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LIGHTNING CREEK GOLD PROPERTIES

PROGRESS REPORT

Brief Survey of Events

At the request of The Sterling Engineering Co. Ltd., four drilling outfits, two complete with engines, were sent to Lightning Creek, British Columbia, by The Clyde Drilling & Prospecting Company on the 25th May. On 24th June one of their drilling foremen, experienced in the operation of these drills, left England and arrived on Lightning Creek about 10th July. By this time The Geophysical Prospecting Company, at the request of The Sterling Engineering Company, had sent a geophysical survey party. This party under the direction of Mr. P.D. Brown left England on 9th July and arrived at Wingdam, Lightning Creek, on the 29th of that month.

As a Director of both prospecting companies, actively concerned in their management, The Sterling Engineering Company considered it desirable that the writer should visit the Lightning Creek gold properties together with Col. Maller, the owner of these extensive mining leases and in accordance with their instructions he left England with Col. Maller on 7th August and arrived at Wingdam, the mining camp on Lightning Creek, on the 22nd of that month. Short stops were made en route at New York, Vancouver and Victoria, when the writer had the opportunity of discussing with interested parties matters relevant to the prospecting and development of Lightning Creek. On 20th August he flew with Col. Maller to Victoria, where he had the honour, pleasure and good fortune to meet Dr. Walker, the deputy Minister of Mines for the province of British Columbia.

Soon after arriving at Wingdam it was learned that the geophysical survey proper had started on 5th August and that the drilling of the first borehole B.H.I had commenced seven days later on 12th August, over 17 days and 10 days respectively before the writer's arrival. This borehole was located on the initial geophysical traverse 000 which, it should be noted was more or less the eastern boundary of the mining claims at that date (see Maps LCIA and LC4 attached to this report).

The writer's immediate concern was the analysis and interpretation of the resistivity and other survey data determined by the geophysical party in order to decide, as far as possible, on the further survey and drilling programme. This is covered by Mr. P.D. Brown in his interim report on the geophysical survey during the period 5th August - 17th September, a copy of which is enclosed. The plans, sections and data accompanying Brown's report have only recently come to hand, owing to the loss of the earlier copies sent to New York.

Having decided on the immediate programme of prospecting the writer took every opportunity of learning the salient geological and topographic features of this property and adjacent areas in order to obtain in the short time available as clear a conception as possible of the gold potentialities. To accomplish this, visits were made to various sections of the property and the conditions noted from personal observation on the site, reference was made to the literature, reports, maps, sections and data made available by the resident manager, Mr. W. N. Taylor, the gold commissioner and others and several operators familiar with past mining operations on Lightning Creek were interviewed. The writer's observations and the views formed at that time are given in his report of September 10th written on the occasion of his visit to Vancouver to attend meetings with Mr. W. Johnson and Col. Maller.

In this report reference was made to the prior visit of Mr. Johnson to Wingdam, when he was conducted over a large section of the property from below Wingdam up to Stanley by Mr. Taylor and the writer. On the way to Vancouver and at subsequent meetings there, the writer was fortunate in being able to discuss the application of dredging methods to various sections of Lightning Creek and adjacent areas with Mr. Johnson, who is a leading expert on the application of such methods in placer gold mining. At the meetings referred to important decisions were taken affecting in a very considerable degree the programme of prospecting during the remainder of the current season also next season. Briefly it was decided to discontinue drilling as quickly as possible and concentrate during the remainder of the season on shaft sinking and sampling at the lower end of Lightning Creek, using steel caisson and auxiliary equipment to be supplied by Mr. Johnson.

On the writer's return to Wingdam, he immediately informed Mr. Taylor of the new prospecting programme, and in accordance with the arrangements agreed on by Col. Maller and Mr. Johnson, he arranged for the geophysical survey party to survey and locate six shaft sites disposed along 2 lines in preparation for the early arrival of Mr. Dorflinger from San Francisco to supervise the shaft sinking and sampling.

On completion of this preparatory work, a further geophysical survey programme was agreed on with Mr. Brown covering the remainder of the current season and extending into the early part of next season. An outline of this programme covering the Beaver Pass sector and one traverse line on the potential dredging ground near the western end of Lightning Creek is given in Brown's interim report.

Before concluding this brief survey giving the sequence of events leading up to and during the writer's visit to the Lightning Creek Gold Properties, mention should be made of the visit of Dr. Holland to Wingdam on the 17th September, when the writer with Mr. Taylor had the pleasure of conducting him to various sections of the property, particularly where geophysical investigations and drilling operations were taken under way. Dr. Holland's visit was made in his official capacity as district geologist and representative of the Provincial Government Department of Mines.

On arrival of Mr. Dorflinger at Wingdam on 3rd October to undertake the shaft sinking and sampling on the lower section of Lightning Creek, the writer returned to Vancouver en route for New York, where he subsequently had ample opportunity of discussing the future programme of prospecting and development with Col. Maller.

Until his departure from New York on 25th October with Col. Maller on their way back to England, close contact was maintained with Mr. W. N. Taylor by telephone, telegram and air mail.

Geophysical Investigations and Drilling Programme

Since the writer's departure from Wingdam, Mr. Brown and all other members of the geophysical survey party have been engaged in carrying out geophysical investigations in the Beaver Pass sector. The extensive programme in this sector previously referred to and the severe weather conditions experienced have entailed their being in the field most of the time. As a consequence it has not been possible for Brown to forward any results to London. These will be brought by the party on their return to London, expected before the end of this year. In view of this only the results of the electrical resistivity survey of the Eastern Section can be considered in this report.

As may be noted from the plan L.C.1.A. and map L.C.4., attached, the eastern section of the creek, over which resistivity measurements were made, extends for a distance of about $1\frac{1}{2}$ miles from approximately 2,000 feet below Jawbone Creek to near the point where Davis Creek enters Lightning Creek, considerably less than a mile west of the village of Stanley, near to which the extremely rich placer gold field, second only to Williams Creek, was situated. The purpose of this survey was to determine the bed rock contour or profile at various sections and, thus in the first place, trace as far as possible, the westerly extension of the old gold channel, reported to be rich under the village of Stanley. In addition to the location of this "deep lead" or channel, generally of later glacial origin, this survey would also serve to locate any extensive rock benches probably carrying bed rock gold concentrations of preglacial origin.

As Brown reports over 1350 resistivity determinations were made in the survey of this eastern section of Lightning Creek. These were recorded at 59 different stations disposed along seven traverses, as shown on the attached plan LCIA. The depths of investigation on this survey varied from a minimum of 200 to over 260 feet, which must be regarded as good, considering the very dry conditions obtaining during August and September, in this area.

The bed rock configuration or profile along each of the seven traverses surveyed is shown on the seven attached sections from traverse 6000, the most westerly, to M.2000 the nearest to Stanley. These sections also show the ground profile and the levels indicated are comparative. Although this entails a certain amount of extra surveying work, it is essential and important for correlation and determination of the subsurface conditions. The profiles and interfaces interpreted have taken into account the information obtained from the 4 boreholes drilled, three on the calibration line 000 and one at the recommended site 4000-1300. The logs and sampling records of these boreholes are attached.

With the exception of the profile shown on Traverse 000, which has been modified in accordance with the information obtained this month from borehole 3A, all other profiles are in general similar to those submitted with Brown's report and therefore his observations regarding same still apply in large measure. The northerly channel indicated on sections M.1000 and M.2000 appear to be one and the same channel, in which case its course is as indicated in red on plan LCIA. It will be noted, as Brown observes, that it leads in the direction of the graveyard, under which it is reported the old channel was traced from the Costello shaft.

A second, but somewhat less pronounced channel, may be observed below G.S.47 on the M.1000 section. There is evidence suggesting that this southerly channel may continue upstream between G.S.15 and G.S.16 as indicated on the M.2000 Section and on the plan LCIA. It is reported that a hole drilled on this line, apparently in the vicinity of these stations did not reach bed-rock at a depth of 137 feet. Brown also reports that magnetic observations on this line indicate a zone of interest in the same locality, but this data has not yet come to hand.

On section 000 bedrock appears to be deepest in the vicinity of G.S.6 at a datum level of about 3575 feet, which it should be noted is shallower than the deep channels on M.1000 and M.2000, which are further upstream. This interesting fact leads one to the conclusion that, there may be a bed rock barrier across the old valley of Lightning Creek between traverses M.1000 and 000. This merits closer investigation next season, as such a condition would tend to assist gold concentration on the upstream side of the barrier.

Sections 1000 and 1300 cross the old La Fontaine mine workings. Brown states that these sections confirm in general the old drill section. Apropos of this it should be stated that detailed comparison with the old drill section does not appear to be possible, as in the first place the datum of the levels on the geophysical and drill sections are obviously different and therefore not comparative. There is also some doubt as to the position and alignment of the old drill section. Only a very broad similarity can therefore be observed.

As to the alternative depths of the channel indicated on the 1000 profile, it may at some future date be important to know, which of these is correct. For the present it seems advisable to avoid these particular sections, in view of the existence of old mine workings, the position of which is doubtful. The course of the deep channel between these two sections is as indicated on the attached plan LCIA.

The bedrock configuration along the two traverses 4000 and 6000, respectively near and below Jawbone Creek, is similar. As may be seen from the respective profiles attached, there is on both sections a relatively broad and shallow rock bench about 120 feet deep, dropping down northwards seventy feet and more to a deep or at least deeper channel. It is important that further investigations should be carried out in this locality in order to define the northern rim and incidentally the course and dimensions of this deeper channel. The existence of a secondary channel is evident on both sections near G.S.34 and G.S.57. The approximate course of the deeper channel is indicated on the plan LCIA, but as already stated, additional resistivity determinations are essential to define this more exactly.

On the evidence furnished by the resistivity survey of this eastern section of Lightning Creek, four borehole sites were recommended, before the writer's departure. These were as follows:-

Two on the most easterly traverse M.2000, at 400 (G.S.12) and 750 (between G.S.15 and G.S.16) respectively, to test the two channels indicated (see Plan LCIA and profile M.2000). One on traverse 4000 at 1300 (G.S.34) and one on traverse 6000 at 1300 (G.S.57) to determine if the broad rock benches noted carry gold. (See Plan LCIA and profiles 4000 and 6000).

Meagre though this drilling programme was, it was still further curtailed by the decision to concentrate as far as possible on shaft sinking during the remainder of the current season. In consequence only one of the four sites recommended has been drilled, viz: the G.S.34 site on traverse 4000 (Borehole 4). It should be stated that at the outset four boreholes were projected on the calibration line 000. It was hoped to drill these before the completion of the geophysical survey of the eastern sector, but, on account of inadequate drilling equipment and casing, and other technical difficulties, this proved impossible. Forseeing this difficulty, it was agreed to limit the number of boreholes on the calibration line to three.

The logs and sampling records of the four boreholes drilled since 12th August are attached. Profile 000 incorporates the information obtained from the three calibration holes B.H.1, B.H.2 and B.H.3A.. Borehole 4 completed on 4th November confirms, in a remarkable degree, the depth to bedrock shown on the profile of traverse 4000, deduced and plotted prior to the writer's departure at the beginning of October.

In concluding this section, it should be stated that the analysis and interpretation of the resistivity data, particularly the determination of true bedrock, is often complicated by the varying character of the drift deposits filling the old Lightning Creek valley, and still more by the varying character of the bedrock itself, which not infrequently is soft and badly decomposed to a considerable depth. On the other hand, the different stratigraphic units comprising the drift deposits and the different zones in the bedrock are generally well reflected by the variations in resistivity. In view of this it is advisable to note all horizons or interfaces having bedrock characteristics, as all of these, whether false or true bedrock, tend to favour gold concentration.

Shaft Sinking

In accordance with the decision taken at the meeting with Mr. Johnson in Vancouver, ten shafts having an aggregate depth of 75 feet have been sunk since 3rd October, the date of Mr. Dorflinger's arrival at Wingdam - a period of just under nine weeks. These shafts are disposed along three lines W1, W2 and W3 as indicated on maps L.C.4 and L.C.5. The sheet of profiles L.C.6, based on the levels run by the geophysical party, shows most clearly the exact position of the shafts on each of these lines. It should be noted that the vertical scale of these profiles is exaggerated ten times. The gold values determined are shown in the following table as an average for the deposits penetrated by the shaft and include the overburden and gravel down to the first clay "bed rock".

Although this amount of shaft sinking and sampling, undertaken so late in the season, must be considered good, it is only a beginning. Any attempt to give an average gold value for the area at this stage would be unwarranted, particularly as the lines of test shafts are well over 3/4 of a mile apart and the shafts on line W1 over 400 feet apart.

From the profiles on sheet L.C.6 it is obvious that only the shallowest gravel has been tested and as Mr. Taylor points out some of this has been worked over. In the case of shaft 1, for example, he expresses the view that this site is worked out ground.

Considering the foregoing facts the values recorded are, to say the least, encouraging and call for an intensification of the programme of testing the shallower gravels by shaft and drill, not only in this particular area but in all the broader stretches or "bays" of Lightning Creek, up to and including the Eastern Sector, as on a general basis the higher up Lightning Creek, the better should the values run.

Recommendations

Although the completion of this section might with some reason be deferred until the final results of this year's geophysical and shaft sinking programme have been submitted and studied, in view of the importance of making adequate and timely preparations for the spring of next year, it is proposed to make such recommendations as seem justified at this stage.

Considering the difficulties encountered due to the late start this year, it is important that all prospecting work should commence at the earliest possible date next year. This appears to be about the 1st May, in which case preparations should be made to that end.

The drilling of the three remaining borehole sites, already recommended in the Eastern Sector (see last two paragraphs page 5) should be proceeded with as early as possible. Simultaneous with this drilling, the detailed geophysical investigations of this Eastern Sector already recommended on pages 4 and 5, should be undertaken.

(a) between traverse lines 000 and M.2000 to determine at intermediate sections the course and extent of the two most easterly deep channels located (see plan L.C.IA) and also to locate the interesting bed rock features suspected between traverse lines M.1000 and 000 (see paragraph 6, page 4) and

(b) in the vicinity of traverse lines 4000 and 6000 in order to define more exactly the course and dimensions of the deep channel already noted on these lines (see plan L.C.IA) and paragraph 3, page 5).

Such investigations should indicate the best and most favourable sections for drilling in this Eastern Sector, West of M.2000, before the completion of the three boreholes just mentioned. In this connection attention should be called to the close interval drilling requested by Nixon, who stressed the gold potentialities of this Eastern Sector in his report of September 1941.

If time permits further efforts should be made to determine the course of the deep channel between M.2000 and Stanley. This may require instruments of still greater range and sensitivity, as attempts to make resistivity determinations along the graveyard line M.5400 were unsatisfactory.

In regard to the testing of the shallow gravels, which, since early October has been carried out by shaft sinking in the Western Sector, as has already been stated, an extension and intensification of this work is warranted on the results obtained to date.

Additional shafts should be sunk in the first instance along lines approximately midway between the present lines W1, W2 and W3 and on account of the wide interval between the present sites, at intermediate points on line W1 and at selected points on the same line South of the Creek. Further test shafts should also be sunk along selected lines West of W1 as far as the alluvial flats adjacent to Kent's dredging operations. For testing the drift deposits at depths beyond the limit of the present shaft sinking equipment, shallow boring outfits should also be employed at selected points.

In addition to the Western Sector attention must now be given to the testing of the shallow gravels in all the larger "bays" of Lightning Creek, particularly between Wingdam and Stanley, which includes the interesting Beaver Pass Sector. This calls for the early selection of the more promising sections of Lightning Creek and in this connection it is suggested that the resident manager Mr. Taylor, who is most familiar with the area, be asked to submit his proposals as soon as possible.

For the testing of the shallow gravels on Lightning Creek, it is recommended that preparations be made for the employment of at least three shaft sinking outfits and one shallow bore outfit with crews from 1st May 1947.

In view of Kent's dredging operations on the properties contiguous to Lightning Creek and the ever extending use of such methods in this region generally, the question of the best method or methods of mining the shallow gravels on the Lightning Creek properties is of immediate concern. Various open work methods have been suggested, first by Nixon in his 1941 report and only recently by Mr. W.N. Taylor in regard to the Western Sector. These merit serious consideration in consultation with experts in this type of mining, keeping in view the shallow gravel conditions and potentialities of Lightning Creek as a whole.

Although this report is concerned mainly with the prospecting work carried out during this short season in the most easterly and westerly sections of the property, it should be stated in conclusion that the additional information and evidence obtained has served to further increase the writer's opinion of the great potentialities of the Lightning Creek Gold Properties. In this connection he cannot do better than restate the concluding remarks of his earlier report of 10th September, that a gold property with such potentialities as Lightning Creek, of such extent and having such advantages, is unique.

Jas.C.Templeton.

9th December, 1946.

TABLE SHOWING AVERAGE GOLD VALUES PER CUBIC YARD IN
TEST SHAFTS ON LIGHTNING CREEK PROPERTY
(AS REPORTED UP TO 9.12.1946)

SHAFT	DEPTH	AVERAGE GOLD VALUE PER CU. YD.	
1	0 - 9'	2.3 cents	
2	0 - 3'	34.4 "	Line W.2 Gagen Creek
	0 - 10'	26.4 "	
3	0 - 8'	31.9 "	
4a	0 - 7'	10.5 "	
5	0 - 9'	10.7 "	Line W.1 Coldspring Creek
6	0 - 9'	8.8 "	
8	0 - 5'	35.6 "	
9	0 - 7'	21.6 "	Line W.3 Mexican Hill
10	0 - 7'6"	20.3 "	

GEOPHYSICAL SURVEY OF THE LIGHTNING CREEK
PLACER MINING PROPERTIES

FIRST INTERIM REPORT - SEPTEMBER 1946

1. INTRODUCTION.

A geophysical survey of the Lightning Creek Properties was started on the 5th August, 1946.

The bedrock of the Lightning Creek Valley is covered with glacial and other drift deposits varying in thickness from a few feet to more than 200 ft, and the primary object of the geophysical survey is to determine profiles of the bedrock at various sections in order to form a basis for the future drilling and testing programme. In particular it is hoped to locate any extensive rock "benches" and to trace the deep pre-glacial channels that may carry placer gold.

Both electrical resistivity and magnetic investigations are in progress, but this present interim report is concerned principally with the resistivity observations made over approximately two miles of the valley at the most easterly end of the property. These observations were made during the period 5th August - 17th September, 1946.

2. SUMMARY OF FIELD PROGRAMME

A grid survey is being made of the property based on a datum line (000) which crosses the valley at point about 100 yards downstream from Anderson Creek, with a true bearing of N 40° W. The reference numbers of all sections upstream from the datum line bear the prefix M (e.g. M.1000, being 1000 ft upstream from the datum line), and the reference numbers of all sections downstream from the datum line bear no prefix, (e.g. Line 1000 being 1000' downstream from the datum).

The datum line (000) has been chosen as the "calibration" line for the geophysical survey and four drill holes have been scheduled for this line for calibration purposes, two of which have been completed at the time of writing this report.

Seven geophysical sections were run across the valley during the period 5th August - 17th September, involving a total of over 1,350 observations being recorded at 59 different stations, (not including tie stations and repeat observations). The locations of the geophysical traverses and stations are shown on the accompanying plan (No.L.C.1).

In addition to the above programme of electrical resistivity investigations, a number of magnetic diurnals have been recorded and magnetic observations have been made along line M.2000.

3. DISCUSSION OF RESULTS

The two drill holes so far completed on the calibration line do not provide sufficient data on which to base a reliable calibration of the resistivity curves and it will not be possible to complete the interpretation of the results until at least four calibration holes have been drilled. A number of the resistivity curves reflect two or even three different horizons having bedrock characteristics, and it is therefore important that as much information as possible be

obtained from the drill holes to assist in the correlation of the various types of resistivity curve with actual subsurface conditions. In many cases the resistivity curves are well defined and it is already possible to give some indication of the subsurface conditions.

Copies of the 59 resistivity curves accompany this report together with seven sections showing the present ground surface and the profile of the bedrock based on a first interpretation of the geophysical results which will be subject to correction when sufficient borehole data is available with which to calibrate the curves.

Sections M.1000 and M.2000 indicate the presence of a channel in the bedrock close to the northern flank of the valley, the direction of which appears to be heading towards the Stanley graveyard. It is worthy of note that the old timers are reputed to have drifted out a channel for a short distance under the graveyard downstream from the Costello Shaft at Stanley, and to have found good gold values. It would seem reasonable to suppose that the channel indicated on the geophysical sections M.1000 and M.2000 is a continuation of this channel and an additional geophysical section has therefore been planned which will traverse the graveyard at a point approximately half a mile upstream from the M.2000 line.

It should be noted that in 1941, some resistivity investigations were made by Stephenson in the vicinity of the M.2000 line, the results of which indicated the existence of a channel approximately in the middle of the valley at a depth of 135 feet below the ground surface. A hole was subsequently drilled to a depth of 167 feet, without reaching bedrock, after which the hole had to be abandoned owing to the shortage of drive pipe. Magnetic observations recorded on this line (M.2000) indicate a zone of interest in the vicinity of stations G.S.15 and G.S.16, which are located approximately in the middle of the valley. Referring to the plotted section M.1000 it will be seen that there is a second channel indicated at M.1000-900 and it is possible that this channel may continue upstream and pass between stations G.S.15 and G.S.16 on line M.2000, thus accounting for Stephen's results.

Sections 1000 and 1,300 cross the old La Fontaine Mine workings, and the results of the geophysical work confirm in general the La Fontaine drill section put down in 1903. It is recommended, however, that the La Fontaine area be avoided in view of the existence of the old workings and that no further prospecting work be done in that area.

The resistivity observations recorded on lines 4000 (Jawbone Creek) and 6000 clearly indicate the presence of a relatively broad shallow bench at an average depth of 120 feet, in that sector. (See plotted sections accompanying report). There appears to be a sharp drop from the bench down into a deep channel running more or less under the road. The depth of the channel is of the order of 200 feet but further investigations may be required in order to define more clearly the dimensions of the channel. It is evident from a section of drill holes put down by the La Fontaine concern in 1903 that similar subsurface conditions exist at a point about $1\frac{1}{2}$ miles downstream from Jawbone Creek although the bench is at an average depth of 150 feet in that case. It would therefore appear that the bench indicated by the resistivity observations in lines 4000 and 6000 extends downstream for at least $1\frac{1}{2}$ miles, increasing in depth in that direction.

4. RECOMMENDATIONS FOR DRILLING PROGRAMMES

Reference has already been made to the apparent existence of a channel close to the northern flank of the Lightning Creek valley and of a second channel along the middle of the valley at sections M.1000 and M.2000 upstream from the datum line, and it is now recommended that further investigations be made at the points M.2000 - 400 (G.S.12) and M.2000 - 750 by means of drill holes. If this recommendation is adopted, provision should be made to drill to a maximum depth of 180' in each case.

The broad rock bench observed on lines 4000 and 6000 would seem well worthy of investigation. Referring to the accompanying plotted sections, it will be seen that there is a secondary channel running on the bench at points 6000 - 1300 (G.S.57) and 4000 - 1300 (G.S.34) and it is recommended that holes be drilled at these points in order to determine whether the bench carries any gold.

5. PROGRAMME OF FUTURE GEOPHYSICAL WORK

Electrical resistivity investigations are in progress at the present time in the Beaver Pass sector of the property. It is proposed to run eight geophysical sections in this area as follows:-

Two sections across	Lightning Creek	upstream from	Beaver Pass.
"	"	"	Beaver Pass valley.
"	"	"	Peters Creek.
"	"	"	Lightning Creek downstream from Beaver Pass.

However this programme will involve about 1,500 observations at more than 70 different stations; it is therefore unlikely that it will be completed during the current season.

In view of the interest that has recently been focussed on the potential dredging ground at the western end of the property, it is proposed to run a geophysical section of about eight stations along line W.2 on which the first three test pits are to be sunk. This line crosses Lightning Creek in a N-S direction close to the mouth of Gagen Creek.

Magnetic observations will be recorded across all sections already investigated by the electrical resistivity method.

Philip D. Brown

BOREHOLE NO. 1

DATE STARTED 12.8.46 DRILLER J. McHARDIE TOTAL DEPTH 154'10"

DATE FINISHED 27.8.46 DRILL NO.1(200S.S.) BEDROCK 147' 0" HOLE N

00-550

Casing to be pulled WATER LEVEL 48½'

<u>DEPTH</u>	<u>FORMATION</u>	<u>REMARKS</u>	<u>SAMPLING</u>	
			<u>Depth</u>	<u>Gold Est</u>
0' - 13'5"	Loose surf Gravel.		13' - 16'	1 colour
13'5" - 25'	Tight gravel.			
25' - 31'	Clayey Gravel			
31' - 34'	Schist boulder or slide rock.		31' - 34'	3 colour
34' - 35'	Clayey Gravel.		34' - 37'	2 col.fi.
35' - 36'	Loose gravel & sand.			
36' - 37½'	Tight fine gravel.			
37½' - 48½'	Slum.			
48½' - 51'	Coarse gravel.		49' - 52'	1 col.fi.
51' - 59'	Fine clayey gravel.			
59' - 90'	Soft clay - grey.			
90' - 91'	Loose sand, gravel and clay.	Slight B.S.		
91' - 99'	Tight gravel - grey.			
99' - 109'	Clayey gravel - yellow.			
109' - 117'	Fine gravel - yellow.		112' - 115'	1 col.fi.
117' - 124'	Coarse brown gravel.	Slight B.S.		
124' - 131½'	Fine gravel and sand brown.	Slight B.S.		
131½' - 134'	Loose coarse gravel brown.			
134' - 141'	Sand & gravel brown.	Slight B.S.		
141' - 143'	Sand & gravel - grey.			
143' - 147'	Crushed grey rock.	Much pyr.		
147' - 154'10"	Quartz bedrock.	Slight pyr.		

Fire assays of conc. by J. R. Williams & Son.

1-147' 0.38 oz/ton \$13.30 Ton.
 147-154'10" 0.24 oz/ton \$ 8.40 Ton.

NOTE: - Casing driven to 148' 4"

BOREHOLE NO. 2

DATE STARTED 12.9.46 DRILLER J. McHARDIE TOTAL DEPTH 128½'

DATE FINISHED 21.9.46 DRILL No.1 (200 S.S.) BEDROCK 111½' HOLE No. 00-765

CASING TO BE PULLED WATER LEVEL 1½'

<u>DEPTH</u>	<u>FORMATION</u>	<u>REMARKS</u>	<u>SAMPLING</u>	
			<u>Depth</u>	<u>Gold Est.</u>
0' - 32'	Loose gravel.	Probably tailings slightly pyrite.	0' - 14' 14' - 23' 23' - 32'	1 fine colour
32' - 39'	Fine gravel.		32' - 39'	1 fine colour
39' - 51'	Running Sand (Boiled up in casing)	Slight B.S.	41' - 50'	
51' - 60'	Clay and gravel.	Much pyrite	50' - 60'	1 fine colour
60' - 75½'	Slum grey.			
75½' - 84½'	Fine gravel & sand.	Much Pyr. & B.S.	75½' - 84½'	
84½' - 102'	Coarse gravel, sand and some clay.	Slight Pyr. and B.S.	84½' - 93½'	
102' - 104'	Cavity (upper eleven of England workings?)	Slight Pyr. B.S.	93½' - 102'	
104' - 105'	Timber (Mine)			
105' - 111½'	Coarse gravel, sand and some clay.			
111½' - 128½'	Bedrock, Schist.			

Total depth of casing 115½ feet

Consid. B.S. (coarse) 102' - 111½' 18 med.col. - 16 fine c

Slight B.S. & Pyr. 111½' - 113½' 5 " "

BORIHOLE No.4

Date started 12.10.46 Driller J. McHardie Total Depth 143'
 Date finished 4.11.46 Drill No.1 (200 S.S.) Bedrock 130' Hole No.4000-12
 Water Level 0'
 (runs out of pipe)

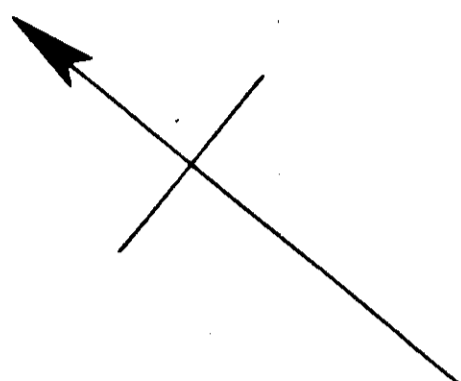
<u>Depth</u>	<u>Formation</u>	<u>Depth</u>	<u>Cons.</u>	<u>Gold Est.</u>	<u>Sampling</u> <u>Wt. of Gold</u>	<u>Vol</u> <u>Ret'd</u>	<u>Vol</u> <u>Cal</u>	<u>Value/10</u>
0- 11	Silt							
11- 19	Gravel, some clay.	11- 19	sl.B.S.		(0.027¢)	1.14 c/ft	2.20	2.01 ¢
19- 96	Clay with fine rocks. Wet and soft, acts like slum.							
96-106	Loose fine gravel.	96-106						
106-110	Tight gravel and sand.	106-110						
110-113	Clay and gravel.	110-113	med.pyr. sl coarse B.S.		0.19 mg.	2.42	1.9	0.223 ¢
113-117	Coarse sand	113-117	Sl.pyr. Sl.B.S.		(0.02¢)			
117-123	Soft clay and gravel.	117-123	Consid.B.S. Sl. Pyr.		1.38 mg. (0.15¢)	1.75	1.7	2.51 ¢
123-130	Tight gravel yellow.	123-128	Much Pyr. 2V fine Sl. B.S. col. 60 mg.		4.48 mg.	2.25	1.9	60.1 ¢
		128-130	Con. Pyr. 1 coarse Sl. B.S. col.		(5.01¢)			
130-142	quartzite bedrock	130-142	Con. Pyr.		0.32 mg. (0.025¢)	2.63	2.2	.26 ¢

Casing driven to 130½ feet.

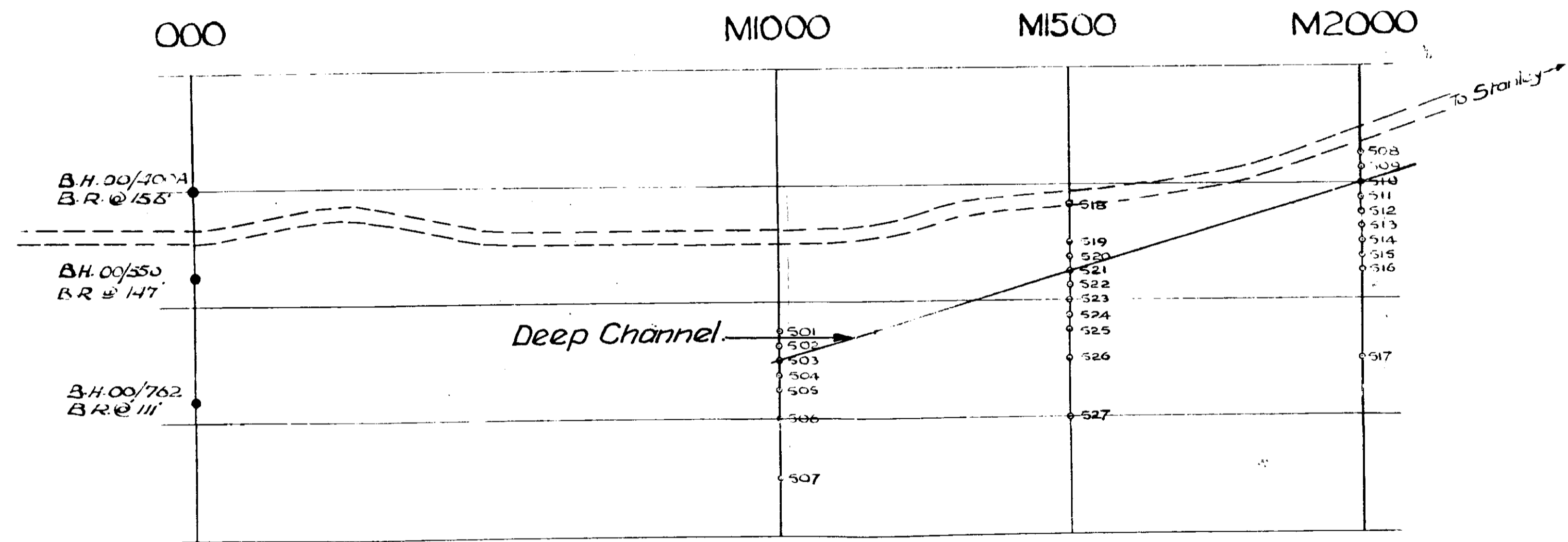
Fine assays of concentrates after amalgamation
by J. R. Williams & Son.

123' - 130' 0.12 oz/ton
130' - 140' 0.16 oz/ton

Gold weighed by J. R. Williams & Son - value \$55.00/oz.



Department of
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ASSESSMENT REPORT
NO. **5** MAP **#1**
PART I



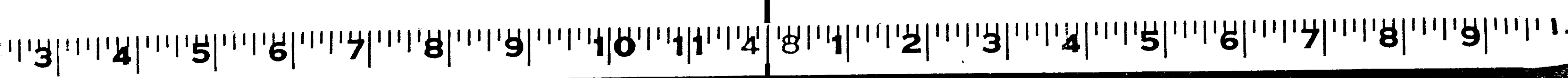
PLAN OF
GEOPHYSICAL STATIONS IN EASTERN SECTOR.

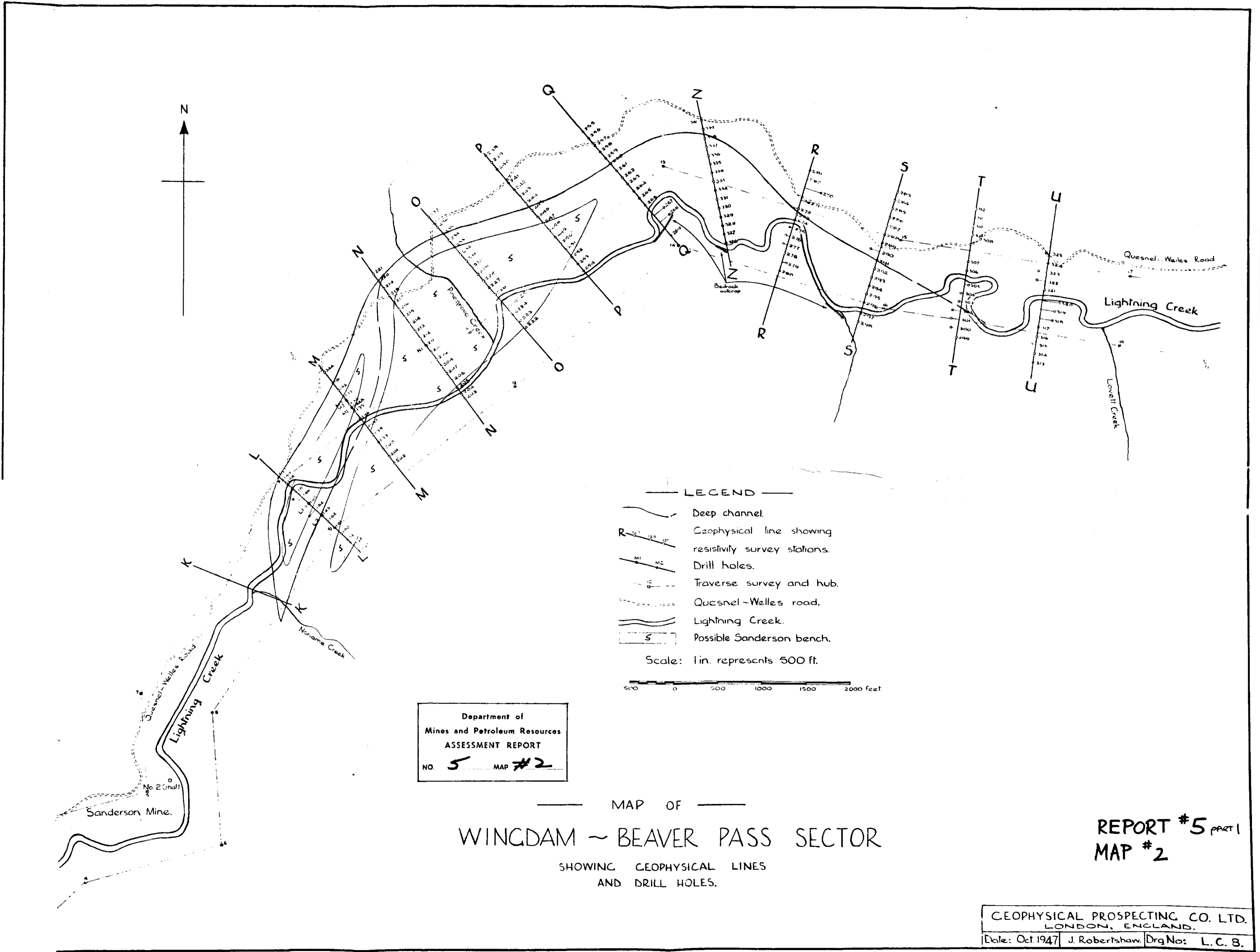
REPORT #5
MAP #1

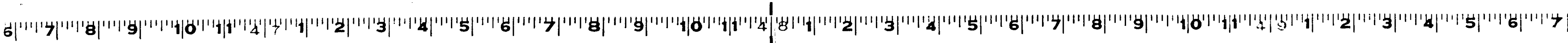
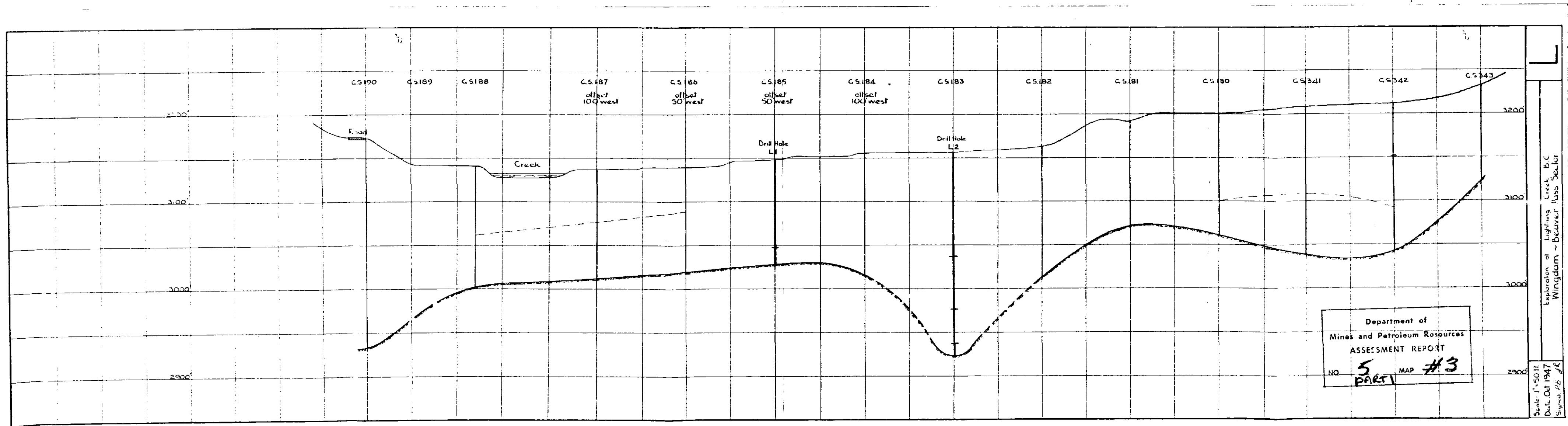
Scale: 1 in. represents 1 ft.

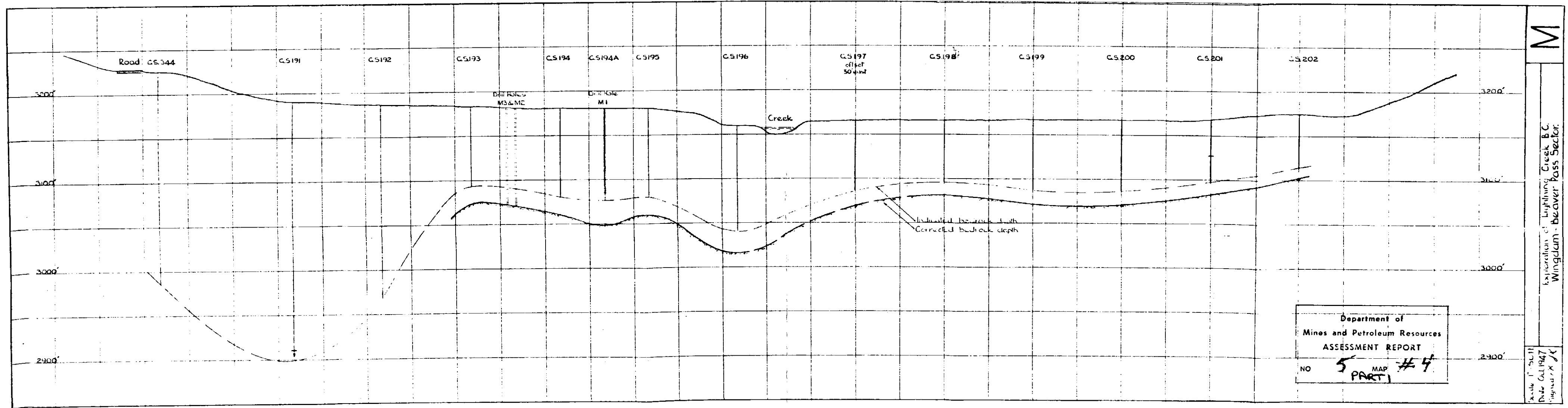
- LEGEND —
- 501 Geophysical Station
 - BH Holes - drilled 1946
 - - - Road - Quésnel to Wells

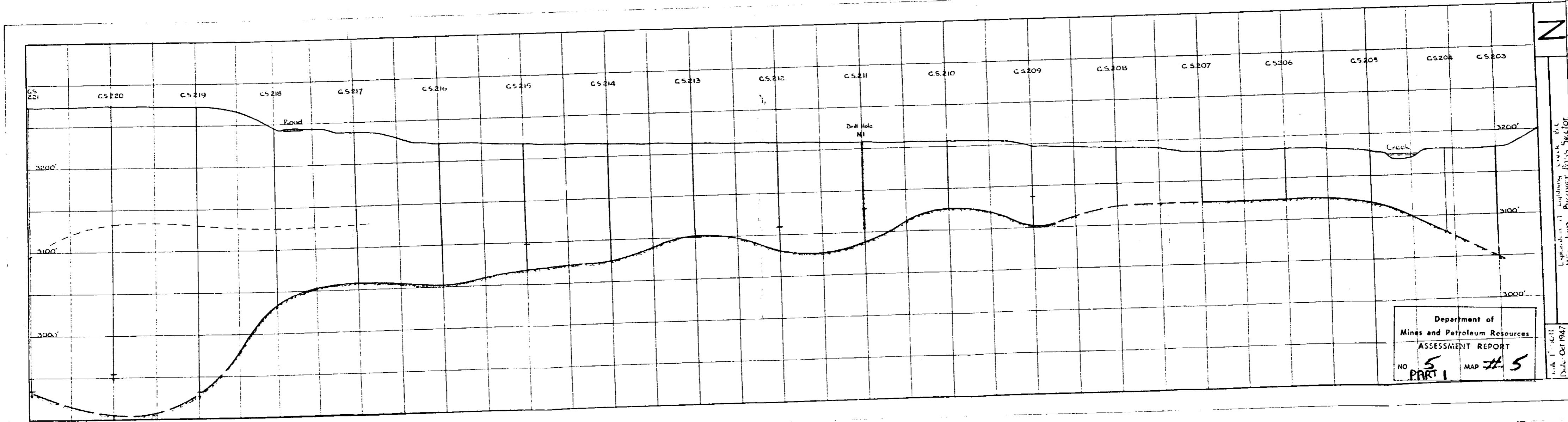
GEOPHYSICAL PROSPECTING CO.
LONDON, ENGLAND.
October '47 DRG. No. LC7 P.D.B.





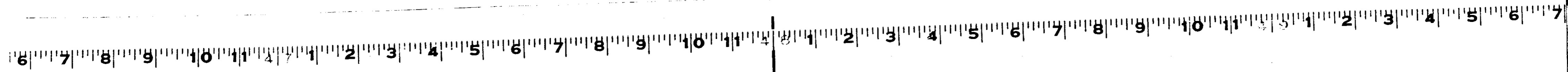


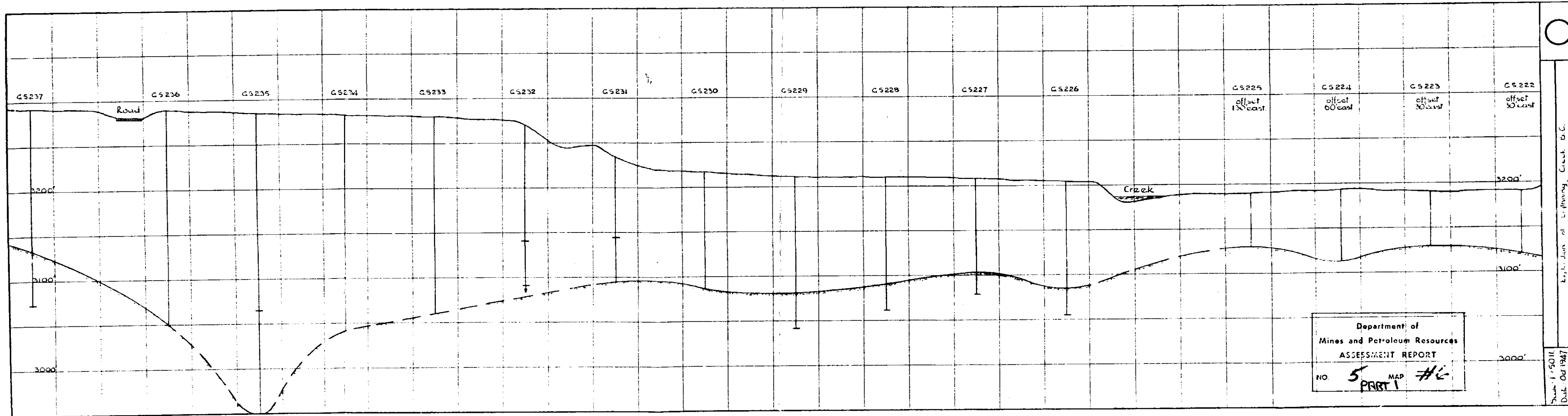


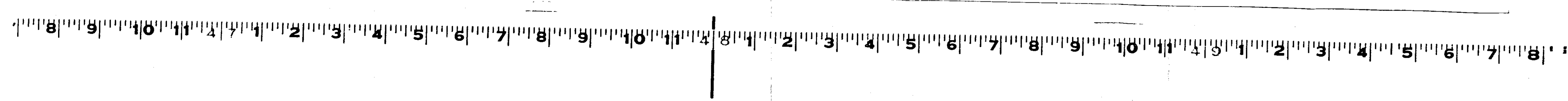
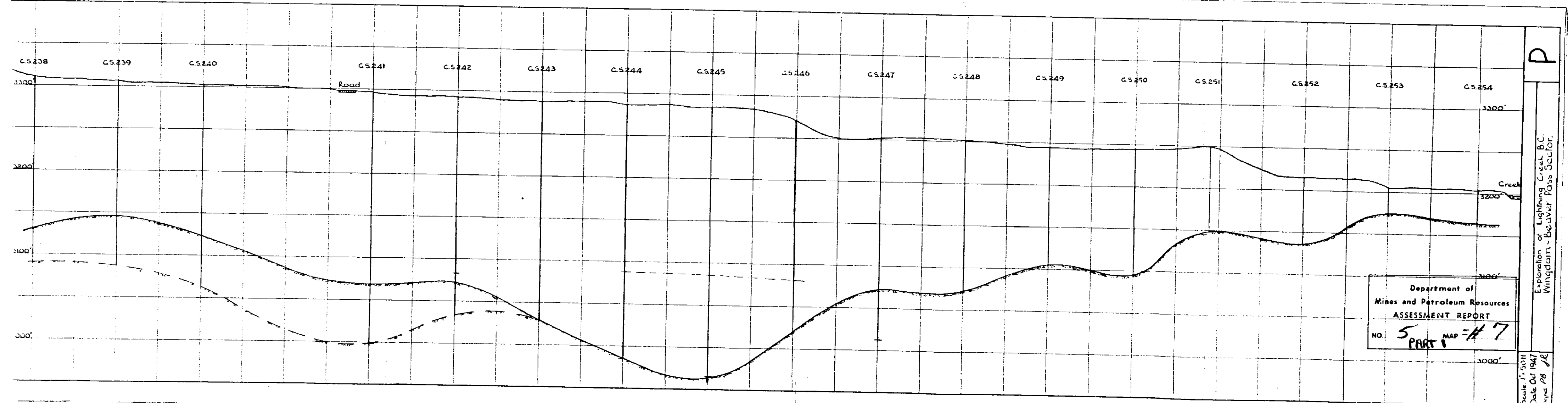


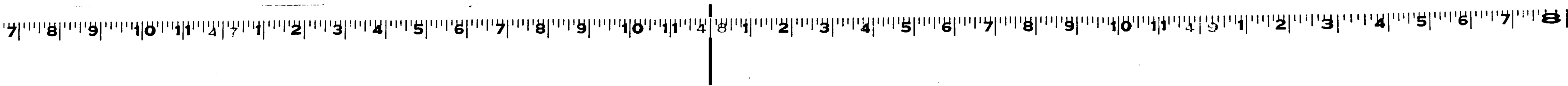
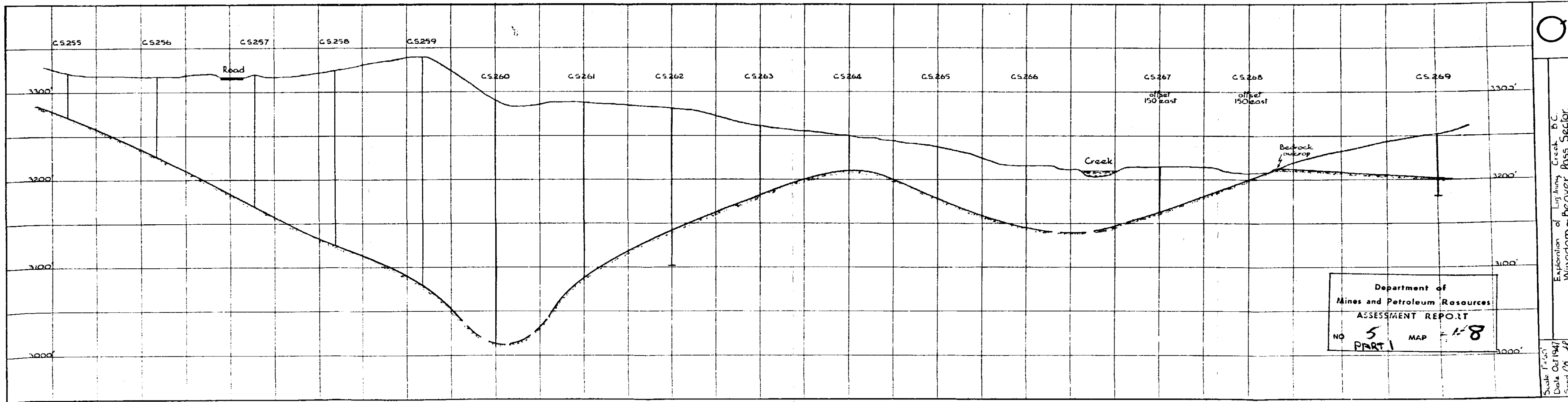
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **5** PART I MAP # **5**
 Date: Oct 1947

N
 Exploration of Lightning Creek, B.C.
 Winuluan Beaver Pass Sector
 Scale 1" = 100'







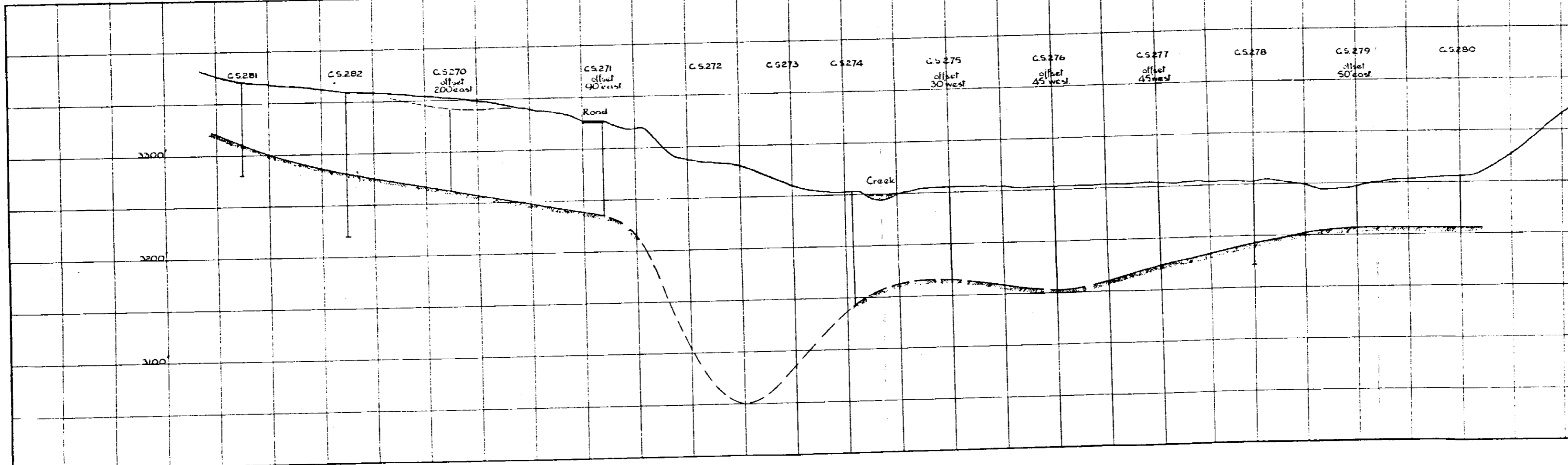


Department of
Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 5 MAP # 9

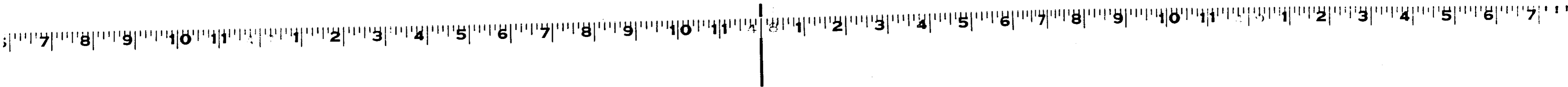
R



Exploration of Lightning Creek B.C.
Wingdam - Beaver Pass Sector

REPORT #5 PART 1
MAP #9

Scale 1"=50ft
Date Oct 1947
Signed J.H. J.K.



REPORT OF THE GEOPHYSICAL SURVEY
OF THE LIGHTNING CREEK GOLD
PROPERTIES

A.R. 5
part 2

PART II - OCTOBER & NOVEMBER 1946

1. INTRODUCTION

A geophysical survey of the Lightning Creek Properties was commenced on the 5th August, 1946, the primary object of which was to determine the bedrock profile at various sections across the valley in order to form a basis for the future drilling and testing programme.

The survey of the Eastern Sector made during the period 5th August - 17th September, 1946 was covered in the first interim report of September, 1946. The present report is concerned with the resistivity investigations made in the Beaver Pass Sector during the month of October and early part of November. The results of a number of preliminary magnetometer observations made in the Eastern and Western Sectors during the month of November are also noted.

2. SUMMARY OF THE FIELD PROGRAMME

During the latter part of September the geophysical crew were engaged on the clearing and surveying of the three test shaft lines on the Western Sector of the property, and the geophysical survey proper was continued at the beginning of October.

ELECTRICAL RESISTIVITY INVESTIGATIONS

Two geophysical sections were completed in the Beaver Pass Sector; the first section, B.6., across the Lightning Creek valley was located about 1,250 feet upstream from Beaver Pass House, and the second section, B.7., across Beaver Pass Creek was approximately 2,500 feet upstream from Beaver Pass House. These sections involved the recording of more than 1,180 determinations at 48 different stations (not including tie stations and repeat observations). The location of these geophysical traverses and stations are shown on the accompanying plan no. L.C.2.A.

This work was part of a larger programme which had been planned for the Beaver Pass Sector, one of the objects being to detect the presence of any extensive rock 'benches' that might carry gold bearing gravels which could be economically mined by dredging or open pit methods. Owing to the limited time available before the ground was covered with deep snow, and the considerable time lost in clearing the survey lines through the thick vegetation, much work still remains to be done in the Beaver Pass Sector.

An attempt to make resistivity determinations across the Stanley graveyard approximately one mile upstream from the datum line (000) was unsuccessful due to the exceptionally high ground resistivity in that region, necessitating the use of even higher voltages than were available. In sharp contrast to the conditions found on the Stanley graveyard, the ground resistance along the Gagen Creek shaft line in the Western Sector was so low at depths greater than about 60 feet, that it was not possible to measure it without modifying the equipment, for which there was no time before the close of the season. In view of the conditions referred to above, efforts should be made to use more powerful apparatus in these sections.

PRELIMINARY MAGNETOMETER OBSERVATIONS

With the aid of a vertical magnetic variometer it is possible to detect concentrations of blacksand with which concentrations of gold are often associated, and therefore it was decided to make a preliminary reconnaissance with the magnetometer, in order to form a basis for any future investigations.

Observations were made along lines M.2000, 000, 1000, 4000, and 6000, in the Eastern Sector, and along the test shaft lines in the Western Sector. Corrections were made for the diurnal variation by making repeated observations at base stations, but this is not considered to be very satisfactory in view of large diurnal variations prevailin - as much as 90% - being greater than the magnetic anomalies to be recorded in many instances. It is essential if any further magnetic investigations are made in this area, that a second magnetometer be used solely for the recording of diurnal variations.

5. DISCUSSION OF THE RESULTS

Electrical Resistivity Investigations

From the correlation of the logs of the four boreholes drilled during the season with the corresponding resistivity curves, it is quite evident that the surface of the bedrock is reflected by a major break in the resistivity curves; but it has been found that in a number of cases there appear to be fractured and saturated zones in the bedrock itself which are also reflected in a similar manner to that of the bedrock surface. It has been considered advisable to indicate on the accompanying sections all the horizons having bedrock characteristics. However, by considering the results obtained at each station in relation to the results obtained at the neighbouring stations, it has been possible to give what is believed to be a fairly accurate indication of the bedrock profile.

The results of the analysis of the investigations made in the Beaver Pass Sector are shown on the accompanying sections B.6 and B.7. Referring to the section B.6, it will be seen that there is a channel more than 250 feet deep and 300' - 400' wide under the middle of the Lightning Creek valley, flanked on either side by broad rock benches varying in depth from 70' to 120'. It is these benches that are of particular interest in view of their width and shallowness, for if they are proved to carry gold bearing gravels they might possibly be worked by dredging, or open pit methods. A similar condition appears to exist across Beaver Pass Creek as will be seen from the accompanying section B.7, the rock terrace extending from G.S.104 to G.S.110 at an average depth of 100' being the most interesting feature from the point of view of potential dredging ground.

PRELIMINARY MAGNETOMETER INVESTIGATIONS

The results of the magnetometer observations made across eight sections accompany this report. A detailed analysis is not considered to be justified since the observations were made purely in the nature of a reconnaissance, but the major points of interest are noted below.

On line 4000 the greatest magnetic anomaly occurs at G.S.27 and G.S.28, thus coinciding with the position of the deep channel previously located by resistivity investigations. In contrast, it will be seen that on line 6000, the magnetic anomaly is greatest between G.S. 53 and G.S.57, coinciding with the broad rock bench located by resistivity investigations.

A zone of interest occurs between points 700 and 800 on line M.2000, and it was this, in conjunction with the configuration of the bedrock surface as determined by resistivity investigations, upon which the recommendation for a drill hole at this location was based.

Unfortunately, the results of the investigations along line 000 were affected to a considerable extent by the presence of the drilling tackle which was being stored in the vicinity.

Referring to the magnetic results obtained along the line of test shafts W.3 in the Western Sector, it will be seen that the zones of greatest magnetic anomaly occur between G.S.125 and G.S.128, and between G.S.132 and G.S.136, and it is worthy of note that the gold content of the gravel in shaft 8 located between G.S.125 and 126 was relatively high. It might well be that shafts 11 and 12, located between G.S.132 and 136, will prove to have high gold values also. The low magnetic anomaly observed between G.S.129 and 131, is no doubt explained by the fact that the creek has cut its present channel into the clay, thus exposing the clay at this section.

Referring to line W.2, the gravel on the northern bank of the creek on which shaft 1 was located, has been worked, and in consequence little importance can be attached to the magnetic results there (i.e. G.S.114 -116), but on the south bank of the creek (G.S.117 - 121) there is a peak at the Shaft 2A which suggests a concentration of black sand there.

It will be seen from the magnetic anomaly curve for line W.1 that a pronounced peak occurs at Shaft 4A and a secondary peak occurs at Shaft 6, both of which are no doubt due to the presence of black sand on the ground surface remaining from the gravel dug from the shafts. It is not possible at this stage to account for the minor variations in the curve which occurs at G.S.142.

4. RECOMMENDATIONS FOR DRILLING PROGRAMME

It is perhaps too early to make any definite recommendations for drilling in the Beaver Pass Sector, but the sections between G.S.69 and G.S.75 on line B.6, and between G.S.103 and G.S.110 on line B.7, to which reference has already been made, might be considered worthy of exploration even at this stage.

Recommendations were made in the first report that the broad rock bench observed on lines 4000 and 6000 in the Eastern Sector be explored by means of drill holes, as a result of which one hole was drilled at the point 4000 - 1300, but more holes will be required in this area in order to determine whether the bench carries any gold. It is worth noting here that the results of the resistivity investigations at the point 4000 - 1300 were well confirmed by the borehole.

The holes previously recommended at points M.2000 - 400 and M.2000 - 750 have yet to be drilled.

5. RECOMMENDATIONS FOR FURTHER GEOPHYSICAL WORK

In planning any future survey it should be remembered that a season of only six months (May to October) can be counted upon with any certainty, and it is important therefore that full use be made of such a limited working season. It was most regrettable that during the 1946 season at least half the time of the geophysical crew was spent on the clearing and preparation of the survey lines; in any future work it is strongly recommended that sufficient labour be provided so that two or more men can be employed continuously on the clearing of the survey lines in advance of the geophysical crew. If this procedure is adopted, the progress of the geophysical survey will be very considerably assisted.

A large part of the Lightning Creek Properties still remains to be investigated, but mention is made below of the work which is outstanding from the 1946 survey.

In order to complete the investigations started in the Beaver Pass Sector, the following additional traverses are required:-

One	traverse	across	Lightning	Creek	upstream	from	B.6.	
"	"	"	Beaver	Pass	Creek	upstream	from	B.7.
Two	"	"	Lightning	Creek	downstream	from	Beaver	Pass.

Owing to the swampy nature of the ground in this area it will not be possible to attempt the first two traverses until the dry season, but it may be possible to undertake the two traverses downstream from Beaver Pass, earlier in the season.

Additional investigations are required along lines 4000 and 6000 in the Eastern Sector, in order to define more clearly the deep channel already noted there, and investigations have still to be made across the Stanley Graveyard in order to locate the continuation of the deep channel noted on section M.2000 close to the northern flank of the valley. Both these areas lay well above the creek, and it will therefore be possible to do this work early in the season when the creek is in flood.

Philip D. Brady

31st January, 1947.

LIG NING CREEK GOLD PROPERTIES
WESTERN SECTOR

SUMMARY OF TEST SHAFT RESULTS AS REPORTED UP TO JANUARY, 1947.

SHAFT LINE W.1. - COLDSRING CREEK

Shaft No.	*Average gold value per cubic yard	Formation	Water Level	Remarks
5	10.7 cents for depth of 0-9 feet.	0'- 3' silt 3'- 9' gravel 9'-22' clay	No water	
4a	10.5 cents for depth of 0-7 feet.	0'- 2' silt 2'- 6' sand 6'- 7' gravel 7'-14' clay	2'	
6	8.8 cents for depth of 0-9 feet.	0'- 1' silt 1'- 9' gravel 9'-20½' clay	1'	

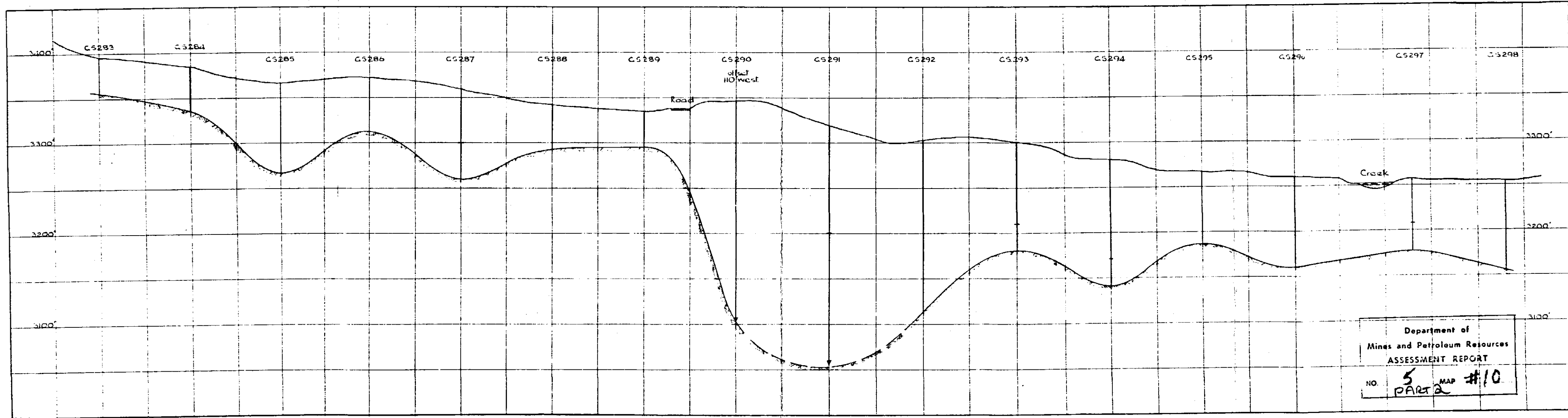
* The gold values quoted in these tables are based on a fineness of 900, but tests have shown that in actual fact the fineness is 1% - 2% higher than this.

SHAFT LINE W.2 - GAGEN CREEK

Shaft No.	Average gold value per cubic yard	Formation	Water Level	Remarks
1	2.3 cents for depth of 0 - 9 feet.	0 - 1' Soil 1'- 4' Fine gravel & sand. 4'- 9' Gravel, some boulders. 9'-9½' Blue Clay.	No water	Nature of gravel & surface indicate waterground previously worked.
2	34.4 cents for depth of 0 - 3 feet.	0 - 1' Soil 1'- 3' Fine gravel 3'- 8' Blue clay	No water	Fineness and looseness of gravel suggest tailings from past workings.
2a	26.4 cents for depth of 0 - 10 feet.	0 - 1' Soil 1'-10' Gravel 10' Blue clay.		
3	31.9 cents for depth of 0 - 8'	0 -4½' Soil, sandy clay. 4½'-8' Medium & coarse gravel. 8'-9' Blue clay.	8½'	

SHAFT LINE W.3 - MEXICAN HILL

Shaft No.	Average gold value per cubic yard	Formation	Water Level	Remarks
7		0 - 1' Soil 1' - Tailings		Pump unable to handle water, shaft not completed.
7 ₂	20.8 cents for depth of 0 - 8 feet.	0 - 1' Soil 1' - 6' Fine gravel & sand some clay 6' - 8' Medium & coarse gravel. 8' - Blue clay.		
8	55.8 cents for depth of 0 - 5 feet.	0 - 1' Soil 1' - 5' Medium gravel (tailings) 5' - 5 $\frac{1}{2}$ ' Blue clay.	5'	
8 $\frac{1}{2}$	5.2 cents for depth of 0 - 8 $\frac{1}{2}$ ' (see Remarks)	0 - 7' Fine gravel (tailings) 7' - 8 $\frac{1}{2}$ ' Coarse gravel 8 $\frac{1}{2}$ ' Blue clay.		Gold lost while shovelling gravel through water in bottom of shaft. Shaft to be repeated.
9	22.2 cents for depth of 0 - 7'	0 - 1' Soil 1 - 7' Med. gravel (tailings) 7 - 7 $\frac{1}{2}$ ' Blue clay.	7'	
10	20.3 cents for depth of 0 - 7 $\frac{1}{2}$ '	0 - 1' Soil and moss 1 - 2' White sandy clay 2 - 7 $\frac{1}{2}$ ' Coarse gravel, 1 large boulder. 7 $\frac{1}{2}$ ' - Blue clay	No Water	Face sample taken from south bank of creek.
10 U	10.6 cents for depth of 0 - 7'			Face sample at a point 250' upstream from No. 10.
10 L	7.0 cents for depth of 0 - 7'			Face sample at a point 200' downstream from No. 10
11		0 - 6' Peat 6 - 7 $\frac{1}{2}$ ' Sandy white clay 7 $\frac{1}{2}$ - 12' 12 - 18' Fine gravel and sand		Not completed. Tested to a total depth of 22 $\frac{1}{2}$ ' by means of narrow tube but no clay encountered.
12		0 - 2' Soil 2' - 3' Sandy white clay.		Not completed.

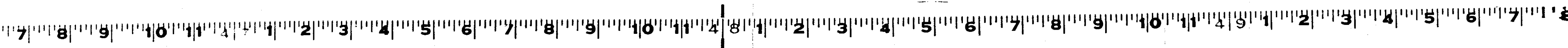


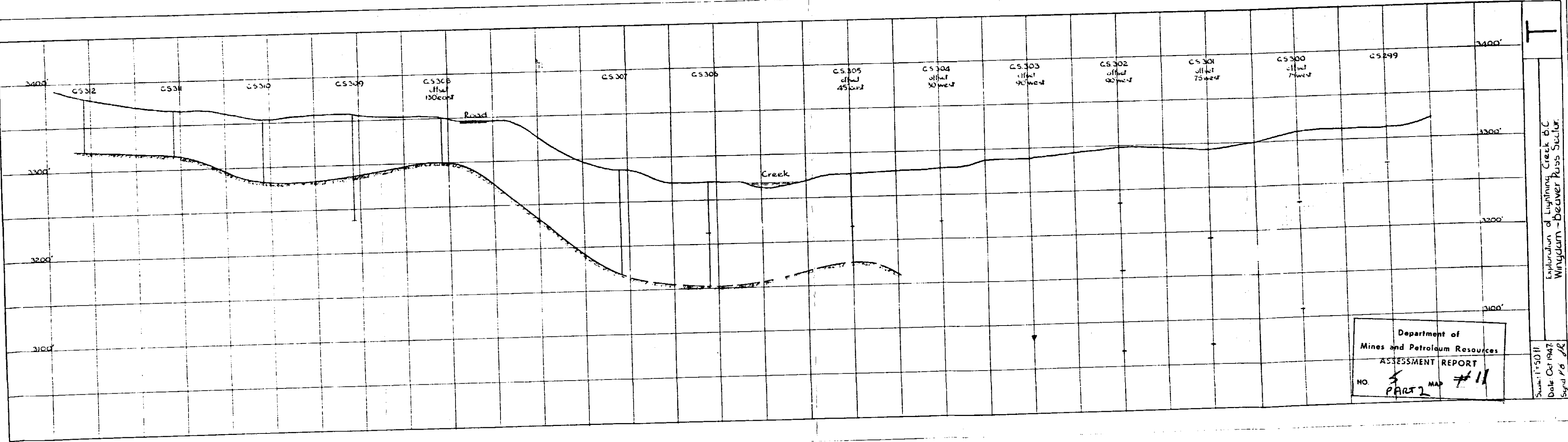
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **5** PART **2** MAP # **10**

Scale: 1" = 50 ft.
Date: Oct. 1947
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Exploration of Lightning Creek B.C.
Wingdam - Beaver Pass Sector.

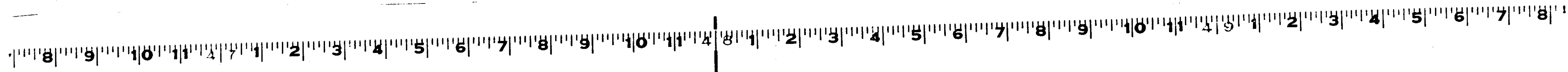


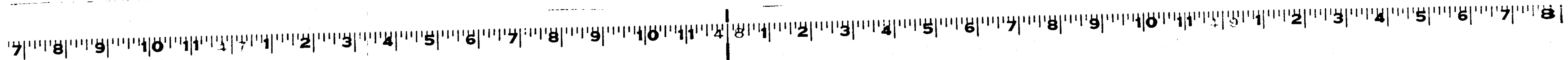
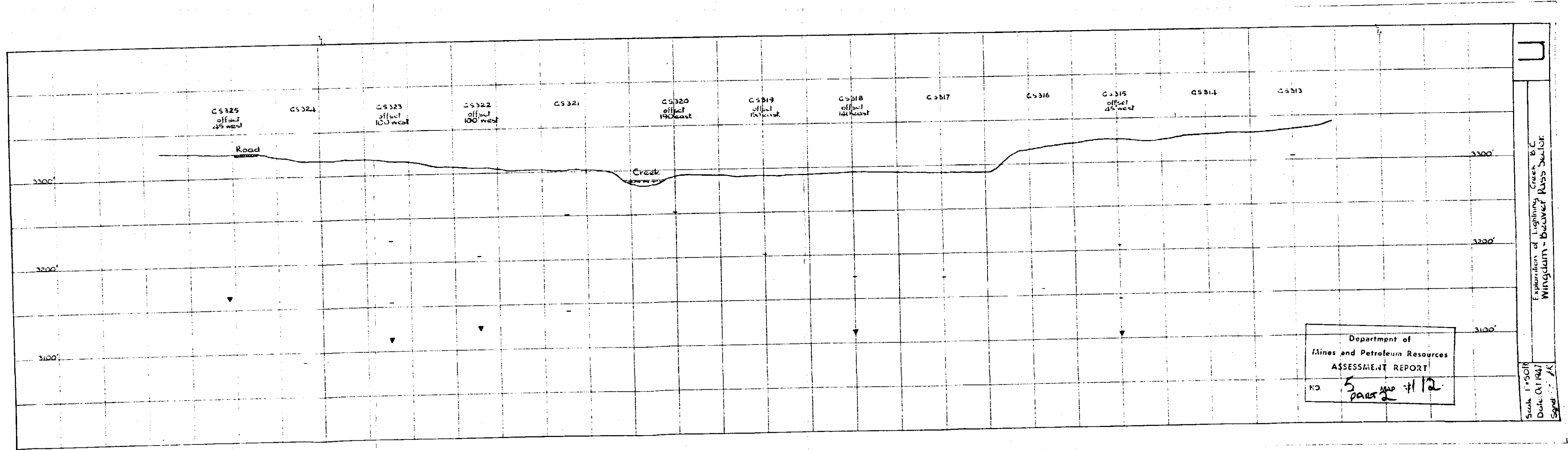


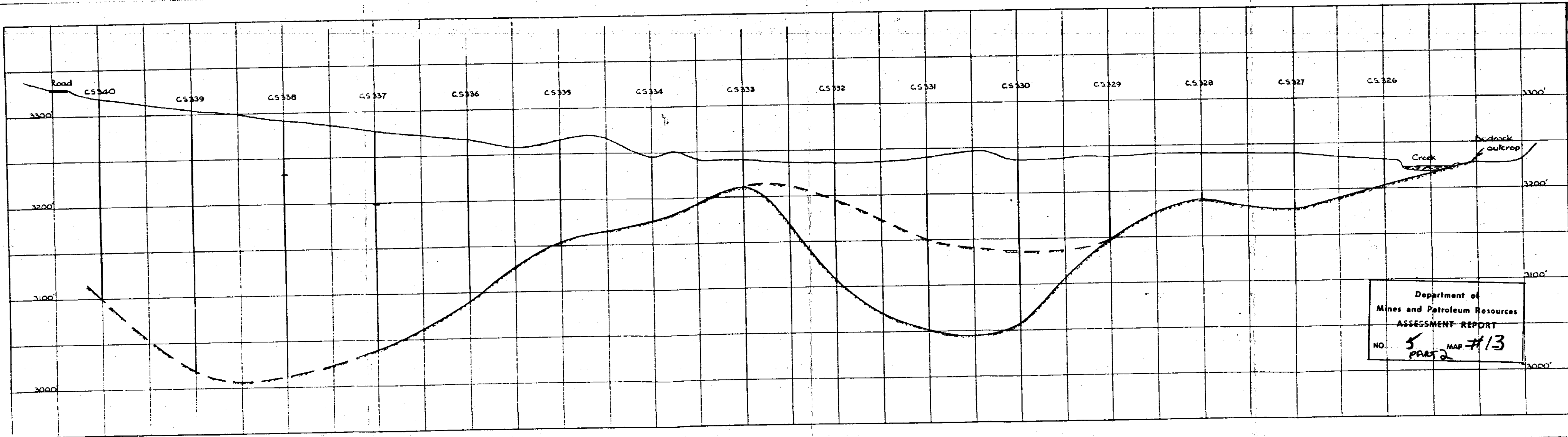
Exploration of Lightning Creek B.C.
 Wingdam - Beaver Pass Sector.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5 MAP # 11
 PART 2

Scale: 1"=50 ft.
 Date: Oct 1947
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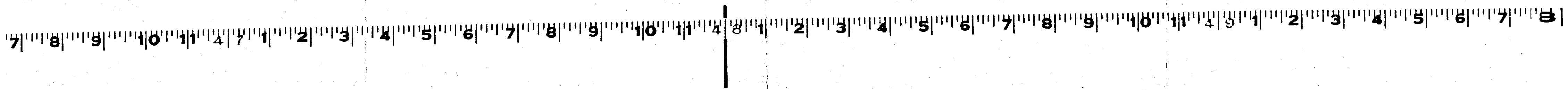


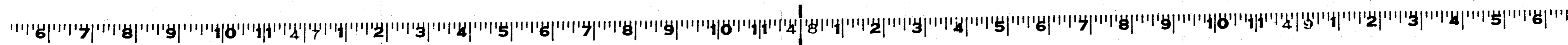
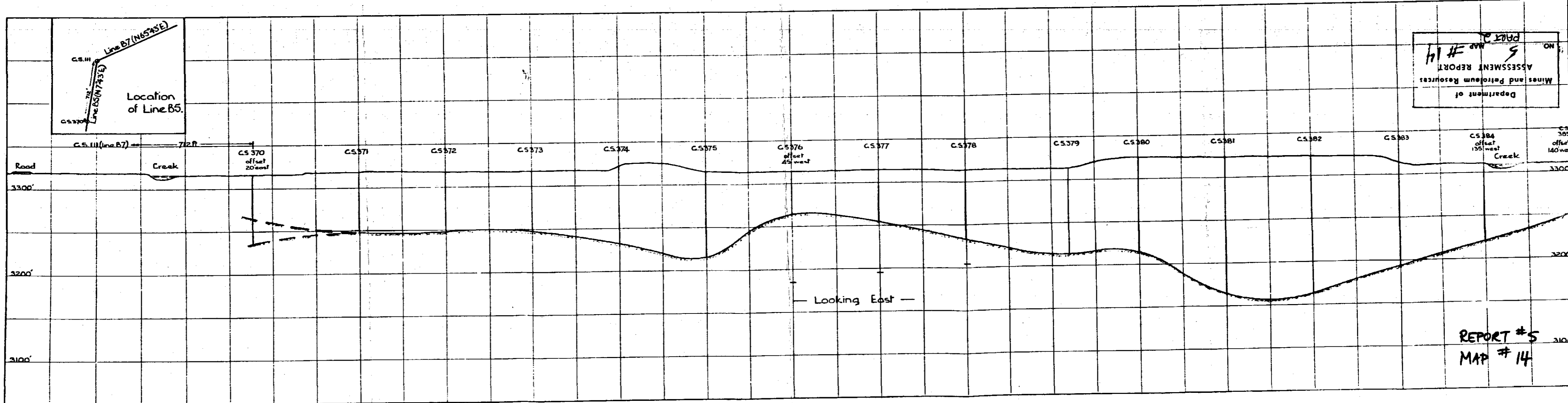




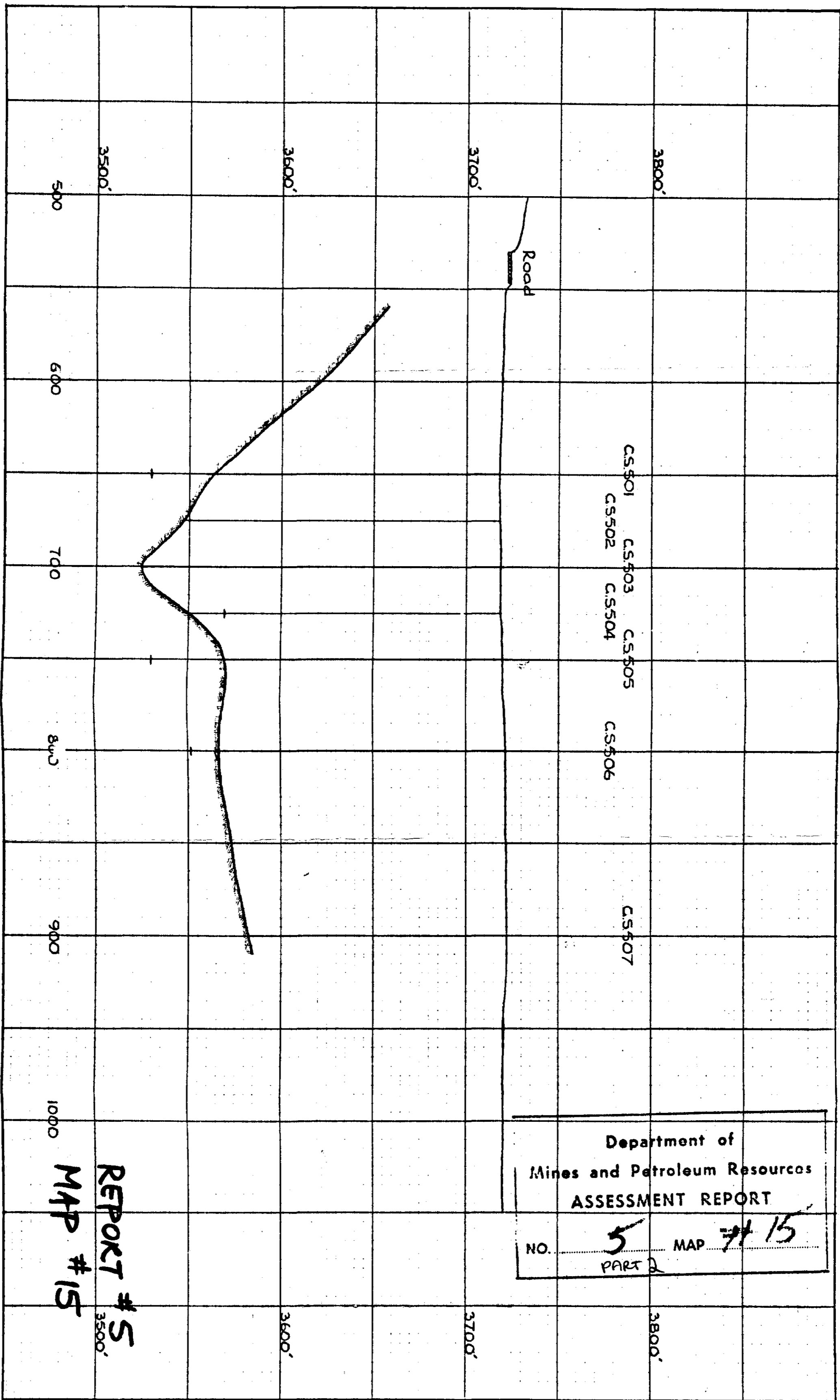
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5 PART 2 MAP #13

Exploration of Lightning Creek B.C.
 Wingham - Beaver Pass Sector.
 Scale: 1"=50ft
 Date: Oct 1947
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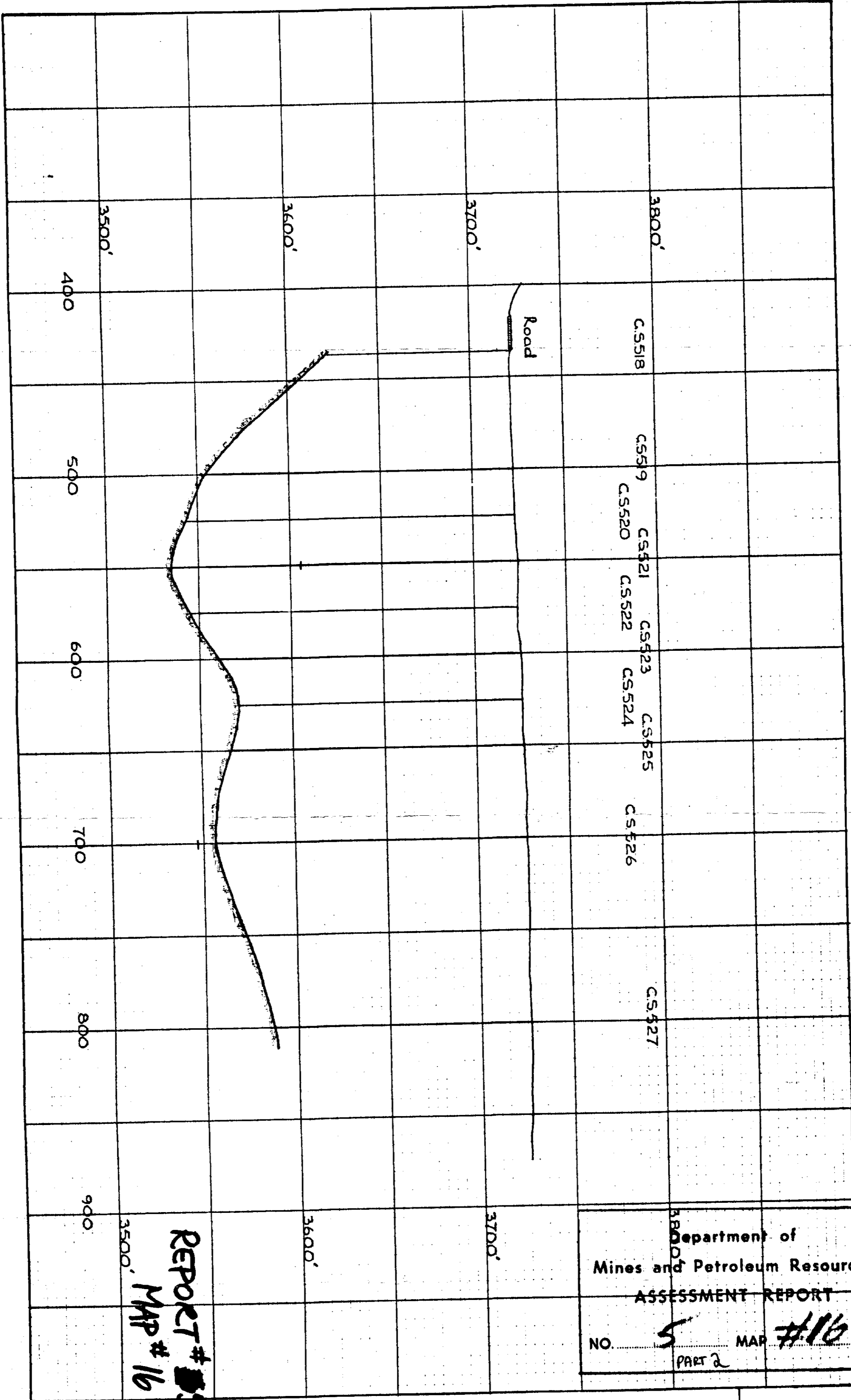
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5 MAP # 15
PART 2

Scale: 1"=50 ft.
Date: Oct. 1947
Sgnd: P.B. JR.

Exploration of Lightning Creek B.C.
Eastern Sector.

M1000

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



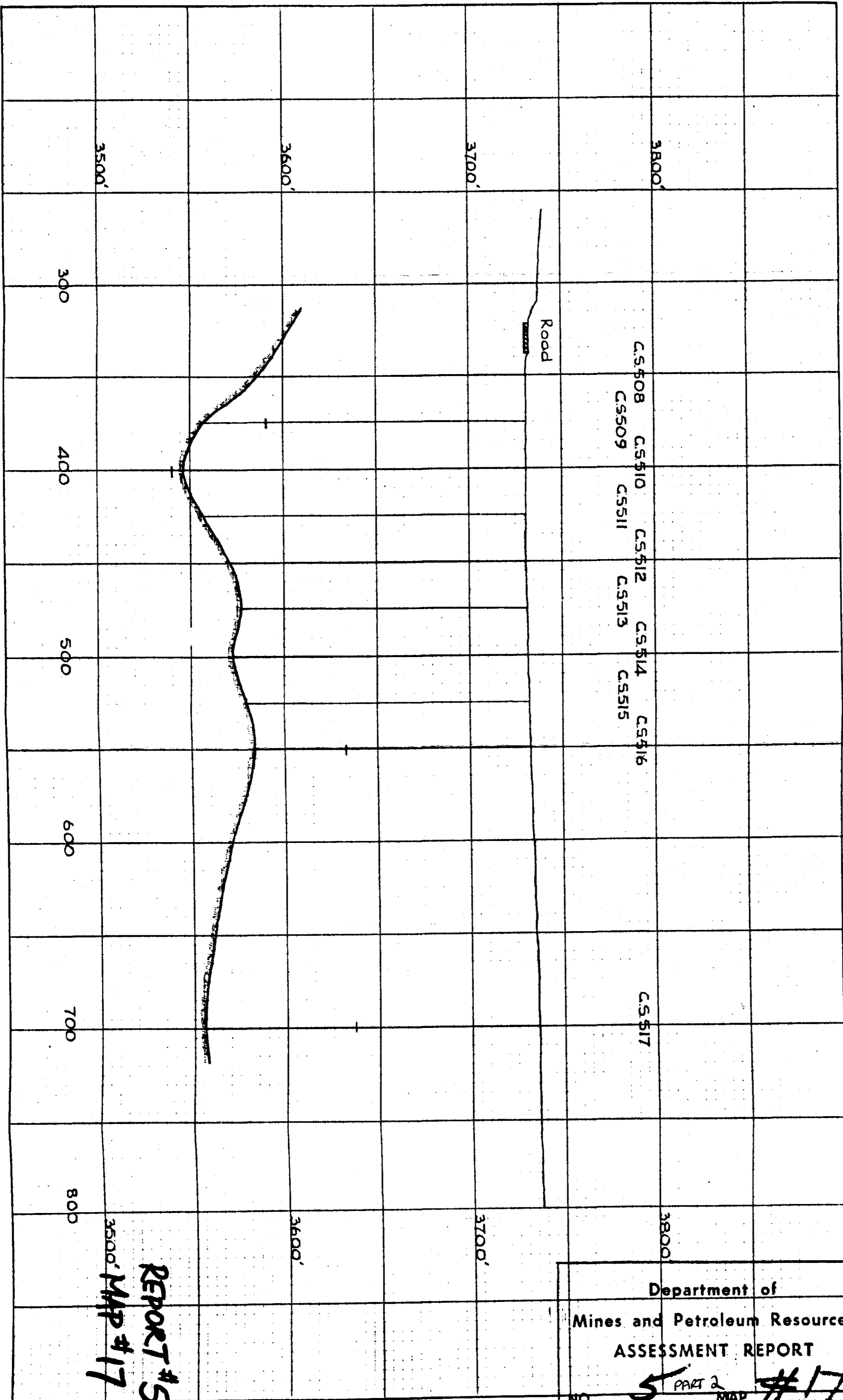
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5 MAP #16
PART 2

Scale: 1" = 50 ft.
Date: Oct. 1947.
Sgnd: P.B. H.

REPORT # 15
MAP # 16

Exploration of Lightning Creek B.C.
Eastern Sector.

MI500



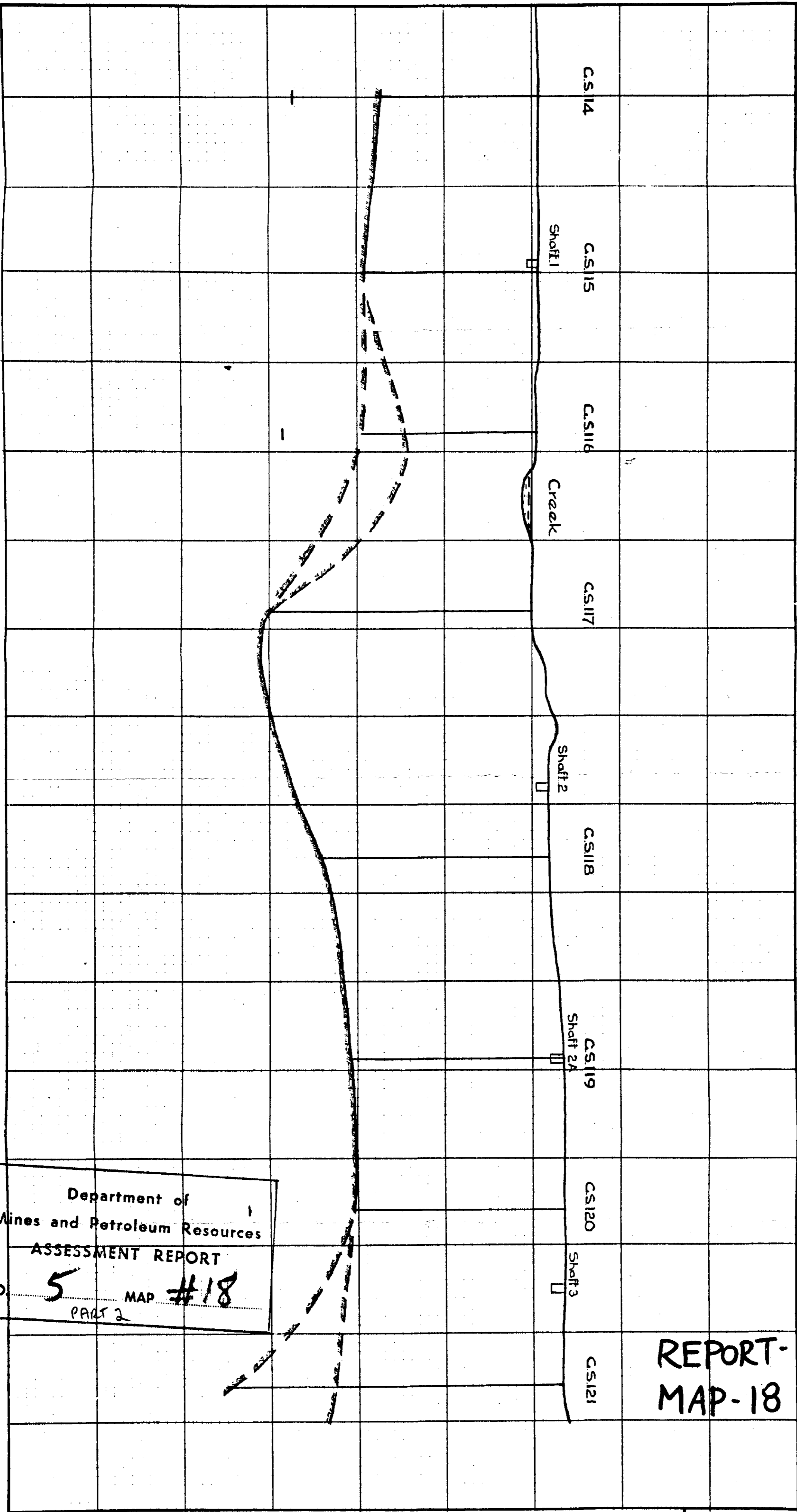
Scale: 1" = 50 ft.
 Date: Oct. 1947
 Sgnd: P.B. J.R.

Exploration of Lightning Creek B.C.
 Eastern Sector.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5 PART 2 MAP #17
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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5 MAP #18
PART 2

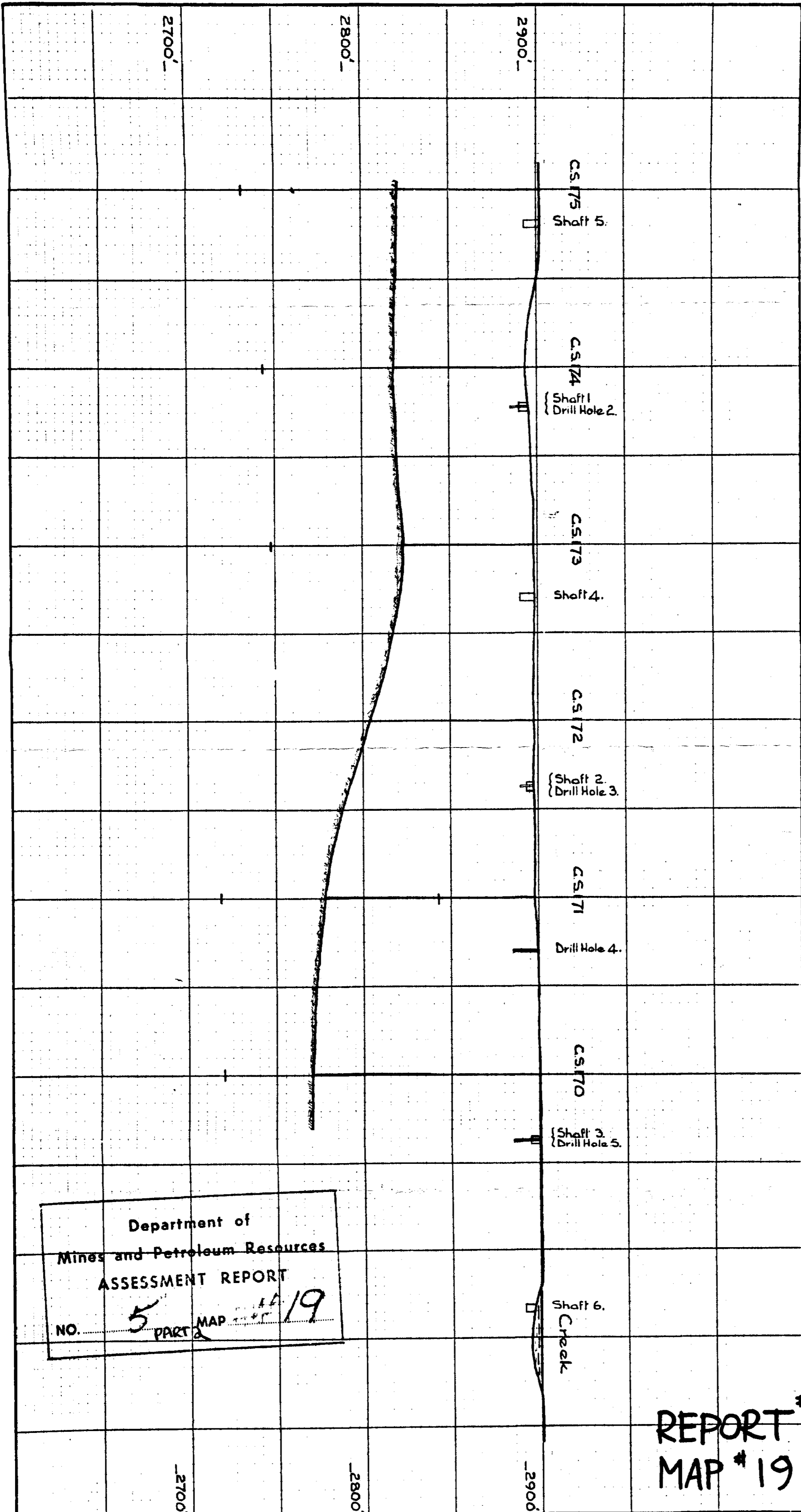
REPORT-5 PART 2
MAP-18

Scale: 1" = 50 ft.
Date: Oct. 1947
Sgnd: P.B. JR.

Exploration of Lightning Creek B.C.
Western Sector.

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5 PART 2 MAP # 19

REPORT # 5
MAP # 19

IB

Scale: 1" = 50ft.
Date: Oct. 1947.
Sgnd: P.B. J.R.

Exploration of Lightning Creek B.C.
Western Sector.