2019 FINAL TECHNICAL REPORT FOR THE HIDDEN GOLD PLACER PROJECT

Judas Creek Area, Southwest Yukon
NTS Map sheets 105D 08 & 105C 05
Location: Latitude of 60°24' N, and Longitude 134°00' W
Mining District: Whitehorse, Yukon Territory

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Submitted to:

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Abstract
The Hidden Gold Placer Property (HGP) is made up of 539.07 hectares of prospecting lease and 1556.86 hectares of placer claims for a total property area of 2095.93 hectares. The area covers a total of 6 drainages consisting of Judas Creek and 5 of its tributaries. The area is a new placer field with no history of mining or mechanical work except for recent work carried out by the current owner (536005 Yukon Inc.) and minor hand work carried out in 1911. The current property is held under 536005 Yukon Inc. a Yukon based corporation and owned by Nicolai Goeppel and Alex Shaman since 2011. The property lies approximately 65 linear kilometers south of the capital city of the Yukon, Whitehorse. The property is road accessible, driving takes approximately 50 minutes and includes 74 kilometers south on the Alaska highway to the property turn off and another 3.6 kilometers along an unnamed dirt road.

In summer and fall of 2019 hand dug test pitting and mechanical test pitting was completed in various areas to test gold potential of benches and tributaries. In addition, in the winter of 2020 a seismic and magnetometer geophysical surveys was done. Seismic was completed to determine depth to bedrock and magnetometer survey was completed to locate potential accumulations of heavies associated with gold paystreaks. The program allowed for 12.5 miles of prospecting leases to be staked and 7.5 miles further staked into placer claims. The program started in spring of 2019 and was run intermittently into the winter of 2020.

Based on the programs results further work is warranted on the Hidden Gold Project. A follow up program consisting of bulk sampling where test pitting has indicated encouraging results, test pitting or drilling on magnetic anomalies and shallow seismic results. The total expenditures for the exploration program are $101,367.79. The purpose of this report is to detail the 2019-2020 exploration program and its findings.

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Introduction

Gold was first discovered in the area in 1911 by Benjamin Miller, the news of his discovery spurred a staking rush to the area a month later. Judas Creek received its name in 1911 following the stampede; the stampeders originally wanted to name the creek “All In” creek based on their exhausted state when reaching the creek but named it Judas creek when they found little gold. Old workings observed in the field indicate a bedrock bench and reef were numerous old-aged hand dug pits and trenches were dug. In the valley bottom some shafts were attempted but stopped due to thawed and wet conditions. Into the 1930’s and 40’s several rumours developed of individuals working and finding coarse gold in the area. These anecdotes from the 1930’s-1940’s is not substantiated in written records.

The Hidden Gold Placer Property (HGP) is made up of 539.07 hectares of prospecting lease and 1556.86 hectares of placer claims for a total property area of 2095.93 hectares. The area covers a total of 6 drainages consisting of Judas Creek and 5 of its tributaries. The area is a new placer field with no history of mining or mechanical work except for recent work carried out by the current owner (536005 Yukon Inc.) and minor hand work carried out in 1911.

The area was essentially rediscovered by the co-founder of 536005 Yukon Inc. (the company), Nicolai Goeppel, in 2011 while prospecting the area for lode gold and platinum group elements (PGE). On unofficially named Faith creek the primary tributary to Judas Creek, a boulder terrace truncated by tertiary semi-consolidated Tertiary conglomerate and serpentinite bedrock was observed and gravels were tested by panning. The initial tests yielded abundant “black sands” primarily magnetite and a 4.5 mg flake of gold. Promptly after a 1-mile prospecting lease was staked. Further hand testing on the discovery site yielded 2.5 grams from half a cubic yard (0.38 m3). Continued hand testing indicated the presence of gold in the gravels on 5 other drainages. The company then continued with mechanical test pitting on Judas Creek, Faith Creek and the unofficially named Hope Creek. Testing indicated primarily thawed ground with overburden to top gravels ranged between 0.75m and 2m. Top gravel on faith creek yielded as high as 100 mg from 0.1 yrd3 (0.076m3).

Based on significant surface results and cost-effective mining conditions; in 2013 a 700ft auger drill program was carried out on Faith and Judas creeks to determine bedrock depth and potential grade. Auger drilling is best in permafrost were the frozen subsurface acts as a casing; whereas, thawed ground affects sample recovery. Despite this gold was observed in all holes. Drilling also indicated stronger glacial effects in Judas Creek and lesser extent on Faith Creek. On both drainages an abrupt change in bedrock depth occurs between 2600 and 2700ft (792.48 – 822.96 m), becoming 20 ft or more shallower upstream. In fall of 2018 a small-scale bulk sampling program was carried out on Faith creek on the discovery bench. A small test trommel was used to process 100 yrds3 (76 m3) and produced 2.95 oz (83.72 g), including nuggets up to 3.57 g. Recovery was less than ideal due to the out-dated condition of the wash plant used and took many modifications to bring up recovery, a single 5-gallon bucket of tailings produced nearly one gram of gold.

A viable placer potential exists approximately 45 minutes south of Whitehorse, Yukon. Testing indicates areas of near surface payable gravels with feasible bedrock depths and no permafrost. The purpose of this report is to summarise and detail the 2019 YMEP program and results. The total expenditures of the 2019 YMEP exploration program on the Hidden Gold Placer project is $101,367.79.

Location and Access

The Hidden Gold Placer Property is made up of 539.07 hectares of prospecting lease and 1556.86 hectares of placer claims for a total property area of 2095.93 hectares. The area covers a total of 6 drainages consisting of Judas Creek and 5 of its tributaries (Figure 1&2). The Hidden Gold Project is located in southwest Yukon, approximately 65 linear kilometers south of the capital city of the Yukon, Whitehorse. The property is road accessible; driving takes approximately 50 minutes and includes 74 kilometers south on the Alaska highway to the property turn off and another 3.6 kilometers along an unnamed dirt road. The property is located in the Whitehorse Mining District in NTS map sheet 105D 08 and 105C 05. Claims are centered on Latitude of 60°24' N, and Longitude 134°00' W

Regional Geology

The HGP property is underlain by Carboniferous to Jurassic Cache Creek Group rocks. The Cache Creek Group consists of an accretionary complex made up of a mixture of oceanic and arc volcanic rocks, pelagic sedimentary rocks, ultramafic bodies, and exotic limestone containing Early Permian Tethyan fauna (e.g., Monger and Ross, 1971; Paterson and Harakal, 1974; Gabrielse, 1991; Struik et al., 2001; Orchard et al., 2001). The HGP property in underlain by oceanic shale, siltstone chert, carbonates and ultramafic rocks (Figure 3). These are overlain by Upper Triassic rocks of the Aksala Group northwest. The Aksala Group consists of mixed clastic and carbonate rocks that are divisible into three dominant facies: calcareous greywacke; thick carbonate; and red-coloured clastics (Casselman, 2004). The structural geology of the area is dominated by two major sub-parallel, north-northwest trending faults that divide and define the boundaries between the Cache Creek Terrane and the Whitehorse Trough and between the Whitehorse Trough and the Yukon-Tanana Terrane. The Nahlin Fault more or less marks the western extent of the Cache Creek Terrane and eastern extent of the Whitehorse Trough. It is a steeply dipping to vertical fault, or series of faults and has seen intermittent activity from the Late Triassic to Tertiary time. The Llewellyn fault marks the boundary between the regionally metamorphosed Yukon-Tanana Terrane and the Whitehorse Trough. It is also steeply dipping and appears to have been active from Late Triassic to Tertiary time. The nearest known intrusive rocks on the property are Early Cretaceous intrusions of the Teslin Suite. They are comprised of leucocratic, fine to coarse-grained, equigranular, hornblende-biotite granite, granodiorite, quartz monzonite and quartz monzodiorite (Casselman, 2004).

Local Geology

The geology of the region was mapped in detail by W. Taylor and D. Shaw in 1989 (Shaw, 1989). Their mapping identified four lithological categories: volcanic, tuff; cherts; chloritic Mafic lenses of gabbro, pyroxenite and diorite; and ultramafics. As well, they identified two alteration assemblages; carbonatization and silicification; and chrome-mica carbonatization of ultramafic rocks. The property is underlain by a northwest trending package of submarine volcanics consisting of moderately chloritized, fine-grained volcanic flows and tuff & that are metamorphosed to greenschist facies. In the showing area these volcanics are carbonatized (listwaenite alteration) ultramafic volcanic rocks that commonly weather brown. The contacts between the ultramafic volcanics and other rocks are strongly foliated and serpentinized. The serpentinized ultramafic rock is dark green, very fine-grained to amorphous and occasionally pyritic. (Casselman, 2004).

Most recent government based geological mapping was done by Luke Bickerton, Maurice Culpron and Dan Gibson in 2012. The HGP property is underlain by metavolcanics, limestone, chert, and ultramafic units of the Carboniferous to Jurassic Cache Creek Terrane; and Upper Triassic rocks of the Aksala Formation which form the upper part of the Stikinia Terrane (Figure xx). These units have subsequently been intruded by mid-cretaceous intrusives of varying composition including granodiorite to quartz monzonite to syenite. All underlying lithologies are described in detail below. Descriptions are based off the 2012 mapping.

Cache Creek Terrane

METAVOLCANIC ROCKS

Metavolcanic rocks are the most widespread unit in the Cache Creek terrane in the project area. Metavolcanic rocks in the area are mainly composed of plagioclase and clinopyroxene within a chloritic matrix. They locally show pillowed and hyaloclastic textures. The basaltic rocks are typically massive and extensively chloritic. These rocks range from dark grey, medium-grained to aphanitic basalt to light grey, fine-grained andesite. They are commonly thoroughly fractured and silicified, and locally contain amygdules filled with both calcite and silica. The flows exposed in the Marsh Lake and Judas Creek areas typically dip to the southeast.

CHERT

Massive chert is locally exposed near Jakes Corner where it is intercalated with metavolcanic rocks. Apart from the more massive occurrences, chert also appears as subordinate lenses within the metavolcanic rocks and as clasts in volcanic breccia of the Cache Creek terrane throughout the map area. Chert units also commonly crop out as ribbon-banded sections, grey-red-brown in colour, and are locally contorted by soft-sediment deformation. Chert beds are normally 5 to 10 cm thick with fine-grained argillite interbeds, but thinner bedding is seen in the ribbon-banded outcrops.

LIMESTONE

limestone occurs primarily as lenses within heavily to moderately chloritic basalt and only locally as thickly bedded, massive crystalline limestone to dolostone.

ULTRAMAFIC ROCKS

Ultramafic rocks in the Cache Creek terrane are characterized by two main compositions; pyroxenite, ranging to serpentinite when in faulted contact with volcanic rocks and chert, or with rocks of the Whitehorse trough in the Judas Mountain and Judas Creek area. The ultramafic bodies to the east have the composition of harzburgite to dunite and are typically larger exposures. The typical western ultramafic rocks are exposed near fault contacts and are commonly altered to listwaenite (quartz-carbonate-fuschite). Serpentinite is also commonly found near these fault boundaries where it is locally brecciated. Pyroxenite in the western part of the map area is typically non-magnetic, medium grained and dominantly composed of clinopyroxene. These rocks show extensive chlorite and epidote alteration. The large harzburgite-dunite bodies in the eastern part are coarse grained and contain abundant magnetite. Locally, harzburgite shows a subtle cumulate texture of olivine with interstitial orthopyroxene; elsewhere, these rocks are sections of rounded blocks in a sheared matrix of heavily altered ultramafic. Veins of antigorite and serpentinite occur throughout theses bodies and also in some areas that are intruded by pegmatite. Typically, olivine crystals are completely replaced by serpentine. The large ultramafic bodies are in fault contact with volcanic rocks of the Cache Creek terrane, but listwaenite alteration is not a prominent feature near these contacts.

Stikinia Terrane

CASCA MEMBER

The Casca member is composed of clastic sedimentary strata varying from coarse-grained, black-grey sandstone to fine-grained, thinly laminated, dark grey argillaceous siltstone. Siltstone units occur as thick, monotonous sections with grey and tan-coloured, very fine-grained sandstone interlaminations. The siltstone beds are commonly graded and contain scour marks, flame structures, rip-up clasts, and locally, trace fossils; all indicate that the section is upright. The medium to coarse-grained quartz sandstone of the Casca member has relatively immature grains which are angular to subangular and dominantly poorly sorted. The sandstone is commonly calcareous and occurs as 10 to 20 cm-thick beds among the more dominant argillaceous siltstone.

HANCOCK MEMBER

Carbonate rocks of the Hancock member of the Aksala formation are dominantly found north of Jakes Corner as massive, crystalline, locally fossiliferous limestone. These rocks were recognized through the mapping of Gordey and Stevens (1994). Carbonate rocks similar to the Hancock member also appear as locally contiguous, coarsely crystalline limestone to limestone breccia interlayered with siliciclastic rocks at different stratigraphic levels within the Casca member. Limestone clasts within the brecciated sections of the carbonate vary in size from 5 mm to 20 cm and are dominantly sub-rounded to sub-angular.

Surficial Geology

The Cordilleran ice sheet has advanced at least 6 times over southern Yukon during the Pleistocene epoch (about the last 1.65 Ma); the last ice sheet retreated approximately 10,000 yrs ago. Ice accumulations in the Cassiar Mountains of south-central Yukon during the late Wisconsinan were responsible for glaciation of the HGP property area. The Cassiar lobe advanced northwesterly with subsequent retreats and advances. Ice flow during the last glacial maximum was independent of the underlying topography. Only as deglaciation thinned the ice sheet did underlaying topography take effect on ice movements. As a result of de-glaciation, a large glacial lake would have occupied the Yukon river, Marsh Lake, Lake Labarge, and McClintock river valleys as ice made its final retreat, leaving a thick layer of glacial lacustrine sediment in the basin bottoms (Bond, 2007). The primary valleys adjacent to the HGP area would have been occupied by ice during this period of glacial recession.

By the early Holocene the glacial lake had began to drain. On-going fluvial incision of the sediment dam on Lake Laberge, into the Holocene, would have continued to affect the geography of the Yukon River valley near Whitehorse. The decreasing level of Lake Laberge caused the Yukon River to down cut into the glaciolacustrine and morainal deposits to the south (Bond, 2007). The retreating waters of Lake Laberge also caused the southern shoreline and the Yukon River delta to migrate northward, thus depositing deltaic sands over the lacustrine fill. Such deltaic sands are seen along the Alaska highway turning off the HGP property. Quaternary glaciation has modified the pre-glacial physiography through base-level adjustments and erosion of summits and valleys. Landforms such as eskers and ice-marginal meltwater channels modified the landscape. Large volumes of meltwater were generated by the retreating glaciers causing both depositional and erosional landforms to develop.

Despite effects of glaciation rare remnant pre-glacial alluvial deposits occur in escapements or driftless areas. Pre glacial paleochannels represents an ancient placer that formed over a substantial amount of time allowing for greater sorting, erosion and subsequently a greater accumulation of gold. Such pre-glacial paleo placers account for the primary placer gold source in the Quesnel, Dease Lake and possible source for the South Klondike area which includes the Indian River the most productive placer gold creek in the Yukon in recent history. The south Klondike is an unglaciated region; paleo placer conglomerates from the area have been identified as being as old as Cretaceous in age (Albian, ca. 100 Ma) forming a consolidated to semi consolidated and locally auriferous conglomerate (Bond, 2007B). In the glaciated Cariboo and Dease Lake placer gold camps in BC, similar consolidated to semi consolidated auriferous conglomerates are interpreted as Tertiary in age (Leveson, 1993 & Bond, 2007). The Cariboo region near Quesnel is historically the most productive placer gold camp in BC.

Driftless or escapement areas that endured glaciation generally occur in valleys perpendicular to ice movements. The east-west trend of the primary valleys within the HGP property allowed for the preservation of pre glacial paleo placers from the northwesterly glacial advance. The presence of a preserved Tertiary fluvial deposit in the HGP area is suggested by the mature landscape morphology that is characterized by broad low-gradient valleys, deep recessive bedrock weathering, rounded summits and flat plateau surfaces. This landscape morphology is observed in other placer camps in the Cordillera such as Clear Creek, Ruby Ranges, the Klondike in the Yukon and Atlin, Dease Lake and the Cariboo in BC. This is further substantiated by field observations and exploration records that identify a preserved consolidated Tertiary conglomerate in 4 locations on the HGP property. The conglomerate ranges from consolidated to semi consolidated ranging from a matrix supported pebble-cobble conglomerate to an angular clast-supported talus breccia. The conglomerate lies in an unconformable contact over underlaying serpentinite on Faith Creek as an in-basin fill.

Previous History

Placer Exploration

Gold was first discovered in the area in 1911 by Benjamin Miller, the news of his discovery spurred a staking rush to the area a month later. Judas Creek received its name in 1911 following the stampede; the stampeders originally wanted to name the creek "All In" creek based on their exhausted state when reaching the creek but named it Judas creek when they found little gold. Old workings observed in the field indicate a bedrock bench and reef were numerous old-aged hand dug pits and trenches were dug. In the valley bottom some shafts were attempted but likely stopped due to thawed and wet conditions. Into the 1930's and 40's several rumours developed of individuals working and finding coarse gold in the area. These anecdotes from the 1930's-1940's is not substantiated in written records.

The first recorded hand and mechanical placer exploration on the HGP property was carried out by Nicolai Goeppel or with 536005 Yukon Inc since 2011; consisting of hand test pitting, mechanical test pitting, auger drilling and bulk sampling. All work carried out by Nicolai Goeppel or 536005 Yukon Inc. will be summarized in the Recent Work section of this report.

The HGP property lies 100km south of historic Livingstone placer gold camp and 90km north of the historic Atlin placer gold camp. The Livingstone placer gold camp according to the Yukon Government royalty records account for about 18,000 ounces credited from Livingstone area creeks to 2014, the actual production is estimated to be at least 60,000 ounces. The Livingstone Creek area was first prospected in 1894 and mined shortly after. Mining has been intermittent since then, with the majority of activity taking place between 1898 and 1920. The Livingston area has produced some of the largest gold nuggets to be found in the Yukon since the Gold Rush; including a 20.5-ounce nugget in 1974 and a 12-ounce nugget in 2011 (Nevada Zinc, 2016).

Approximately 90 linear kilometers south of the HGP property is the historic Atlin gold camp. The Atlin gold camp is the second largest gold producer in British Columbia (Ash, 2001) with reported placer gold production of over 600,000 oz of gold between 1898 and 1946 from creeks in the area. The Atlin Goldfields Camp holds the provincial record for the largest gold nugget, which weighed 2.6 kg or 85 oz, and was discovered on Spruce Creek (BCGS Paper 2017-1, p.179-193). More recently, placer mining on Otter creek in the Atlin area has seen speculated annual yields from 2014-2016 ranged between 30,000 and 40,000 ounces of gold accumulated from the Slonski, Godkin, Zogas, and Pelly Construction operations (Clive, 2016). This following discovery of a rich deep paleo channel; the channel is in the upper subalpine elevations of the drainage and is roughly 33m of overburden and 5m of pay gravel on bedrock. Coarse visible gold hosted in a mesothermal quartz vein within carbonaceous phyllite was found in situ in the base of a placer excavation, indicating a proximal bedrock gold source.

The closest recent placer operations and active water and placer mining land use licenses are 22 linear km south of the HGP property on Wolverine creek and Moose Brook. From a property posting on Junior Miners, Moose Brook specifying that sub economic gold exists within the first 10ft and 'high-grade' gold at 40 – 50ft, no recorded values. Personal communications with operators on Moose Brook and nearby Wolverine Creek indicate local source of placer gold, with gold often tied to quartz material and a presence of Platinum on both drainages. On Wolverine Creek a previous miner Sid McKeown indicated that as much as one gram of platinum would accumulate for every ten grams of gold recovered.

Hard Rock Exploration

During the Klondike gold rush of 1896, adjacent Tagish Lake and Marsh Lake served as one of the primary routes taken by most stampeders on their way to the Klondike gold fields. Early prospectors and miners would have arrived by steamboat in Skagway or Dyea, Alaska and transported one-year worth of supplies over the Chilkoot Pass to Bennet Lake. There constructing boats and rafts to transport the supplies and equipment; the stampeders sailed and rowed Bennet Lake into Tagish Lake and Marsh Lake into the Yukon River to Dawson City. Much of the first exploration was likely done by these stampeders, prospecting as they journeyed north to the Klondike. Evidence is displayed as 'turn of the century' hand dug pits, trenches and shafts.

Prospecting during the 'turn of the century' led to the several significant mineral discoveries including; the Mount Skookum Au-Ag epithermal deposit, the Whitehorse Copper skarn deposits, and Venus polymetallic Au-Ag structurally hosted veins. This displays the variety of different styles mineralization that occur in the region. Other styles of mineralization evident in previous mineral exploration include; Ni-Cu-PGEs, Awaurite (Ni-Fe alloy) and chromite, asbestos, mesothermal listwaenite structurally hosted gold quartz-carbonate veins and potential nephrite Jade.

The earliest evidence of hard rock exploration in the region was in the late 1800s on the Ross Bank occurrence (Minfile; 105D 102) located approximately 35 km northwest of the HGP property. Several 'turn of the century' hand dug pits and a 50-meter adit were uncovered in 1984 yet no written records exist concerning these workings. It was drill tested for the first time in 1990. Geochemically anomalous results were returned from drill hole 90-2. Siliceous, pyritic sections of volcanic agglomerate and muddy siltstone returned up to 1989 ppb gold over 2.50 meters and 1671 ppb gold over 3.67 meters respectively. Seven other sections returned values between 505 ppb and 1310 ppb gold over core widths ranging between 0.92 to 2.75 meters (Doherty, 1990). The M'Clintock zone covers mineralized shear zones in Cache Creek Group mafic volcanic flows and tuffs. The shear zones are probably riedel or oblique shears to the Marsh

Lake Fault located approximately 400 meters to the west. The highest value returned in 1990 was 24,243 ppb gold over 0.20 meters from drillhole 90-3 which tested the shear zones. Mineralization consists of disseminated pyrite and galena in narrow (< 0.30 meters wide) quartz or quartz-carbonate veins hosted by sheared, phyllic altered, mafic volcanics. Ten other sections returned anomalous gold values ranging between 592 ppb to 5046 ppb over core widths of 0.21 to 2.54 meters (Doherty, 1990).

Earliest recorded work for hard rock mineral exploration in the immediate property area dates back to 1951, involving hand and bulldozer trenching, in pursuit of asbestos (Minfile; 105D 011 and 105D010). Exploration for asbestos continued intermittently in the area until early 1980s. Majority of the work consisted of road construction, mechanical trenching, soil and rock sampling (Beauregard, 2002). Mechanical trenching by bulldozer opened several large exposures greater than 100 m long of serpentinized ultramafics. Minor soil sampling during this time returned up to 646 ppm Ni. As part of a Yukon Mineral Exploration Program in 2015, rock samples from the historic trenches returned peak values of 2167.5ppm Ni and 100.8ppm Co; trenches also contained listwaenite altered quartz-carbonate stockwork and nephrite jade float (Goeppel, 2016).

An exploration program conducted by Dodgex Ltd in 1986 examined altered peridotite for PGE potential and located a chromite-rich zone in dunite with layer widths up to 5m (Minfile 105C 012). A one-meter chip sample across the zone assayed 52.2% chromium oxide, 145 ppb platinum and 2 ppb palladium. Replicated sample collected by Gordon McLeod in fall 2002 returned a total PGE value of 1740 ppb; this sample was tested using nickel fusion followed by ICP-MS analysis and returned anomalous PGE values: 683 ppb Ru, 417 ppb Ir, 406 ppb Os, 159 ppb Pt, 70 ppb Rh and 5 ppb Pd. The combined PGE assay yielded 39% ruthenium (light PGE) and 56% osmium, iridium and platinum (heavy PGEs). Alternate grab sample form McLeod in 2002 returned peak values of 105ppm Co, 953ppm Cr, and 2293ppm Ni, with 13 out of 14 grabs from assaying over 1400 ppm Ni (Beauregard, 2002).

The Tonnes of Gold (TOG) occurrence approximately 15 km southeast is the first recorded high-grade gold listwanite occurrence in the immediate vicinity; grab samples from the prospect returned peak values of 1422.2 g/t gold, >50 ppm silver, 7128 ppm lead and 3938 ppm zinc (Minfile 105C 028). The TOG claims were first staked in 1972 by local Whitehorse prospector, Gord McLeod, upon discovery of a small pod of massive chromite in ultramafic rocks. In 1979, Archer Cathro and Associates conducted geological mapping program on the property and microprobe analysis on a sample of massive chromite by District Geologist, Michael Marchand. The analysis returned a value of 49.4% Cr203 (Casselman, 2004). In 1982 during a property visit conducted by Noranda Exploration Company Ltd visible gold was found in a siliceous rock on the property. Further prospecting in 1984 determined that coarse visible gold occurs with graphite, galena and sphalerite in a linear zone of quartz and quartz-carbonate veining along the sheared contact between ultramafic and andesitic metavolcanic rocks of the Cache Creek Terrane. The highest gold grades occur along graphitic shears which segment massive quartz lenses in the footwall of a 10 m wide zone of talc-carbonate and quartz-carbonate-green mica alteration along the serpentinized margin of the ultramafic body. At least eight of these narrow, highly mineralized shear fractures occur over a 5 m width, and mapping and sampling in 1989 turned up visible gold at thirteen separate locations over a strike length of 26 metres. Drilling in 1990 tested the quartz veins up to 30 m down dip, over a strike length of 100 m. Hole 5-90 contained visible gold and returned assays up to 53 g/t gold over 0.18 m (Casselman, 2004).

A high-quality airborne geophysical (DIGHEM) survey was performed by government agencies specifically over Cache Creek Group rocks in the vicinity of Jakes Corner. The survey of 2764 line-kilometres, at a line spacing of 200 metres, was flown over an area of 500 square kilometres. More than 500 bedrock conductors were identified (Smith, 1994; Power, 1995). From this survey, two strong linear geophysical anomalies occur at the site of the Military occurrence, Minfile 105D 178. The occurrence is located on the southeast boundary of the HGP project area. In the late 90s a ground geophysical survey was done to follow up on results from previous airborne geophysical data. The secondary survey identified several structures including a linear low in nearby Faith Creek. Follow up soils returned several Au anomalies up to 510 ppb and was subsequently trenched exposing the fault and contact area. Highest assays only returned 90 ppb Au after sampling; however, bulk sampling of vein material and gouge using a 5lb ball mill returned half a dozen flakes in several 1-2 kg samples (Beauregard, 1998). The occurrence consists of an extensively hydrothermally altered fault at the serpentinite and chert/limestone contact on the edge of a glacial plunge pool which forms an incised channel into Faith Creek. The zone is gouged, pyritic with clay and graphitic alteration and minor fuchsite. This could provide one local source to gold seen in nearby creeks. Access from the Alaska Highway to the HGP property was established during this exploration.

The most recent significant exploration in the HGP property region approximately 16 km to the north was carried out by FPX Nickel Corp. which discovered Awaurite nickel-alloy mineralization as part of an extensive regional exploration program in 2011. In the subsequent years trenching, mapping and prospecting was completed on the Mitch Property which defined a 1.3-kilometre-long northwest-southeast trending zone of disseminated awaruite mineralization marked by a number of strong rock anomalies grading better than 0.08% Davis Tube magnetically-recovered ("DTR") nickel. In 2014 the company completed 873 meters of diamond drilling and intersected broad zones of broad zones of magnetically-recovered nickel exceeding a 0.06% cut-off. This includes 255.2 metres averaging a grade of 0.087% DTR nickel from 3.0 to 258.2 metres in hole 1 and the entire 453.6-metre length of hole 2 averaging 0.087% DTR nickel from 2.7 to 456.3 metres, with grades increasing to 0.123% DTR across the bottom 32.2 metres of the hole (FPX Nickel Corp.).

Recent Work

The table below summaries the recent placer exploration work carried by the Nicolai Goeppel and later on with 536005 Yukon Inc. on the Hidden Gold Placer project. The description of the work also highlights some of the more significant finds.

Year	Work Completed	Description
2011	prospecting	Discovery of paleo channel conglomerate with overlaying boulder gravels. Initial test pan on creek was done. Trace gold and abundant concentrate primarily magnetite.
2012	prospecting / hand dug test pitting	Two weeks spent digging hand dug test pits on first mile and a half of Faith creek above confluence with Judas Creek; material was screened and tested by panning. Seven hand dug test pits were excavated on benches, bedrock and false bedrock outcrops with one hole down to top gravels on the creek level. All test sites indicated viable accumulations of gold with pan tests yielding up to 45 mg in a single pan.

2013	prospecting / hand dug test pitting / staking	One-mile prospecting lease was staked. Hand dug test pits from the previous season were sampled again, 4 five-gallon buckets (.01 of a yard) of material from each hole was sampled using a small highbanker sluice box. Results yielded up to 0.2 g for 0.25 yard. Additional prospecting and panning were done upstream on Faith creek from 1.5 to 3 miles from the confluence of Judas Creek. 3-mile prospecting lease was staked.
2014	mechanical test pitting / prospecting / staking	Half a yard on material was sluiced with small vibrating flying dutchman sluice box producing 2.5 grams of gold on a bench at the lower downstream part of Faith creek. A larger shotgun box was constructed and ran two yards producing 1.5 grams. 3 other test pits were dug on bench. Additional prospecting was done on Judas Creek and two other tributaries and proven to contain placer gold; subsequent prospecting leases and placer claims were staked three drainages.
2015	mechanical test pitting / auger drilling/ staking	38 test pits were dug on Faith creek, 25 test pits on Judas and 2 test pits on Hope creeks. Test pits were panned and pits with good results had 0.01 yrd^3 sluiced. Test pits on Faith creek tested top gravels and indicates payable grades up to 25-50 mg from 0.01 yrd^3 and average of 5ft of overburden. Test pits on Judas Creek tested an upper gravel layer and returned pans up to 20 mg. Pan test from test pits on Hope creek yielded up to 2.5 mg. 111 ft of 6-inch auger drilling was done on 3 locations on Faith creek and 480 ft 6-inch auger drilling on was completed on 9 locations on Judas creek. Results from drilling on Faith creek indicate a bedrock ledge were bedrock goes from 55ft to 24ft to 16ft and returned 50 mg of gold from one five-gallon pail or an average of 2 grams per yrd^3 (0.765 m^3). Drilling on Judas creek had bedrock varying from 70+ ft to 10 ft gravels form intermittent layers on downstream side and more consistent layer up stream. Leases were staked into claims and additional bench leases were staked.
2016/2017	prospecting/reclamation	Test pits were back filled and any slash piles were chopped to size and burned. Minor sampling of test pits and prospecting.
2018	Bulk sampling / analytical testing	100 yrd^3 (76.46m^3) of material was processed through trommel off of bench on the downstream end of Faith creek; producing 2.953 oz of gold or an average grade of 1.2 grams per cubic meter. Concentrate was tested with several analytical methods and determined to contain iron, nickel, platinum and palladium.

2019	geophysics / mechanical test pitting / hand dug test pits/ staking	Several locations on Judas Creek and Faith Creek were surveyed using magnetometer and seismograph. 14 mechanically excavated test pits were dug on Judas creek. 8 hand dug test pits were done on Judas creek and the right and left limit benches as well as two on an unnamed tributary of Faith creek and 4 on an alternate tributary between Judas and Faith creek. Magnetometer survey identified several potential pay areas, seismograph provided depth to bedrock readings. Hand dug test pits indicated gold present on the Judas creek benches and on the two unnamed tributaries. One tributary also indicated abundant platinum. Several prospecting leases were staked and broken into claims.

2019 Exploration Program and Results

Summary

The 2019 exploration on the Hidden Gold Placer Project initiated July 15th, 2019 and was run intermittently till end of March 2020. The initial phase consisted of staking on Judas creek and left and right limit benches, approximately 7.5 miles of prospecting leases were staked. Mechanical trenching began on July 17th, 2019 on Judas creek. A total of 14 test pits were dug along a 1.5km stretch on Judas creek, using a Doosan EX200 excavator for 3 days. In September 2019, 14 hand dug test pits were dug on the newly staked leases on Judas creek as well as on two unnamed tributaries. Figure 4, indicates hand and mechanically excavated test pit locations. These leases were subsequently staked into claims and 5 miles of leases were staked on upper Faith creek as well as a one-mile lease on the lower end of Judas creek. Materials from mechanical test pitting and hand dug pits were tested by either panning or run through a small high banker sluice box. Gold quantities were estimated in the field using a placer gold scale card. In February 2020, a ground walking magnetometer survey coupled with a passive seismic survey was carried out on several areas on Faith and Judas creeks. The magnetometer was used to identify potential pay streaks were there are significant accumulations of heavy minerals through alluvial action. The passive seismic unit was used to identify depth to bedrock and possible sub layers. The total expenditures for the exploration program are $101,367.79.

Mechanical Test Pitting

On July 16th, 2019 a Doosan EX200 excavator was mobilized the Hidden Gold Project from Whitehorse, Yukon. Damen Kraeleman was the operator and two geologists from All Gold Resources carried out the

testing. Three days of mechanical test pitting was carried out along a 1.5km stretch of Judas creek. The location was selected because of the physiology of the drainage at this location. Test pits reached a maximum depth of 5m dimensions were approximately 1.75 m wide by 2.5 m long. None of the test pits reached bedrock. Out of the 14 test pits 8 reached gravels, 3 were in lacustrine clay and 2 were frozen and abandoned. On pits which hit gravels 0-0.15 m was organic soil, 0.15-1.9 m was lacustrine clay, 1.9-5 m was gravel ranging from fine to coarse with cobbles. In a two of the pits gravels is truncated by clay layer. Gravels produced trace gold to 10 mg from pan tests, an average of 1.53 g/yrd^3 (per 0.76m^3) and was very fine in nature. All test pits were backfilled and reclaimed following sampling. The mechanical test pit data is tabulated below. Figure 6, Appendix I indicates the test pit locations.

Pit ID	Easting	Northing	Width (m)	Length (m)	Depth (m)	Description	Results
N1	554191	6697970	1.75	2.5	5	0-0.20m organic soil;0.20-1.75m clay; 1.75-5 well rounded boulders matrix supported sandy medium gravel	trace
N2	553956	6698058	1.75	2.5	3	Frozen, organic soil 0-0.25m, 0.25-3m clay	n/a
N3	553662	6698416	1.75	2.5	5	0-.15 organic soil; 0.25-5m gravel-cobble packed with medium sand	2mg fine gold from pan test
N4	553759	6698497	1.75	2.5	3	Frozen, organic soil 0-0.25m, 0.25-3m clay	n/a
N5	554944	6698643	1.75	2.5	5	0-.15 organic soil; 0.25-5m gravel-cobble packed with medium sand	1.5mg fine gold from pan test
N6	555065	6698778	1.75	2.5	5	0-.15 organic soil; 0.25-5m gravel-cobble packed with medium sand	trace
N7	553789	6698420	1.75	2.5	5	0-0.25 m was organic soil, 0.15-1.9 m was lacustrine clay, 1.9-4 m was gravel ranging from fine to coarse with cobbles and occasional boulder up to 0.5m wide. Clast supported coarse sand matrix, 4-5m hard clay	10mg from pan test
N8	553851	6698347	1.75	2.5	5	0-0.25 m was organic soil, 0.25-1.9 m was lacustrine clay, 1.9-5 m was gravel ranging from fine to coarse with cobbles. Clast supported coarse sand matrix	n/a
N9	554139	6698459	1.75	2.5	5	0-0.25 m was organic soil, 0.15-1.9 m was lacustrine clay, 1.9-5 m was gravel ranging from fine to coarse with cobbles and occasional boulder up to 0.5m wide	2mg from pan test
N10	554315	6698451	1.75	2.5	5	0-0.25 m was organic soil, 0.15-1.9 m was lacustrine clay, 1.9-4 m was gravel ranging from fine to coarse with cobbles with clast	trace

						supported coarse sand matrix, 4-5m hard clay	
N11	554474	6698620	1.75	2.5	5	0-0.25 m was organic soil, 0.15-1.9 m was lacustrine clay, 1.9-4 m was gravel ranging from fine to coarse with cobbles and occasional boulder up to 0.5m wide. Clast supported coarse sand matrix, 4-5m hard clay	5mg from pan test
N12	554509	6698744	1.75	2.5	5	0-0.25m organic soil; 0.25-5m lacustrine clay with minor interbedded fine to medium gravels	n/a
N13	554583	6698487	1.75	2.5	5	0-0.15m organic soil; 0.15-2.5m sandy matrix supported fine gravels with cobbles; 2.5-5m clast supported coarse gravels and cobbles	trace
N14	554785	6698703	1.75	2.5	5	0-0.25m organic soil; 0.25-5m lacustrine clay with minor interbedded fine to medium gravels	n/a

Hand Dug Test Pits

In Fall 2019, starting mid September; hand dug test pitting began, this was generally done by 2 to 4 people mobilizing into areas via quads. The crew consisted of prospectors Stephen Sanderson, Thomas Fink and geologists Ryan Purnell and Nicolai Goeppel. Testing was carried out by panning or running five-gallon buckets through a small high banker sluice box. Four test pits were excavated on the left-limit bench of Judas creek, 3 test pits on the right limit bench and one in the creek bottom (Figure 7&8). A further 4 pits were dug on the unnamed tributary between Judas creek and Faith creek and 2 test pits on the unnamed tributary that drains into Faith creek from the south end of the property (Figure 9&10). Test pits averaged 2 m wide by 3m long and reached depths up to 3m. All test pits were backfilled and reclaimed following sampling. Test pits dug on the creek level generally reached the water table and had to be terminated; were as, test pits dug on the bench levels or above the creek elevation could be excavated to greater depths. Benches on Judas creek failed to reach bedrock and indicated a thick horizon of glacial lacustrine clays with some thin coarse gravel layers.

Approximately 70% of the test pits had gold with values ranging from trace to 20 mg of gold in test pans. The 20 mg pan (average 2.3 g/yrd^3) was taken from pit 10 the unnamed tributary that drains into Faith creek from the south. The pit was dug on a bedrock reef that is approximately 5m above the creek level. Test pit number 5 located on the unnamed tributary between Judas and Faith creeks returned 8 flakes of platinum and 10 mg of gold in 3 colours. Platinum was observed in concentrate from lower Faith creek were samples were analysed by overburden drilling management and only as fine flakes or grains. Such quantities of platinum in a single pan may suggest closer proximity to the source. Results and descriptions are tabulated below.

Pit ID	Easting	Northing	Width (m)	Length (m)	Depth (m)	Description	Results
Pit 1	552146	6696010	3	3	2.7	Located on bench at confluence between Faith and Judas Creek. Cobbles packed with sand, clay rich at surface to 0.5m; 0.5 to 1.25m coarse sand layer; 1.25 to 1.75m coarse cobbles (up to 1 ft across) packed with coarse sand; 1.75 to 2.7m coarse material grades gradually into matrix supported pea gravel.	up to 2.5 mg Au in test pans from coarse cobble-gravel
Pit 2	552079	6696006	3	3	2	Located on bench at confluence between Faith and Judas Creek. Cobbles packed with sand, clay rich at surface to 0.5m; 0.5 to 1.25m coarse sand layer; 1.25 to 1.75m coarse gravel packed with medium sand; 1.75m matrix supported pea gravel, sandy.	trace gold in pans from coarsest material.
Pit 3	555768	6699246	2	2	2	Located on left-limit bench on Judas creek, where bench has been outwashed by a tributary from the south. 0-1.25m was clay with occasional pea gravel; 1.25-2m coarse boulder packed with coarse sand and gravel	up to 5mg Au in pan tests from coarse bouldery material
Pit 4	555889	6699241	3	3	2	Located on left-limit bench on Judas creek, where bench has been outwashed by a tributary from the south. 0-0.5 gravel packed with clayey sand. 1.25m was clay	up to 2mg Au in pan tests from coarse bouldery material

						with occasional pea gravel; 1.25-2m coarse boulder packed with coarse sand and gravel, high clay content.	
Pit 5	555326	6695922	2	2	2.5	0-0.12m organic material inbetween well-rounded boulders up to 0.75m wide; 0.12-1.5m moderately rounded gravels, sand matrix with 0.5-0.75m wide boulders; 1.5-2m clay; 2-2.5m fine gravel and sand with boulders ranging from 0.25-0.75m.	2mg Au in 1 pan of surface gravels. 8 flakes of platinum and 10mg Au from under clay layer. 0.5mg from pan of bottom.
Pit 6	555265	6695696	2	5	0.5	Organic soil to greenstone bedrock, minor pockets of oxidized sub-rounded pea gravel in silt matrix.	1/2 pan of gravel yielded 1mg colour from pocket of pea gravel
Pit 7	555244	6695693	2	3	1	Thin layer of organic soil to medium to coarse gravel with boulders up to 0.5m wide to greenstone bedrock.	one 3mg colour from pan test.
Pit 8	555232	6695688	1.5	2.5	2	Pea gravel in fine sand dominated matrix with occasional cobble grades into coarser gravel-cobble in sand supported matrix.	pan from bottom with no gold.
Pit 9	556636	6694031	2.5	2.5	2	On creek level besides rock outcrop. 0.25m of organic soil; silt-sand to bottom of the pit.	no gold
Pit 10	556668	6694023	2	2	1	Located on left-limit of tributary on 5m high bedrock reef. 10cm of organic soil coarse gravel/cobble packed with coarse sand to bedrock.	10mg in one pan from gravel on top of bedrock.

Pit 11	555812	6699509	2.5	3	2	Located on left-limit bench on Judas creek, where bench has been outwashed by a tributary from the south. 0-1.25m was clay with occasional pea gravel; 1.25-2m coarse boulder packed with coarse sand and gravel	no gold
Pit 12	553923	6698749	3	3	2	located on right limit bench of judas creek; fine silt and clay with occasional gravel, lacustrine material	no gold
Pit 13	554027	6698832	2	2	2	located on right limit bench of judas creek; fine silt and clay with occasional gravel, lacustrine material	no gold
Pit 14	554109	6698887	3	3	2	Area of outwash through the right -limit bench. Fine silt-clay from 0-1m; 1-2m medium gravel packed with fine clay.	one 2.5mg colour from pan test.

Seismic Survey

A passive seismic survey was conducted starting mid February on Judas and Faith creeks. Readings were taken at 50m intervals on lines perpendicular to the creek and parallel to the creek on one location on Judas creek. Readings were first done on areas of known bedrock depth based on drilling or visual exposure in order to verify and 'home-in' the data. Remaining survey areas were based on positive test results or areas of interest for mining. Data was projected and analyzed using Gorilla software.

The unit is manufactured by Moho s.r.l (serial number T23-0049/02-17) and the model is a Tromino. A geophysicist from EarthEx Geophysical Solutions Inc. provided consultation and reviewed data during the survey; as well as, Alex Walcott from Geofisica. The Tromino is used for characterization of soils and subsurface; for example, distinguishing overburden from gravels. It is also used to determine depth to bedrock and bedrock profile. The unit uses 3 velocimetric channels, 3 accelerometric channels and 1 analog channel which record naturally occurring microtremors and minor seismic activity.

Prior to the start of the survey it was understood that the seismograph would require 2 minutes for a reading and that frozen ground would not be an issue and that the machine could be placed on top of the exposed soil. However, a 20-minute reading was more accurate and provided more reliable data. This also incurred a 20-minute recording time. In addition, frozen soil created coupling issues that provided the greatest source of error during the survey. In order to operate and generate usable data each site required that snow and overlaying vegetation be removed and that the ground be heated using a propane torch for a minimal 25cmx25cm area. The Tromino has three metal spikes which must be pushed securely into the ground, a poor coupling would result in unusable data. This factor also required much more preparation time and a helper to assist in site preparation. Given these circumstances it would require at times over an hour to take a single reading. It would be recommended that such a survey only be carried out in the summer and that more than one unit be used. This would ensure better coupling, multiple units could be cycled or 'leap-frogged' to give a better area of cover, and a laptop could be taken in the field to give a real-time look at the data and whether it is usable. 30 readings were taken 12 were usable. Based on seismic data bedrock depths varied from 3.27m or 10.7ft to 7.93 m or 26 ft. Generally, bedrock was in the 10.7 – 16ft range on Judas creek and 25 – 26 ft range on Faith creek. A summary of the seismic data is tabulated below. Figures 15 – 18 map the seismic locations. The complete seismic data is Appendix II of this report.

Waypoint ID	Easting	Northing	Elevation (m)	Depth to Bedrock	Partition #	Data Quality	Frequency (Hz)	Comments
FC2A7 (drillhole 24ft depth)	**552565**	**6695144**	**799**		**33**	**OK, two peaks, repeat test**	**5.15 or 7**	**Repeat required to determine true frequency.**
FCDHA (repeat of FC2A7	**552565**	**6695144**	**799**			**poor, tracking ok**	**4.64?**	**4.64 as frequency? Fairly flat curve but tracking ok**
FCDH2 (drillhole 24ft)	**552624**	**6695135**	**803**		**60/99**	**Good**	**3.1**	
FC01A	552584	6695186	821		40,41	Scrapped Site, poor data		
FCO2A	552563	6695142	922			Scrapped Site		
FC03A	552540	6695107	830	**7.93**	28	Good	2.8 or 4	Need confirmed frequency value from FC2BA7 to calculate true depth
FC3BA	552637	6695066	812		29	Good	2.6	Need confirmed frequency value from FC2BA7 to calculate true depth
FC3BA2	552635	6695055	779	**7.72**	58/99	Good	2.94	
FC2BA	552643	6695062	805		34	Good, two peaks	3.45 or 4.2	Need to repeat site to understand true frequency values
FC2BA2	552654	6695107	808	**6.48**	59/99	Good	3.5	
FC1BA	552672	6695165	801		35	Poor		Repeat
JCDH (drillhole 16ft depth)	**552529**	**6697172**	**774**		**51**	**Poor**	**0.6**	**Repeat required to find frequency.**
JCDH2 (repeat of JCDH)	**552529**	**6697172**	**774**		**57**	**Poor, tracking ok**	**1.03?**	**1.03 as frequency? Fairly flat curve. Some tracking of horizontal**

								components. 2nd Repeat
JCDH3 (drillhole 16ft depth)	**552531**	**6697172**	**778**		**61/99**	**Poor but close to JCDH2?**	**0.94**	**March 29 3rd repeat**
JC2B	552874	6697255	785		39	Poor		Repeat
Jc2GA	553868	6698683	810			Poor		Repeat
Jc3GA	553883	6698639	792			Poor		Repeat
Jc4GA	553902	6698587	787	**3.22**	48	Good	1.42	Bedrock depth dependent on known frequency of FC2A7
Jc5B	552731	6697203	776		36	Poor		Repeat
Jc5GA	553940	6698564	784	**4.98**	47	Good but high frequency	0.92	Bedrock depth dependent on known frequency of FC2A7
JC6G	553948	6698504				Poor		Repeat
Jc7GA	553966	6698461	786	**4.58**	45	Good but high frequency	1	**Bedrock depth dependent on known frequency of FC2A7**
Jc8GA	554001	6698413	788	**4.98**	44	Good but high frequency	0.92	Bedrock depth dependent on known frequency of FC2A7
Jc9Ga	554011	6698366	783	**4.98**	43	Good but high frequency	0.93	High Frequency
JCCAB	554251	6698535	792		52	Poor		Repeat, Bedrock depth dependent on known frequency of JCDH
JC2EA	554896	6698834	792		53	Good	0.93	Bedrock depth dependent on known frequency of JCDH
JC3EA	554934	6698820	783		54	Poor		Repeat, Bedrock depth dependent on known frequency of JCDH
JC4EA	555000	6698794	770		55	Maybe	0.77	Bedrock depth dependent on known frequency of JCDH
JC3B	552826	6697240		**3.27**	38	Maybe	1.4?	Bedrock depth dependent on known frequency of JCDH

JC4B	552780	6697220		**3.27**	37	Good	1.4	Bedrock depth dependent on known frequency of JCDH

Magnetometer Survey

In February and March 2020, a ground based magnetic survey was carried out on the Hidden Gold Project. Surveys were carried out on lower and upper Faith creek and on Judas creek (Figure 5). Grids were spaced at 50 and 100 m intervals with lines running perpendicular to the creek. The areas for the magnetometer survey were to view the response over a known area of interest, to provide targets in the unexplored regions, and to asses areas of interest. The magnetometer unit is a GEM systems GSM-19 (serial number 1044215) proton precession magnetometer. The unit is a walking mag taking readings in 2 second intervals. The magnetometer survey measures magnetic susceptibility of the subsurface, the greater the accumulation of magnetic minerals the greater the magnetic response. The higher magnetic susceptibility represents potential pay streaks as higher velocity fluvial flows would have concentrated gold and other heavy minerals by washing away lighter minerals (heavy minerals ie: magnetite, ilmenite, platinum, other PGEs, cobalt, Ni-alloy, sheelite, etc). It should be noted that the computer generation of the geophysical maps uses an interpolation between points; therefore, data is extrapolated between readings and has less confidence as distance between readings increases. The smaller the distance between readings the greater the resolution in the projection and the higher the accuracy of the data.

On the downstream end of Judas creek, a total of 1.4 -line kilometers were completed with readings taken every 2 seconds on 50m spaced lines oriented perpendicular to the creek (Figure 11). Survey A was a total of 3973 readings were taken. A 350m long area was surveyed on the downstream west end of Judas Creek. Readings ranged between 55581.8 and 56258.3 nano tesla (nT). The survey indicates that the benches are producing a high magnetic response. Also, there is a high response alongside the creek that may be indicative of a buried channel. The low response along the third line from the left coheres with a ledge that was discovered in previous drilling and could indicate presence of a fault.

Towards the east and up stream on Judas creek a secondary magnetometer survey (Survey B) was completed; a total of 6.8 line-kilometers was surveyed. Readings were taken every 2 seconds on lines perpendicular to the creek for approximately 400-500m on 100m intervals between lines (Figure 12). The survey covered a 1.4 km long area along Judas Creek, and readings ranged between 49854.47 and 56617.25 nT. A total of 9302 readings were taken. Results indicate high isolated readings towards the enter of the creek were the drainage widens and on isolated areas on the right limit bench. In addition, higher magnetic susceptibility was returned on the western flank of the survey area were the drainage narrows. In this area a broad area of higher magnetic susceptibility may be the result from material generated from a tributary draining in from the south or bedrock influence. Magnetic highs and intermediate highs in the middle of the drainage are of particular interested as they are insulated with a thicker layer of overburden. This area was run on 100m line intervals to see if coverage could be maximized but appears 100m intervals are too far apart, reducing the resolution too far. Bench readings in generally appear much higher and should be projected separate from valley bottom readings to emphasize highs produced in the valley bottom were thicker overburden insulates high responses.

Two surveys were done on Faith creek, Survey C was done in the downstream end next to the 2018 bulk sample and 2015 drilling and a second survey (Survey D) was done 4 miles upstream in the highest elevations of the drainage, were little data is known. The downstream survey was a total of 0.25 line-kilometers. A total of 302 readings were taken; readings ranged from 56635.96 to 56959.72 nT. A broad magnetic high is seen along the north and west end of the mag survey with lower magnetic values to the south and left-limit of the creek (Figure 13). This may be more indicative of the bedrock signature as it is known that serpentinite an ultramafic with high magnetic susceptibility is exposed to the north or right-limit of the creek, suggesting that there is a contact or fault in the drainage.

The upper Faith creek survey (Survey D) was a total of 10 line-kilometers lines were done on 50 m intervals and reading were taken at 10m intervals (Figure 14). For this survey the mobile function was used appose to the walking mag function in order to avoid data pile ups on locations were the travel was more difficult and time consuming. A total of 1445 readings were taken ranging from 48521.46 to 56715.24 nT. This survey produced the best result out of all the survey areas. A nice 100m continuous magnetic high tends along the right-limit of the drainage and then trends towards the center of the drainage on the west end of the survey area. This appears to signify a potential pay streak. It is suspected that this area worked best due to the underlaying limestone geology that would have accentuated any concentrations of magnetic minerals and the survey method using closer line spacings and controlled readings every 10 meters.

Expenditures

Personnel

Task	Day Rate	Number of Days	Total
Geologist	$400	23	$ 9,200.00
Assistant/Labourer	$275	33	$ 9,075.00
Excavator operator	$600	3	$ 1,800.00
Geophysics Survey	$450	39	$ 17,550.00

Subtotal	**$ 37,625.00**

Claim Staking			
Claim Staking	$350.00 per day per person	43	$ 15,050.00

Subtotal	**$ 15,050.00**

Daily Field Expenses			
Daily Field Expenses	$100.00 per day per person	98	$ 9,800.00
Daily Field Expenses Claim staking	$100.00 per day per person	43	$ 4,300.00

Subtotal	**$ 14,100.00**

Transportation

Task	**Rate**	**Number of Days**	**Total**
Truck	$0.60/km 150km/day = $90/day	47	$ 4,230.00
Truck	$0.60/km 150km/day = $90/day	29	$ 2,610.00

Subtotal	**$ 6,840.00**

Equipment

Task	**Rate**	**Number of Days**	**Total**
Quad	$40.00 per day	26	$ 1,040.00
Quad	$40.00 per day	26	$ 1,040.00
Snow machine	$40.00 per day	21	$ 840.00
Argo (tracked)	$40.00 per day	20	$ 800.00
Excavator	$200.00/hr 3days	35 hrs	$ 7,000.00
Quad trailer	$10.00 per day	26	$ 416.00
Quad trailer	$10.00 per day	26	$ 416.00
Skimmer	$10.00 per day	21	$ 200.00
Transport trailer	$16.00 per day	47	$ 752.00
Chainsaw	$10.00 per day	26	$ 260.00
2" pump	$10.00 per day	13	$ 130.00
Highbanker (1 to 5yd/hr) Test pits	$25 per day	13	$ 325.00

Clean up Sluice and Pump	$25 per day	13	$ 325.00
Seismic unit	$300/day	21	$ 6,300.00
Magnetometer	$300/day	18	$ 5,400.00
		Subtotal	**$ 19,844.00**

Fuel			
Fuel (general, quads, trucks, etc)	By receipt/visa statement		$ 3,908.79
		Subtotal	**$ 3,908.79**

Final Technical Report			
Report preparation + Geophysics Data			$ 4,000.00
		Subtotal	**$ 4,000.00**

Total Costs			
Personnel			$ 37,625.00
Claim Staking			$ 15,050.00
Daily Field Expenses			$ 14,100.00
Transportation			$ 6,840.00
Equipment			$ 19,844.00
Fuel			$ 3,908.79
Report preaparation			$ 4,000.00
		Total	**$ 101,367.79**

The total expenditures for the 2019-2020 YMEP exploration program is $101,367.79. All receipts and invoices can be viewed in Appendix III of this report.

Conclusion and Recommendations

The 2019-2020 placer exploration program on Hidden Gold Placer property resulted in the excavation of 14 hand-dug test pits, 14 mechanically excavated test pits, an 18.42 line-kilometer magnetometer survey, 24 seismic points and staking. Total expenditures for the 2019-2020 YMEP program was $101,367.79.

Approximately 70% of the test pits had gold with values ranging from trace to 20 mg of gold in test pans. The 20 mg pan (average 2.3 g/yrd^3 or per 0.76 m^3). Another hand dug test returned 8 flakes of platinum and 10 mg of gold in 3 colours. Such quantities of platinum in a single pan may suggest closer proximity to the source. These two significant test pits are on previously untested tributaries in the area. Test pitting was effective tool on reefs and benches but ineffective near the creek level were there is a stronger water table. Mechanical test pitting successfully reached gravels on 8 of the 14 test pits and all contained gold from trace to 10 mg in pan tests. The area chosen for mechanical test pitting is the broadest area on Judas creek and has likely a greater depth to bedrock, making test pitting less effective. The seismic survey had 12 out of 30 readings which provided usable data, of which bedrock depths varied from 3.27m or 10.7ft to 7.93 m or 26 ft. Winter conditions required considerable time and effort for site preparation. The seismic unit would make an effective tool for exploration but likely only in the summer and using multiple units. The magnetometer survey was successful in delineating targets for follow up. It was found that 50 m line intervals provided better data and that the mobile and controlled sites worked better than the walking mag function. In addition, the upper faith creek survey underlain by limestone showed to particularly highlight magnetic anomalies. The program resulted in the staking of 12.5 miles of prospecting leases; of which, 7.5 miles was broken into claims.

Based on results from the 2019 exploration program further work is warranted to further evaluate the project through prospecting, drone surveys, drilling, mechanical test pitting, extending magnetometer / seismic survey and bulk sampling. Areas of focus include the first 5 miles on Faith Creek to expand drilling and test pitting, the plunge pool on Hope Creek, and 3 miles on Judas Creek to expand on previous testing. The unnamed tributaries south of Faith creek and between Faith and Judas creeks should also be prospected and mechanically test pitted to determine these new outlying potentials. Anomalies on Faith and Judas creek should be mechanically test pitted or drill tested. Drone surveys should be flown over the different drainages in the project with high-resolution cameras to identify glacial features and changes in the creek morphology and to serve as a medium in plotting data. A digital DEM can be established from drone surveys and would serve as an accurate surface to use for accurate resource calculations and planning future mining. Magnetometer and seismic should be extended to determine test pit and drilling targets and what method is more appropriate. Test pits should be continued from previous testing and on areas were shallow bedrock is determined from field observations or seismic data. Excavation of pits should place organic material on a specific place, be sampled and then immediately filled in the reverse order to ensure minimal disturbance. Drilling should be done by means of a sonic drill following test pitting where bedrock is deeper based from test pits or seismic data and to test magnetic anomalies. This will offer a way to gauge depth to bedrock and provide an inclination to the grade. Since there is no permafrost which would acts as a natural casing when auger drilling, sonic drilling would be the best option. Drilling should carry out on Hope Creek, upper end of Faith and on Judas Creek. Test pits would provide insight into the grades in the upper gravels and depth of overburden; drilling will provide stratigraphy, depth to bedrock with approximate grade. Areas which have already been test pitted and drilled and indicate promising results should be bulk sampled. This will provide a more accurate yardage calculation and thoroughly evaluate the placer potential.

A new placer area is emerging in southwest Yukon. The project covers 5 drainages made up of Judas creek and its tributaries. The Hidden Gold Placer project displays encouraging results and favourable placer mining conditions. Permafrost has yet to be encountered in the project area with minimal overburden (generally 2.5 – 5ft deep). Lack of permafrost and strong ground water table present good seepage and would theoretically allow for zero discharge and minimal draw from the creeks during mining. The well-established access to the area and close proximity to Whitehorse makes the project very feasible.

Statement of Qualifications

I Nicolai Goeppel, of the city of Whitehorse, Yukon, certify that:

1. I worked and carried out work on the Hidden Gold Property in 2020, and have been involved with the Hidden Gold Placer project since 2011
2. I have completed an Earth Sciences B.Sc. at Memorial University of St. John's, Newfoundland in 2014
3. I have worked in the mineral exploration industry in the Yukon, Newfoundland, and British Columbia since 2009
4. I have been involved in the placer industry my entire life and engaged in placer gold exploration in the Yukon and BC since 2009
5. Owner and founder of Higher Ground Exploration Services since 2015

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Appendix I

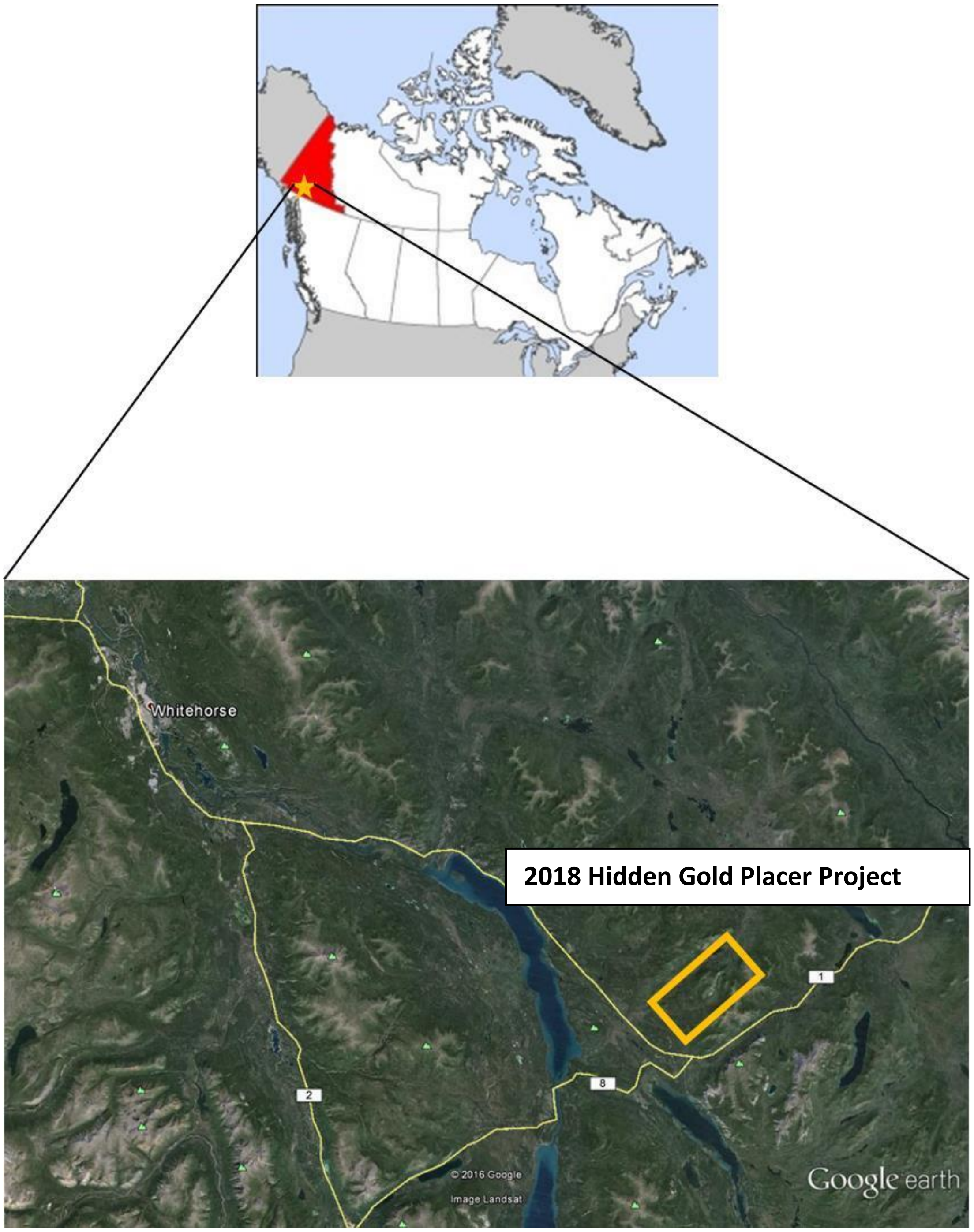


Figure 1. Location

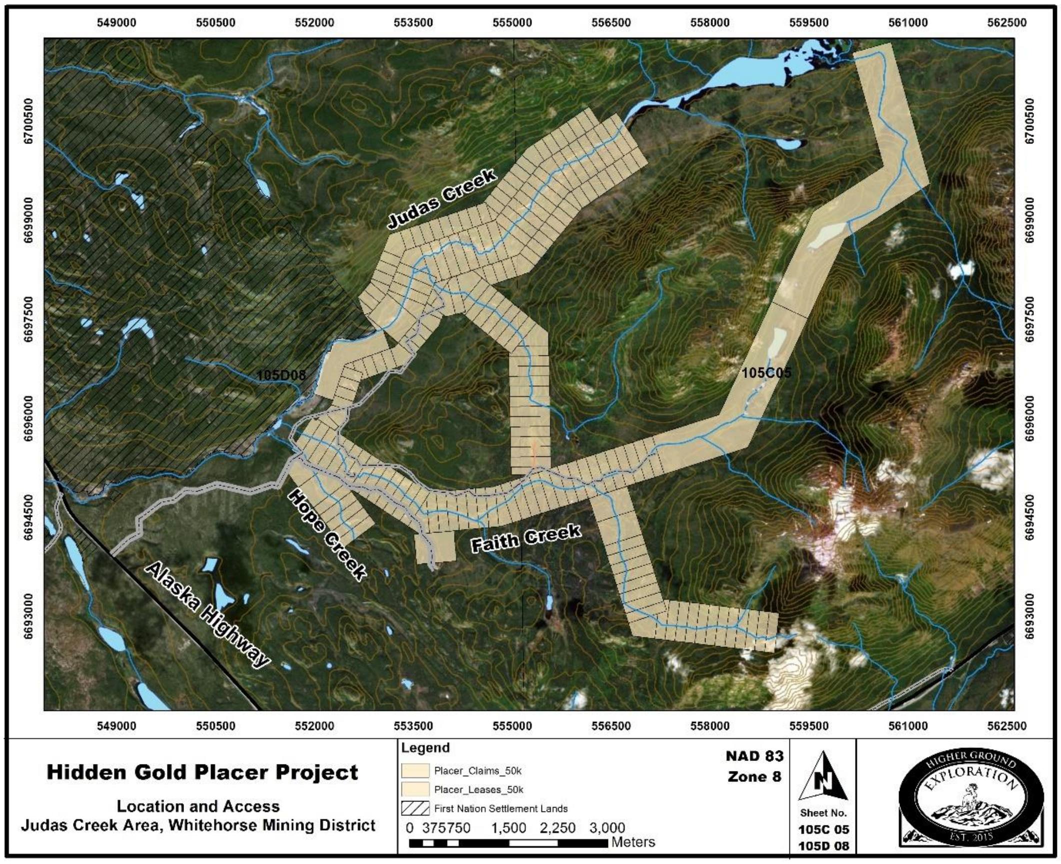


Figure 2. Claim and leases with detailed access

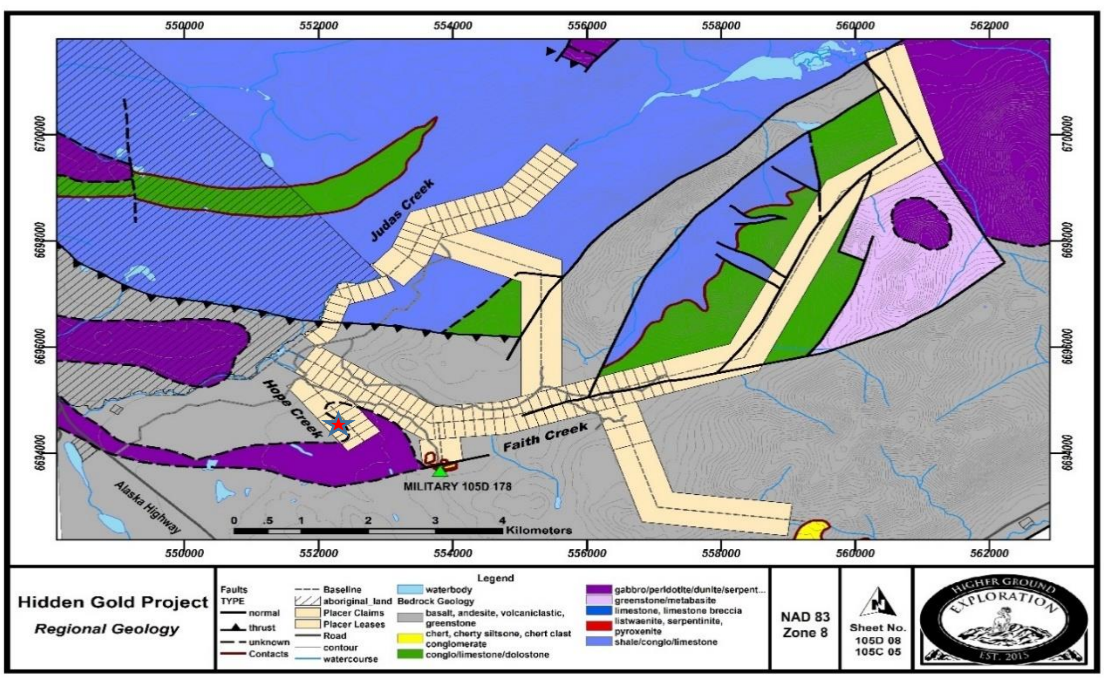


Figure 3. Regional geology, claims and leases

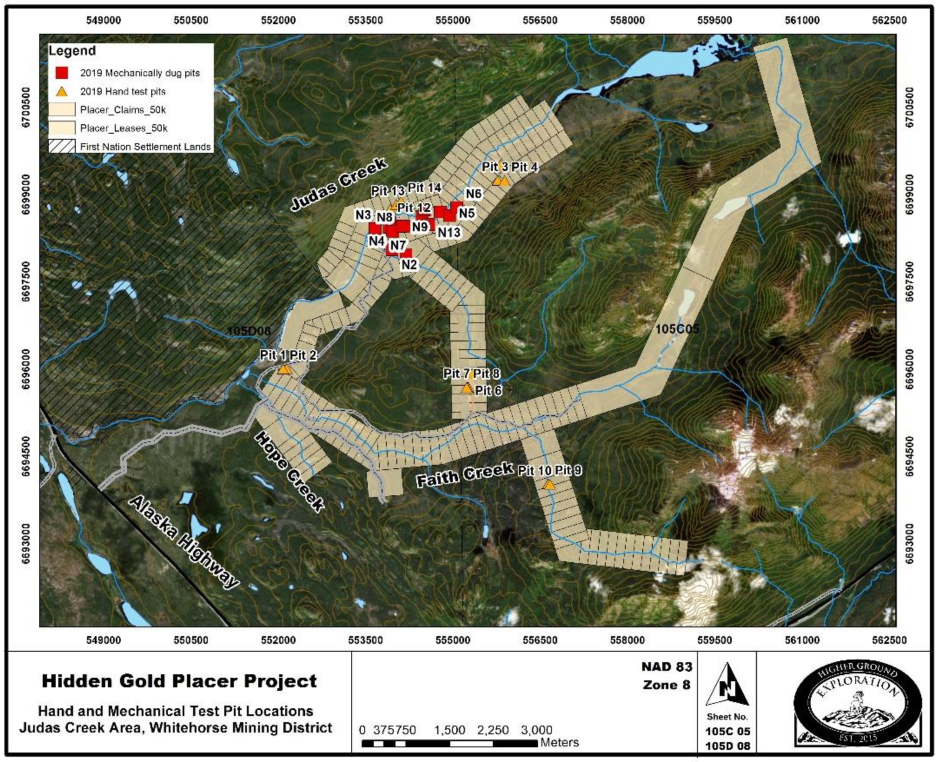


Figure 4. Mechanical and hand dug test pit location overview

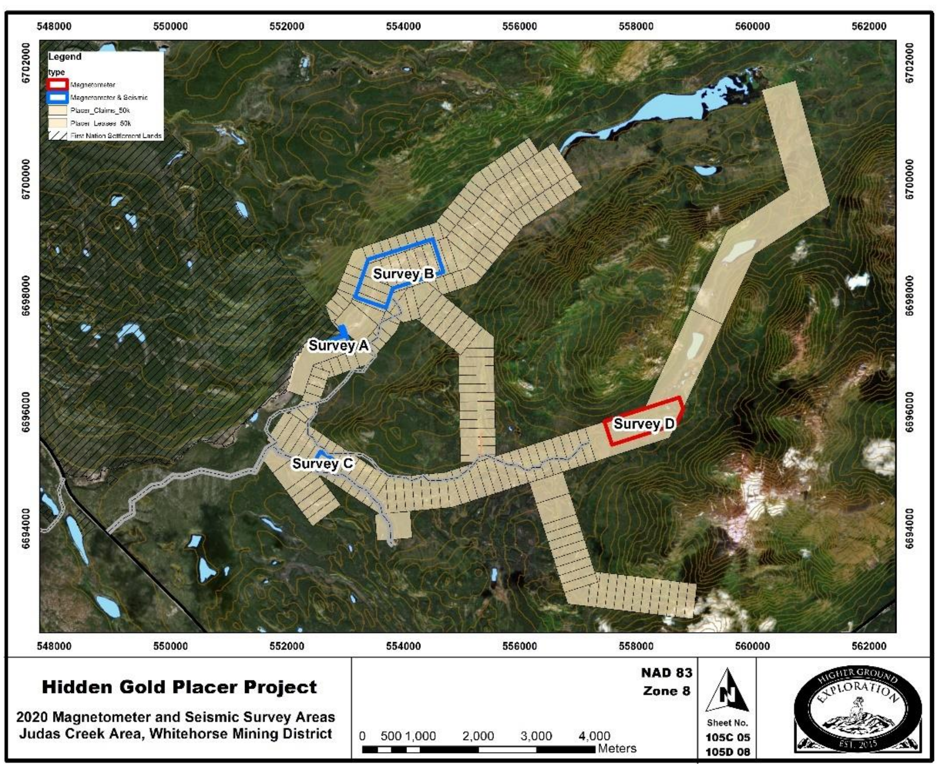


Figure 5. Magnetometer and seismic survey areas

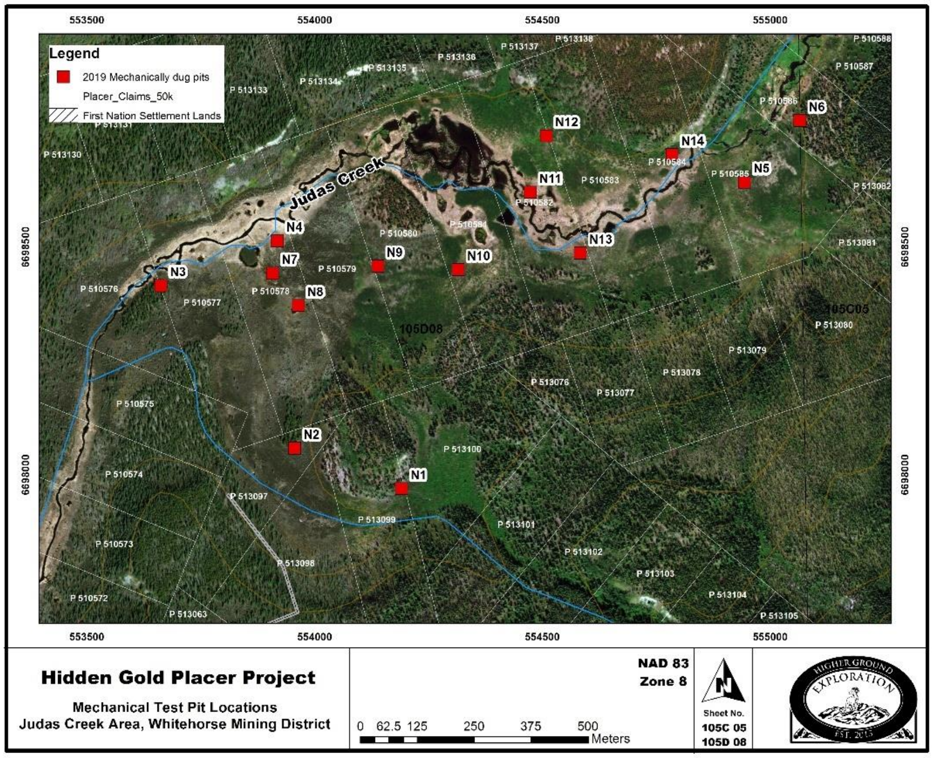


Figure 6. Mechanical test pit locations

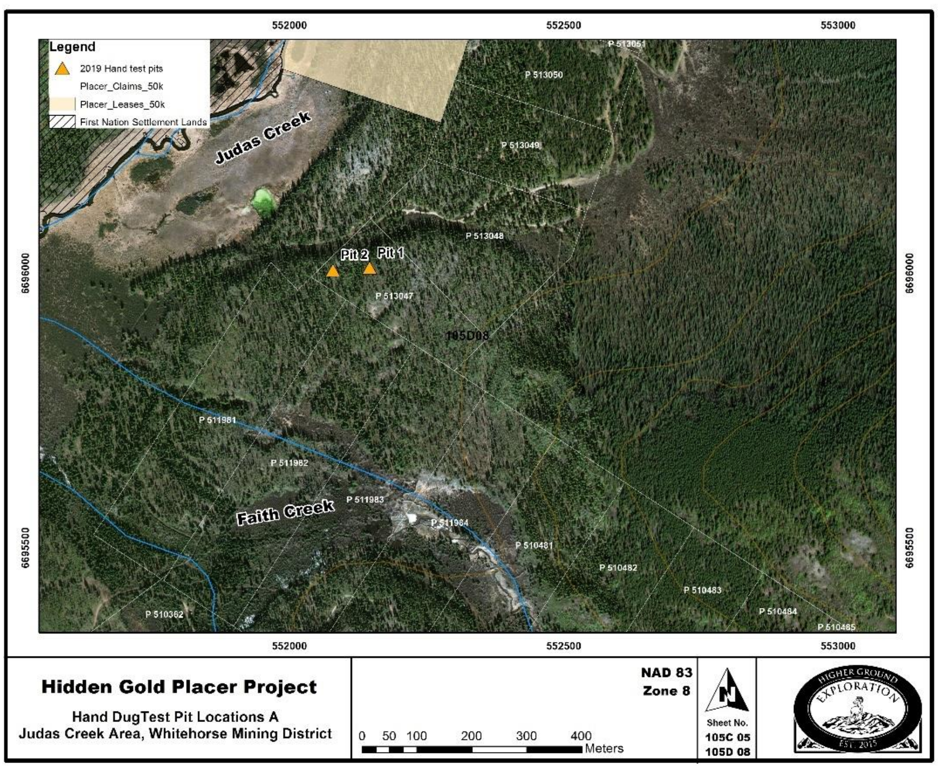


Figure 7. Hand dug test pit locations, area A

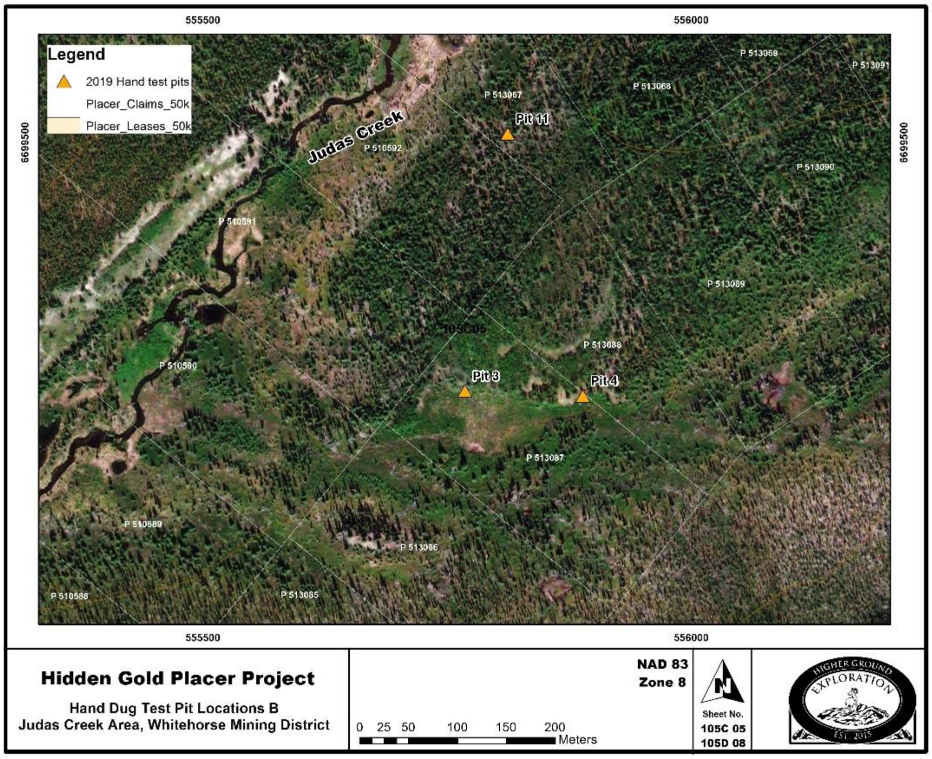


Figure 8. Hand dug test pit locations, area B

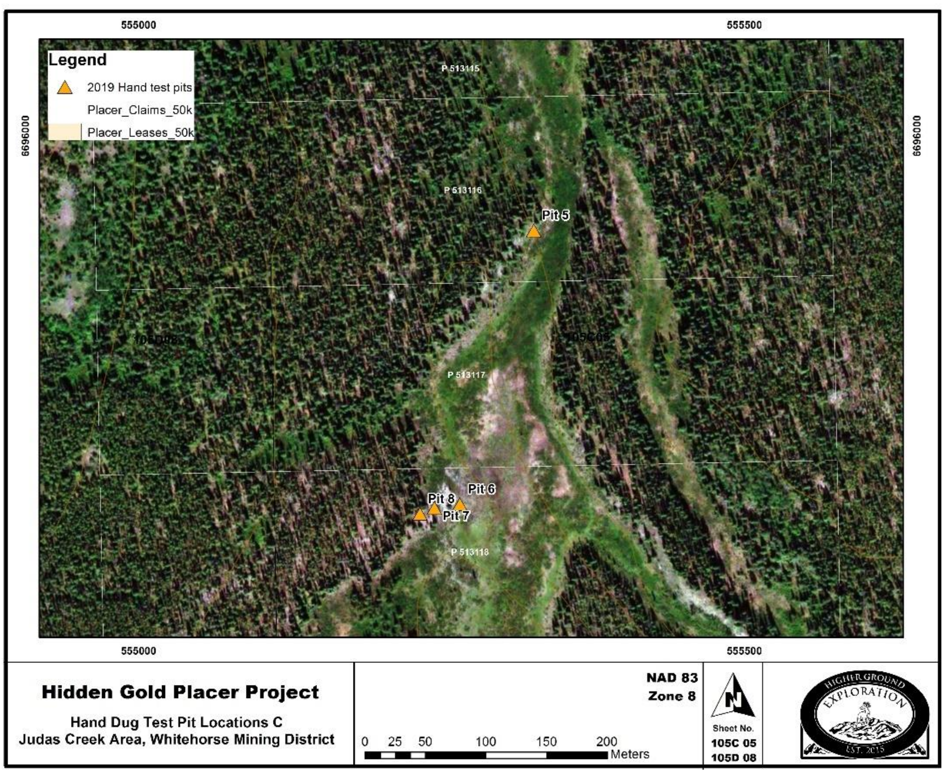


Figure 9. Hand dug test pit locations, area C

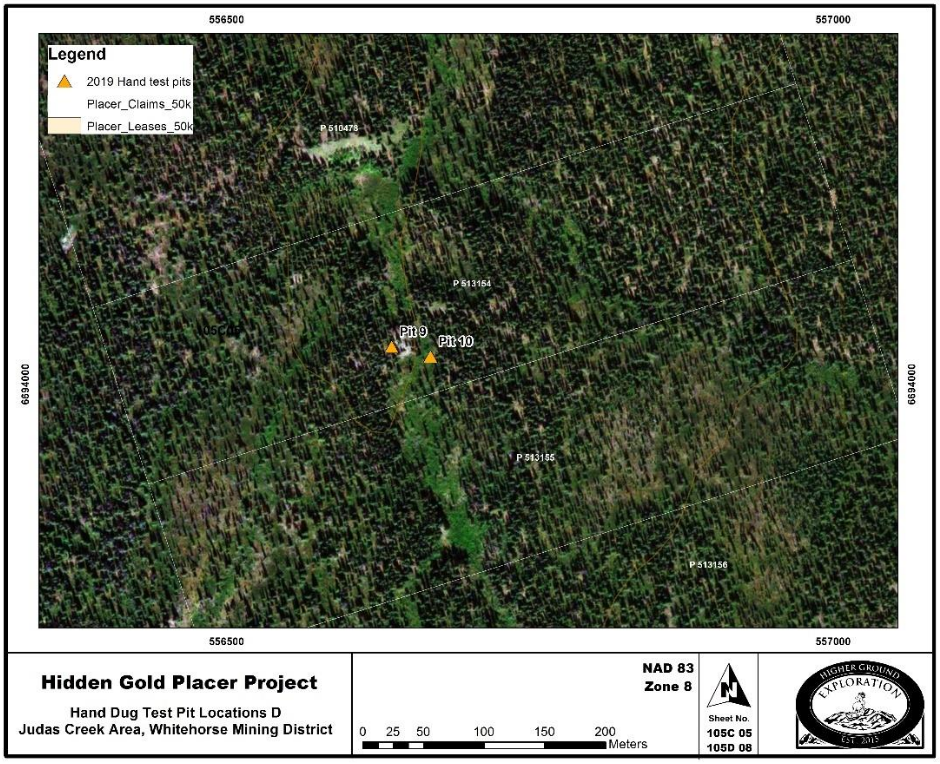


Figure 10. Hand dug test pit locations, area D

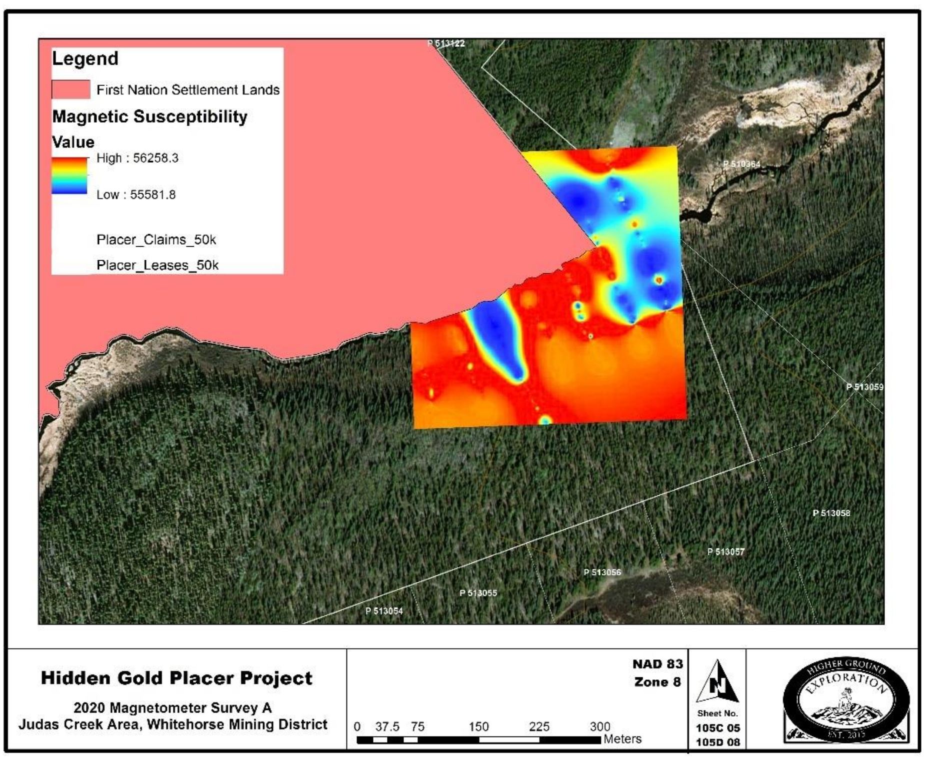


Figure 11. Magnetometer survey A

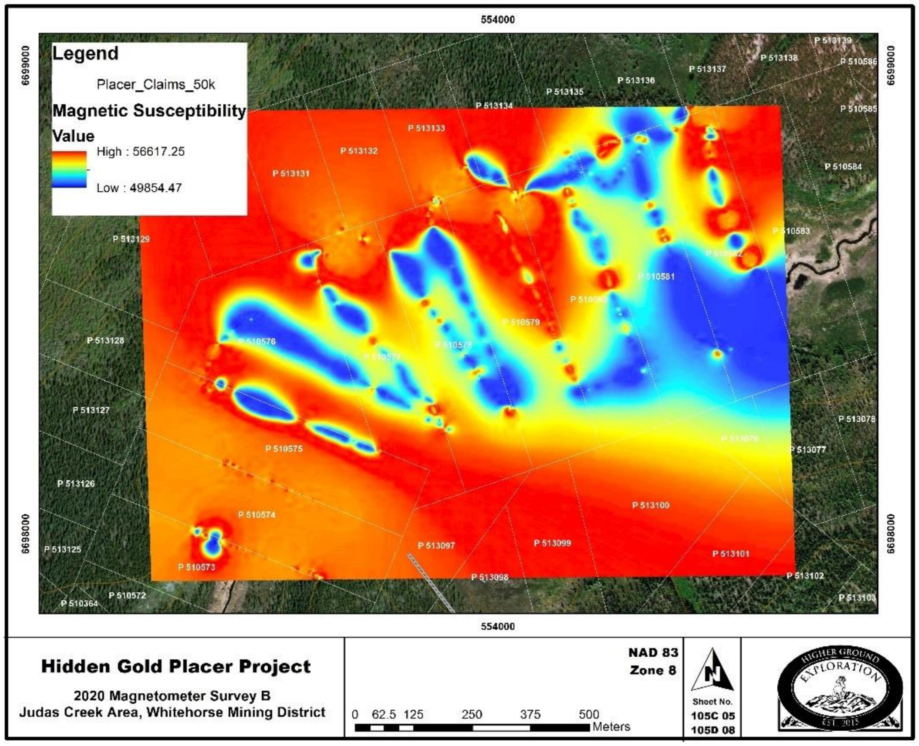


Figure 12. Magnetometer survey B

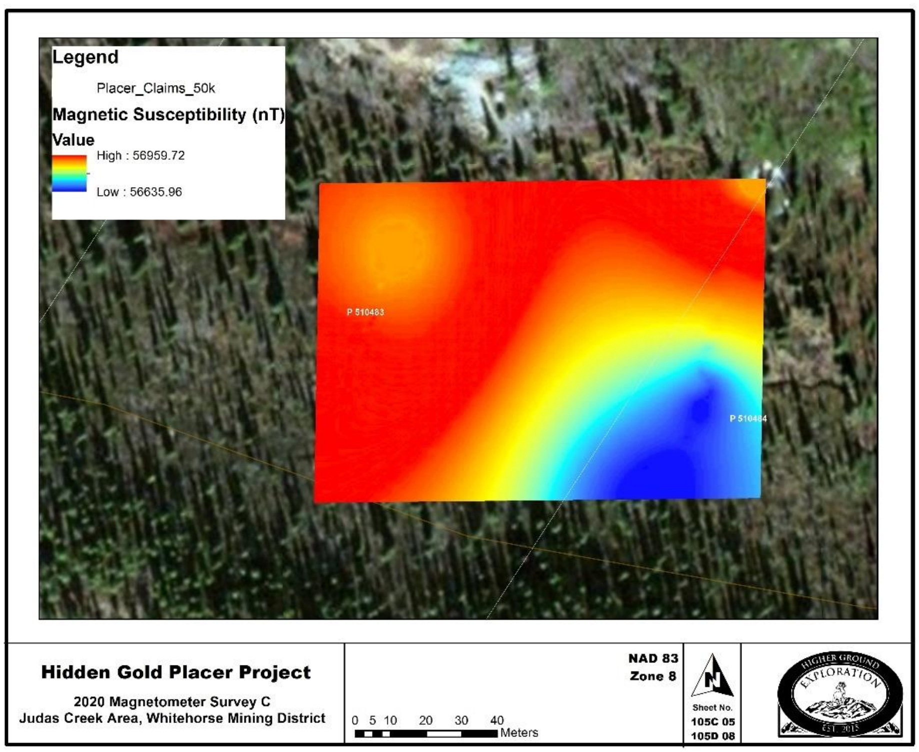


Figure 13. Magnetometer survey C

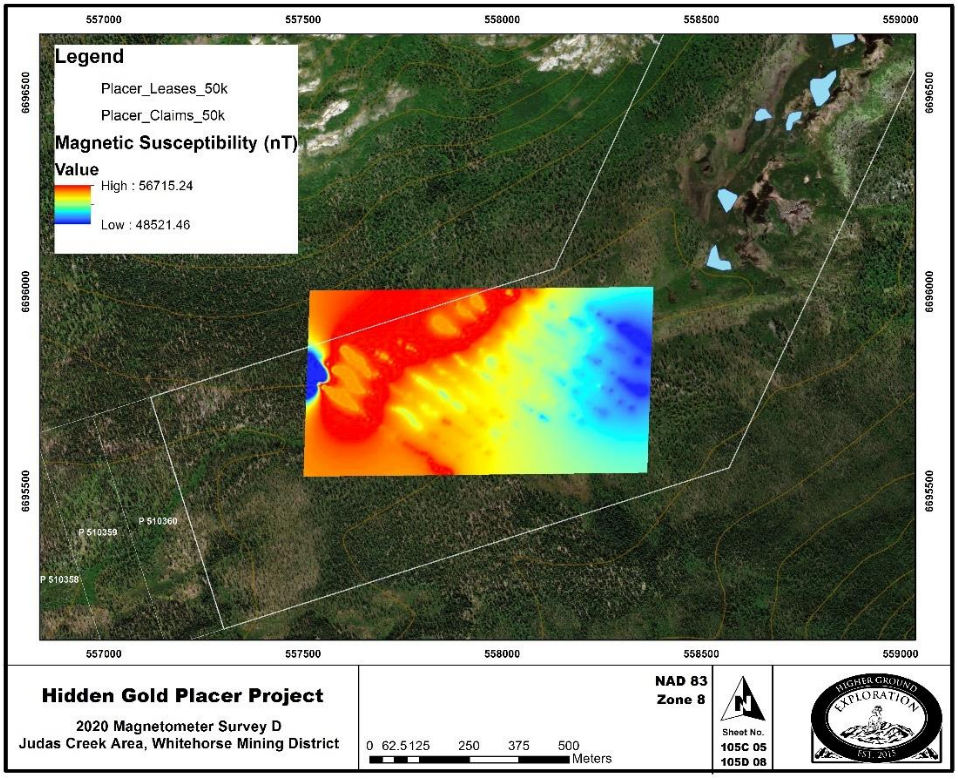


Figure 14. Magnetometer survey D

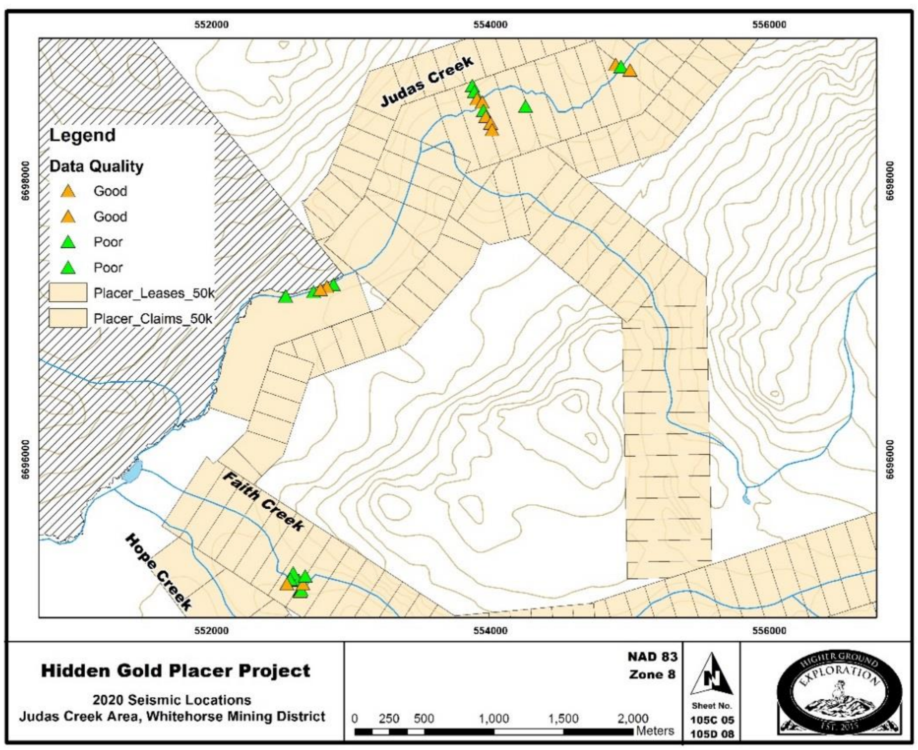


Figure 15. Overview of seismic locations

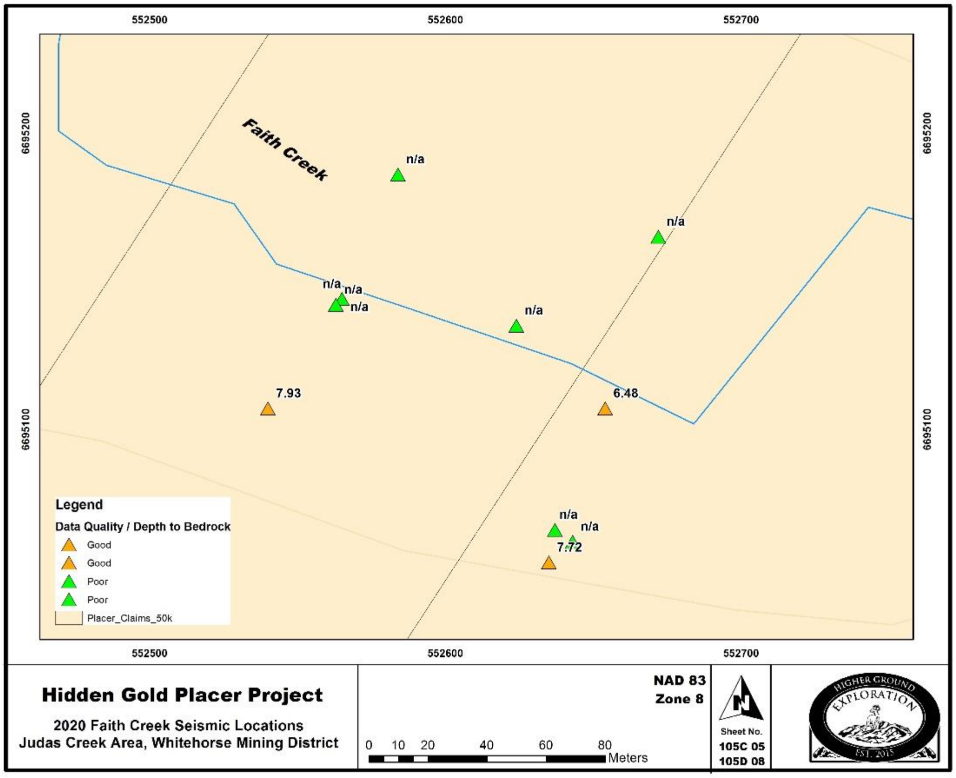


Figure 16. Faith Creek Seismic Locations

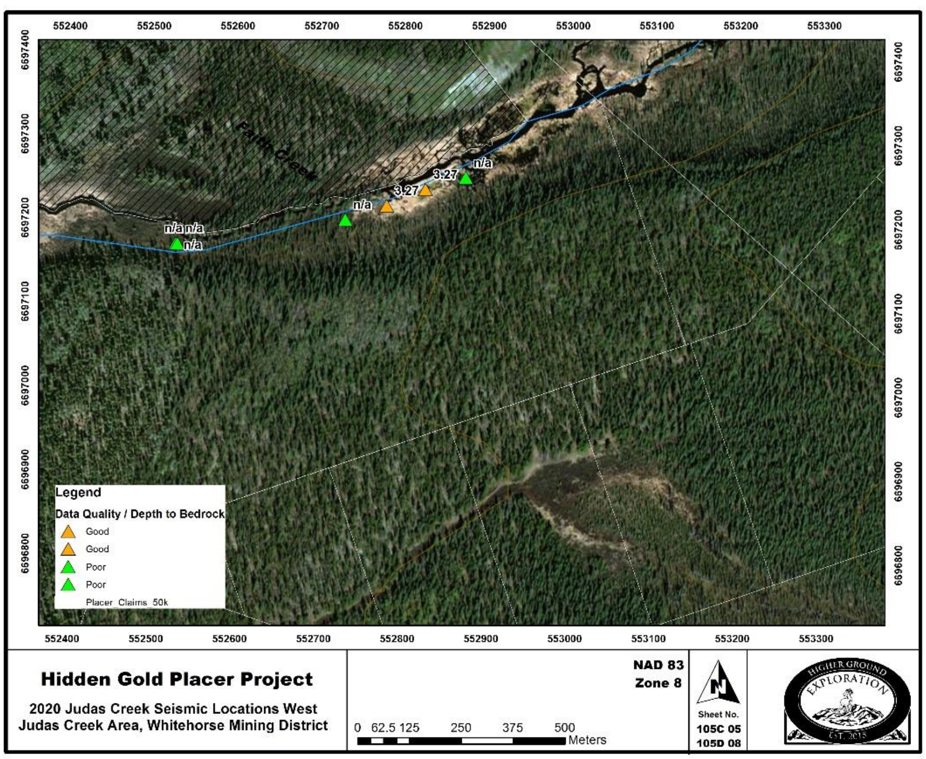


Figure 17. Judas Creek West Seismic Locations

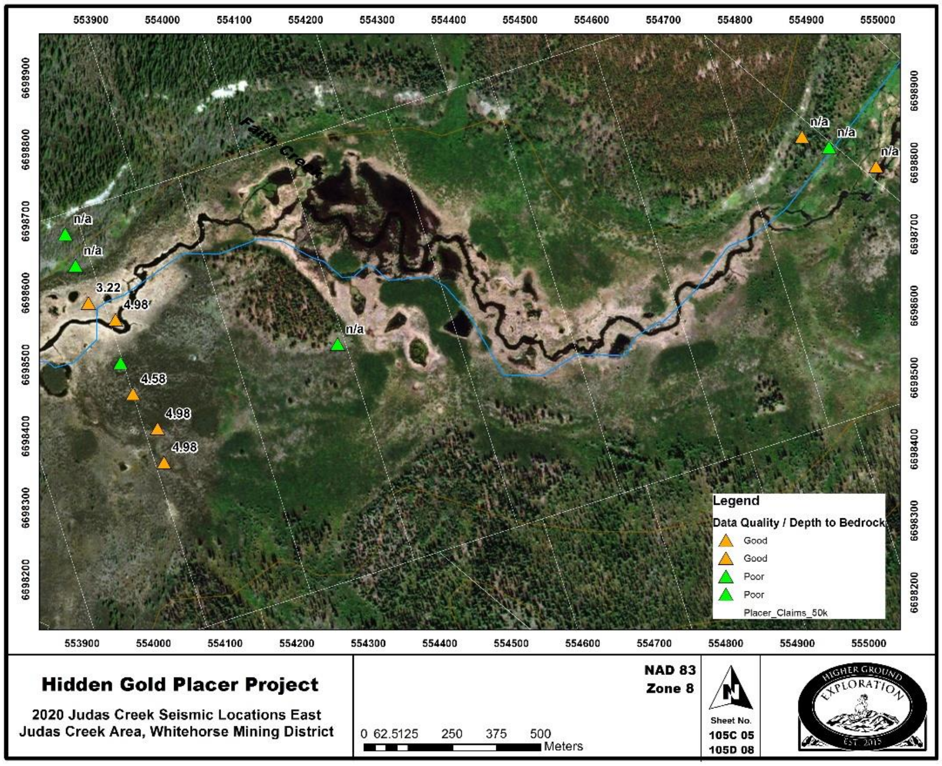


Figure 18. Judas Creek West Seismic Locations

Appendix II

FC2BA

Partition # 59/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 29/03/20 13:59:37 End recording: 29/03/20 14:19:37

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

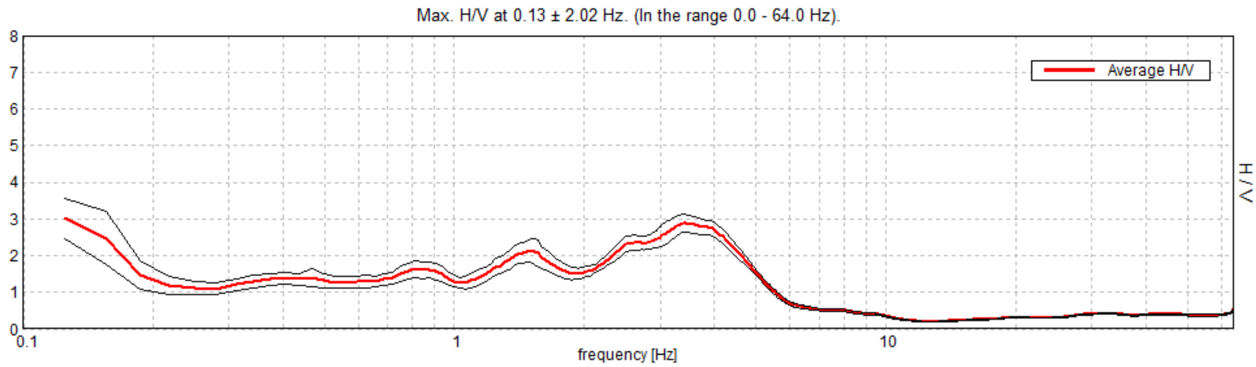
Smoothing: 10%

Location: E 552654 , N6695107

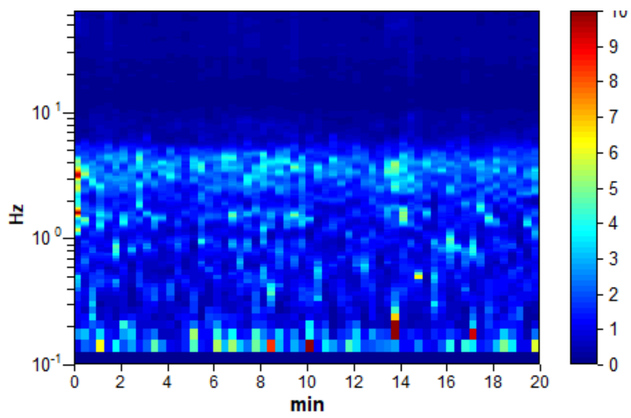
FC3BA	H = VS / 4F
F= 2.6	H = 90.77 / 4 (2.94)
VS = 90.77	**H = 7.72m**

Depth to bedrock = 7.72m or 25.32ft

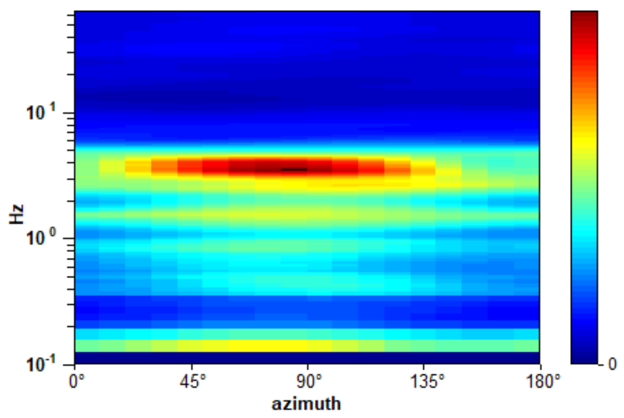
HORIZONTAL TO VERTICAL SPECTRAL RATIO



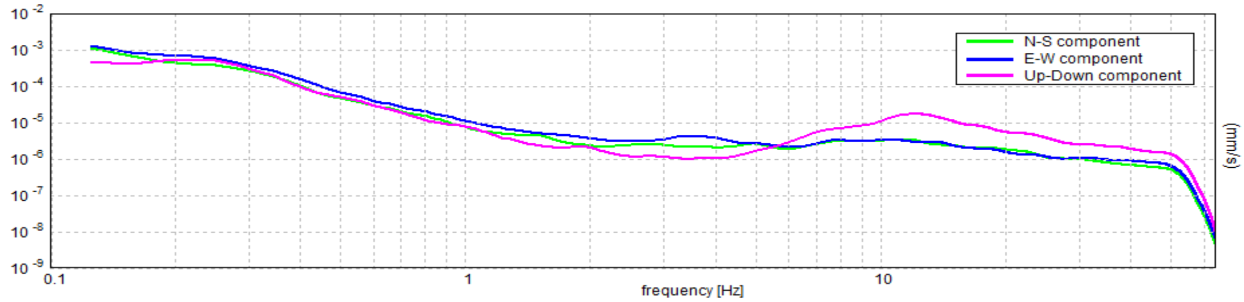
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 0.13 ± 2.02 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	0.13 > 0.50		NO
$n_c(f_0) > 200$	150.0 > 200		NO
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$	Exceeded 0 out of 7 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.094 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	0.188 Hz	OK	
$A_0 > 2$	3.01 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|16.15785| < 0.05		NO
$\sigma_f < \varepsilon(f_0)$	2.01973 < 0.03125		NO
$\sigma_A(f_0) < \theta(f_0)$	0.5569 < 3.0	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

FC03A

Partition# 28/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 04/03/20 14:49:07 End recording: 04/03/20 15:09:07

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analyzed 75% trace (manual window selection)

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

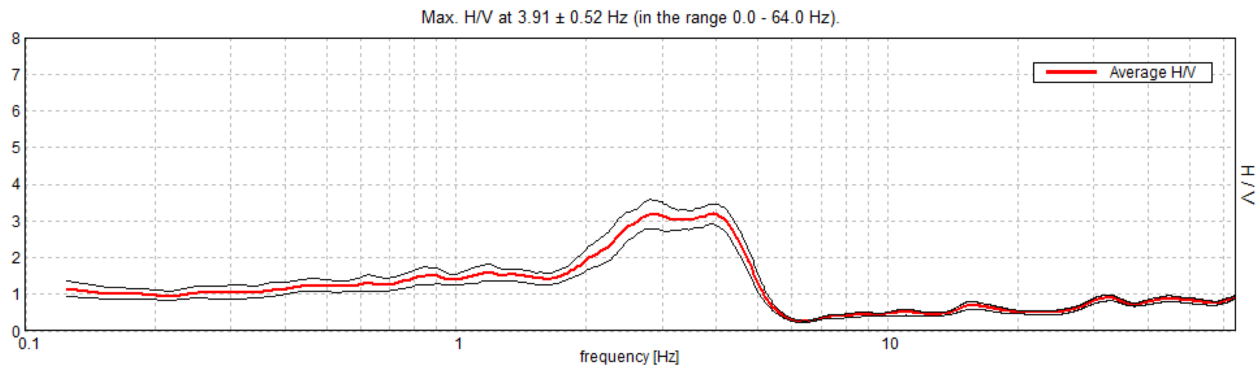
Smoothing: 10%

Location: E552540, N6695106

FC03A	H = VS / 4F
F = 2.86	H = 90.77 / 4 (2.86)
VS = 90.77	**H = 7.93m**

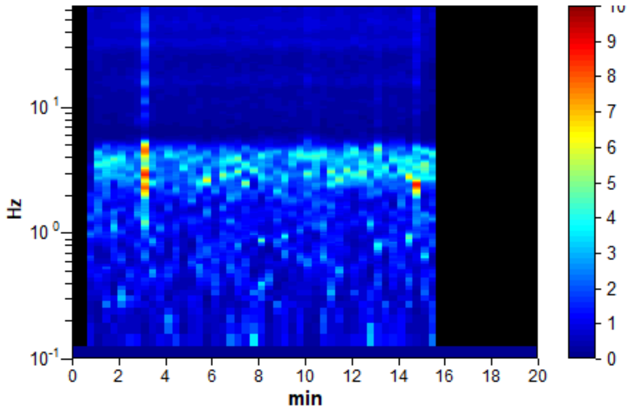
Depth to Bedrock = 7.93 m or 26 ft

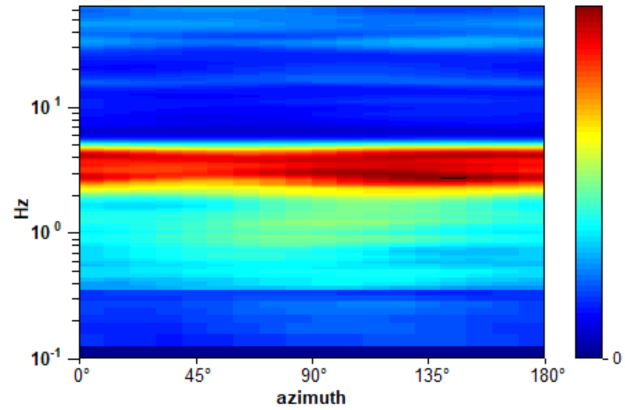
HORIZONTAL TO VERTICAL SPECTRAL RATIO



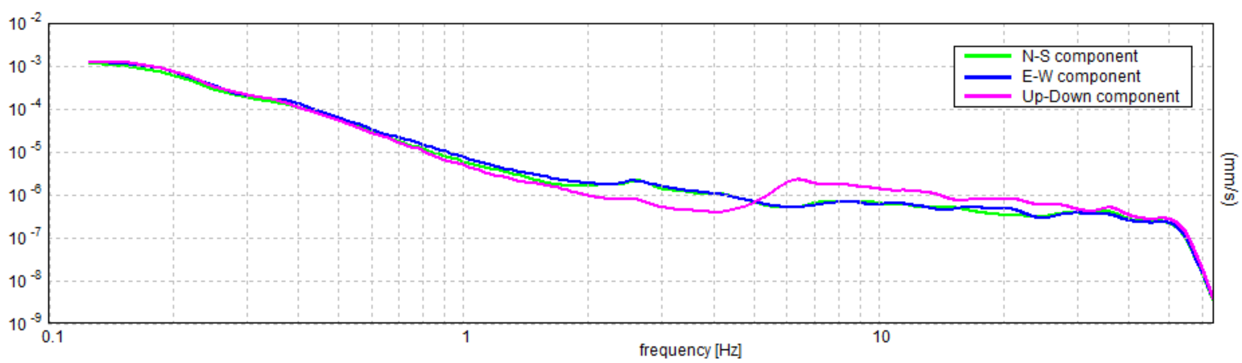
H/V TIME HISTORY

DIRECTIONAL H/V





SINGLE COMPONENT SPECTRA



Max. H/V at 3.91 ± 0.52 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve

[All 3 should be fulfilled]

$f_0 > 10 / L_w$	3.91 > 0.50	**OK**	
$n_c(f_0) > 200$	3515.6 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 188 times	**OK**	

Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	1.813 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	4.906 Hz	OK	
$A_0 > 2$	3.19 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.134| < 0.05		NO
$\sigma_f < \varepsilon(f_0)$	0.52343 < 0.19531		NO
$\sigma_A(f_0) < \theta(f_0)$	0.2715 < 1.58	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0

$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

FC3BA

Partition 58/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 29/03/20 13:11:27 End recording: 29/03/20 13:31:27

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analyzed 20% trace (manual window selection)

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

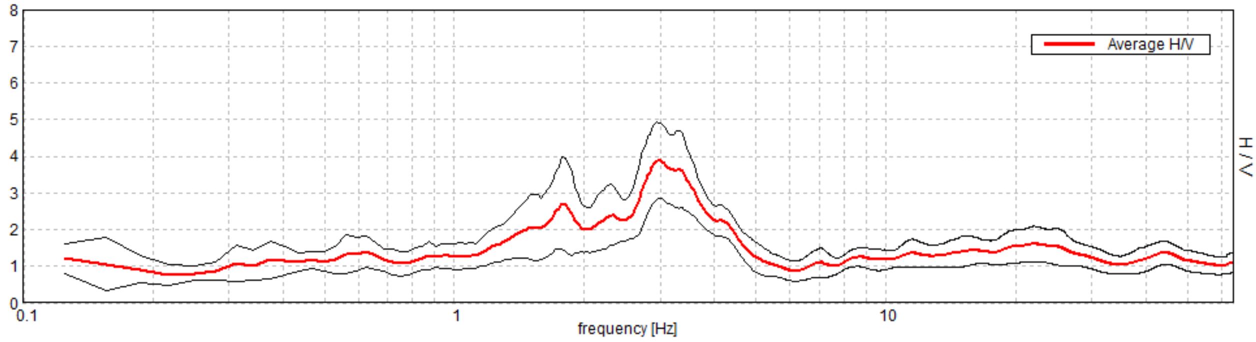
Location: E 552634, N 6695054

FC3BA	H = VS / 4F
F= 2.6	H = 90.77 / 4 (2.94)
VS = 90.77	**H = 7.72m**

Bedrock Depth = 7.72m or 25.33 ft

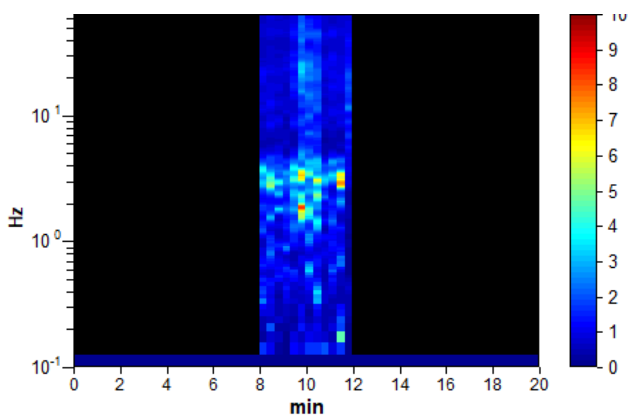
HORIZONTAL TO VERTICAL SPECTRAL RATIO

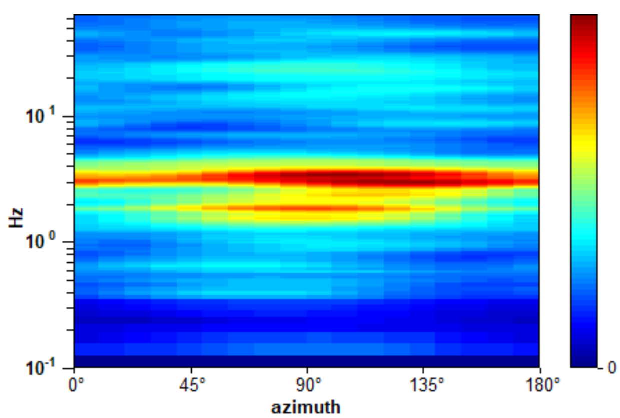
Max. H/V at 3.0 ± 0.22 Hz. (In the range 0.0 - 64.0 Hz).



H/V TIME HISTORY

DIRECTIONAL H/V





Max. H/V at 3.0 ± 0.22 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	3.00 > 0.50	OK	
$n_c(f_0) > 200$	720.0 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 145 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	1.406 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	4.469 Hz	OK	
$A_0 > 2$	3.89 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$\|0.075\| < 0.05$		NO
$\sigma_f < \varepsilon(f_0)$	0.22499 < 0.15		NO
$\sigma_A(f_0) < \theta(f_0)$	1.0195 < 1.58	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$

$\sigma_A(f)$ $\sigma_{logH/V}(f)$ $\theta(f_0)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided standard deviation of log $A_{H/V}(f)$ curve threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC2EA

Partition # 53

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 20/03/20 03:43:45 End recording: 20/03/20 04:03:45

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

Location: E 554896 N 6698833

JC2EA H = VS / 4F

F= 0.93

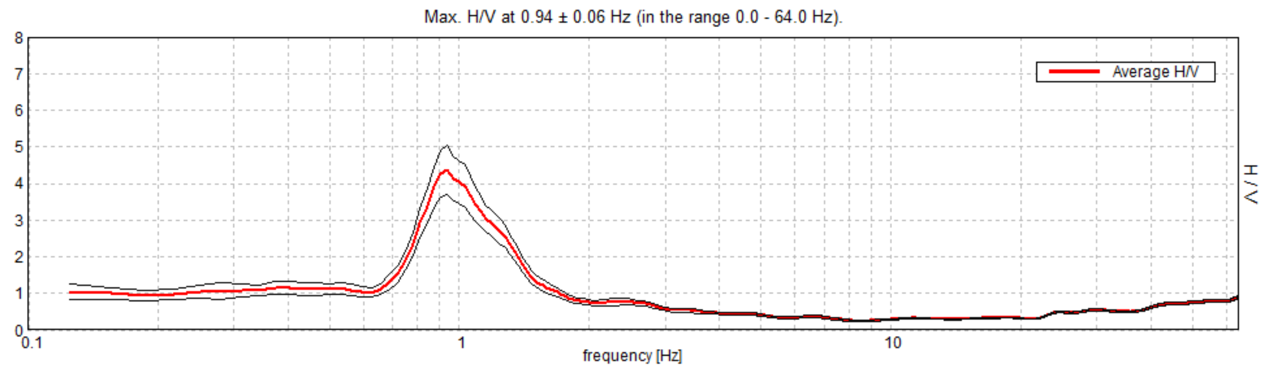
H = 18.32 / 4 (0.93)

Vs= 18.32 m/s

H = 4.98m

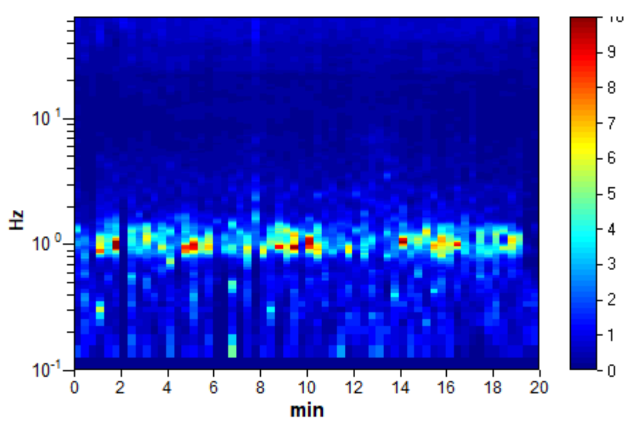
Bedrock Depth: 4.98m or 16 ft

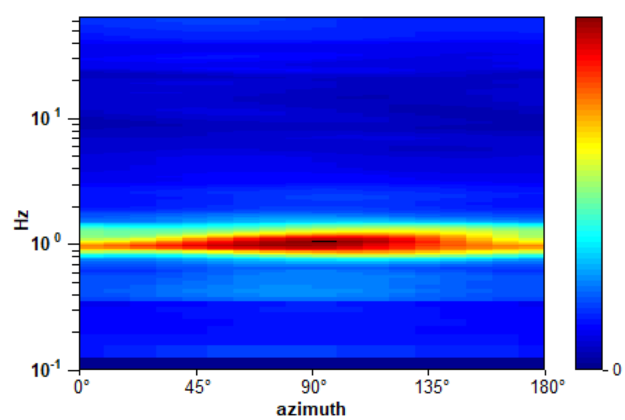
HORIZONTAL TO VERTICAL SPECTRAL RATIO



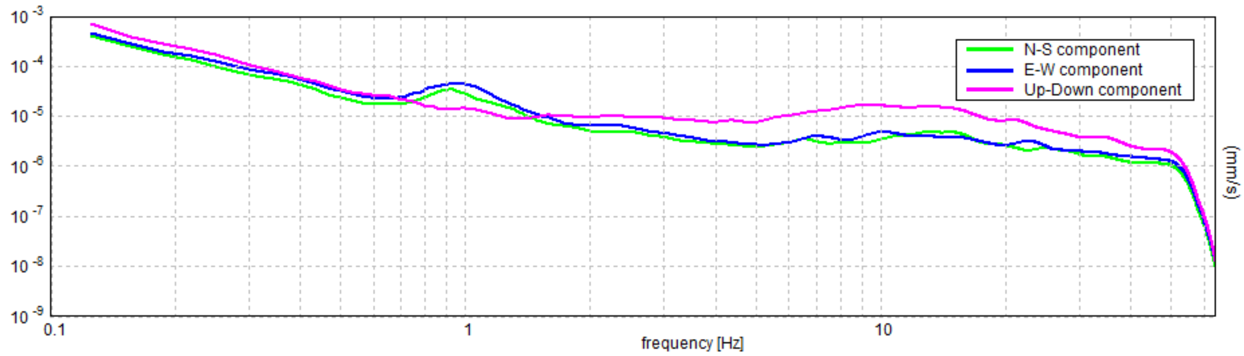
H/V TIME HISTORY

DIRECTIONAL H/V





SINGLE COMPONENT SPECTRA



[According to the SESAME, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables**.]

Max. H/V at 0.94 ± 0.06 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	0.94 > 0.50	OK	
$n_c(f_0) > 200$	1125.0 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$	Exceeded 0 out of 46 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.75 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	1.344 Hz	OK	
$A_0 > 2$	4.37 > 2	OK	

$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$\|0.06625\| < 0.05$		**NO**
$\sigma_f < \varepsilon(f_0)$	$0.06211 < 0.14063$	**OK**	
$\sigma_A(f_0) < \theta(f_0)$	$0.6592 < 2.0$	**OK**	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	$0.25 f_0$	$0.2 f_0$	$0.15 f_0$	$0.10 f_0$	$0.05 f_0$
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC3B

Partition # 38/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 08/03/20 17:31:41 End recording: 08/03/20 17:51:41

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

Location: E 552826 N 6697239

JC3B

F= 1.4

Vs= 18.32 m/s

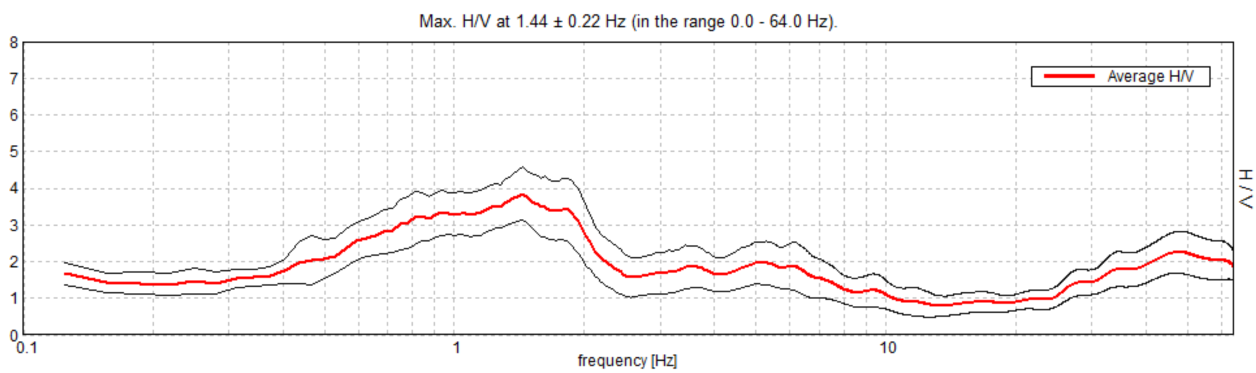
H = VS / 4F

H = 18.32 / 4 (1.4)

H = 3.27m

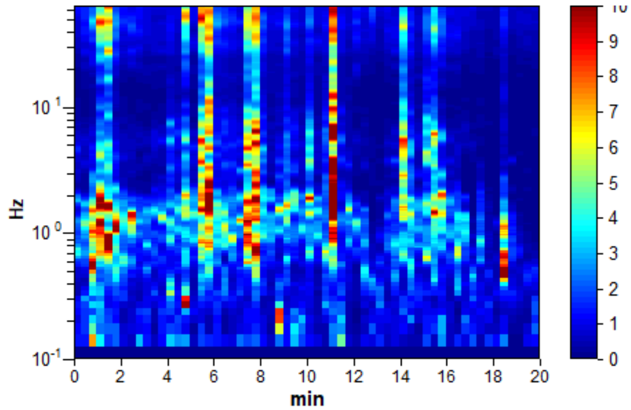
Bedrock Depth = 3.27m 10.7ft

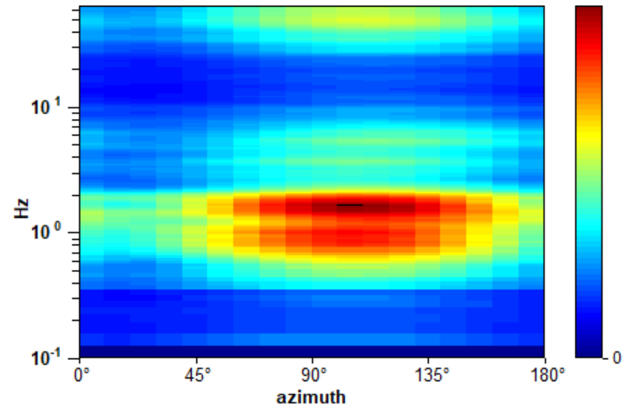
HORIZONTAL TO VERTICAL SPECTRAL RATIO



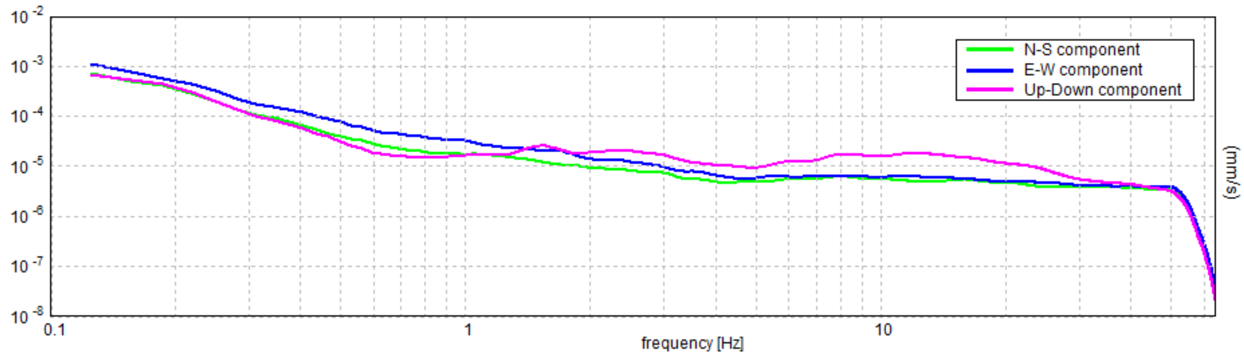
H/V TIME HISTORY

DIRECTIONAL H/V





SINGLE COMPONENT SPECTRA



Max. H/V at 1.44 ± 0.22 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve

[All 3 should be fulfilled]

$f_0 > 10 / L_w$	1.44 > 0.50	**OK**	
$n_c(f_0) > 200$	1725.0 > 200	**OK**	

$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 70 times	**OK**	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.406 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	2.313 Hz	**OK**	
$A_0 > 2$	3.86 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.15527| < 0.05		**NO**
$\sigma_f < \varepsilon(f_0)$	0.22321 < 0.14375		**NO**
$\sigma_A(f_0) < \theta(f_0)$	0.7357 < 1.78	**OK**	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$

Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC4B

Partition # 37/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 08/03/20 16:40:32 End recording: 08/03/20 17:00:32

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

Location : E 552780 N 6697219

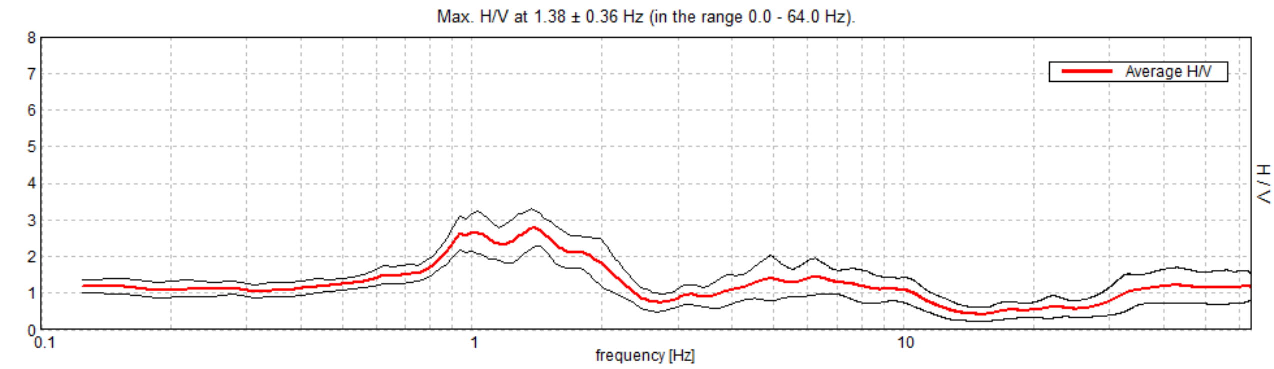
JC4B H = VS / 4F

F= 1.4 H = 18.32 / 4 (1.4)

Vs= 18.32 m/s **H = 3.27m**

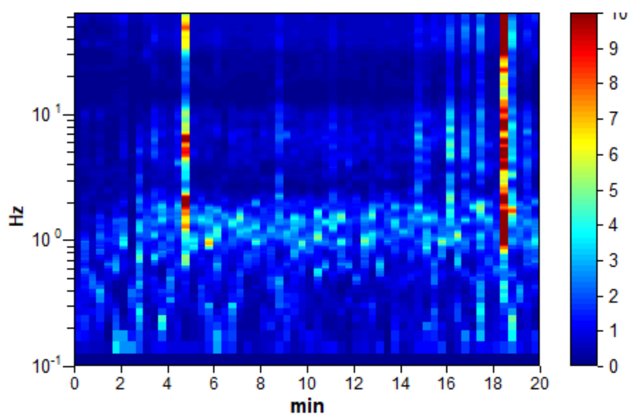
Bedrock Depth = 3.27m or 10.77ft

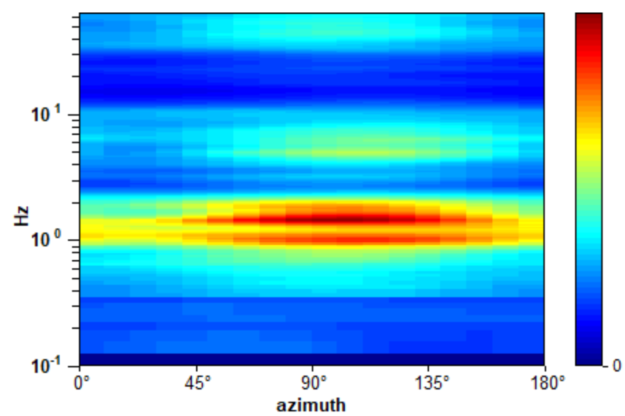
HORIZONTAL TO VERTICAL SPECTRAL RATIO



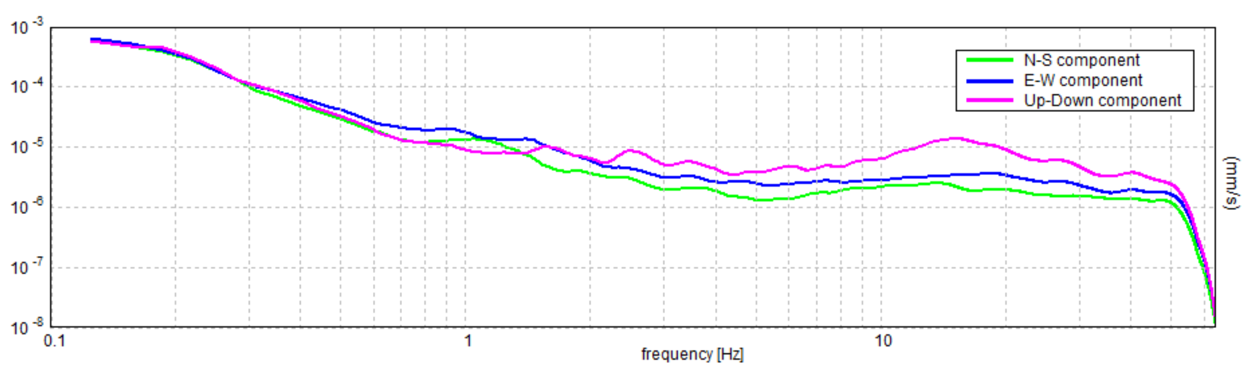
H/V TIME HISTORY

DIRECTIONAL H/V





SINGLE COMPONENT SPECTRA



[According to the SESAME, 2005 guidelines. **Please read carefully the** *Grilla* **manual before interpreting the following tables**.]

Max. H/V at 1.38 ± 0.36 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	1.38 > 0.50	OK	
$n_c(f_0) > 200$	1650.0 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 67 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.563 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	2.219 Hz	OK	
$A_0 > 2$	2.76 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.26271| < 0.05		NO
$\sigma_f < \varepsilon(f_0)$	0.36123 < 0.1375		NO
$\sigma_A(f_0) < \theta(f_0)$	0.5483 < 1.78	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$

A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC4GA

Partition # 48/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 15/03/20 16:14:13 End recording: 15/03/20 16:24:15

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h10'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

Location: E 553901 N 6698586

JC4GA

F = 1.42

VS = 18.32 m/s

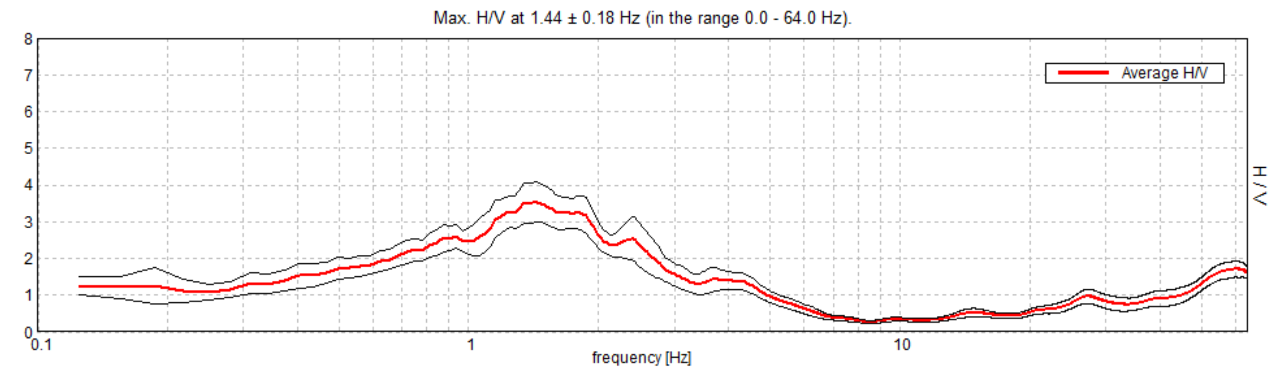
H = VS / 4F

H = 18.32 / 4 (1.42)

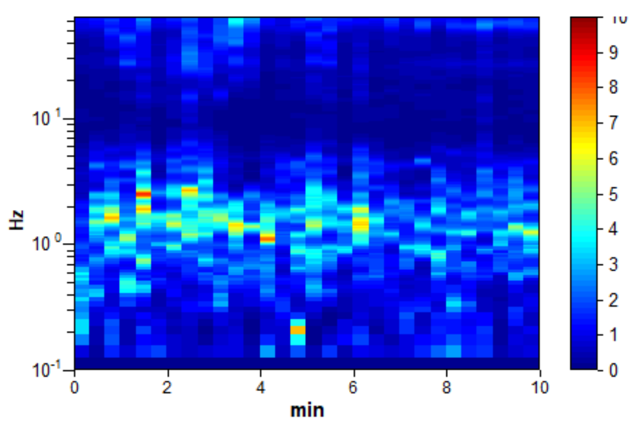
H = 3.22m

Bedrock = 3.22m or 10.56ft

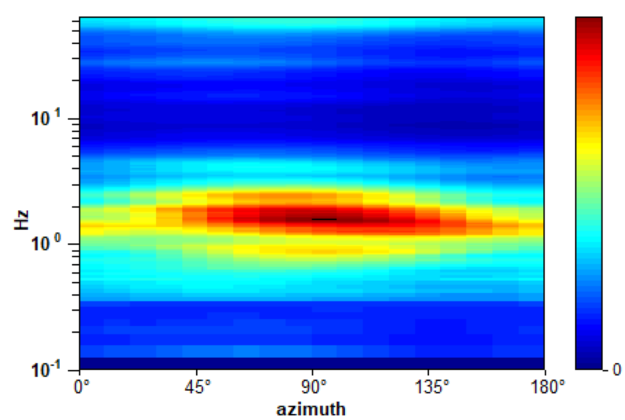
HORIZONTAL TO VERTICAL SPECTRAL RATIO



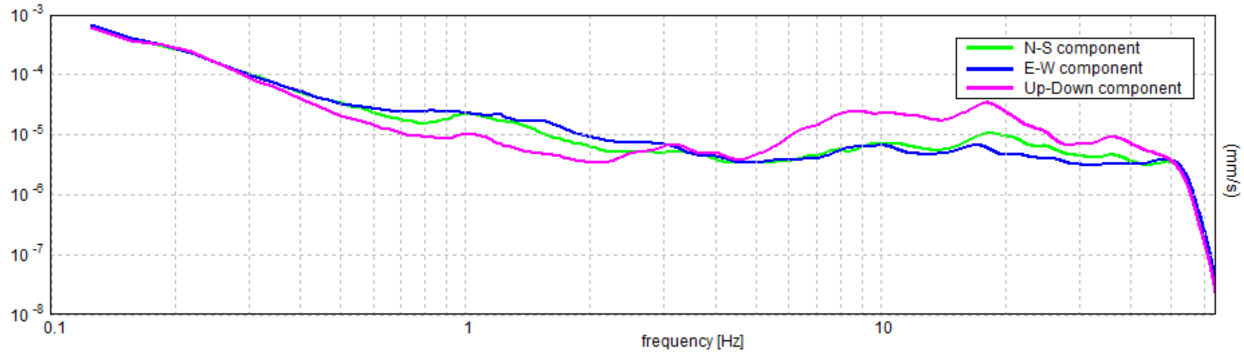
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



[According to the SESAME, 2005 guidelines. **Please read carefully the** *Grilla* **manual before interpreting the following tables**.]

Max. H/V at 1.44 ± 0.18 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	1.44 > 0.50	**OK**	
$n_c(f_0) > 200$	862.5 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz**	Exceeded 0 out of 70 times	**OK**	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.531 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	2.844 Hz	**OK**	
$A_0 > 2$	3.54 > 2	**OK**	

$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$\|0.12769\| < 0.05$		**NO**
$\sigma_f < \varepsilon(f_0)$	0.18355 < 0.14375		**NO**
$\sigma_A(f_0) < \theta(f_0)$	0.5595 < 1.78	**OK**	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC5GA

Partition # 47/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 15/03/20 15:15:56 End recording: 15/03/20 15:35:56

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

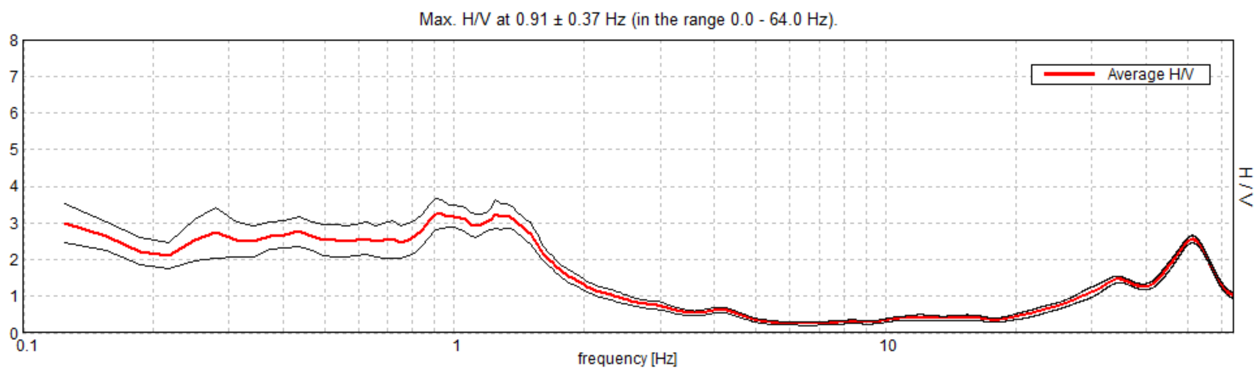
Smoothing: 10%

<u>Location:</u> E 553939 N 6698563

<u>JC5GA</u>	H = VS / 4F
F= 0.92	H = 18.32 / 4 (0.92)
Vs= 18.32 m/s	**H = 4.98m**

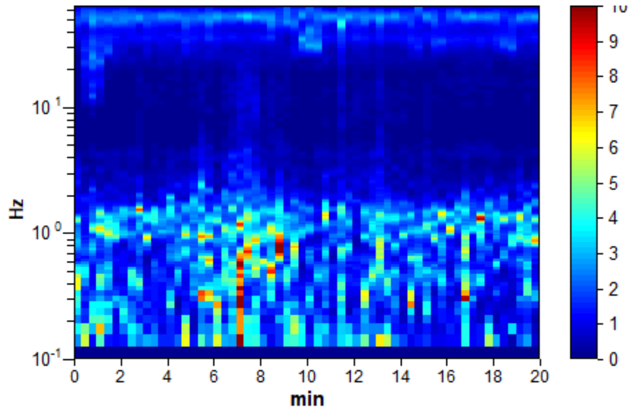
Bedrock Depth = 4.98m or 16.34 ft

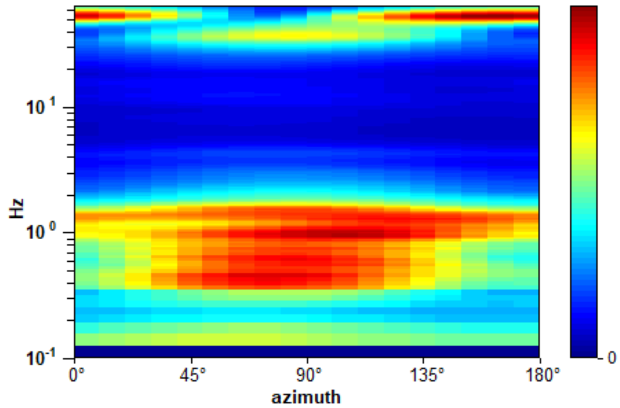
HORIZONTAL TO VERTICAL SPECTRAL RATIO



H/V TIME HISTORY

DIRECTIONAL H/V





SINGLE COMPONENT SPECTRA

Max. H/V at 0.91 ± 0.37 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	0.91 > 0.50	OK	
$n_c(f_0) > 200$	1087.5 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 44 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$			NO
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	1.813 Hz	OK	

$A_0 > 2$	3.25 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.40915| < 0.05		**NO**
$\sigma_f < \varepsilon(f_0)$	0.37079 < 0.13594		**NO**
$\sigma_A(f_0) < \theta(f_0)$	0.4278 < 2.0	**OK**	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC7GA

Partition #45/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 14/03/20 18:18:13 End recording: 14/03/20 18:38:13

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

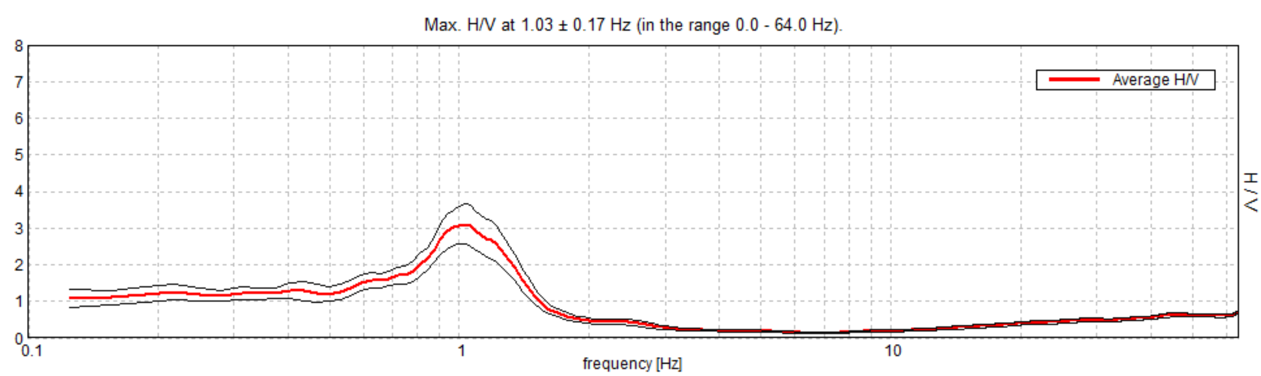
Smoothing: 10%

Location: E 553966 N 6698460

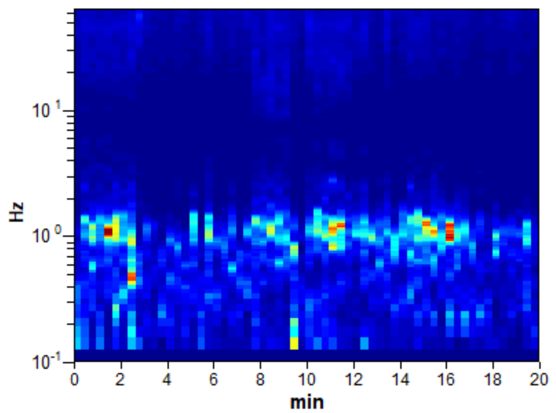
JC7GA	H = VS / 4F
F= 1	H = 18.32 / 4 (1)
Vs= 18.32 m/s	**H = 4.58m**

Bedrock Depth = 4.58m 15.03 ft

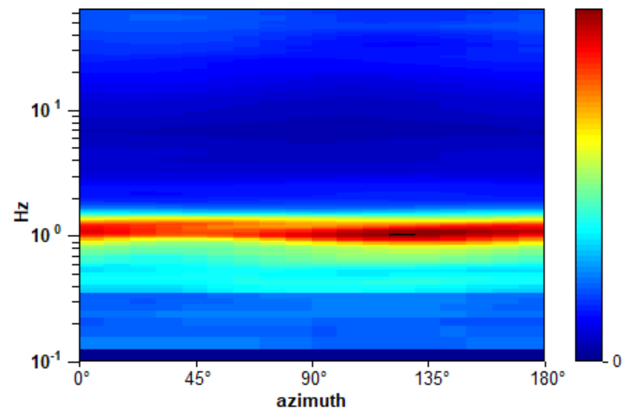
HORIZONTAL TO VERTICAL SPECTRAL RATIO



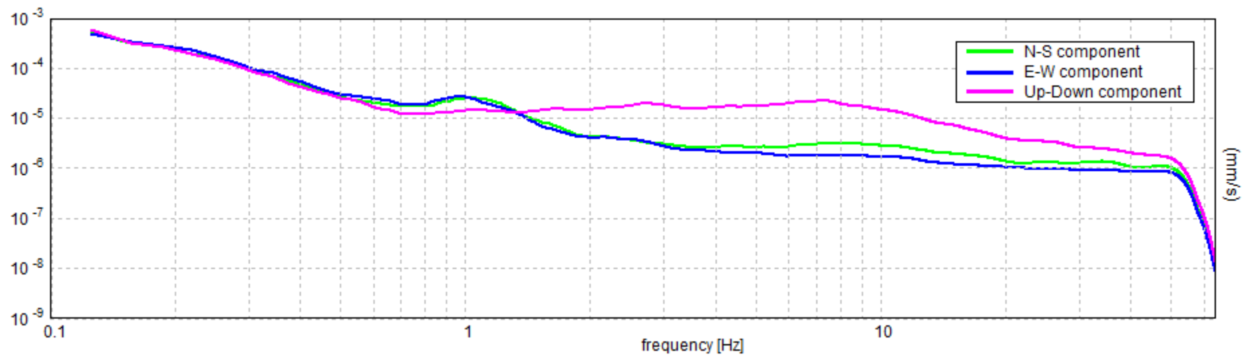
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



[According to the SESAME, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables**.]

Max. H/V at 1.03 ± 0.17 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	1.03 > 0.50	OK	

$n_c(f_0) > 200$	1237.5 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 50 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.594 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	1.438 Hz	OK	
$A_0 > 2$	3.11 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.16173| < 0.05		NO
$\sigma_f < \varepsilon(f_0)$	0.16678 < 0.10313		NO
$\sigma_A(f_0) < \theta(f_0)$	0.5355 < 1.78	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC8GA

Partition# 44/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 14/03/20 17:30:32 End recording: 14/03/20 17:50:32

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

Location : E 554001 N 6698413

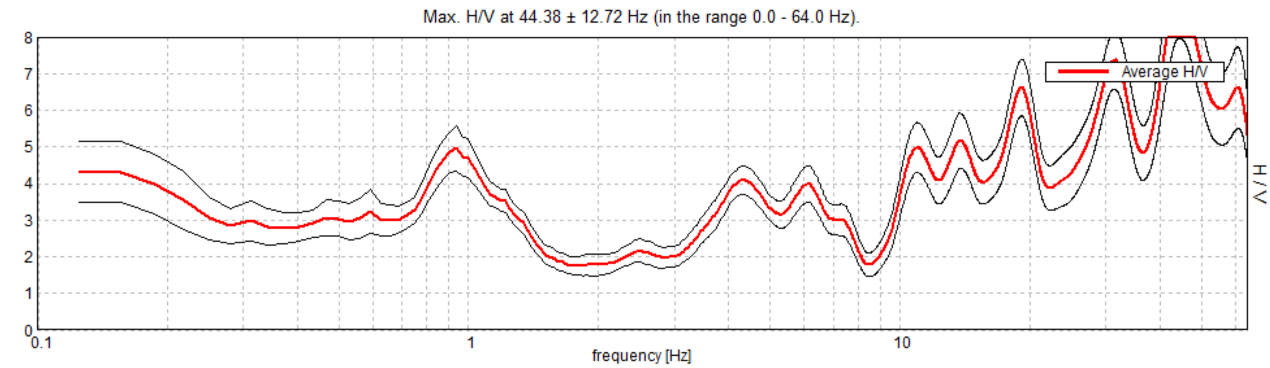
JC8GA H = VS / 4F

F= 0.92 H = 18.32 / 4 (0.92)

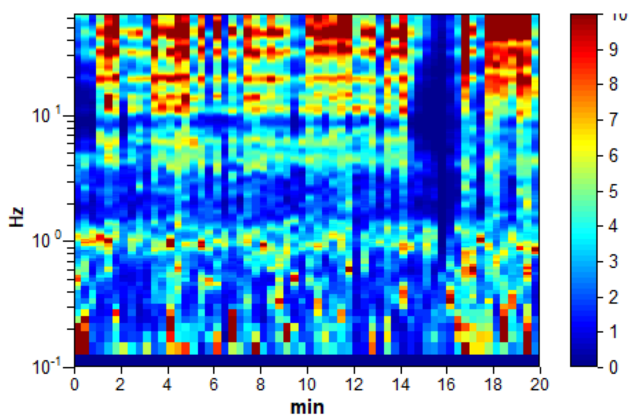
Vs= 18.32 m/s **H = 4.98m**

Bedrock Depth = 4.98m or 16 ft

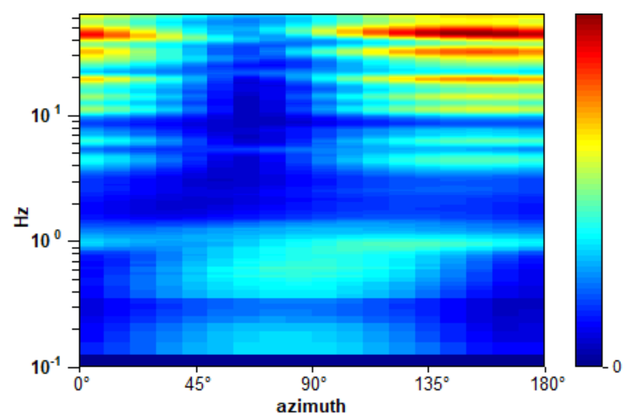
HORIZONTAL TO VERTICAL SPECTRAL RATIO



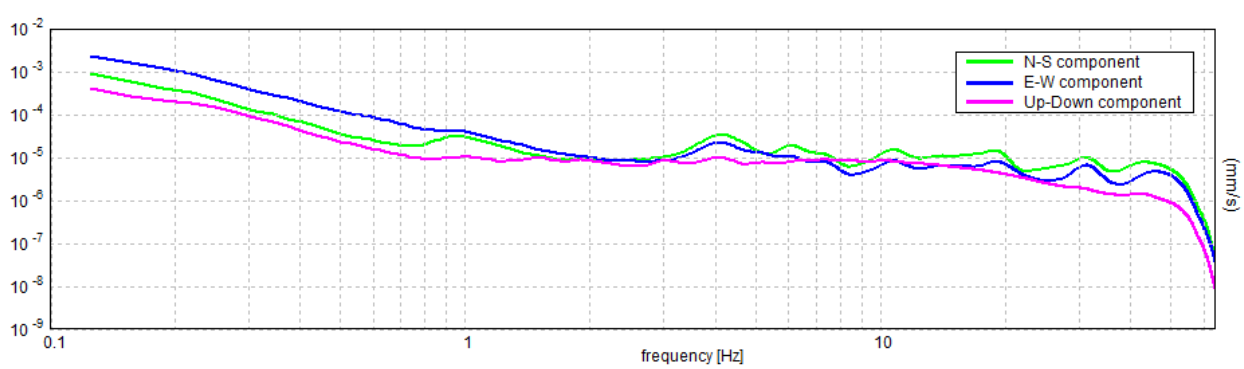
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



[According to the SESAME, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables**.]

Max. H/V at 44.38 ± 12.72 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	44.38 > 0.50	OK	
$n_c(f_0) > 200$	53250.0 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 1339 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	25.938 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$			NO
$A_0 > 2$	9.20 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.28667| < 0.05		NO
$\sigma_f < \varepsilon(f_0)$	12.72118 < 2.21875		NO
$\sigma_A(f_0) < \theta(f_0)$	1.2291 < 1.58	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency

$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

JC9GA

Partition # 43/99

Instrument: TZ3-0049/02-17

Data format: 32 byte

Full scale [mV]: 51

Start recording: 14/03/20 15:53:31 End recording: 14/03/20 16:13:31

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h20'00''. Analysis performed on the entire trace.

Sampling rate: 128 Hz

Window size: 20 s

Smoothing type: Triangular window

Smoothing: 10%

Location: E 554011 N 6698366

<u>JC9GA</u>

F= 0.92

Vs= 18.32 m/s

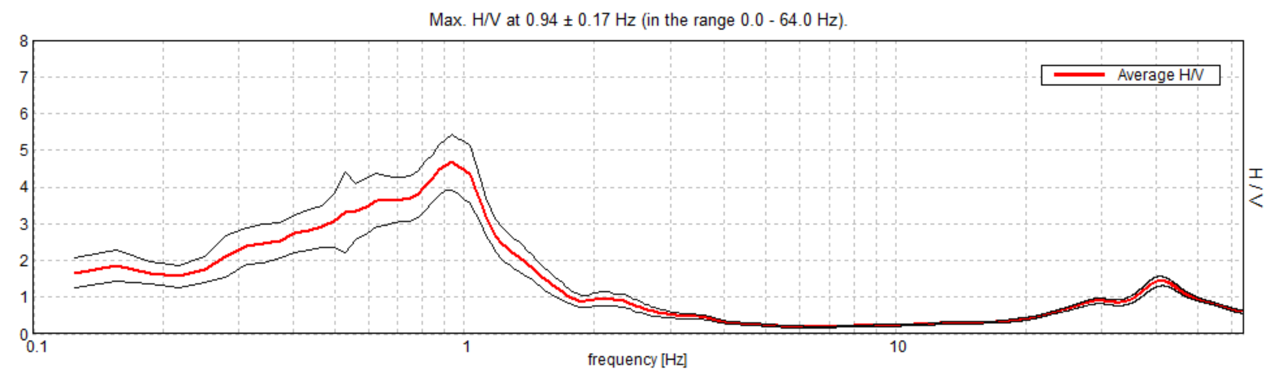
H = VS / 4F

H = 18.32 / 4 (0.92)

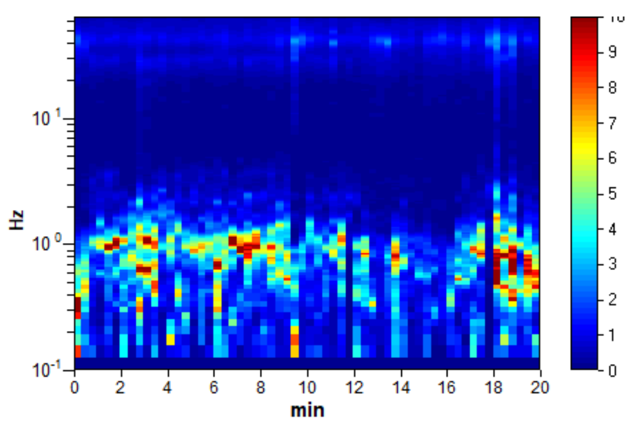
H = 4.98m

Bedrock Depth = 4.98 m or 16 ft

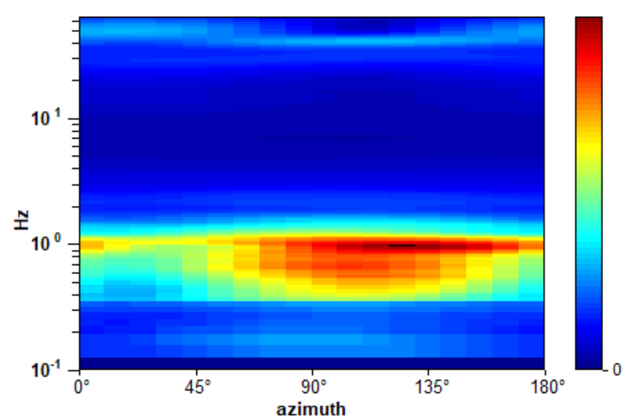
HORIZONTAL TO VERTICAL SPECTRAL RATIO



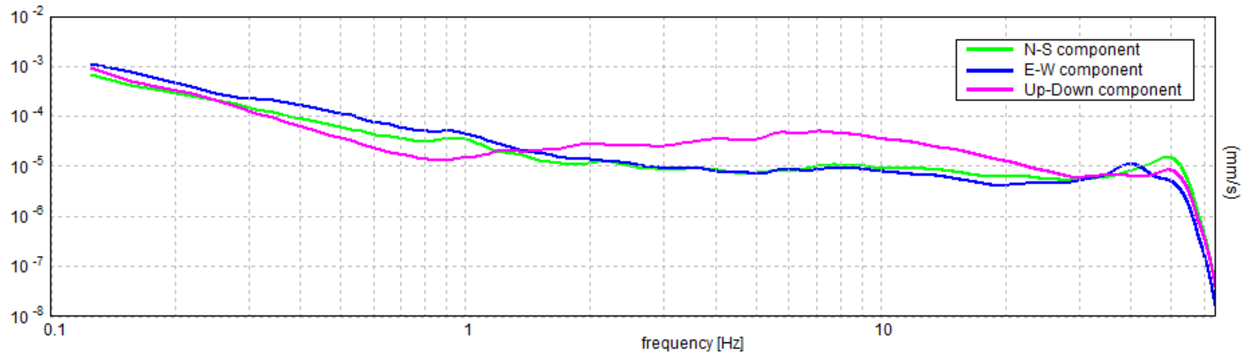
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



[According to the SESAME, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables**.]

Max. H/V at 0.94 ± 0.17 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable H/V curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	0.94 > 0.50	OK	
$n_c(f_0) > 200$	1125.0 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5Hz$ **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5Hz$**	Exceeded 0 out of 46 times	OK	
Criteria for a clear H/V peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	0.281 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	1.281 Hz	OK	
$A_0 > 2$	4.67 > 2	OK	

$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$\|0.18459\| < 0.05$		NO
$\sigma_f < \varepsilon(f_0)$	$0.17305 < 0.14063$		NO
$\sigma_A(f_0) < \theta(f_0)$	$0.7658 < 2.0$	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq. range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

Appendix III

Please see attached.