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REPORT ON COAL DEPOSITS

TUYA AND TAHLTAN RIVERS

TELEGRAPH CREEK AREA, B.C.

by W.V. Smitheringale P. Eng. 1953

Early reports of the Minister of Mines for B.C. - (1904 pp 97-98) - refer to large seams of coal on the Tuya River, about 35 miles northerly from Telegraph Creek, B.C. This early report mentions three coal seams, 38 ft, 26 ft and 40 ft thick respectively. The last mentioned is referred to as "Outcrop No.3 shows up on Coutts Creek, about 400 yds upstream on the right hand side going up".

No one in Telegraph Creek knew of a Coutts Creek, nor had any of the older residents any recollection of such a stream. The leases, Lots No.2899-2907, were located; the present creek, locally known as "Coal Creek", seems to answer the above description, in so far as it enters the Tuya River flowing easterly, and has a prominent exposure of a coal horizon, about 1000 ft up stream on the north bank. However, there is definitely no 40 ft of coal exposed in this location, nor could the other thickness of exposed coal be verified, although five exposures were observed along the east bank of the Tuya River.

The coal on the Tuya River, and also on the Tahltan River, about 15 miles to the S.W., is generally a poor grade lignite, occurring at various horizons in a series of conglomerates, sandstones and clays of apparent Tertiary age. About Coal Creek, and south, well cemented conglomerates and soft sandstones are in evidence, striking generally 100° to 130° and dipping 10° to 60° N.E. Traversing north on the Tuya River, the coal bearing series appeared to contain relatively more sandstone and finer grained clastic members; near the northern limits of the coal leases on the Tuya River

interbedded basaltic flows were observed, and the rocks appeared generally flat lying. On the Tahltan River at Hartz Creek, the rocks are small pebble conglomerates, poorly cemented sandstones and soft clay rocks striking from 070° to 100° and dipping 15° to 35° N. Little information is available regarding the extent of these rocks; where observed, they occur within limited areas along the river beds of the two rivers. No effort is made to correlate those two areas, either on the basis of contemporanity or as parts of the same sedimentary basin.

The Tuya River, Coal Creek, Tahltan River and Hartz Creek, in the areas of the coal occurrences, have cut deep, steep walled trenches in a rolling basinlike area. Near the bottom of the river valleys, in the above areas, an old erosional surface, developed on the coal bearing rocks, has been exposed. Above this erosion surface there are 500 to 700 ft of varved clays, silts and gravels. Slumping, or slides, of large size characterize the upper slopes which have been developed in the unconsolidated material. The rivers haveentrenched themselves to varying depths from a few feet to more than 150 ft in the coal bearing rocks.

DESCRIPTION OF COAL ON TUYA RIVER AND COAL CREEK:

The following coal occurrences were observed along the east side of the Tuya River:-

(1) At, or possibly slightly south of, the south boundary of Lease Lot 2903, on the east bank of the river, about 20 ft up, there is a local outcrop of fair looking lignite. This is about 18 inches thick and can be seen for roughly 15 ft on the surface. It is badly fractured, crumbling to pieces 1/2" to 1" in size and has the appearance it might be a remnant in a large piece of slough.

(2) About 800 ft upstream, across low northerly dipping oxidized and poorly cemented sandstone, there is a second exposure of "coal". This is a carbonaceous zone about 30 ft thick, striking from 090° to 110° and dipping 20° - 30°N. It can be traced southward, from river level, up the steep bank for several hundred feet to a point about 150 ft above the river, where the eroded surface of the rocks are overlain with unconsolidated clays and gravels. The zone is underlain by a conglomerate with rocks up to 4" to 6" in diameter, composed of well weathered amygdaloidal lava and tuffs. It is overlain by a soft clay rock. The zone can be divided into a lower section made up of thin bedded or laminated silty rock with carbonaceous partings and an upper part containing more prominent carbonaceous zones from 6" to 18" thick made up of leaves, a reed like woody material, small branches and cones.

I don't think these layers could be called even a poor lignite.

(3) Another 800 ft to 1000 ft upstream on the east bank, is a third outcrop of coal. The rock between the 2nd and 3rd showing is largely a well sorted conglomerate, with some sandstone members. The pebbles, composed of black cherty material and other types of sedimentary rocks, vary in size from 1/2" to 1-1/2". The bedding gradually steepens northward and at the third coal outcrop, the bedding has an apparent strike of 100° and dip of 63° N. The so called coal zone is about 11 ft thick, consisting of an upper member 4 ft thick made up of a lower section of grey to black clay succeeded by thin clay beds with partings and layers of leafy carbonaceous material up to 1/4" or 1/2" in thickness. This upper 4 ft member is separated from a similar 3' to 4' lower member of similar material by roughly 3-1/2 ft of sandstone.

(4) About 600 ft upstream, across a thick sandstone member overlain by a wide zone of conglomerate, is a fourth coal zone. This zone, about 7 ft wide, has 4-1/2 to 5 ft of the best looking coal observed in the Tuya River and Coal Creek area. It is made up of fairly hard, shiny lignite in layers from 1/4" to 4" thick. The section is, from base to top;

Conglomerate

Clay

7 ft coal zone consisting of a F.W. section 1 ft ± of clayey sand with carbonaceous partings, succeeded by 3 ft of reasonable looking lignite, a 2" sand parting overlain by 2 ft of fair coal.

H.W. of coal passing into sandy clay with carbonaceous partings.

Thick member of thin bedded oxidized sandstone

The attitude of the coal is 080° dip 60° N.W. The coal is exposed, in a sloping face, from river level to about 40 ft vertical, at which height there is the erosional unconformity between the Tertiary (?) coal bearing rocks, and recent sands and clays.

A sample (Tuya #1) from the coal seam proper was analysed by the B.C.Department of Mines with the following result:-

Proximate Analysis	As received	Dried
Moisture	16.9%	-
Ash	5.1	6.1
Volatile matter	35.6	42.9
Fixed Carbon	42.4	51.
Ultimate analysis		
Sulphur	0.9	1.0 *
Calorific Value (B.T.U/lb)	9680	11650
Fuel Ratio (F.C/V.M.)	1.2 Non Coking	

12,361 B.Th.U/lb dry mineral-matter free basis.

Remarks:	Classification		Subbituminous C
	M.M. Free dry	F.C.	54.7%
	M.M. " Moist	B.T.U.	-
	M.M. " Dry	B.T.U.	10510

Weathered coal - Classification doubtful

The plotting of this coal seam, on the accompanying map 2 is reasonably accurate. The location of the other coal exposures downstream are distances estimated after walking along bars, scrambling through brush and over low bluffs. There are no outcrops along the west side of the Tuya River in this section of the river.

(5) From the above outcrop of coal, the east bank on the Tuya was traversed northward but no coal, or coal zone was observed on the Tuya River within the limits of the old leases. Outcrops of the Tertiary (?) conglomerates, grits and sandstones were observed here and there on both sides of the Tuya.

At "5", on the east bank of the river about 1000 ft north of the leases, there is a zone of carbonaceous material, consisting of thin interbedded clay and poor lignitic type of material. The thickness of this zone is about 20 ft and the apparent attitude is N 15°E dip 50°SE. I believe this is a false attitude, as the bank above this exposure is marked by large cracks, and the general appearance of the immediate area suggests a slide. One or two hundred yards upstream, pebble conglomerate is exposed which has an easterly strike with N.E. dip.

On the west bank of the Tuya immediately above "5" there is a columnar lava flow interbedded with the sediments, and further north, on the east rim, another flat lying lava bed can be seen in the sediments.

(6) On Coal Creek there are several minor exposures of so called coal, the best showing being on the north bank about 800 to 1000 ft west of its confluence with the Tuya River. This zone, outcropping from 75 ft to 100 ft above the river, is some 25 ft in thickness, and is exposed for some 400 ft more or less along the steep bluffy slope. A section from the river upwards is: 75 ft or more of conglomerate; 3'-5' of sandy material; 6" fair looking lignite; 12" thinly bedded lignitic material of fair to poor grade; 15 ft more or less of interbedded carbonaceous material and clayey sand. The carbonaceous layers are around 6" thick near the bottom of this upper 15 ft section but decrease in thickness to 1" in the upper portions. On the whole they form less than 50% of the section: This latter section is succeeded by pebble conglomerate.

Coal Creek was traversed, along the creek bottom from the Tuya River to a point about half way north along the western edge of lease 2907. Intermittent outcrops of Tertiary (?) conglomerates, sandstones and clays were observed. Exposures of carbonaceous material were observed at three places (7, 8 and 9 map 2) but none of these are of any interest. At point "7", on the east bank of the creek, there is a bluff of conglomerate and sandstone. In this is a 4 ft to 6 ft zone of carbonaceous material consisting of 1" to 6" bands of low grade lignitic material alternating with sandstone. At point "8", about 1000 ft north, on the west bank, there is a 6" seam of lignite in proximity to an interbedded lava flow. About 1/2 mile above the forks, at "9" on the east bank of the creek, there is a bluff of sandstone, clay and conglomerate. About 75 ft above the creek bottom, there are 3 carbonaceous zones with approximate equal spacing, over a member thickness of some 60 ft. Each zone, about 5 ft in thickness, consists of low grade material interbedded

with clay and sand. The attitude appeared to be approximately N 135° dip 30° N.E. Overlying the upper zone is an unknown thickness of conglomerate.

TAHLTAN RIVER:

Approximately 15 miles S.W. of the Tuya River coal exposures, there are, on the north bank of the Tahltan River at the confluence of its tributary Hartz Creek, a number of outcrops of coal similar in character and appearance to those on the Tuya River. At this location, the Tahltan River has cut a steep walled valley through 600-700 ft of clays, silts and gravels to expose a series of coal bearing sandstones, clays and conglomerates of Tertiary (?) age. Observations from short flights over this area, indicate these sedimentary rocks may be confined to a narrow belt, roughly 4 miles in width, along the Tahltan River. Traverses along the river indicate an old erosional surface on the Tertiary (?) coal bearing rocks from a few ft to 30 ft more or less above the river level. Above this erosional surface are the unconsolidated clays and gravels.

From approximately 500 ft below Hartz Creek to roughly 2000 ft above it, there are 6 exposures of coal on the east side of the Tahltan River. At the northern extremity of this area there are three exposures on the west side of the river - (map 3). All of these showings are characterized by thin (1/16" to 1") low grade lignitic layers interbedded with partings and thin beds of clay and sand. The containing rocks are poorly indurated clays and sands. The coal outcrops are all poorly exposed and badly weathered.

A description of each of the outcrops is given, starting from the most southerly:

(1) About 500 ft southeasterly from the outlet of Hartz Creek on the east bank of the Tahltan there is a four to five ft zone of low grade, thinly bedded clayey lignite, occurring in soft clays and sands.

(2) About 700 ft northwesterly from Hartz Creek along the east bank of the Tahltan there is exposed in a low bank of soft clay strata an eleven foot coal zone, striking 090° dip 28° N, that has the appearance of being the best grade and width of coal in any of the exposures in this area. A section of the seam from bottom up is:

0.7 ft thin bedded coal, fair appearance;

0.2 ft clay;

1.1 ft thin bedded coal, fair appearance;

3.6 ft lenses of coal like material in clay generally sheared, and has appearance of being mostly clay with broken areas or small masses of poor lignitic material. This zone grades upwards into thin bedded clays with carbonaceous partings;

6.9 ft fair coal. Bottom 18" crushed and clayey upper 5-1/2 ft in layers 1/4" to 4" thick; clean looking coal.

Analysis by B.C. Department of Mines of sample from the 6.9 ft section is:

Tahltan #6	As received	Dried
Proximate analysis:		
Moisture	22.0%	-
Ash	21.8	28.0
Volatile	26.8	34.3
Fixed Carbon	29.4	37.7
Ultimate analysis:		
Sulphur	0.2	0.3
Calorific Value:		
Gross B.T.U. per lb.	6480	8300
Fuel ratio (F.C./V.M.)		1.1
Coking properties		none

10,624 B.T.U./lb dry mineral-matter free basis.

Remarks:	Classification	Subbituminous C (?)
	M.M. Free dry F.C.	54.4%
	M.M. Free moist B.T.U.	-
	M.M. Free Dry B.T.U.	12,000

Weathered coal - Classification doubtful. The appearance of the sample suggested small pieces of coal mixed with larger pieces of partings.

This coal seam is poorly located from an operational standpoint. The old erosional surface is only some 20 ft above the Tahltan River. This thickness, or less, is maintained on strike as far as Hartz Creek, a distance of 450 ft. East of Hartz Creek the unconsolidated gravels and clays form steep high slopes.

(3) Two hundred and fifty ft further north, along the east side of the Tahltan there is a third coal zone about 7 ft in thickness striking 070° dip 20° NW. This zone, occurring in soft, poorly cemented sand and clay, consists of, from bottom up:

3-1/2 ft	lignitic material in layers 1/2" to 2" thick with clay partings.
4"	sandstone layer
3 ft	laminated clays and poor lignite material overlain by clay.

(4) Six hundred and fifty feet further north, at river level, there is an old cut which exposes a coal zone of undetermined width. This strikes about N-100° dips around 15° N. Both hangwall and footwall of the zone are covered with drift. The face of the cut shows about 3 ft greyish lignitic material, in thin bands, underlain by 10" or so of soft wet buff colored flakey material suggesting an old ash layer.

(5) About 300 ft further north, on the east bank, there are exposed two coal zones in a steep bank of soft sandstone and clay. These

strike about E-W and dip 15° N. The lower of the two zones is about 7 ft thick, and consists of interlayered dark carbonaceous clay and lignitic material. This can be traced for roughly 200 ft, from water level up the steep slope to near the old erosional surface some 50 ft above the river level. This coal zone appeared to narrow, become lenticular and contain more clay and sand members to the S.E.

About 15 ft stratographically higher than the above zone there is a second seam of coal. This is 12" to 18" thick, can be traced for 75 ft more or less on the steep slope, and has the appearance of a better grade of coal.

Samples of these two zones were taken, as grab samples of the better looking layers within each seam. The results are:

Tahltan #7 (6'-7' zone)

Proximate analysis:	As received	Dried
Moisture	17.2%	-
Ash	28.6	34.5
Volatile matter	25.3	30.6
Fixed carbon	28.9	34.9
Ultimate analysis:		
Sulphur	0.2	0.2
Calorific value:		
Gross B.T.U. per lb	6350	7670
Fuel ratio (F.C./V.M.)		1.1
Coking properties		non coking

10,305 M.M. free

Remarks:	Classification	Subbituminous C (?)
	M.M. Free dry F.C.	36.3%
	M.M. Free moist B.T.U.	-
	M.M. Free dry B.T.U.	12360 ?

Weathered coal - Very high mineral matter. Classification doubtful

Tahltan #8 - 12"-18" seam:

Proximate analysis:	As received	Dried
Moisture	20.8%	-
Ash	8.0	10.1
Volatile matter	36.0	45.5
Fixed carbon	35.2	44.4
Ultimate analysis:		
Sulphur	0.8	1.1
Calorific value gross:		
B.T.U. per lb	8870	11200
Fuel ratio (F.C./V.M.)	1.0	12,331
Coking properties	non coking	Dry mm.

Remarks:	Classification	Subbituminous C ?
	M.M. Free dry F.C.	50.0%
	M.M. Free moist B.T.U.	-
	M.M. Free dry B.T.U.	12610

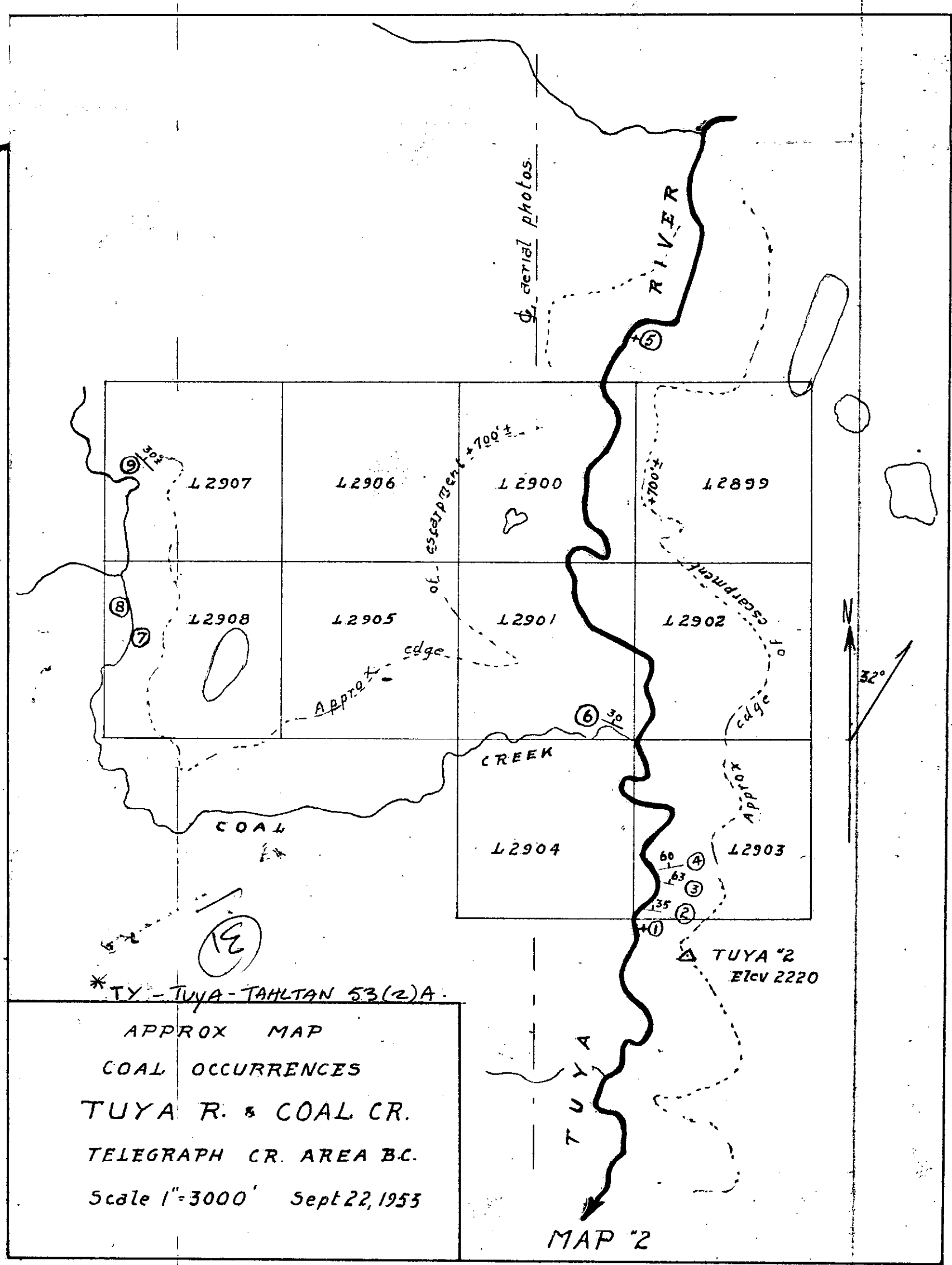
Weathered coal - Classification doubtful.

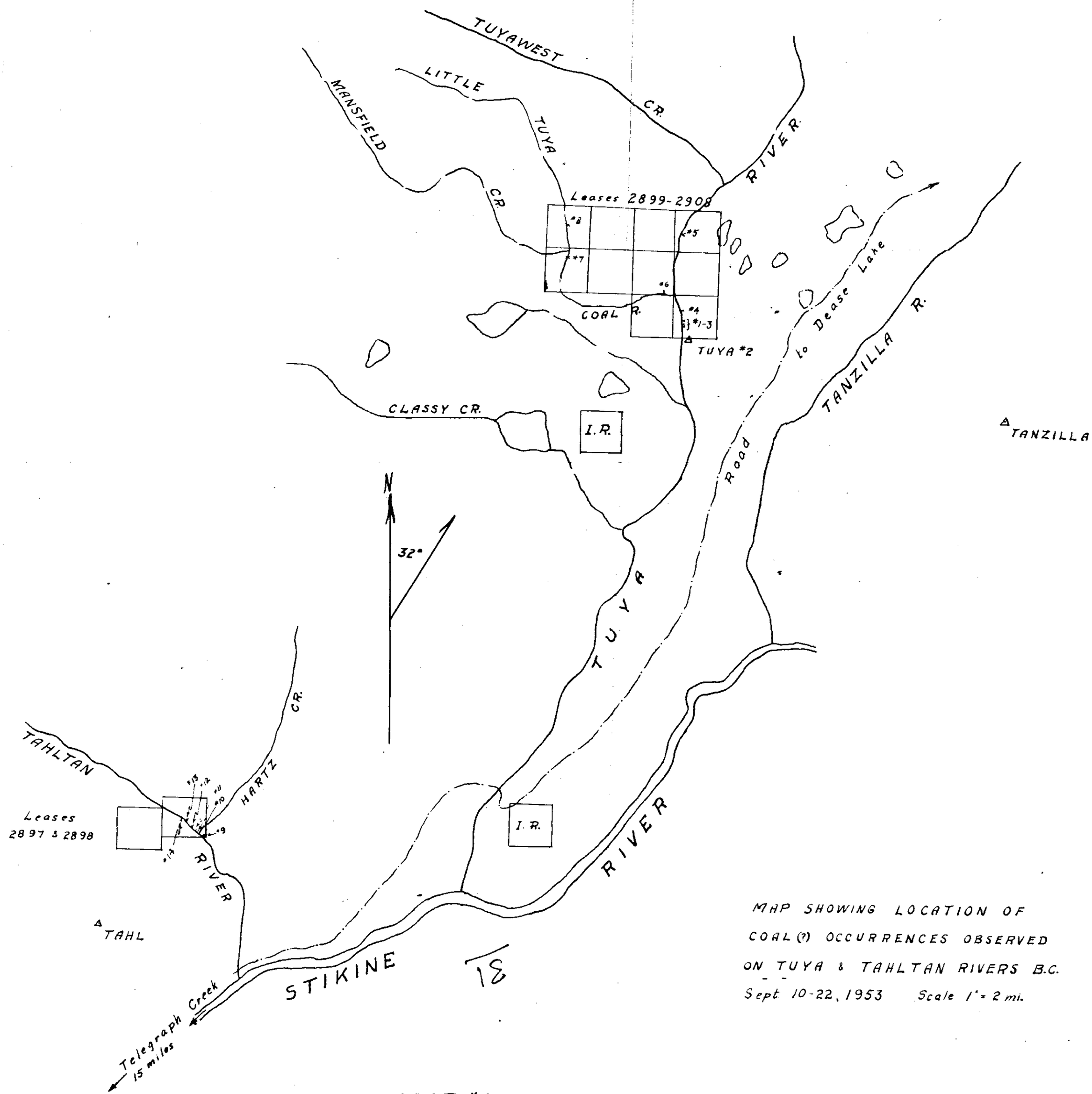
(6) On the west side of the Tahltan River opposite to the last mentioned occurrence, there is an exposure of three coal zones. The lowest or most southerly of these is at least 11 ft in thickness, made up of thin layers 1/4" to 1" thick of dense shiny, bituminous material interbedded with dark grey to black dull appearing beds. These latter seemed to be carbonaceous clays or very low grade lignitic bands. Two samples of this coal seam were taken, but not analysed, as they appeared to be a definitely lower grade of coal to sample Tahltan 6. The strike of the zone is N 075° dip 35° N.W. The F.W. of this zone is not exposed.

Seventy feet northerly along the river bed, there is a second coal zone consisting of a 2 ft bed of fair looking coal on the F.W., then 5" of clayey sandstone succeeded by a 3 or 4 inches of lignitic material.

Another 150 ft northerly along the west bank, there is a third coal zone, about 4 to 5 ft thick, consisting of a 18" F.W. zone of fair lignitic material, overlain by 10" to 1' of soft buff colored flakey clay, which in turn is overlain by 2 ft of dirty looking lignitic material.

The rocks between these three zones appeared to be soft, poorly indurated clays with some weak sandstone members, similar to the rock sequence at "5", but no correlation is made. Three or four hundred feet upstream, bluffs of sandstone and fine grit outcrop on both sides of the river. The attitude is N 075° dip 35° N.W. and there appeared to be no offsetting of the structure from one side to the other. This attitude is similar to the coal zone along the west side of the river.

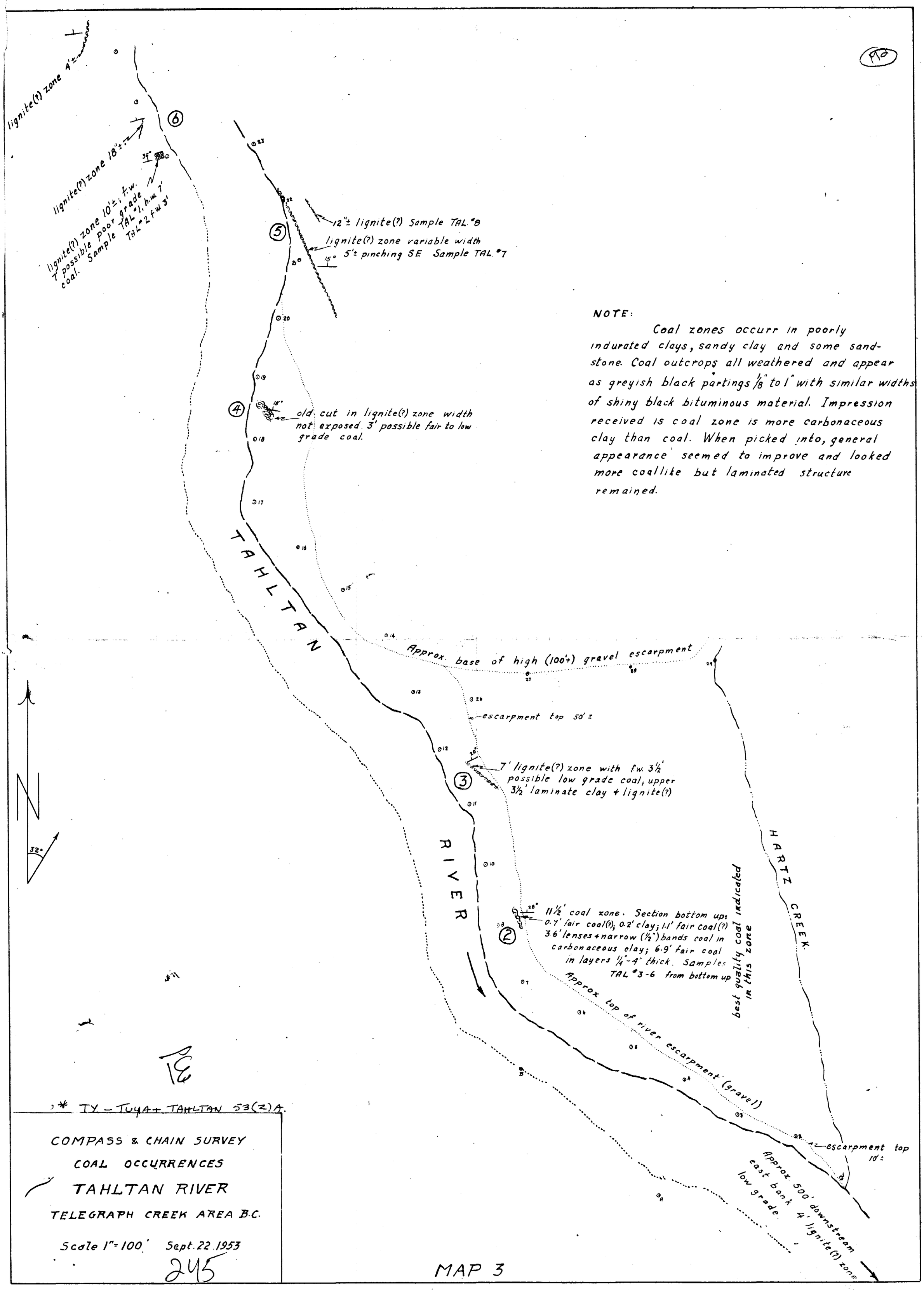

℄ aerial photos.
RIVER
L2907
L2906
L2900
L2899
L2908
L2905
L2901
L2902
L2904
L2903
Approx. edge of escarpment
+700'±
CREEK
COAL
TUYA
TUYA #2
Elev 2220
N
32°
*TY - TUYA - TAHLTAN 53(2)A.
APPROX MAP
COAL OCCURRENCES
TUYA R. & COAL CR.
TELEGRAPH CR. AREA B.C.
Scale 1" = 3000' Sept 22, 1953
MAP #2



MAP SHOWING LOCATION OF COAL (?) OCCURRENCES OBSERVED ON TUYA & TAHLTAN RIVERS B.C.
Sept 10-22, 1953 Scale 1" = 2 mi.

MAP "1

* TY-Tuya + TAHLTAN 53(2)A



NOTE:

Coal zones occurr in poorly indurated clays, sandy clay and some sandstone. Coal outcrops all weathered and appear as greyish black partings ⅛" to 1" with similar widths of shiny black bituminous material. Impression received is coal zone is more carbonaceous clay than coal. When picked into, general appearance seemed to improve and looked more coallike but laminated structure remained.

MAP 3