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Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: GEOMORPHOLOGICAL AND GEOLOGICAL

TOTAL COST: $27,141.96

AUTHOR(S): JOHN OSTLER

SIGNATURE(S): John Ostler

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): NONE

YEAR OF WORK: 2017

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S):

PROPERTY NAME: Spillway

CLAIM NAME(S) (on which the work was done): SPILLWAY (1047275), MAUS (1047747)

COMMODITIES SOUGHT: PLACER GOLD

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: NONE

MINING DIVISION: FORT STEELE

NTS/BCGS: 82 G/12 082G 063

LATITUDE: 49 ° 38 ' 35 " LONGITUDE: 115 ° 33 ' 04 " (at centre of work)

OWNER(S):
1) JOHN D. OSTLER
2)

MAILING ADDRESS:
1015 CLYDE AVENUE
WEST VANCOUVER, B.C. V7T 1E3

OPERATOR(S) [who paid for the work]:
1) JOHN D. OSTLER
2)

MAILING ADDRESS:
1015 CLYDE AVENUE
WEST VANCOUVER, B.C. V7T 1E3

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
PRE-GLACIAL CHANNEL OF WILD HORSE RIVER THROUGH LONE PEAK GAP TO MAUS CREEK VALLEY
MIOCENE TO NEBRASKAN-AGE PLACER GOLD

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: A.R.: 281; 15,913; 23,399;
25,972; 26,942; 27,200

Next Page

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	36 ha	SPILLWAY (1047275) MAUS (1047747)	$21,523,57
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other	PAN CONCENTRATES OF TILL 6 SAMPLES	SPILLWAY (1047275)	$1,872.80
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail	7.6 km	SPILLWAY (1047275), MAUS (1047747)	$3,745.59
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	$27,141,96

CASSIAR EAST YUKON EXPEDITING LTD.

GEOMORPHOLOGICAL AND GEOLOGICAL SURVEYS ON THE SPILLWAY PROPERTY

Map-staked Placer Claims

Name	Record Number	Area	Expiry Date
<u>SPILLWAY</u>	**1047275**	**104.62 ha (258.41 A)**	**January 26, 2027**
<u>MAUS</u>	**1047747**	**41.85 ha (103.37 A)**	**January 26, 2027**
Total Property Area		**146.47 ha (361.78 A)**	

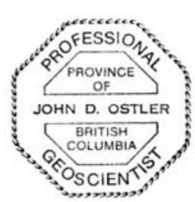
NOTE: <u>UNDERLINE</u> indicates claims on which work was conducted during the current program.

Location:
Fort Steele Mining Division
N.T.S.: 82 G/12 B.C.: 082G 063
49° 38' 35"N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.

Owner:
John D. Ostler
1015 Clyde Avenue,
West Vancouver, British Columbia, V7T 1E3

By:
John Ostler; M.Sc., P.Geo.
1015 Clyde Avenue, West Vancouver, British Columbia, V7T 1E3

July 2, 2017



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Continued

GEOMORPHOLOGICAL AND GEOLOGICAL SURVEYS ON THE SPILLWAY PROPERTY

SUMMARY

The Spillway property comprises two map-staked placer claims that together cover 146.47 hectares (361.78 acres) in the Fort Steele Mining Division and in the Kootenay Land District in the Hughes Range of the Rocky Mountains in southeastern British Columbia. The property is located on N.T.S. map sheet 82 G/12 and on B.C. map sheet 082G 063. The centre of the property area is at 49° 38' 35" north latitude and at 115° 33' 04" west longitude (U.T.M.: 5,449,965 N., 604,608 E.). John D. Ostler is the registered owner of 100% of the claims that comprise the property.

The Spillway property occupies the southerly facing valley of Lone Gulch that drains into Maus Creek and part of the main Maus Creek valley. The Lone Peak gap at the head of Lone Gulch separates Lone Peak from the rest of the Hughes Range. Elevations of the property range from 1,530 m (5,120 ft) at the northeastern margin of the SPILLWAY (1047275) claim, down to 1,080 m (3,543 ft) at Maus Creek at the southwestern corner of that claim. The elevation at the northern boundary of the property near the pass between Maus Creek and Wild Horse River is 1,238 m (4,062 ft).

The property hosts a second-growth forest comprised mostly of pine, cedar, spruce, fir, aspen, and cottonwood trees which is in various states of growth. Much of the property area has been clear cut recently. There is sufficient timber suitable for underground placer mining on southern part of the property.

The property is located about 10 km (6.1 mi) northeast of Fort Steele from which it is accessible by road. The village of Fort Steele, located on B.C. Highway 93+95, is the nearest supply and service center to the property. Only basic services such as food and gasoline are available at Fort Steele. Cranbrook, located on B.C. Highways 3 and 95 about 24 km (14.6 mi) southwest of the property, is the nearest regional supply and service centre. Cranbrook hosts the nearest international airport, helicopter base, and a rail yard. At Cranbrook, services required to support a placer mining operation are available.

The Wild Horse River-Maus Creek area experiences cold winters and hot, dry summers. Winter snow falls in the property area by late November and stays on the ground until April in open areas, and until May on shady slopes at higher elevations. Surface work can be conducted on the property from April to November during a normal year.

The current exploration target on the property is on crown land with no special restrictions on development thereon. Normally, upon development permitting, one is able to secure surface rights necessary to conduct a mining operation. The author knows of no legal impediment to one being able to secure such surface rights as part of the permitting process.

A three-phase power transmission line services residences along Fort Steele Wild Horse Road, within 2.8 km (1.7 mi) of the property. Adequate fresh water for a mining operation could be drawn from Maus Creek.

There is adequate, reasonably flat area appropriate for erecting a wash plant and developing a tailings pond in the southern part of the SPILLWAY (1047275) placer claim. As production progresses northward, space for a plant and pond will be created apace with production.

The current (2017) exploration program was designed to assemble and examine geomorphological and geological evidence related to the existence of an early high-level channel of Wild Horse River through the Lone Peak gap and across the SPILLWAY (1047275) claim to the Maus Creek valley.

It has long been held by local placer miners that the gap between Lone Peak and the rest of the Hughes Range was the location of a pre-glacial channel of Wild Horse River and consequently hosts a substantial amount of placer gold on the bedrock surface. Also, it has been assumed that the prolific underground placers at Maus Creek south of the Spillway property are of gold derived from the old channel of Wild Horse River. Generally during erosion, gold tends to fall straight down and not laterally in a drainage. If the early channel of Wild Horse River through the Lone Peak gap existed, the gold on the floor of that channel should still exist on the bedrock surface beneath the gap and on the spillway down to Maus Creek. That palaeo-channel is the economic target on the Spillway property.

The direct source of the placer gold in the Wild Horse River valley was free gold released from a plethora of quartz-sulphide veins that weathered out of a dilatant zone located directly above the current erosional level of the river. The base of the productive part of that vein system was above the elevation of the current floor of the Main Hydraulic Pit on Wild Horse River. Peripheral gold-bearing veins occur at elevations up above 1,524 m (5.000 ft) on the slopes around Wild Horse River and on Lone Peak. The elevation of the bedrock surface through the Lone Peak gap is about 1,230 m (4,035 ft) above sea level which is well beneath the top of the productive part of the Wild Horse dilation. That gold would have been available for deposition in a channel through the Lone Peak gap.

The channel of Wild Horse River through the Lone Peak gap may have been active from the Miocene to early Pleistocene Epoch, for a time span of at least 23 million years. Before the Kansan-stage glaciation 602,000 to 520,000 years ago, a tributary of Brewery Creek cut back into the Wild Horse River drainage terminating any drainage through the Lone Peak gap. By then, the bedrock surface in the Main Hydraulic Pit on Wild Horse River already had weathered down to its current elevation. Probably the elevation of the bedrock surface of the Maus Creek valley was similarly eroded.

In Lone Peak Gulch, pre-Illinoian-stage Pleistocene stratigraphy has been buried beneath more recent colluvium and scree. Thus, the early Pleistocene-epoch development of the area can only be estimated through indirect evidence.

The last major glaciation in the Spillway property area was during the Illinoian stage, 390,000 to 350,000 years ago. A remnant of Illinoian-stage boulder till adhering to the eastern slope of Lone Peak along the western decommissioned road indicates that ice flowed from the Wild Horse River valley southward through the Lone Peak gap at that time.

An alluvial fan is located on the southern part of the SPILLWAY (1047275) claim and on the adjoining RUSTY GOLD (778442) claim. The fan is far too large to have been created by stream flow from the cleft in the northern part of the SPILLWAY (1047275) claim. The author opines that the fan was built during the late Illinoian stage (350,000 to 320,000 years ago) when an ice-dammed lake occupied the Wild Horse River valley from the Main Hydraulic Pit to about 10 km (6.1 mi) north of Boulder Creek. Until the dam burst, the lake drained out through the Lone Peak gap.

Although almost no new placer gold would have been added to the floor of the gap and the spillway south of it during Illinoian-stage re-activation of the channel, gold would have been concentrated by the temporary river.

Pan concentrate sampling results indicate that Illinoian and Sangamon-stage tills that were transported from the Wild Horse River valley southward through the Lone Peak gap are gold-bearing. Samples from till and colluvium transported down Maus Creek and southwestward down slope from the Hughes range are barren. This indicates that the gold mined at the prolific underground placers south of the Spillway property at Maus Creek was transported from the Wild Horse River valley through the Lone Peak gap to the current Maus Creek drainage and substantiates the existence of the existence of a pre-glacial, high level channel of Wild Horse River through the Lone Peak gap and across the current Spillway property area.

It is recommended that a program of rotary drilling be conducted along the main north-south access road down the spillway on the SPILLWAY (1047275) claim. Chips from the drill holes may add to knowledge of pre-Illinoian Pleistocene stratigraphy along the spillway. Depth to bedrock will enable the construction of a bedrock profile along the spillway and the identifications of any basins that could trap placer gold. Sampling near the bedrock surface should give confirmation of the general tenor of placer gold on the bedrock surface along the spillway.

The recommended program comprises 12 drill holes spaced at 100-m (328.1-ft) intervals along the access road from U.T.M. 5,499,600 to 5,500, 700 N. Another 6 lateral step-out holes are recommended, two flanking holes along the access road in three locations to enable some determination of the lateral shape of the spillway channel . Based on previous drilling in the area, holes are estimated to average about 40 m (131.2 ft) in depth. Thus, the program will comprise a total of 720 m (2,362.2 ft) of rotary drilling. The estimated cost of the recommended program including road renovation, drilling, logging and sampling is $82,000.

GEOMORPHOLOGICAL AND GEOLOGICAL SURVEYS ON THE SPILLWAY PROPERTY

1.0 INTRODUCTION

1.1 Duration and Management of the Current (2017) Work Program

The property owner, John D. Ostler; M.Sc., P.Geo. conducted the current (2017) exploration program and produced this report through his company, Cassiar East Yukon Expediting Ltd., of West Vancouver, British Columbia. For details and costs of the current exploration program, see sections 5.1 to 5.3 of this report. The current work program was conducted on and about the property during the following days:

May 30 and June 8, 2017	transport from Vancouver to Fort Steele area, return
May 31 to June 7, 2017:	field work and sampling on the Spillway property
November 8, 2016 to July 2, 2017	research and production of this assessment report (intermittent)

A total of 40 person-days X 8 = 320 person-hours were spent on all of the claims of the Spillway property (Figure 10, Table 4).

1.2 Property Description and Location

The Spillway property-area covers part of the southwestern margin of the Hughes Range of the Rocky Mountains in the southeastern British Columbia. It is located on N.T.S. map sheet 82 G/12 and on B.C. map sheet 082G 063 (Figures 1 and 2).

The property comprises 2 map-staked placer claims that cover 146.47 hectares (361.78 acres) in the Fort Steele Mining Division and in the Kootenay Land District. The tenures of the claims comprising the property (Figure 2) are as follow:

Table 1
Map-staked Placer Claims

Claim Name	Record No.	Area: hectares (Acres)	Record Date	Expiry Date	Owner
SPILLWAY	1047275	104.62 ha (258.41 A)	October 15, 2016	Jan. 26, 2027	John D. Ostler
MAUS	1047747	41.85 ha (103.37 A)	November 8, 2016	Jan. 26, 2027	
Total Property area		146.47 ha (361.78 A)			

On June 22, 2017, sufficient work was filed (event 5653771) to extend the expiry dates of the claims to those reported in the preceding table.

N.

GENERAL LOCATION

SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo. JULY, 2017

Figure 1

CASSIAR EAST YUKON EXP. LTD.

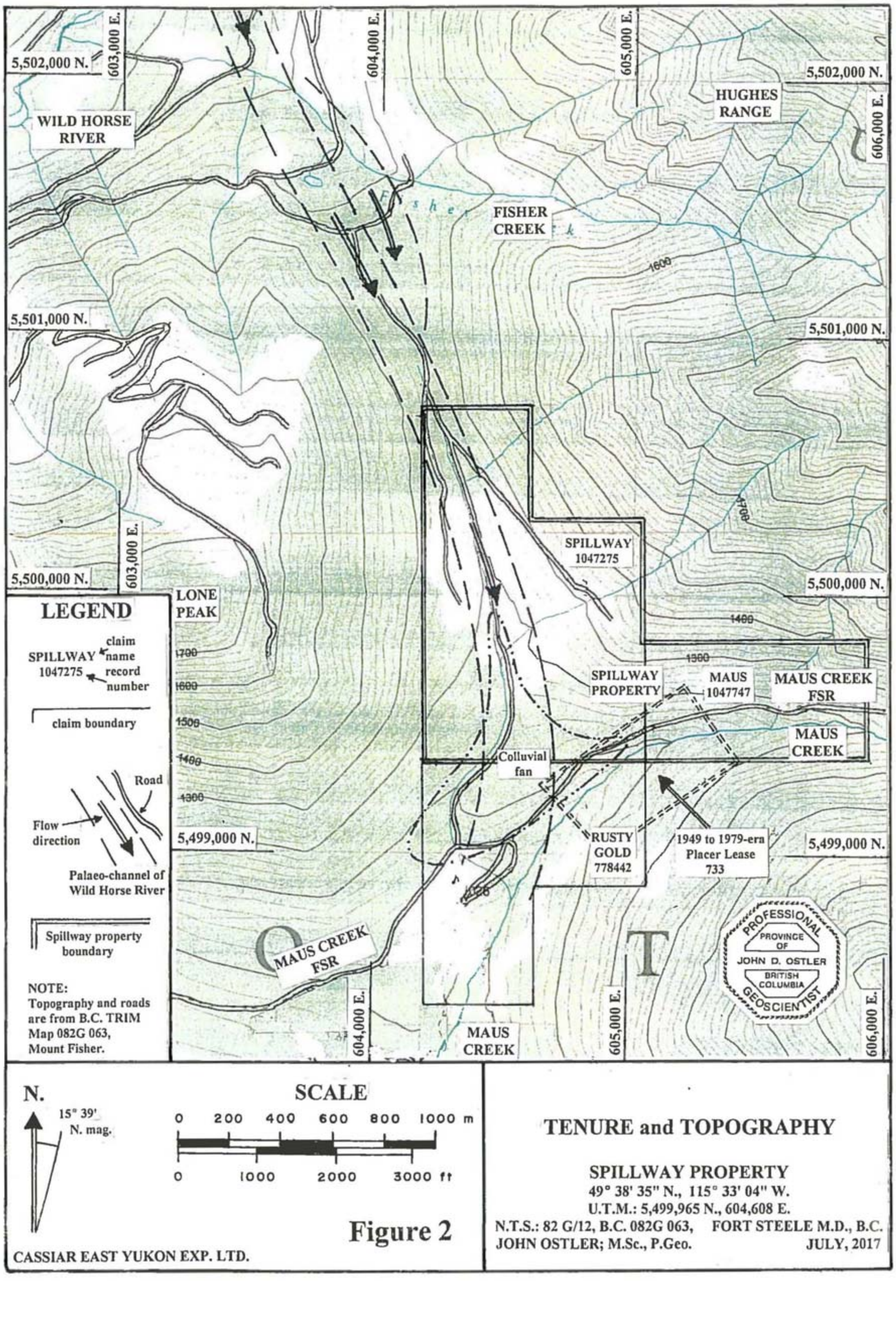
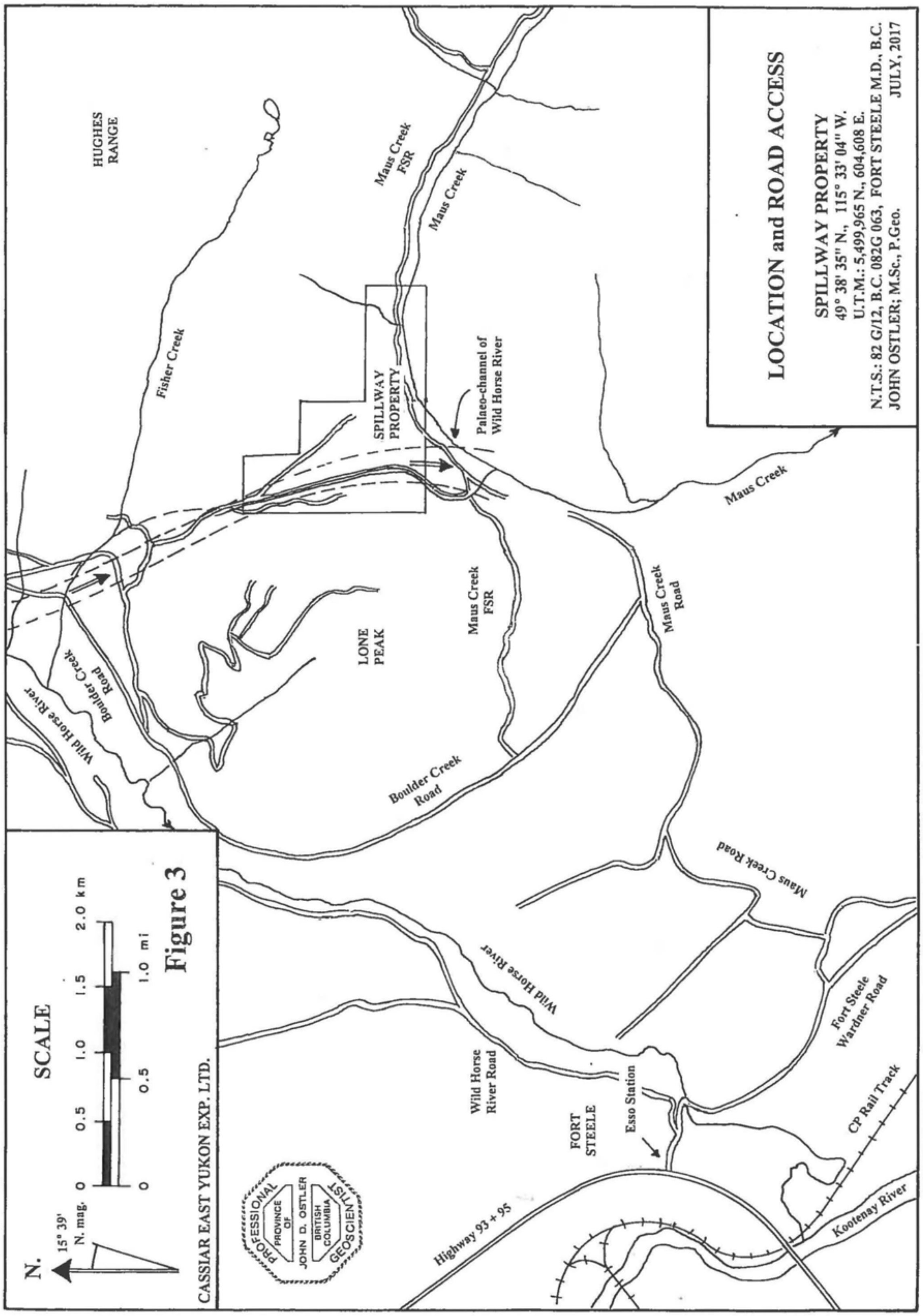


Figure 2

TENURE and TOPOGRAPHY

SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo. JULY, 2017


HUGHES RANGE
Fisher Creek
Maus Creek FSR
Maus Creek
SPILLWAY PROPERTY
Palaeo-channel of Wild Horse River
LOCATION and ROAD ACCESS
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017
Maus Creek
LONE PEAK
Maus Creek FSR
Maus Creek Road
Boulder Creek Road
Wild Horse River
Boulder Creek Road
Maus Creek Road
Wild Horse River
Wild Horse River Road
Fort Steele Wardner Road
FORT STEELE
Esso Station
CP Rail Track
Kootenay River
Highway 93 + 95
SCALE
0 0.5 1.0 1.5 2.0 km
0 0.5 1.0 mi
Figure 3
N.
15° 39'
N. mag.
CASSIAR EAST YUKON EXP. LTD.
PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
JOHN D. OSTLER

Although the boundaries of the Mantle property have not been surveyed and their exact positions have not been defined on the ground, those positions have been defined precisely on the provincial mineral tenure grid. Consequently, there is no legal uncertainty regarding the location and the area covered by the claims.

There is no private land or aboriginal homeland on the property. The closest reserve to the property is the Kootenay No. 1 Indian Reserve which is located about 6.75 km (4.1 mi) west of the of the western boundary of the SPILLWAY (1047275) claim. The property is located in area designated as Ktunaxa territory.

There is no plant or equipment, inventory, mine or mill structure of any value on these claims.

1.3 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

The Spillway property occupies the southerly facing valley of Lone Gulch that drains into Maus Creek and part of the main Maus Creek valley. The Lone Peak gap, located at the head of Lone Gulch, separates Lone Peak from the rest of the Hughes Range. Elevations of the property range from 1,530 m (5,120 ft) at the northeastern margin of the SPILLWAY (1047275) claim, down to 1,080 m (3,543 ft) at Maus Creek at the southwestern corner of the claim. The elevation at the northern boundary of the property near the pass between Maus Creek and Wild Horse River is 1,238 m (4,062 ft) (Figure 2).

The property hosts a second-growth forest comprised mostly of pine, cedar, spruce, fir, aspen, and cottonwood trees which is in various states of growth. Much of the property area was clear-cut recently. There is sufficient timber suitable for underground placer mining on southern part of the property.

Directions for road access to the property are as follow (Figure 3):

Turn off B.C. Highway 93+95 onto Fort Steele Wild Horse Road near the centre of Fort Steele. There is an Esso gas station, store, and camp ground on the northeastern corner of the road junction. Turn left off Fort Steele Wild Horse Road onto Maus Creek Road about 3.2 km (2.0 mi) from the gas station. Follow Maus Creek Road for about 3.6 km (2.2 mi) to the junction with Boulder Creek Road. Turn left onto Boulder Creek Road. The Maus Creek Forest Service Road diverges to the right of the Boulder Creek road at 1.4 km (0.85 mi) up the Boulder Creek Road. That junction separates access to the northern and southern parts of the Spillway property.

To access the northern part of the property continue up the Boulder Creek Road around the eastern slope of the Wild Horse River valley, around the western side of Lone Peak. At 5.2 km (3.17 mi) up the Boulder Creek Road (at the 8 km sign) Turn to the right, up hill, onto a fairly good bush road that climbs eastward up the northern slope of Lone Peak. At 1.6 km (1 mi) up the bush road there is a log yard with the entrances to several roads. Go through the yard and exit southward on the road that goes through the Lone Peak gap. The northern boundary of the SPILLWAY (1047275) claim is about 0.9 km (0.55 mi) south of the yard.

To access the southern part of the property turn right onto the Maus Creek Road Forest Service Road at its junction with the Boulder Creek Road. The Maus Creek F.S.R. crosses onto the southeastern part of the SPILLWAY (1047275) claim at 3.6 km (2.2 mi).

The village of Fort Steele, located on B.C. Highway 93+95 about 4.5 km (2.75 mi) from the southern part of the property-area, is the nearest supply and service center to the property. Only basic services such as food and gasoline are available at Fort Steele. Cranbrook, located on B.C. Highways 3 and 95 about 24 km (14.6 mi) southwest of the property, is the nearest regional supply and service centre. Cranbrook hosts the nearest international airport, helicopter base, and a rail yard. At Cranbrook, services required to support a placer mining operation are available.

The Maus Creek area experiences cold winters and hot, dry summers. Winter snow falls in the property area by late November and stays on the ground until April in open areas, and until May on shady slopes at higher elevations. Surface work can be conducted on the property from April to November during a normal year.

The current exploration target on the property is on crown land with no special restrictions on development thereon. Normally, upon development permitting, one is able to secure surface rights necessary to conduct a mining operation. The author knows of no legal impediment to an operator being able to secure such surface rights as part of the permitting process.

A three-phase power transmission line services residences along Fort Steele Wild Horse Road, within 2.8 km (1.7 mi) of the property. Adequate fresh water for a mining operation could be drawn from Maus Creek (Figure 2).

Both the mining business and the pool of professionals and skilled tradesmen who serve it are international and mobile. The Fort Steele area has already demonstrated that it has sufficient amenities to attract personnel to work at placer mines in the area.

There is adequate, area appropriate for wash plant and tailings pond on the colluvial fan in the southern part of the SPILLWAY (1047275) claim (Figure 2). As production progresses northward, space for a plant and pond will be created apace production.

2.0 HISTORY

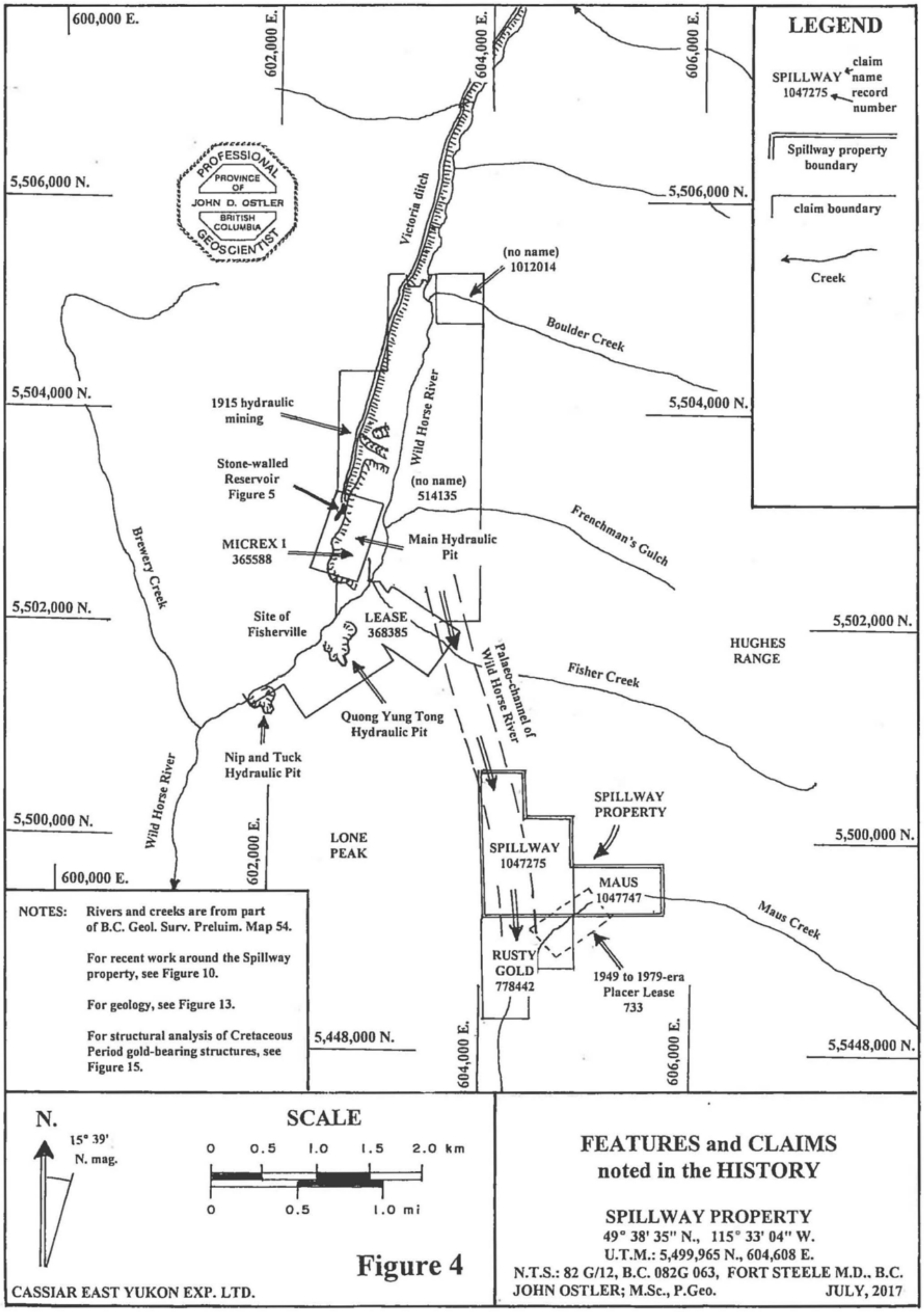
2.1 Chronology of Ownership and Exploration of Placer Claims in the Wild Horse River and Maus Creek Areas

NOTE: All references to ounces (oz) are to Troy ounces = 31.104 grams.

Unless otherwise referenced, the following history is gleaned from the British Columbia Minister of Mines' annual reports and bulletins. Maus Creek was part of the Wild Horse River placer camp and it was recorded several times in the annual reports that production from Maus Creek was included with that of Wild Horse River. Consequently, the amount of placer gold production from Maus Creek itself is not well known. Hydraulic mining was conducted along Wild Horse River from 1867 until about 1930. The author could find no reference to hydraulic mining on Maus Creek. It is assumed that early production from Maus Creek was from small-scale underground workings and surface gravel. The lack of water supply ditches around the confluence of Lone Gulch and Maus Creek indicates that the colluvial fan located at the southern end of the SPILLWAY (1047275) placer claim was not hydraulicked.

1863 Gold was discovered by Jack Fisher near the mouth of what later became known as Fisher Creek on Wild Horse River. The river was so named in recognition of the wild horses that lived on the river delta.

1864 At least 400 miners were working claims that extended for several kilometers up Wild Horse River. The "town" of Fisherville (probably mostly wooden tent frames) was built near the mouth of Fisher Creek. In good ground, miners were netting about $1/pan. At a gold price of $18.00/ounce, that would equal about 0.07 oz placer gold per pan after deductions for fineness and smelter charges. Wages could be from $20 to $30/day at a time when labourers were making about $2/day in more civilized places. The gold was coarse and easy to recover with pans, small sluices, and rockers. Nuggets were worth from $2.50 to $78 after deductions for fineness and smelter charges. They weighed from about 0.15 to 4.4 ounces.


LEGEND
SPILLWAY 1047275
claim name
record number
Spillway property boundary
claim boundary
Creek
600,000 E.
602,000 E.
604,000 E.
606,000 E.
5,506,000 N.
5,504,000 N.
5,502,000 N.
5,500,000 N.
5,448,000 N.
5,5448,000 N.
PROFESSIONAL
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BRITISH COLUMBIA
GEOSCIENTIST
Victoria ditch
(no name)
1012014
Boulder Creek
1915 hydraulic mining
Wild Horse River
Stone-walled Reservoir
Figure 5
(no name)
514135
Frenchman's Gulch
MICREX I
365588
Main Hydraulic Pit
Brewery Creek
Site of Fisherville
LEASE
368385
Palaeo-channel of Wild Horse River
HUGHES RANGE
Fisher Creek
Quong Yung Tong Hydraulic Pit
Nip and Tuck Hydraulic Pit
SPILLWAY PROPERTY
LONE PEAK
SPILLWAY
1047275
MAUS
1047747
Maus Creek
RUSTY GOLD
778442
1949 to 1979-era Placer Lease
733
NOTES: Rivers and creeks are from part of B.C. Geol. Surv. Preluim. Map 54.
For recent work around the Spillway property, see Figure 10.
For geology, see Figure 13.
For structural analysis of Cretaceous Period gold-bearing structures, see Figure 15.
N.
15° 39'
N. mag.
SCALE
0 0.5 1.0 1.5 2.0 km
0 0.5 1.0 mi
Figure 4
CASSIAR EAST YUKON EXP. LTD.
FEATURES and CLAIMS noted in the HISTORY
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017

1865 The Dewdney trail was completed from New Westminster on the coast to Wild Horse River. That wagon road facilitated the importation of equipment, supplies, and if necessary, British troops to the Wild Horse River placer camp. The colonial government was in a great rush to complete the trail before the end of the American Civil War. At that time, the United States had the world's largest standing army. The colonial government wanted to prevent annexation of British Columbia to the United States as Texas and California had been annexed previously.

1866 Fisherville, located west of Wild Horse River just south of its confluence with Fisher Creek, was torn down and moved up hill to access the rich ground beneath it (Figure 4).

1867 Main Hydraulic Pit: Claim acquisition
David Griffiths acquired ground along Wild Horse River. Later, he became the operator of one of the hydraulic mines in the Main Hydraulic Pit located about 2.4 km (1.46 mi) north of the Spillway property (Figure 4).

1869 Maus Creek: Trail work
Small-scale hydraulic mining commenced in the area of the current Main Hydraulic Pit, located north of Fisher Creek on Wild Horse River. A new wagon road was built from Fort Steele to the pit area and trails were extended up Maus Creek.

1874 Boulder Creek: Adit
W.H. Morrow with a crew of seven men drove an adit into the bank of Wild Horse River 11.27 km (7 mi) up the creek from the Fort Steele mining office. The author estimates that the adit was located at about U.T.M.: 5,505,240 N., 603,560 E. This location is about 120 m (393.7 ft) north of the confluence of Boulder Creek and Wild Horse River. This was the first recorded attempt to explore for a deep channel on Wild Horse River. The colonial government provided $551 and $1,000 was raised privately to fund the project. The author assumes that the adit was driven eastward into the bench. It had been driven in for 27.4 m (90 ft) when it was abandoned. In 1894 there was a second attempt to extend that adit.

1875 to 1877 Main Hydraulic Pit: Ditch development
Several new placer "hill" claims were staked on the lower slopes flanking Wild Horse River with intent to prospect "deep ground" during the winter of 1875-6.

Two new ditches and associated flumes were built during the winter of 1875-6 to provide a reliable water supply to enable expansion of hydraulic operations on both sides of Wild Horse River. The author believes that hydraulicking on the southeastern side of Wild Horse river was concentrated in the area south of its confluence of Fisher Creek Hydraulicking on the northwestern side of the river was located somewhere within the area for the Main Hydraulic Pit. The Hang Company dug a ditch that extended for 6.44 km (4 mi) along the slope southeast of the river at a cost of $3,000, enabling it to have a successful hydraulicking season in Summer, 1876. During the winters of 1875-6 and 1876-7, the Victoria Ditch Company constructed a 5.2-m (17-ft) high dam on Victoria Gulch and a 7.24-km (4.5-mi) long ditch from Victoria gulch to the area of the main hydraulic pit. The estimated cost of the project was $10,000 to $12,000 (Figure 4).

1881 Wild Horse River: Hydraulic operations

It was reported that the hydraulic operation on the northwestern side of Wild Horse River was doing well while the Hang Company's operation on the southeastern side of the river was doing poorly. The Hang Company's operation continued for several years after 1880 generating enough money to maintain its 6.44 km (4 mi) ditch. The author suspects that either the company got out of a "channel" into lean ground in its pit or not all of the gold that was recovered was reported.

1882 to 1885 Wild Horse River: Hydraulic operations

Hydraulic operations on both sides of Wild Horse River were doing well. Reported gold production from Wild Horse River and surrounding creeks was worth about $25,000 per year, coming mostly from hydraulic mining. Holland (1950) listed that a total of 7,551 oz of placer gold production was reported from Wild Horse River camp from 1881 to 1885.

1885 to 1886 Decline in Camp Production

Gold production decreased. During 1885, a rush to Findlay Creek resulted in a labour shortage. In 1886, production throughout the camp was curtailed by a lack of water due to a drought.

1887 Decline in Camp Production

In the Annual Report of 1887, it was noted that "there has been a marked falling off in the number of companies mining in Wild Horse Creek". Four hydraulic operations were still active in the drainage indicating that small-scale sluice and rocker mining operations were being shut down. This may have been due to the easy ground with shallow cover near the river progressively being worked out. That year, government engineers estimated that about $23,000 in placer gold had been produced by hydraulicking and a further $3,000 in placer gold had been produced by other smaller operations.

David Griffiths increased production in the Main Hydraulic Pit area by operating a new No. 2 Giant monitor.

1888 to 1889 Stabilization of Camp Production

Despite an early freeze-up preventing hydraulic mines from cleaning up, the value and distribution of placer gold production from the Wild Horse River camp in 1888 and 1889 were similar to that of 1887.

1890 Wild Horse River: Hydraulic mining production

A total of eight monitors and 11 sluices were being used. Activity was concentrated in the Main Hydraulic Pit area located on current MICREX 1 (365588) placer claim and on the adjacent part of current (no name) (514135) placer claim, and in the southeastern hydraulic pits in the Nip and Tuck area located on current Placer Lease 368385 (Figure 4). A total of about $32,000 (1,778 oz @ $18/oz) was realized from production that year. David Griffiths cleaned up his sluices in the main hydaulic pit area for the first time since 1887. He recovered from $8,000 to $9,000 (444 to 500 oz @ $18/oz) placer gold from three seasons of hydraulicking. Griffiths's delayed clean-up accounted for the rise in the annual production from Wild Horse River in 1890.

1877 to 1880 Wild Horse River: Hydraulic operations

The increased water supply permitted expansion of hydraulic operations on both sides of Wild Horse River and revenue from those operations steadily increased.

Figure 5 Stone-walled Reservoir near the Southern End of Victoria Ditch

For location adjacent with the Main Hydraulic Pit, see Figure 4

1891 Main Hydraulic Pit: Hydraulic mining production
By 1891, David Griffiths had been working on Wild Horse for 24 years. He was 61 years old, and he may have felt that it was time to sell out. He commenced negotiating sale of his leases in the Main Hydraulic Pit area to The East Kootenay Exploration Syndicate, Ltd., of London, England. His hydraulic operation was shut down during negotiations. Production of placer gold from Wild Horse River dropped to about $18,000 (1,000 oz @ $18/oz) in 1891. Based on the production from Griffiths's 1887-1890 clean-up, less than half of the decline can be reasonably attributed to the cessation of his operation. Production elsewhere must have declined also.

1892 Boulder Creek: Adit
A 2.42-km (1.5-mi) long placer lease was granted along Wild Horse River near the mouth of Boulder Creek. The adit driven by D.H. Morrow and company in 1874 near Boulder Creek was re-entered and extended in search of an old channel.

1892 Main Hydraulic Pit: Corporate maneuver
Ownership of David Griffiths's ground passed to the East Kootenay Exploration Syndicate, Ltd. The syndicate planned to upgrade water-supply infrastructure to enable the operation of a third monitor in the Main Hydraulic Pit area. The syndicate's ground included a length of 640 m (2,100 ft) of bench leases and a further 518 m (1,700 ft) of bench claims. Despite the fact that there was no production from the main hydraulic pit area, reported placer gold production from Wild Horse River was up to about $25,000 (1,389 oz @ $18/oz) for the year. Probably the stone-walled reservoir above the western wall of the Main Hydraulic Pit was constructed in 1892 (Figures 4 and 5).

1892 Boulder Creek: Underground work
Work on the Morrow adit located near the mouth of Boulder Creek ceased due to excessive ground water in the working. Another attempt at reaching the target area by digging a shaft at a better location was planned. Five km (3 mi) of road was built in order to bring in pumps for the shaft.

1893 Wild Horse River: Hydraulic mining production
During 1893, five companies reported placer gold production of $19,000 (1,056 oz @ $18/oz) from five hydraulic and two sluicing operations. The East Kootenay Exploration Syndicate completed its infrastructure upgrade in the Main Hydraulic Pit area and conducted a test run. David Griffiths bought some profitable leases in order to re-sell them to the syndicate.

1894 Wild Horse River: Hydraulic mining production
A total of $22,500 (1,250 oz @ $18/oz) of placer gold was reported for the year including $10,000 production (556 oz @ $18/oz) by a "joint stock company", probably the East Kootenay Exploration Syndicate. The syndicate had its problems including loss due to landslides during heavy rains to long sections of the Victoria ditch and the dam at the head of it. A positive effect of the rain was that the river near the hydraulic operations was flushed of accumulated fine debris from the sluices. During the winter of 1893-4, the syndicate bought from David Griffiths the ground that he had acquired in 1893. The syndicate leased it back to the Chinese owners who had sold it to Griffiths. Everyone seems to have been satisfied with the arrangement.

1894 Boulder Creek to Victoria Gulch: Shaft sinking
In Autumn, 1894, work on the 1891-era shaft at the mouth of Boulder Creek was re-commenced by a Mr. Jennings. His goal was to reach bedrock during winter 1894-5. A Mr. Laird of Chicago attempted to sink a shaft to bedrock just down stream from Victoria Gulch, about 2.8 km (1.74 mi) north of Boulder Creek. Four other placer leases were acquired in the Victoria Gulch area in anticipation of further shaft sinking.

1895 Main Hydraulic Pit: Adit on bedrock
The East Kootenay Exploration Syndicate, Ltd. repaired its plant in the Main Hydraulic Pit area. The International Placer Company was driving an adit toward the location of a presumed old channel at an undisclosed location on Wild Horse River.

1895 Eastern bank of Wild Horse River south of Fisherville: Hydraulic mining
"The old Nip and Tuck claim" was sold to the Nip and Tuck Gold Mining Company of Vancouver. The company renovated a 5-mile long ditch on the southeastern side of Wild Horse River and commenced hydraulicking the river bank. The author opines that this claim was in the area of one of the smaller southeastern hydraulic pits on the southwestern part of current Placer Lease 368385 (Figure 4).

1895 Maus Creek: Minor production
Placer production from "Lost and Man's creeks was reported as having a value of $175 (9.72 oz @ $18/oz). Maus Creek was mis-reported as Man's Creek. Lost Creek is a tributary of Maus Creek located near its headwaters about 7 km (4.3 mi) east of the Spillway property area.

1896 Main Hydraulic Pit: Renovation
The East Kootenay Exploration Syndicate was succeeded by The Invicta Gold Mining (Placer) Co., Ltd., of England, probably to provide syndicate members with some stock liquidity. In 1896, the renewed plant in the Main Hydraulic Pit area was tuned up with a run-through of 53,550 m^3 (70,000 yd^3) of low-grade gravel. By 1896, the Main Hydraulic Pit was about 1,524 m (5,000 ft) long and was washed to a vertical back-wall located 183 to 244 m (600 to 800 ft) west of the river. It was close to its current size. Much of the blue boulder-clay till remained in the pit floor covering the bedrock surface. Invicta planned to sink two shafts to bedrock in the winter of 1896-7 to test the gold tenor at the bedrock surface. Underground development of the bedrock surface was anticipated.

1896 Eastern bank of Wild Horse River south of Fisherville: Hydraulic mining
The Nip and Tuck Gold Mining Company continued hydraulicking in the southwestern part of current Placer Lease 368385 (Figure 4).

1896 Maus Creek: Notices of work
A total of 9 notices of work were filed and a total of 16 claims were in good standing on Maus Creek. Those totals included both hard rock and placer claims.

1897 Main Hydraulic Pit: Lack of progress
Apparently, The Invicta Gold Mining (Placer) Co. had given up on the idea of sinking shafts and mining the bedrock surface beneath the blue boulder-clay till in the lower parts of the Main Hydraulic Pit. The company reported that it was investigating installing a hydraulic elevator to lift the till away from the bedrock surface in the pit. No hydraulicking was done in the pit in 1897.

1897 Eastern bank of Wild Horse River south of Fisherville: Corporate maneuver
By 1897, Nip and Tuck operation had been acquired by the Nip and Tuck Gold Hydraulic Mining Company, of London, England. The back wall of the Nip and Tuck hydraulic pit was 15.24 m (50 ft) high and was being washed down by a 15.2-cm (6-inch) monitor. The upper strata in the pit were " loam and sand, etc., with low values". The lower strata were boulder-clay till. Most of the gold must have come from the bedrock surface beneath it. About 114,750 m^3 (150,000 yd^3) of material was processed at the Nip and Tuck Pit that year.

1897 The Quong Yung Tong Company ran a small-scale hydraulic operation in a pit located on the northeastern part of current Placer Lease 368385.

1898 to 1900 West Side of Wild Horse River

In 1899, some of the 1869-era road to the Main Hydraulic Pit was re-located and a road was extended to Victoria Gulch. Little placer mining activity on Wild Horse River was reported. Presumably the Nip and Tuck and Quong Yung Tong operations were continuing at this time.

1901 Maus Creek: Certificates of work

Six certificates of work and four new locations were recorded. It is unknown how many of these were related to placer operations.

1901 to 1903 Wild Horse River: Hydraulic mining production

Both the Nip and Tuck and Invicta properties were leased out to small-scale operators who reportedly produced "considerable gold". The author presumes that these miners were working into the bedrock contact with the boulder till. The Quong Yung Tong Company reported a poor year in 1901. It was hydraulicking southwest of the mouth of Fisher Creek (Figure 4).

1904 to 1907 Wild Horse River: Hydraulic mining production

In 1904, five companies were hydraulicking 6.1 to 12.3-m (20 to 40-ft) thick gravel "which has proved fairly rich in gold" at undisclosed locations. These may have included the Invicta Gold Mining (Placer) Co. or the Quong Yung Tong Company.

1915 North of the Main Hydraulic Pit: Hydraulic mining production

One group was reported to be hydraulicking an 18.2 to 30.5-m (60 to 100-ft) high bank with a 30.5-m (100-ft) head of water at an undisclosed location. That group was earning \$0.0383/m^3 (\$0.05/yd^3) placer gold. This translates to about 0.002 oz/m^3 (0.0015 oz/yd^3) at a gold price of \$19.00/oz. The author assumes that this group was working either on tailings or on barren side-hill gravel. The location of this work may have been conducted in the two hydraulic pits north of the Main Hydraulic Pit on the current (no name) (514135) placer claim (Figure 4).

1917 Maus Creek: New wagon road

A new wagon road was built along the northern side of Maus Creek to the Victor hard rock property located at the confluence of Lost and Maus creeks about 6 km (3.7 mi) east of the current Spillway property area.

1918 Wild Horse River: Increased activity

"Increased activity" on Wild Horse River was reported. The Wild Horse Dredging Company acquired placer leases somewhere on the river.

1919 Wild Horse River: Wing dam near the upper end of the canyon.

The Wild Horse Dredging Company constructed a dam across the river in order to divert the flow to gain access to the creek-bottom gravel during low water. The dam was washed out during spring floods. Next, the company installed a drag line scraper upstream from the dam site.

1919 Main Hydraulic Pit, southern end

The Gamble Mining Company piped water across the river from the east side to facilitate hydraulicking on the west side. The company was working virgin ground on its Placer Lease 21B, probably located on the current MICREX1 (365588) placer claim (Figure 4). The 1919 hydraulicking season was curtailed during the latter part of the summer due to a shortage of water.

1920 Main Hydraulic Pit, southern end

The Wild Horse Dredging Company was "re-organized" and did no work during the year. Also, the Gamble Mining Company did not work on Wild Horse River in 1920.

1921 to 1922 Wild Horse River: Increased activity

It was reported in the Annual Report for 1921 that "returns from Wildhorse are increasing". Probably, those returns were from various small operations on creeks throughout the camp. By 1922 The Wild Horse Dredging Company was defunct. With great scorn, it was revealed in the annual report for 1922 that the company was just an excuse for "a stock-jobbing proposition from start to finish". The Gamble Mining Company secured more water rights and repaired "an old flume" before commencing hydraulicking in the Main Hydraulic Pit late in the season.

1923 Main Hydraulic Pit: Corporate maneuver

The property of the Gamble Mining Company and other placer properties on Wild Horse River were acquired by the Wild Horse Creek Mining Company. The Victoria ditch was renovated and a new flume was built enabling delivery of water from the western side of the river at a rate of 0.34 m^3/sec (12 $ft^{3/}$/sec). Camp buildings were erected also. The company's plan was to commence hydraulicking in the Main Hydraulic Pit area in 1924.

1924 Main Hydraulic Pit: Ditch renovation and hydraulic mining

The Wild Horse Creek Mining Company conducted a hydraulicking operation in the Main Hydraulic Pit throughout the season. The water delivery capacity of the Victoria ditch was increased to 1.42 m^3/sec (50 $ft^{3/}$/sec) to enable the use of a monitor even during the low-water period from August to October. The old Quong Yung Tong ditch on the eastern side of the river was renovated and extended to within 0.8 km (0.5 mi) of Victoria Gulch. A trestle was built to pipe water across the river to the Main Hydraulic Pit area. That enabled a second monitor to be employed during high water in the early part of the summer season. The company was satisfied with the amount of coarse gold that was produced from the Main Hydraulic Pit.

1924 Boulder Creek: Drift mining

An un-named group that was drifting along bedrock at Boulder Creek found a narrow pay streak containing some coarse gold lying next to bedrock. They contemplated hydraulicking the area.

1925 Main Hydraulic Pit: Hydraulic mining

The Wild Horse Creek Mining Company became known as the Wild Horse Gold Mining Syndicate. The syndicate hydraulicked in the Main Hydraulic Pit area all season. The results of the clean-up were unknown. The syndicate must have been disappointed with the results of that clean-up because it planned to use the monitors on other parts of its holdings.

1926 Eastern bank of Wild Horse River south of Fisherville: Testing

The Wild Horse Gold Mining Syndicate tested ground on the southeastern side of Wild Horse River.

1927 Eastern bank of Wild Horse River south of Fisherville: Hydraulic mining

The Wild Horse Gold Mining Syndicate employed a crew hydraulicking and cleaning up bed rock. They may have been working in the old Nip and Tuck pit located in the southwestern part of current Placer Lease 368385 (Figure 4). There, the pit had been hydraulicked to bedrock by 1903.

1928 to 1933 Eastern bank of Wild Horse River south of Fisherville: Hydraulic mining

The Wild Horse Gold Mining Syndicate continued hydraulicking with one monitor. Much effort was spent sinking shafts and tunneling in search of old channels. The syndicate's claims extended for 3.2 km (2 mi) above Brewery Creek. That ground included much of current Placer Lease 368385 and the southern end of current (no name) (514135) placer claim (Figure 4).

1930 to 1939 Maus Creek: Surface sluicing

George R. Castles of Maus Minerals Ltd. reported in private correspondence to Dome Exploration (Canada) Limited and Gulf Minerals Canada Limited in 1979 that: during the 1930s, miners were reported to have made a living by sluicing surface gravels in Maus Creek.

1933 Eastern bank of Wild Horse River south of Fisherville: Dam construction

J.H. Norman and J.H. Dixon of Calgary acquired an undisclosed number of placer leases between the mouth of Wild Horse River and Boulder Creek. They built a timber seepage dam and a V-shaped flume with 1.8-m (6-ft) high sides near the hydraulic pit at the southwestern end of the current Placer Lease 368385. Their plan was to excavate the creek bed beneath the dam at low water. Nothing seems to have come of that plan.

1933 to 1935 Boulder Creek: Trenching and drifting

A. Suran and sons were working placer leases on Boulder Creek about 1.2 km (0.75 mile) above its confluence with Wild Horse River. They had excavated a deep trench to divert the water from their working area in the creek bed in order to mine a thin but rich layer of pre-glacial or inter-glacial gravel on bedrock. They were recovering nuggets valued at up to $27. At an average gold price of $26.38 in 1933, some of those nuggets weighed more than an ounce. Downstream from A. Suran's operation on Boulder Creek, W.A. Drayton was driving a tunnel to bedrock.

1935 to 1939 Maus Creek: Underground placer mining

George R. Castles of Maus Minerals Ltd. reported in private correspondence to Dome Exploration (Canada) Limited and Gulf Minerals Canada Limited in 1979 that: Dan Kelly and colleagues from Fort Steele made the first serious attempt to test the gold deposits on the bedrock surface along Maus Creek. Kelly sunk a 28-m (92-ft) deep shaft to bedrock on the era of 1949 to 1979-era Placer Lease 733. That lease was on the eastern part of the colluvial fan in the southeastern boundary area of the current SPILLWAY (1047275) placer claim (Figures 4 and 6). Castles reported that Kelly had told him that in 1939 he had taken 10 oz of placer gold with a "value" of $327.00 from underground workings, presumed to be on bedrock at the bottom of the shaft during two weeks of mining. Kelly also reportedly said that some of the ground on bedrock ran as high as 2 oz per set or somewhere in the range of $13.00 to $23.00 per yd^{3}". (For analysis, see sections 2.2.2 and 3.2.2, this report)

1946 to 1949 Maus Creek

George R. Castles reported that Dan Kelly felt that he was too old to return to underground mining and conducted no more work at Maus Creek.

1949 Maus Creek: Underground placer mining

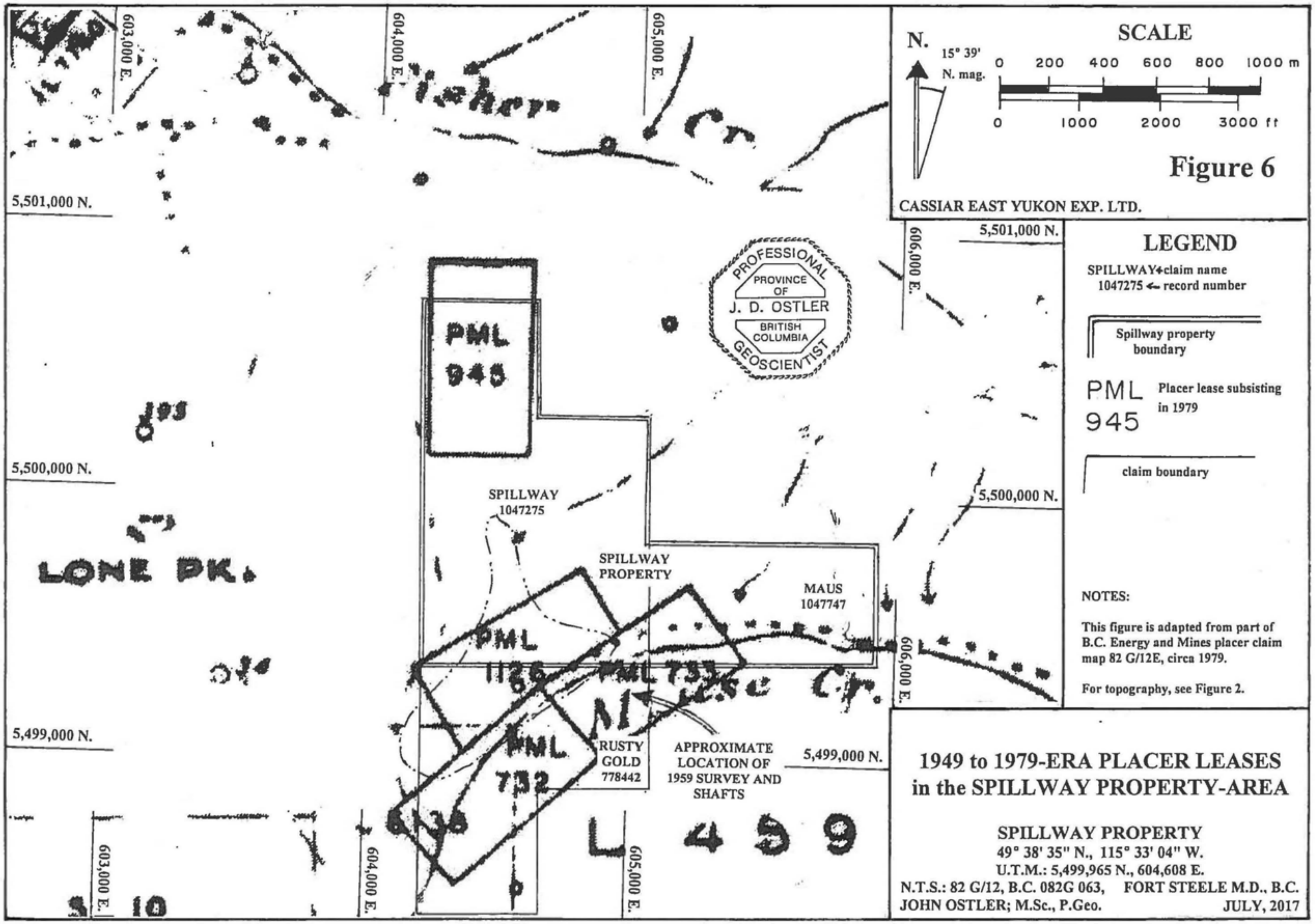
Dan Kelly allowed his leases on Maus Creek to lapse and his ground (probably covered later by placer leases 732 and 733 (Figures 4 and 6)) was re-staked by George R. Castles and S.J.C. Best. Work commenced on re-claiming Kelly's shaft and workings.

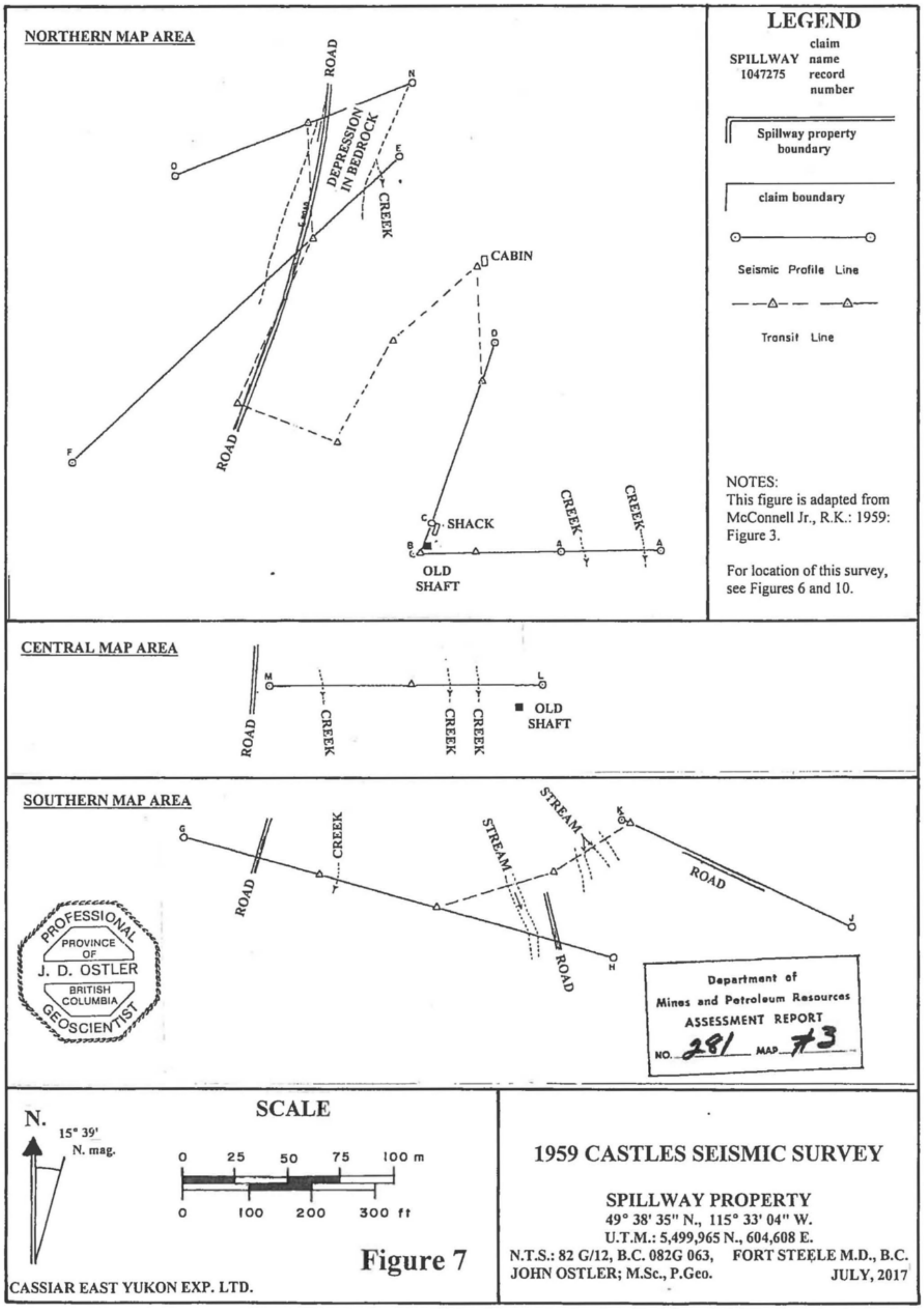
1953 Main Hydraulic Pit: Surface work

It was reported that J. Holbrook continued to work on his leases located 3.22 km (2 mi) upstream from the Kootenay Base Metals mill (in the northern part of the Main Hydraulic Pit on Wild Horse River) (Figure 4). There were no details regarding either the nature of Holbrook's work or of how long he had been working.

1956 to 1958 Maus Creek: Underground placer mining

George R. Castles of Maus Minerals Ltd. reported in private correspondence to Dome Exploration (Canada) Limited and Gulf Minerals Canada Limited in 1979 that: During the summers from 1956 to 1958 the 1939-era Kelly shaft was de-watered and reinforced, the existing drifts were sampled and the exploration drifts were extended another 9.14 m (30 ft). Material from the exploration drifts was sluiced to recover the gold. No record of the recovered gold was disclosed. Groundwater flow into the workings was reported to have been 41.7 litres per minute (550 gallons per hour). Castles's text indicates that there were at least four drifts at the bottom of the Kelly shaft.


N.
15° 39'
N. mag.
SCALE
0 200 400 600 800 1000 m
0 1000 2000 3000 ft
Figure 6
CASSIAR EAST YUKON EXP. LTD.
LEGEND
SPILLWAY←claim name
1047275 ← record number
Spillway property boundary
PML 945 Placer lease subsisting in 1979
claim boundary
NOTES:
This figure is adapted from part of B.C. Energy and Mines placer claim map 82 G/12E, circa 1979.
For topography, see Figure 2.
1949 to 1979-ERA PLACER LEASES in the SPILLWAY PROPERTY-AREA
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017
603,000 E.
604,000 E.
605,000 E.
606,000 E.
5,501,000 N.
5,500,000 N.
5,499,000 N.
PROFESSIONAL
PROVINCE OF
J. D. OSTLER
BRITISH COLUMBIA
GEOSCIENTIST
PML 945
SPILLWAY
1047275
SPILLWAY
PROPERTY
MAUS
1047747
PML 1126
PML 733
PML 732
RUSTY
GOLD
778442
APPROXIMATE
LOCATION OF
1959 SURVEY AND
SHAFTS
Cr.
LONE PK.
L 499


NORTHERN MAP AREA
ROAD
DEPRESSION IN BEDROCK
CREEK
CABIN
SHACK
OLD SHAFT
CREEK
CREEK
LEGEND
SPILLWAY claim name
1047275 record number
Spillway property boundary
claim boundary
Seismic Profile Line
Transit Line
NOTES:
This figure is adapted from McConnell Jr., R.K.: 1959: Figure 3.
For location of this survey, see Figures 6 and 10.
CENTRAL MAP AREA
ROAD
CREEK
CREEK
CREEK
OLD SHAFT
SOUTHERN MAP AREA
ROAD
CREEK
STREAM
STREAM
ROAD
ROAD
PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
J. D. OSTLER
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 281 MAP #3
N.
15° 39' N. mag.
SCALE
0 25 50 75 100 m
0 100 200 300 ft
Figure 7
CASSIAR EAST YUKON EXP. LTD.
1959 CASTLES SEISMIC SURVEY
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo. JULY, 2017

1957 Eastern bank of Wild Horse River south of Fisherville: Hydraulic mining
Fort Steele Gold and Silver Mines Ltd. of Cranbrook acquired four placer leases from C.F. Gorse. The leases were located southwest of the mouth of Fisher Creek and covered the old Quong Yung Tong Hydraulic Pit located on in the northeastern part of current Placer Lease 368385 (Figure 4). A crew of four installed a bucket conveyor to a sluice, a 10-cm (4-inch) monitor, and a 12,285 litre/min (2,700 gal/min) pump. During the season, they washed down about 7,650 m^3 (10,000 yd^3) of gravel containing an undisclosed amount of placer gold.

1958 Eastern bank of Wild Horse River south of Fisherville: Drilling
Boreas Mines Limited of Calgary bought the leases covering the operation in the old Quong Yung Tong Hydraulic Pit. Boreas conducted "exploratory drilling". No details of that drilling are known to the author.

1959 Maus Creek: Seismic survey
In Summer, 1959, George Castles commissioned Hunting Technical and Exploration Services Limited to conduct a seismic refraction survey in three areas on the area covered by his placer leases 732 and 733 (Figures 6, 7, and 10) and possibly other claims. The northern survey area was near the 1939-era Kelly shaft on Placer Lease 733. The exact locations of the survey lines are not known to the author because no location map accompanied the survey report (McConnell Jr., 1959). A total of 7 survey lines comprising a total length of 1,014.98 m (3,330 ft). The survey was conducted from July 8 to 16, 1959 (Figure 7). R.K. McConnell Jr. discussed the results of the seismic survey as follows:

<u>NORTHERN MAP AREA</u>

From the seismic evidence it is possible to outline a rather consistent stratigraphic section in this area.

From about elevations of 3360 to 3340 feet (1,024.1 to 1,018.0 m) are found unconsolidated sands silts and gravels.

From about 3340 to 3200 feet (1,018.0 to 975.4 m) is a layer of hard dense till or cemented gravel which was encountered in the old mine workings.

Below elevation 3200 (975.4 m) is the surface of the bedrock.

At the ground surface in all cases is an aerated layer roughly five feet (1.52 m) thick consisting of dry soil and humas.

Maus Creek itself has cut well below the unconsolidated layer into the cemented gravel but still lies roughly eighty to ninety feet (24.4 to 27.4 m) above the bedrock. A similar stream channel which has since been abandoned may have once flowed as shown on the EF line with its bed roughly ten to twenty feet (3 to 6.1 m) below the surface of this hard layer. The NO line was surveyed in an attempt to trace this channel but because of the surface topography the results were not quite so conclusive. There is however some suggestion that the valley (channel) continues as shown (on Figure 7).

Because of the depth and poor velocity contrast it was impossible to determine the nature of the bedrock topography although the consistent depths at the end points might hint at a relatively even surface.

CENTRAL MAP AREA

The one profile attempted in this area failed to encounter bedrock because of the high velocity layer which lies just below the surface and the narrowness of the valley which prevented extending the spread.

SOUTHERN MAP AREA

Results in this region were quite inconclusive but the section suggested by the seismic results is shown in cross sections JK and HG (Figure 7). One or two layers of unconsolidated alluvium overlie a high velocity layer which may be either the cemented layer encountered in the more northerly profiles or the bedrock itself. It was unfortunately impossible to distinguish between the two types of material in this area on the basis of velocity.

McConnell Jr., R.K.; 1959: p.3.

1960 to 1964 Maus Creek: Castles shaft
G.R. Castles and crew sank a new shaft toward bedrock near Maus Creek close to the confluence of Maus Creek and Lone Gulch on Placer Lease 733 (Figure 6). He worked on this project from two to five weeks per year. Consequently, progress was slow. The author estimates that by the end of the 1964 work, the shaft was down about 20 m (65.6 ft) from surface.

1963 Eastern bank of Wildhorse River south of Fisherville
Pundata Mining Limited of Cranbrook acquired the four placer leases covering the Quong Yung Tong Hydraulic Pit and whatever equipment was on them from Wildhorse Golds Limited (Figure 4).

1963 Western bank of Wild Horse River: Bulldozer work
It was reported that most of the activities in 1963 were on the west side of Wild Horse River, where several cuts and test-holes were made by bulldozer, and a crew of four men washed 1,148 m^3 (1,500 yd^3) of gravel. "Some gold was recovered." The author is uncertain if that testing was conducted on the Fisher Creek leases or in the Main Hydraulic Pit farther up river.

1963 Southwest of Maus Creek: Hammer drilling along the base of the southwestern slope of Lone Peak
A letter report was written by C.M. Romanowitz (1963) to an un-named owner of a group of placer leases located along the base of the southwestern slope of Lone Peak. The property was located about 1 km southwest of the bench at the confluence of Lone Gulch and Maus Creek. The program reported upon comprised eight Becker Hammer Drill holes on placer leases 951 to 953. Bedrock was reached at 29.9 m (98 ft) in Hole 2. The other holes did not reach bedrock. The description of the sediment penetrated in the drill logs is consistent with that of glacial till. The drill was underpowered for the job and efforts to sample failed. In the letter there is a mention of a previous magnetometer survey in the area.

1964 Along the base of the southwestern slope of Lone Peak: Percussion drilling
The work previously reported southwest of Maus Creek was on an old channel that diverged from the canyon area of Wild Horse River and flowed southeastward along the base of the southwestern slope of Lone Peak. C.B. Newmarch conducted a drill program in 1964 in that channel near where it diverges from the Wid Horse River canyon area. His (1994) comments on work in that area were as follow:

The concept of an earlier and also gold-bearing channel lying east of the present Wildhorse River was established by (Newmarch) in Report on Drilling Project on Placer Mining Lease #922 compiled by Veczay Minerals exploration in June, 1964 (Unpublished). This project, involving seventeen churn-drilled holes demonstrated the presence on an “Old Channel” close to the west side of Lone Peak that carried gold values of 1 to 3 cents per cubic yard (when the gold price averaged $35.10 per ounce) and that a concentration at a depth of 120' (36.6 m) obtained on the top of a clay “false bedrock”. This same area was further tested in 1990 by Ole Placers who drilled six holes on Placer Claims 21, 20, 66, and 97, providing data reported by Michael Hendrick in Assessment Report 21,575. Only modest amounts of gold were recovered, estimated on occasion to be .01 to .02 ounces pre cubic yard. The stream gradient is thought to be about four to five degrees

Newmarch, C.B.; 1994: p. 5.

1964 Maus Creek: Corporate maneuver
R.G. Castles formed Maus Minerals Ltd. the company received a “controlling interest” in four placer leases owned by Castles. The leases were located near the confluence of Maus Creek and Lone Gulch.

1964 to 1968 Maus Creek: Excavation of Castles shaft to bedrock
Maus Minerals Ltd. increased the pace of work on the Castles shaft near Maus Creek. Sometime from 1964 to 1968, excavation reached the bedrock surface (see 1968).

1965 Eastern bank of Wildhorse River south of Fisherville: Poor results
M.C. Robinson (1965) reported that placer mining on the leases around the Quong Yung Tong Hydraulic Pit at Fisher Creek was an economic failure. During his 1965 field program, heavy equipment, by then in the hands of a receiver, was still in the pit. He reported that there was no placer mining being conducted on Wild Horse River in 1965.

1968 Western bank of Wild Horse River: Bulldozer work
Jacques de Floras conducted an undisclosed amount of bulldozer trenching and pit excavation, panning and other gold testing on Placer Lease 1009 somewhere near Fisher Creek.

1968 Maus Creek: Road work and drifting beneath Castles shaft
By 1968, Maus Minerals Ltd. owned Placer Leases: 732, 733, 945, 946, and 947. Probably, Placer Leases 946 and 947 covered the spillway between leases 945 and 733 (Figure 6). W. Strickland, the mine manager, supervised renovation of the Maus Creek road, de-watering and a further 3.6 m (12 ft) of drift was driven in and on the bedrock from the bottom of the shaft in an easterly direction. The total length of that drift is not known to the author.

1969 Maus Creek: Drifting beneath the Castles shaft
Maus Minerals Ltd. extended the drift at the bottom of the Castles shaft another 4.0 m (13 ft).

1970 Maus Creek: Corporate maneuver and drifting beneath the Castles shaft
Maus Minerals Ltd. abandoned Placer Leases 946 and 947, leaving the company with three leases: 732, 733, and 945 (Figure 6). The drift at the bottom of the Castles shaft was extended eastward another 4.6 m (15 ft). The total length of the east drift by then was at least 12.2 m (40 ft).

1971 Maus Creek: Drifting beneath the Castles shaft
Maus Minerals Ltd. commenced a new southward drift along bedrock from the bottom of the Castles shaft. By the termination of the 1971 exploration, the south drift was 2.4 m (8 feet) long.

1972 Maus Creek: New placer lease and drifting beneath the Castles shaft
Maus Minerals Ltd. converted a claim that covered the northern apex of the bench at the confluence of Maus and Lone creeks to Placer Lease 1126. That conversion brought Maus Minerals's placer lease holding to its final number of four leases (Figure 6). The southern drift on bedrock at the bottom of the Castles shaft was extended another 6.2 m (20.5 ft).

1973 to 1974 Maus Creek: Drifting beneath Castles shaft
The southern drift on bedrock at the bottom of the Castles shaft was extended another 10.4 m (34 ft) to achieve a total length of 19 m (62.3 ft).

1979 Maus Creek: Corporate maneuver
G.R. Castles (1979) presented the leases owned by his company, Maus Minerals Ltd., to Dome Exploration (Canada) Limited and Gulf Minerals Canada Limited for either option or sale (Figure 6). Neither company was interested in becoming involved in an underground placer project.

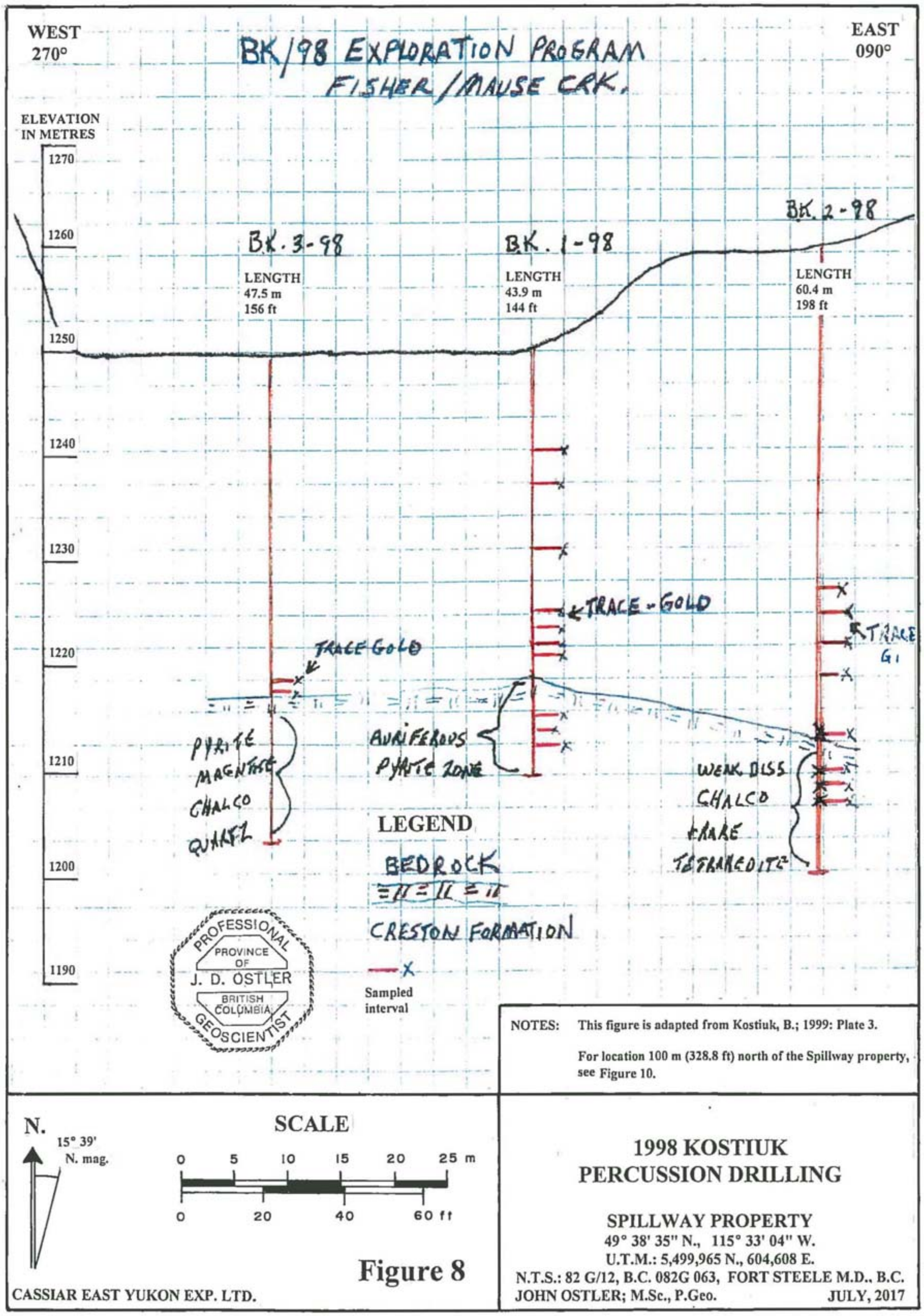
1984 Main Hydraulic Pit and along the Eastern bank of Wildhorse River south of Fisherville: Surface testing
P.W. Ransom (2009) described work along Wild Horse River from Fisher Creek to Boulder Creek as follows:

> Modern placer exploration started on the Wild Horse River in 1984 with three operators. Two were mining placer leases on the northwest side of the river. They were working two newly discovered pre-glacial slot channels along an area across the valley from the tributaries of Fisher Creek and Frenchman's Gulch (a cleft in the eastern slope of the Wild Horse River valley located about 400 m (1,312 ft) north of Fisher Creek, Figure 4). The other was working placer leases on the southeast side of Wild Horse River, at a site below Fisher Creek (probably on current Placer Lease 368385). Their operations uncovered a pre-glacial slot channel approximately 27.4 m (90 ft) above the present river. This slot channel was buried under the previous hydraulic mining operations from the 1890s. Initial washing of these tertiary gravels found them with paying quantities of placer gold.
>
> Ransom, P.W.; 2009: pp. 1-2.

1986 to 1987 Maus Creek: Hard-rock Scree sampling on the current MAUS (1047747) placer claim
During March, 1986, Ken Gourley staked the Jeff 2 and Jeff 3 (2601(4) and 2602(4)) modified grid mineral claims. The Jeff property covered 875 ha (2,161.25 acres) and its western portion covered much of the current Spillway property. Early during 1987, Gourley and an assistant traversed the scree slope north of Maus Creek on area covered by the current Maus (1047747) placer claim (Figure 10). They collected four "composite samples of minor quartz (carbonate sericite) tension-fracture and "bleed" quartz veinlets from the quartzite. This material represents perhaps 0.25% of the scree." (Groves and Robson, 1987) Trace amounts of gold were found in the vein quartz by gravity separation.

1987 to 1988: Main Hydraulic Pit, southern and central parts: Mechanized mining on bedrock
The current MICREX 1 (365588) placer claim covers the southern 2/3 of the main hydraulic pit on Wild Horse River. Gee Cee Mines Ltd. mined the bedrock surface of about 25% of the claim area in 1987 and 1988. Material was run through a large pair of sluices into a pond located in the southeastern part of the property. The results of that mining are unknown to the author.

1990 Southwest of Lone Peak: Percussion drilling (See text of C.B. Newmarch in 1964 section)


WEST
270°
EAST
090°
BK/98 EXPLORATION PROGRAM
FISHER/MAUSE CRK.
ELEVATION IN METRES
1270
1260
1250
1240
1230
1220
1210
1200
1190
BK. 3-98
LENGTH
47.5 m
156 ft
BK. 1-98
LENGTH
43.9 m
144 ft
BK. 2-98
LENGTH
60.4 m
198 ft
TRACE GOLD
TRACE - GOLD
TRACE GOLD
PYRITE
MAGNETITE
CHALCO
QUARTZ
ACC. PYRITE ZONE
WEAK DISS
CHALCO
+RARE
TETRAHEDRITE
LEGEND
BEDROCK
CRESTON FORMATION
Sampled interval
PROFESSIONAL
PROVINCE OF
J. D. OSTLER
BRITISH COLUMBIA
GEOSCIENTIST
NOTES: This figure is adapted from Kostiuk, B.; 1999: Plate 3.
For location 100 m (328.8 ft) north of the Spillway property, see Figure 10.
N.
15° 39' N. mag.
SCALE
0 5 10 15 20 25 m
0 20 40 60 ft
Figure 8
CASSIAR EAST YUKON EXP. LTD.
1998 KOSTIUK
PERCUSSION DRILLING
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017

1993 The Lone Peak gap south of Fisher Creek: Surface testing
The North Fisher Group of five placer claims was staked by a group headed by C.B. Newmarch in June, 1993. Due to overlap, the total area covered by the claim group is unknown to the writer. From August 25 to September 18, 1993 a group of seven took seven bucket-size surface samples and ran them through a vibratory sluice. Gold flakes were found in some of the samples. The samples were taken at four locations south of Fisher Creek (Figure 10). The most southerly sample site was about 250 m (820.2 ft) north of the northern boundary of the SPILLWAY (1047275) placer claim.

1998 The Lone Peak gap: Percussion drilling
During 1998 Brian Kostiuk of Cranbrook, B.C. controlled the Lone (310287) mineral claim. The claim covered most of Lone Peak and an area of about 400 ha (988 acres) after overlap. During Autumn, 1998 he contracted Owens Drilling Ltd. to drill three vertical percussion holes at the road crossing the pass between Fisher and Maus creeks (Kostiuk, 1999). The holes were located about 100 m (328.8 ft) north of the current SPILLWAY (1047275) placer claim (Figures 8 and 10). A total of 151.8 m (498 ft) of hole was drilled in three holes that formed an east-west line across the road. According to Kostiuk's diagram, depth to bedrock ranged from 30.5 to 45.7 m (100 to 150 ft) (Figure 8).

2000 Main Hydraulic Pit: Bulk test
The current (no name) (514135) placer claim covers the northern third of the Main Hydraulic Pit and the area along Wild Horse River northward to near Boulder Creek (Figure 4). P.W. Ransom (2009) described work in that area as follows:

> In 2000 a large bulk test was done on the northwest side of Wild Horse River by a company from Montana that had optioned a section of the placer property. Their records state that they washed 344.25 m^3 (450 yd^3) from 2.44 m (8 ft) of lower pay gravels in an upper middle slot channel.
>
> Ransom, P.W.; 2009: pp. 1-2.

2002 On and north of the SPILLWAY (1014275) placer claim: Diamond drilling
By 2002, Brian Kostiuk controlled a group of 16 mineral claims that he had optioned out to Golconda Resources Ltd. of Calgary, Alberta. The claims covered Lone Peak and the gap between Fisher and Maus creeks. LeClerc Diamond Drilling of Cranbrook, B.C. completed five NQ diamond drill holes on the property from March 17 to May 30, 2002 (Pighin, 2002). The first two holes (LP -02-1 and 2) were drilled on the northern flank of Lone Peak and near Fisher Creek at a location about 900 m (2,953 ft) northwest of the Spillway property (Figure 10). Drill hole LP-02-3 was a vertical hole drilled through the Wild Horse River palaeo-channel at a location about 150 m (492 ft) north of the SPILLWAY (1047275) placer claim. Drill holes LP-02-4 and 5 were drilled at 190°/-45° and 250°/-45° respectively from a location at about U.T.M.: 5,500,480 N., 604,300 E. in the northern part of the SPILLWAY (1047275) placer claim. The bedrock surface was penetrated at a vertical depth of 44.2 m (145 ft) in diamond drill hole LP-02-3. Unmineralized meta-sedimentary rocks were cut beneath the bedrock surface. The bedrock surface was penetrated at 37.8 and 57.9 m (124 and 190 ft) respectively in drill holes LP-02-4 and 5 respectively. Those two holes were drilled at -45°; thus the calculated depth to bedrock is:

length in hole X cos 45° = vertical depth — LP-02-4: 37.8 m X 0.7071 = 26.7 m or 67.7 ft
LP-02-5: 57.9 m X 0.7071 = 40.9 m or 134.3 ft

Unmineralized meta-siltstone and argillite were penetrated in drill holes LP-02-3 to 5.

2002 South of Lone Peak west of the SPILLWAY (1014275) placer claim: Diamond drilling
From June to August, 2002 LeClerc Diamond Drilling of Cranbrook, British Columbia drilled three holes (LP02-6 to 8) from one location south of Lone Peak for Golconda Resources Ltd. on Brian Kostiuk's Lone 1 (310287) claim. A total of 662.5 m (2,173.6 ft) of drilling was done into a northerly trending shear zone that was weakly mineralized with gold (Figure 10).

2004 Eastern bank of Wildhorse River south near Fisherville: Surface testing
Placer Lease 368385 is located southeast of Wild Horse River across from the Fisherville historic site (Figure 4). P.W. Ransom (2009) described work on Placer Lease 368385 as follows:

> In 2004 a bulk test program was started by Great Eagle Resources Ltd. (The) main mining operation (was) on the southeast side (of Wild Horse River) to assess the value of the pay channel to depth. Two pit locations were excavated to bedrock with an approximate depth of 6.56 m (20 ft). Test results confirmed that the most profitable pay layer of washable gravels was (from) 1.52 m (5 ft) to bedrock with another 0.66 m (2 ft) into the bedrock. Recovery from bedrock of the upper pit gravels found high gold values (concentrations) of up to $\$52.29/m^3$ ($\$40.00/yd^3$) (gold price was unstated) and nuggets ranging from 0.25 oz to 0.5 oz in size (weight).
>
> Ransom, P.W.; 2009: pp. 1-2.

In 2004 the average gold price was $409.72/oz. Using that average it can be calculated that the material from the Great Eagle bulk test graded about 0.128 oz/m^3 (0.098 oz/yd^3). Recent excavator pits in the Quong Yung Tong Hydraulic Pit southwest of Fisher Creek on Placer Lease 368385 confirm that the 2004 work program was conducted there (Figure 4).

2005 Wild Horse River from the Main Hydraulic Pit to Boulder Creek: Claim conversion
On-ground staking was replaced by map-staking in British Columbia in the winter of 2004-2005. Six "legacy" placer claims owned by Jacob associates: Fisher Hill 2 (266729), Fisher Boulder 3 (266730), Great Eagle I (352135), and Great Eagle 4 (366689), Dome (368497), and Total (368498) were converted into current the (no name) (514135) placer claim (Figure 4).

2005 to 2008 Main Hydraulic Pit, northern end: Physical work
Great Eagle Resources filed physical work involving "machinery and equipment" to keep current the (no name) (514135) placer claim in good standing.

2007 Main Hydraulic Pit, central and southern parts: Physical work
On September 14, 2007, Gee Cee Mines Ltd. filed a notice of physical work involving "machinery and equipment in a trench or open cut". That work may have been conducted in an excavator pit located near the northeastern corner of the MICREX 1 (365588) placer claim (Figure 4).

2009 Main Hydraulic Pit, northern part: Physical work
Great Eagle Resources filed physical work described as placer sluicing, panning or rocker box separation including transport costs for a program that was conducted from June 1 to October 7, 2009 on the (no name) (514135) placer claim. This appears to be the program of pit sampling and percussion drilling conducted by Jason Jacob and reported upon by P.W. Ransom (2009) (Ostler, 2014: Figure 3).

Ransom described the pit configuration as follows:

> There were 6 closely spaced pits at one location and 4 closely spaced pits at a second location about 518 metres (1,699.5 ft) downstream along the northwest side of Wild Horse Creek from the first set. The set of 6 pits cover a distance of about 175 metres (574.1 ft) (as per measurement by Jason Jacob) from the base of a steep slope to the riparian area (top of bank) of Wild Horse Creek, and that the second set may cover about 60 metres (196.9 ft) from base of slope to riparian area ...
>
> Ransom, P.W.; 2009: p. 3.

Pits were dug to an average depth of 6.7 m (22 ft), the limit to which the excavator that was used could dig beneath surface. None of the pits reached bedrock.

2009 Northern Main Hydraulic Pit to Boulder Creek: Percussion drilling
A total of seven churn holes were drilled at four locations along the western side of Wild Horse River on the (no name) (514135) placer claim. Drill holes No. 1 and 2 were drilled near Pits No. 7 to 10. Drill holes No. 3 to 5 were drilled near Pits No. 1 to 6. Drill holes No. 6 and 7 were reportedly drilled at locations between the location of Drill Holes No. 3 to 5 and the mouth of Boulder Creek (Ostler, 2014: Figure 3). Jason Jacob, the property owner, sampled the drill holes.

2009 Main Hydraulic Pit, central and southern parts: Percussion drilling
Gee Cee Mines Ltd. commissioned Owens Drilling Ltd. of Cranbrook to drill an air rotary chip hole to a depth of 14.6 m (48 ft) in the main hydraulic pit on the MICREX 1 (365588) placer claim (Ostler, 2014: Figure 3). Drilling was conducted on July 2, 2009. Chips were sampled at 0.65-m (2-ft) intervals. Samples were put through a vibrating screen deck and the resulting concentrates were hand-panned.

The drill hole penetrated calcified gravel above bedrock and did not intersect the bedrock surface. Although no stratigraphic units were recorded in the drill log, the author assumes that the hole was drilled in undisturbed gravel and not tailings. Calcified gravel was too indurated for hydraulic monitors to break up and was left behind. All concentrates were reported to be "chalcopyrite black sand". Up to four very fine flakes of gold were recovered from the samples from surface down to 12.8 m (42 ft). A 3 X 5 mm nugget and a 1 X 2 mm nugget, and 7 very fine gold flakes were recovered from the 13.4 to 14.6-m (44 to 48-ft) intervals.

2010 Maus Creek: Claim staking and sale
The RUSTY GOLD (778442) placer claim was staked by Neale Wallace of Calgary, Alberta on May 24, 2010 to cover the southern part of the bench at the confluence of Lone Gulch and Maus Creek. The claim comprised three cells covering 62.78 ha (155.07 acres). That claim adjoined the SPILLWAY (1047275) placer claim to the south (Figures 2, 4, and 10).

On June 21, 2010 the RUSTY GOLD (778442) placer claim was transferred to Mike Lessard of Calgary, Alberta.

2010 to 2017 Maus Creek: Physical work
Mike Lessard kept the RUSTY GOLD (778442) placer claim in good standing by filing one year of physical work per year. That work comprised panning and sluicing.

2010 Main Hydraulic Pit, northern part: Physical work
Physical work described as using machinery and equipment was filed for a work program conducted by Great Eagle Resources Ltd. reportedly in the northeastern part of the Main Hydraulic Pit near the site of the southern two 2009 drill holes and four 2009 pits.

2011 Legal maneuvering regarding Placer Lease 368385 and the (no name) (514135) placer claim
On April 12, 2011, claims including Placer Lease 368385 and the (no name) (514135) placer claim were transferred from Great Eagle Resources Ltd. to Jason Jacob (Figure 4).

On May 27 and June 9, 2011, claims including Placer Lease 368385 and the (no name) (514135) placer claim were transferred from Jason Jacob to La Concha Minerals Inc. of Vancouver, British Columbia.

On June 17, 2011, a certificate of pending litigation was filed on claims including Placer Lease 368385 and the (no name) (514135) placer claim.

On September 8, Placer Lease 368385 was transferred from La Concha Minerals Inc. to Raymond Keith Morton, an associate of Jason Jacob.

2012 No work was conducted on the Wild Horse River property because it was the subject of litigation.

2013 Main Hydraulic Pit, northern part: End of litigation, program design
On February 26, 2013, the Wild Horse River property comprising Placer Lease 368385 and the (no name) (514135) placer claim was transferred to Merklin Resources Inc. of Vancouver by court order.

On November 24, 2013, the author was commissioned to research placer exploration and mining in the Wild Horse River property-area and to make recommendations. He examined the property on December 5, 2013.

During December, 2013, the Wild Horse Joint Venture was constituted to mine the area covered by the (no name) (514135) placer claim. Peter Osha of Triple-O Contracting Ltd. of Quesnel, British Columbia was commissioned to direct the mining operation. On December 27, 2013 Geotronics Consulting Inc. was commissioned to conduct a seismic survey over the southern part of the (no name) (514135) placer claim (Ostler, 2014).

2013 Boulder Creek: Production
During 2013, Steve Lanthem produced about 12 oz of placer gold from a small operation on the southern part of the alluvial fan of Boulder Creek. Lanthem's pay streak is inter-glacial red gravel preserved in a series of shallow rock basins at the base of the fan. The workings are located on the southern part of the (no name) (1012014) placer claim (Figure 4).

2014 Wild Horse River north of the Main Hydraulic Pit: Seismic survey
Geotronics Consulting Inc. conducted the first part of a seismic survey on the (no name) 514135 placer claim north of the Main Hydraulic Pit from January 18 to February 7, 2014. Instrument problems due to -40° C weather forced a halt to the survey. Work continued from March 10 to 15, 2014. The survey was conducted by a 6-person crew. A total of 4.76 km (2.9 mi) of east-west lines were surveyed at 100-m (328.8-ft) intervals across the Wild Horse River valley. The survey was conducted from U.T.M line 5,503,300 N. to line 5,504,000 N. The author was able to identify undulations on the upper surface of the Illinoian-stage Blue Till and on the bedrock surface that were interpreted to be channels (Ostler, 2014). Some of those interpretations were confirmed by the author as mine geologist during the 2014-2015 mining of that area.

2014 Main Hydraulic Pit, northern part: Mechanized mining production
In May, 2014 the Wild Horse Joint Venture commenced mining the northern part of the main hydraulic pit on the (no name) (514135) placer claim (Figures 4 and 9). Total production was in the range of several hundred ounces of placer gold. (The Wild Horse Joint Venture has not released exact production numbers). About 85% of the gold production came from Kansan-stage Yellow Till and gravel within 2 m (6.6 ft) of the bedrock surface. Most of the remaining 15% came from Post-Illinoian-stage Red Channel Gravel remaining in depressions on the upper surface of the Illinoian-stage Blue Till after hydraulic mining (see Section 2.2.2 of this report for details).

2015 Wild Horse River north of the Main Hydraulic Pit: Mechanized mining production
A spur of bedrock extends out from the western side of the Wild Horse River valley at the northern end of the Main Hydraulic Pit on the (no name) (514135) placer claim (Figure 4). In April, 2015 production commenced on the northern slope of that spur and progressed northward. North of 5,503,800 the bedrock surface was covered by Illinoian-stage Blue Till. That till was directly in contact with the bedrock surface and the productive Kansan-stage Yellow Till and gravels had been scraped away during the Illinoian glaciation. North of U.T.M.: 5,503,900 N., a tan, silty lake sediment was present above the Blue Till and beneath Red Channel Gravel. The late-Illinoian-stage lake in which the tan silt was deposited may have extended to beyond Boulder Creek. The Tan Silt was a disaster in the wash plant. Water could not break up lumps of it and gold stuck to it in the sluices. Production worsened progressively and mining was terminated at about U.T.M. 5,504,060 N.

2015 Wild Horse River north of the Main Hydraulic Pit: Percussion drilling
In June, 2015 Owens Drilling Ltd. was contracted to do 154.53 m (507 ft) of percussion drilling. The work was done from June 25 to 28, 2015 using a truck-mounted drill. A total of 11 holes were drilled, generally along east-west lines spaced about 75 m (246 ft) apart from U.T.M. 5,503,925 N. to 5,504,200 N. Some of the undulations in the bedrock surface that were identified by the 2014 seismic survey were confirmed. Also it was confirmed that the Blue Till was in direct contact with bedrock at least to U.T.M. 5,504,200 N. and that the silty tan lake sediment was present also.

2015 Return of Mining to Main Hydraulic Pit
The Wild Horse Joint Venture returned to the Main Hydraulic Pit to mine the last of the bedrock surface north of the MICREX 1 (365588) claim. There, production from daily clean-ups was similar to that from 2014.

2015 Main Hydraulic Pit, central and southern parts: Corporate maneuver
Ownership of the MICREX 1 (365588) claim was transferred from Gee Cee Mines Ltd. to Brian Kostiuk of Cranbrook, British Columbia.

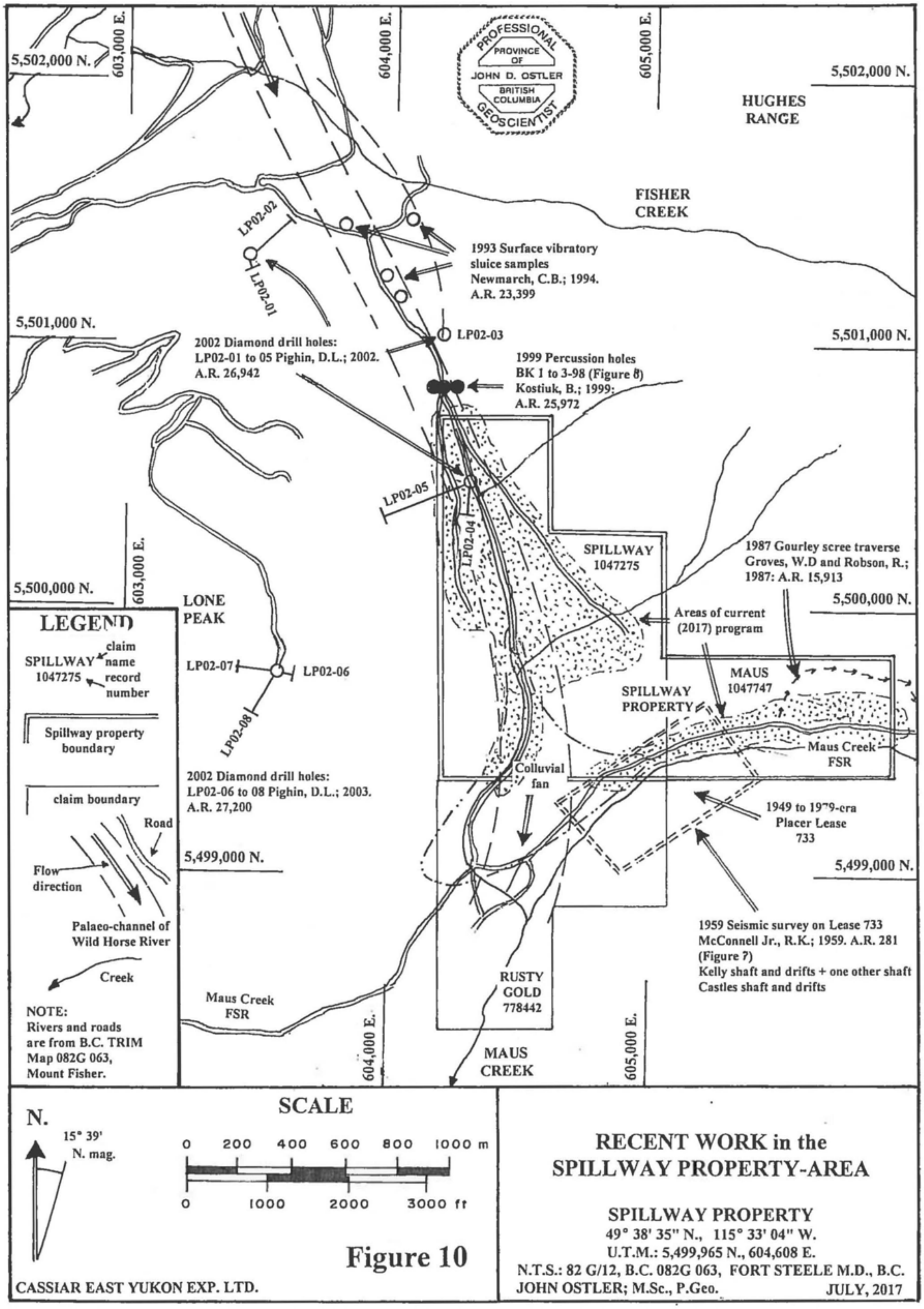
2016 Maus Creek: Spillway property staked
On October 15 and November 8, 2016, the author staked the SPILLWAY (1047275) and MAUS (1047747) claims respectively (Table 1) (Figure 2).

2016 to 2017 Main Hydraulic Pit, central and southern parts: Mechanized mining
The Wild Horse Joint Venture was re-constituted and in its new form it came to an agreement with Brian Kostiuk to mine the MICREX 1 (365588) placer claim (Figure 4). Mining was conducted from April to November, 2016 continued in 2017. The author was not involved in that mining and has no details of the results.

2017 Maus Creek: Current work program
From May 30 to June 8, 2017, a program of geomorphological and geological surveys, and pan concentrate sampling was conducted by the author. That work program is the subject of this report.

Figure 9 Production near the boundary of the (no name) (514135) placer claim

This photo was taken from atop the northern wall of the Main Hydraulic Pit on October 11, 2015. As mining proceeded southward various stages of reclamation were visible behind it. The graded area in the foreground was mined in 2014. By October, 2015 it was ready for spreading of seed-bearing brush and trees.



PROFESSIONAL GEOSCIENTIST PROVINCE OF BRITISH COLUMBIA JOHN D. OSTLER
5,502,000 N.
603,000 E.
604,000 E.
605,000 E.
HUGHES RANGE
FISHER CREEK
LP02-02
LP02-01
1993 Surface vibratory sluice samples Newmarch, C.B.; 1994. A.R. 23,399
5,501,000 N.
2002 Diamond drill holes: LP02-01 to 05 Pighin, D.L.; 2002. A.R. 26,942
LP02-03
1999 Percussion holes BK 1 to 3-98 (Figure 8) Kostiuk, B.; 1999; A.R. 25,972
LP02-05
LP02-04
SPILLWAY 1047275
1987 Gourley scree traverse Groves, W.D and Robson, R.; 1987: A.R. 15,913
5,500,000 N.
LONE PEAK
Areas of current (2017) program
LEGEND
SPILLWAY 1047275 claim name record number
Spillway property boundary
claim boundary
Road
Flow direction
Palaeo-channel of Wild Horse River
Creek
NOTE: Rivers and roads are from B.C. TRIM Map 082G 063, Mount Fisher.
LP02-07
LP02-06
LP02-08
MAUS 1047747
SPILLWAY PROPERTY
Maus Creek FSR
Colluvial fan
2002 Diamond drill holes: LP02-06 to 08 Pighin, D.L.; 2003. A.R. 27,200
1949 to 1979-era Placer Lease 733
5,499,000 N.
1959 Seismic survey on Lease 733 McConnell Jr., R.K.; 1959. A.R. 281 (Figure 7) Kelly shaft and drifts + one other shaft Castles shaft and drifts
RUSTY GOLD 778442
Maus Creek FSR
MAUS CREEK
N.
15° 39' N. mag.
SCALE
0 200 400 600 800 1000 m
0 1000 2000 3000 ft
Figure 10
CASSIAR EAST YUKON EXP. LTD.
RECENT WORK in the SPILLWAY PROPERTY-AREA
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017

2.2 Historical Placer Mineral Resource and Reserve Estimates, and Production from Wild Horse River Camp and the Spillway Property

2.2.1 Historical Placer Mineral Resource and Reserve Estimates from the Spillway Property

No historical estimates of mineral resources or reserves of placer gold in the area of the Spillway property are known to the author.

2.2.2 Production from the Wild Horse River Camp and the Spillway Property

S.S. Holland (1950) described reporting of placer gold production from Wild Horse River as follows:

> Most of the placer gold from the Fort Steele Mining Division has come from Wild Horse River, formerly known as Wild Horse Creek, discovered in 1863. The record of production since 1874 is reasonably complete, but for the preceding years... there is absolutely no record. From 1896 to 1905 the production from Perry Creek (discovered in 1867) is listed with that of Wild Horse River, and from 1906 to 1922 the production of the whole division is listed under Wild Horse River. In the early years Wild Horse River probably produced about nine-tenths of the total placer gold production of the division.
>
> Holland, S.S.; 1950: p.33.

Holland calculated that a total of $820,008 was realized through a reported production of 41,858 oz of gold. He used an average gold price of $18.25/oz and an average fineness of 0.878 in his calculation.

The author subscribes to the supposition that actual production from a placer camp is at least 10 times the amount of the reported production. J.D. Galloway (1933) made such a supposition in his summary of placer mining in British Columbia as follows:

> The total production of the (Wild Horse) creek, mostly from a length of 3 or 4 miles (4.83 to 6.44 km), is variously estimated at from $5,000,000 to $20,000,000. A large production at least is certain ...
>
> Galloway, J.D.; 1933: p. 44.

Using the average free market price for gold in 1933, $26.33/oz, an unofficial production of 189,897 to 759,588 ounces can be estimated. Using an average price for gold of $18.00/oz as reported during the late 19th century, an unofficial production of 277,778 to 1,111,112 ounces can be estimated.

Figure 11 Secondary Plant Sluice No.1, Carpet

This is the result one of four runs through the secondary separation plant after a 30-oz daily clean-up from Kansan-stage basal Yellow Gravel near bedrock in the Main Hydraulic Pit in 2014. The first sluice in the secondary plant could handle only about 10 oz of placer gold before it became clogged and started losing product, as can be seen here with the gold streaming down the grate. The coarse fraction (about 6 oz in this run) shows as flattened, amber-coloured grains, flakes, and nuggets. The fine fraction (another 7 oz in this run) is buried in the carpet and is barely visible in this photo. The blue-black material is magnetite-rich “ironstone” which is always abundant in gold-bearing yellow gravel. I could not wash the ironstone through the sluice without losing too much gold with it, so I tilted the sluice to catch most of the gold and ironstone in the nugget trap. The gold was panned out of the ironstone later.

Figure 12A Panning Gold from Ironstone -1

Figure 12B Panning Gold from Ironstone - 2

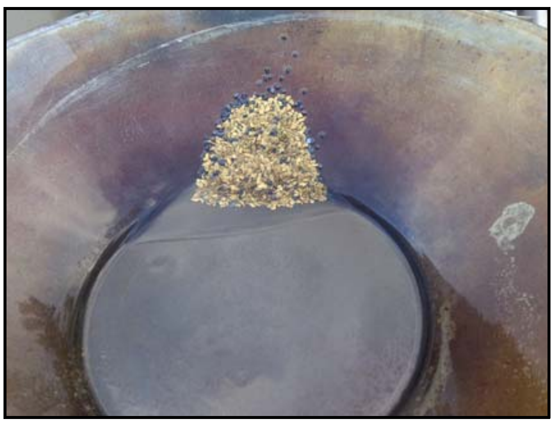


Figure 12C Panning Gold from Ironstone - 3

By this point in the process it becomes increasingly difficult to keep flat flakes from skating over the lip of the pan. I could pan out only about 3 oz gold at a time. Often, I had to dump a single run of concentrate into 3 or 4 pans and pan them out separately. Gold sticking to cold, wet hands was a problem.

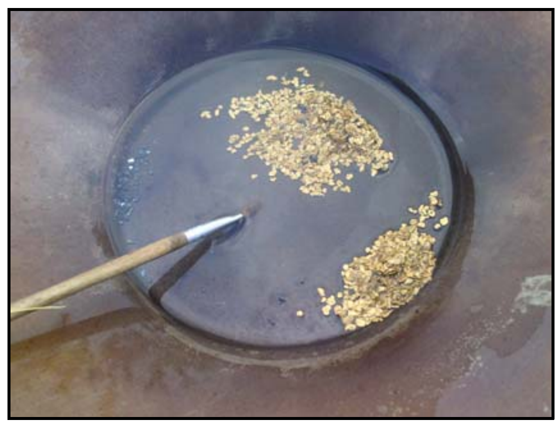


Figure 12D Panning Gold from Ironstone - 4

Final separation is done with a brush while gently rocking the pan with a little water in it. It takes about 7.5 oz of placer gold to completely cover the bottom of one of these gold pans. There is about 3 oz here.

During 2013, Steve Lanthem ran a placer operation on the (no name) (1012014) placer claim located near Boulder Creek (Figure 4). He produced 12 oz of placer gold.

In 2014, the Wild Horse Joint Venture mined the northern part of the Main Hydraulic Pit on the (no name) (514135) placer claim (Figures 4 and 9). Total production was in the range of several hundred ounces of placer gold. (The Wild Horse Joint Venture has not released exact production numbers). About 85% of the gold production came from Kansan-stage Yellow Till and gravel within 2 m (6.6 ft) of the bedrock surface. Most of the remaining 15% came from Post-Illinoian-stage Red Channel gravel remaining in depressions on the upper surface of the Illinoian-stage Blue Till after hydraulic mining. Production from daily clean-ups of material from near bedrock ranged from 14 to 32 oz of placer gold (Figures 11 and 12). Production from daily clean-ups of Red Channel gravel material ranged from 6 to 12 oz of placer gold. Daily clean-ups of the Blue and Yellow tills yielded only about 1 to 3 oz of placer gold. Once that was learned, most of the till went straight to the land fill as it did not make the daily cut-off production of 5 oz. Unfortunately, a lot more time was spent getting to bedrock than mining it.

A spur of bedrock extends out from the western side of the Wild Horse River valley at the northern end of the Main Hydraulic Pit on the (no name) (514135) placer claim. In April, 2015 production commenced on the northern slope of that spur and progressed northward. Production from daily clean-ups of material from Red Channel Gravel near bedrock north of the spur ranged from 4 to 12 oz of placer gold.

North of 5,503,800 the bedrock surface was covered by Illinoian-stage Blue Till. That till was in direct contact with the bedrock surface and the productive Kansan-stage Yellow Till and gravel had been scraped away during the Illinoian glaciation. The gold on the bedrock surface was quite fine-grained (most passing through a No. 12 screen) and there was very little of it. Production from daily clean-ups of material from the Blue Till near the bedrock surface ranged from 2 to 6 oz of placer gold. North of U.T.M.: 5,503,900 N., a tan, silty lake sediment was present above the Blue Till and beneath Red Channel Gravel. The post-Illinoian lake in which the tan silt was deposited may have extended to beyond Boulder Creek. Production from daily clean-ups of Red Channel and Recent-age gravel above the Tan Silt was about 3 oz of placer gold.

Mining was terminated at about U.T.M. 5,504,060 N. In August, 2015, the Wild Horse Joint Venture returned to the Main Hydraulic Pit to mine the last of the bedrock surface north of the boundary of the (no name) (514135) claim and the MICREX 1 (365588) claim (Figures 4 and 9). There, production from daily clean-ups was similar to that from 2014.

From April to November, 2016, the Wild Horse Joint Venture mined bedrock surface of the southern part of the Main Hydraulic Pit on the MICREX 1 (365588) placer claim. Reportedly, results were similar to those from the northern part of the Main Hydraulic Pit. The joint venture plans to continue mining on the MICREX 1 (365588) placer claim throughout 2017.

In 1895, placer gold production from "Lost and Man's creeks was reported as having a value of $175 (9.72 oz @ $18/oz). Maus Creek was mis-reported as Man's Creek. Lost Creek is a tributary of Maus Creek located near its headwaters about 7 km (4.3 mi) east of the Spillway property area.

George R. Castles of Maus Minerals Ltd. reported in private correspondence to Dome Exploration (Canada) Limited and Gulf Minerals Canada Limited in 1979 that: he was told by Dan Kelly that in 1939 Kelly had taken 10 oz of placer gold from the bottom of the workings beneath a shaft that he had excavated to bedrock in the area of Placer Lease 733. That lease was located near the southern boundary of the current Spillway (1047275) placer claim (Figures 6 and 10). Kelly reported that he received $327.00 for the gold.

In 1939 the average price of gold was $34.42/oz. From that, revenue of $327.00 / 10 oz = $32.70 per oz was received. From that a fineness of 32.70 / 34.42 = 0.950 can be calculated.

Dan Kelly also reportedly said that some of the ground on bedrock ran as high as 2 oz per set or somewhere in the range of $13.00 to $23.00 per yd^3. If a return of 2 oz per set was the best that Kelly could report, then the average revenue would have had to have been close to the low end of the return per yard that he reported. The author arbitrarily pegged Kelly's return at $18.30 / m^3 or $14.00 / yd^3 to arrive at reasonable results in the calculation in Table 2 below. In Autumn, 1939, the Canadian dollar traded at about $US0.99, so whether the reported dollars were Canadian or American makes little difference.

Placer drifts were normally held up with false-set timbering with vertical supports set at short intervals.

Half of the roof supports (every second one) were threaded ahead during an advance to the next set location and were held up temporarily in notches in the working face until the location of the next vertical support (set) was reached.

Assuming that Kelly's tunnel had a standard 1.22-m (4-ft) width and the distance between vertical sets was 1.22 m (4 ft), then a total area of 1.49 m^2 (1.78 yd^2) was mined per set. If Kelly's workings conformed to mining regulations, his drifts along bedrock would have been 7 ft or 2.33 yd (2.13 m) high. Thus a total of:

$1.49\ m^2 \times 2.13\ m = 3.17\ m^3$ ($1.78\ yd^2 \times 2.33\ yd = 4.15\ yd^3$) was mined per set

If Kelly ran all of the material from his drifts through his wash plant, then his gold recovery could have been as follows:

Table 2
Average Gold Production Calculated from Dan Kelly's 1939 Underground Workings

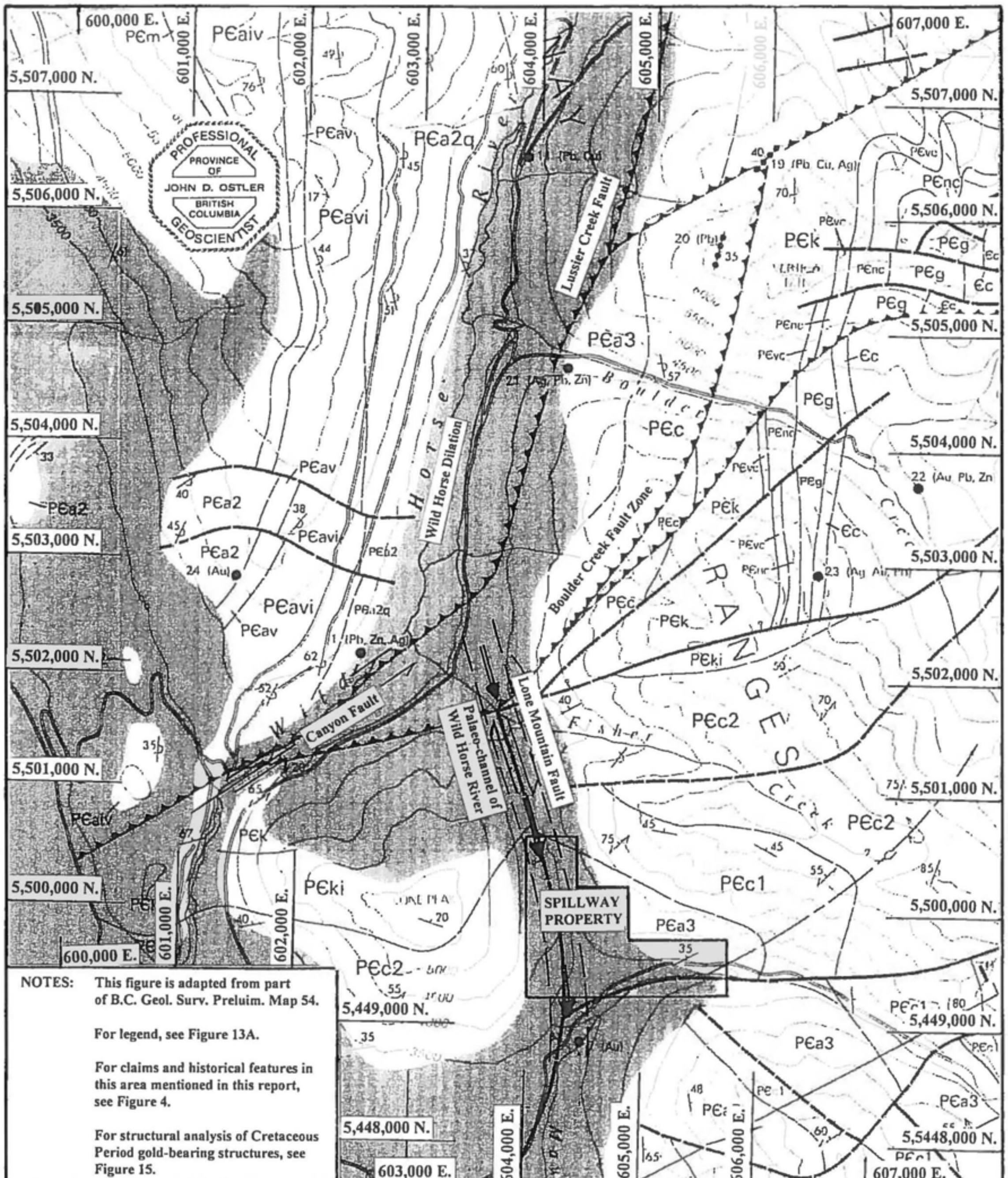
Average Revenue @ \$34.42/oz / m^3 / yd^3 as reported	Average Troy oz gold @ \$34.42/oz / m^3 / yd^3	Average Placer oz gold @ 0.950 fine / m^3 / yd^3	Volume / Set m^3 yd^3	Total av. Gold mined / set Troy oz Placer oz	Area / Set m^2 yd^2	Average Troy oz gold from bedrock surface / m^2 / yd^2	Average Placer oz gold from bedrock surface / m^2 / yd^2
\$18.30 \$14.00	0.532 0.407	0.560 0.428	3.17 4.15	1.69 1.78	1.49 1.78	1.13 1.00	1.19 1.05

NOTE: During Autumn, 1939 the Canadian dollar traded at about \$US0.99, almost at par value.

The numbers in the above calculation are within range of what Dan Kelly reported.

During the summers from 1956 to 1958 George R. Castles de-watered and reinforced the 1939-era Kelly shaft, the existing drifts were sampled and the exploration drifts were extended another 30 feet (9.14 m). Material from the exploration drifts was sluiced to recover the gold. No record of the gold recovered is known to the author.

From 1964 to 1968 George R. Castles sunk a shaft on 1949 to 1979-era Placer Lease 733 (Figures 6 and 10). From 1970 to 1974, he drove two drifts along the bedrock surface from the bottom of that shaft. His eastern drift was at least 12.2 m (40 ft) long. The southern drift was 19 m (62.3 ft) long. Those workings required several months of full-time labour to complete. And although Castles reported no gold production numbers from the bedrock surface, he must have recovered enough gold to make the effort worth while.



N.

15° 39'

N. mag.

SCALE

0 0.5 1.0 1.5 2.0 km

0 0.5 1.0 mi

Figure 13

CASSIAR EAST YUKON EXP. LTD.

GEOLOGY of the HUGHES RANGE around WILD HORSE RIVER

SPILLWAY PROPERTY

49° 38' 35" N., 115° 33' 04" W.

U.T.M.: 5,499,965 N., 604,608 E.

N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.

JOHN OSTLER; M.Sc., P.Geo. JULY, 2017

Figure 13A

Legend to Figures 13 and 14

PURCELL MOUNTAINS

CENOZOIC
QUATERNARY

PLEISTOCENE AND RECENT: TILL, GRAVEL, SAND, AND ALLUVIAL DEPOSITS

MESOZOIC
CRETACEOUS

Kg — QUARTZ MONZONITE, GRANODIORITE

PALEOZOIC

CAMBRIAN

Єe — EAGER FORMATION: SHALE, SILTSTONE; LIMESTONE, QUARTZITE

Єc — CRANBROOK FORMATION: QUARTZITE, CONGLOMERATE; LIMESTONE

Єci — MAGNESITE

PROTEROZOIC
HELIKIAN – PURCELL SUPERGROUP

PЄs — SILL: GABBRO OR DIORITE

PЄg — GATEWAY FORMATION: GREEN AND MAUVE SILTSTONE, ARGILLITE, QUARTZITE, STROMATOLITIC DOLOMITE, SILTY DOLOMITE

PЄnc — NICOL CREEK FORMATION: AMYGDALOIDAL AND VESICULAR BASALT

PЄnci — VOLCANICLASTIC SILTSTONE AND SANDSTONE

PЄvc — VAN CREEK FORMATION: GREEN AND MAUVE SILTSTONE, ARGILLITE; SILTY QUARTZITE

PЄk — KITCHENER FORMATION: DOLOMITE, LIMESTONE; IN PART, ARGILLACEOUS AND SILTY: ARGILLITE, SILTITE

PЄki — DOLOMITIC SILTSTONE AND ARGILLITE, INTER-LAYERED WITH GREEN SILTSTONE AND ARGILLITE

PЄc — CRESTON FORMATION: GREEN, GREY, AND MAUVE SILT-STONE AND QUARTZITE; WHITE QUARTZITE; MINOR DOLO-MITIC SILTSTONE AT TOP

PЄci — RUSTY WEATHERING GREY SILTSTONE AND ARGIL-LITE, QUARTZITE, AND GREEN LENTICULAR-BEDDED SILTSTONE

KOOTENAY RANGES

CENOZOIC
QUATERNARY

PLEISTOCENE AND RECENT

PALEOZOIC
DEVONIAN

Db — BURNAIS AND HARROGATE FORMATIONS: SHALY LIME-STONE, DOLOMITE; GYPSUM

CAMBRIAN

Єe — EAGER FORMATION

Єc — CRANBROOK FORMATION

PROTEROZOIC
HELIKIAN – PURCELL SUPERGROUP

PЄg — GATEWAY FORMATION

PЄnc — NICOL CREEK FORMATION

PЄvc — VAN CREEK FORMATION

PЄk — KITCHENER FORMATION

PЄki — GREY OR GREEN DOLOMITIC SILTSTONE, SILT-STONE, DOLOMITIC QUARTZITE

PЄc — CRESTON FORMATION

PЄc2 — COARSE-GRAINED SILTSTONE, QUARTZITE; GREEN AND MAUVE SILTSTONE AND DOLOMITIC SILT-STONE AT TOP

PЄc1 — GREY, GREEN, AND PURPLE SILTSTONE, MINOR QUARTZITE

Figure 13A Continued

Legend to Figures 13 and 14

PROTEROZOIC
HELIKIAN – PURCELL SUPERGROUP

PЄm MOYIE SILLS; MINOR DYKES: GABBRO, DIORITE

PЄa ALDRIDGE FORMATION: QUARTZITE, QUARTZ WACKE, SILTSTONE, ARGILLITE

- PЄa3 UPPER ALDRIDGE: RUSTY WEATHERING ARGILLITE AND SILTSTONE
- PЄa2 MIDDLE ALDRIDGE: THIN TO THICK–BEDDED GREY QUARTZITE, QUARTZ WACKE; SILTSTONE AND RUSTY WEATHERING ARGILLITE DOMINATE NEAR TOP
- PЄa1 LOWER ALDRIDGE: RUSTY WEATHERING SILTSTONE AND QUARTZITE; SILTY ARGILLITE
  - PЄa1q GREY–WEATHERING QUARTZITE, QUARTZ WACKE

PROTEROZOIC
HELIKIAN – PURCELL SUPERGROUP

PЄm MOYIE SILLS; MINOR DYKES

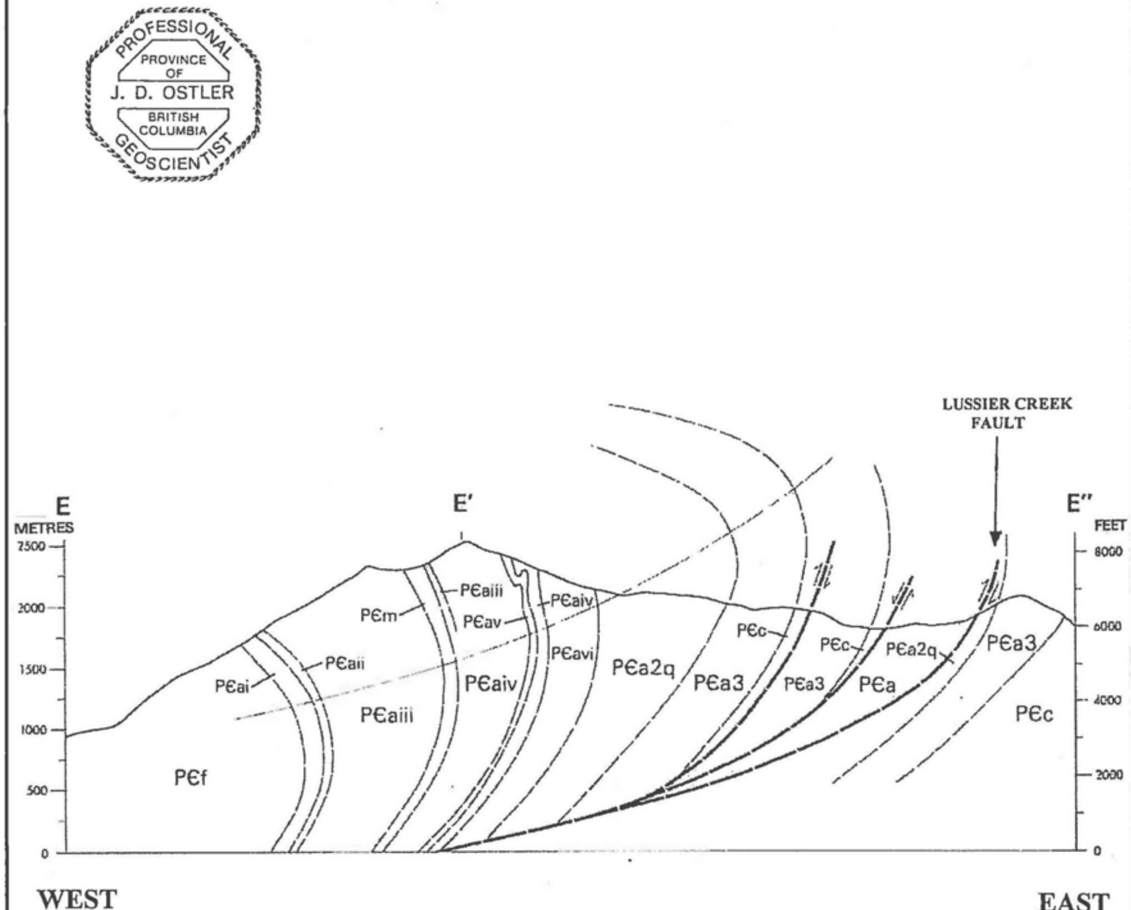
PЄa ALDRIDGE FORMATION

- PЄa3 UPPER ALDRIDGE
- PЄa2 MIDDLE ALDRIDGE
  - PЄa2q GREY QUARTZITE, QUARTZ WACKE
  - PЄa2s SILTSTONE AND ARGILLITE
  - PЄavi MEDIUM TO DARK GREY SILTSTONE, ARGILLITE
  - PЄav THICK–BEDDED QUARTZITE; MINOR CON–GLOMERATE
  - PЄaiv BUFF–COLOURED DOLOMITIC SILTSTONE, ARGILLITE
  - PЄaiii GREY TO TAN SILTSTONE; GREY OR BLACK ARGILLITE
  - PЄaiii GREY TO TAN SILTSTONE; GREY OR BLACK ARGILLITE
  - PЄaii SILTY DOLOMITE, DOLOMITIC SILTSTONE: MINOR LIMESTONE
  - PЄai GREY TO BLACK SILTSTONE, ARGILLITE

PЄf FORT STEELE FORMATION: WHITE CROSSBEDDED QUART–ZITE; MUD–CRACKED SILTSTONE AND ARGILLITE

SYMBOLS

- LIMIT OF MAPPING OR EXPOSURE
- ROCK OUTCROP
- GEOLOGICAL CONTACT: DEFINED, APPROXIMATE, ASSUMED
- FAULT: DEFINED, APPROXIMATE, ASSUMED
- THRUST OR REVERSE FAULT
- NORMAL FAULT
- FOLD AXIAL TRACE: ANTICLINE, OVERTURNED
- SYNCLINE, OVERTURNED
- BEDDING: INCLINED, OVERTURNED, VERTICAL
- FOLIATION, CLEAVAGE
- JOINTING
- LINEATION
- MINOR FOLD AXIS
- SMALL SHEAR (WITH DIP)
- MINERALIZED VEIN (SHOWING TREND) 53 (Cu)
- MINE; PROSPECT OR OCCURRENCE 73 (Cu) 41 (Cu)
- TOPOGRAPHIC CONTOUR (500–FOOT INTERVAL) 3500
- ROAD: HARD SURFACE
- LOOSE OR STABILIZED SURFACE
- LAKE



NOTES: This figure is adapted from part of B.C. Geol. Surv. Prelim. Map 54.

For legend, see Figure 13A.

SCALE

0 1 2 3 km

0 0.5 1.0 1.5 2.0 mi

Figure 14

CASSIAR EAST YUKON EXP. LTD.

EAST-WEST CROSS-SECTION
4 km north of BOULDER CREEK

SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo. JULY, 2017

3.0 GEOLOGICAL SETTING AND MINERALIZATION

3.1 Regional Geology

3.1.1 Pre-Pleistocene Geology

The southern Hughes Range around Wild Horse River and Maus Creek has been mapped by both the Geological Survey of Canada and by the British Columbia Geological survey, most notably by: G.B. Leech (1958 and 1960), Trigve Höy (1979 and 1984) (Figure 13), and re-compiled by Trigve Höy and Ginette Carter (1988). A more recent computerized (less detailed but more colourful) rendition of that mapping is available at the British Columbia government website: www.MapPlace.ca .

For a history of stratigraphy and deformation, see Table 3 of this report.

R.J.W. Douglas et al. (1970) described the geologic history of the southern Hughes Range around Wild Horse River as follows:

> The Proterozoic successions of the southeastern Cordillera are customarily referred to as the Purcell and Windermere systems. They are separated by a widespread unconformity and interval of folding, metamorphism, and intrusion of granitic stocks, these effects being considered to be the result of the East Kootenay Orogeny. The granites ... have yielded K-Ar dates of 675 to 745 million years which suggest that the orogeny occurred within the Hadrynian era ... The Purcell is probably therefore mainly Helikian in age although part may be as young as early Hadrynian and, by virtue of its allochthonous position with respect to the Hudsonian metamorphosed basement, part of the Purcell may be Late Aphebian. The Windermere falls entirely within the Hadrynian and, as it is locally conformable with Lower Cambrian sediments, probably represents all or most of the late Hadrynian ...
>
> The Purcell is divisible into two main parts by an hiatus, partly represented by the Purcell lava, a very extensive basalt flow several hundred feet thick ... The lower part of the Purcell is divisible into three main units. The lowest includes the thin, varicoloured, laminated, and stromatolitic carbonates and conglomerates with pebbles of quartzite and dolomite that comprise the near-shore Waterton and Aylton formations in the Clarke Range, and which grade westward into various facies including that of the very thick Aldridge Formation. The Aldridge comprises rusty-weathering, fine-grained, laminated argillaceous quartzite and dark argillite with graded bedding and scour and fill structures, indicating deposition in deep water. The middle unit contains red and green argillite and quartzite that comprise the Appekunny and Grinnell formations in the east. These rocks contain such tidal-flat and shallow-water features as channel fillings, torrential ripple marks, mud cracks, salt-hopper and raindrop markings, features that are generally lacking in the equivalent but thicker Creston Formation of the west. The upper unit of the lower Purcell, represented by the Siyeh Formation in the east, contains much clean carbonate typically with “molar tooth” and stromatolitic and oolitic structures, interbedded with shale and siltstone in the lower and upper parts. The latter unit constitutes the Siyeh of the Purcell Mountains and the underlying rocks, argillaceous and silty dolomites, form the Kitchener Formation. The upper part of the Purcell, the Shepard and lower Gateway formations contain much argillaceous and silty dolomite whereas the conformable higher units of alternating argillite and quartzite vary from green and grey to purple and red and exhibit shallow water

sedimentary structures. The Purcell is intruded by the Moyie gabbro sills and is unconformably overlain by the Hadrynian Windermere system in the western and northern Purcell mountains and by various Palaeozoic formations in the eastern Purcell and southern Rocky Mountains...

Helikian sedimentation was brought to a close in the southern Cordilleran Geosyncline by the East Kootenay Orogeny ... It was manifested by uplift, gentle folding, tilting, faulting, granitic intrusion, and regional metamorphism to greenschist facies and locally to sillimanite grade.
...

In southern Rocky Mountains, the Miette Group is composed of a basal unit, 3,000 feet (914 m) thick of argillite and argillaceous sandstone, succeeded by 2,000 feet (610 m) of sandstone, grit, conglomerate, and argillite, which is overlain by 3,000 feet (914 m) of argillite and, locally at the top, by a carbonate 0 to 3,000 feet (914 m) thick ...

The Lower Cambrian ... is restricted to the Cordilleran Geosyncline, and is generally thickest in linear troughs marginal to the (North American) craton. It is of miogeosynclinal facies. Thick extensive sheets of orthoquartzite and conglomerate overlain by limestone ... grade westward into thinner calcareous shales ... Their maturity relative to the underlying Windermere clastics, with which they may be locally conformable, suggests reduction of relief and a general tectonic stability of the (North American) craton by ... the Early Cambrian. Northeast-trending Eager Trough (south of the property-area) possibly bordered on the southeast by the Moyie fault, separates Purcell Arch from an emergent block to the south (Montania). Quartzose sandstone and conglomerate derived from adjacent uplifts transgress the arch and lie unconformably on Purcell and Windermere strata...

Middle Cambrian sediments ... in the southern Cordilleran Geosyncline conformably overlie the Lower Cambrian in ... deeply depressed ... troughs ... Shale was probably deposited in the Eager Trough ...

R.J.W. Douglas et al.; 1970: pp. 371-378
in R.J.W. Douglas ed.; 1970.

Lower to Middle Cambrian Period sedimentation is represented in the Wild Horse River area by: Eager Formation shale, siltstone, limestone, and quartzite; and Cranbrook Formation quartzite, conglomerate and limestone. West of the Hughes Range, the Cordilleran Eugeosyncline was filled by sediments and volcanics of the Slocan and Lardeau groups from the Upper Cambrian to Devonian Period. The Cariboo Orogeny occurred during the Early to Middle Ordovician Period. It resulted in deformation, regional metamorphism and conpressional folding and faulting. The final filling of the Cordilleran Miogeosyncline by strata of the Kaslo and Milford Groups occurred from the Devonian to Triassic Period (Table 3). Those rocks are not present in the Hughes Range.

The Wild Horse River placer gold camp is at the northeastern apex of the Kimberley Gold Trend as defined by Seabrook and Höy (2015). The trend is a pear-shaped region that extends southwestward from Wild Horse River through the Moyie River area to near the British Columbia-Washington border. Trigve Höy (2015?) maintained that the Kimberly Gold Trend was associated with the Kanasewich structural zone. His description of the Kanasewich structural zone was as follows:

> The Kanasewich structural zone ... extends south-westward across the Purcell Mountains into the southern Kootenay arc in the Salmo-Rossland area of southeastern British Columbia. It coincides approximately with the western extension of an Archean basement structure, referred to as the Vulcan structure, that separates two cratonic blocks of the Canadian Shield. The Kanasewich zone delineates one of the more prominent metallogenic belts in British Columbia that includes deposits such as the Sullivan mine, lead-zinc replacement deposits on the Kootenay Arc, the Rossland gold-copper camp, the Pend O'Reille lead-zinc camp, and the gold deposits of the Sheep Creek camp. In addition, the Kimberley Gold Belt, containing placer gold in Wild Horse Creek, Moyie River and Perry Creek ...
>
> Höy, Trigve; 2015?: p. 4.

The Columbian Orogeny occurred from the Early Jurassic to Middle Cretaceous Period (Table 3). Possibly during that time, activity along the Kanasewich structural zone provided conduits for gold-bearing fluids to rise from great depth and enrich cover rocks along the zone. This made gold available for concentration in mesothermal vein structures during Cretaceous-Period development of the transcurrent faults of the Rocky Mountain Trench.

The Columbian Orogeny created most of the current landforms and shifted most of the geologic terranes of British Columbia into their current positions. Normal faulting related to development of the Rocky Mountain Trench, occurred throughout the Hughes Range. Deposition of small monzonitic intrusions in the Wild Horse River area was related to this tensional faulting. These stocks may have provided fluid flow necessary for the local mobilization and concentration of gold in the pyrite-chalcopyrite-arsenopyrite-quartz veins that are generally believed to be the source of the placer gold in the Wild Horse River placer camp.

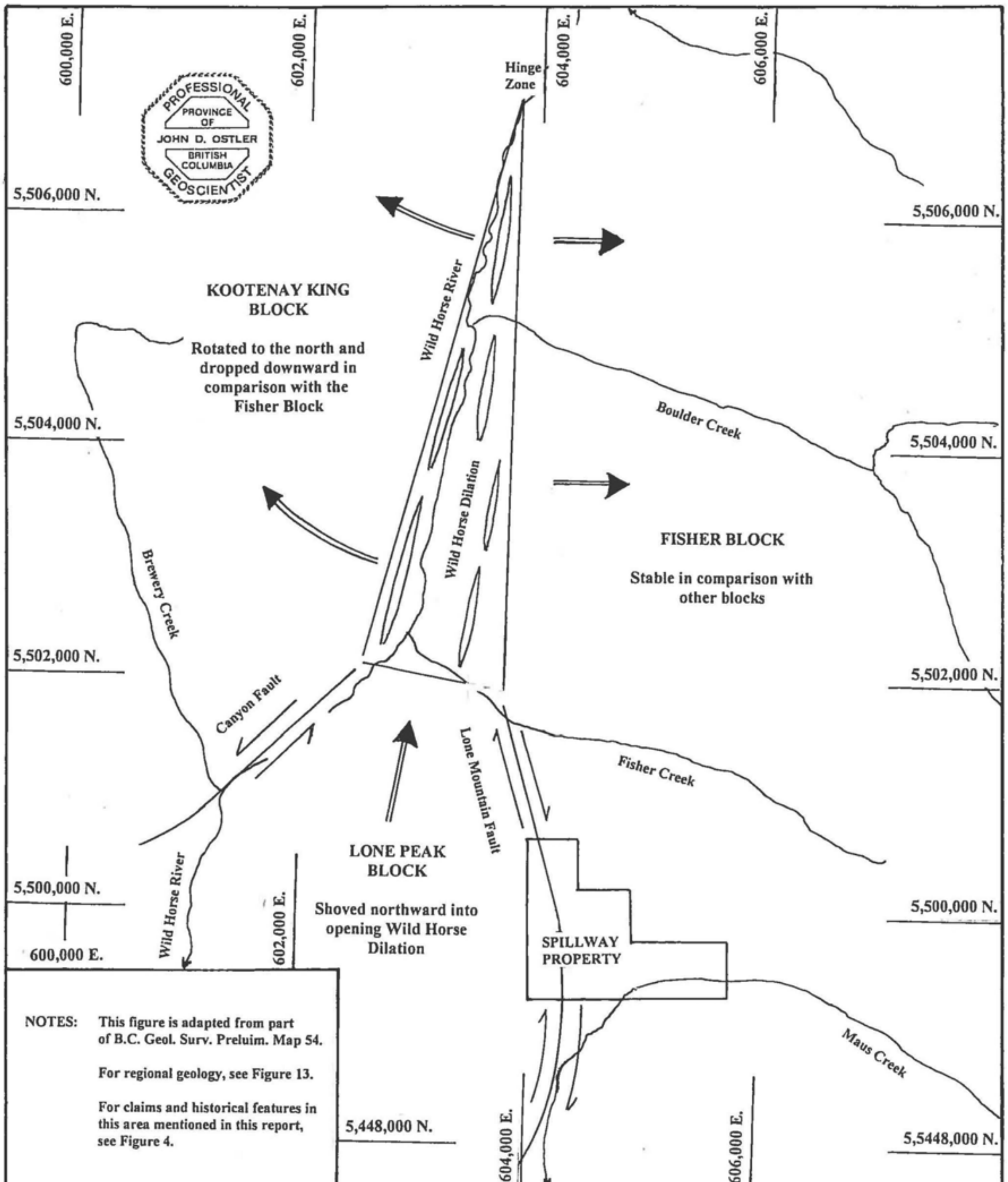
The western wall of the Main Hydraulic Pit is defined by a high, steep rock bluff. Results of the 2014 seismic survey (Ostler, 2014) indicate that Pleistocene and Recent-epoch unconsolidated fluvial sediments are bounded to the east also by a steep rock bluff and that Wild Horse River occupies a steep-sided bedrock gorge from Fisher Creek to Boulder Creek (Figures 4 and 13).

The writer opines that the gorge was developed by weathering in a zone of weakness in a major Cretaceous-Period dilation zone that developed due to transcurrent movement along the Rocky Mountain Trench. An ideal transcurrent fault has no lateral movement at each end. Movement increases to a maximum somewhere near the middle of the fault trace. In the leading half of the block of rock on each side of the ideal fault, local forces should be compressive; in the lagging half of the block, they should be tensional as that part of the block of rock is dragged along toward the middle of the fault trace. Local tensional structures should be developed as secondary structures oriented at about 30° to the primary fault, in this case, the Rocky Mountain Trench.

The fault structure forming the Rocky Mountain Trench from Fort Steele northward to Wasa Lake is oriented at about 335° (N25°W). If they are vertical, secondary dilational structures northeast of the trench should be oriented close to 005° (N5°E). The surface trace of the axis of the Wild Horse River gorge is oriented at about 009° (N9°E) from Fisher Creek to Boulder Creek (Figure 15).

Like at the ends of each section of the main transcurrent Rocky Mountain Fault, the amount of deformation along secondary structures decreases to nothing away from the main structure. The surface trace of the Wild Horse Dilation is wedge-shaped with its apex near Victoria Gulch and its area of greatest spreading is near the southern end of the Main Hydraulic Pit at Fisher Creek (Figures 4 and 15). South of Fisher Creek, the amount of spreading was too great to be accommodated by a single dilation. The Lone Peak Block was shoved northward into the base of the Wild Horse Dilation past the Fisher and Kootenay King blocks. Differential movement was accommodated by the Lone Mountain Fault (right lateral) and along the Canyon Fault (left lateral) (Figure 15).

The asymmetry of the surface trace of the Wild Horse Dilation and the northward curving of those of the Lone Mountain and Canyon faults with decreasing altitude indicate that those three structures dip steeply west-northwestward. This is consistent with the Kootenay King Block being rotated clockwise and dropped down in relation with the Fisher and Lone Peak blocks (Figure 15).



NOTES: This figure is adapted from part of B.C. Geol. Surv. Preluim. Map 54.

For regional geology, see Figure 13.

For claims and historical features in this area mentioned in this report, see Figure 4.

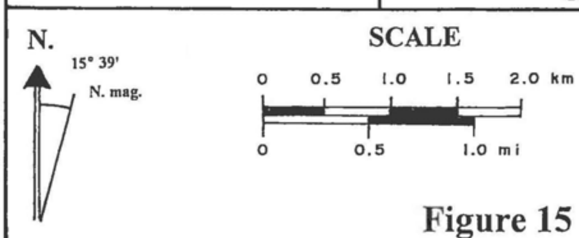


Figure 15

CASSIAR EAST YUKON EXP. LTD.

CRETACEOUS-AGE STRUCTURES RESPONSIBLE for GOLD DEPOSITION

SPILLWAY PROPERTY
49° 38' 35".N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C. 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo. JULY, 2017

Less than 15° of rotation of the Kootenay King Block was sufficient to promote development of a plethora of gold-bearing pyrite-arsenopyrite-chalcopyrite-quartz veins in local dilatancies, that upon weathering, provided abundant placer gold to the Wild Horse River system south of Victoria Gulch.

The author opines that the palaeo-channel of Wild Horse River from Fisher Creek to Maus Creek was formed due to weathering of the Lone Mountain Fault and that the current channel of Wild Horse River through the canyon west of Lone Peak was developed by subsequent weathering and land surface lowering along the Canyon Fault (Figure 15).

The palaeo-channel that flowed through the pass between Fisher and Maus creeks may have been the main channel of Wild Horse River until the late Pliocene Epoch. Climatic cooling and increased precipitation may have promoted cutting of the creek that now forms the lower canyon area of Wild Horse River northward into of the Hughes Range. At the same time, increased water flow may have resulted in a breach of a pass west of Lone Peak and the abandonment of the old channel through the pass east of the peak.

Late Illinoian-stage ice damming (350,000 to 320,000 years ago) caused temporary reactivation of the channel through the pass east of Lone Peak.

Part of the palaeo-channel between Lone Peak and the Hughes Range is deemed to be preserved at an elevation of about 1,230 m (4,035 ft) about 30 m (91.4 ft) beneath surface from Fisher Creek southward to the northern boundary of the SPILLWAY (1047275) claim (Figures 2 and 13) . From there to the confluence of Lone Gulch and Maus Creek, the land surface elevation drops to 1,120 m (3,675 ft) due to Pleistocene and Holocene-age erosion. This represents a total lowering of the land surface beneath the palaeo channel at the confluence of Lone Gulch and Maus Creek by 120 m (394 ft).

In 1989, the author worked on the palaeo-channel of Bonanza Creek near where it was cut off by erosion of the Klondike River, north of Dawson City, Yukon. Although lighter silicate material was transported laterally down-river from the river confluence, dense gold migrated almost straight down as the land surface was lowered. The trace the Bonanza Creek placers of could be followed out across the main valley to near the current course of Klondike River. The author expects that the situation from the northern boundary of the

SPILLWAY (1047275) placer claim to Maus Creek is similar to that across the Klondike River valley west of Bonanza Creek. Silicate minerals have been transported laterally down the Maus Creek valley while dense gold grains have settled on the bedrock surface directly beneath the trend of the palaeo-channel of Wild Horse River (Figures 2 and 13).

3.1.2 Pleistocene and Holocene Stratigraphy

The record of Pleistocene and Recent-age subsurface stratigraphy of Maus Creek is sparse due to a lack of hydraulic mining there. In contrast, the stratigraphy of the unconsolidated sediments of the Wild Horse River valley between Fisherville and Boulder Creek are fairly well-known due to a long history of hydraulic mining in that area. The author was mine geologist for the Wild Horse Joint Venture's mechanized mining operation from 2014 to 2015. During that time he closely observed stratigraphy in the pit and in drill holes along the western side of the river from U.T.M.: 5,503,200 N. to 5,504,200 N. (Figures 4 and 13) That stratigraphy is discussed in this report because the influences of the glaciations that affected the main valley of Wild Horse River are relevant to Maus Creek.

Stratigraphy of the unconsolidated sediments in the Main Hydraulic Pit was described in the B.C. Minister of Mines' Annual Report for 1896, pp. 523-524 as follows:

> The bank (of the Main Hydraulic Pit) is now (in 1896) about 5,000 feet (1,524 m) long, and washed back 6 to 800 feet (183 to 244 m) from the creek ... and now stands nearly vertical, showing several more or less uniform strata dipping easily towards the creek (unconsolidated sediments against the rock bluff), of which the (a) upper stratum of 50 feet to 60 (15.2 to 18.3 m) of top dirt carries no value (gold concentrations); (b) the next stratum or "red dirt" is about 20 to 25 feet (6.1 to 9.1 m), and so far has proved to be the most profitable; © The blue-dirt stratum, 35 feet (10.7 m) thick in places, is so solid that it has to be broken up by dynamite before hydraulicking; (d) the alternate layers of clay and conglomerate of considerable depth, are to be tested for their values, and these lie on the bedrock of highly tilted chloritic slates ...
>
> B.C. Minister of Mines', Annual Report, 1896, pp. 523-524.

Farther south on the southwestern part of current Placer Lease 368385 in the Nip and Tuck Hydraulic Pit (Figures 4 and 13), the unconsolidated stratigraphy was described in the B.C. Minister of Mines', Annual Report of 1897, p. 1025 as follows:

> The Nip and Tuck Gold Hydraulic Mining Co. ... is working a bank about 50 feet (15.2 m) high, of which the upper 20 feet (6.1 m) is loam, sand, etc., carrying low values (gold concentrations). The lower stratum is a blue boulder clay, laying on a bed-rock of chloritic slates, standing at an angle of 65°...
>
> B.C. Minister of Mines', Annual Report, 1897, p. 1025.

The red gravel and the "conglomerate" gravel located above and beneath the blue boulder-clay till respectively in the Main Hydraulic Pit area seem to have been absent in the Nip and Tuck Hydraulic Pit. The author assumes that most of the gold production in the Nip and Tuck pit was from the bedrock surface.

J.D. Galloway (1933) recounted the assumed Pleistocene and Recent-epoch history of the Wild Horse River area as follows:

> The available geological data indicate that in pre-glacial times the valley of Wild Horse Creek was partially filled with water-worn gravel, containing a concentration on bed-rock of well-rounded placer gold derived largely from the valley of Boulder creek, a tributary from the east. Wild Horse glacier scoured this valley fairly clean and removed most of the gold. Coincidently, the character of the valley was changed to a pronounced U-shape, its rock walls were worn off smooth, and all decomposed rock removed therefrom. According to this theory, another abundant supply of broken rock , sand and mud with placer gold was released on retreat of the ice. It is this debris, subsequently worked over and roughly assorted by the glacial streams, which filled Wild Horse Creek valley with bouldery gravel up to a level of about 300 feet (91.4 m) above that of the present stream. During the filling of the old valley in this manner, placer gold would have to some extent deposited with a tendency to gravitate towards bed-rock. The lack of pronounced stratification and assortment of these gravels is taken to indicate that a complete concentration on bedrock in the glacial channel is not to be expected, and that some of it will be found distributed through the heavier parts of the gravel generally. Geological evidence all tends to the conclusion that the post-glacial stream pursued a different course from the present stream, and that as a result portions of the old gravel-filled glacial stream escaped re-excavation. It has been shown that the present stream crosses the abandoned channel of the glacial stream in a few places, where the values (placer gold) have been removed. At other points the gold content of the old channel has been removed by hydraulicking and ground-sluicing operations. Attention of late (1933) has been directed to the remaining undisturbed sections of the old channel ... (in the Main Hydraulic Pit) where the present stream is considered to be about 100 feet (30.5 m) below that of the glacial stream-bed.
>
> Galloway, J.D.; 1933: p. 44.

The author assumes that Galloway's assessment of the Pleistocene and Holocene-epoch history of the Wild Horse River valley was primarily from an examination of gravel exposures in the Main Hydraulic Pit.

In the author's opinion, Galloway's assumption that most of the gold in Wild Horse River originated in Boulder Creek was an error. The author opines that the source of the placer gold is a plethora of small gold-bearing quartz veins hosted in the shear zone along the river (Figure 15).

Galloway's reference to the present stream is quite obvious; however, his references to the glacial or post-glacial stream are not. The author believes that those references are to the Red Channel Gravel that was described in the 1896 Minister of Mines' Annual Report (previous) as deposited atop the blue boulder-clay till.

Descriptions of the blue boulder-clay till are typical of a basal till and not of an ablation till as Galloway described it. Also, Galloway ignored the "conglomerate" gravel located beneath the blue boulder-clay till and he omitted any discussion of gold found between the blue boulder-clay till and the bedrock surface.

The author's impression from Galloway's history was that the Wild Horse River valley was scraped almost bare by a single Wisconsin-stage (latest Pleistocene-epoch) glaciation. More recent work on the glacial history of southeastern British Columbia has demonstrated this to have been unlikely.

N.W. Rutter (1984) studied the Pleistocene-epoch history of the Waterton Lakes area on the eastern side of the Rocky Mountains east of the Wild Horse River area. He found that the last major glaciation in the area occurred during the Illinoian stage from 390,000 to 350,000 years ago (Figure 16). An ice-free corridor subsisted along the area of the Alberta-British Columbia border since that time. Two quite minor alpine ice advances occurred at about 250,000 and 175,000 years ago during the Sangamon stage. Three more minor ice advances occurred at 90,000, 65,000, and 15,000 years ago during the Wisconsin stage.

Although Wild Horse River is on the wet side of the Rocky Mountains and thus would have endured more extensive glaciation, ice accumulations during the Sangamon and Wisconsin stages probably were quite thin and not very destructive of pre-existing valley-fill stratigraphy.

Extrapolating N.W. Rutter's (1984) findings to the Wild Horse River valley, the author identifies seven distinct periods of uplift and channel development, each following a regional glaciation.

The author disagrees with Galloway's assertion that the U-shape of the valley is entirely glacial in origin. The author suspects that the valley between Fisher and Boulder creeks occupies a zone of weak rock that weathered into a graben-like feature by the Kansan-stage glaciation (602,000 to 520,000 years ago) (Figure 15). Gold derived locally from veins in the bedrock surface accumulated on that surface.

The author's observations of the stratigraphy in the Wild Horse River valley lead him to the following conclusions (Table 3).

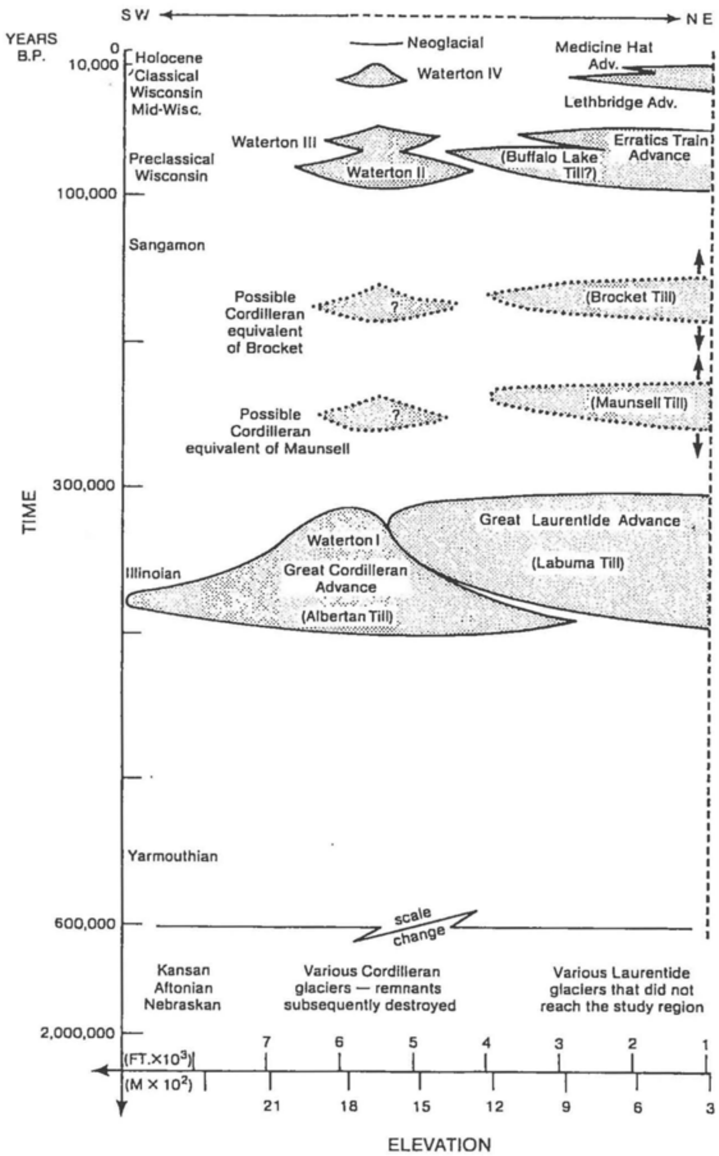
Severe glaciations during the early Pleistocene epoch (Nebraskan stage from 1.6 million to about 800,000 years ago) resulted in the scouring out of all previously deposited unconsolidated material in the river bottom laying bare pre-existing undulations in the bedrock surface (Ostler, 2014).

Sometime during pre-Kansan time (800,000 to 602,000 years ago) the basal "conglomerate" Yellow Gravel was deposited on bedrock in the Main Hydraulic Pit area and presumably everywhere else in the river bottom between Fisherville and Boulder Creek. Gold was well concentrated in this gravel during channel development. About 85% of the gold mined in the northern part of the Main Hydraulic Pit during 2014 and 2015 came from this gravel.

During the Kansan stage (602,000 to 520,000 years ago) a moderately intense glaciation deposited a basal Yellow Till on top of the basal Yellow Gravel. Both the till and gravel beneath it have a relatively high ironstone content (Figures 11 and 12), and the till contains boulders up to the size of a small automobile.

A thin layer of Upper Yellow Gravel overlies the Yellow Till. Probably, that gravel was deposited as a thick unit during post-Kansan time from 520,000 to 390,000 years ago. Gold concentration in the Upper Yellow gravel is minor to that in the Basal Yellow Gravel.

The Upper Yellow Gravel is discontiguous beneath the Illinoian-stage Blue Till. It is assumed that most of the Upper Yellow Gravel was scraped off in the Main Hydraulic Pit area during the Illinoian glaciation which progressed from 390,000 to 350,000 years ago. All previous unconsolidated stratigraphy was scraped off of the bedrock surface outside the Main Hydraulic Pit area from the Quong Yung Tong Hydraulic Pit south of Fisherville northward to Boulder Creek (Figures 4 and 13). Peter Osha, mine manager for the Wild Horse Joint Venture (pers. comm.) concluded that the rock spur that extends out from the western side of the valley just north of the Main Hydraulic Pit turned the main force of the Illinoian glaciation about 5° to the east and spared the pit area the scouring that was endured by the adjacent bedrock surface. The Blue Till is a basal boulder-clay till that has a comparitively high sulphide content.



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PROVINCE OF BRITISH COLUMBIA
J. D. OSTLER

NOTE: This figure is from Rutter, N.W.; 1984: Figure 1.

Figure 16

CASSIAR EAST YUKON EXP. LTD.

PLEISTOCENE HISTORY of the WESTERN CANADIAN ICE-FREE CORRIDOR

SPILLWAY PROPERTY

49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C.: 082G 063, FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo. JULY, 2017

A thickness of up to 6 m (19.7 ft) of Tan Silt covers an area from U.T.M.: 5,503,900 N. to near Boulder Creek on the western side of Wild Horse River. It conformably overlies a thin layer of ablation till that forms the top of the Blue Till. It is interpreted to be a quiet water sediment deposited in a short-lived lake that formed due to ice damming across the Wild Horse River valley somewhere near Fisher Creek. Its direct superposition on the ablation till and its lack of macro-fossils indicates that the lake existed during the melting stage of the Illinoian ice sheet about 350,000 years ago. The Wild Horse River valley must have been a scene of bare rock, till, and ice that looked much like the fjordlands of northern Greenland do now.

The palaeo-channel of Wild Horse River through the pass between Lone Peak and the Hughes range from Fisher Creek to Maus Creek may have been re-activated at that time. For that channel to have been re-activated, the elevation of the surface of the lake would have had to have been at least 1,230 m (4,035 ft) which is the elevation of the bedrock surface in the pass between Fisher and Maus creeks. Thus the lake would have extended northward from the Fisherville area, to about 1 km (0.6 mi) north of Wallinger Creek for a total length of more than 10 km (6.1 mi). A lake that size would contain sufficient water, that upon sudden release, would be capable of forming the relief on the upper surface of the Blue Till that was recorded by the 2014 seismic survey (Ostler, 2014). Also upon sudden release, that amount of water, could flush out and scour the canyon south of the Fisherville area.

The Red Channel Gravel overlies a late Illinoian-stage angular unconformity. It is atop the Blue Till in the Main Hydraulic Pit area. It is directly on bedrock on the northern slope of the rock spur at the northern end of the pit, on Blue Till north of U.T.M.: 5,503,800 N., and on the Tan Silt lake sediment north of U.T.M.: 5,503,900 N. Probably, this variation in the substrata of the Red Channel Gravel is due to rapid differential down-cutting of unconsolidated strata during the emptying of the lake due to breaching of the ice dam near Fisherville late during melting of Illinoian-stage ice.

Gold concentration was significant during deposition and re-working of the Red Channel Gravel. That unit was the main target of hydraulic miners in the Main Hydraulic Pit.

Figure 17 Old Shaft through the Tan Silt and Blue Till to bedrock

The Red Channel Gravel was scraped off and sent to the plant before this old shaft was dug out. The shaft was located at U.T.M.: 5,503,858 N., 603,207 E. on the western side of Wild Horse River about 250 m (755 ft) north of the northern wall of the Main Hydraulic Pit. At this location the Tan Silt is about 4 m (13.1 ft) thick. The Illinoian-stage Blue Till is about 2.5 m (8.2 ft) thick.

Table 3
Table of Geologic Events and Lithologic Units in the Spillway Property-area

Time	**Formation or Event**
Holocene 8,000-0 years	**Valley rejuvenation**: Down cutting of the present stream profile. **MINERALIZATION: Re-deposition of placer gold from pre-existing channels**
Pleistocene **Wisconsin** . 130,000-8,000 years	**Wild Horse River: Valley filling** with the upper grey gravel Alpine glaciations, uplift and channel development at 90,000, 65,000 and 15,000 years **MINERALIZATION: concentration of placer gold in channels** **Spillway property: deposition of cobble till on top of the alluvial fan and along Maus Creek**
Sangamon and Post-Sangamon 250,000-130,000 years	**Wild Horse River: Valley filling** with the lower grey gravel **Minor alpine glaciations**, uplift and channel development at 250,000, and 175,000 years **MINERALIZATION: concentration of placer gold** **Spillway property: Ice flow through the Lone Peak gap and deposition of cobble till**
Post-Illinoian 350,000-320,000 years	**Wild Horse River: Post-glacial uplift and development of the Red Channel Gravel on top of the Illinoian-stage Blue Till and Tan Silt** **MINERALIZATION: concentration of placer gold in the Red Channel Gravel** **Deposition of the Tan Silt directly on top of the Blue Till** in a lake bed that extended from U.T.M.: 5,503,900 northward to near Boulder Creek.. Spillway property: re-activation of Lone Peak gap channel of Wild Horse River, deposition fo alluvial fan
Illinoian 390,000-350,000 years	**Major glaciation**, ice carving of most of the pre-existing sediment in the Wild Horse River valley, **Deposition of the sulphide-rich blue boulder-clay basal till (the Blue Till).** **Scouring out of all previous Pleistocene-epoch sediment in the main channel of Wild Horse River north and west of the Main Hydraulic Pit area**. Spillway property: Ice flow through the Lone Peak gap resulting in deposition of boulder till
Post- Kansan 520,000 to 390,000 years	**Post-glacial uplift and development of gravel on top of the basal Yellow Till** **MINERALIZATION: weathering of gold out of sulphide-bearing veins, concentration of placer gold in the gavel on top of the Kansan-age Yellow Till, most of which was lost during the Illinoian glaciation**
Kansan 602,000 to 520,000 years	**Moderately severe glaciation**, **Deposition of the ironstone-rich basal Yellow Till and limited gouging out of the yellow river gravel beneath it.**
Post-Nebraskan to Pre-Kansan 800,000? to 602,000 years	Development of a yellow ironstone-rich gravel on top of an ice-scoured bedrock surface **MINERALIZATION: weathering of gold out of sulphide-bearing veins, concentration of placer gold in the yellow gravel**
Early Pleistocene to Nebraskan 1.6 m.y. - 800,000? years	1.6 m.y. - 800,000? years: glaciations of unknown intensities and extents. All sediment was removed from the bedrock surface beneath Wild Horse River and the “channel” depressions in the bedrock surface were deepened by ice carving. Pre-glacial gold was removed by glaciation.
Late Pliocene to early Pleistocene 3.4 to 1.0 m.y.	Back cutting of lower Wild Horse River profile and breaching of the pass west of Lone Peak resulting in abandonment of Wild Horse River channel east of Lone Peak.
	m.y. = million years ago

Table 3 Continued
Table of Geologic Events and Lithologic Units in the Spillway Property-area

Eocene to Pliocene 57.1-1.6 m.y.	Deep erosion, and unroofing of the rocks, incision of the land surface. Development of the channel of Wild Horse River through the pass between Lone Peak and the rest of the Hughes Range **MINERALIZATION: Release of free gold from sulphides of pyrite-arsenopyrite-chalcopyrite-quartz veins during deep weathering and its deposition in placers in the channel of Wild Horse River through the pass between Lone Peak and the rest of the Hughes range.**
Late Cretaceous to Eocene 97-57.1 m.y.	**Onset of regional erosion.** **MINERALIZATION: Release of free gold from sulphides of pyrite-arsenopyrite-chalcopyrite-quartz veins**
Early Jurassic to Middle Cretaceous 200-130 m.y.	**Columbian Orogeny:** **Deformation of Cache Creek rocks in a northeastward dipping subduction zone, accretion of Nicola Group rocks to North America:** progressive deformation and regional metamorphism, overriding of Cache Creek and Quesnel Terrane rocks onto Kootenay Arc strata, intense deformation, uplift, regional metamorphism culminating in extensive plutonism in Kootenay Arc rocks. The orogeny progressed from east to west. Uplift of the Coast Mountains. Normal faulting related to development of the Rocky Mountain Trench, deposition of small monzonitic intrusions in the Wild Horse River area Disruption of stratigraphy by the Rocky Mountain Trench and associated secondary structures **MINERALIZATION:** **Upward migration of gold into crustal rocks along the Kanasewich structural zone and subsequent deposition of gold-bearing pyrite-chalcopyrite-arsenopyrite-quartz veins**.
Late Permian to Early Triassic 256-241 m.y.	**Mild orogenic event in southern British Columbia:** Deformation, low-grade metamorphism, plutonism, uplift and erosion.
Late Devonian to Triassic 355-251 m.y.	**Deposition of the Kaslo and Milford Group clastic sediments representing the final filling of the Cordilleran Miogeosyncline in the West Kootenay region.** These rocks were deposited on an erosional surface resulting in a major unconformity between them and the underlying eugeosynclinal rocks.
Early to Middle Ordovician 490-460 m.y	**Cariboo Orogeny:** Early deformation and regional metamorphism of the Lower to Middle Eagle Bay Formation, Slocan and Lardeau groups west of the Rocky Mountain Trench, compressional faulting in the Hughes Range **MINERALIZATION: Deposition of silver and gold-bearing galena-sphalerite-carbonate-quartz veins and mantoes**
Middle Cambrian to Devonian 544-355 m.y.	**Deposition of the Lower to Middle Eagle Bay Formation mafic volcanic and meta-sedimentary rocks**, and the Lardeau and Slocan group volcanics and sediments in the Cordilleran Eugeosyncline west of the Hughes Range.
Early to Middle Cambrian 600 to 544 m.y.	**Deposition of Mio to Eugeosynclinal sediments in a deepening Cordilleran Geosynclinal basin**: deposition of the Cranbrook and Eager formations in the Hughes Range, block faulting during basin deepening
Late Haydrinian to Cambrian 675 to 600 m.y.	**Deposition of the Windermere Supergroup clastic sediments and volcanics:**
Late Hadrynian 745 to 675 m.y.	**East Kootenay Orogeny**: folding and compressional movement on faults in the Wild Horse River area, lower greenschist facies regional metamorphism
Late Aphebian to Late Hadrynian 1,860 to 745 m.y.	**Deposition of the Purcell Supergroup sediments and volcanics**; deposition of the Aldridge Formation in the Wild Horse River-Maus Creek area Development of block faulting due to basinal extension during sedimentation, Normal movement on the Boulder Creek fault system **MINERALIZATION:** **SEDEX base metal deposition in the Aldridge Formation at the Sullivan mine, west of the Hughes Range during basin spreading**
	m..y. = million years ago

NOTE: Data for this table was compiled by the author from various sources.

Weathering and valley filling occurred during most of the succeeding 350,000 years. Valley filling was punctuated by two brief Sangamon-stage glaciations (250,000 and 175,000 years ago) and two early Wisconsin-stage glaciations (90,000 and 70,000 years ago). Each glaciation was followed by a period of uplift and channel development. This accounts for the occurrence of gold-bearing strata in the generally barren grey gravel partly preserved in the Main Hydraulic Pit wall above the Red Channel Gravel. The most recent Wisconsin-stage glaciation (25,000 to 8,000 years ago) and isostatic uplift was responsible for the development of the present river profile (Table 3).

3.2 Property Geology

3.2.1 Hard Rock Stratigraphy

The Spillway property is underlain primarily by clastic and impure carbonate strata of the Helikian-Era Creston and Aldridge formations that have been metamorphosed to schists and impure carbonates by greenschist and lower amphibolite facies regional metamorphism. The results of the current (2017) pan concentrate sampling indicate that the Creston and Aldridge formation rocks in the Maus Creek drainage are not a source of significant gold (Section 5.2, this report). Mineralogically, these rocks are a passive host with regard to the deposition of placer gold. Their main influence on the tenor of gold deposition is their ability to form natural riffles and sediment traps at the bedrock surface due to irregularities in their resistance to weathering caused by inconsistencies across bedding and cleavages.

3.2.2 Glacial and Post-glacial Stratigraphy

The Glacial and post-glacial stratigraphy of the property is the subject of the current (2017) exploration program. For results of that work, see section 5.2 of this report.

3.3 Mineralization

3.3.1 Placer Gold

By the 1880s, it was well-known that both silver-bearing, galena-rich quartz veins and polymetallic gold-bearing quartz veins existed in the Precambrian-age schists throughout the Wild Horse River area. It was generally believed that release of free gold and its concentration into nuggets and plates during weathering out of sulphide minerals was the source of the placer gold in Wild Horse River. Proof of this mechanism was reported in the B.C. Minister of Mines', Annual Report for 1891 as follows:

> The Pass claim on the mountain above Wild Horse, is, I understand, shewing favourably. In the vicinity of this lead a small stringer was discovered last summer. A little pocket in this seam, which was situated on the mountain, far above the action of water, contained over $100 worth of gold (over 5.6 oz @ $18/oz). The remainder of the seam, as far as it was explored was barren. This would tend to confirm Dr. Dawson's opinion as to the origin of the Wild Horse placers.
>
> B.C. Min. Mines', Ann. Rept. of 1891: p. 570.

Brian Kostiuk (2002) drilled three diamond drill holes into gold-bearing veins in a shear located south of Lone Peak about 600 m (1,968 ft) west of the SPILLWAY (1047275) claim, and at an elevation of 1,600 m (5,249 ft) which is about 400 m (1,312 ft) above the level of the palaeo-channel of Wild Horse River that crosses the Spillway property. Gold-bearing pyrite-chalcopyrite-arsenopyrite-quartz veins are found on the side hills above Wild Horse River at elevations at least 500 m above that of the palaeo-channel that crosses the Spillway property thus flow through the Lone Peak gap and spillway tapped into a productive part of the Wild Horse River dilation (Figure 15).

Intrusion of a plethora of gold-bearing pyrite-chalcopyrite-arsenopyrite-quartz veins in the Wild Horse River dilation and related shears is the source of the gold in the Wild Horse River placer camp (Figure 15). There is no single "mother lode" source of the placer gold in the camp. Any energy expended searching for one is wasted.

S.S. Holland (1950) reported four gold fineness calculations from 237 oz of placer gold that ranged from 0.879 to 0.900 fine gold. Curiously, he reported an average gold fineness of 0.878 in his table and used that fineness in his calculation of reported production.

Holland's gold fineness calculation is similar to a statement of gold fineness that appeared in the B.C. Minister of Mines' Annual Report of 1894 that read:

> The gold shipped out realized, after all charges were paid, on an average of $17.60 an ounce, the fineness being 0.884. It contains, also a small value of silver.
>
> B.C. Min. Mines', Ann. Rept. of 1894: p. 746.

These fineness calculations are similar to one that can be made from a statement in the B.C. Minister of Mines' Annual Report of 1924:

> ... The gold recovered was fairly coarse and of high grade, running $18.12 to the ounce.
>
> B.C. Min. Mines', Ann. Rept. of 1924: p. B187.

The average open market gold price that year was $20.69/oz. Using that price and recognizing that an unknown amount of smelter charges would have been deducted to produce the reported $18.12/oz net revenue, the minimum fineness of that gold would have been 0.876.

On December 5, 2013, the author examined gold that has been produced recently from near the confluence of Boulder Creek and Wild Horse River on the (no name) (1012014) placer claim by Steve Lanthem (Figure 4). That gold being quite orange, was similar to the colour of a British or Canadian gold sovereign. The sovereign was a circulation coin that contained 0.917 gold and 0.083 copper to harden the alloy. The author suspects that the gold that he examined was about 0.885 fine and contained and a significant amount of copper.

The author was mine geologist for the Wild Horse Joint Venture from April, 2014 to July 20, 2015. One of his duties was to operate the secondary separation plant. About half of the gold produced in the northern part of the Main Hydraulic Pit was caught in a No. 12 screen. That coarse fraction was shipped directly. We found that it averaged about 0.878 gold, about 0.090 silver and 0.032 copper, etc. The fine fraction was ultimately cast into doré bars for shipping and was slightly refined in the process. Our doré bars graded roughly 0.910 gold.

George R. Castles of Maus Minerals Ltd. reported in private correspondence to Dome Exploration (Canada) Limited and Gulf Minerals Canada Limited in 1979 that: he was told by Dan Kelly that in 1939 Kelly had taken 10 oz of placer gold from the bottom of the workings beneath a shaft that he had excavated to bedrock in the area of Placer Lease 733. That lease was located on the bench near the southern boundary of the current Spillway (1047275) placer claim (Figures 6 and 10). Kelly reported that he received $327.00 for the gold.

In 1939 the average price of gold was $34.42/oz. From that, revenue of $327.00 / 10 oz = $32.70 per oz was received. From that a fineness of 32.70 / 34.42 = 0.950 can be calculated. This fineness is somewhat higher than the historic fineness of the gold mined in the Wild Horse River camp which was 0.878 as determined by H.H. Holland (1950). Possibly, Kelly converted raw placer gold into doré bars which he sold to a smelter. That beneficiation would account for the high fineness of his gold. Also, he may have sold his 10 oz of gold at a time when the gold price was significantly higher than the yearly average for 1939.

Most of the raw gold produced by the Wild Horse Joint Venture's mining from 2014 and 2015 was an amber colour (Figures 11, 12, and 18). About 1% of the coarse gold was lemon yellow and somewhat spongy in texture. Nuggets of green gold were quite rare.

Most of the coarse gold produced by the Wild Horse Joint Venture in 2014 and 2015 had been hammered of squeezed flat. This flakes were common. That was deemed to have been due to movement due to glaciation.

North of the Main Hydraulic Pit, the gold recovered from the Red Channel Gravel both on bedrock and on top of the Blue Till was similar to that recovered from bedrock in the Main Hydraulic Pit. Gold recovered from where the Blue Till was in contact with bedrock was much finer grained.

Gold nuggets ranged in size from 6.34 gm (0.2 oz) downward, with one exception.

On May 2, 2015, the author and Bret MacDonald were dropping the nugget trap in the Goldfields shaker plant when what looked like two nuggets were seen jammed in the front end of the grate. I wiggled out the gold which turned out to be one large nugget.

“It looks like a fish,” exclaimed Bret.

I replied, “It’s a goldfish,” and truly it looked just like one of those goldfish cookies sold by Pepperidge Farms.

The Goldfish weighed 36.516 gm (1.174 oz) (Figure 18) . It was sold through a specialty placer jeweler at a significant premium to the price of bullion.

If the majority of the gold present on the Spillway property is from deposition in an abandoned channel of Wild Horse River, then the colour, fineness, and character of that gold should be similar to those of the gold that the author handled for the Wild Horse Joint Venture from 2014 to 2015.

Figure 18 The Goldfish - 1.174 oz

4.0 DEPOSIT TYPE: PLACER GOLD

The mineral exploration targets on the Wild Horse River property are surficial and buried channel alluvial placer gold deposits, and eluvial placer gold deposits related to weathering of sulphide-bearing quartz veins.

Surficial placer gold deposits were described by V.M. Levson (1995) as follows. The morphology and controls of surficial and buried channel placer gold deposits are essentially the same:

SURFICIAL PLACERS C01

IDENTIFICATION

SYNONYM:
Holocene deposits; terrace placers; fluvial, alluvial, colluvial, eolian (rare) and glacial (rare) placers.

COMMODITIES (*BYPRODUCTS*):
Au, PGE and Sn, locally Cu, garnet, ilmenite, cassiterite, rutile, diamond and other gems - corundum (rubies, sapphires), tourmaline, topaz, beryl (emeralds), spinel - zircon, kyanite, staurolite, chromite, magnetite, wolframite, sphene, barite, cinnabar} *Most of the minerals listed in brackets are recovered in some deposits as the principal product.*

EXAMPLES (British Columbia - *Canada/ International*):
Fraser River (Au), Quesnel River (Au), Tulameen district (PGE); *North Saskatchewan River (Au, Alberta, Canada),Vermillion River (Au, Ontario, Canada), Riviere Gilbert (Au, Québec, Canada), Klondike (Au, Yukon, Canada), Río Tapajos (Au, Brazil), Westland and Nelson (Au, New Zealand), Yana-Kolyma belt (Au, Russia), Sierra Nevada (Au, California, U.S.A.), Goodnews Bay (PGE, Alaska, U.S.A.), Emerald Creek (garnet, Idaho, U.S.A.), Río Huanuni and Ocuri (Sn, Bolivia), Sundaland belt (Sn, Thailand).*

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION:
Detrital gold, platinum group elements and other heavy minerals occurring at or near the surface, usually in Holocene (Tertiary subsurface channels also) fluvial or beach deposits. Other depositional environments, in general order of decreasing importance, include: alluvial fan, colluvial, glacial-fluvial, glacial, and deltaic placers.

TECTONIC SETTINGS:
Fine-grained, allocthonous placers occur mainly in stable tectonic settings (shield or platformal environments and intermontane plateaus) where reworking of clastic material has proceeded for long periods of time. Coarse autochthonous placer deposits occur mainly in Cenozoic and Mesozoic accretionary orogenic belts and volcanic arcs, commonly along major faults.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING:

Surficial fluvial placer concentrations occur mainly in large, high-order stream channels (allochthonous deposits) and along bedrock in high-energy, steep-gradient, low-sinuosity, single-channel streams (autochthonous deposits). Concentrations occur along erosional surfaces at the base of channel sequences. Alluvial fan, fan-delta and delta deposits are distinct from fluvial placers as they occur in relatively unconfined depositional settings and typically are dominated by massive or graded sands and gravels, locally with interbedded diamicton. Colluvial placers generally develop from residual deposits associated with primary lode sources and by sorting associated with downslope migration of heavy minerals. Glaciofluvial and glacial placers are mainly restricted to areas where ice or meltwater has eroded pre-existing placer deposits. Cassiterite, ilmenite, zircon, and rutile are lighter heavy minerals which are distributed in a broader variety of depositional settings.

AGE OF MINERALIZATION:

Mainly Holocene (rarely Late Pleistocene) in glaciated areas; generally Tertiary or younger in unglaciated regions. (Buried channels are commonly Tertiary to Pleistocene in age.)

HOST / ASSOCIATED ROCK TYPES:

Well-sorted, fine to coarse-grained sands; well-rounded, imbricated and clast-supported gravels.

DEPOSIT FORM:

In fluvial environments highly variable and laterally discontinuous; paystreaks typically thin (<2 m), lens shaped and tapering in the direction of palaeoflow; usually interbedded with barren sequences.

TEXTURE / STRUCTURE:

Grain size decreases with distance from the source area. Gold typically fine-grained (<0.5 mm diameter) and well rounded; coarser grains and nuggets rare, except in steep fluvial channel settings where gold occurs as flattened flakes. Placer minerals associated with colluvial placer deposits are generally coarser grained and more angular.

ORE MINERALOGY (Principal and *subordinate*):

Au, PGE, cassiterite *(Cu, Ag and various industrial minerals and gemstones).*

GANGUE MINERALOGY:

Quartz, pyrite and other sulphides in many deposits uneconomic concentrations of various heavy minerals such as magnetite and ilmenite.

ALTERATION MINERALOGY:

Fe and Mn oxide precipitates common; Ag depleted rims of Au grains increase in thickness with age.

ORE CONTROLS:

In fluvial settings, placer concentrations occur at channel irregularities, in bedrock depressions and below natural riffles created by fractures, joints, cleavage, faults, foliation or bedding planes that dip steeply and are oriented perpendicular or oblique to stream flow. Coarse-grained placer concentrations occur as lag concentrations where there is a high likelihood of sediment reworking or flow separation such as at the base of channel scours, around gravel bars, boulders or other bedrock irregularities, at channel confluences, in the lee of islands and downstream of sharp meanders. Basal gravels over bedrock typically contain the highest placer concentrations. Fine-grained placer concentrations occur where channel gradients abruptly decrease or stream velocities lessen, such as at sites of channel divergence and along point bar margins. Gold in alluvial fan placers is found in debris-flow sediments and in interstratified gravel, sand and silt. Colluvial placers are best developed on steeper slopes, generally over a weathered surface and near primary lode sources. Economic gold concentrations in glaciofluvial deposits occur mainly along erosional unconformities within otherwise aggradational sequences and typically derive their gold from older placer deposits.

GENETIC MODEL:

Fluvial placers accumulate mainly along erosional unconformities overlying bedrock or resistant sediments such as basal tills or glaciolacustrine clays. Basal gravels over bedrock typically contain the highest placer concentrations. Overlying bedded gravel sequences generally contain less placer minerals and reflect bar sedimentation during aggradational phases. Frequently the generation of more economically attractive placer deposits involves multiple cycles of erosion and deposition.

ASSOCIATED DEPOSIT TYPES:

Fluvial placers commonly derive from hydrothermal vein deposits and less commonly from porphyry and skarn deposits. PGE placers are associated with Alaskan-type ultramafics. Allochthonous fluvial placers are far traveled and typically remote from source deposits.

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE:

Anomalous concentrations of Au, Ag, Hg, As, Cu, Fe, Mn, Ti or Cr in stream sediments. Au fineness (relative Ag content) and trace element geochemistry (Hg, Cu) of Au particles can be used to relate placer and lode sources.

GEOPHYSICAL SIGNATURE:

Ground penetrating radar is especially useful for delineating the geometry, structure and thickness of deposits with low clay contents, especially fluvial terrace placers. Shallow seismic, electromagnetic, induced polarization, resistivity and magnetometer surveys are locally useful. Geophysical logging of drill holes with apparent conductivity, naturally occurring gamma radiation and magnetic susceptibility tools can supplement stratigraphic data.

OTHER EXPLORATION GUIDES:

Panning and other methods of gravity sorting are used to identify concentrations of gold, magnetite, hematite, pyrite, ilmentie, chromite, garnet, zircon, rutile and other heavy minerals. Many placer gold paystreaks overlie clay beds or dense tills and in some camps these “false bottom” paystreaks are important..

ECONOMIC FACTORS

GRADE AND TONNAGE:

Deposits are typically high tonnage (0.1 to 100 Mt) but low grade (0.05-0.25 g/t Au, 50-200 g/t Sn). Placer concentrations are highly variable both within and between individual deposits.

ECONOMIC LIMITATIONS:

The main economic to mining surficial placer deposits are typically low grades and most deposits occur below the water table. Environmental considerations are also an important limiting factor as these deposits often occur near, or within modern stream courses.

IMPORTANCE:

Placer gold deposits account for more than two-thirds of the world's gold reserves and about 25% of known local production in British Columbia. Recorded placer production has represented 3.5% of B.C.'s total gold production is the last twenty years. Prior to 1950, it was approximately 160,000 kg. Actual production in British Columbia was significantly larger. Placer mining continues to be an important industry in the province with annual average expenditures of more than $30 million over a survey period from 1981 to 1986. Shallow alluvial placers also account for a large part of world tin (mainly from SE Asia and Brazil) and diamond (Africa) production.

Levson V.M., in:
Lefebure, D.V. and Ray, G.E. ed.; 1995, pp. 21-23.

5.0 EXPLORATION

5.1 Procedures and Parameters of the Current (2017) Exploration Program

The current (2017) exploration program was designed to assemble and examine geomorphological and geological evidence related to the existence of an early high-level channel of Wild Horse River through the Lone Peak gap and across the SPILLWAY (1047275) claim to the Maus Creek valley.

Both B.C. map 082G 063 and N.T.S. map sheet 82 G/12 are obsolete with regard to access to the Spillway property. The southern access route has been cut off by irrigation water works at the mouth of the Maus Creek valley about 1.3 km (0.79 mi) south of the southern boundary of the Spillway property. The northern access road to the property up Fisher Creek has been abandoned for at least 20 years. A total of one day was spent with a Garmin 62 G.P.S. unit held out the truck window while putting alternate road routes to the property on a copy of B.C. Map 082G 063 (Section, 1.3, this report and Figures 2 and 3) (Table 4).

Total foot traverse length during the current (2017) exploration program was about 6 km (3.66 mi). A significant amount of time was spent digging into unconsolidated material in order to estimate its character, relative age and transport direction. Assuming that results of exploration along traverse lines were relevant for 30 m (98.4 ft) on either side of a traverse line, a total area of 36 ha (88.9 acres) was investigated in detail.

Locations were established by use of a Garmin 62 GPS unit. Established field techniques for both float and outcrop mapping were used.

Topography was taken from BC Trim map 082G 063 (Figures 2, 19 and 20). Parts of that map were blown up and used as field base maps. Some of the maps and diagrams from previous assessment reports and property files were re-scaled and used in this report (Figures 6 to 8).

Six pan concentrate samples were taken. Three samples were taken from a polymictic boulder tills that were transported southward into the property-area through the Lone Peak gap from the Wild Horse River valley during the Illinoian glaciation. Three other samples were taken from materials transported into the property area from various sources in the Maus Creek valley. About 3 kg (6.6 lb) of material was collected for each sample using a stainless steel trowel. That material was sufficient to fill a standard steel gold pan. Samples were seived through a stack of No. 2, 8 and 12 screens (with grids of 2,8, and 12 squares per inch respectively). The residues were panned down to dark, heavy mineral silt fractions. Gold and black sand quantities were estimated visually. For sample locations see Figures 19 and 20, and Appendix 'B'.

Figures for this report were produced using traditional drafting and various computer techniques.

5.2 Results and Interpretation of the Current (2017) Exploration Program

A major ridge of the Hughes Range is located northeast of the Spillway property (Figure 13). Talus migrating from that Ridge provides abundant Holocene-stage scree and colluvium that mantles the northeastern part of the property. Colluvium developed from till and talus from Lone Peak covers most of the property area west of the spillway south of the Lone Peak gap.

Rock outcrop is very sparse and is confined to the northeastern part of the property. There, varicoloured carbonate-bearing turbidites of the Creston Formation overlie grey to black siltstones and argillites of the Upper Aldridge Formation. Both formations are part of the Neohelikian-age Purcell Supergroup (Figure 13A).

It has long been held by local placer miners that the gap between Lone Peak and the rest of the Hughes Range was the location of a pre-glacial channel of Wild Horse River and consequently hosts a substantial amount of placer gold on the bedrock surface. Also, it has been assumed that the prolific underground placers at Maus Creek on the RUSTY GOLD (778442) claim south of the Spillway property are of gold derived from the old channel of Wild Horse River. Generally during erosion, gold tends to fall straight down and not laterally in a drainage. If the early channel of Wild Horse River through the Lone Peak gap existed, the gold on the floor of that channel should still exist on the bedrock surface beneath the gap and on the spillway down to Maus Creek. That palaeo-channel is the economic target on the Spillway property. The author plotted the estimated course of the old channel of Wild Horse River through the Lone Peak gap to Maus Creek on Figures 2 to 4.

In Lone Peak Gulch, pre-Illinoian-stage stratigraphy has been buried beneath more recent colluvium and scree. Thus, the early Pleistocene Period development of the area can only be estimated through indirect evidence.

Before the Kansan-stage glaciation 602,000 to 520,000 years ago, a tributary of Brewery Creek cut back into the Wild Horse River drainage terminating any drainage of Wild Horse River through the Lone Peak gap. By then, the bedrock surface in the Main Hydraulic Pit on Wild Horse River already had weathered down to its current elevation. Probably the elevation of the bedrock surface of the Maus Creek valley was similarly eroded.

The last major glaciation in the Spillway property area was during the Illinoian stage, 390,000 to 350,000 years ago. A remnant of Illinoian-stage boulder till adhering to the eastern slope of Lone Peak along the western decommissioned road (Figure 19) indicates that ice flowed from the Wild Horse River valley southward through the Lone Peak gap at that time.

An alluvial (later colluvial) fan is located on the southern part of the SPILLWAY (1047275) claim and on the adjoining RUSTY GOLD (778442) claim (Figures 2 and 19). The fan has a surface area of about 0.4 km^2 (0.15 mi^2), which is far larger than any other fan in the Maus Creek valley and far too large to have been created by stream flow from the cleft in the northern part of the SPILLWAY (1047275) claim. The fan is partly overlain by a Wisconsin-stage cobble till bench. The author opines that the fan was built during the late Illinoian stage (350,000 to 320,000 years ago) when an ice-dammed lake occupied the Wild Horse River valley from the Main Hydraulic Pit to about 10 km (6.1 mi) north of Boulder Creek (Section 3.2.2, this report). Until the dam burst, the lake drained out through the Lone Peak gap.

Although almost no new placer gold would have been added to the floor of the gap or the spillway south of it during Illinoian-stage activity in the channel, gold would have been concentrated by the temporary river. There is rock outcrop on both sides of the Lone Peak gap near the northern boundary of the Spillway property restricting the channel to a width substantially less than 100 m (328.1 ft) (Figure 19). Sediment was flushed through the gap, down the spillway, and deposited in an extensive alluvial fan that may have temporarily dammed up Maus creek. Placer gold would have been concentrated in the natural rock riffles on the floor of the gap and spillway.

During subsequent interglacial stages, the surface of the alluvial fan was reworked by water erosion and mass wastage and has become more colluvial in nature.

The extent of the Sangamon-stage glaciation on the Spillway property is unknown. However, gold-bearing cobble till at the entrance to the spillway at the northern boundary of the SPILLWAY (1047275) claim may be Sangamon in age (Figure 19). That would indicate that during the Sangamon glaciation (250,000 to 175,000 years ago), ice flowed southward through the Lone Peak gap as it had during the previous Illinoian-stage glaciation.

Cobble till on top of the colluvial fan and along the Maus Creek F.S.R. indicate that during the Wisconsin glaciation, ice flowed across the property area but was not very thick (Figures 19 and 20).

During the current (2017) exploration 6 pan concentrate samples were taken. Three were from remnants of a presumed Illinoian-stage polymictic boulder tills that were transported from the Wild Horse River valley through the Lone Peak gap to the northern part of the SPILLWAY (1047275) claim (Figure 19). A sample of that till, SP12-PC, contained three flakes, a small amount of flour gold, and about 0.1 gm of black sand. Samples SP1-PC and SP13-PC from that till each contained a trace of flour gold and a small amount of black sand.

`The other three samples: SP2-PC, SP4-PC and SP14-PC (Figures 19 and 20) were from local sources or transported down Maus Creek. Those samples contained no visible gold and only a trace of black sand.

If the Maus Creek drainage contains no significant placer gold, then the gold mined in the prolific underground placers on the RUSTY GOLD (778442) claim south of the Spillway property must have been originally brought to the area from Wild Horse River via an old channel that flowed through the Lone Peak gap.

During the current work program, Maus Creek was in spring flood with temporary channels flowing over its banks through the forest. It was not mapped in detail, nor was it sampled.

5.3 Duration, Area, Location, Management, and Value of the Current (2017) Exploration Program

The current work program was conducted on and about the property during the following days:

May 30 and June 8, 2017	transport from Vancouver to Fort Steele area, return
May 31 to June 7, 2017:	geological field work and sampling on the Spillway property
November 8, 2016 to July 2, 2017	research and production of this assessment report (intermittent)

A total of 40 man-days (40 days X 8 = 320 man-hours) of work was conducted during the current (2017) exploration program.

Table 4
Duration of the 2017 Exploration Program

Name	Program Design and Administration	Geomorph. and Geological Surveys	Sample Seiving and Panning	Tspt.+ road access search + weather days	Research, Data processing+ reporting	Total man-days
John Ostler; M.Sc., P.Geo. West Vancouver, B.C.	1.00	5.75	0.25	4.00	29.00	40.00

Table 5
Area and Location of the 2017 Exploration Program

Activity	Area in hectares (Acres)	Claims Name	Claims Record No.
Geomprphological and geological surveys	36 (88.9)	SPILLWAY MAUS	1047275 1047747
Pan concentrate sampling (6 concentrates)	N.A. (N.A.)	SPILLWAY	1047275
Road and local access survey	Length = 7.6 km	SPILLWAY MAUS	1047275 1047747

Table 6
Contractors for the 2017 Exploration Program

Contractor	Activities
Cassiar East Yukon Expediting Ltd. 1015 Clyde Avenue West Vancouver, British Columbia, V7T 1E3 (604) 926-8454	Exploration, research, program design, and reporting
Western Technical Supply Company Limited 845 West 15th Street West Vancouver, British Columbia, V7P1M5 (604) 986-2391	copy of large scale maps and scale changes
Arcprint and Imaging 4455 Alaska Street Burnaby, British Columbia V5C 1T3 (604) 293-0029	Scans of figures, photocopy

Table 7
Value of the 2017 Exploration Program

Item		
Wages: John Ostler; M.Sc., P.Geo., research, data compilation, and reporting 30 days @ $600/day . . . . John Ostler; M.Sc., P.Geo., field work, 10.0 days @ $600/day	 $18,000.00 $ 6,000.00 $24,000.00	 $24,000.00
Transport: 1 1-ton 4X4 pick-up truck, 10 days @ $160/day . . . . Diesel	 $ 1,600.00 $ 446.05 $ 2.046.05	 $ 2.046.05
Camp and Crew Costs: 1 fly camp inc. chain saws, 1/3 month @ $900/month. . . . . Meals and camp food, ($209.81 of this is G.S.T. exempt) . . . . Field supplies	 $ 300.00 $ 346.73 $ 25.63 $ 672,36	 $ 672,36
Office expenses: Production of topographic and base maps, mylars and large figures . . Scan of small figures and other report production costs	 $ 301.05 $ 122.50 $ 423.55	 $ 423.55
Value of the Current (2017) Program		**$27,141.96**
G.S.T.: 0.05 X $26,932.15		$ 1,346.61
Total Value of the 2017 Exploration Program		**$28,488.57**

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The current (2017) exploration program was designed to assemble and examine geomorphological and geological evidence related to the existence of an early high-level channel of Wild Horse River through the Lone Peak gap and across the SPILLWAY (1047275) claim to the Maus Creek valley.

It has long been held by local placer miners that the gap between Lone Peak and the rest of the Hughes Range was the location of a pre-glacial channel of Wild Horse River and consequently hosts a substantial amount of placer gold on the bedrock surface. Also, it has been assumed that the prolific underground placers at Maus Creek south of the Spillway property are of gold derived from the old channel of Wild Horse River. Generally during erosion, gold tends to fall straight down and not laterally in a drainage. If the early channel of Wild Horse River through the Lone Peak gap existed, the gold on the floor of that channel should still exist on the bedrock surface beneath the gap and on the spillway down to Maus Creek. That palaeo-channel is the economic target on the Spillway property.

The direct source of the placer gold in the Wild Horse River valley was free gold released from a plethora of quartz-sulphide veins that weathered out of a dilatant zone located directly above the current erosional level of the river. The base of the productive part of that vein system was above the elevation of the current floor of the Main Hydraulic Pit on Wild Horse River. Peripheral gold-bearing veins occur at elevations up above 1,524 m (5.000 ft) on the slopes around Wild Horse River and on Lone Peak. The elevation of the bedrock surface through the Lone Peak gap is about 1,230 m (4,035 ft) above sea level which is well beneath the top of the productive part of the Wild Horse dilation. That gold would have been available for deposition in a channel through the Lone Peak gap.

The channel of Wild Horse River through the Lone Peak gap may have been active from the Miocene to early Pleistocene Epoch, for a time span of at least 23 million years. Before the Kansan-stage glaciation 602,000 to 520,000 years ago, a tributary of Brewery Creek cut back into the Wild Horse River drainage terminating any drainage through the Lone Peak gap. By then, the bedrock surface in the Main Hydraulic Pit on Wild Horse River already had weathered down to its current elevation. Probably the elevation of the bedrock surface of the Maus Creek valley was similarly eroded.

In Lone Peak Gulch, pre-Illinoian-stage Pleistocene stratigraphy has been buried beneath more recent colluvium and scree. Thus, the early Pleistocene Period development of the area can only be estimated through indirect evidence.

The last major glaciation in the Spillway property area was during the Illinoian stage, 390,000 to 350,000 years ago. A remnant of Illinoian-stage boulder till adhering to the eastern slope of Lone Peak along the western decommissioned road indicates that ice flowed from the Wild Horse River valley southward through the Lone Peak gap at that time.

An alluvial fan is located on the southern part of the SPILLWAY (1047275) claim and on the adjoining RUSTY GOLD (778442) claim. The fan is far too large to have been created by stream flow from the cleft in the northern part of the SPILLWAY (1047275) claim. The author opines that the fan was built during the late Illinoian stage (350,000 to 320,000 years ago) when an ice-dammed lake occupied the Wild Horse River valley from the Main Hydraulic Pit to about 10 km (6.1 mi) north of Boulder Creek. Until the dam burst, the lake drained out through the Lone Peak gap.

Although almost no new placer gold would have been added to the floor of the gap and the spillway south of it during Illinoian-stage re-activation of the channel, gold would have been concentrated by the temporary river.

Pan concentrate sampling results indicate that Illinoian and Sangamon-stage tills that were transported from the Wild Horse River valley southward through the Lone Peak gap are gold-bearing. Samples from till and colluvium transported down Maus Creek and southwestward down slope from the Hughes range are barren. This indicates that the gold mined at the prolific underground placers south of the Spillway property at Maus Creek was transported from the Wild Horse River valley through the Lone Peak gap to the current Maus Creek drainage and substantiates the existence of the existence of a pre-glacial, high level channel of Wild Horse River through the Lone Peak gap and across the current Spillway property area.

6.2 Recommendations

It is recommended that a program of rotary drilling be conducted along the main north-south access road down the spillway on the SPILLWAY (1047275) claim. Chips from the drill holes may add to knowledge of pre-Illinoian Pleistocene stratigraphy along the spillway. Depth to bedrock will enable the construction of a bedrock profile along the spillway and the identifications of any basins that could trap placer gold. Sampling near the bedrock surface should give confirmation of the general tenor of placer gold on the bedrock surface along the spillway.

The recommended program comprises 12 drill holes spaced at 100-m (328.1-ft) intervals along the access road from U.T.M. 5,499,600 to 5,500, 700 N. Another 6 lateral step-out holes are recommended, two flanking holes along the access road in three locations. These step-out holes would enable some determination of the lateral shape of the spillway channel. Based on previous drilling in the area, holes are estimated to average about 40 m (131.2 ft) in depth. Thus, the program will comprise a total of 720 m (2,362.2 ft) of rotary drilling.

The estimated cost of the recommended program including road renovation, drilling, logging and sampling is $82,000.

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John Ostler: M.Sc., P.Geo.,
Consulting Geologist
West Vancouver, British Columbia,
July 2, 2017

APPENDIX ‘A’

CERTIFICATE of the QUALIFIED PERSON

I, John Ostler, of 1015 Clyde Avenue in the City of West Vancouver, Province of British Columbia do hereby certify:

That I am a consulting geologist with business address at 1015 Clyde Avenue, West Vancouver, British Columbia;

That I am a graduate of the University of Guelph, Ontario where I obtained my Bachelor of Arts degree in Geography (Geomorphology) and Geology in 1973, that I am a graduate of Carleton University of Ottawa, Ontario where I obtained my Master of Science degree in Geology in 1977, that I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of British Columbia, and that I have been engaged in the study and practice of the geological profession for more than 40 years;

That I examined the Spillway property from May 31 to June 7, 2017;

That I am responsible for all of this report entitled “Geomorphological and Geological Surveys on the Spillway Property” dated effective July 2, 2017;

That I am the owner of the Spillway property; and

That as of the date of this certificate, to the best of my knowledge, information, and belief, this report entitled “Geomorphological and Geological Surveys on the Spillway Property” dated and effective July 2, 2017 contains all scientific and technical information that is required to be disclosed to make said report not misleading.

John Ostler; M.Sc., P.Geo.
Consulting Geologist

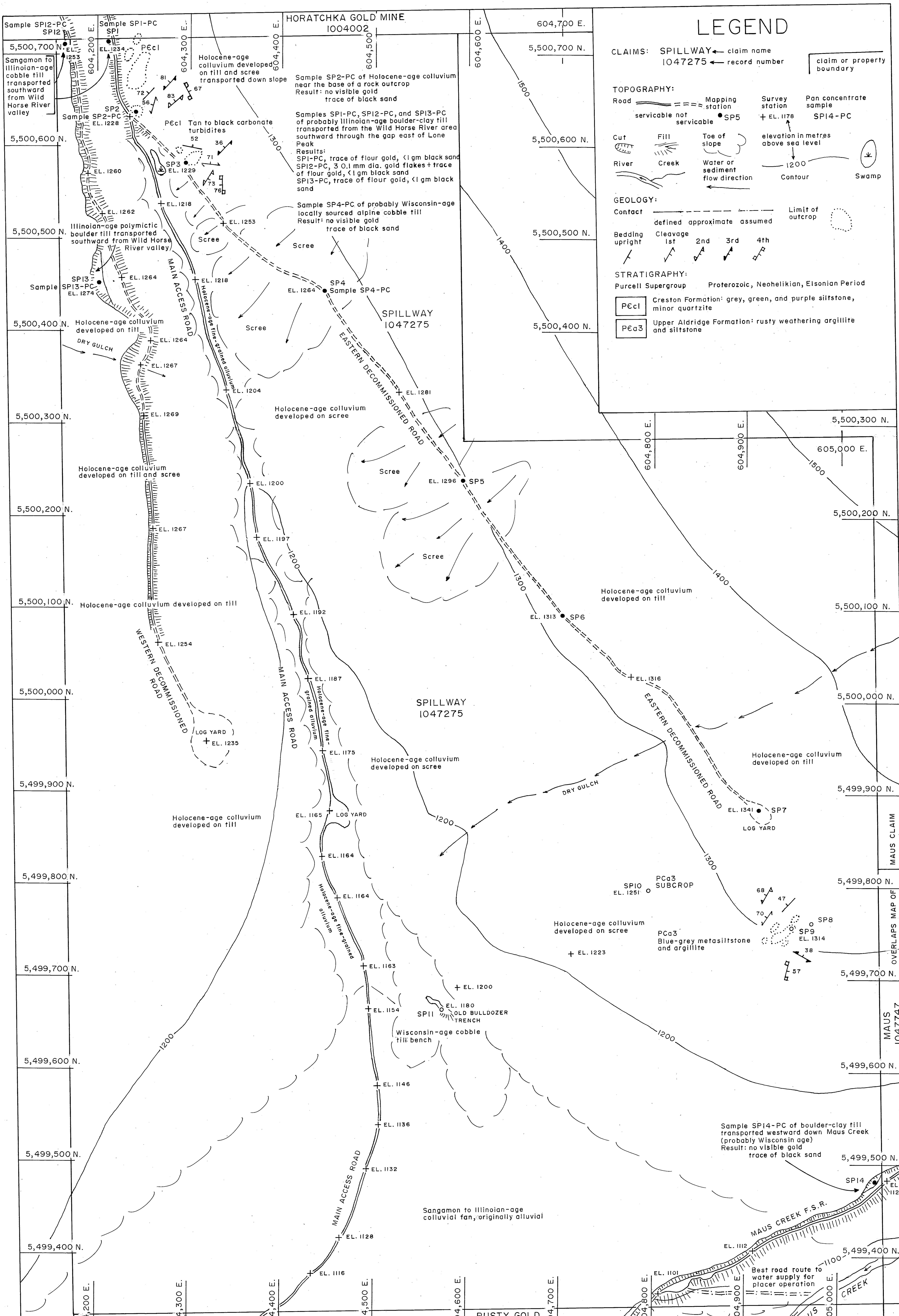
West Vancouver, British Columbia
July 2, 2017

APPENDIX 'B'

Sample Locations and Descriptions

Sample Number	U.T.M. Location	Sample Process	Lithology	Results
SP1-PC	5,500,718 N., 604,215 E.	Hand panning to black-sand tail	Illinoian-age boulder-clay till tspt. south from Wild Horse River	trace of flour gold < 1 gm black sand
SP2-PC	5,500,630 N., 604,236 E.	Hand panning to black-sand tail	Holocene-age colluvium near base of outcrop	no visible gold, trace of black sand
SP4-PC	5,500,436 N., 604,427 E.	Hand panning to black-sand tail	Wisconsin-age locally sourced alpine cobble till	no visible gold, trace of black sand
SP12-PC	5,500,716 N., 604,175 E.	Hand panning to black-sand tail	Illinoian-age boulder-clay till tspt. south from Wild Horse River	3 0.1 mm flakes + trace of flour gold, < 1 gm black sand
SP13-PC	5,500,440 N., 604,203 E.	Hand panning to black-sand tail	Illinoian-age boulder-clay till tspt. south from Wild Horse River	trace of flour gold, < 1 gm black sand
SP14-PC	5,499,718 N., 605,051 E.	Hand panning to black-sand tail	probably Wisconsin-age boulder-clay till tspt. down Maus Ck.	No visible gold, trace of black sand

NOTE: For locations on property, see Figures 19 and 20.



PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
JOHN D. OSTLER

N.
15°39' N. mag.

SCALE
0 50 100 150 200 m
0 100 200 300 400 500 600 ft

Figure 19

CASSIAR EAST YUKON EXPEDITING LTD.

GEOMORPHOLOGICAL and GEOLOGICAL SURVEYS on the SPILLWAY (1047275) CLAIM
SPILLWAY PROPERTY

49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C.: 082G 063
FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017


LEGEND
CLAIMS: SPILLWAY ← claim name
1047275 ← record number
claim or property boundary
TOPOGRAPHY:
Road
servicable not servicable
Mapping station
SP5
Survey station
EL. 1178
elevation in metres above sea level
Pan concentrate sample
SP14-PC
Cut
Fill
Toe of slope
River
Creek
Water or sediment flow direction
1200
Contour
Swamp
GEOLOGY:
Contact
defined approximate assumed
Limit of outcrop
Bedding upright
Cleavage 1st 2nd 3rd 4th
STRATIGRAPHY:
Purcell Supergroup Proterozoic, Neohelikian, Elsonian Period
PCcl Creston Formation: grey, green, and purple siltstone, minor quartzite
PCa3 Upper Aldridge Formation: rusty weathering argillite and siltstone
605,000 E.
605,100 E.
605,200 E.
605,300 E.
605,400 E.
605,500 E.
605,600 E.
605,700 E.
605,800 E.
605,900 E.
5,500,700 N.
5,500,600 N.
5,500,500 N.
5,500,400 N.
5,500,300 N.
5,500,200 N.
5,500,100 N.
5,500,000 N.
5,499,900 N.
5,499,800 N.
5,499,700 N.
5,499,600 N.
5,499,500 N.
5,499,400 N.
1900
1800
1700
1600
1500
1400
1300
1200
1100
SPILLWAY 1047275
OVERLAPS MAP OF SPILLWAY CLAIM
MAUS 1047747
PЄa3 Black carbonaceous argillite and silt beds
PЄcl Tan to black carbonate turbidites
DRY GULCH
Holocene-age colluvium developed on scree
Holocene-age colluvium developed on probably Wiscon-age till
Holocene-age colluvium developed on scree
Holocene-age colluvium developed on scree
Scree
SP15 EL. 1192
SP16 EL. 1220
87
69
69
23
57
78
76
29
45
60
MAUS CREEK F.S.R.
EL. 1128
EL. 1147
EL. 1155
EL. 1161
EL. 1177
EL. 1185
EL. 1206
EL. 1210
EL. 1220
EL. 1223
EL. 1234
SP14
Sample SP14-PC of boulder-clay till transported westward down Maus Creek (probably Wisconsin age)
Result: no visible gold
trace of black sand
MAUS CREEK
PROFESSIONAL
PROVINCE OF
JOHN D. OSTLER
BRITISH COLUMBIA
GEOSCIENTIST
N.
15°39' N. mag.
SCALE
0 50 100 150 200 m
0 100 200 300 400 500 600 ft
Figure 20
CASSIAR EAST YUKON EXPEDITING LTD.
GEOMORPHOLOGICAL and GEOLOGICAL SURVEYS on the MAUS (1047747) CLAIM
SPILLWAY PROPERTY
49° 38' 35" N., 115° 33' 04" W.
U.T.M.: 5,499,965 N., 604,608 E.
N.T.S.: 82 G/12, B.C.: 082G 063
FORT STEELE M.D., B.C.
JOHN OSTLER; M.Sc., P.Geo.
JULY, 2017