G
Studies, Reconnaissance
Extensive (Umatilla)

REPORT ON
EXTENSIVE GRAZING RECONNAISSANCE

UMATILLA NATIONAL FOREST

1917

By

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FIVE-MILE CATTLE & HORSE DIVISION

For convenience in discussion, this range has been divided into three main types which, according to their areas, are listed as follows: Lodge Pole Pine – Pine Grass or 6Br, 6gr., and 2 D. It should be understood that these classifications are broad and that many small sub-types are included within them. This division into types is made with reference entirely to the forage cover.

The 6Br. type covers practically 50% of the range and supports a dense stand of Lodgepole Pine with an understory of large and small Huckleberry and pine grass in the following proportions: Large Huckleberry 45%, Small Huckleberry 45% and Pine grass 10%. These estimates are the results repeated estimates at different points in this type.

Much of this type is impenetrable for cattle although they have made trails into much of it that once was inaccessible. Each year the stock extend these trails and utilize more and more of the forage in the thickets. It was in these thickets that the cattle were observed eating the small huckleberry brush.

This type should not be considered as having a carrying capacity of more than one head of cattle or horses per 25 to 27 acres. It is worthy of note here that on this overstocked range the cattle have been forced to utilize forage which they would not ordinarily use, i.e., they have changed their eating habit to suit the adverse conditions on the range. It was noted that cattle forced into the thickets kept their condition and indeed emerged in the fall in good flesh. However, this does not indicate, necessarily that the range is not overstocked as these cattle will not use the thickets until the more accessible portions of the range are fed almost to denudation. For an example the creek bottom of Five-Mile creek doubtless once supported a dense stand of the better grasses and sedges, but now the dandelion is in predominance on account of it's flat rosette-like habit of growth which causes it to lie so close to the ground that cattle cannot graze it to the point of extermination.

The extent to which these thickets are penetrated by the cattle may be realized when it is stated that two permittees rode for three days late in October without finding any of their stock which in the aggregate were probably nearly a hundred in number.

6Gr. Type. This type covers the denser stands of Western Yellow Pine as well as the open stands and the small rocky openings on the ridge tops.

The timber stand is composed of a mature upper story of yellow pine and an understory of reproduction of the same species. All age classes are represented.

In the denser portions there is a stand of Pine grass and Fescues forming approximately a 7/10 density on a 7/10 surface cover. This type is closely utilized and has sustained considerable damage from improper grazing.

In the open stand of timber as well as on the open rocky flats there is a stand of fescue and agrostis that has been badly over-grazed in the past and in which there is no signs of present improvement. This area is considered to have been over-grazed because of it's shallow soil of an adobe like texture which will not withstand early heavy grazing. It is a well known fact that cattle and horses will always feed the higher level country first in the Spring.

Another factor which influences the stand of grasses here is that for the past four years there has been but one full seed crop matured, hence the perennials are subjected to three years grazing with no new stand of plants.

It has been demonstrated to the satisfaction of both the permittees and Forest Officers, that deferred grazing on these open flats for only one good seed year will increase the stand of grasses from 25% to 50%. On a sheep allotment in T.6 S., R.27 E., W.M., the plan of keeping off the flats until fall was tried and the camptender insists that they are producing 100% more feed now than they were four years ago. This permittee is still practicing this method and is highly pleased with the results. The permittee refered to is Mr. E.K. Wyland and the deferred grazing system was suggested to him by Mr. C.L. Keithley, District Ranger. Thus it will be seen that any system of range management must contemplate the protection of these rocky flats in the early spring.

2D Type. This type is found along the Creek bottoms and is the main source of feed on the Five-Mile Cattle and Horse Range. It is untimbered and supports a 10/10 stand of sedges and grasses where it has not been too heavily grazed. One of the best indications of over-grazing on this range is that even along these creek bottoms where the soil is deep rich and moist, the primary forage has been almost entirely supplanted by another class of plants such as dandelion. These secondary plants are invariably of poorer forage value than the original or primary species.

In riding over this range, even as late as October first, cattle will be found on these meadows, and it is reasonable to suppose that they have been on these same areas since early spring and although this type comprises less than one tenth of the total area of the range, it is probably furnishing four tenths of the total feed. If it were not for the fact that these meadows have a deep moist soil they would have long ago become a dust bed with no vegetation of any kind.

Salting is done almost exclusively along the streams in this meadow type. This is considered not wholly for the best as the cattle will certainly feed off all these open meadows as is their natural habit, and it would be well to draw them back into the less heavily grazed pinegrass, and browse types. The amount of salt put out has been sufficient and the Five-Mile Cattle and Horse Association has a highly efficient man in charge of the salt distribution and line riding.

Salting is done almost entirely in troughs and the system followed is to keep salt in all the troughs all the time. It should be noted that 700 pounds of salt were used at trough No. 3 and only 200 pounds at trough No. 20. This would indicate that there was a lack

of even distribution of the stock on the range and the difference is great enough to warrant a close investigation in order to determine whether the stock are being distributed by the salt or whether the salt is being distributed according to the distribution of the cattle. It will be easily seen that, other things being equal there must have been nearly three and one half times as many cattle in the vicinity of trough No. 3 as there were at trough No. 20, and if the range is to be evenly used there would have to be three and one half times as much feed tributary to trough No. 3.

All the troughs are placed in situations which are easily accessible and it is recommended that a careful study be made of the range, together with a careful analysis of this salt report, with the object in view of formulating a salting schedule which will result in an immediate increase of forage as a resultant of equitable utilization. A diagram showing graphically how much above or below average, the salt consumption was at each trough, is appended to this report and it is recommended that one copy of this diagram be sent the District Ranger who, by a careful study of the diagram together with a map showing the locations of the various salt grounds, may be able to formulate a salt schedule.

It is considered necessary here to suggest that a definite policy be adopted on this Forest for the placing of salt troughs as it was found that they have been placed in a variety of situations. For instance on this range they are all "on the water" as they are on the Hardman, while on the Texas Bar on the Eastern Division they are placed on the ridge tops between the creeks, i.e. in the middle of the feed areas. It is considered that on the whole the best placing of troughs has been done on the Texas Bar C.&H. Range at the direction of Ranger W.W. Allison.

The boundaries of the Five-Mile C.&H. Division are marked by driveways and section lines and not by natural grazing unit boundaries, consequently the stock will never be confined to their own range until a drift fence is constructed. If a drift fence is constructed (as is recommended) on the present boundaries, it is suggested that the first work be done on the west and south, as these lines are the most difficult to hold and most of the loss occurs among the stock that stray off the range to the south.

If the fence is built on the present boundaries of this range it is thought that a reduction will be necessary in the number of permitted stock. With approximately 32 miles of unfenced boundary in a country of gently rolling topography, and with 1868 head of stock, it is safe to assume that 5% will be off the allotment all the time and as it is known that the allotment is at least fully utilized, it is easily seen that the confinement of this same number of stock absolutely within the present boundaries will result in a 5% overload. It is also considered that this range is more than fully stocked under the present system of management.

In most cases water facilities are sufficient for the even utilization of the range but one instance was noted where a spring could be developed to advantage. This spring is known as Coyote Spring and is located in Section 11, T.5 S., R.30 E., W.M. A good

trough here would allow evener use of the eastern part of the Range where it was noted that the stock were in poorer condition than on other parts of this allotment.

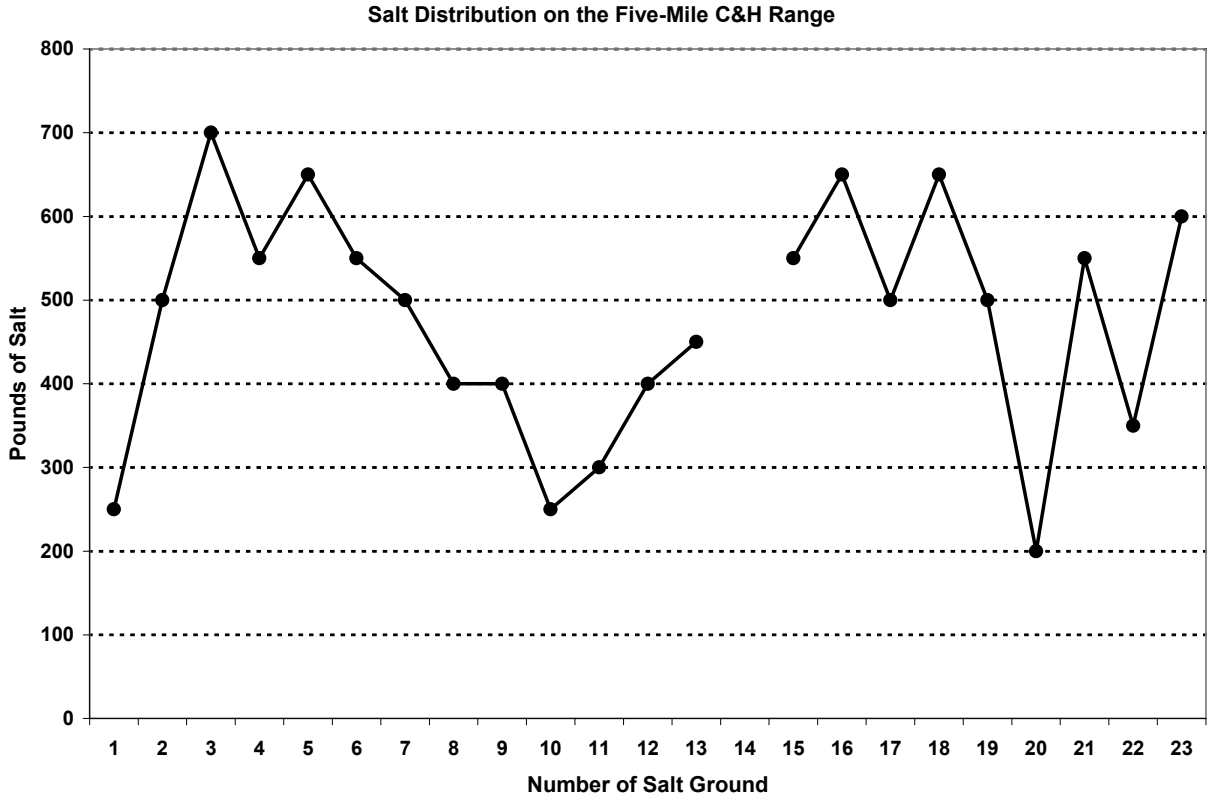
To summarize it may be said that every effort should be made to protect the open rocky flats and the meadow types and use the browse types more fully early in the grazing season. An excellent start has been made towards systematic salting, and it is thought that thru the Five-Mile Cattle and Horse Association this system may be extended to a point where there will be a substantial increase in forage and a consequent increase in carrying capacity per acre. There is no doubt but that at one time there was a stand of grasses on this range that were high in feeding value, but continued early grazing has depleted the primary stand until it has been supplanted by inferior species.

It is realized that at present it would be impossible to establish a three year rotation system of deferred grazing, but it is thought well to suggest at this time that such a system be inaugurated as soon as practicable.

Respectfully submitted,

{signed} F.V. Horton
Grazing Examiner.

January 31, 1918.



N.B. Data for Trough No. 14, missing. Total No. lbs. used = 10450

LONEROCK CATTLE AND HORSE DIVISION

This cattle and horse range is clearly divided into two types from a grazing viewpoint. Listed according to their relative areas they are, 6Pg (Timber-Pine grass) and 1Wd. (Open grassland).

The 6 Pg. type covers approximately 90% of the area and the forage plants are chiefly pine grass and peavine although there is considerable lupine and large huckleberry in the denser timber stands. This type is found almost entirely on moist soil and will withstand heavy grazing although the character of the forage is such that stock are inclined to neglect it until the feed on the more open areas is fully used. Hence, if the stock are not disturbed or not moved by salt distribution, they will overgraze the openings and undergraze this timber type. The pine grass on this range is at its best as a forage plant in the early spring and it is a well known fact that the stock prefer the open types until the heat of the summer compels them to seek the shade, hence the best forage crop is lost. This pine grass is considered to be only 60% of the forage value of western wheat grass (*Agropyron spicatum*) on this Forest.

The timber stand on this type is chiefly mature yellow pine with its attendant reproduction. This reproduction is of all age classes and in some places is dense enough to almost exclude forage plants. A small part of this type is covered with lodgepole pine and white fir.

1Wd. Type: This type of approximately 10% of the entire range does not furnish 1/10 of the forage as might be expected. The composition of the forage type is scrubby sage and grasses. These areas have been very heavily grazed in the past and it is thought that if the sage brush had not protected a few individual grasses each year, there would have been a complete replacement of the original stand of grasses by weeds.

It is considered that range of this type will recover very rapidly under protection as there is a sufficient number of individual plants to furnish seed for the restocking of the area. Most of these open flats are patented and although they are not fenced, they cannot be taken into consideration when making an allotment on the acreage basis.

In sections 28, 29, 30, 31, 32, and 33, T.6 S., R.24 E., W.M., there is approximately one and one half sections of range that is only partially utilized. A portion of this unused range in Sections 29, 30, 31 and 32 is unused on account of not being a natural grazing unit with the rest of the range, that is, in order for the stock to use this range they must cross a deep canyon and feed at almost right angles to a steep slope. Private lands leased to the use of sheep on both sides prevent a natural drift along contours. In order to use all this range economically it will be necessary to either change the boundaries of the cattle allotment or allot this area to the use of sheep.

Another area partially used lies in a long strip on the north side of Stahl Canyon. This may be utilized by installing salt troughs half-way down the sides of this canyon. The slope on the north side is such that it would be possible to construct these troughs and

thus draw the stock both from the top level areas and from the feed near the water. There is considerable forage going to waste along this strip and an effort should be made to utilize it either by an improved method of salting or in a change of the class of stock.

Although the range of the Lonerock classed as fully used, (not including the open areas) has been closely utilized in the past, it is not considered to be over-grazed and in the judgement of the examiner if the entire area was evenly used it surely will carry the present number of stock without damage, in fact there is a possibility that under proper management more stock could be accommodated here.

It is recommended that either the area on the south side of Stahl Canyon be alloted to sheep or that the cattle range be enlarged so it will include the natural drift-way along the top of the ridge to the south, i.e., to include the level area above the "rim" of the canyon.

A systematic plan of salt distribution would of course be very beneficial on this range and it is suggested that the troughs be placed in the timber types and well away from the water. There is a need of closer supervision by the Forest Officers in relation to the placement of salt troughs that are built by the permittees.

{signed} F.V. Horton
January 31, 1918. Grazing Examiner.

HARDMAN CATTLE AND HORSE DIVISION

This range lies on a gentle slope to the southeast and has very little rough topography, in fact, the "breaks" of Little Wall Creek constitute the only part where the topography might be classed as rough, and even here the slopes are not inaccessible to cattle and horses.

The topography of Little Wall Creek is in the form of a dissected plateau, characteristic of all the drainage of the John Day river. The rock is in evidence in the form of columnar basalt more or less broken but still forming the characteristic "rims" and their talus slopes.

There are two principal types represented on this range, viz., 1Wd. and 6 Gr. The discussion of these types in the order of their comparative areas is as follows:

1Wd. Type.

It is estimated that this type covers fully 50% of the entire area and in composition it is about 70% fescues, 15% western Wheat Grass and 15% weeds of which the sunflower or Wyethia forms a considerable part.

The fescues are found principally on the open rocky flats among the sage brush and furnish a quantity of excellent forage of the highest palatability. This forage type is deserving of particular note as it should serve as a standard of what the range should be on the rocky flats of the ridge tops on this Forest.

The soil of this type is nearly always shallow and of an "adobe like" texture which will puddle very easily in the spring when it is saturated with water. In these rocky flats there are the characteristic mounds of soil from 2 to 3 feet in depth and all of these are well stocked with grass and near the southern part there is considerable Western Wheat Grass coming in. This type although producing a heavy crop of forage at this time and which is considered to be under grazed, should be watched very carefully as a great damage can be done by allowing too early grazing. Under the present management there is an economic waste of grasses which are not utilized.

There is a type variation found on this area at the heads of the draws, i.e. where the draw flattens out into the level areas. This sub-type supports a stand of sedges potentilla, senecio, and wyethia and furnishes a very large amount of feed. These areas are capable of withstanding heavy grazing as they are located on deep moist soil.

There is another type of variation found on the south slopes into the canyons. This is an almost pure stand of Western Wheat grass (*Agropyron spicatum*). This stand of grass has not been used fully for several seasons and it is thought that the reason for this is that the stock prefer the higher more level areas, and as there is no shortage of feed they will naturally feed off the preferred sites first. A later season would not damage this crop of "bunch-grass", in fact it would be desirable to use all this grass each season.

It is interesting to note that on this understocked range the stock have had an opportunity to select their feed, i.e. it was noted that on the slight, open, north slopes the forage was left, the south slopes evidently being preferred. The only reason for this is, apparently, the grasses on the north slopes have had more moisture and are consequently coarser and less palatable. It should be understood that these terms north and south slopes do not mean steep long slopes but merely slight differences in elevation on the open flatter areas, in fact where there was a slope only 4 or 5 feet in height there is a noticable difference in the utilization percent. This evident selection was taken as one of the best evidences of undergrazing.

The open grass type in Sections 25 & 26, T.6.S., R.26 E., W.M., has been overgrazed in the past by sheep, as there is still considerable tar-weed present. This range, however, under the present system, is coming back with a stand of wheat grasses and fescues. It is suggested that if the number of stock allotted to this range is increased that especial care be taken to protect this area from early spring grazing.

It was noted that there was a good stand of "new" grasses coming in over the entire tract. This was especially noticeable in the southern part, where many seedlings of

Agropyron spicatum were noted. These seedlings were found as single individuals and had not assumed the characteristic bunch grass form.

6Gr. Type.

This type is limited to the timbered portion of the range and covers approximately 50% of the entire area.

The timber is almost entirely an open yellow Pine stand with considerable reproduction of the same species of all ages.

In composition this type is approximately as follows – Pine Grass -- 30%, Fescue and Agrostis – 30%, Browse – 10% and Lupine and Peavine – 30%. This type is very important, not only on account of the fact that it has a good stand of fair forage but also from the fact that it forms a very suitable complement for the open range, that is to say, during the warmer part of the summer stock will graze in the shade and thus save the more open range which on account of its shallower soil must be protected. It is thought that all the salt troughs should be in this type as the soil will stand the trampling with less damage than that soil in the open. It is considered that it would be possible to always have the troughs in this timbered type and still have a distribution which would result in the even utilization of the entire range.

Salting is done almost entirely in troughs and the District Ranger in charge of this range keeps very close watch of the salt distribution. A rider camps during the summer on the range and distributed the salt and attempts to hold the stock on the allotment. Salting is done near the water and this system is not so objectionable as would seem at first thought, as the topography is such that the range is fairly evenly utilized even now. It is suggested that the rider keep a record of the amounts of salt put out at each trough or salt ground, in order that any even distribution of stock may be noted and studied.

To summarize, it is thought that if some system be devised, such as the proper distribution of salt, which will keep the stock off the open rocky flats until late in the summer or until the fall, this range will easily carry two hundred more cattle than at present. It is certain that some attempt should be made to utilize the "bunch grass" which is found on the canyon sides in the southern part of the range. It is thought that at this elevation stock may be kept in these canyons and "rims" much later than the present season allows.

It should be kept in mind that grazing after the maturity of the seed crop is beneficial to the range if the soil is in such condition that it will not be mechanically damaged by trampling. The greatest damage to a forage crop is done by grazing just prior to the maturing of the seed crop.

{signed} F.V. Horton
Grazing Examiner.

January 31, 1918.

TAMARACK–MONUMENT CATTLE & HORSE DIVISION

The study of this range was made in two parts, i.e. the portion of the range outside the drift fence and the portion inside. They will be taken up in this report in the same order.

That portion of the Tamarack--Monument Cattle and Horse Range lying outside the drift fence is considered to be all of one grazing type, viz. 6 Pg. (Timber-Pinegrass)

The composition of this type is approximately as follows: Pine grass -- 50%, Sunflower – 30%, Lupine – 10% and Browse – 10%. The timber stand is largely Western Yellow Pine, matured, with an understory of reproduction of all ages. On the more moist north slopes there is a stand of Douglas and White Fir and Western Larch with their attendant reproduction. However, this type is small in area as the entire Division slopes to the southward.

Topography.

This entire tract slopes to the south and east and varies in form from rounded ridges in the north to rocky, steep slopes and "rims" in the south. These "rim-rocks" are not high, nor do they cover any great area, but they influence the topography in the same general way as is characteristic of the Eastern Oregon lava flows. That is, the successive flows have weathered down into low perpendicular "rims" with their attendant talus slopes of loose rocks and disintegrated basaltic soil. Generally speaking the soil on this area is of fair depth and contains some humus, principally derived from the fallen pine needles.

Forage.

This range is apparently fully used under the present management, if not over used. It is at least safe to say that under the present system it will not support more stock without damage. The formulation and application of plans which will provide for the distribution of salt on the higher ridges rather than along the streams would result in an evener utilization and a consequent increase in capacity. However it is not thought that any great increase can be made until this range has been under management for several years and the primary forage given a chance to recover.

There is a lack of even utilization on this range on account of the varying topography, i.e. high dry ridges and easily accessible creek bottoms, hence it is imperative that both water and salt troughs be constructed with the idea of drawing the stock away from the creek bottoms toward the higher ridges.

This range will stand grazing earlier in the season than will the more open south slope types within the drift fence, that is, the damage will be less and more of the forage will be used. This will, however, be difficult on account of the fact that during the early part of the grazing season the weather is apt to be cool and rainy, consequently the stock will seek the open sunny range on the south slopes. It is desirable to feed this part of the range early as there is considerable pine grass present and if this is left until late in

the summer it becomes coarse and harsh, thus rendering it less palatable than in the early spring.

It has been stated that there is considerable sunflower on this range. As to the palatability of this plant and the proper season of grazing, very little can be said. It would seem that there are two periods in its life cycle when it furnishes considerable feed, the first is during the early part of its growth in the spring while it is green and tender. At this time, however, stock do not seem to be particularly partial to this plant, although they do graze the flower heads when they are produced. The second period when it would seem that this plant furnishes considerable feed is after the maturity of the seeds and the leaves have dried. At this time the seed heads are filled with the matured oily seeds which are considered by some of the stockmen to be of high feeding value. It was noted that both classes of stock would eat these seeds with relish. The point on which the examiner is not satisfied is whether the plant will furnish more feed during the early part of the season when there is a large amount of soft green feed or when there is a small amount of concentrated feed in the form of seeds. This plant is abundant enough from the Hardman C. & H. Range west over the Western division to warrant close attention.

Summary.

In view of the fact that the utilization of that part of the Tamarack--Monument Cattle and Horse Range outside the drift fence is uneven, it is considered that an attempt should be made to distribute the stock by salting on the higher ridges and by the development of every possible spring on the slopes. It should be remembered that uneven utilization in this case does not mean that any large area has been left, but that there are numerous small patches where the utilization in not complete in comparison with the other parts of the range.

It is considered that this range is carrying at least its full quota under the present system of management and any increase would result in serious damage to the range.

TAMARACK–MONUMENT CATTLE AND HORSE DIVISION

That portion of the Tamarack-Monument Cattle and Horse Division inside the drift fence is divided into three main types and two minor ones. The open grass type is sub-divided into fully stocked and poorly stocked.

Listed according to their relative areas they are as follows: 1 Wd. (open grass-land) 6 Pg. (Timber-pine grass), 7 R.R. (inaccessible rim rocks), 6 Br.Gr. (Timber Browse and Grass), 1 Wd. P.S. (open grassland, Poorly-stocked) and 4 Gr. (Sagebrush and grass.)

The 1 Wd type comprising approximately 4/10 of the area is open south slope, and characterized by rough, "rim-rocky" topography and steep rocky slopes. There is no doubt but that at one time all this open south exposure supported a stand of Western

Wheat grass and that misuse has depleted the stand until at the present time there is a quantity of inferior forage present in the form of small tar weed etc.

Although this type is considered to be overstocked there need be little fear of completely destroying the primary forage, as there is considerable "bunch-grass" growing among the rocks and under the sage and bitter bush which are inaccessible to the stock and hence will continue to mature their seed crop each year. These individual bunches of grass are found among the "rims" wherever there is soil enough to allow them to get a hold and it was noted that where there was no grazing these plants were large and thrifty even though there was less soil than on the slopes below. This would indicate that the conditions are right for the production of a large crop of forage but that there has been introduced some disturbing factor such as too early grazing, or too heavy grazing. It would seem that if the less favorable sites, where there is no grazing, produce a good stand of forage plants, and the more favorable sites, where there is grazing, produce plants such as tar weed, the ecologic balance has been disturbed by some factor aside from soil, moisture, or climate. Therefore it is considered that this range is not properly grazed.

The composition of the 1Wd. type varies from a pure "bunch-grass" stand to a weedy, brushy mixture, the principal brush being Mountain Mahogany (*Cercocarpus ledifolius*) and pursia (*Pursia tridentata*) or bitter bush as it is termed locally. The average surface cover is estimated to be about 7/10, the density 6/10, and the palatability 90%.

It is considered that this type in its normal condition should furnish the larger portion of the feed on this range, but it is problematical if under the present management it is furnishing any more feed than an equal acreage of timber type. An examination of the area early in the spring, prior to the opening of the grazing season is considered necessary before a definite statement as to the relative amounts of forage furnished by each type can be made.

6 Pg. Type.

This type covers about 4/10 of the area under fence and is found under the Western Yellow Pine timber type common to the region. It supports a stand of pine grass and large huckleberry.

The topographic aspect of this type is north, east, or west – never south in any large area. This type of range forms a very suitable complement to the open range of the area and might be very economically used as such.

At the time of examination this type had been very closely used and all indications were that it has been so used for several past years. On the north slope of Little Tamarack Mountain where the topography approaches the precipitous, it was noted that the cattle had penetrated even the thickets and at the time of examination the stock had used practically all the grass, and were feeding on the Huckleberry browse. Stock were found well distributed over this entire type.

7 R.R. Type.

Although this type covers only about 1/10 of the entire area within the drift fence, it is considered worthy of note on account of the fact that it is waste range and cannot be taken into consideration when making an allotment on the acreage basis. It has been classed as waste range for the two main, following reasons: First, a considerable area is covered with a dense stand of Mountain Mahogany which is almost impenetrable and which excludes the growth of forage plants. Second, the soil is very shallow and lies on a fairly solid rock sub soil. It has supported a stand of early spring plants such as onions and the stock have been allowed to use these areas early in the spring hence the soil has been puddled and the forage trampled out. At the time of examination this area was almost barren, the only plants noted being moss and small daisy, together with a small amount of tar-weed.

The topography of this area is sharp cut in the form of a dissected plateau with small level intervals just above the "rims". The soil on these level areas is very shallow and on account of the fact that it lies on a comparatively impervious sub-strata of rock, will hold the water until late in the summer when evaporation will remove it with the result that the soil becomes baked hard. This soil is of the adobe like texture common to the region.

6 Br.Gr. Type.

This type is found only on the north slopes which pitch steeply into the stream beds, and the soil and moisture have caused a consequent variation in the type of vegetation. The composition of the forage on this type is approximately as follows: Large Huckleberry 60%, Pine Grass 40%. The timber stand is largely Douglas Fir and in many places the reproduction of this species forms thickets which exclude the growth of forage plants.

Although this type is small in area, it forms an important complement to the open range in that any plan of management should contemplate the utilization of this type before the more open areas. The deeper soil will withstand trampling with less damage than will the shallower soils of the open south slopes. To get the greatest amount of feed from this type it must be fed early in the spring when the palatability of the pine grass and browse is greatest.

1Wd.(P.S.) Type.

This type is similar, or at least has been similar, to the larger open south slope type, however persistent misuse has so denuded the area that it is only supporting a scattering stand of Small-tar-weed and small daisy.

The shallow, adobe like soil bakes hard under the hot sun of early summer, especially when the protective cover of grasses has been removed.

The term miss-use in this case does not necessarily mean overgrazing, but does mean too early utilization. Late grazing will not injure either the texture of the soil or the forage crop itself, but the use of this type in the early spring will curtail the seed crop and render the soil unfit for the reception of the seeds. It is recognized that this range is earlier than many other ranges on this Forest, but nevertheless it is recommended that every attempt be made to protect this area during the early part of the season. This area will be very difficult to protect as it is very accessible and during the cool part of the season the stock will be sure to seek this part in preference to the timbered portions of the allotment. There is no question but what Western Wheat Grass (bunch-grass) will grow on this type if given a chance, as it was observed to have made a good growth on similar soils at similar elevations, where it had been protected from stock. It is considered that this plant i.e. "bunch grass", matures its seed about July 15 or earlier in some seasons.

The most conclusive evidence that this type has been misused is the fact that where there is an inaccessible place with a little soil present, one will find thrifty specimens of "bunch-grass" present.

4 Gr. Type.

This type, although extensive on the sheep range, furnishes an almost negligible amount of forage on the cattle and horse range and was only mentioned as it forms a distinct type.

It lies wholly on the top of the ridge above the uppermost rim of the John Day drainage. The topography is flat and the soil is shallow and rocky.

The forage composition is approximately as follows: Sage brush 30%, Grasses (fescues & agrostis) 20%, weeds 50%.

General comment and Summary.

This range was covered during the first week in September and at this time the feed at the higher elevations had been completely utilized and the stock were showing a tendency to drift towards the lower winter ranges. This drift could not be ascribed to weather conditions but was caused by a lack of feed at higher elevations and it is a well known fact that stock will drift towards their home range when the feed gets short.

During the first week of September when the range was examined it was noted that there was still some feed near the south boundary of the allotment but it was not considered sufficient to carry the stock thru to the end of the grazing season. None of the stock on this range were considered to be in more than fair condition and many were very poor, especially cows with calves.

It would seem when this range is compared with the adjoining sheep range that it is overstocked under present methods of management, in fact, just across the fence which

encloses this range there was a good stand of grass and weeds, while inside the fence the range was grazed almost to denudation. This was the case even where the sheep had been crossing the fence to get to water. All the timber types have been completely used even where there is considerable dead and down timber.

Salting is done thoroughly, i.e. enough salt is put out, as nearly as could be determined, but almost all the salt is placed near springs or streams. The amount of damage done by this method is not so plainly evident as on ranges where the utilization is less close.

On the whole the eastern part of this cattle and horse allotment is not fed as closely as the western and it was on this eastern part that a totally un-utilized area was found. This area comprises approximately one section and is located in Sections, 21, 22, 27, and 28, T. 8 S., R.26 E., W.M., on the south slope of Nigger Knob.

This unused area supports a dense stand of "bunch-grass" (*Agropyron spicatum*) on a steep rocky hillside. There is a spring near the south central part of the tract. The only apparent reason for the non-use of this area is the fact that it is bounded on the west by a division fence, on the north and east by a steep hill side covered with a dense stand of Mt. Mahogany, and on the south by fences along the Forest Boundary. The division fence of the allotment cuts off the natural driftway for stock to this tract and although it is very steep and rocky, it is thought that horses will utilize it if they are salted near the top of the ridge. There were few signs to show that this tract had ever been used by cattle, although a few signs of use by horses were noted.

In general it is thought that a later season would be advisable, that is to say, it is thought necessary to hold the stock off the range as late as possible or at least until the soil becomes firm enough on the south slopes to prevent damage by trampling. Late fall grazing will not injure this range and every effort should be made to delay the utilization of these open south slopes.

It is suggested that a salting system be devised which will involve the use of troughs, and which will tend to keep the stock away from the open south slopes and in the timber where the soil is more able to withstand trampling. It is considered that stock should never be salted near the water on this range. If there is to be any improvement in the quantity or quality of this range it is considered necessary to either reduce the number of allotted stock or devise a system of deferred grazing by means of better salting methods or division fences. It is recommended that the salting system be put into effect first as a reduction would be very undesirable at this time.

A suggestion is offered here in regard to the use of the permittees winter range. It is easy to see along the John Day River that the winter range has been used without regard to season or systems of management, and it would be of great advantage if the owners of these ranges could be brought to see that the forage crop of native grasses need as careful attention as do the cultivated crops, and that they are as valuable to them from an economic standpoint.

It is considered entirely practicable, with the complete cooperation of the permittees, to establish a sort of rotation system between the National Forest grazing, and the privately owned grazing land.

{signed} F.V. Horton
January 31, 1918. Grazing Examiner.

CHERRY CATTLE AND HORSE RANGE

(**OUTLINE**)

1. Topography.
2. Soil.
3. Timber types.
4. Grazing types.
    A. 6 Gr. Type, or open yellow pine-grass type.
    B. 6 Br. Type, or timber-browse.
    C. 1 Wd. Type, or open grassland.
5. Management.
    A. Season.
    B. Salting.
    C. Water.
    D. Cooperation.
6. Recommendations.
7. Map.

1. Topography.

This range lies wholly within the Birch Creek drainage or the tertiary drainage of the Umatilla River. Pearson Creek which forms the eastern boundary, is characterized by steep, rocky slopes. The entire range presents the appearance of a dissected plateau which has been rounded by agencies of erosion. Since the drainage is north northeast and west there is a variety of exposures and a consequent variety of soils and types. The country, in general, would be classed as rough to rugged, Pearson Creek Canyon being approximately 800 feet deep where it crosses the Forest Boundary.

2. Soil.

The soil is roughly divided into two types, viz., volcanic ash and disintegrated basaltic. The former is found on the north slopes, is very light and contains considerable humus both as an inherent part of the surface soil and as a cover. This soil is fairly moist but has a decided tendency to dry out when the protective timber cover is removed.

The basaltic soil covers the ridge tops and the open south slopes. It is of the characteristic red-brown color and has very little humus content or cover. It's adobe-like texture makes it very soft when wet and very hard when dry, consequently early spring grazing and the consequent trampling will tend to puddle this soil, and it has been noted that tracks made in the spring by the stock will many times be still visable in the fall. The loose, shaken, basaltic sub-soil provides rapid under-drainage and allows this soil to dry out quickly.

Rock on this soil type is found in both "rims" and loose surface fragments. In the "rims" which are found chiefly on the canyon slopes, the basalt retains its familiar columnar structure. Most of the south slopes and ridge tops are covered with loose angular fragments of the regional rock.

3. Timber types.

As the timber types follow the soil types very closely, there are two main timber types: the Lodgepole Pine, Douglas and White Fir which is found on the north slopes and wherever the volcanic ash soil is found, and the open Yellow Pine type which follows the disintegrated basaltic soil very closely and hence is found on the ridge-tops and south slopes.

In the Lodge pole pine type is found a dense stand of Lodge pole pine, Douglas and White fir of all ages. There is an occasional stand of Western Larch also in this type. Reproduction of all these species form an understory in this type.

In the Yellow Pine type there is a stand of mature Western Yellow pine and an understory of reproduction of the same species. This reproduction is of all age classes from one year old seedlings up, and in many places is dense enough to almost exclude other vegetation.

4. Grazing Types.

A. 6Gr.

(1) The area of this type is approximately 50% of the entire area of the range or about 5760 acres.

(2) The surface cover, density and palatability have been estimated as follows: S.C. 8/10; D. 7/10; Pal. 90%. These estimates are considered average as they are the results of numerous estimated on all parts of this type.

(3) The plants found on this type are listed below, together with their approximate amounts.

Yarrow.....15%

Lupine 15%
Tar-weed.....15%
Indian tobaco.....10%
False alum root 10%
Poa.....10%
Fescue 10%
Agropyron 5%
Deschampsia 10%

(4) It is considered that the utilization factor on this range is very nearly 1. since the topography is not rough enough to prevent utilization and there are no thickets which prevent the use of adjacent range. In considering the utilization factor as 1. it is pre-supposed that the water and salt is equitably distributed.

(5) Comment.

As this type follows the open yellow pine timber type and is consequently found on the ridge tops and south slopes, where the soil is shallow, it is considered that this type should receive close attention as to the time of grazing, that is, the season should be as late as possible so there will be a minimum of damage to the soil and the forage.

It will be noted that a large amount of early feed is furnished by this type at present as the stock will not go into the timber until the heat of the summer or late spring makes the open flats uncomfortable. It is considered that salting should never be done in this type unless the topography makes it absolutely necessary. Any system of management should work towards the protection of this type and the closer utilization of the browse type.

B. 6 Br. type.

(1) The area of this type is approximately 30% of the entire range or about 3456 acres.

(2) The surface cover is estimated at 6/10: the density at 7/10 and the palatability at 60%. These are average estimates based on numerous other estimates made at different places on this type.

(3) The plants found on this type are listed below:

Large huckleberry 30%
Small huckleberry.....15%
Prince's Pine 3%
Lonicera 3%

Lupine 15%
Clover.....10%
Pine grass 20%
Koeleria 2%
Strawberry.....1%
Currant 1%

(4) The utilization factor is considered to be less than 1. as there are patches of dead and down timber which keep the stock away from some small feed areas.

(5) Comment.

This type is found on the volcanic ash soil under the lodgepole pine timber. It is important as a grazing type on account of the fact that it will withstand trampling with less damage than will the open types where the soil is shallow. If this type is used as a complement to the other types of the region there will result a direct benefit to both the 6Gr. and 1Wd. types. This subject will be taken up later under the head of "Recommendations."

C. 1Wd. Type.

(1) It is estimated that this type covers approximately 20% of the area of the entire range or about 2304 acres.

(2) The average surface cover, density and palatability of this type, based on numerous estimates at different places on this type are as follows: S.C. 8/10, D. 7/10, Pal. 90%.

(3) Plants.

The plants found on this type are listed here together with their relative amounts:

Yarrow.....10%
Erithrocoma.....10%
Tar-weed.....10%
Indian tobaco.....10%
Balsam root 5%
Lupine 5%
Fescue 10%
Agropyron 5%
Poa.....10%
Onion 10%
Deschampsia 10%

Spring plants such as
Hydrophyllum, Sisyrinchium, etc. 5%

(4) The utilization factor here is considered to be 1. as there are no outside influences to prevent the complete utilization of this type.

(5) Comment.

This type should be the most important of all from a forage producing standpoint, but thru lack of protection, or rather from abuse, it has become one of the minor types. On this range the 1 Wd. type in a large measure is early, i.e., on the Pearson Creek slope, while on Stanley and Alcott Creeks the range is late, consequently in past years when the grazing season opened April 15, the stock would seek the warmer slopes and the trampling of this shallow soil while wet has resulted in the present semi-denuded condition. On one south slope in the NW 1/4 SW 1/4, Sec. 24, T.3 S., R. 32 E., W.M., near the quarter corner on the west side of this section, there doubtless was at one time a fair stand of forage grasses. There is still some remnants of the original stand of Poas to be found on this area, in the form of crescent shaped "sods". This particular part of the range was in sheep range for many years and was repeatedly trailed over, greatly to its detriment. It is thought that there still remains enough of the primary forage to restock the range if it is given protection in the early spring. The early range on the breaks of Pearson Creek may be used from a week to ten days earlier than any other open type on the range.

5. Management.

A. <u>Season</u>.

The opening of the grazing season on the Cherry Cattle and Horse Range should not be earlier than May 1 and in some years it will be necessary to withhold the stock until May 15 or later. In either case an attempt should be made to hold the stock on the earlier range of the Pearson Creek Breaks as late as possible. On May 1st. there is usually considerable snow at elevations of over 4500 feet, hence at this time the higher range is just starting and the soil will be very wet and liable to damage from puddling. This is true particularly of the 6 Gr. and higher 1 Wd. types. It will be noted that 10% of the forage in both these types is composed of Poas, or as they are called locally, June grasses, thus it is clear that this species forms an important part of the forage. These grasses flower from June to early August and early trampling will have a damaging effect on subsequent forage crops.

It is thought that the present number of stock can utilize the range in ten to fifteen days less time. That is to say, under a system which would secure equitable

utilization, the entire forage crop would be consumed before the close of the grazing season. It is known that the stockmen do not always put their stock on the Forest at the beginning of the season and then in the fall they take out a few head before the close. Of course there is more or less drifting off the range from early fall until the end of the season.

B. Salting.

There is no salting schedule on this range and the only attempts at systematic salting are the following:

In what might be called the western unit of this range, i.e. that part used by the permittees living on the east fork of west Birch Creek, a salt house has been constructed on the Forest, and in the spring, a number of users haul enough salt to this house to supply their stock during the season. These permittees then take turns in coming up from their ranches and distributing the salt. This makes it very easy for the Forest Officer to check up the amount of salt used during the grazing season. At least two salt troughs have been built by these permittees and with some encouragement they would build more. Some supervision will be needed to help them place these troughs in such situations as will lend themselves to some scheme of management.

The permittees using the eastern part of this range i.e., those living chiefly on East Birch Creek, salt on the ground and have no definite plan, although there is usually someone at the Gilliam Camp (which is on the Range) during the grazing season and the salt is distributed from there. There is some question as to the amount of salt put out on this part of the range.

C. Water.

One spring has been developed on the Pearson Creek breaks and has resulted in the fuller utilization of a steep hillside. There are several springs which should be developed with the idea of faining a more even distribution of the stock and a subsequent lessening of "trailing". The specific recommendations for the developement of these springs and creeks will be taken up later. It is considered that water is abundant enough on this range if it were all available at all times of the season.

D. Cooperation.

There is no association of the stock men of this range and there is no doubt that such an organization would result in much benefit both to the users and to the Forest Range.

Several users of this range have expressed their willingness to organize and in view of the success had on other ranges on the Forest, it is considered that these

permittees should be encouraged to form an association and adopt special rules which will aid in the management of the range.

6. Recommendations.

It is recommended that first an association be formed and special rules adopted similar to those in force on the Camas and Hidaway Cattle and Horse Range. It is suggested that as the two ranges adjoin, the two associations could work cooperatively as one man could do the salting and riding on both the Cherry and the west end of the Camas and Hidaway Ranges.

More salt troughs are needed and it is thought that they should be built in the Lodgepole Pine type in order to protect the open areas as much as possible. Any scheme of management on this range should contemplate the protection of the 1Wd. type and 6 Gr., and a closer utilization of the browse. When the full number of troughs are built, i.e. about one to each section or more, a careful record of the amounts of salt used at each trough should be kept and also the area of tributary forage should be examined. The amount of salt should not be more than enough to supply the number of stock which will use that part of the range economically during the season. That is to say if on a certain area the feed is consumed in 60 days, the supply of salt should not be continued at the trough which supplies this particular part, but salt should be kept in troughs which are on areas still unused. Thus "trailing" will be avoided.

A water trough should be built at the Pole Mill Spring at Cold spring near the north boundary of the Forest and at the Old Separating Corral on the head of Pearson Creek. The improvement of the first two will prevent "trailing" and tend to hold the cattle off the Creek bottoms. The last mentioned is on a creek bottom, at the first point in the streams course where water is found the entire year.

A gathering corral is needed at the Pole Mill. The construction of this corral would enable the stockmen to gather a considerable number of stock and drive them all off the Forest together, and thus avoid useless driving over the range. It would also be of use to the permittees in case it were necessary to catch any stock for any purpose while on the range. At present there are no enclosures on the range or near it which might be used in such a case. The stock men would be glad to build this corral under a special use permit, if free use timber were given them.

A drift fence is needed on the eastern boundary of this range as there is a continual trespass on the M.G. Edwards Sheep allotment. It is recommended that an examination of the area lying between the stream bed of Pearson Creek and the top of the "rim" to the east, be made with the idea of determining whether it should not be made a part of this Cattle and Horse Range.

{signed} F.V. Horton
Grazing Examiner.

February 18, 1918.

STARKEY CATTLE AND HORSE DIVISION

(Outline)

1. Topography.
2. Soil.
3. Timber types.
4. Grazing Types.
    A. 6 Gr. or open yellow pine-grass type.
    B. 6 Br. or timber-browse type.
    C. 1 Wd. or open grassland.
5. Management.
    A. Season.
    B. Salting.
    C. Water.
    D. Cooperation.
6. Recommendations.
7. Map.

STARKEY CATTLE AND HORSE DIVISION

1. Topography.

This range lies on the west side of the Grande Ronde River, and its topography is modified by the tertiary drainage of this stream, viz. the secondary drainage of Meadow Creek which lies to the Northeast.

The ridges lying perpendicular to Meadow Creek, and also to the main divide to the south (i.e. between the John Day and Grande Ronde Rivers) are long and sweeping in contour near their heads and become more abrupt as they approach Meadow Creek. The canyons are in no instance more than 300 feet deep, hence it is said that the topography itself will have no depreciative effect on the utilization of this range.

2. Soil.

In general the soil may be classified into two types: volcanic ash and disintegrated country rock.

The volcanic ash is found almost entirely on the north slope, or in a few instances, on the ridge tops where it has been held by a dense stand of lodgepole pine. It is never found on the south slopes and usually contains considerable humus. This soil will dry out very rapidly when the protective timber cover is removed.

The disintegrated country rock soil covers most of the ridge tops and all the south slopes. It is characterized by its adobe like texture and lack of humus. This soil puddles easily if trampled when wet.

In a few places such as the NE 1/4 of Section 24, T.4 S., R.34 E., W.M. this disintegrated soil has silted down into a stream head, or rather the head of a draw, considerable humus has accumulated and the result is that a deep rich soil has been formed which supports a heavier stand of forage than any other tract on the higher range. This particular place is situated on the head of Campbell Creek.

3. Timber Types.

The timber types are mentioned here on account of the direct relation they bear to the grazing types. These timber types are as follows: - (1) Open yellow pine, (2) Lodge pole Pine.

The open yellow pine type is composed of a mature stand of Western Yellow Pine with its attendant reproduction of all ages. This type follows the disintegrated rock soil of the higher dryer ridges and south slopes.

The lodgepole Pine type is found entirely on the volcanic ash soil chiefly on the north slopes although it is occasionally found on the ridge top. Among this type is found both white and Douglas fir and some Western Larch and their reproduction. In some places this type is so dense as to almost exclude undergrowth of all but the most tolerant of shrubs and plants.

4. Grazing Types.

The grazing types have not been divided intensively only three main types being considered.

These grazing types, in detail, are as follows:

A. 6 Gr. Type.

This type is the largest of the three grazing types listed, and probably furnishes the most feed, more on account of quantity rather than quality. The amounts and kinds of plants are listed below:

Pine Grass	60%
Lupine	10%
Fragaria	5%
Clover	5%
Fescue	10%
Yarrow	5%
Koeleria	5%

It will be noted that pine grass furnishes the main part of the forage from a quantitative standpoint but as a rule this grass is partly lost to the stock as they will not eat it completely after the first few weeks in the spring, and during this time they prefer to feed on the open south slopes. It is considered that this grass can never be used to its fullest extent i.e. at its economic maturity, so long as it is used in connection with open grassland type.

The fescue which is noted as constituting 10% of the forage is not as closely utilized as might be expected. This grass is found almost exclusively under the yellow pine and apparently is the last species to be used. This is contrary to the usual way this grass is used, as it is usually one of the first plants on the range to be grazed, and in fact is here when it grows in the open. The only reason for the apparent loss of palatability here is that the pine needles are so mixed with the grass that the stock cannot get one without the other.

As this type follows the open yellow pine type of timber very closely the fescue is very conspicuous forming circular patches about the bases of the trees covering an area similar to the shape of a direct projection of a cross section of the tree crown on the ground.

B. 6 Br. Type.

The plants on this type are listed as follows:

Large huckleberry 40%
Small huckleberry.....10%
Pine grass 30%
Timber lupine 15%
Clover.....5%

This range although listed second is not second in importance from a grazing standpoint, although it is estimated to be second in area. It is not as closely utilized as some other ranges of similar composition, on this Forest, but this is accounted for by the fact that this type occupies a smaller percent of the entire area, while the larger percent supports a stand of more palatable plants growing on sites more topographically suited to the use of horses and cattle.

Thus it will be seen that the "preferred" range will be eaten before the browse will be touched. There will be little chance of over-utilizing this range as the soil will withstand the trampling and the forage plants are such that the stock will not use them closely unless forced to it by hunger. Of course more of this forage will be used if there is some attempt made to distribute the stock by a salting method.

It should be understood that the utilization of this range will not be affected by the topography but rather by the timber cover and the fact that the pine grass must

be used early in the spring in order that the maximum amount of good may be gotten out of it.

C. 1 Wd. Type.

The plants found on this range are listed as follows, and although a few found here may be omitted it is considered that these are a representative of the entire area:

Wheat grass	20%
Fescue	20%
Agrostis	10%
Tar weed	30%
Yarrow	5%
Onion	10%
Indian tobaco	5%

This type is untimbered and is found almost entirely on the rocky ridge tops and the south slopes. A more intensive study would divide this type into several sub-types such as 3Gr., 3D. etc. Most of these variations are caused by one of three agencies, i.e. exposure, use or moisture. For instance the more abrupt south slopes if undisturbed by over grazing, support a good stand of Western Wheat grass and Fescue but where the ecologic balance has been disturbed, inferior species come in (such as tar weed) and a 3 Gr. type is the result.

Another example is found on the heads of streams as on the head of Campbell Creek on the site of Campbell Ranger Station, where a good stand of grasses is found, which is caused by both moisture and a good depth of silted soil. Although these areas are small they affect the total amount of forage on the range to an appreciable extent but in this extensive Reconnaissance it was thought well to class them all under one head and thus avoid confusion from a multiplicity of types.

5. Management.

A. Season.

The authorized season for the Starkey Cattle and Horse Range is from May first to October thirty-first. The opening date is considered at least early enough to cover even the latest of seasons, and without a doubt a later season would be preferable if the primary forage of the range is to be brought back. Of course a later season will result in the loss of some of the pine grass range but it is thought that more will be gained by the increase of the forage on the open areas than will be lost on the pine grass areas.

It is suggested that the possibility exists of the present number of cattle using this range during a shorter period than at present time. It is recognized that the stockmen using this range pasture their stock, to a large extent, on stubble and of course they wish to get the stock on the Forest Range as early as possible in order that they may get their early spring farm work done, however if it is possible to shorten the season it should be done in the spring when this range needs protection.

It is considered that if a good salting plan were made and put into execution there would be a more even utilization and also a quicker utilization.

B. Salting.

Apparently the stock receive sufficient salt but there is no apparent attempt to control the movements of the stock by means of salt distribution, at least there is no pre-determined schedule. In some places the salt is placed on the ground and in some the stock are salted in troughs. There is a tendency to salt near the water. Here again it is considered necessary to emphasize the need of a uniform policy toward the placement of the salt troughs. It is considered that they should be placed (in almost every case) in the browse type as this type is less utilized than any other. There need be no fear that the open areas will not be grazed but on the contrary every attempt should be made to keep the stock off these areas as late as possible. Also the soil on the browse type will withstand trampling with less damage than the open type.

C. Water Development.

A few water troughs have been built and some of these are in a bad state of repair. It is thought that a complete system of troughs will result in a more even utilization of the range within a shorter period. However it should be made clear that the topography is such and the natural watering facilities are so plentiful, that the construction of the water troughs is not so important as that of salt troughs.

D. Cooperation.

The Starkey Cattle and Horse Association has been formed and has resulted in material benefit to both the users and the Forest Range. A drift fence is needed to eliminate the constant trespass of the permitted stock of the Starkey Cattle and Horse Range, on the sheep ranges which bound it on the south and west. Also this fence would prevent the straying of the stock and a consequent loss. It is known that stock from this range stray as far as Granite Meadows which is approximately twenty miles from the home range. In one instance a two year old horse strayed off the Forest to the west along the stock driveway and was last heard from at least 30 miles from the home range. The association has expressed a willingness to build this fence under certain conditions.

6. Recommendations and Summary.

The most immediate need of the Starkey Cattle and Horse range is systematic schedule for the distribution of salt. It is suggested that the troughs and grounds be numbered and a careful record kept of the number of pounds used at each trough. Also a map showing the location of the salting places should be kept. A careful analysis of the record of salt used will enable the Forest Officer to determine the relative distribution of the stock, and will give a basis for the formulation of a plan which will secure an equitable distribution according to the amount and quality of the range.

A drift fence is needed as noted above. This fence will also do away with the necessity of keeping a rider to herd back the stock from the adjoining sheep ranges. The doing away with this driving is of course desirable both from a standpoint of better range and fatter stock.

It is obvious that springs should be improved as stock should be able to get a drink quickly and not have to spend several hours of the day trying to get a drink from a mud hole. The flowing streams of course need no improvement.

It is suggested that every attempt be made to protect the open yellow pine and open grassland types and use the browse more closely. The need of early spring protection on this range cannot be too strongly emphasized as the range is carrying its full limit and only by the most careful management can it be expected to maintain even its present stocking of forage plants.

It is recommended that a careful examination of this range be made to determine whether this range cannot be used fully in a shorter period.

{signed} F.V. Horton
February 18, 1918. Grazing Examiner.

CAMAS AND HIDAWAY CATTLE AND HORSE RANGE

1. Topography.

Briefly stated, the topography of this entire range is the usual rounded ridges of the region, divided by sharply cut canyons which never exceed 300 feet in depth. The country is generally characterless as the ridges slope gradually towards the valley of the main drainage into which they merge without abrupt pitches.

The entire range lies within the John Day River watershed, the local drainage being thru Camas Creek.

2. Rock.

The rock is in evidence, for the most part, in the form of loose surface fragments of basalt which in some instances cover 40% of the area on south slopes and ridge tops.

3. Soil.

The soil of the region may be roughly grouped into three classes as follows: (1) Open disintegrated basalt, (2) Silted Creek Bottom Soil, and (3) Volcanic ash.

(1) The disintegrated basaltic soil is found on the open ridge tops and south slopes, and is characterized by its dark red color and lack of humus. This soil is very shallow, scarcely ever being more than one foot in depth.

(2) The silted creek bottom soil is differentiated by its dark brownish-red color, fine texture, inherent humus and moisture. This is the most productive soil on the entire range.

(3) The volcanic ash soil is found on the north slopes and is very light and loose in character. It is usually a light yellow color, and although it has a very good humus cover and contains considerable moisture, it dries out very quickly when the protective timber cover is removed.

4. Timber types.

The timber types have been roughly grouped into two main classes, i.e., Open Yellow Pine and Lodgepole Pine-Douglas and White Fir-Western Larch. The former is found on the south slopes and the dry ridge tops, while the latter is found almost exclusively on the north slopes.

5. Grazing Types.

The grazing types have been divided into three divisions as follows: 1 Wd. or open grassland, 6Gr. or yellow pine-grassland, and 6 Br. or browse-timber type. The intensive grazing reconnaissance of this area has divided it into some 13 different types but it is considered well to avoid the confusion of multiplicity of types in this extensive discussion.

1 Wd. Type.

The plants noted as growing on this type are listed below: -

Grasses 60%		Weeds 40%	
Wheat Grass	30%	Indian Tobaco	40%
Bromus	20%	Wyethia	15%
Agrostis	20%	Yarrow	5%
Deschampsia	20%	Stonecrop	20%
		Alum root	10%

Onion 10%

Ordinarily it would be expected that this type would furnish more feed per unit of area than any other on the range, but here we find that the contrary is the case.

It is believed that this type once supported a fairly good stand of grasses but continued abuse before the creation of the National Forest has so disturbed the economic balance that at present it is difficult to determine whether these south slopes and open ridge tops should be classed as grass or weed areas. The statement that these areas once supported a good stand of grasses is based on the fact that there is still such a stand on the south one half of the south one half of Sec. 26, T 4 S., R. 32 E., W.M.

6.Gr. Type.

This type which follows the open yellow Pine timber type very closely, furnishes most of the feed on this range. It would seem that each tree crown protects a small area of forage about the size and shape of a direct projection of a cross section of the crown itself. Each of these small "patches" has a good stand of grasses, principally fescue, which are evidently not eaten until the other grasses of the range have been consumed. The reason given for this is the fact that the pine needles become so mixed with the grass that the latter is rendered unpalatable to the stock.

The composition of this type is about the following:

Grasses 80%		Weeds 10%		Shrubs 10%	
Pine grass	20%	Arnica	5%	Spireae	45%
Fescue	30%	Stonecrop	15%	Rose	5%
Bromus	15%	Onion	10%	Service B. Willow	50%
Koeleria	15%	Yarrow	20%		
Deschampsia	20%	Sego	5%		
		Fragaria	5%		
		Alum root	20%		
		Drymocallis	10%		
		Indian tobaco	10%		

The intensive reconnaissance gives as average for surface cover, Density, and Palatability the following: S.C. 7/10, Den. 5/10 & Pal. 80%.

The shallow soil of this area, as evidenced by the up-rooted trees, will not withstand trampling in the early season but it is less susceptible to injury than the soil on the open grassland.

It is of interest here to note that the reproduction of the yellow pine is encroaching on the open grassland until, in some places the growth of forage plants is almost prohibited.

6 Br. Type.

This browse type represents the least used area of all the types, although it is scarcely ever in any part inaccessible to cattle and horses.

In composition it is approximately as follows:

Grasses 40%		Weeds 10%		Shrubs 50%	
Pine grass	80%	Arnica	60%	Lonicera	5%
Koeleria	20%	Yarrow	20%	Spiraea	20%
				Large huckleberry	45%
				Service berry	10%
				Willow	5%
				Seven-bark	15%

Surface cover 9/10, Density 8/10, Palatability 50% according to a number of estimates on various parts of this range.

This type will always be the last grazed unless the natural grazing habits of the stock be varied by the use of a salt distribution scheme. That is the cattle will feed the open and semi-open areas during the cooler part of the grazing season, then as the days grow warmer they will penetrate the browse type where they have the protection of the shade. However this late use of the pine grass will result in an economic loss as this grass is less palatable in the fall or summer than in the spring.

6. Salting.

Salting is now under the control of the Forest Service thru the Camas and Hidaway Cattle and Horse Association and one man is employed to distribute the salt and ride the lines. This is the first year that this system has been tried on this range but it is thought that the area is too big for one man to cover properly. Apparently there has been enough salt distributed this year which is certainly an improvement over previous years when it is known that the stock did not get sufficient salt.

Salting is done on the ground in most part although several salt troughs have been built in the south western part of this range. These troughs have been built on the ridge tops but are considered to be too close to water. Close supervision is needed on this point by the Forest Ranger in charge of the District.

7. Water Development.

There has been but little work along the lines of water development on this range and it is considered that if every spring were troughed and a few trails cut to the stream heads, that the water distribution would be sufficient to insure even utilization. This subject will be taken up more fully under the head of recommendations.

8. Cooperation.

The Camas and Hidaway Cattle and Horse Raisers Association, which is composed of a majority of the users on this range, is a very efficient organization which is cooperating with the Forest Service to the fullest extent. It is considered that much credit is due the Forest Supervisor for work along this line.

A suggestion is offered here as to the desirability of making two C.&H. Divisions out of this range with the dividing line placed at Camas Creek.

9. Season.

The season on this range is from May 1st to October 31st. This is considered too early for the higher part of the area but very good for the lower parts. Deferred grazing of the higher parts may be secured to some extent by the proper distribution of salt.

10. Recommendations.

At the present a fence is being built on the northeast boundary of the range. This is an excellent improvement and will certainly result in less loss and a more satisfactory feeling between the sheep and cattle men. It is considered that if the stock are confined within the present boundaries of the range, and provision is made for the equitable distribution of the stock there will be no resultant shortage of feed.

It would be well perhaps to watch closely the allotment of the Cunningham Sheep and Land Co., as it has been noted in past years that considerable numbers of cattle have been on this range each season. Thus it is possible that if the cattle are kept off this range by the drift fence, there may be a small amount of surplus range. As a tentative arrangement it is suggested that if there is a surplus of range here, that a part of the Cunningham S.&L. Co. range on the west be added to the M.G. Edwards allotment and this latter allotment be bounded on the west by the "rim" of Pearson creek instead of the creek itself. This would allow the Cherry C.&H. range to extend to the divide and if a drift fence were built (on the eastern boundary of the Cherry C.&H. Range) the difficulties of construction would be greatly lessened and the Cherry Range would include a natural grazing unit.

As to salt troughs it is considered that one trough to approximately each square mile will be sufficient to secure even utilization and again it should be stated that these troughs should be built on sites selected by the Forest Ranger in charge of the District.

It is believed that generally, salting should be done in the browse type and well away from the water. A schedule of salt distribution should be made and followed which will tend to make the stock use the range near the Forest Boundary first in the spring then the higher range later in the summer. The schedule should contemplate the protection

of the open grass land type, and open yellow pine type especially at the higher elevations.

Water troughs should be built at springs located in the following places:

SE 1/4 SE 1/4 Section 27, T. 5 S., R. 33 E., W.M.
NE 1/4 NE 1/4 Section 9, T. 4 S., R. 32 E., W.M.
NE 1/4 NW 1/4 Section 20, T. 4 S., R. 33 E., W.M.
SE 1/4 NE 1/4 Section 4, T. 4 S., R. 32 E., W.M.
NW 1/4 NE 1/4 Section 15, T. 4 S., R. 32 E., W.M.
SE 1/4 NE 1/4 Section 9, T. 4 S., R. 32 E., W.M.

By cutting a trail from the opening on the ridge top to the stream bed, water may be made available near the middle of the west 1/2 of section 15, T.4 S., R.32 E., W.M. The same is true in the NW 1/4 SE 1/4 of Section 34, T.5 S., R.33 E., W.M.

A spring in the SW 1/4 NE 1/4 Section 20 T.5 S., R. 33 E., W.M. has been troughed but at the time of inspection was in a very bad state of repair. It is considered that this spring should be dug out, the fence repaired and the troughs set up again.

It is realized that this range has been under going many changes during the past few years and that readjustment to the new conditions will be slow i.e. stock will not use new areas as completely as the old ones to which they are accustomed etc., but on the whole it is considered that the range is more nearly properly used than any other on the northern part of the Eastern Division of this Forest. Under the plans now outlined that is in regard to salting and fencing, it is thought that in a few years it will certainly be possible to increase the number of stock now allowed. There is apparently no great amount of forage unused and no great area over used hence it is said that if the whole is equally utilized there need be no fear of over grazing, and more than that, it is thought that under a proper system of management there will be an increase of forage on the areas which at present are producing only plants of low feeding value.

It might be of interest to note that the Badley Cabin unit is less used than any other part unless it be that area in the vicinity of Owings Ranger Station.

No increase in the number of stock alloted to this range is recommended nor is there any decrease thought necessary.

{signed} F.V. Horton
February 18, 1918. Grazing Examiner.

MADISON CATTLE AND HORSE RANGE
STANFIELD BROS. SHEEP ALLOTMENT
SMITH AND BARKER SHEEP ALLOTMENT

Topography.

The tract in question comprises approximately 14,400 acres of which approximately 2320 acres are patented, leaving a total of 12,080 acres of National Forest land.

The drainage is principally southerly thru Skookum and Alder Creeks, however, about one-third drains north and west. A high divide runs thru the tract from the south west to the east central boundary. The culminating peak is Madison Butte with an elevation of 5900 feet. The lowest elevation is on Alder Creek, about 3900 feet.

The creeks are sharp cut near their sources, sometimes with cliffs and rim-rocks. The canyon sides are steep in the northern part but flatten out towards the south into rounded characterless ridges.

Although the greatest area has a southern exposure, there is not found the type of vegetation which might be expected, i.e., open rocky flats or open bunch grass flats. This is shown on the accompanying map and in the notes below:

The following types are listed in order with regard to their comparative areas:

6 Br.

1. Type composition.

   A. Forage plants.

      (1) Large huckleberry.
      (2) Small huckleberry.
      (3) Lupine.
      (4) Pine grass.
      (5) Lonicera.

   B. Timber.

      (1) Douglas Fir.
      (2) White Fir.
      (3) Lodgepole Pine.
      (4) Western Larch.

2. Type Soil.

   A. Volcanic ash.

      (1) Moist but dries out quickly when exposed to the sun.

   B. Silted ash.

(1) North slope soil, moist but does not dry out quickly. Contains considerable humus.

3. Comment.

This type is somewhat variable in character in that in some places viz., along Alder Creek, there is a dense stand of White Fir reproduction about 20 years old. It forms an almost impenetrable thicket which supports almost no forage.

Along the top of the main divide, this type is chiefly composed of an over-mature stand of White Fir, Douglas Fir, and Lodgepole Pine. This stand of timber has become so decadent that perhaps 50% of it is dead and down, hence the ground is very thickly covered with logs but still supports considerable pine grass and large huckleberry. This type of range cannot be economically utilized by sheep but cattle will use about 80% of it according to observations of the Five Mile C.&.H Division.

A small area of this type is small huckleberry under a stand of dense lodgepole. This small huckleberry is considered useless as a forage plant on this range.

On the whole the type is very poor range for any class of stock especially sheep. It is estimated that it should be considered 33-1/3% poorer than the average sheep allotment on the Western Division of this Forest.

6.Pg. Type.

1. Type composition.

   A. Forage Plants.

      (1) Pine grass.
      (2) Agrostis.
      (3) Lupine
      (4) Peavine.
      (5) Yarrow.

   B. Timber.

      (1) Western Yellow Pine - average density.
      (2) Douglas fir - scattered.

2. Type Soil.

   A. Volcanic Ash.
      (1) Dry light soil found only on the sides of ridge.

B. Basaltic disintegration.
(1) On ridge tops; a light shallow sandy loam.

3. Comment.

This type is fairly constant throughout this section of the country and only varies with the soil and consequent density of the timber stand.

The timber varies in age from over-mature to reproduction of all ages. In the greater part of the area reproduction of the yellow pine forms thickets which permit of very little forage plant growth. However, many of the ridge tops are covered with a dense cover of pine grass which if fed early in the summer will be of considerable value as forage.

On the whole this type will average the same as similar allotments of the Western Division, i.e. about five acres plus, will support one sheep per season.

6. Pg. (Open) Type.

1. Type composition.

A. Forage plants.

(1) Pine grass.
(2) Lupine.
(3) Yarrow.
(4) Agrostis.
(5) Bromus.(?)

B. Timber.

(1) Scattered Yellow Pine.

2. Type soil.

A. Sandy loam to light ash. (Soil is light but apparently moist from underground source; type lies on south slope at brow of divide.)

3. Comment.

This type is very limited in area but supports a 10/10 stand of excellent forage in fact the entire area is covered with "bunch grass" and consequently has a very high carrying capacity. This type is more economically used by cattle than sheep, however, the sheep may use it without great economic loss if handled properly.

6. Burn Type.

1. Type Composition.

   A. Forage plants.

      (1) Large huckleberry.
      (2) Pine grass
      (3) Lonicera.

   B. Timber.

      (1) This type has supported a stand of Douglas Fir, Tamarack, Lodgepole Pine and white Fir but a fire has killed 95% hence there is a dense stand of reproduction of these same species.

2. Type soil.

   A. Volcanic Ash.

      (1) Has contained considerable humus but this has been burned out, leaving the mineral soil exposed.

3. Comment.

   This type cannot be considered in making the grazing allotment as it is practically inaccessible to all classes of stock. Cattle will utilize more of it than any other class.

6.M. Type.

This type extends for a short distance along Alder Creek and the map shows a larger area than really exists. The true meadow type will average only about one chain in width for perhaps a mile in length.

The plants found here are sedges, agrostis and fescues and form a 10/10 density.

This type also supports considerable timber, white fir and tamarack with an understory of alder. There is considerable down timber, consequently the type is difficult to utilize fully.

<u>General Comment.</u>

Taking into consideration the general brushy loggy character of the tract and the fact that it lies on both sides of a divide it will be seen that cattle allowed to graze on either slope will drift to the higher country, i.e., the top of the divide, unless restrained by a fence. Horses will also drift towards the higher ground and the open bunch-grass type. Cattle will utilize the forage in the thickets where the sheep are not herded. Neither of these sheep allotments were fully utilized this (1917) season although there were a few cattle and horses on them most of the time.

The utilization factor on this unit is influenced by the fact that there are trails and roads both used and unused which penetrate in all directions, even thru the denser thickets on the northern part. These old roads and trails have been built by grazing permittees and free use permittees.

{signed} F.V. Horton
February 18, 1918. Grazing Examiner.

BLACK MOUNTAIN CATTLE AND HORSE RANGE

This range may be classified as of all one type, i.e. 6 Br. as it lies almost entirely on a north slope. The timber is principally lodge pole pine, white and Douglas Fir in a mature to decadent stand. There is, of course, considerable reproduction of all these species.

The soil is a light, deep, moist volcanic ash, characteristic of the north slopes of this region.

Topographically this area, as stated before, lies on a long north slope it has, however, no abrupt pitches but rather a continual long even slope to the summit of the divide of which Black Mt. is the culminating peak. While the slope is not steep enough to prohibit grazing the dense timber stand will have some effect on the utilization factor. There are a few places where the timber is dead and down and also a few thickets of lodgepole pine reproduction which will exclude stock.

As a grazing unit this area is considered comparatively poor on account of the fact that pine grass forms the principal part of the forage. Browse, in the form of large huckleberry, forms the second class of forage from the standpoint of quantity. There is some lupine and peavine.

This range was apparently not fully utilized in the season of 1917 and there was no sign that the utilization had ever been 100%. A few signs of stock were seen on the old "free use" roads which penetrate this tract in all directions.

Water is plentiful without development as there are numerous springs and streams on the north slope.

There is no evidence of any systematic salt distribution system, in fact there was little sign that any salt had been put out this year. It is considered that this range will be more fully utilized if a systematic salt schedule be made and followed. Such scheme should contemplate the construction of salt troughs situated about one half the distance from the north Forest Boundary to the south boundary of the allotment. It is thought that when a well defined salting system is inaugurated there will be an increase in the carrying capacity of this range, although it is not recommended as long as the present system is followed.

It will be somewhat difficult to utilize the entire range without some trespass of the cattle and horses on the sheep range to the south unless a drift fence be built. However a more detailed study of the outside conditions are required before a definite recommendation can be made on this subject.

There is no association of the permittees using this range and the advisability of forming such an organization is problematical and largely up to the present Forest Officers in charge of this range. It is, however, considered advisable to begin agitation of this subject among the users of the range in order that an association may be formed in case it were considered advisable at some later date.

It is thought that the full number of permitted stock were not on the allotment all the time during the past season, but rather spent a considerable part of the time on private land outside the Forest. Therefore if by proper distribution of salt the entire alloted number were kept on the allotment during the entire season the utilization would be much closer. Hence it is not recommended that an increase be made immediately.

F.V. Horton
February 18, 1918. Grazing Examiner.