941	57.89618
	Bk R2807	1.103496	0.957138	0.129629	0.455787	5.032161	1.180509	51.09501	57.89669
	C R2808	1.051770	1.094832	0.115577	0.532060	4.559944	1.344863	47.73652	53.91329

*Note:* These molecular or molar weathering ratios are calculated from analyses given in Table 7. CIA is chemical index of alteration (100 times molar ratio of alumina/alumina+lime+soda+potash) and CIA-K is chemical index of alteration without potassium.