YUKON MINERAL EXPLORATION PROGRAM

TARGET EVALUATION PROGRAM ON THE LIGHTNING/ MCNEIL PLACER PROPERTY, YUKON

FINAL REPORT

YMEP – 17-062

NTS *105 M 14P*

Longitude 135°09' W, Latitude 63°55'N

Mayo Mining District

Claim Names: Creek Claim 1-11 and Creek Claim 1-22
Grant Numbers: P16789-99 and P16800-P16821

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INTRODUCTION

Following is the Final Report for YMEP #17-062, a Placer Target Evaluation Project submitted by H. C. Coyne & Sons, who have an option agreement with Gimlex Enterprises on the 100% owned Lightning and McNeil Placer Claims. The objective of this program was to follow up on a 2016 seismic refraction survey that identified placer targets on Lightning and McNeil Creek drainages. Six cased RC drill holes were drilled to investigate a number of intermediate and deeper seismic targets. Five holes on Seismic Lines 1 & 2 (McNeil) reached bedrock but the final hole on Line 6 (Lightning) ended in alluvium at 145 foot depth.

The Lightning/McNeil Placer property is an early stage placer gold project located on the Lightning creek road 7.5 km east of Keno City within the Keno Hill Map area (105M14). The area lies within the glaciated region of the Central Yukon and includes the placer-gold-producing basins of Duncan Creek, Thunder Gulch, Lightning Creek, and Granite Creek. Placer mining within these drainages has focused on buried interglacial deposits or outwash gravel that reworked interglacial deposits, and more recently on locally derived glacial till at Granite Creek.

RC drilling in 2017 clearly showed that the depth to bedrock was far less than interpreted from the seismic survey, but still 130 feet deep near the center of the of the valley on Line 1. Bedrock was phyllite not quartzite in all 5 holes on McNeil which is probably part of the reason for the deeper seismic interpretation of depth to bedrock.

Drilling conditions were extremely difficult in most holes on account of wet unconsolidated ground which resulted in very poor recovery especially in the most saturated areas. Surprisingly interesting gold values were obtained from intermediate and deeper samples in 2 different holes and anomalous values were found in three others. There was no way to determine how much gold may have been lost during drilling.

The property really needed some higher gold numbers to move forward in view of the complex glacial history, depth and drilling issues.

LOCATION – ACCESS - PHYSIOGRAPHY

The Lightning/McNeil placer property consists of 33 placer claims that are located on the Lightning creek road approximately 7.5 km east of Keno City, Yukon. Keno City is accessed from Mayo by 40 km of gravel road known as the Silver Trail Highway (Figure 1). The Project area is covered by the Keno Hill Map area (105M-14).

The Keno Hill Map area lies within the glaciated region of the Mayo Placer Watershed, Central Yukon (Figure 2 and 3). At the center of the map area is the Gustavus Range. Mount Hinton forms the core of the range and has many summits above 6500 feet. Two plateau uplands, Keno and Galena Hills, are separated from the Gustavus Range by Duncan Creek and Lightning Creek. The placer-gold-producing basins in the Keno Hill map area include: Duncan Creek, Thunder Gulch, Lightning Creek, and Granite Creek. Placer mining within these drainages has focused on either buried interglacial deposits or outwash gravel that reworked interglacial deposits. The area shows remnant geomorphological features from several periods of Cordilleran and Alpine glaciation, including glacial deposits (lateral and terminal moraines), cirques and U-shaped valleys, outwash channels, deltas and gravel plains. The Mayo Placer watershed is characterized by rolling hills and mountains with peaks up to 2000 meters. The area is sometimes referred to as the Keno Hill Silver District, as there has been extensive silver mining of polymetalic veins (Ag-Pb-Zn).

The property is centered at the confluence of Lightning Creek and McNeil Gulch near 63.92° N Latitude; 135.152° W Longitude (Figure 4).

McNeil gulch is a north trending valley with a large west and north facing cirque at the headwaters and a large terminal moraine complex in the lower 3000 ft of the valley. Upstream of the terminal moraine, the valley has the classic glacial formed U-shape. There are small glaciers in the cirque at the headwaters. McNeil creek was obviously dammed and diverted by the terminal moraine deposits and has cut a steep sinuous channel along the west side of the terminal moraine and enters the top of Kim Klippert's test mining area. The treed rollinghills(Figure 9) are the moraine with the u-shaped upper valley in the distance.

Lightning Creek is an east- west trending valley (almost perpendicular to McNeil) that served as a major meltwater channel draining the melting Cordilleran Ice sheet in Laude River Area at the end of the last (McConnell) glaciation. Below McNeil it becomes noticeably incised downstream. This down-cutting in Lightning Creek is attributed to lowering of the base level of Mayo River in post-McConnell time.

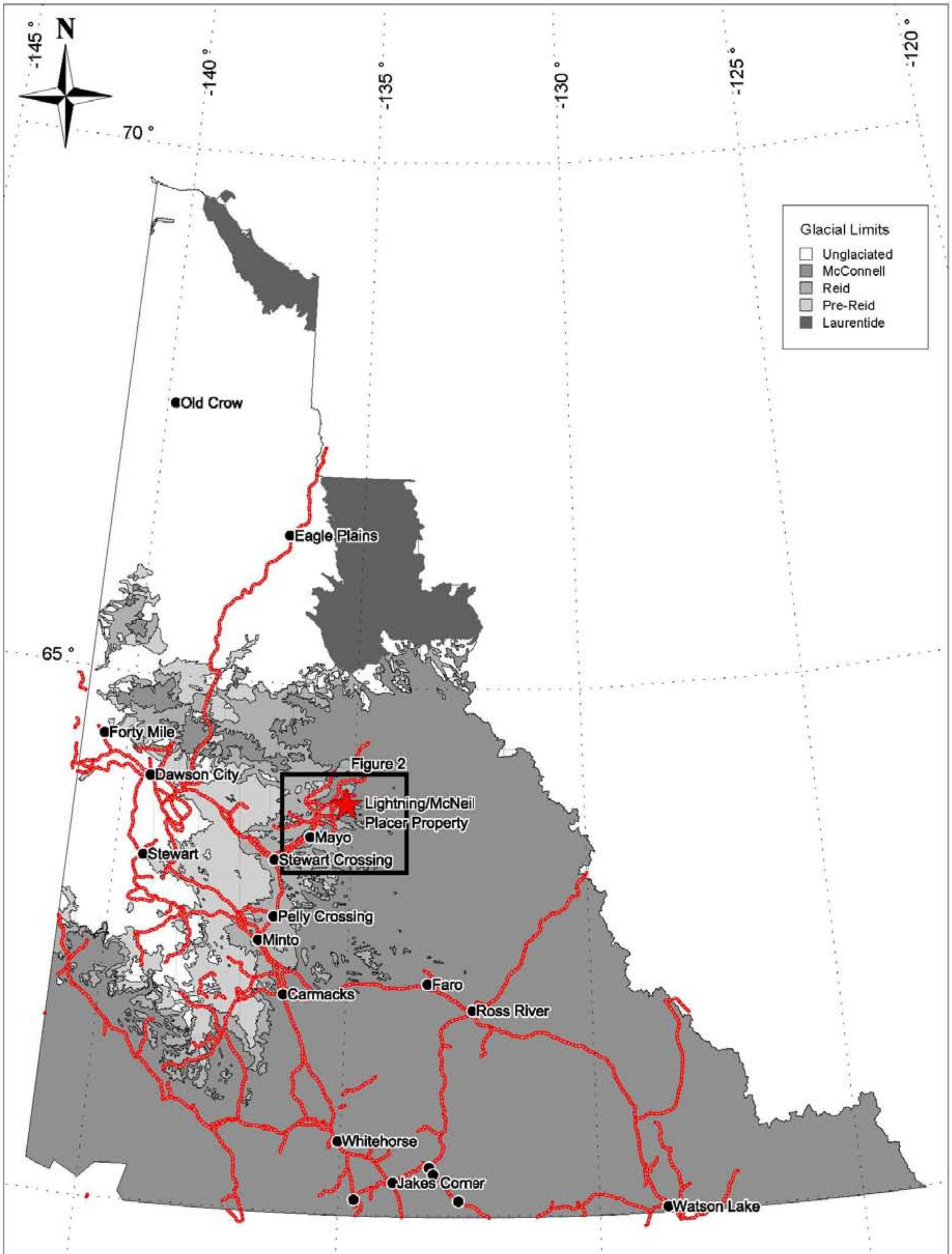

Figure 1. Project Location (Red Star) showing boundaries of glacial limits

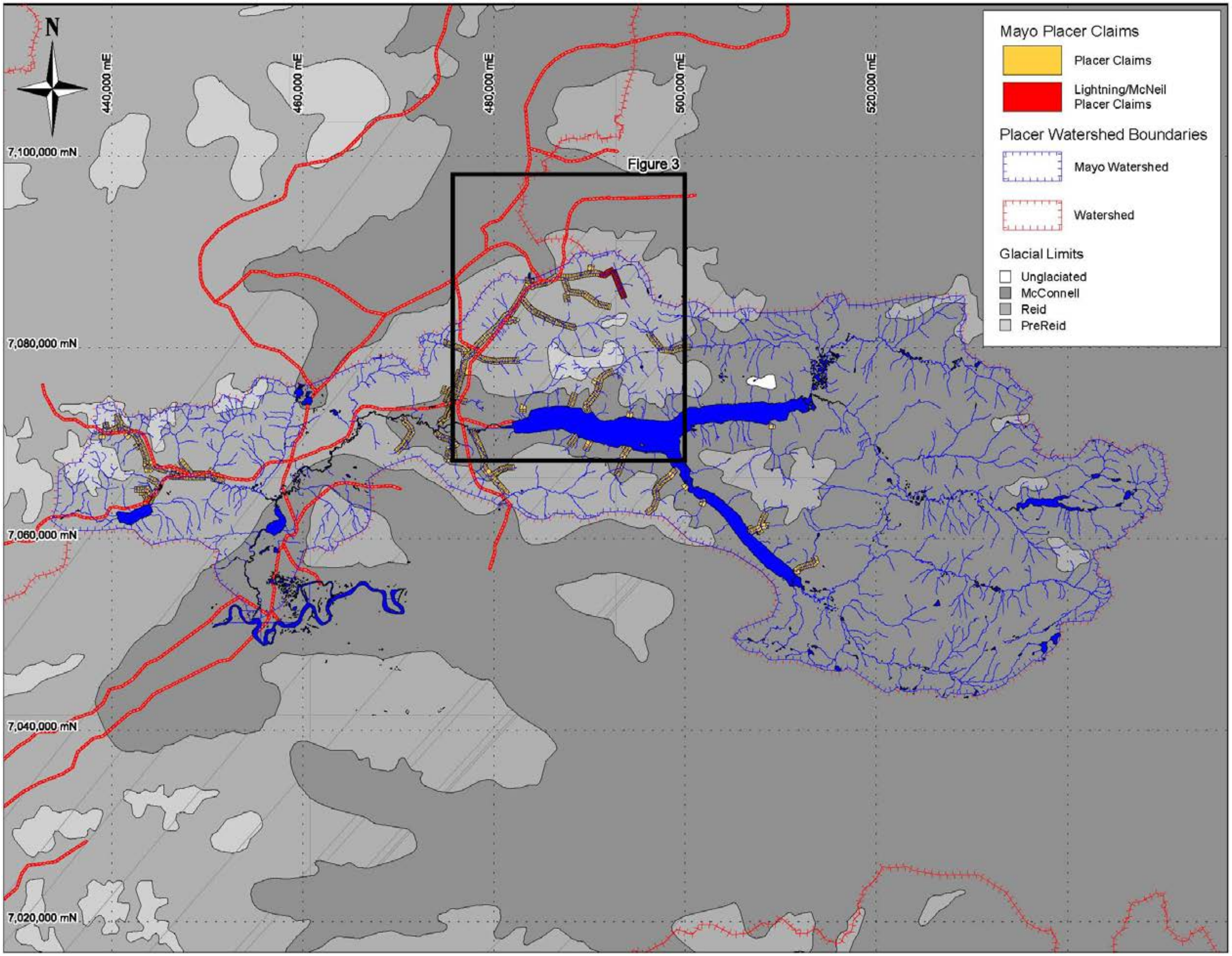

Figure 2. Project location (Red Claim Cells) showing Mayo watershed boundary, boundaries of glacial limits and Mayo Placer Claims

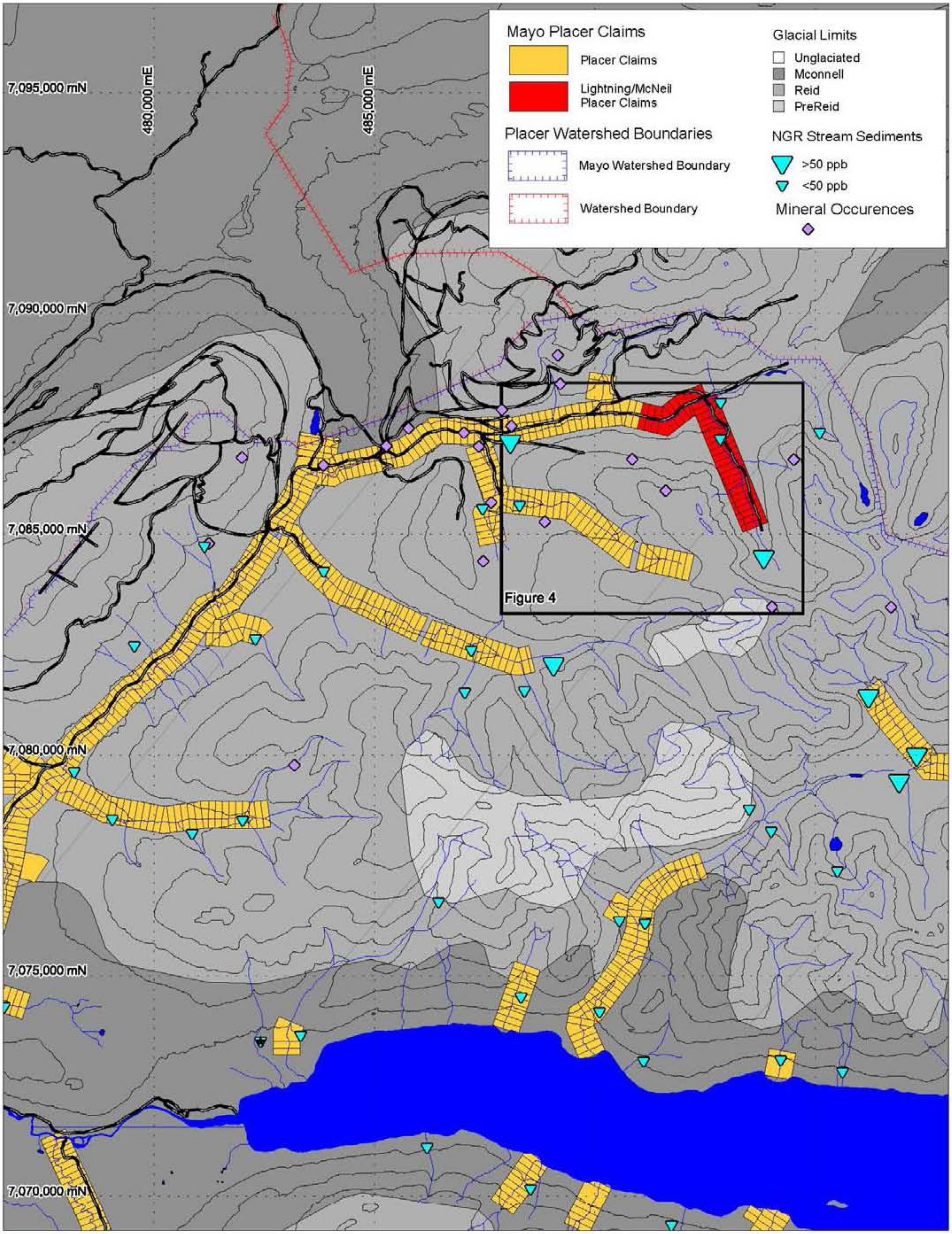

Figure 3. Keno Hill Map area showing Mayo placer claims boundaries of glacial limits, mineral occurrences, and NGR stream sediments

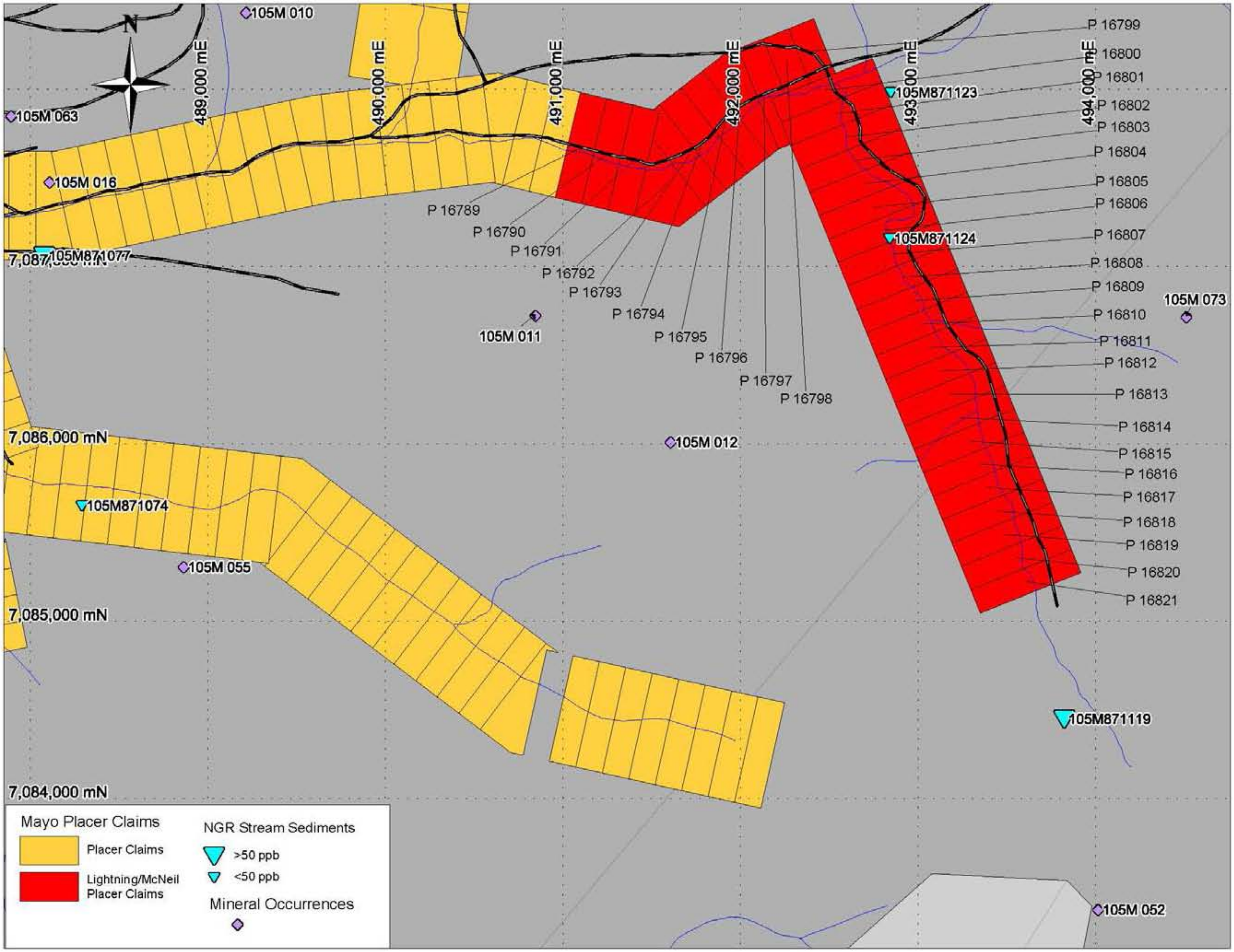

Figure 4. Project claim grant numbers (Red Cells), other Mayo placer claims, mineral occurrences, and NGR stream sediments

Table 1: McNeil and Lightning Creek Placer Claims included in this YMEP.

Grant Number	Claim Name	Claim Nbr	Claim Owner	Recording Date	Claim Expiry Date
P 16789	Creek Claim	1	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16790	Creek Claim	2	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16791	Creek Claim	3	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16792	Creek Claim	4	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16793	Creek Claim	5	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16794	Creek Claim	6	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16795	Creek Claim	7	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16796	Creek Claim	8	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16797	Creek Claim	9	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16798	Creek Claim	10	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16799	Creek Claim	11	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16800	Creek Claim	1	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16801	Creek Claim	2	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16802	Creek Claim	3	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16803	Creek Claim	4	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16804	Creek Claim	5	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16805	Creek Claim	6	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16806	Creek Claim	7	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16807	Creek Claim	8	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16808	Creek Claim	9	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16809	Creek Claim	10	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16810	Creek Claim	11	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16811	Creek Claim	12	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16812	Creek Claim	13	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16813	Creek Claim	14	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16814	Creek Claim	15	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16815	Creek Claim	16	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16816	Creek Claim	17	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16817	Creek Claim	18	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16818	Creek Claim	19	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16819	Creek Claim	20	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16820	Creek Claim	21	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08
P 16821	Creek Claim	22	Gimlex Enterprises Ltd. - 100%	1993-11-10	2018-09-08

REGIONAL GEOLOGY

Bedrock Geology and Mineralization

The Keno Hill map area is located in the northwestern part of the Selwyn Basin. This area of the basin is underlain by Upper Proterozoic meta-sediments (Hyland Group), Devono-Mississippian meta-volcanic and meta-sedimentary rocks (Earn Group), Mississippian quartzites (Keno Hill Formation) that were deposited in a shelf environment during the formation of the northern Cordilleran continental margin (Figure 5). Middle Triassic gabbro and diorite sills are dispersed within the Keno Hill quartzites. At some point in the Late Jurassic, the region transitioned from an extension or transtension and rifting tectonic regime to a compressive or transpression tectonic regime (Murphy, 1997). This change in tectonic regime is recorded by the regional deformation, metamorphism and displacement on large thrust faults, such as the Robert Service and Tombstone thrusts. This tectonic regime ended sometime before the emplacement of the 90-94Ma felsic plutons (Tombstone intrusions). The Tombstone plutonic suite includes the large Roop Lakes pluton, dated at 92.8 Ma (Roots, 1997), which intrudes the Keno Hill Quartzite approximately 12 km east of the Lightning/McNeil placer claims.

A contact metamorphic halo within the Keno Hill Quartzite extends as much as 4km away from exposures of the Roop Lakes pluton (Lynch, 1989a, b). Fault- and fracture-controlled hydrothermal veins within the quartzite extend from the margin of the metamorphic halo toward the west into the Keno Hill mining district. From east to west, veining is zoned away from the pluton (Lynch, 2005). Quartz-feldspar-tourmaline veins occur immediately west of Roop Lakes pluton. Outward from the quartz-feldspar-tourmaline veins are vuggy quartz-calcite veins. The vuggy quartz-calcite veins transition into the sulphide-rich, quartz-siderite veins of the Keno Hill silver-lead-zinc mining district. The regional zoning pattern suggests that gold may be found between Roop Lakes pluton and the Keno Hill district (Lynch, 1986).

Gold bearing veins in the Gustavus Range, like those associated with Minfiles 105M-011, 012, 052, 070, and 073, are thought to be the gold sources for placer gold in Lightning/McNeil Creek (Figure 5).

Surficial Geology

The current landscape of central Yukon is primarily a result of the multiple glacial and interglacial events that took place during the Quaternary period (Figure 6). Ice from both the Cordilleran ice sheet and local alpine glaciers from the Gustavus Range covered the valleys in the Keno Hill map area. From oldest to youngest these were the pre-Reid (early Pleistocene), Reid (middle Pleistocene) and the McConnell (late Pleistocene) glaciations.

Landforms resulting from the pre-Reid glaciations have undergone considerable erosion and are difficult to identify. Pre-Reid interglacial deposits are sometimes preserved under Reid glacial sediment, as is the case in Duncan and Upper Duncan Creeks.

The Reid glaciation occurred at least 200,000 years ago (Berger, 1994). Reid ice advanced into the map area from the east following the regional drainage. The main conduits for the passage of ice were the Keno-Ladue River, Granite Creek, Mayo Lake and South McQuestern River valleys. The Corilleran ice from Keno-Ladue River flowed up Faith Creek and combined with glacial ice emanating from Allen Creek, McMillan Gulch, and McNeil Gulch. The combined ice flowed westward down Lightning Creek and merged with the Keno-Ladue River ice advancing up Christal Creek. This combined ice flowed south into the Duncan Creek drainage. Glacial till and glacial fluvial deposits of this glaciation can be found along the Duncan Creek drainage. Till fabrics from upper Duncan Creek indicate that during the waning stages of the Reid glaciation alpine ice retreated prior to the Cordilleran ice and as a result Cordilleran ice advanced up upper Duncan Creek. The interglacial period between the Reid and the McConnell glaciations resulted in a number of alluvial deposits that are pre-served at surface and underneath McConnell glacial deposits.

The McConnell glaciation advanced into the map area between 17,000 and 20,000 years ago (Bond, 1997). The advance of the alpine glaciers originating in the Gustavus Range reached their maximum immediately preceding the Cordilleran ice. A lobe of Cordilleran ice advanced up Faith Creek from the Keno-Ladue River. The Cordilleran ice merged with the alpine ice but did not advance down Lightning Creek more than 1km west of the mouth of McNeil Gulch. Significant glacial till, glacial fluvial and alluvial deposits were formed in the map area with receding of the McConnell ice.

Placer deposit potential within the Keno Hill map area is prospective for three main reason: 1) gold bearing vein showings in and around the Gustavus Ranges (Yukon Minfile 105M-011, 012, 052, 070, and 073), 2) favorable stream sediment geochemical values (NGR – 105M-87-1077 – 210.5 ppb Au, 105M-87-1124 – 41 ppb Au. 105M-87-1119 – 254 ppb, 105M-87-1073 – 106 ppb), and 3) that with the exception of a few alpine glaciers originating in the Gustavus Ranges the area was largely free from the erosive forces of the Cordilleran ice sheet during the McConnell Glaciation.

Surficial geological mapping carried out by Bond (1998) indicates that the ground covered by the Lightning/McNeil placer claims is composed of Late Pleistocene McConnell glaciation till complexes including the McConnell valley glacier moraine at the mouth of McNeil Gulch, undivided Pleistocene and Holocene colluvium veneer, and undivided Holocene alluvial deposits (Figure 7).

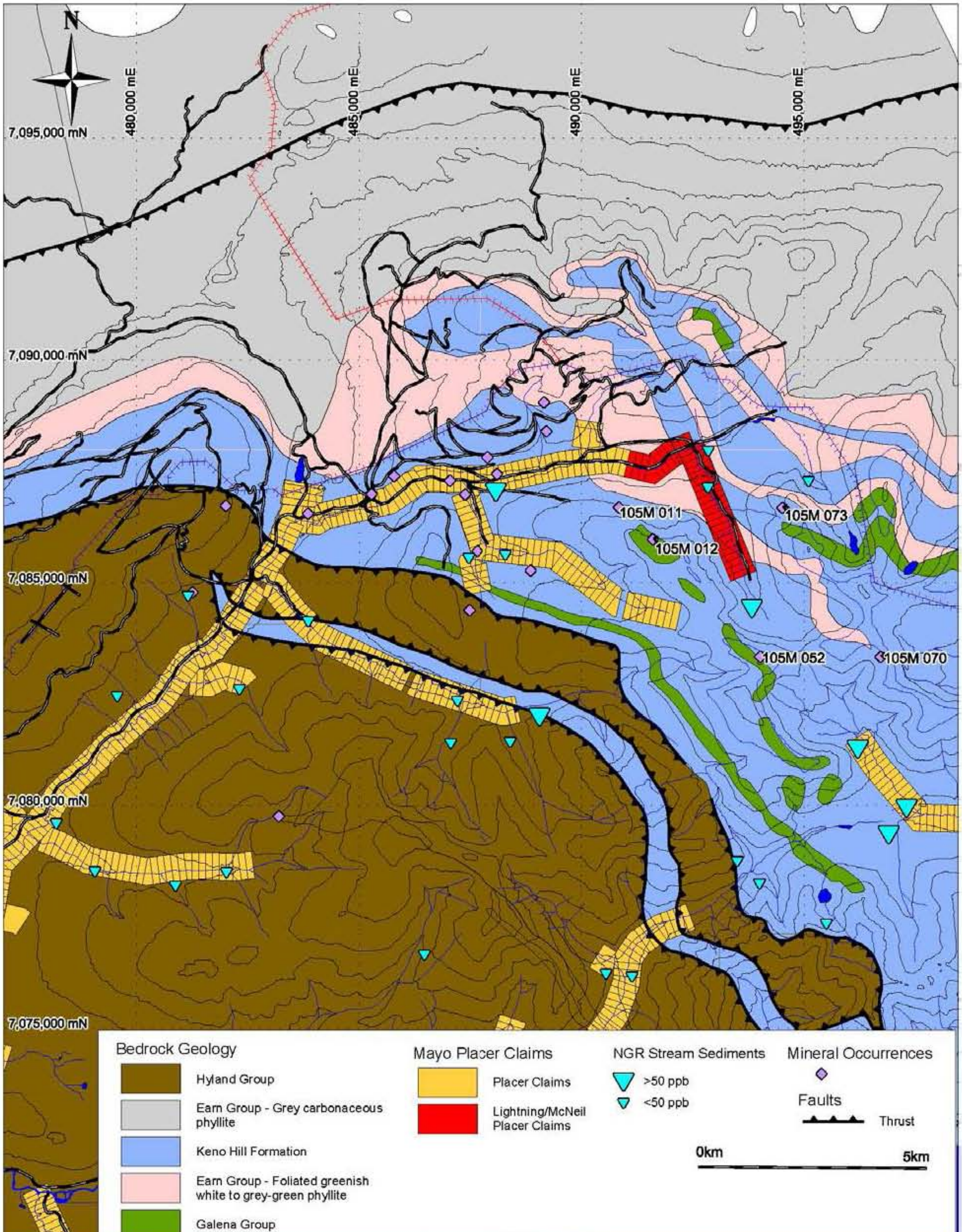

Figure 5. Keno Hill map area showing bedrock geology, minfile occurrences and Mayo placer claims

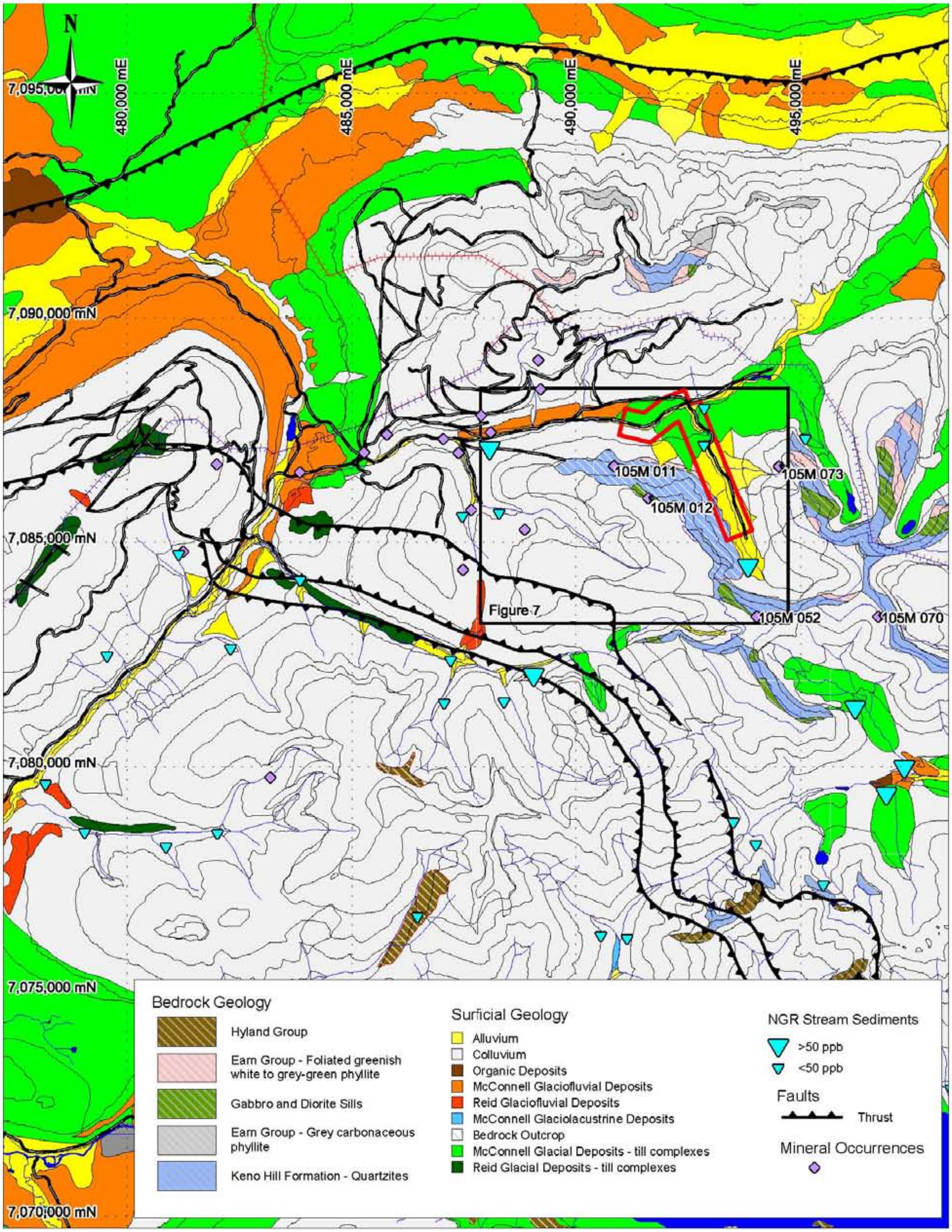

Figure 6. Keno Hill map area showing surficial geology and Lightning/McNeil placer claims outline

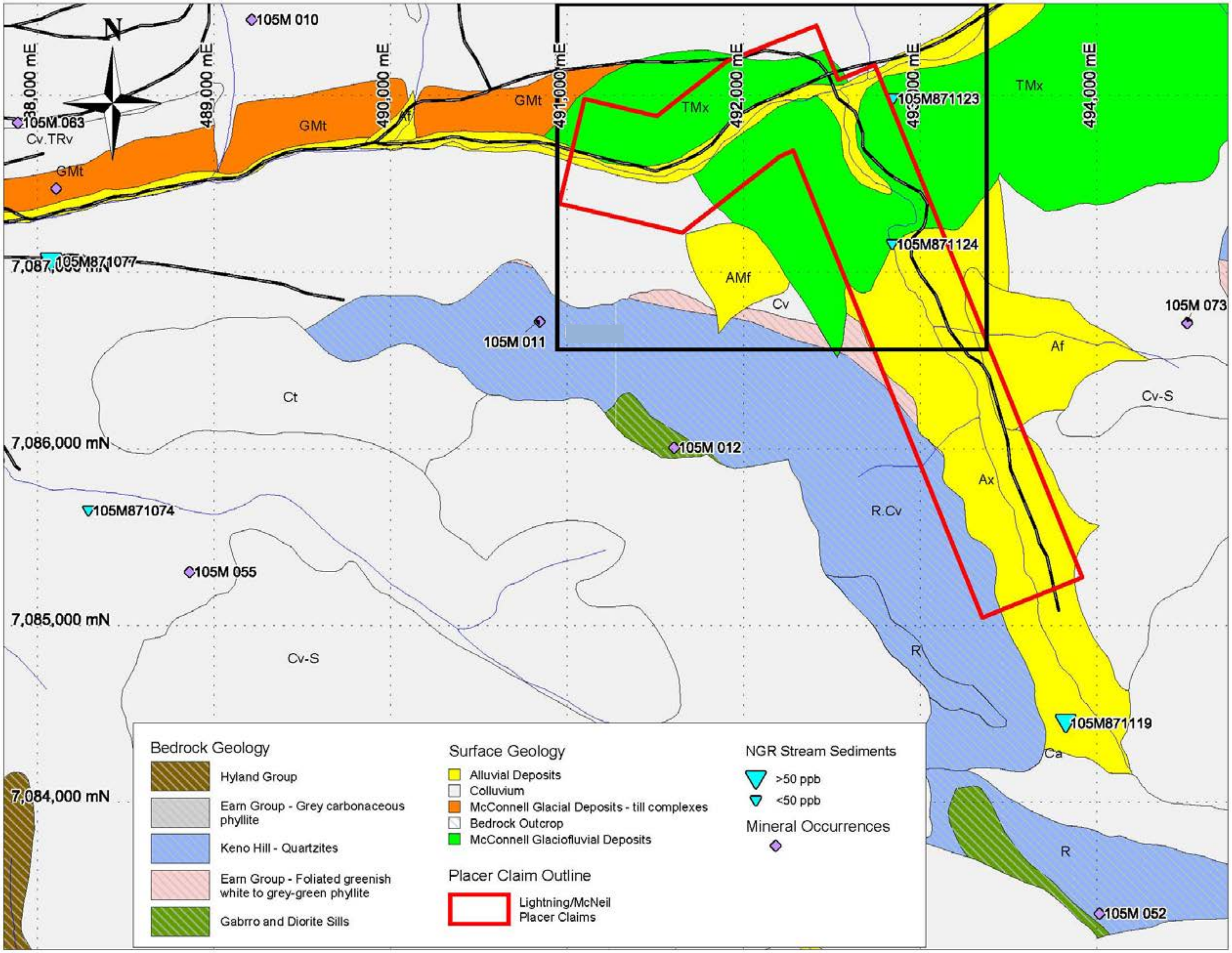

Figure 7. Surface geology covered by Lightning/McNeil placer claims and locations of mineral occurrences and NGR stream sediment samples

PROPERTY HISTORY

The placer claims included in this YMEP were staked by Kim Klippert in 1993 and from 1998 to 2001 Klippert carried out small scale mining and testing on the property. After the death of Kim the claims were offered for sale and Gimlex Enterprises Ltd. purchased 100% of the claims from Cheryl Klippert in the fall of 2014. Cheryl Klippert maintains a small royalty on any future gold production. The seismic survey and excavator test pitting done in 2016 is the only work done since that time
Apparently, Kim Klippert was not into paper work or record keeping. Very little technical information, maps or production records were found describing the work done from 1998-2001. He received funding from YMIP # 2000-6 and worked on both the placer and quartz claims but the report does not give any useful details about the placer work completed. There are some short write ups in the Yukon Placer Mining Industry reports (1998-2002) which are summarized below, on the work done by Klippert on Lower McNeil and from adjoining properties Lightning Creek and tributary Thunder Gulch, mined by Bardusan Placers (Claus Barchan). We have had several discussions with Claus Barchen about his experience and knowledge from many years of mining on Lighting Creek a few miles downstream of this claim block.

From 1998 to 2001 Kim Klippert opened a mining cut in the bottom end of McNeil Gulch in glacial moraine material. Gold values were said to occur from surface to the bottom of the cut at depths of 7.6 metres to 15.2 metres (25ft. to 50ft.). In an email to another miner offering some of the claims for lease Kim Klippert claimed to have tested between 3,800 to 4,600 m^3 (5,000 to 6,000 cubic yards) of glacial material averaging $4.00 USD per cubic yard when the gold price was $ US 257USD/oz (equivalent to~485mg of Au per cubic yard at $257USD/oz). He also stated that Hans and Claus Barchan had drilled their claims below his claim block and reached bedrock at depths of 19.8 metres (65 feet) . Kim further stated, that while the values were interesting, without the resources and equipment to test or mine deep ground, Kim was not able to advance exploration on Lightning Creek.

Some of the work funded by YMIP #2000-6 included 3 trenches. A cubic yard sample collected from the bottoms of each trench and was concentrated with a sluice box and returned gold values from $1.25USD to $3.05USD per cubic yard (~150mg to ~370mg per cubic yard assuming a gold price of $257USD/oz). Unfortunately the report does not include the specific gold values for the individual trenches. The locations of these three trenches are all within areas where the creeks have eroded significantly through the moraine (meltwater channels). The gold bearing moraine materials are plausibly being derived from glacial erosion of much older interglacial placer deposits in McNeil creek and/or gold bearing veins in the Gustavus Range to the south.

Downstream, Bardusan Placers mined on Lightning above Thunder Gulch from 2003-2009. At the mouth of Thunder the ground was 18.3 metres (60 feet) deep and went to 70 feet and greater upstream, and also the gold was finer and flatter (90% minus 12 mesh) above Thunder Gulch.

In a personal communication, Claus Barchan explained that they had difficulty stabilizing their pit walls in cuts on Lightning and in 2010 elected to move and focus their efforts on mining Thunder Gulch, where they continue to mine today. He also stated that he recalled and had seen records of a mid -1980s drilling program done by Joris Brinkerhoff in which a couple of reverse circulation drillholes encountered bedrock at depths of 50-55 feet from surface near the junction of Lightning and McNeil. Records of these drill holes have not yet been located. In the fall of 2016 during a visit with local miner Mel Zeiler on Lower Duncan Creek the Brinkerhoff drilling was discussed and it turned out that Mel was working for Brinkerhoff in the mid 1980's and was at the drill when a small nugget came up and was identified by Mel from one of the holes near McNeil. He said the holes were along the road as it was then and that the drillers has just arrived from the Alberta oil-patch and were not experienced with placer drilling or sampling.

In summer of 2014, Jim Christie visited the site and hand panned 15 samples of material from cut walls of previous mining areas. There was no difficulty finding gold in sediments on the property and all pans contained fine gold, however, it was not weighable for individual pans and is only an indication that there is the potential for a placer concentration of gold on the property The challenges associated with the target types of deposits (depth, boulders, complex stratigraphy and potential for multiple gold horizons, etc.) make the traditional auger drill used in the Klondike ineffective. The costs to bring in an alternate drill, potentially dual rotary, sonic or reverse circulation, is very high due to high mobilization costs and per foot costs.

Forty two excavator test pits completed during 2016 focused on evaluation of the economic potential within the McConnell terminal moraine complex on Lower McNeil and the underlying till complex. Of these 20 contained weighable gold and 10 more had visible colours but only 2 were high enough to be near economic grade. No patterns or continuity of grade were identified except that there was more gold in materials that contained stream washed pebbles and sandy matrix material and less in angular rocky till. The work was sufficient to conclude that there is no economic concentration of gold in the youngest McConnell age terminal moraine complex on Lower McNeil Creek.

The untested potential on the claims comes down to intermediate and deeper interglacial or preglacial targets that because of depth, groundwater and large boulders can only be tested by drilling.

Figure 8: McNeil Creek looking upstream (SE) from north side of Lightning Creek.

Figure 9: Lightning Creek valley below McNeil.

Figure 10: RC Drill with compressor in tow. Casing and other drilling equipment is carried in the steel basket chained to the blade.

Figure 11: RC Drill on Gimlex equipment trailer about to unload at Lightning Creek.

Figure 12: RC Drill, compressor and cylone on Hole #6. (above)

Figure 13: RC drill on Hole #6. Sample delivery elbow above drill head feeds into the black hose leading to the cyclone. 1” steel wear plate visible on the top of the elbow. (left)

Figure 14: Dry sample collected under cylone on Hole #6. (left)

Figure 15: RC sample buckets from Hole #3 – many very wet but some semi-dry. (below)


Figure 16: Geologist sieve sample till with subrounded alluvial components and mixed rock types.


Figure 17: Geologists sieve sample RC rock chips at bedrock contact. Dark greenish grey chips are phyllite.

Figure 18: Longtom used to concentrate drill samples.

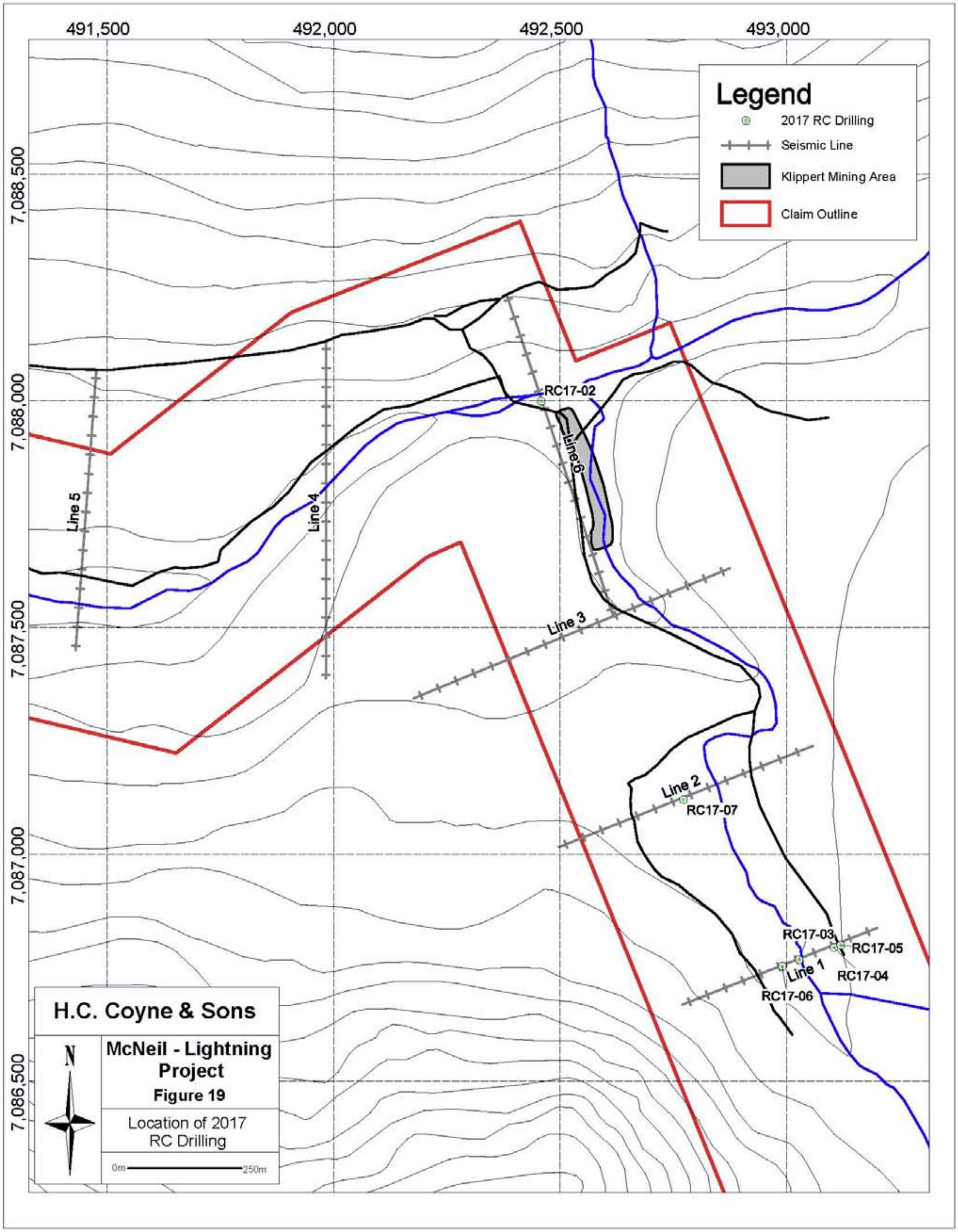

Figure 19: Map showing seismic lines and the 6 – 2017 drill holes.

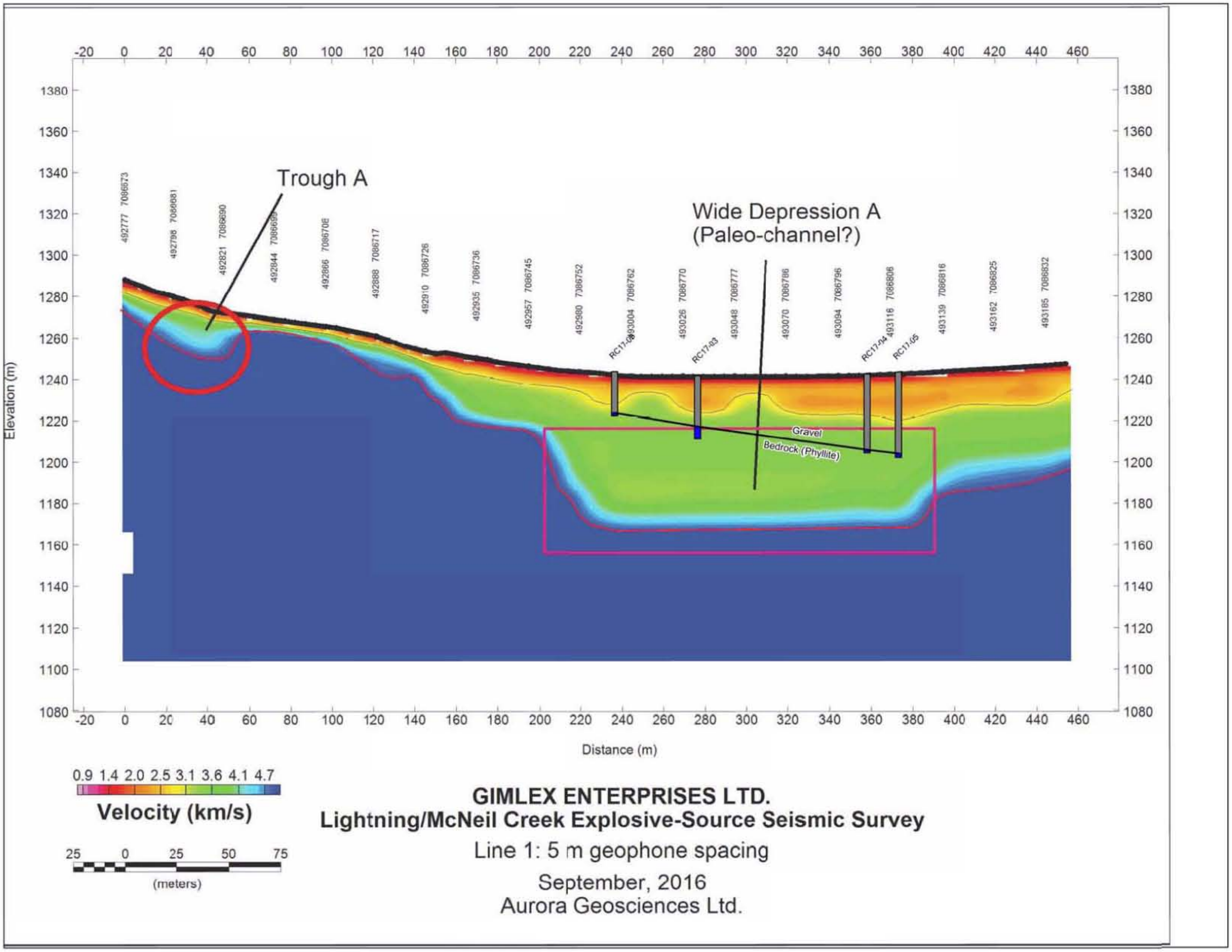

Figure 20: Seismic Interpretation and 4 – 2017 RC drill holes on Line 1 on McNeil.

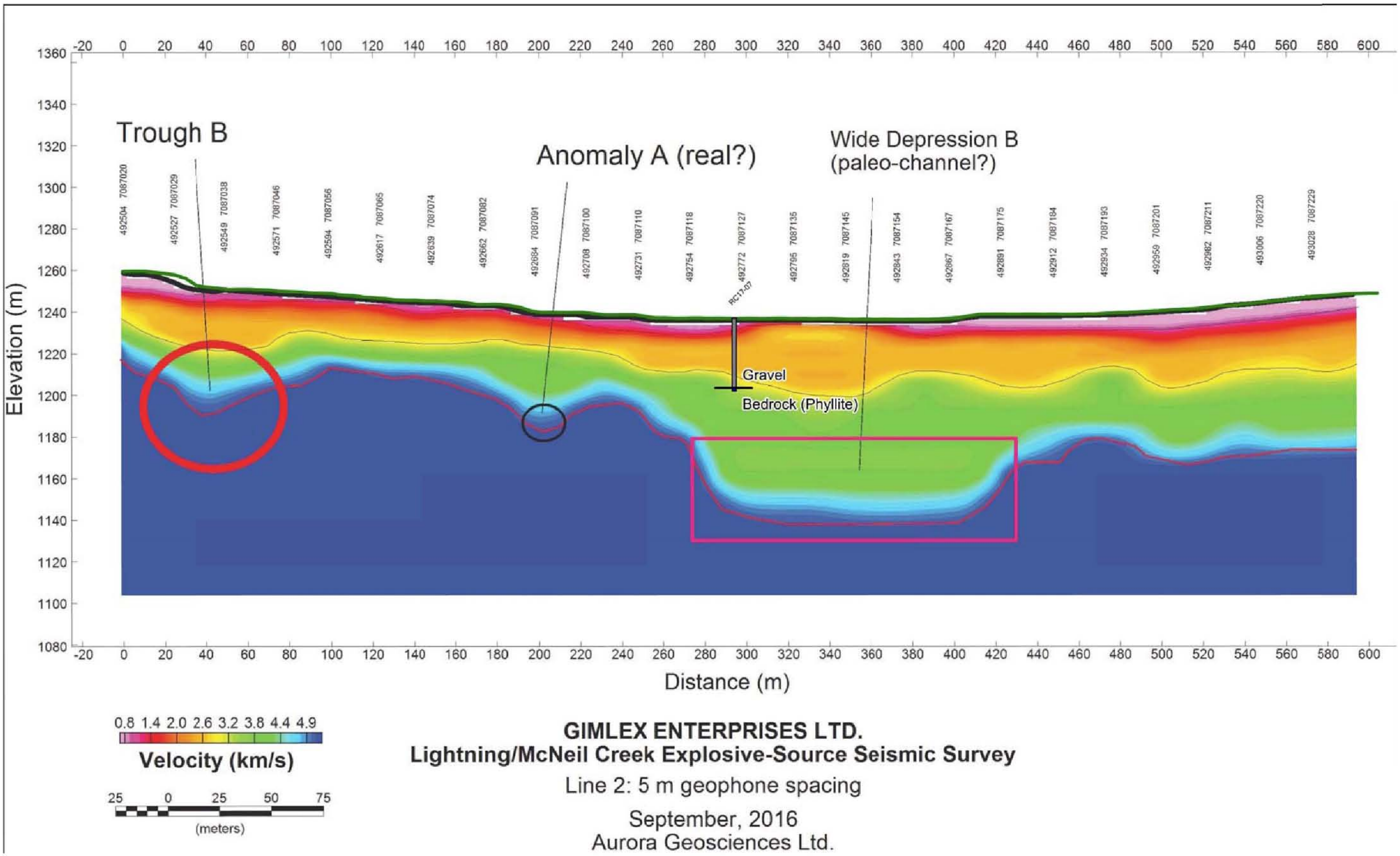

Figure 21: Seismic Interpretation and 2017 RC drill hole on Line 2 on McNeil.

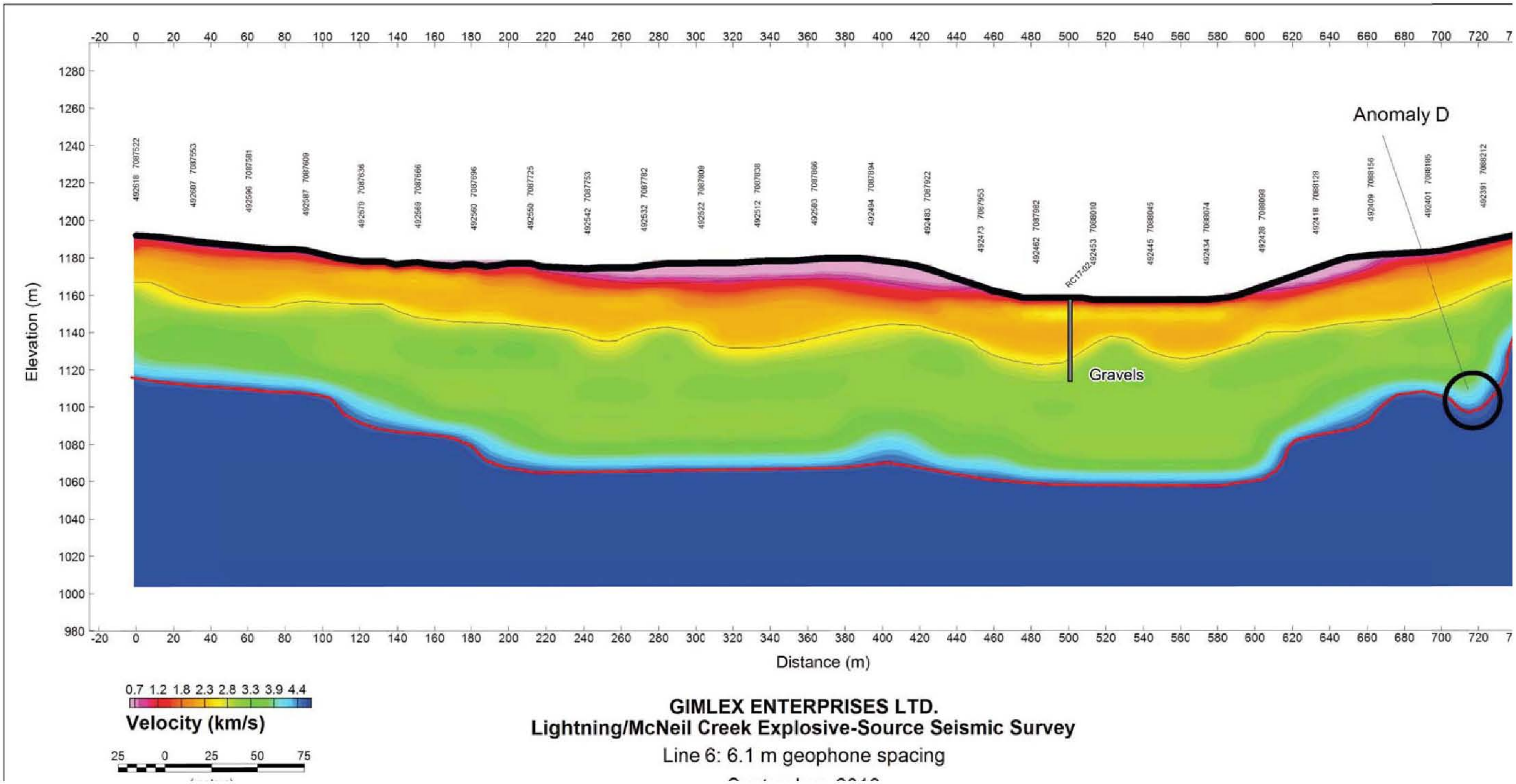

Figure 22: Seismic Interpretation and 2017 RC drill hole on Line 6 at Lightning Creek

PROGRAM RATIONALE

Placer gold is widespread and easily panned from old workings, test pits and road cuts on lower McNeil and Lightning creeks from a variety of materials including glacial moraine, glaciofluvial, and post-glacial sediments. The moraine materials are gold bearing apparently being derived from pre-existing placers in McNeil creek and gold bearing veins in the Gustavus Range to the south. There is clearly potential for an economic concentration of gold within these drainages. Knowledge of the placer geology at the site is limited by poor exposure, lack of meaningful records from previous work and the dominant overprint of a large terminal moraine complex from the McNeil valley glacier (McConnell age) covering the area around the McNeil/Lightning confluence.

Excavator testing of the terminal moraine complex in 2016 showed that gold concentrations are erratic and much lower than what is feasible for commercial placer mining, and the probability of discovering a near surface economic deposit is very low. The seismic survey completed in 2016 indicated that deeper placer targets exist although the deepest bedrock channels identified were too deep for conventional open pit placer mining and would need to be of exceptional grade to permit some unorthodox form of underground extraction. Shallower targets identified by the seismic work could be meltwater channels related to the melting of McConnell ice or much older interglacial stream channels

All of the targets that were identified by the seismic work are too deep to be evaluated by excavator trenching and can only be tested by drilling. There are a number of drilling techniques that might be applicable but there are also limitations particularly in respect of obtaining reliable samples for placer evaluation and the size and weight of the drilling equipment. There was no perfect drill rig available for a small job in central Yukon. The options were a mid-size sonic drill equipped to extract a 4 ½ inch core sample versus a light weight RC drill equipped to drill a 6 inch cased hole to 145 feet and then continuing with 4 ½ inch conventional RC drilling. The RC rig was selected because of its proven ability to drill bouldery ground and smaller size, although it was known that there were sampling issues in wet ground such as expected in Lightning Creek. McNeil was expected to be frozen at depth under the wet surface layers but no permafrost was found there, and there were definite sample collection and recovery issues. Prior to moving the drill to McNeil there was a chance to try it drilling 35 holes at Dublin Gulch for Victoria Gold. Most of the holes were dry, recovery was good and drilling hard granitic boulders was not a problem. Sections of a few of the holes were wet but the casing sealed the water and good recovery was restored in most instances.

DRILLING EQUIPMENT

The RC Drill with a removable forward casing and equipment carrying basket and compressor in tow is shown on Fig. 10. It is mounted on a small excavator body and has a small steel blade that carries the basket but can also do minor clearing and leveling when the basket is removed. The large air compressor mounted on the trailer was set at 650 CFM @ 350 psi for drilling and sample return. The drill was transported to site on

Gimlex’s small equipment trailer (Fig. 11), and the compressor was towed by a 1 ton pickup. Gimlex provided a mid-size PC200 excavator to assist with moving equipment and samples and drill site building.

The compressor was equipped with 100 feet of airline and could be setup away from the drill (Fig. 12) and the cyclone for sample collection could be set up as much as 50 feet away. During drilling the RC bit engaged a lug in the casing bit such that the down the hole hammer advanced the casing and the RC drill string as a unit and the cuttings from both bits were carried up the RC drill rods and delivery tube to the cyclone where the sample was collected in buckets (Figs. 13-15). Drilling progressed fairly quickly and the geologist and sampler had to work fast to properly log and sample the cuttings and mark the sample interval on each pail and keep them in consecutive order.

SAMPLING AND PROCESSING

While the sampler was busy collecting and marking sample buckets the geologist was continuously examining the cuttings and recording data. An important tool was a small kitchen sieve which could quickly collect a sample from the cyclone and then be washed such that the rock chips could be examined interpreted and recorded. See (figs. 16-17) and copies of the geologist Will Shackel’s field logs in the appendix. When the hole was completed the geologist was able to examine all of the buckets and determine geology based sample intervals and mark the buckets for processing through the longtom by the technician (Fig. 18). Individual samples were clearly marked and kept separated so there would be no confusion during processing. They were loaded into a steel sling basket and carried by the PC200 excavator to the longtom site or to a pickup truck for transport to the longtom.

At the longtom the technician processed the samples bucket by bucket carefully washing out the pails and then the contents over a finger grizzly and expanded metal and angle iron riffles. Larger rocks on the grizzly were washed with a garden hose sprayer and then discarded while finer material fell and was washed through the riffles. When the sample was finished water to the longtom was shut off, the riffle run removed, and a large aluminum bin was placed on the steel frame at the end of the unit. The longtom was cleaned into the bin using the garden hose sprayer and all the mats were washed out in the bin. Excess water was discarded and the sample was transferred to a smaller plastic container and then safely stored in an enclosed trailer until there was time for further processing and recovery of any contained gold. After drilling was finished all samples were sieved and the minus 12 mesh fractions were transferred to large size zip lock freezer bags. The plus 12 mesh was carefully panned by the geologists and technician and some coarse gold was recovered and placed in the corresponding freezer bag with the fines. The samples where then packed in larger plastic bins with lids and taken to Dawson City were they could be sieved and panned down to about 1 cup of material under more controlled conditions. The samples were then run on a miller table where the individual grains of gold could be recovered and then dried and weighed on an electronic scale accurate to 2 mg.

2017 DRILLING PROGRAM

The drill and supporting equipment was moved to site on Sept 3, 2017. Because the program would be short accommodation for the crew was arranged at the Silver Moon Bunkhouse in Keno City a 30 minute drive from the property rather than setting up a camp. Drilling started the next day on McNeil Seismic Line 1 at hole #6 on the west side of the valley near the base of slope(numbering of holes is as proposed, not in order of drilling).The hole was entirely dry and recovery was good but only trace amounts of gold were recovered from the samples. Bedrock comprised of dark bluish grey phyllite was intersected at depth of 65 feet, surprisingly shallow in view of the seismic interpreted depth of about 200 feet.

Summary Table

Summary Table of RC drilling September 4-13, 2017

Drillhole	Easting	Northing	Elevation	Final Depth (ft)	Drilling Order
RC17-01	Not drilled	Not drilled	Not Drilled	N/A	N/A
RC17-02	492457.71	7087998.7	1162.831543	145	6
RC17-03	493027.04	7086767.1	1252.714111	100	2
RC17-04	493104.18	7086793.9	1244.783447	125	3
RC17-05	493118.51	7086798.8	1243.581787	135	4
RC17-06	492989.94	7086752.2	1257.040039	70	1
RC17-07	492771.65	7087120.0	1240.697754	115	5
			Total	**690**	

The following day the drill was moved further east on Line 1 out onto the valley floor where everything was wet. The creek was mostly in a channel but there was water flowing everywhere on the dense rocky till a few feet below the mud and organic surface layers. A drill site was constructed from rocky material a few feet above the water level near the planned site for hole #3 and the compressor was on dry higher ground. The hole was wet all the way especially the upper 60 feet and the bottom of the hole in bedrock below 86 feet. Significant gold (24 mg) was recovered from the interval 40-55 feet which was logged a possible interglacial stream alluvium, was extremely wet and had very poor sample recovery. This depth is similar to one of the shallow seismic features on Line 1. Bedrock described as grey chloritic phyllite was intersected at 80 feet again much less than the 200 foot seismic interpretation. No gold was recovered from samples deeper than 55 feet in hole#3.

The next hole labeled #4 towards the east side of the valley could not be drilled where planned because of water and had to be located about 10 m east but still tested the same broad seismic target. The hole was dry to 80 feet in till and colluvium and 3 samples from 10-80 feet contained weighable gold (10-8-8 mg). Below 80 feet the hole was mostly wet and recovery was fair to poor in material with mixed lithologies and some subangular to subrounded rock chips that may be in part alluvial. From 110-120 feet was dense grey brown basal till. Bedrock from120-125 was foliated micaceous quartzite and graphitic phyllite the contact again being shallower than the seismic interpretation.

Because of the wet conditions and poor recovery the geologist decided to combine the buckets from 80-125 as a single sample and surprisingly 86 mg of gold was recovered from it and some of it was coarse (nuggety). This was the highest value obtained and is an indication that a deep paleochannel may exist on McNeil.

The next Hole #5 further east on Line 1 is close to the edge of the wide depression shown on the seismic profile and is at the planned location. It was wet to 30 feet then drier below to 45 feet all in till. Some subrounded rock chips, alluvial ?, were logged in till from 35-40 feet and the sample from 15-45 feet contained 44 mg of gold. This depth coincides with a weak higher velocity layer shown on the seismic profile. While not a basal till this material may be similar in origin to the till being mined on Granite Creek on the other side of the mountain. Below 45 feet the hole was wet to 53 feet then dry 65-70 feet then very wet again with fines washing out and poor recovery. From 45-130 the hole was in a till/alluvial complex and then green phyllite bedrock from 130-135. Three samples from this lower section contained anomalous gold (12-14-20 mg) of gold.

In view of the shallower than expected depths to bedrock all across Line 1 it was decided to try a hole near the center of the wide seismic depression on Line 2 where bedrock was predicted to be over 300 feet deep. Hole #7 was located just west of center on the seismic target slightly above the wet area on the valley floor. The hole was mostly dry with good recovery to 85 feet then very wet with poor recovery in sloppy clay rich grey brown till. Bedrock at 109 feet was wet green phyllite with minor vein quartz. Weighable gold was found in all samples ranging from 2-16 mg.

Drilling then moved downstream to Lightning Creek just below McNeil. Hole #2 was drilled on the south side of Lightning near the ford and was wet all the way. It was stopped at 145 feet upon running out of casing and unmanageable ground and water conditions for uncased RC drilling. There was a definite alluvial component in the samples all the way. The highest gold value (34 mg) from 60-90 feet was a till/alluvial mixture changing to wet abrasive sandy alluvium below 75 feet. Gold was consistent 14-16 mg from 10-60 feet but dropped to 4 mg below 90 feet. Recovery was poor for the entire hole and bedrock was not reached. A second hole was originally planned for Lightning but was not drilled on account of the depth and conditions in hole #2 and the surface was part of multiple creek diversions at the planned site.

DISCUSSION OF SEISMIC RESULTS

The 2017 drilling results have shown that the depth to bedrock on Seismic Lines 1 & 2 is much less than interpreted on the seismic profiles and the eastward sloping bedrock surface plotted from drill hole intercepts shown on Fig. 20 does not resemble the flat bottomed wide depression interpreted from seismic data. Not being a person trained in seismic interpretation the author cannot be critical of the method used and the effort made by Aurora's crew to obtain good data was impressive. One of the problems with the survey was no bedrock exposure anywhere on the seismic lines to sync with the seismic data, nor could any bedrock be found in deep excavator trenches along the lines. In the end Aurora assumed a travel velocity consistent with quartzite which outcrops on the slope on both sides of McNeil valley but drilling confirmed that the valley is actually underlain by phyllites which would have very different velocity properties including directional travel velocity differences related to the attitude of foliation. Perhaps a different re-interpretation could be made using the bedrock drill intercepts on McNeil. On Lightning re-interpretation could be more challenging because panels of quartzite and phyllite are projected to cross Lightning Creek on the regional geology map.

The following four paragraphs were part of the YMEP application and are included for Background information only.

Aurora's interpretation of the seismic data created a surprising picture of interesting although very deep depressions in the bedrocks surface underlying Lightning and McNeil Creeks. These depressions appear to be deeply buried but otherwise intact ancient stream channels that potentially could host significant placer gold concentrations. Target depth to bedrock is about 320 feet on Line 2 on McNeil and depth to bedrock appears to decrease to 240 feet on Line 1 some 1400 feet upstream. Projecting the same gradient further upstream on McNeil would place the old channel at surface about 4200 feet upstream of Line 1. Similarly the Medium velocity (yellow layer) decreases from depth of 125 to 75 feet from Line 2 to Line 1 indicating that the intermediate velocity target depth may be less further upstream on McNeil. Potentially there could be shallower more conventional placer mining targets upstream of the seismic survey on McNeil Creek. Downstream on Lightning a broad 400+ foot deep channel is buried under the west bank of the creek probably inaccessible from surface.

One problem with the interpreted models is that there has been no bedrock found in outcrop or excavator trenches to correlate with the seismic data. The travel velocity used for interpretation of the bedrock surface (red line on profiles) is about 5 km/s, a value known to be consistent with typical values for quartzite. There are however phyllite layers within the Keno Hill quartzite and the underlying Earn Group is predominately phyllite and does appear to project through the property based on regional mapping on nearby hillsides. Phyllites would be expected to be characterized by slower travel velocities around 4.5 km/s and would be near the blue/green transition area on the profiles. Use of the slower velocity to interpret bedrock depth would decrease depth by 30-70 feet but would not otherwise significantly change the profiles, and the targets are still very deep.

Four layers have been interpreted in each of the profiles and marked with black lines. The top of the next layer above bedrock at about 3 km/s where the green transitions through yellow to orange on the profiles and appears to be a surface characterized by numerous depressions that could be of interest. This feature could be an interglacial erosion surface (pre or post Reid) where placer gold accumulations might have formed in streams that occupied the depressions. These are shallower more conventional placer targets 50-75 feet deep on McNeil Line 1 but deeper downstream and on Lightning. These shallow features are directly above the deep bedrock depression on Line 1 and could be evaluated using the same holes that would test the deep target.

An interesting 30-50 foot deep target is indicated on Line 6 under Lightning Creek. This is a higher velocity panel about 300 feet wide extending across the valley. It was in this general area in the mid 1980's that a fingernail sized nugget was recovered from a reverse circulation drill hole by Mel Zeiler, now a miner on lower Duncan Creek. The drillers thought the hole was in bedrock at around 55 feet contrasting with seismic interpreted depth of about 300 feet. This hole may have ended in a large boulder which are common in the area. Under the shallow target at depths of 110-120 feet are other intermediate velocity targets on Line 6 which may be older interglacial channels and could be evaluated by deepening the same holes testing the 30-50 foot deep target.

CONCLUSIONS

The RC drilling with casing method was successful to the degree that the wet ground conditions allowed. Without casing it would have been less so and with high risk to the drill rods and bit in saturated rocky unconsolidated ground. As it was, drilling was possible but limited to 145 feet equal to the amount of casing on site and fortunately this was sufficient to reach bedrock in all five holed drilled on McNeil. Bedrock was not reached at 145 feet on the single hole drilled on Lightning Creek below McNeil. A reasonable conclusion is that there is little or no permafrost on the claims in McNeil or Lightning and there is lots of water. This is a significant factor to consider in planning future work.

In terms of information gained from the drilling the following are significant:

1. The depth to bedrock on McNeil is much less than suggested by the seismic interpretation but still quite deep, 130 feet in hole #5.

2. The shape of the underlying bedrock surface is more like a wide "U" shaped depression than a wide flat bottomed depression as seen on Seismic Section 1 (Fig. 20) and the drill holes are all on the west side of center defining a surface that is easterly dipping. Bond, J.D. 2017 viewed hole #5 on his air photo stereo viewer and it appeared to lie near the geographic middle of McNeil valley and he suggested that the bedrock depression was not likely to get much deeper further to the west. He also noted that Line 1 is just at the mouth of ancestral McNeil or perhaps even slightly out into Lightning valley. He would expect the sediments to thin (bedrock to rise) and therefore shallower ground might be found 500-750m upstream. This could be important in planning future work,

3. The bedrock underlying middle McNeil is phyllite not quartzite and this unknown factor would be important in interpreting seismic data as travel velocity would be very different than for quartzite. If the projections shown on the Regional Geology map are valid the phyllite unit could extend much further up McNeil.

4. Extreme wet ground conditions combined with a high volume of high pressure air resulted in much loss of sample (poor recovery) in most holes. The wet drill cuttings were extremely abrasive cutting holes in 1 inch thick steel wear plates in the elbow at the start of the sample delivery tube and the 1 inch thick steel donut that prevents blowback between the RC drill rods and the casing resulting in increasing sample loss as drilling continued. The drill was shut down mid hole several times to weld the hole in the delivery tube elbow wearplate but the blowback preventer could not be fixed mid hole because the casing ringbit would fall off downhole and could not be re-attached. Casing ringbits are designed to fall off in order to retrieve the casing and cost about $ 200 each. The most sever abrasion occurred in drilling the final 145 foot hole on Lightning. The return elbow had to be welded twice and the 1 inch thick x 5 inch diameter hardened steel blowback preventer was reduced to a 3/8 inch thick x 4 inch diameter Frisbee shape and extreme sample loss by blowby was happening. Also the RC bit was badly worn and needed to be replaced and the casing drive lug was worn out. These types of problems only happened on the very wet holes and quartz sand was probably a big contributor.

5. Gold results from the RC samples while interesting cannot be used to estimate in situ grade on account of poor recovery. Fine gold could be lost in escaping splashed or spilled water especially in the presence of the vegetable oil used to lubricate the hammer. All sizes of gold could be lost in escaping high pressure slurries and air blasts and splashes that occurred. Downhole the casing ringbit and RC bit are locked together and advance as a unit and it is possible that high pressure and high air flow from the bit face could force material out into unconsolidated alluvium and up the outside of the casing. The steady advance of the casing should prevent contamination of the sample from outside the hole and gold loss is more likely than gain. A reasonable conclusion is that the gold values obtained from the RC samples are minimum values and there is no way to estimate actual value on account of the situation.

Generally values of 30+mg of gold in a 6 inch drill hole would be considered interesting and the higher values obtained 44 and 86 mg with some coarse gold would be very interesting. In this instance given the glacial history, drilling issues, depth, and water issues it would be nice to see higher numbers.

RECOMMENDATIONS

The 6 hole 2017 RC Drilling with Casing project was encouraging in showing that interesting placer gold including some coarse gold is present at intermediate and deeper levels in the stratigraphy but exact location in the section, genesis of the hosting unit and gold grade could not be determined. It also identified a number of serious issues that need to be carefully considered before more work is done in order to get better information.

Drilling is the only way to advance this property and most methods including the 2017 RC method can be ruled out on account of the difficult drilling conditions. Sonic Drilling is the only method known to the author that has any hope of success and sonic drilling of hard boulders has never been proven. Sonic was an option for 2017 when Boart Longyear had their larger track mounted sonic rig in the area but it was equipped to recover only a small 4 ½ inch sample which is very small for placer. Larger sonic tooling is available and I was told recently that there is an 8 inch sonic rig nearby in the 40-mile region of Alaska that could be investigated.

If more drilling is considered it would be a good idea to determine the access and conditions on the valley floor 500-750 m further upstream. Jeff Bond has suggested that the ground is probably shallower up there and might therefore be easier to test and mine.

Expenditures

Item	No. items	Rate	Unit	No. Units	Cost
Field Crew					
Project Manager / Senior Geologist - J.S Christie, Ph.D.		$500	day	16	$8,000.00
Technician /FA 3 – A. Gunn		$400	day	14	$5,600.00
Geologist – W. Shackle, M.Sc.		$425	day	10	$4,250.00
Sample helper – W. Kendi		$300	day	9	$2,700.00
Drivers/Sample tech.		$350	day	9	$3,150.00
WCB - 5% Estimate					$1,185.0
Equipment					
Vehicles - Crew and equipment -4wd ccab	2	$50	day	9	$4,000.00
12 kVa generator	1	$40	day	20	$800.00
ATV		$40		9	$360.00
Heated sample processing/storage		$50	day	9	$450.00
First Aid/ Camper Heat		$50	day	9	$450.00
Flat bed trailer		$15	day	9	$135.00
2" Honda Pump		$10	day	9	$90.00
Placer Sampling Equipment		$50	day	9	$450.00
Service truck with tools, compressor, welder		$100	day	9	$900.00
ATV	1	$40		20	$800.0
Heavy equipment and Support					
M. Mooney – RC Drill Rig + helper					$32,391.00
PC200 Excavator		$120/hr		42	$5,040.00
Hauling - Kenworth T800 and Lowboy for D85					$1,850.00
Mak Transport					$8,700.00
Accommodation in Mayo 4 x 2 nights + 2 x 1 night		$50		10	500.00
Silver Moon Bunkhouse					$4,000.00
Total camp person days					
Daily Field Expenses	1	$ 100.0	day	76	$7,600.00
Report					
GIS Support					$300.00
Data Analysis, Report Preparation and writing					$2,000.00
Total					$91,701.00

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SRK, 2012. Technical Report on the Flame & Moth Deposit, Flame & Moth Property, Keno Hill District, Yukon. SRK Project 2CA017.004. Prepared for Alexco Resource Corporation, August 8, 2012.

Statement of Qualifications

I, **James Stanley Christie,** of Dawson City, in Yukon Territory, Canada

Hereby certify:

1. That my address is P.O. Box 660, Dawson City, YT, Y0B 1G0;

2. That I am a graduate of the University of British Columbia:

    a) Ph.D., Geology. 1973,
    b) B.Sc., Honors, Geology, 1965;

3. That I have been practicing my profession in geology, placer mining and mining exploration continuously since 1965 and since 1984 in the Yukon;

4. That I have over 20 years experience with placer exploration, evaluation of placer deposits and placer mining;

5. That this proposal is based on my knowledge of the district and the applicable techniques for placer exploration.

Dated this **29**th day of January, **2018** at Vancouver, B.C.,

James S. Christie

APPENDIX

Copies of Summary Drill Logs

Copies of Field Drill Logs

-Recorded by Will Shackel M.SC., Geologist at the drill sites as drilling progressed.

Copy of 2017 email
Jeff bond to Jim Christie

RC17-02
Easting – 492457.71 Northing – 7087998.7 Elevation – 1162.83

Description
-6” hole using 6 1/8 ring bit on casing
-Depth 145 feet- all cased
-Casing and RC drill string advanced simultaneously as a unit driven by down the hole hammer
-Depth to bedrock – no bedrock – ran out of casing
-Location – Lightning Creek on Seismic Line 6

Samples

#	Interval	Mg Au
RC17-02A	10-35	14
RC17-02B	35-60	16
RC17-02C	60-90	34
RC17-02D	90-145	4
PC17 Cyclone spillage		4
PC17 casing blow by		6

Drill Log Summary

Interval	Observations	Recovery
0-10	Organics and clay layer and dark grey till/alluvium?	Poor – 20%
10-35	Dark grey rocky quartzite till – alluvial component 20-30% (rounded and sub-rounded chips)- color changed to brown at 25’ then dark brown at 32’- water from 12’ washing out fines and some sample- mostly alluvial	Fair – Poor
35-60	Mostly alluvial mixed lithology brown sandy mixture very wet washing out fines and some sample loss color changed to grey at 60’	Poor
60-90	Grey till/alluvium to 75’ then turning brown and very wet abrasive sandy alluvium? – much sample loss had to weld hole worn thru sample delivery tube (1” thick) by slurry –	Poor

	chips are of mixed rock types	
90-145	All very wet to end of hole – mixture of lithologies and angular to rounded rock chips thought to be alluvial – all brown colour – all samples compromised by washing out of fines – sample loss around cyclone and casing blowby to surface- very messy	Poor

RC17-03
Easting 493027.04 Northing 7086767.1 Elevation 1252.71

Description
-6” hole using 6 1/8” ring bit on casing
-Depth – 100 feet all cased
-Casing and RC drill string advanced simultaneously as a unit driven by down the hole hammer
-Depth to bedrock – 80 feet
-Location on McNeil Seismic Line 1

Samples

#	Interval	Mg Au
RC17-03A	40-55	24
RC17-03B	55-65	nil
RC17-03C	65-85	nil

Drill Log Summary

Interval	Observations	Recovery
0-40	Wet grey brown rocky till – mixed lithologies – alluvial component (sub-rounded rock chips) 30-40’	70% from 10’
40-55	Very wet brown till/alluvial mixture – possible interglacial stream deposit – drillers comment “feels like drilling through creek gravel”	Poor
55-65	Brown till – less water below 60’ – colour change to medium brown at 64’	Fair
65-85	Brown till with minor sub-rounded rock chips (alluvial?) 75-80 dense grey basal till – 95% phyllite fragments. Bedrock at 80’ grey chlorite well foliated phyllite	Fair
85-100	Chlorite phyllite – heavy water at 86’ and down, losing fines and some sample – minor vein quartz chips in phyllite bedrock, deeper bedrock not sampled	Poor

RC17-04
Easting 493104.18 Northing 7086793.9 Elevation 1244.78

Description
-6” hole using 6 1/8” ring bit on casing
-Depth – 125 feet all cased
-Casing and RC drill string advanced simultaneously as a unit driven by down the hole hammer
-Depth to bedrock – 120 feet
-Location on McNeil Seismic Line 1

Samples

#	Interval	Mg Au
RC17-04A	10-25	10
RC17-04B	25-60	8
RC17-04C	60-80	8
RC17-04D	80-125	86

Drill Log Summary

Interval	Observations	Recovery
0-10	Grey brown rocky till	Poor 40-50%
10-25	Grey till – oxidized orange brown 15-25 may be interglacial colluvium? / alluvium – hard grey till below	Good
25-60	Grey till to 35’ then dark brown till- mixed lithologies and clay balls – mixture of till and colluvium?	Good
60-80	Mixed colluvium and till brown and grey brown – minor water at 80’	Good
80-110	Wet brown alluvium? Colluvium? Sub-angular and sub-rounded rock chips – mixed lithologies	Fair to Poor
110-120	Grey brown basal till - wet	Poor
120-125	Bedrock mixed finely foliated grey micaceous quartzite and slightly graphitic phyllite – bedrock is weakly oxidized	Poor

RC17-05
Easting 493118.51 Northing 7086798.8 Elevation 1243.58

Description
-6" hole using 6 1/8" ring bit on casing
-Depth – 135 feet all cased
-Casing and RC drill string advanced simultaneously as a unit driven by down the hole hammer
-Depth to bedrock – 129 feet
-Location on McNeil Seismic Line 1

Samples

#	Interval	Mg Au
RC17-05A	15-45	44
RC17-05B	45-75	12
RC17-05C	75-105	14
RC17-05D	105-135	20

Drill Log Summary

Interval	Observations	Recovery
0-15	Organics and clay on dark grey rocky till/alluvium?	Poor (25-40%)
15-45	Dark to medium brown till- wet to 30' with fines washing out – some sample loss, dry below 30'- better sample – some sub-rounded (alluvial) rock chips 35-40 feet- all till	Poor Fair to Good
45-75	Brown till with alluvial component – sub-rounded rock chips throughout interval – water at 53' then dry 65-70 then wet again – fines washing out- rock chips mainly sub-rounded to rounded 65-70'	Variable Poor to Fair
75-105	Wet brown alluvium? – mixed lithologies – hard drilling and lots of quartz 80-90' – sub-angular and sub-rounded rock chips – fines washing out of sample-color changing to dark brown at 105' – till? From 95'	Poor
105-135	Wet brown till?/alluvium? – fines washing out then almost dry 115-120'- hard slow dilling 120-122 some very fine grained alluvial lake sediments 125-130' – Bedrock at 129'- chips are fine grained medium green phyllite. 129 to 135' – hole very wet at end – estimate 10 gallons per minute at 135' – not artesian – water forced up by air pressure	Poor

RC17-06
Easting 492989.94 Northing 7086752.2 Elevation 1257.04

Description
-6” hole using 6 1/4” wing bit on casing
-Depth – 70 feet all cased
-Casing and RC drill string advanced simultaneously as a unit driven by down the hole hammer
-Depth to bedrock – 65 feet
-Location on McNeil Seismic Line 1

Samples

#	Interval	Mg Au
RC17-06A	35-45	Trace
RC17-06B	45-70	nil

Drill Log Summary

Interval	Observations	Recovery
0-5	Organics – clay - soil	Poor
5-35	Brown rocky till with quartzite and phyllite chips – mostly angular to sub-angular and minor sub-rounded	Good
34-45	Grey brown till changing to brown 40-45 mixed lithologies – phyllite and quartzite	Good
45-65	Brown till? Colluvium with possible alluvial component (sub-rounded rock chips) phyllite rock chips increasing from 63’	Good
65-70	Dark blue grey phyllite – some graphitic phyllite and overall weak oxidation of bedrock . drilling procedure produces very fine grained rock chips in phyllite bedrock	Good

RC17-07
Easting 492771.65 Northing 7087120.0 Elevation 1240.70

Description
-6” hole using 6 1/8” ring bit on casing
-Depth – 115 feet all cased
-Casing and RC drill string advanced simultaneously as a unit driven by down the hole hammer
-Depth to bedrock – 109 feet
-Location on McNeil Seismic Line 2

Samples

#	Interval	Mg Au
RC17-07A	5-25	16
RC17-07B	25-70	2
RC17-07C	70-85	12
RC17-07D	85-115	4

Drill Log Summary

Interval	Observations	Recovery
0-5	Soil layers organics and clay	40%
5-25	Dense rocky grey till – mostly sub-angular but some sub-rounded – rounded chips (alluvial?) – water at 16’ then dry	Good
25-70	Grey till – grey quartzite 70% - Phyllite 30% chips. Quartz chips 39-40’, sand layer 59’	Good
70-85	Grey and brown till – minor water but mostly dry – chips mostly dark grey phyllite – lesser grey quartzite – green schist boulders and water at 80-85’	Good
85-109	Brown wet till – sloppy clay 85-90 – lots of water washing out fines – phyllite and quartzite chips mostly angular to sub-angular	Poor
109-115	Bedrock – very wet green phyllite with minor quartz vein material – 100% phyllite – fines mostly lost	Poor

Summary Table

Summary Table of RC drilling September 4-13, 2017

Drillhole	Easting	Northing	Elevation	Final Depth (ft)	Drilling Order
RC17-01	Not drilled	Not drilled	Not Drilled	N/A	N/A
RC17-02	492457.71	7087998.7	1162.831543	145	6
RC17-03	493027.04	7086767.1	1252.714111	100	2
RC17-04	493104.18	7086793.9	1244.783447	125	3
RC17-05	493118.51	7086798.8	1243.581787	135	4
RC17-06	492989.94	7086752.2	1257.040039	70	1
RC17-07	492771.65	7087120.0	1240.697754	115	5
			Total	**690**	

DEPTH	Colour	Clay	Silt	Sand	Lith Qz	Meta Sed	Igneous	Qz/n	[illegible]	Sorted	Rounded	OBSERVATIONS	TYPE
80-85	BR	15?	5	15	65	95	0	5	N	Well	SR	V. Wet - clay rich Mixed liths. Fine grained, 3-5mm, "Hard drilling"	Alluvial? RC17-5C
85-90	BR	15?	10?	5?	80?	85	0	15	N	Mod-Well	SA-SR?	Abundant Qz, Wet - Wash	Alluvium
90-95	BR	"	"	"	"	90	0	10	N	Mod	SR	V WET - Wash, V mixed liths	
95-100	BR	"	"	"	"	"	"	"	"	"	"	" " "	Till/Alluv?
100-105	BR	"	"	"	"	"	"	"	"	"	SA-SR	" " Colour Change to D.BR	Till @ 107ft?
105-110	BR	20?	10?	5?	65?	90	0	10	N	P-Mod	SA-SR	V. Wet - Wash	
110-115	BR	20	10	5	65	95	0	5	N	Mod	SA-WR	Wet - minor? clay wash clay @ 114 Seal. Water	Till/Alluv
115-120	BR	30	15	5	50	95	0	5	N	P-Mod	SA-SR	Mostly dry -	RC17-5D
120-125	BR	20	10	5	65	80	0	20	N	Mod	ANG	Poor Rec of 120-122, V. Slow drilling	
	Boulder/Bedrock?				Mod	Rec 122-125, WET - Wash.						3 rock @ 129ft?	
125-130	BR	10?	5	5?	80	90	0	10	N	Well	SA-SR?	Fine GRAINED - frags 2-4mm	Alluvial? Glacial
130-135	BR	5?	2	2	91	100	0	0	N	N/A	SA	BEDROCK - Mid-GREY, VF-F grained,	

No to weak foliation in Quartzite. minor Sericite? HOLE PRODUCING c. 10 Gallons WATER/MIN.

EOH @ 135ft SAMPLES: RC17-05A 15-45
RC17-05B 45-75
RC17-05C 75-105
RC17-05D 105-135 EOH

END RC17-05

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RC17-07

Depth	Colour	Clay	Silt	Sand	Lith Qz	M. Sed	Igneous	Qz/n	[illegible]	Sorting	Rounded	OBSERVATIONS	TYPE
RC17 07	Line 2 between STATIONS 12 + 13												
0-5	Brown	10	10	2	88	98	0	2	N	Poor-Mod	SA-SR	Poor REC (40%) Soil layers w/organics	Till/Till
5-10	GREY	"	"	"	"	95	0	5	N	"	SA-R	Good REC	Till
10-15	"	5	10	2	83	90	0	10	N	"	SA-R	Good REC	Till (RC17 7A)
15-20	"	"	"	"	"	95	0	15	N	"	A-SA	WATER @ 16ft. Slight MIXED liths	Till
20-25	GREY	"	"	"	"	"	"	5	N	"	"	DRY [illegible]	Till (RC17 7B)
25-30	[illegible]	5	>	2	88	98	"	2	N	Mod	SA	Mostly GREEN QZITE (70%) + Phyllite (30%)	Till
30-35	GREY "	5	5	2	88	98	0	2	N	Poor-Mod	"		
35-40	GREY	5?	5	2	88?	90	0	10	N	"	A-SA	Rich QZ layer c. 1ft WIDE @ 39ft	Till?
40-45	9th Sept 2017 - Stopped overnight											STOPPED FOR DAY.	
40-45	GREY	5?	5	2	88?	90	0	10	N	Poor-Mod	SA	QZITE + Phyllite frags	Till (RC17 7B)
45-50	"	"	"	"	"	"	"	"	N	"	"	"	Till
50-55	"	"	"	"	"	95	0	5	N	Poor	SA	"	
55-60	"	5	10	2	83	90	0	10	N	P-Mod	A-SA	1/2 ft channel sand @ 59ft	Till
60-65	GREY	5	10	2	83	90	0	10	N	"	"		
65-70	GREY	5	10	5	80	90	0	10	N	"	"	Slight water, Mostly [illegible]	Till
70-75	BROWN	5	10	5	80	98	0	2	N	Poor-Mod	"	Slight water, Mostly [illegible]	Till? (RC17 7C)

Depth	Colour	Clay	Silt	Sand	Lith frag	Meta seds	Igneous	P/n	Mg	Sorted	Rounded	Observations	Type
75-80	Grey	5	10	5	80	90	0	10	N	P-M	SA	Mostly DARK GREEN Phyllite Qzite	Till
80-85	Gr BR	20	10	5	65	95	0	5	N	P-M	SA-SR	water Green Schist Boulder	Till (7C)
85-90	"	30?	15?	5?	50?	95	0	5	N	P-M	SR	Wet sloppy clay	Till
90-95	BR	30?	15?	5	"	90	0	10	N	P-M	SR	WATER Wash fine frags Sludge	Till
95-100	BR	25?	"	"	55?	95	0	5	N	Poor	A	Loss of fines, As above	Till (RC17-7D)
100-105	BR	"	"	"	"	90	0	10	N	Mod	A	QZ + Phyllite Wash	Till
105-110	"	"	"	"	"	"	"	"	"	"	A	[illegible] Green [illegible] Bedrock water	
110-115	"	10?	5?	5?	80?	95	0	5	N	Mod?	A	QZ vein host material, 80% Green Phyllite frags	
		Hole @ 115 ft. Bedrock @ 108 ft											Bedrock
		Cased to 115 ft. Samples											

RC17-07
A 5-25
B 25-70
C 70-85
D 85-115 ft

RC 17-02

Depth	Colour	Clay	Silt	Sand	Lith frag	Meta seds	Igneous	P/n	Mg	Sorted	Rounded	Observations	Type
RC17-02 - 8 Road nr laydown 8. of Lightning Creek													(No sample)
0-5	Dark Gr BR	30	10	5	55	95	0	5	N	Mod	SR	V Poor Rec (15%) [illegible]	Till
-10	D. Grey	20	10	5	65	95	0	5	N	Poor	SA-SR	Poor Rec (20%)	Till
10-15	"	"	"	"	65	99	0	1	N	Poor	A	WATER 12 ft, Mostly QZITE	Till
15-20	"	10?	5	5	80	95	0	5	N	Mod	A-SA	LARGE frags (7mm-30mm)	Alluvial??
-25	"	10	5	5	80	95	0	5	N	Mod	SR	Sample loss to soft ground conditions	Alluvial??
-30	Brown	5?	5	5	85	95	0	5	N	Poor	SA-R	Wet - Wash. Mixed liths	Alluvial?
30-35	Br	9?	5	5	85	95	0	5	N	Poor	SA	Mixed liths, change to dark BR @ 33 ft	33ft (RC17 02A)
												DARK Rec - find lith frags 3-8mm	
	Br	5?	5	5	85	85	0	15	N	Mod	SA-SR	Fn GR lith frags 3-8mm	Alluvial?
	Brown	"	"	"	88	90	0	10	N	P-M	SA-R	Clay wash	Alluvium
	Brown	8?	5	5	68	95	0	5	N	Poor	SA	MIXED lithos	Alluvial?
-55	"	10?	5	5	80	95	0	5	N	"	"	" Clay wash	" (RC17 02B)
55-60	"	"	"	"	80?	90	0	10	N	"	SR	wash, colour change @ end	"?
60-65	Grey	10?	5?	5	80?	90	0	10	N	P-M	SA-R	MIXED liths, Wet	Alluvium?
65-70	"	15	5?	5	75	90	0	10	N	Mod	SR	MIXED liths Dry	Alluvium/fill
70-75	GREY	20	10	5	65	95	0	5	N	V. P	SR	Sludgy	" / "
75-80	Brown	10?	10?	5	75	95	0	5	N	P	SR	Wash. Stop 30 min to weld drill	(RC17 02C)
80-85	Brown	10?	4?	5	75?	95	0	5	N	P	SA	"	

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LIGHTNING McNEIL RESULTS

SAMPLE				Mg Au
RC17 - 2A	10-35			14
2B	35-60			16
2C	60-90			34
2D	90-145			4
2	cyclone spillage			4
2	casing blowby			6
RC17 - 3A	40-55			24
3B	55-65			nil
3C	65-85			nil
RC17 - 4A	10-25			10
4B	25-60			8
4C	60-80			8
4D	80-125		nug	86
RC17 - 5A	15-45		nug	44
5B	45-75			12
5C	75-105			14
5D	105-135			20
RC17 6A	35-45			tr
6B	45-70			nil
RC17 7A	5-25			16
7B	25-70			2
7C	70-85			12
7D	85-115			4

Compiled by Joe ✓23 SAMPLES

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Jim Christie

From: Jeff.Bond@gov.yk.ca
Sent: November-23-17 1:54 PM
To: jschristie41@gmail.com
Subject: McNeil drilling

Hello Jim,

I plotted your drill holes in our air photo stereo viewer. Your deepest hole along the drill fence (RC17-05) and furthest east, appears to lie very near to the geographic middle of the valley. So its depth, relative to the others, makes sense. I would be surprised if it got any deeper to the east. The other thing I noticed is your drill fence is located just at the mouth of the McNeil valley and may actually lie slightly out into the Lightning valley. This was a logical place to drill from a depositional environments perspective, but it was also susceptible to being deeper ground. Just upstream about 500-750m I would expect bedrock to come up causing a thinning of the sediments. This should continue right up the valley. So if you were ever considering another drill program I would recommend a line further up-valley to test this potentially shallower ground, and to see if a channel could survive basal erosion/reworking by the alpine glacier.

Drill hole RC17-02 was definitely quite far west off the valley center line. So perhaps its gold content reflected this.

Thanks for sharing the data.

Jeff

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