

THE FERTILIZERS ACT AND "IDEAL GRASS MANURE."

At the Magistrate's Court, Auckland, on 18th July last, Frank M. Winstone was charged with having sold a fertilizer (Ideal Grass Manure*) the analysis of which was at variance with the invoice certificate, to the prejudice of the purchaser. The information was laid on behalf of the Department of Agriculture, whose Inspector had taken the samples under the Fertilizers Act. The analysis made by the Department had disclosed a deficiency in soluble nitrogen to the extent of 0.40 per cent. out of 0.60 per cent., and 0.93 per cent. out of 2 per cent. insoluble nitrogen, supposed to be present, or 48 per cent. less than the guarantee of total nitrogen. The evidence showed that at least eight bags of the manure were sampled, and in each case the samples were taken from various portions of the contents so as to secure a fair average.

The defendant, while admitting the offence under the Act, maintained that the bulk was not deficient in the guaranteed quantity of nitrogen. He stated that at the time of the last registration the nitrogenous element was supplied by animal nitrogenous manure capable of being reduced to a fine powder. Owing to shortage in this ingredient it had later been necessary to use nitrate of soda. This was in crystal form and did not crush and mix readily with the other ingredients.

The Magistrate said he was prepared to deal with the offence as a case of an invoice made without knowledge that the goods did not comply with the certificate, but there was an obligation on the part of the vendor to make sure that the mixture was correct, the matter being a serious one for farmers. The defendant was convicted and fined £5, with costs £1 8s.

Although the point of deficiency in *insoluble* nitrogen (0.85 per cent.) was not specially referred to in the Court proceedings, it should be clearly understood that the stated imperfect mixing of the nitrate of soda does not account for such deficiency, the nitrogen in nitrate of soda being wholly soluble.

*The minimum composition of Ideal Grass Manure, as guaranteed by the vendor, and registered under the Fertilizers Act for the year 1919-20, was as follows: Nitrogen—soluble 0.60 per cent.; insoluble 2 per cent.; phosphoric acid—soluble 14, insoluble 17.84 per cent.; potash, 14. See Serial No. 193. In list of fertilizers published in *Journal* for July, 1919, page 45.

LAND FOR RETURNED SOLDIERS.

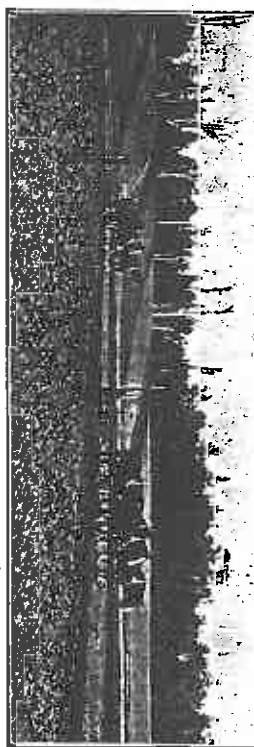
During the month of July an area of 18,028 acres was made available for selection by discharged soldiers. This area was subdivided into thirty-nine holdings, and mainly consisted of good dairy and grazing country. One pastoral holding of 3,500 acres is included in the area.

During the month of August a total area of 60,545 acres is available for selection, and is subdivided into 151 holdings. Included in this area are three small grazing-runs of a total area of 5,645 acres, situated in the Nelson Land District. Several large blocks of Crown land in the Auckland Land District are made available; the areas of these sections range from 114 acres to 2,872 acres.

In the Auckland District, Orongo and Selwyn Settlements, containing a total of 756 acres, situated on the Waihou River and at Lichfield respectively, will be opened on the 17th September. Linkwaterdale Settlement, of 450 acres, in the Marlborough District, is to be opened on 7th September.

The principal blocks of Crown land to be opened in September are 2,857 acres situated near Owahango, in the Wellington Land District, consisting of partly cleared heavy-bush land, and 2,649 acres near Murchison, in the Nelson District, consisting of heavy-bush land.

Unidentified Subscription.—A 2s. 6d. postal note, No. 666901, issued at Manukau on 5th August, 1920, together with 1s. 6d. in stamps, have been received without letter of advice. The sender should communicate name and address.



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SOILS OF THE MANAWATU DISTRICT.

PART III. THE LOAMS AND OTAKI SANDS.

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IN Part I of these articles the recent dune-sands, consisting almost wholly of mineral matter and crystalloid in character, were described, and in Part II an account was given of the humus soils, formed almost wholly of organic matter and chiefly colloidal in character. In this part it is intended to deal with the loams, which do not suffer from the conspicuous defects of the previous types and therefore represent the most valuable soils of the area, and the older dune-sands named by Dr. Cotton the "Otaki sand series," which have been so altered in character and surroundings that they do not offer the same difficulties in treatment which the recent dunes do in conversion to pasture or arable land.

Owing to the large amount of space which a presentation of the analytical evidence entails this article will be restricted to a description of the types dealt with, leaving to a later date the full consideration of the data which are here collated. No difficulty was experienced in separating the previous types dealt with. A hand-and-eye examination of the most superficial character is sufficient to separate

the dune-sands from the peats, or to say whether they have been mixed. When dealing with the loams it will be necessary to exercise much more caution, for they may merge into the humus soils, the sandy soils, or the clay soils—or would do so if any such be present. In no soil, however, was an amount of clay found which would entitle a sample to be called a clay soil, although perhaps some of the subsoils might merge into clays. Exactly how to classify the soils treated of in this article can be determined only by a careful mechanical separation of the constituent particles into different grades of fineness by means of sieves and settlement in a column of water, and by determining the relative amounts of the differently sized particles present. In this way it has been possible to classify the loams in the following classes and groups:—

Silt Loams, Group 1.—This contains the heaviest type of soil met with in the district, the samples being all similar in the proportion of the different kinds of sediments present. The silts vary from 48 to 52 per cent., the sands from 25 to 27 per cent., and the clay from 10 to 16 per cent. Coarse sand is never present in amounts higher than 4 per cent. Much of the land bordering the Manawatu River is this class of country, and the material may have been largely derived from the eastern or Wairarapa side of the Tararua Range. Chemically, all the soils of the type examined in the vicinity of this river were, with the exception of a forest soil, found to be deficient in available and total phosphoric acid, but the potash was present in quantity. The hillside soils of Waikanae suffer from the same defect—want of phosphates. The Paekakariki soils of this type are, however, well provided with phosphate and carbonate of lime.

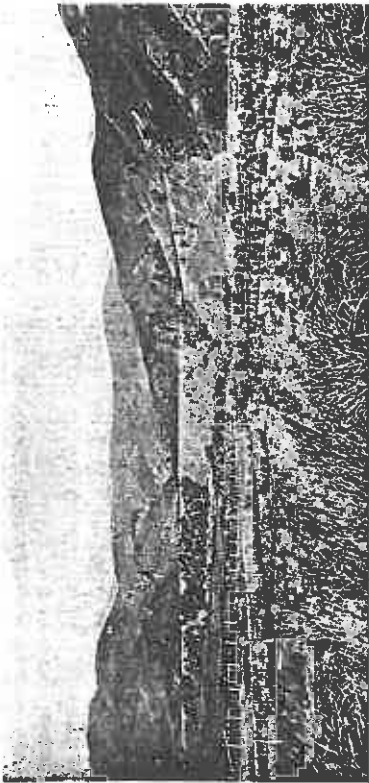
Silt Loams, Group 2.—The soils of this group are closely related to those of Group 1, but contain less of the silt fraction and more coarse sand and clay. Generally speaking, they are richer in available plant-food.

Sandy Loams.—As the title denotes, these soils contain a higher proportion of sand, the coarse sand varying from 4 to 33 per cent., the total sands being from 45 to 53 per cent., and the percentage of silts about 25 per cent., while the clay is about 10 per cent. Chemically they are all, except one or two, deficient in available and total phosphoric acid, but are well supplied with total and available potash. Those which owe their sandy nature to an admixture of the Otaki sandstone are invariably deficient in phosphates.

Otaki Sands.—These soils are the easiest type to define of those dealt with in this article. They are derived from the old Otaki sandstone, first described and named by Dr. Cotton, and are distinguished by containing a large amount of coarse sand—from 30 to 40 per cent.—the total fine and coarse sand making the greatest proportion of the soil—roughly 60 to 70 per cent.—and with very small quantities of silt and clay. Chemically they are deficient in both available and total phosphoric acid, but well supplied with potash.

NOTES ON SOILS ANALYSED (SEE TABLES).

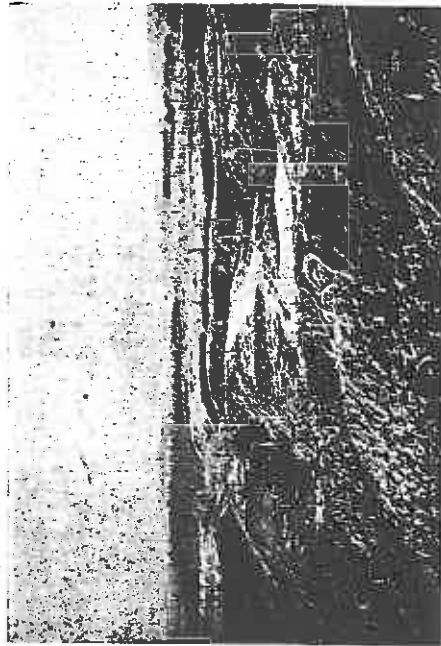
K 265. — Collected (24/8/18) on Arapaepae Road, Kimberley, Block V, Section 14, Waiopetu Survey District (Buller Estate). Greywacke detritus on Otaki sandstone. Down in pasture.



VIEW AT PAEKAKARIKI, LOOKING INLAND FROM DIRECTION OF MODERN FIXED SAND-DUNES.

In background the Tararua Mountains, which contribute the hillside soils, and the fan-lands in middle ground, eroded by sea-action into cliffs. In foreground is a marine plain and ancient swamp from which samples L. 419, 420, 422, and 424 were collected.

[Photo, C. A. Cotton.]



AREA OF OTAKI SANDSTONE (ANCIENT DUNE) COUNTRY AT SHANNON.

This area is much eroded by streams, but capable of supporting forest, as shown by the stumps. Now in surface-sown pasture. Representative of samples K 375, K 492, and L. 430.

[Photo, G. L. Adkin.]

K 268.—Collected (24/8/18) on Block V, Section 38, Waiopehu S.D., from pasture land adjoining Ohau Bridge, near Rolleston's Creamery, 35 ft. to 40 ft. below the level of the previous terrace, on land originally formed by the Ohau River. This is a flat terrace carrying good pasture, with many stumps of black-pine still remaining, denoting rich soil. Much timothy and white clover present. This is typical of much of the newer river-terrace land of the Manawatu district on which dairying is carried on.

K 269a.—Collected (24/8/18) on Waiopehu Native Reserve, in a gravel flood-plain of the Ohau River. Taken to a depth of 4 in. to 10 in.; a shallow soil on gravel. Totara the dominant forest-tree, with underscrub of *Melicope simplex*, mahoe, hinau, *Myrsine Urvilleanii*, *Ptilosporum tenuifolium*, *Myrsine salicina*, and manuka. Rape and turnips do well on this land where deep enough to plough.

K 270.—Collected (24/8/18) at Ohau Village, Block V, Section 14, Waiopehu S.D. Unploughed land on greywacke detritus on Otaki sandstone. Pasture: cocksfoot and rye-grass now deteriorating or "going out." Similar in character to K 265.

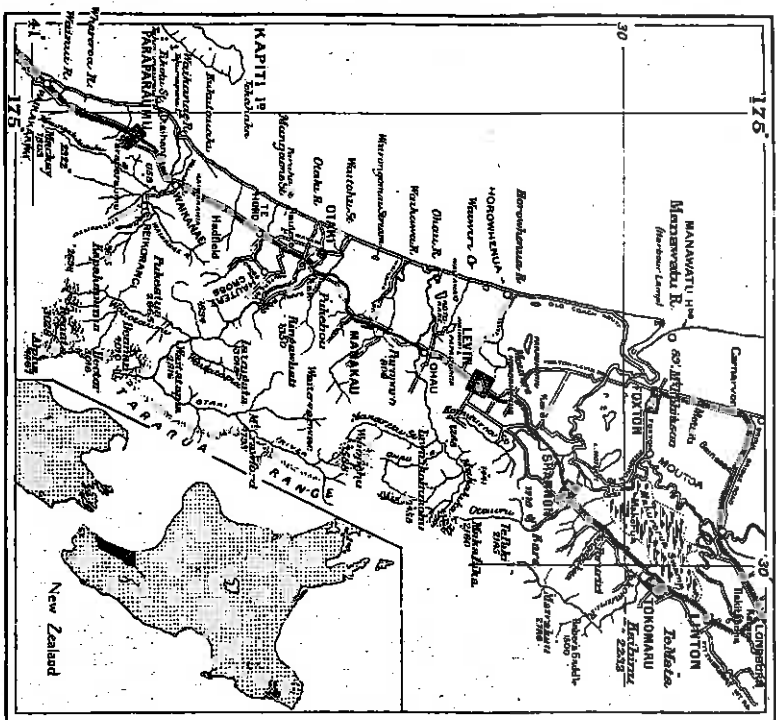
K 272a.—Collected (24/8/18) on Arapaepae Road, between Kimberley and Levin, Block I, Section 4, Waiopehu S.D. Unploughed rough stump country, with a pasture of cocksfoot and rye-grass, now going out and reverting to *Danthonia pilosa* and *Poa pratensis*. Suckling-clover is common, and moss is abundant. This area is typical of a large area of Manawatu country—very flat, and resting on a gravel subsoil. The original forest-trees were tawa and totara, with lesser forest of titoki, mahoe, and rewarewa (*Kaigialia*). Soil stony and subsoil gravelly.

K 273.—Collected (24/8/18) on top of terrace, 215 ft. above sea-level, near hills, Block XIV, Section II, Mount Robinson S.D. This terrace is on Otaki sandstone, but being nearer the Tararua foothills the greywacke detritus is very deep, and it was not found possible to reach the sandstone with the sampler, although the sandstone is well shown in a road-cutting leading to the top of the terrace. Sample taken from Tully's Farm, on the top of the terrace, consisting of some of the finest rye pasture in the district, with a high white-clover content. The pasture has been down fourteen years, and its excellent state is perhaps in part due to its being used for fattening store cattle rather than for dairying, for which latter it is suitable, and which would have resulted in a greater draft on the soil-phosphates. Forest originally tawa chiefly, with occasional pukatea, except in the swampy hollows, where it was more abundant. The underscrub was mahoe, *Hedycahya*, *Pennantia*, and much supplejack, which latter is usually regarded as an indication of good soil. The highly lime-content when compared with surrounding soils will be noticed.

K 277.—Collected (25/8/18) on Block XIII, Section 2, Mount Robinson S.D., Foxton Road, on Otaki sandstone, 300 ft. above sea-level. Land opposite Levin golf-links, undulating, dissected by square-sided gullies, down in pasture many years but never ploughed; no sign of stumps. Pasture consists of crested dogstail, rye-grass, white clover, and Yorkshire fog, with hummocks of *Danthonia pilosa*. Many weeds present, chiefly *Kamniculus parviflorus*, and rushes (*Juncus effusus*) plentiful. Originally forest, as in K 273.

K 280.—Collected (25/8/18) on Block XIII, Mount Robinson S.D., Native reserve. This sample was taken in similar country to last in an area nearer the junction of the Otaki sandstone with the recent blown sand from the coast—a grassed paddock which has been ploughed.

K 372.—Collected (21/9/18) in land near Otaki Railway-bridge, on a gravel flat supporting a light scrubby vegetation. The dominant shrubs



MAP OF DISTRICT DEALT WITH IN THIS SERIES OF ARTICLES.
Scale, 10 miles to the inch. Inset map shows relative locality.

are titoki and *Melicope simplex*, but also present are *Podocarpus totara*, which may have been more plentiful in the past (being removed for fencing), *Myrsine Urvilleanii*, *Olea Cunninghamhamii* (maire), *Melicope ramiflora*, *Myrsine obovata*, with occasionally a stunted rimu or matai. The sward of native grass in the interspaces is chiefly composed of *Microlema stipoides* (New Zealand rice-grass). Other plants present were *Muehlenbeckia australis*, *Paspalum tetrandrum*, *Asclepias Solandrii*, *Asplenium flaccidum*, *Larrea micromala*, *Pseudopanax crassifolium*,

Dodonaea, Corýline australis, Ptilosporum eugenioides, Coprosma crassifolia, Rubus australis. Block IX, Section 9, Waitohu S.D.

K 373.—Collected (21/9/18) at Pahiku, on Te Waka Road, Block VIII, Waitohu S.D., on Otaki sandstone. This road runs along the edge of a scarp of Otaki sandstone. The soil rests directly on the sandstone as a subsoil. The soil is low in available and total phosphoric acid. This land grows lucerne well, indicating that phosphoric acid is not so necessary for this crop.

K 375.—Collected (21/9/18) at Pahiku, Te Waka Road, Waitohu S.D. Taken on portion of paddock where Otaki sandstone comes to the surface and forms the soil itself.

K 380.—Collected (21/9/18) on Block V, Kaitawa S.D., from fan-land, Waikanae; compound of recent shingle and detritus. Fans similar in slope to that on which Duncan's stud farm rests (situated about one mile north of the railway-station). Very stony land. Soil taken in many places from 2 in. to 7 in. deep. Now down in good English grasses, spotted medick, &c. Formerly covered with "coastal" forest, kohekohe (*Dysoxylum*) being the dominant tree.

K 387.—Collected (23/9/18) in the Esplanade Gardens, Palmerston North, in virgin forest of tawa, pukatea, and white-pine, with small forest and underscrub of titoki, kawakawa (*Piper*), lacebark (*Hoheria lanceolata*), *Schefflera*, mahoe, *Coprosma grandifolia*, *C. robusta*, wineberry, *Gemstoma*, *Aristotelia racemosa*, *Hedyocarya*, ferns, and epiphytes, the characteristic habitat of *Adiantum formosum*, which is abundant here. This terrace land on the banks of the Manawatu River must be accounted a rich soil, and is typical of much of the terrace land near Palmerston North.

K 389.—Collected (23/9/18) on high terrace land about 100 ft. above level of Palmerston North, south bank of Manawatu River, Main South Road, three miles from Palmerston. This is heavy land which previously supported tall forest, as shown by the stumps, which now persist on the surface-sown pasture. Pasture poor, becoming invaded by rushes and moss.

K 391.—For full particulars see previous article in last month's *Journal*, p. 63.

K 395.—Collected (23/9/18) in pasture above Otaki sandstone, four miles from Palmerston North, near Tokomaru.

K 401.—Collected (23/9/18) in pasture near Koputaroa.

K 403.—Collected (23/9/18) in forest near Manakau, consisting of tawa, pukatea, and some rimu, with underscrub of mahoe, hinau, kohekohe, *Schefflera*, *Hedyocarya*, *Gemstoma*, fuchsia, *Solanum aviculare*, ferns, lianes, and epiphytes.

K 488, &c.—These are ten samples of soil taken (3/1/19) from the different paddocks of the Central Development Farm, Weraoa, for the purpose of making an intensive study of the farm soils. The averages are here given as sufficient for the purposes of this article. The soils varied little in composition, and the paddocks have all been cultivated and manured, and have been used chiefly for dairy-farming for a number of years. The original vegetation was tawa forest.

K 491.—Collected (30/12/18) on Heights Road, at 650 ft., in poor pasture which has reverted to danthonia. Greywacke hillside soil.

K 492.—Collected (30/12/18) on Heights Road, at 350 ft., in Otaki sandstone. The similarity of this soil to that taken near sea-level on the same sandstone (see K 375) is remarkable.

L 419.—Collected (19/9/19) on greywacke hillside with gentle slope, at Paekakariki (Lynch's). Subsoil, greywacke gravel. Pasture contains many rushes.

L 420.—Collected (20/9/19) in paddock on west side of railway-line, north of Paekakariki Railway-station, on flat growing excellent ryeclover pasture—on site of old swamp containing a few stumps. Pasture a close sward.

L 422.—Collected (20/9/19) on flat near Paekakariki, on pasture. Soil probably derived from both dune-sand and hillside detritus.

L 424.—Collected (20/9/19) in long flat paddock of arable land on McKay's Farm, Paekakariki. Down in Western Wolth's ryegrass; previous to this turnups, which had been fed off.

L 426.—Collected (20/9/19) on flat area of mixed dune-sand and hillside detritus on McKay's land, Paekakariki. From the stumps extracted, was probably in the past a swampy forest; now highly farmed land.

L 431.—Collected (20/9/19) in dense forest (Hadfield's) at Pararaumu. Forest of kohekohe, pukatea, and tawa, with underscrub of nikau-palm, kiekie (*Freyinetia*), kawakawa, climbing-ratas, *Mitella tenbeckia australis*, mahoe, supplejacks, *Parsonsia*, *Gemstoma*, rewera, "lawyer," ngalo, and titoki.

L 435.—Collected (20/9/19) on hillside, Waikanac Forest: kohekohe, tawa, with underscrub similar to that of L 431, but subsoil stony.

L 436.—Collected (20/9/19) in kohekohe-pukatea forest, on Otaki sandstone, Waikanae.

L 438.—Collected (20/9/19) in hillside mahoe forest, Waikanae, in very stony soil with bare floor. Other trees, &c.: kohekohe, tawa, titoki, rimu, nikau, *Hedyocarya*, pukatea, kiekie, tree-ferns, and mixed shrubs. Gravel subsoil.

L 443.—Collected (21/9/19) on terrace above Otaki Township, near Waitahou Valley Road, in tawa-pukatea forest, with usual underscrub.

L 445.—Collected (22/9/19) in manuka-clad terrace near the Ravenswood Cheese-factory. Vegetation consists of manuka (*Leptospermum scoparium*), with much moss and a little poor pasture in interspaces. Only other scrubs, *Coprosma robusta*, *C. propinqua*, *C. areolata*, and *Olearia virgata*, which all occur sparingly in the manuka scrub.

L 499.—Collected (5/10/19) in hillside forest, Waikanae, in kohekohe-pukatea-tawa forest, with usual underscrub, at elevation of 250 ft. Tatton Fraser's property.

L 501.—Collected (5/10/19) in upland pasture (largely danthonia), Waikanae. In similar position to L 499, Tatton Fraser's Farm. This area is very similar to a large area of far-land, including the well-known Gear Estate. Originally covered with coastal forest.

L 503.—Collected (5/10/19) on same hillside, lower down. This pasture—English grasses and clovers—has been down thirty-five years, and is at present in excellent condition.

Results are percentages on air-dried soil.

Lab. No.	Description of Soil (Classification of U.S. Department of Agriculture, modified.)	Analysis of "Fine Earth" passing 2 mm. Sieve.					Stones and Gravel.
		Coarse Sand.	Silt.	Fine Silt.	Clay.	Moisture and Loss on Ignition.	
K 387	Silt loam	23.5	38.7	15.5	11.7	16.0	..
K 389	Silt loam	27.9	40.7	15.4	12.5	10.4	..
K 391	Silt loam	26.1	37.7	14.7	10.3	12.3	2.1
K 395	Silt loam	36.0	30.4	11.2	11.8	10.6	10.7
K 400	Silt loam	30.9	32.7	10.0	10.6	16.4	4.3
L 420	Silt loam	13.2	30.8	10.3	16.0	21.5	..
L 442	Silt loam	21.1	37.3	6.3	19.5	16.0	..
L 443	Silt loam	23.4	34.3	12.4	10.7	14.6	..
L 503	Silt loam	27.1	26.9	11.0	12.2	11.9	..
K 388	Subsoil of K 387: Sandy loam	43.8	26.7	11.6	10.7	11.9	..
K 390	Subsoil of K 388: Silt loam	31.4	34.8	11.0	15.0	8.5	..
K 396	Subsoil of K 393: Silt loam	34.7	31.5	12.1	15.8	7.4	20.0
K 402	Subsoil of K 401: Silt loam	29.2	33.6	11.6	15.8	10.8	..
K 412	Subsoil of L 420: Silt loam	17.8	32.6	14.4	23.3	14.9	..
L 435	Subsoil of L 443: Silt loam	18.9	26.3	12.9	28.0	14.8	..
L 446	Subsoil of L 443: Silt loam	31.6	31.7	11.9	15.4	11.6	..
L 502	Subsoil of L 501: Silt loam	27.2	35.2	12.2	15.7	11.6	..
K 384	Silt loam	22.6	28.9	12.8	12.2	11.2	..
K 385	Silt loam	22.6	23.5	10.9	11.7	17.2	..
K 274	Silt loam	20.2	25.6	10.0	11.0	31.7	..
K 275	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 276	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 277	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 278	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 279	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 280	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 281	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 282	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 283	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 284	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 285	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 286	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 287	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 288	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 289	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 290	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 291	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 292	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 293	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 294	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 295	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 296	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 297	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 298	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 299	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 300	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 301	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 302	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 303	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 304	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 305	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 306	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 307	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 308	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 309	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 310	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 311	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 312	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 313	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 314	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 315	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 316	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 317	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 318	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 319	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 320	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 321	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 322	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 323	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 324	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 325	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 326	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 327	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 328	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 329	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 330	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 331	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 332	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 333	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 334	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 335	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 336	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 337	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 338	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 339	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 340	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 341	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 342	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 343	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 344	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 345	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 346	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 347	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 348	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 349	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 350	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 351	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 352	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 353	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 354	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 355	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 356	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 357	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 358	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 359	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 360	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 361	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 362	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 363	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 364	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 365	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 366	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 367	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 368	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 369	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 370	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 371	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 372	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 373	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 374	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 375	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 376	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 377	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 378	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 379	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 380	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 381	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 382	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 383	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 384	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 385	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 386	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 387	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 388	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 389	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 390	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 391	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 392	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 393	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 394	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 395	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 396	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 397	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 398	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 399	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 400	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 401	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 402	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 403	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 404	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 405	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 406	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 407	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 408	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 409	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 410	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 411	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 412	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 413	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 414	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 415	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 416	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 417	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 418	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 419	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 420	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 421	Silt loam	1.2	25.6	3.7	11.0	22.1	..
K 422	Silt loam	1.2	25.6	3.			

