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TECHNICAL REPORT AND UPDATED MINERAL RESOURCE ESTIMATE OF THE RIVER VALLEY PALLADIUM PROJECT, DANA, JANES, MCWILLIAMS, AND PARDO TOWNSHIPS, SUDBURY MINING DIVISION, ONTARIO

UTM NAD 83 Zone 17N 557,800 m E, 5,169,700 m N
LONGITUDE 80º15' W AND LATITUDE 46º41'N

FOR
NEW AGE METALS INC.

NI 43-101 & 43-101F1
TECHNICAL REPORT

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1.0 EXECUTIVE SUMMARY

The following report was prepared to provide a National Instrument ("NI") 43-101 Technical Report and Updated Mineral Resource Estimate for the River Valley Palladium Deposit ("the Deposit"), located approximately 60 km northeast of Sudbury, Ontario (Canada) that is 100% owned by New Age Metals Inc. ("NAM" or "the Company"). The River Valley Property ("the Property") mineralization is primarily platinum-group elements ("PGE"). Palladium is the dominant metal with smaller amounts of platinum, gold, rhodium, silver, copper, nickel and cobalt.

The River Valley Property hosts a magmatic contact-type palladium-platinum-gold deposit located in northeastern Ontario, approximately 60 km northeast of Sudbury and 340 km northwest of Toronto, Ontario. Sudbury is one of the largest mining districts in North America with several operating mines, two sulphide process plants, two nickel-copper-PGE smelters, and a nickel refinery.

P&E Mining Consultants Inc. ("P&E") completed this Updated Mineral Resource Estimate for the River Valley Deposit with an effective date of September 14, 2021. New Age Metals Inc., the issuer, is a public company trading on the TSX Venture Exchange (TSXV) with the symbol "NAM". Prior to NAM it was named Pacific North West Capital ("PFN"). The Updated Mineral Resource Estimate has been prepared according to CIM Definition Standards - For Mineral Resources and Mineral Reserves.

1.1 PROPERTY DESCRIPTION, LOCATION, ACCESS, AND PHYSIOGRAPHY

The Property is contiguous and consists of two mining leases, 310 single cell mining claims and 18 boundary cell mining claims located within Dana, Janes, McWilliams, and Pardo Townships in the Sudbury Mining Division. The two mining leases and surrounding claims total approximately 10,700 ha. The Property is centered at approximately 557,800 m E and 5,169,700 m N (North American Datum 83 Universal Transverse Mercator Zone 17N) or at Longitude 80º14' W and Latitude 46º41' N. The mining leases and claims are currently 100% owned by NAM, subject to a 3% net smelter return royalty.

The Property is accessible from Sudbury by traveling east along paved Trans-Canada Highway 17 for approximately 50 km to the Town of Warren, and then north on Highway 539 for a distance of 22 km to the Village of River Valley. The center of the Property is approximately 12 km northwest of the Village of River Valley and is accessed by 539A to Glen Afton and the unpaved route 805. Several logging roads and trails access the mineralized zones from route 805.

The Property benefits significantly from close proximity to the City of Sudbury. Mineral exploration, mining, along with mineral processing and smelting are major components of the local economy. The local infrastructure, business community and populace of the region are very well-equipped to service the infrastructure and technical requirements of exploration and mining activities. Sudbury is serviced by a regional airport with regular scheduled service to Toronto and other Canadian destinations.

A 230 kV transmission line that passes through the Town of Warren on the Trans Canada Highway is located approximately 22 km south of the Project. A 115 kV transmission line passes through the Village of Field and is located approximately 15 km to the east of the Project. Water is abundant in region from numerous lakes and rivers to support exploration programs and mining activities. The Property lies at a mean elevation of approximately 325 m asl. Topographic relief is moderate and typical of the Precambrian Shield. Forest cover is mainly poplar with regrowth of white pine after previous logging activities. The Property is located in the watershed of the Sturgeon River that flows in a southerly direction toward Lake Nipissing and ultimately into Georgian Bay of Lake Huron through the French River. The climate of the region is typical of the southern part of the Canadian Shield with temperatures ranging from summer averages of 19°C to winter averages of -13°C. Exploration and development activities can be conducted year-round.

1.2 HISTORY

The exploration history of the region dates back to the 1960s, with original work by Tomrose Mines Ltd. from 1963 to 1965. In 1965, Falconbridge Ltd. optioned the Tomrose Property and completed an EM survey, but no further work was recommended. In 1968, Kenco Exploration Canada completed airborne magnetic and EM surveys and follow up work in 1968 resulted in the exposure of surface sulphide mineralization in pits and trenches. In 1996, renewed interest in platinum group metals resulted in WMC International completing geological and geochemical exploration on the East Bull Intrusive Suite including the River Valley Intrusion.

In 1998, Prospectors Luhta, Bailey and Orchard acquired claims covering part of the current Property and completed prospecting and sampling work that identified platinum group metal mineralization. Pacific North West Capital acquired claims covering part of the current Property in 1999. Since then, surface and airborne exploration programs, along with many drill programs have been completed. Pacific North West Capital acquired additional claims in 2016 and announced a name change to New Age Metals Inc. in 2017.

1.3 GEOLOGY, MINERALIZATION AND DEPOSIT TYPE

The River Valley Palladium Deposit is part of the Paleoproterozoic East Bull Lake Intrusive Suite, dated between 2,491 and 2,475 Ma, and mineralization occurs as a total of 13 distinct zones hosted in gabbronorite to gabbroic anorthosite. The East Bull Lake Suite Intrusions exhibit geochemical characteristics consistent with being derived from fractionated tholeiitic or high-alumina tholeiitic parental magmas.

The River Valley Intrusion is the largest and easternmost of the East Bull Lake Intrusive Suite intrusions and has an area of approximately 200 km^2. The intrusion occurs within the Grenville Front Tectonic Zone. The copper-nickel-PGE mineralized host rocks are mainly in the Breccia Unit, which is situated at the base of the intrusion above the basal contact with the Archean footwall rocks.

The mineralized Breccia Unit occurs along most of the 16 km strike length of the River Valley Intrusion on the Property. The mineralization is divided into several zones based on variable offsets along north and northeast trending faults and shear zones. The zones of mineralized breccia starting in the northwest and proceeding to the southeastern extent of the contact on the Property are:

Dana North, Pine, Dana South, Banshee, Lismer North, Lismer Main, Varley, Azen, Razor, and Mustang (also known as River Valley Extension).

Two types of mineralization have been observed at the Project: 1) contact type PGE mineralization, which is that hosted mainly in the Breccia Unit, and 2) reef type PGE mineralization, which occurs internally within the River Valley Intrusion. All of the Mineral Resources described in this Technical Report are the contact type mineralization. The presence of several highly-anomalous assays from rocks lying within higher portions of the River Valley Intrusion's stratigraphy suggests that there are opportunities for PGE mineralization such as reef or stratabound-type targets.

A multi-stage model for the formation of the mineralization in the River Valley intrusion has been proposed in the scientific literature. Accordingly, a major contamination event at depth with the addition of sulphur from local crustal rocks, induced sulphide saturation. Sulphide droplets were subsequently enriched in PGE within a conduit system with possible further upgrading of sulphide metal tenors via partial dissolution of sulphide. The PGE-enriched sulphide liquid then settled in a staging chamber and partially crystallized before a major pulse of magma entrained sulphide liquid, eroded blocks of prior crystallized and mineralized gabbro and footwall rocks, and emplaced an inclusion-bearing package as the lower approximate 100 m of the River Valley Intrusion. Later emplacement of main River Valley magma was from a sulphur-undersaturated, PGE-fertile magma. Post-emplacement hydrothermal alteration resulted in localized remobilization of the platinum metals.

1.4 EXPLORATION AND DRILLING

NAM has carried out exploration programs on the Property since 1999. The programs consisted of surface exploration, numerous ground and airborne geophysical surveys, a LiDAR topographical survey, and extensive drill programs.

In 2000, a total of 6,779 m of drilling in 40 holes was conducted in the Dana North Zone to Dana South Zone area. A total of 16,027 m in 98 holes were drilled in 2001, and 83 holes were drilled in 2002 at Lismer Ridge Zone, Dana South Zone and Banshee Zone. From late 2002 to May 2004 a total of 44,131 m in 208 holes were drilled, followed by 24,198 m in 123 holes in 2005. During 2011 and 2012 a total of 12,767 m in 46 holes were drilled, mainly at the Dana North and Dana South Zones.

In 2015, a total of 474 m in two holes drilled at Dana North resulted in discovery of the Pine Zone. In 2016, five holes were drilled for a total of 1,267 m at the Pine Zone. In 2017, a total of 3,728 m in 14 holes were drilled at the Pine Zone and Dana North Zone.

In 2018, a trench was excavated and channel sampled on the Dana North/Pine Zone area. There was no exploration or drilling on the Property in 2018 and 2019. Exploration and drilling resumed in 2020 and continues in 2021.

Exploration work completed in 2020 and ongoing in 2021 at River Valley consists of a rhodium assay study of historical drill core, trench excavation and surface mineral prospecting near the Dana South Zone, surface prospecting at Pardo Zone, and an IP geophysical survey at Banshee Zone. In 2020 and 2021, exploration holes were drilled on the Pine and Banshee Zones and metallurgical holes were drilled on the Dana North, Dana South, Lismer North and Lismer Ridge Zones.

1.5 SAMPLE PREPARATION, ANALYSES AND SECURITY

NAM implemented a robust quality assurance/quality control ("QA/QC") program from the commencement of Phase 5 drilling in 2002 at the Property.

It is this Technical Report authors' opinion that NAM's sample preparation, analytical procedures, security and QA/QC program meet industry standards, and that the data are of good quality and satisfactory for use in the Mineral Resource Estimate reported in this Technical Report. It is recommended that the Company continue with the current QC protocol, which includes the insertion of appropriate certified reference materials (standards or CRMs), blanks and duplicates, and to further support this protocol with umpire assaying (on at least 5% of samples) at a reputable secondary laboratory.

Mr. Antoine Yassa, P.Geo., an independent Qualified Person in terms of NI 43-101 visited the Property from June 6 to June 8, 2021, for the purpose of carrying out a site visit and completing an independent verification sampling program. The River Valley core was examined during the June site visit, with 21 samples taken from five holes. The archived half-core samples were sawn into ¼ splits, with one ¼ split sent for analysis and the remaining ¼ core split returned to its storage box. An effort was made to sample a range of grades. The samples were selected by Mr. Yassa, and placed into sample bags that were sealed with tape and placed in a rice bag. The samples were sent by courier by Mr. Yassa to AGAT Laboratory, ("AGAT") in Mississauga, Ontario for analysis.

AGAT has developed and implemented at each of its locations a Quality Management System ("QMS") designed to ensure the production of consistently reliable data. The system covers all laboratory activities and takes into consideration the requirements of ISO standards. AGAT maintains ISO registrations and accreditations (ISO 9001:2015 and ISO/IEC 17025:2017).

Platinum, gold and palladium samples were analyzed by fire assay with ICP-OES finish and copper, nickel, cobalt and silver were analyzed using sodium peroxide fusion with ICP-OES/ICP-MS finish. P&E considers there to be good correlation between the majority of P&E's independent verification samples analyzed by AGAT Labs and the original analyses in the NAM database. The authors of this Technical Report consider the due diligence results to be acceptable and results are suitable for verification use in the current Mineral Resource Estimate.

1.6 MINERAL PROCESSING AND METALLURGICAL TESTING

Between 1999 and 2006, intermittent metallurgical testwork was performed on high-grade samples of limited size from some of the mineralized zones at River Valley. Scoping level metallurgical studies were completed in 2012-2013 on a composite sample from the Dana South Zone ("DSZ") and Dana North Zone ("DNZ"). Testwork was conducted for:

- Bond Rod Mill Index ("RWI");
- Ball Mill Work Index ("BWI");

- Abrasion Index ("AI");
- Modal Analysis and Deportment;
- Mineral Liberation Analysis ("MLA"); and
- Flotation testwork including Regrind Effect, Rougher Kinetic testwork and Locked Cycle Testwork ("LCT").

The LCT produced a concentrate grading 15.5% Cu, 1.67% Ni, and 189 g/t PGM at recoveries of 84.4% for Cu, 22.2% for Ni, and 68.7% for PGM.

In February 2018, Expert Process Solutions ("XPS") reported on a mineralogical analysis of four composites from the River Valley Property. The composites generated were created from assay reject material and included "typical" grade Pine Zone, "high-grade" Pine Zone, "typical" grade Dana Zone, and "high-grade" Dana Zone. Copper and nickel sulphides and Co-bearing sulphides were identified, as were palladium and platinum minerals and a rhodium-bearing mineral.

The metallurgical programs concluded that a sequential flotation flowsheet for the recovery of PGE-bearing concentrate may be the preferred mineral processing route. Improvements and optimization with further testwork will be required to confirm an increase in PGE recovery.

Mineralized material sorting was demonstrated to have limited potential for River Valley and no additional testing is recommended by P&E Mining Consultants.

1.7 UPDATED MINERAL RESOURCE ESTIMATE

Historical resource estimates of River Valley Deposit were completed in 2001, 2002, 2004 and 2006 by NAM and more recently, Mineral Resource Estimates were completed in 2012, 2018 and 2019. These earlier Mineral Resource Estimates are superseded by the Mineral Resource Estimate described in Section 14 of this Technical Report. The Property was also the subject of a Preliminary Economic Assessment ("PEA") by P&E in 2019, which is presented in an NI 43-101 Technical Report titled "Technical Report, Updated Mineral Resource Estimate and Preliminary Economic Assessment of the River Valley Deposit, Sudbury Mining Division, Ontario."

The Mineral Resource Estimate presented in the current Technical Report has been prepared following the guidelines of the Canadian Securities Administrators' National Instrument 43-101 and Form 43-101F1 and in conformity with generally accepted "CIM Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. Mineral Resources have been classified in accordance with the "CIM Standards on Mineral Resources and Reserves: Definition and Guidelines" as adopted by CIM Council on May 10, 2014. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or any part of the Mineral Resource will be converted into a Mineral Reserve. Confidence in the estimate of Inferred Mineral Resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

The Mineral Resource Estimate in this current Technical Report was prepared by P&E using the drill hole database provided by NAM. The drill hole database consisted of 723 diamond drill holes totalling 156,421 m, that were drilled in many exploration campaigns completed between 2000 and 2020.

P&E validated the Mineral Resource Estimate database in GEMS™ by checking for inconsistencies in analytical units, duplicate entries, interval, length or distance values less than or equal to zero, blank or zero-value assay results, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, survey and missing interval and coordinate fields. The authors of this Technical Report section are of the opinion that the supplied database is suitable for Mineral Resource estimation.

A total of ten mineralized domains were determined from lithology, structure and grade boundary interpretation from visual inspection of drill hole sections. The domain outlines were influenced by the selection of mineralized material above C$10/t net smelter return ("NSR") that demonstrated lithological and structural zonal continuity. Minimum constrained core length for interpretation was approximately 2.0 m. In order to regularize the assay sampling intervals for grade interpolation, a 2.0 m compositing length was selected for the drill hole intervals that fell within the constraints of the Mineral Resource wireframes. Grade capping was performed on the 2.0 m composite values in the database within the constraining domains to control the possible bias resulting from erratic high-grade composite values in the database.

A total of 432 bulk density samples ranged from 2.61 t/m^3 to 3.26 t/m^3 with average of 2.94 t/m^3. A uniform density 2.94 t/m^3 was applied for all mineralized domain model blocks for this Mineral Resource Estimate.

The River Valley block model was constructed using GEOVIA GEMS™ V6.8.4 modelling software with 5 m x 5 m x 5 m blocks. Each block model has attributes for estimated grades, NSR, rock type (mineralization domains), volume percent, bulk density, and classification. Palladium, platinum, gold, rhodium and silver grades were interpolated into the blocks using Inverse Distance weighting to the third power ("ID^3"), whereas copper, nickel and cobalt grades were interpolated with Inverse Distance squared ("ID^2"). Nearest Neighbour ("NN") was run for validation purpose. For rhodium, the grades used for un-assayed intervals were calculated with a Robust Simple Regression analysis based on the relationship of Rh content with Pt.

In the opinion of the authors of this Technical Report section, all the drilling, assaying and exploration work on the River Valley Project supports this Mineral Resource Estimate and is based on spatial continuity of the mineralization within a potentially mineable shape are sufficient to indicate a reasonable potential for economic extraction, thus qualifying it as a Mineral Resource under the 2014 CIM Definition Standards. The Mineral Resource was classified as Measured, Indicated, and Inferred based on the geological interpretation, Pd variogram performance and drill hole spacing.

The River Valley Mineral Resource Estimate was derived from applying NSR cut-off values to the block model and reporting the resulting tonnes and grades for potentially mineable areas. The three-year trailing average commodity prices and US$/CDN$ exchange rates, estimated process recoveries, estimated smelter payables, open pit marginal processing and G&A cost of CDN$15/t; and underground mining, processing and G&A cost of CDN$50/t were used to calculate the NSR values that determine pit constrained and out-of-pit potentially economic portions of the constrained mineralization. The 3-year trailing average US$ prices used were as follows:

- Pd - $1,850/oz;
- Pt - $900/oz;
- Au - $1,600/oz;
- Ag - $18.50/oz;
- Rh - $8,000/oz;
- Ni - $6,50/lb;
- Cu - $3.00 lb;
- Co - $16.00/lb.

The NSR cut-off value of the pit constrained Mineral Resource is CDN$15/t and the out-of-pit Mineral Resource is CDN$50/t. The block model was further investigated with a pit optimization to ensure that a reasonable assumption of potential economic extraction could be made.

The updated 2021 Mineral Resource Estimate for River Valley, with an effective date of September 14, 2021, is presented in Table 1.1. At cut-offs of CDN$15/t NSR (pit constrained) and CDN$50/t NSR (out-of-pit), the Mineral Resource Estimate consists of: 89.9 Mt grading 0.54 g/t Pd, 0.21 g/t Pt, 0.04 g/t Au and 0.06% Cu, or CDN$47.58/t in the Measured and Indicated classifications; and 94 Mt grading 0.35 g/t Pd, 0.16 g/t Pt, 0.04 g/t Au and 0.06% Cu, or CDN$31.69/t NSR in the Inferred classification. Contained metal contents are 2.3 Moz Pd+Pt+Au in the Measured and Indicated classifications and 1.6 Moz Pd+Pt+Au in the Inferred classification.

The Mineral Resource Estimates are sensitive to the selection of a reporting NSR cut-off value, as demonstrated in Table 1.2 for pit constrained Mineral Resources. At a cut-off of $CDN25/t NSR, the pit constrained Mineral Resources consist of: 60 Mt grading 0.71 g/t Pd, 0.26 g/t Pt, 0.05 g/t Au and 0.04% Cu, or CDN$60.54/t NSR in the Measured and Indicated classifications; and 48 Mt grading 0.48 g/t Pd, 0.20 g/t Pt, 0.05 g/t Au and 0.03% Cu, or CDN$31.69/t NSR in the Inferred classification (Table 1.2). Contained metal contents are 2.0 Moz Pd+Pt+Au in the Measured and Indicated classifications and 1.1 Moz Pd+Pt+Au in the Inferred classification.

TABLE 1.1
RIVER VALLEY PIT CONSTRAINED MINERAL RESOURCES @ CDN$15/T NSR CUT-OFF (1-8)

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Total	**Measured**	15,485	0.70	347.1	0.25	122.4	0.05	22.7	0.1	23.7	0.003	0.9	0.02	5.2	0.02	10.8	0.49	242.3	59.53
	Indicated	73,513	0.51	1,198.9	0.2	476.7	0.03	82.7	0.1	89.9	0.002	4	0.01	22.4	0.02	42.3	0.22	512.7	44.70
	Meas + Ind	**88,998**	**0.54**	**1,546.0**	**0.21**	**599.1**	**0.04**	**105.4**	**0.06**	**113.6**	**0.002**	**4.9**	**0.010**	**27.6**	**0.02**	**53.1**	**0.26**	**755.0**	**47.28**
	Inferred	92,679	0.35	1,033.3	0.15	461.8	0.03	91.8	0	86.1	0.002	3.2	0.02	41.4	0.01	41.9	0.25	740.7	31.06

RIVER VALLEY OUT-OF-PIT MINERAL RESOURCES @ CDN$50/T NSR CUT-OFF

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Total	**Measured**	2.9	1.05	0.10	0.37	0.03	0.07	0.01	0.1	0.01	0.003	0	0.03	0	0.03	0	0.51	0.05	89.72
	Indicated	639.3	1.08	22.21	0.35	7.26	0.06	1.25	0.1	1.06	0.003	0.04	0.02	0.28	0.03	0.66	0.23	4.79	88.46
	Meas + Ind	**642.1**	**1.08**	**22.31**	**0.35**	**7.29**	**0.06**	**1.25**	**0.1**	**1.07**	**0.003**	**0.04**	**0.02**	**0.28**	**0.03**	**0.66**	**0.23**	**4.84**	**88.47**
	Inferred	1,589.2	0.79	40.38	0.37	18.82	0.05	2.44	0.1	2.04	0.002	0.07	0.02	0.56	0.04	1.79	0.30	15.29	68.14

RIVER VALLEY TOTAL MINERAL RESOURCES @ CDN$15 & CDN$50/T NSR CUT-OFF

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Total	**Measured**	15,488	0.70	347.20	0.25	122.4	0.05	22.7	0.1	23.7	0.003	0.9	0.02	5.2	0.02	10.8	0.49	242.4	59.54
	Indicated	74,152	0.51	1,221.10	0.20	484.0	0.04	84.0	0.1	91.00	0.002	4.0	0.01	22.7	0.02	43.0	0.22	517.5	45.08
	Meas + Ind	**89,640**	**0.54**	**1,568.30**	**0.21**	**606.4**	**0.04**	**106.7**	**0.1**	**114.7**	**0.002**	**4.9**	**0.01**	**27.9**	**0.02**	**53.8**	**0.26**	**759.8**	**47.58**
	Inferred	94,268	0.35	1,073.70	0.16	480.6	0.03	94.2	0	88.1	0.002	3.3	0.02	42.0	0.01	43.7	0.25	756.0	31.69

Notes: *Class = Classification, Meas + Ind = Measured and Indicated classifications.*

1 *Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.*

2. *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*

3. *The Inferred Mineral Resource in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of the Inferred Mineral Resource could potentially be upgraded to an Indicated Mineral Resource with continued exploration.*
4. *The Mineral Resources were estimated in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions (2014) and Best Practices Guidelines (2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.*
5. *The Mineral Resource Estimate is based on US$ metal prices of $1,850/oz Pd, $900/oz Pt, $1,600/oz Au, $3.00/lb Cu, $16/lb Co, $6.50/lb Ni, $8,000/oz Rh, $18.50/oz Ag. The US$:CDN$ exchange rate used was 0.75.*
6. *The NSR estimates use flotation recoveries of 80% for Pd, 80% for Pt, 80% for Au, 85% for Cu, 25% for Co, 90% for Ni, 80% for Rh and 65% for Ag and smelter payables of 80% for Pd, 80% for Pt, 85% for Au, 85% for Cu, 50% for Co, 90% for Ni, 80% for Rh and 65% for Ag.*
7 *The pit optimization used a mining cost of $2.25/t mined, combined processing and G&A costs of CDN$15/t, and pit slopes of 50º. The out-of-pit Mineral Resources used underground mining, processing and G&A cost of CDN$50/t.*
8 *Out-of-pit Mineral Resources were determined to be potentially extractable with the longhole mining method.*

TABLE 1.2
RIVER VALLEY PIT CONSTRAINED MINERAL RESOURCE SENSITIVITY @ CDN$25/T NSR CUT-OFF

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Total	Measured	11,272	0.89	322.2	0.30	109	0.06	20.0	0.1	19.5	0	0.7	0	4.4	0.03	9.8	0.53	191	74.51
	Indicated	48,795	0.67	1,047.8	0.25	397	0.04	68.3	0	64.7	0	3.1	0	16.0	0.02	35.7	0.24	378	57.31
	Meas + Ind	**60,066**	**0.71**	**1,370.0**	**0.26**	**506**	**0.05**	**88.4**	**0**	**84.2**	**0**	**3.8**	**0**	**20.4**	**0.02**	**45.4**	**0.29**	**569**	**60.54**
	Inferred	48,426	0.48	751.0	0.20	310	0.04	57.3	0	47.4	0	1.8	0	21.8	0.010	15.2	0.28	438	41.48

More detailed sensitivities of pit constrained and out-of-pit Mineral Resource Estimates by mineralized zones at River Valley are provided in Section 14 of this Technical Report.

The relative metal contribution to NSR for Measured and Indicated Mineral Resources is presented in Table 1.3. The predominant contribution of Pd + Pt (88.4%) is particularly noteworthy, given the sparsity of such true PGM deposits in secure and established mining jurisdictions globally.

TABLE 1.3
METAL CONTRIBUTION TO NSR OF MEASURED AND INDICATED MINERAL RESOURCES AT RIVER VALLEY

Metal	Contribution (%)
Pd	74.6
Pt	13.8
Au	4.0
Cu	4.2
Ni	0.8
Co	0.2
Rh	2.1
Ag	0.3
Total	**100.0**

The updated 2021 Mineral Resource Estimate is based on all historical and 2020 diamond drilling, more conservative mineralized domain wireframing strategy and revised mineralized domain modelling, inverse distance grade interpretation methodology, and higher overall metal prices, particularly for palladium. As a result, Measured and Indicated Mineral Resources increased compared to the previous Mineral Resource Estimate. At the CDN$15/t NSR cut-off, the pit constrained. Measured & Indicated Mineral Resources total of 89 Mt grading 0.79 g/t Pd+Pt+Au (2.3 Moz) reported herein significantly exceeds the potentially mineable Mineral Resources total (includes Inferred Mineral Resources) of 78 Mt grading 0.79 g/t Pd+Pt+Au (2.0 Moz) reported in the 2019 Preliminary Economic Assessment of River Valley.

1.8 ENVIRONMENTAL STUDIES, PERMITS AND SOCIAL OR COMMUNITY IMPACT

The River Valley Property is located equally distant from Sudbury and North Bay (100 km by road each) and 20 km north of the Trans-Canada Highway No. 17. The Property area is uninhabited. The closest full-time habitation seven km south at Glen Afton, and at the Village of River Valley, 10 km farther southeast along the Sturgeon River. Exploration activities on the Property have included trenching, surface drilling, geophysical surveys, geological mapping and exploration trail development. No significant environmental liabilities related to previous exploration activities are known to exist on the Property. The trails and cleared zones to the east of the Property are the result of provincially-permitted forestry.

The River Valley Project, though a proposed large-scale mining project, is anticipated to have no discernable off-site impacts during development, operations and closure. No hazardous chemicals will be used to process mineralized feed material and the waste rock is not expected to be acid generating or metal leaching. Elements of potential concern found with Mineral Resources (e.g., arsenic) are present at background concentrations. The Project will be designed for closure with mined-out pits to be used for tailings disposal 5- to 6-years after Project initiation and the initial tailings storage facility ("TSF") will cease operation in the early years of mine life.

A major environmental aspect of the Project that will be outlined in a Project Description and in the expected Environmental Assessments is the intrusion of mine pits into the footprint of small and one larger surface water body (Pine Lake) on the Project site.

Baseline environmental studies for the Project include a 2011 study of surface water quality, sediment analyses and benthic identifications. More extensive baseline environmental studies commenced in 2020, continued in 2021, and will be required in the earliest stage of the Project development and for an Environmental Impact Assessment.

The federal and provincial Environmental Assessment ("EA") processes and permitting framework for metal mining in Canada are well established. A requirement of an EA under federal legislation is anticipated for the River Valley Project. It is reasonably possible that a joint Federal-Provincial EA would be agreed upon by the respective agencies. Following the EA approval, the Project will enter a permitting phase that will regulate the Project through all phases of construction, operation, closure, and possibly post-closure. Throughout all of these processes, consultation with, and advice from, local First Nations and local communities is considered essential. The two First Nations are the Temagami First Nation which has an interest in the northern section of the Property, and the Nipissing First Nation which has an interest in the southern section. NAM has signed a Memorandum of Understanding with the Temagami First Nation and is involved in discussions and meetings with the Nipissing First Nation about negotiating a similar Participation Agreement.

Other than marginal timber resources, no Crown resources are affected by the Project. The construction of a power line allowance and a 115 kV transmission line will require Provincial approval. Upgrading of the six km trail to the Project from Glen Afton will be required to handle industrial transport and provide safe access for workers.

NAM will develop a reclamation and Closure Plan that will satisfy all regulatory requirements and will be consistent with best Canadian industrial practice. The Closure Plan will be submitted to the Ontario Ministry of Energy, Northern Development and Mines. The closed-out Project site should essentially be a "walk-away" situation; i.e., no post-operation active treatment should be required. Surface water quality should return to pre-mining conditions and pits will either be flooded, allowing aquatic biology to self-establish, or will be filled with tailings. A vegetative cover will be established on the in-pit stored tailings when self-consolidation of the tailings mass is completed.

1.9 CONCLUSIONS AND RECOMMENDATIONS

1.9.1 Conclusions

NAM's 100% owned River Valley Property is a dominantly palladium property consisting of 310 single cell mining claims, 18 boundary claims, and two mining leases covering an area of approximately 10,700 ha in the Sudbury Mining Division of Ontario. Contact-type palladium mineralization associated with disseminated copper-nickel sulphides is currently defined in ten zones of various sizes over a strike length of approximately 16 km. Several additional mineralized zones are known, and with further exploration drilling are an opportunity to delineate additional Mineral Resources.

The Property benefits significantly from excellent access and close proximity to the Sudbury mining district. Mineral exploration, mining, along with mineral processing and smelting are major components of the local economy. Access and weather conditions allow for exploration and development work to be conducted year-round.

At cut-offs of CDN$15/t NSR (pit constrained) and CDN$50/t NSR (out-of-pit), the updated 2021 Mineral Resource Estimate consists of: 89.9 Mt grading 0.54 g/t Pd, 0.21 g/t Pt, 0.04 g/t Au and 0.06% Cu, or CDN$47.58/t NSR in the Measured and Indicated classifications; and 94 Mt grading 0.35 g/t Pd, 0.16 g/t Pt, 0.04 g/t Au and 0.06% Cu, or CDN$31.69/t NSR in the Inferred classification. Contained metal contents are 2.3 Moz Pd+Pt+Au in the Measured and Indicated classifications and 1.6 Moz Pd+Pt+Au in the Inferred classification.

The predominance of Pd + Pt (88.4%) in a breakdown of relative metal contribution to the NSR is particularly noteworthy, given the sparsity of such true PGM deposits in secure and established mining jurisdictions globally.

1.9.2 Recommendations

Additional exploration and study expenditures are warranted to advance the Project towards a Feasibility Study. P&E recommendations include step-out and in-fill drilling, geological, geophysical and geochemical studies, metallurgical testwork and a Pre-Feasibility Study.

P&E recommends additional drilling on the Property to expand the current Mineral Resources, add new Mineral Resources, and upgrade Inferred Mineral Resources to Indicated Mineral Resources. The current Mineral Resources are generally open to expansion by drilling down-dip. Inferred Mineral Resources at Banshee, Azen, Razor and Mustang should be drilled to Indicated classification Mineral Resources. Mineralized Zones at Pardo, Drop and Jackson Flats remain to be drilled sufficiently for Mineral Resource estimation.

IP surveys and limited drilling programs east of the footwall contact of the River Valley Intrusion previously discovered the Pine Zone. This discovery opens up the potential for new exploration opportunities on the Property. Additionally, historical targets with characteristics of reef-style mineralization internally within the River Valley Intrusion warrant further investigation. Orientation MT and gravity surveys should be completed over the River Valley Intrusion.

Additional recommendations by the authors of this Technical Report include:

- Additional metallurgical testwork to establish optimum material grinding and metal recovery parameters for all metals including rhodium;
- Upgrading storage of coarse rejects and pulps to better prevent contamination;
- Institution of a safe and secure off-site database for the Project;
- Completion of the Rh assay study of historical and fresh mineralized and barren drill core;
- Acquisition of additional bulk density measurements in order that up to 5% of the total assay dataset is represented; and
- Completion of 3-D lithostructural model of the Deposit host rocks.

P&E recommends that a Pre-Feasibility Study ("PFS") be completed to estimate Mineral Reserves and develop a mine and site operations plan as a basis for future, more advanced engineering and economic studies.

The Company re-commenced permitting and baseline studies in 2020 and it is recommended that work continue on these initiatives, including:

- Continued aquatic, terrestrial and atmospheric field studies to support permitting activities;
- Ongoing groundwater and hydrogeology monitoring on a quarterly basis;
- Stakeholder engagement and consultation.

The estimated cost to complete the recommended program is estimated to be CDN$19.6M (Table 1.4). The program should be completed in the next 12 to 18 months.

TABLE 1.4
RECOMMENDED PROGRAM AND BUDGET

Program	Description	Budget (CDN$)
In-fill Drilling	35,000	7,000,000
Exploration Drilling	25,000	5,000,000
Upgraded Drill Core and Drilling Data Storage	containers and Acquire	250,000
Geophysical Surveys	IP, MT-Gravity	500,000
Geological and Geochemical Studies	lithostructural, rhodium	500,000
Metallurgical Studies	laboratory testwork	400,000
Permitting and Environmental Studies	aquatic, terrestrial, hydrology	300,000

TABLE 1.4 RECOMMENDED PROGRAM AND BUDGET		
Program	**Description**	**Budget (CDN$)**
Consultation Work	First Nations, government	100,000
Engineering and Pre-Feasibility Study	geotechnical, geomechanical, hydrogeological studies; Mineral Reserves estimation, mine and site planning	3,000,000
Subtotal		**17,050,000**
Contingency (15%)		2,557,500
Total		**19,607,500**

2.0 INTRODUCTION AND TERMS OF REFERENCE

2.1 TERMS OF REFERENCE

The following Technical Report was prepared to provide a National Instrument ("NI") 43-101 Technical Report and Updated Mineral Resource Estimate for the mineralization contained in the River Valley Palladium Deposit, Ontario, Canada.

This Technical Report and Updated Mineral Resource Estimate was prepared by P&E Mining Consultants Inc. ("P&E") at the request of Mr. Harry Barr, Chairman and CEO, New Age Metals Inc. ("NAM" or "the Company"). NAM is a reporting issuer trading on the TSX Venture Exchange ("TSX-V") with the trading symbol NAM.

The Company has its head office at 101-2148 West 38th Avenue, Vancouver, BC V6M 1R9 and a regional office at 59 Burtch's Lane, Rockport, ON K0E 1V0. Prior to January 31, 2017, NAM was known as Pacific North West Capital Corp.

This Technical Report has an effective date of September 14, 2021. There has been no material change to the River Valley Project between the effective date of this Technical Report and the signature date.

The present Technical Report is prepared in accordance with the requirements of National Instrument 43-101 ("NI 43-101") and in compliance with Form NI 43-101F1 of the Ontario Securities Commission ("OSC") and the Canadian Securities Administrators ("CSA").

P&E understands that this Technical Report will support the public disclosure requirements of NAM and will be filed on SEDAR as required under NI 43-101 disclosure regulations. P&E understands that this Technical Report will be used for internal decision-making purposes and will be filed on SEDAR, as required under TSX regulations. The Technical Report may also be used to support public equity or private placement financings.

2.2 SITE VISIT

Mr. Eugene Puritch, P.Eng., FEC, CET, of P&E, a Qualified Person under the regulations of NI 43-101, conducted a site visit to the Property on September 10, 2018. The purpose was to review drill core, geologic and engineering aspects of the Project for the Preliminary Economic Assessment of 2019 (P&E, 2019). More recently, Mr. Antoine Yassa, P.Geo., of P&E, a Qualified Person under the regulations of NI 43-101, Mr. Yassa visited the Property from June 6 to June 8, 2021. Mr. Yassa is a professional geologist with more than 27 years of experience in exploration and operations, including several years working in magmatic PGE-nickel sulphide deposits. Mr. Yassa was accompanied on the Property by Mr. Richard Zemoroz, Senior Project Geologist with NAM, or delegates.

2.3 SOURCES OF INFORMATION

The data used in the Updated Mineral Resource Estimate and the development of this Technical Report was provided by NAM to P&E. The Property was the subject of a Preliminary Economic Assessment ("PEA") by P&E, which is presented in an NI 43-101 Technical Report titled "Technical Report, Updated Mineral Resource Estimate and Preliminary Economic Assessment of the River Valley Deposit, Sudbury Mining Division, Ontario" dated August 7, 2019 (effective date of June 27, 2019), and is filed on SEDAR under NAM's profile. Parts of Sections 4 to 10 in this Technical Report have been excerpted, updated, and revised from the PEA.

In addition to the site visits, P&E held discussions with technical personnel from the Company regarding all pertinent aspects of the Project and carried out a review of available literature and documented results concerning the Property. The reader is referred to those data sources, which are listed in Section 27 (the References section) of this Technical Report, for further detail.

Table 2.1 presents the authors and co-authors of each section of this Technical Report, who in acting as independent Qualified Persons as defined by NI 43-101, take responsibility for those sections of this Technical Report as outlined in the "Certificate of Author" included in Section 28 of this Technical Report. Sections 5, 6, 7, 8, 9, 10 of this Technical Report were prepared by NAM, under the supervision of Richard Sutcliffe, Ph.D., P.Geo. who acting as a Qualified Person as defined by NI 43-101, takes responsibility for those sections of this Technical Report as outlined in the "Certificate of Author" included in this Technical Report.

TABLE 2.1
QUALIFIED PERSONS RESPONSIBLE FOR THIS TECHNICAL REPORT

Qualified Person	Employer	Sections of Technical Report
Richard Sutcliffe, Ph.D., P.Geo.	P&E Mining Consultants Inc.	2, 3, 4, 5, 6, 7, 8, 9, 10 and Co-author 1, 25, 26
Eugene Puritch, P.Eng.	P&E Mining Consultants Inc.	23, 24 and Co-author 1, 14, 25, 26
Yungang Wu, P.Geo.	P&E Mining Consultants Inc.	Co-author 1, 14, 25, 26
Jarita Barry, P.Geo.	P&E Mining Consultants Inc.	11 and Co-author 1, 12, 25, 26
D. Grant Feasby, P.Eng.	P&E Mining Consultants Inc.	13, 20 and Co-author 1, 25, 26
Antoine Yassa, P.Geo.	P&E Mining Consultants Inc.	Co-author 1, 12, 25, 26

2.4 UNITS AND CURRENCY

In this Technical Report, all currency amounts are stated in Canadian dollars ("$") unless otherwise stated. At the effective date of this Technical Report, the 24-month trailing average exchange rate between the US dollar and the Canadian dollar is 1 US$ = 1.33 CDN$ or 1 CDN$ = 0.75 US$.

Commodity prices are typically expressed in US dollars ("US$") and will be so noted where appropriate. Quantities are generally stated in Système International d'Unités ("SI") metric units including metric tons ("tonnes", "t") and kilograms ("kg") for weight, kilometres ("km") or metres ("m") for distance, hectares ("ha") for area, grams ("g") and grams per tonne ("g/t") for metal grades. Platinum group metal ("PGM"), gold and silver grades may also be reported in parts per million ("ppm") or parts per billion ("ppb"). Copper metal values are reported in percentage ("%") and parts per billion ("ppb"). Quantities of PGM, gold and silver may also be reported in troy ounces ("oz"), and quantities of copper in avoirdupois pounds ("lb"). The terms and their abbreviations used in this Technical Report are listed in Table 2.2. Units of measurement and their abbreviations are listed in Table 2.3. Grid coordinates for maps are given in the UTM NAD 83 Zone 17N or as latitude and longitude.

TABLE 2.2
TERMINOLOGY AND ABBREVIATIONS

Abbreviation	Meaning
$	dollar(s)
°	degree(s)
°C	degrees Celsius
<	less than
>	greater than
%	percent
3-D	three-dimensional
3E	three elements: Au + Pt + Pd
Actlabs	Activation Laboratories Ltd.
Accurassay	Accurassay Laboratories Ltd.
Ag	silver
AGAT	AGAT Laboratories Ltd.
AI	abrasion index
Amplats	Anglo American Platinum Limited
ARD	acid rock drainage
As	arsenic
Au	gold
ATV	all-terrain vehicle
Bi	bismuth
Bondar Clegg	Bondar Clegg Laboratories
BMS	base metal sulphides
BWI	ball mill work index
CAPEX	capital cost estimate
CDN$	Canadian dollar(s)
CEAA	Canadian Environmental Assessment Act
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CMC	cellulose, carboxymethyl ether, sodium salt (reagent)
Co	cobalt
Company, the	New Age Metals Inc.
Cr	chromium
CRM(s)	certified reference material(s)
CSA	Canadian Securities Administrators
Cu	copper
DCP	direct current plasma
Deposit, the	River Valley Palladium Deposit

Table 2.2 **Terminology and Abbreviations**	
Abbreviation	**Meaning**
DMB & W	Derry Michener Booth and Wahl
DNZ	Dana North Zone
DRA	DRA Americas Inc.
DSZ	Dana South Zone
EA	Environmental Assessment
ECA(s)	Environmental Compliance Approval(s)
EM	electromagnetic
Fe	iron
G&A	General and administration
g/t	grams of metal per tonne
GeoSim	GeoSim Consultants
HADD	Harmful Alteration, Disruption or Destruction of Fish Habitat
lb	pound weight
ICP	inductively coupled plasma
ICP-AES	inductively coupled plasma-atomic emission spectroscopy
ICP-OES	inductively coupled plasma-optical emission spectroscopy
ICP-MS	inductively coupled plasma-mass spectrometry
ID	identification
ID^2	inverse distance squared
ID^3	inverse distance cubed
Inventus	Inventus Mining Inc.
IP	induced polarization
Ir	iridium
IRR	internal rate of return
ISO	International Organization for Standardization
JV	joint venture
k	thousand(s)
Kaymin	Kaymin Resources Ltd.
lb	pound (weight)
LCT(s)	locked cycle testwork(s)
LiDAR	light detection and ranging
LIL	large ion lithophile
LOM	life-of-mine
LOW-A	low-grade control sample
M	million(s)
m asl	metres above sea level
Ma	millions of years
mag	magnetic(s)
max.	maximum
MDEng	Mine Design Engineering Inc.
MECP	Ministry of Environment, Conservation and Parks

Table 2.2 **Terminology and Abbreviations**	
Abbreviation	**Meaning**
MENDM or MNDM	Ontario Ministry of Energy, Northern Development and Mines (was Northern Development and Mines)
Mg	magnesium
MIBC	methyl isobutyl carbinol (reagent)
min.	minimum
ML	metal leaching
MLA	mineral liberation analysis
MNDM or MENDM	Ontario Ministry of Energy, Northern Development and Mines (was Northern Development and Mines)
MOU	Memorandum of Understanding
MRSD	moving range standard deviation
Mtpy	million(s) tonnes per year
MTU	Michigan Technological University
NAD	North American Datum
NAM	New Age Metals Inc.
NAP	North American Palladium Ltd.
Ni	nickel
NI or NI 43-101	National Instrument or National Instrument 43-101
NN	Nearest Neighbour
NPV	net present value
NSR	net smelter return
NZ-2	North Zone 2
NZ-2E	high-grade control sample
OK	ordinary kriging
OPEX	operating cost
OSC	Ontario Securities Commission
oz	ounce
P_{80}	80% passing size
P&E	P&E Mining Consultants Inc.
Pd	palladium
PdEq	palladium equivalent
PEA	Preliminary Economic Assessment
P.Eng.	Professional Engineer
PFN	Pacific North West Capital
PFS	Pre-Feasibility Study
PGE(s) or PGM(s)	platinum group elements or platinum group metals
P.Geo.	Professional Geoscientist
Pt	platinum
Project, the	River Valley Project
Property, the	River Valley Property
PWQO	provincial (surface) water quality objectives

TABLE 2.2 TERMINOLOGY AND ABBREVIATIONS	
Abbreviation	**Meaning**
Q1, Q2, Q3, Q4	first quarter, second quarter, third quarter, fourth quarter of the year
QA/QC	quality assurance / quality control
QC	quality control
QEMSCAN	quantitative evaluation of materials by scanning electron microscope
QMS	quality management system
R^2	the coefficient of determination
Rh	rhodium
ROM	run-of-mine
RQD	rock quality designation
Ru	ruthenium
RV-1	high-grade sample
RV-2	mid-grade sample
RV-3	low-grade sample
RWI	bond rod mill index
S	sulphur
Sb	antimony
SEDAR	System for Electronic Document Analysis and Retrieval
SEM	scanning electron microscopy
SGS	SGS Canada Inc. / SGS Lakefield Research
Si	silicon
SiO_2	silicon dioxide
SIBX	sodium isobutyl xanthate (reagent)
Sn	tin
SZ	South Zone
t	metric tonne(s)
Te	tellurium
Technical Report	(this) NI 43-101 Technical Report
the Company	New Age Metals Inc.
the Deposit	River Valley Deposit
the Project	River Valley Project
the Property	River Valley Property
TIC	total installed cost
TMF	tailings management facility
TSF	tailings storage facility
TSX-V	Toronto Venture Stock Exchange
US$	United States dollars
UTM	Universal Transverse Mercator
WSP	WSP Canada Inc.
WRF	waste rock storage facilities
XPS	Expert Process Solutions
XRAL	X-Ray Assay Laboratories

TABLE 2.2 TERMINOLOGY AND ABBREVIATIONS	
Abbreviation	**Meaning**
XRD	x-ray diffraction
XRT	x-ray transmission

TABLE 2.3 UNIT MEASUREMENT ABBREVIATIONS			
Abbreviation	**Meaning**	**Abbreviation**	**Meaning**
µm	microns, micrometre	m^3/s	cubic metre per second
$	dollar	m^3/y	cubic metre per year
$/t	dollar per metric tonne	mØ	metre diameter
%	percent sign	m/h	metre per hour
% w/w	percent solid by weight	m/s	metre per second
¢/kWh	cent per kilowatt hour	Mt	million tonnes
°	degree	Mtpy	million tonnes per year
°C	degree celsius	min	minute
cm	centimetre	min/h	minute per hour
d	day	mL	millilitre
ft	feet	mm	millimetre
GWh	Gigawatt hours	MV	medium voltage
g/t	grams per tonne	MVA	mega volt-ampere
h	hour	MW	megawatts
ha	hectare	oz	ounce (troy)
hp	horsepower	Pa	Pascal
k	kilo, thousands	pH	Measure of acidity
kg	kilogram	ppb	part per billion
kg/t	kilogram per metric tonne	ppm	part per million
km	kilometre	s	second
kPa	kilopascal	t or tonne	metric tonne
kV	kilovolt	tpd	metric tonne per day
kW	kilowatt	t/h	metric tonne per hour
kWh	kilowatt-hour	t/h/m	metric tonne per hour per metre
kWh/t	kilowatt-hour per metric tonne	$t/h/m^2$	metric tonne per hour per square metre
L	litre	t/m	metric tonne per month
L/s	litres per second	t/m^2	metric tonne per square metre
lb	pound(s)	t/m^3	metric tonne per cubic metre
M	million	ton	short ton
m	metre	tpy	metric tonnes per year
m^2	square metre	V	volt
m^3	cubic metre	W	Watt
m^3/d	cubic metre per day	wt%	weight percent
m^3/h	cubic metre per hour	y	year

3.0 RELIANCE ON OTHER EXPERTS

The Technical Report authors have assumed, and relied on the fact, that all the information and existing technical documents listed in the References section of this Technical Report are accurate and complete in all material aspects. Although the Technical Report authors have carefully reviewed all the available information presented to us, they cannot guarantee its accuracy and completeness. The Technical Report authors reserve the right, but will not be obligated to revise the Technical Report and conclusions if additional information becomes known to the authors subsequent to the effective date of this Technical Report.

Copies of the tenure documents, operating licenses, permits, and work contracts were not reviewed. Information on land tenure was obtained from NAM. The Technical Report authors relied on tenure information from NAM and has not completed an independent detailed legal verification of title and ownership of the River Valley Palladium Property. Ownership of the mining claims was independently verified by the author of this Technical Report section on September 14, 2021, utilizing Ontario's Ministry of Northern Development and Mines website at: https://www.lioapplications.lrc.gov.on.ca/MLAS/Index.html?viewer=MLAS.MLAS&locale=en-CA.

The Technical Report authors have not verified the legality of any underlying agreement(s) that may exist concerning the land tenure, or other agreement(s) between third parties, but has relied on and considers it has a reasonable basis to rely on NAM to have conducted the proper legal due diligence.

Select technical data, as noted in the Technical Report, were provided by NAM and the Technical Report authors have relied on the integrity of such data. A draft copy of the Technical Report has been reviewed for factual errors by NAM and Technical Report authors have relied on NAM's knowledge of the Property in this regard. All statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the effective date of this Technical Report.

4.0 PROPERTY DESCRIPTION AND LOCATION

The River Valley Property is located approximately 100 km by road (60 km direct) northeast of the City of Greater Sudbury, Ontario (Figure 4.1). The Property lies within Dana and Pardo Townships and is centered at approximately 557,800 m E and 5,169,700 m N (NAD83 UTM Zone 17N), or Longitude 80º15' W and Latitude 46º41' N.

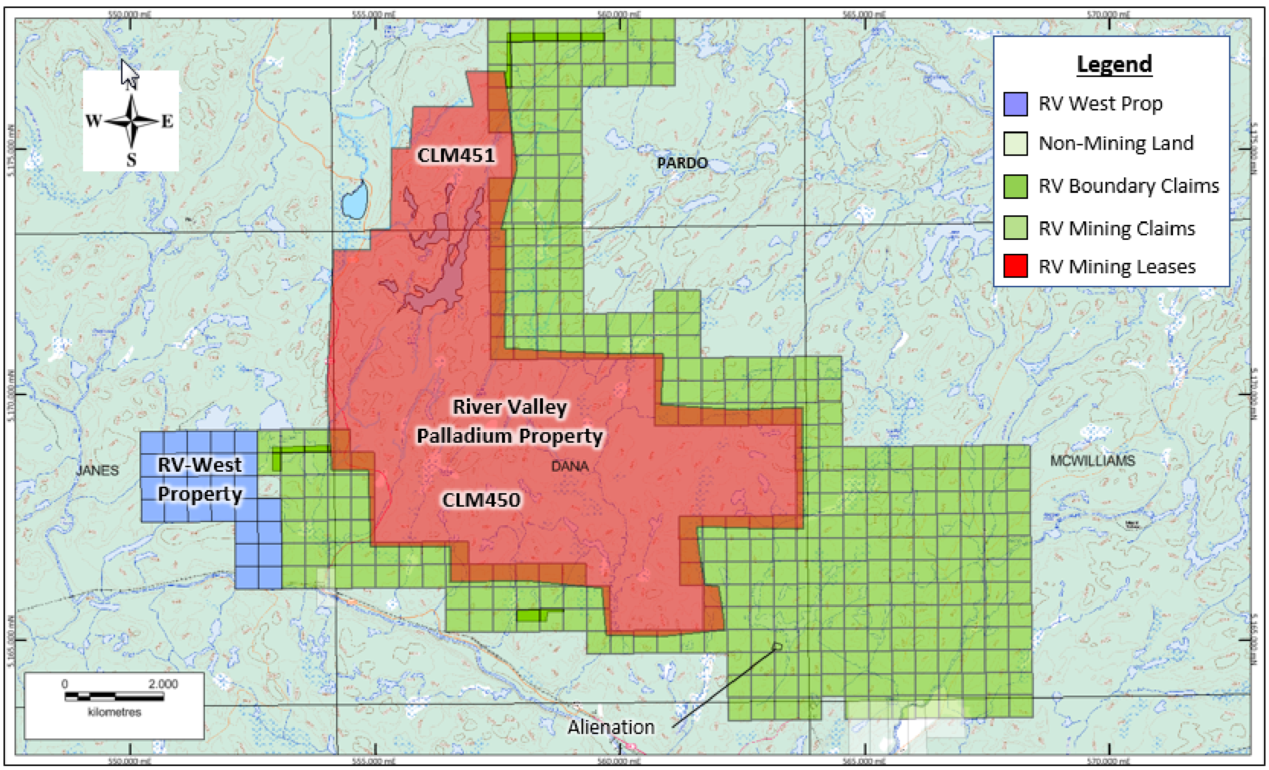
FIGURE 4.1 RIVER VALLEY PROPERTY LOCATION MAP

Source: *P&E and DRA (2019)*

4.1 LAND TENURE

The Property land position consists of two mining leases, 310 single cell mining claims and 18 boundary cell mining claims (Appendix H, Table H.1), all 100% owned by NAM (formerly Pacific North West Capital Corp) (Figure 4.2). The two mining leases total 5,402 ha in area (Table 4.1). Mining lease CLM450 was granted in November 2011 and covers the majority of the Mineral Resources reported in Section 14 of this Technical Report (Table 4.1). Mining lease CLM451 was granted in January 2021 and covers the Pardo Zone, which has yet to be drilled sufficiently for Mineral Resource estimation. These two mining leases each have surface and mining rights, 21-year renewal terms, and remain in good standing subject to annual lease payments to the provincial government. Banked credits on CLM450 total $11.5M, which can cover the holding costs of the mining claims until expiry.

FIGURE 4.2 LAND TENURE MAP OF THE RIVER VALLEY PROPERTY



Source: *P&E (September 2021)*
Notes: *Land tenure information effective September 14, 2021, RV = River Valley, The Alienation is a pending permit for aggregate.*

TABLE 4.1 RIVER VALLEY MINING LEASES				
Mining Lease	**Area (ha)**	**Township**	**Recorded**	**Current Expiry Date**
CLM450	4,777.18	Dana	01-Nov-2011	31-Oct-2032
CLM451	624.94	Pardo	11-Jan-2012	28-Feb-2033

Source: *P&E and DRA (2019)*

The 328 single cell mining claims and boundary claims are located within Dana, Janes, McWilliams, and Pardo Townships and surround the two mining leases (Figure 4.2). The Mineral Resources not covered by the two mining leases are covered by eleven of the single cell mining claims to the southeast of CLM450; specifically mining claims 183413, 147429, 183414, 279263, 131411, 131410, 163968, 183415, 107066, 165173 and 338225, all of which are on the River Valley Extension part of the River Valley Property (mainly in McWilliam Township). These eleven single cell mining claims are all in good standing as of the effective date of this Technical Report (see Appendix I). The total area of NAM's land position at River Valley is approximately 10,700 ha. Adjacent and nearby claim holdings also held by NAM are 70% ownership of the River Valley West Joint Venture Property (30% owned by Freegold Ventures Limited).

4.2 TENURE AGREEMENTS AND ENCUMBRANCES

On April 7, 2011, Pacific North West Capital Corp. ("PFN") (now NAM) announced that it had closed the purchase of the remaining 50% interest in the unincorporated joint venture covering the Project from Anglo American Platinum Limited ("Amplats") through its wholly-owned subsidiary, Kaymin Resources Ltd. ("Kaymin"). Pursuant to the terms of the agreement with Amplats and Kaymin, as announced in PFN's news release of January 31, 2011, a total of 8,117,161 fully paid and non-assessable common shares of PFN (reflecting a 12% interest in PFN based upon the issued and outstanding common shares of PFN as of November 30, 2010 (67,643,008) and three-year warrants to purchase up to 3,000,000 common shares of PFN at a price of CDN$0.30 per common share have been issued to Kaymin for its 50% interest in the joint venture. The transaction provided PFN with 100% interest in the Property.

According to the Property Purchase Agreement dated January 15, 1999, PFN's 100% interest in the Property is subject to a 3% Net Smelter Returns ("NSR") Royalty to the original vendors of the Property. NAM will pay each of the original Vendors (Robert Bailey, Lorne Luhta and Ron Orchard) a 1% NSR Royalty from future commercial production from the Property. NAM has the right to purchase up to two-thirds of each 1% NSR Royalty from each vendor, for an aggregate of $666,667 for each two-thirds of 1% of each Vendor's NSR, or the pro-rata lesser amount for a lesser percentage interest. Essentially, the 3% NSR Royalty can be bought down to 1% for CDN$2M.

In a Company press release dated August 4, 2016, PFN announced that it signed an agreement with Mustang Minerals Corp. to acquire 100% interest in the six claims of its PGM property near Sudbury, Ontario. These claims were located southeast adjacent to and contiguous with NAM's mining lease CLM450 (Figure 4.2), and extended NAM's ownership of the River Valley Deposit by an additional 4 km to 16 km in total. The six claims were acquired for $50,000 cash and shares. Mustang Minerals Corp. retained a 1% NSR on any production from the six claims. The NSR can be purchased at any time for $500,000. On January 31, 2017, PFN announced a name change to New Age Metals Inc ("NAM).

4.3 PROPERTY AND TITLE IN ONTARIO REGULATIONS

In 2018, the Ontario Ministry of Energy, Northern Development and Mines ("MNDM") converted from a system of ground staking to a system of online registration of mining claims. Ontario Crown lands are available to licensed prospectors for the purposes of mineral exploration. A licensed prospector must first stake a mining claim to gain the exclusive right to explore on Crown land. Claim staking is governed by the Ontario Mining Act and is administered through the Provincial Mining Recorder and Mining Lands offices of the MNDM.

A claim remains valid as long as the claim holder properly completes and files the assessment work as required by the Mining Act and the Minister approves the assessment work. A claim holder is not required to complete any assessment work within the first year of recording a mining claim. In order to keep a mining claim current, the mining claim holder must perform $400 worth of approved assessment work per single cell mining claim unit and $200 per single boundary cell mining claim unit, per year; immediately following the initial staking date, the claim holder has two years to file one-year worth of assessment work. Claims are forfeited if the assessment work is not done.

A claimholder may prospect or carry out mineral exploration on the land under the claim, however, the land covered by these claims must be converted to leases before any development work or mining can be performed. Mining leases are issued for 21-year terms and may be renewed for further 21-year periods. Leases can be issued for surface and mining rights, mining rights only or surface rights only. When issued, the lessee pays an annual rent to the province. Furthermore, prior to bringing a mine into production, the lessee must comply with all applicable federal and provincial legislation.

4.4 ENVIRONMENTAL AND PERMITTING

Exploration permits are required from the Ontario government for trenching, ground geophysical and drilling programs. NAM has been granted the permits required for all historical, previous and current work programs.

4.5 ABORIGINAL GROUP COMMUNICATIONS

Initial contact and meetings have been made with aboriginal groups whose traditional land claims overlap the Property. These groups include the Temagami First Nation and Nipissing First Nation. Temagami First Nation and Nipissing First Nation representatives visited the Project in 2017 and 2018. An Exploration Memorandum of Understanding between NAM and Temagami First Nation was signed in 2014 and amended in 2017.

4.6 OTHER SIGNIFICANT FACTORS AND RISKS

The author of this Technical Report section is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform work on the River Valley Property that has not been discussed in this Technical Report.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

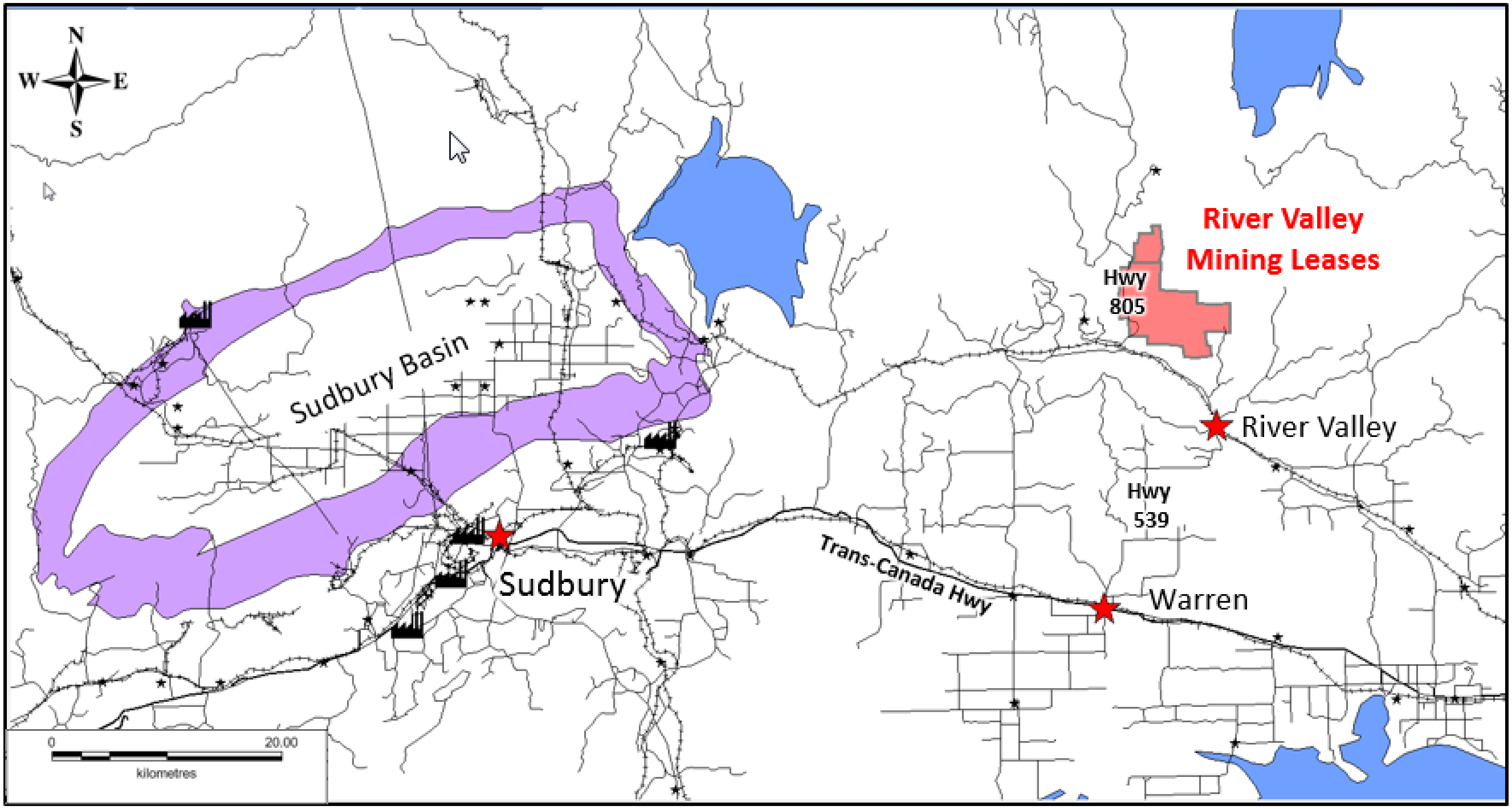
5.1 ACCESS

The River Valley Property is accessed from Sudbury by travelling east along Trans-Canada Highway 17 for 50 km to the Town of Warren, and north on Highway 539 (Figure. 5.1) for 22 km to the junction of Highway 805. Drive northwest along Highway 805 from the Village of River Valley, a distance of about 19.5 km from the Temagami River. Turn right onto a logging road, for about 800 m, then right at a fork in the road, and continue an additional 200 m. At this point several skidder roads and access trails lead south toward the Dana mineralized zones (Dana North Zone and Dana South Zone) and the Banshee Zone of the River Valley Palladium Deposit (Figure 5.2).

The Lismer North and Lismer Ridge Zones can be accessed by an all-terrain vehicle ("ATV") trail from Highway 805 by turning east at a gravel pit at Kilometre 14 (ATV trail at north edge of pit) and following the trail northwards for approximately 6 km.

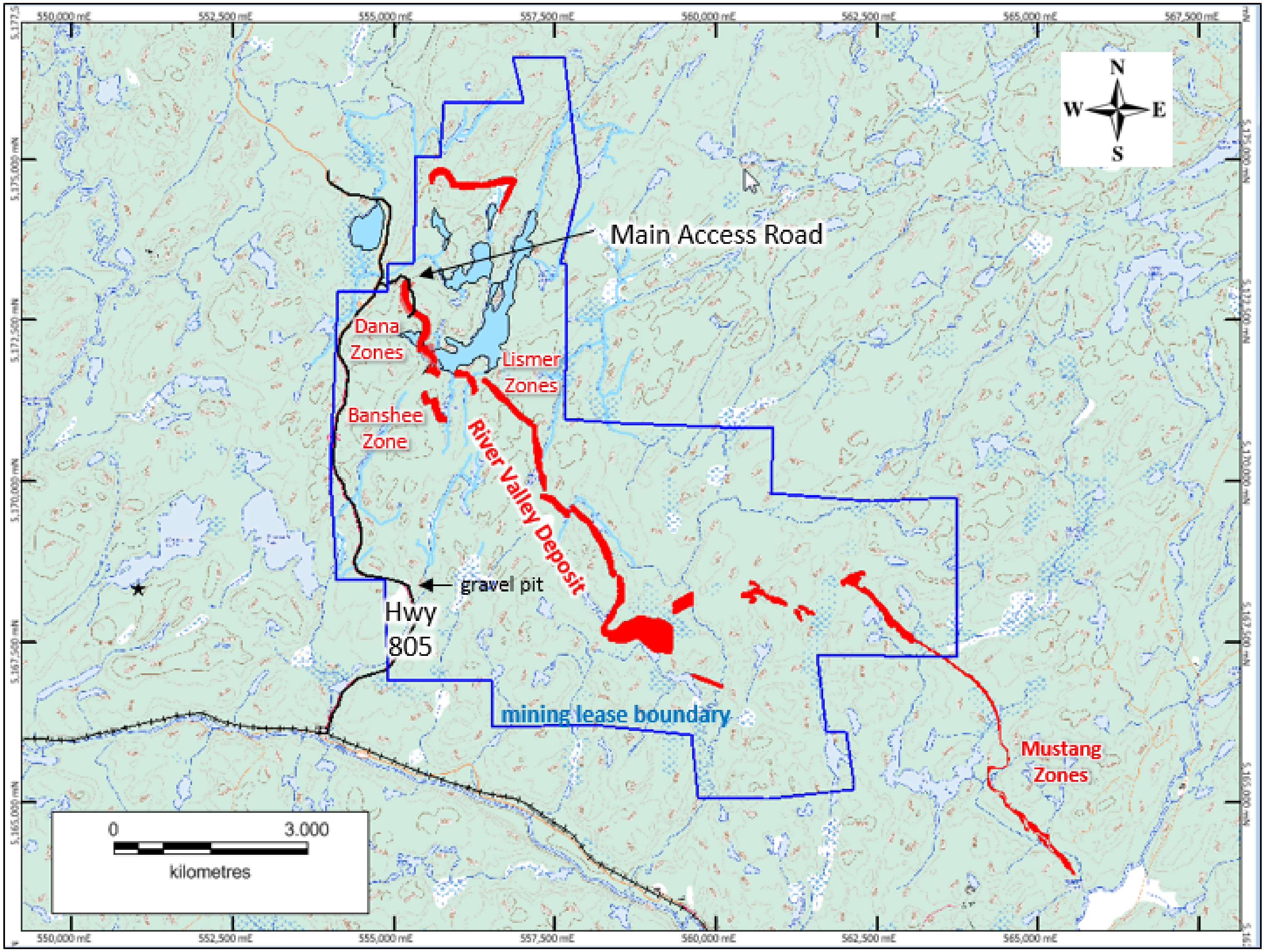
The nearest airport is the Sudbury Regional Airport, located 40 km west of the Property. The airport has regularly scheduled flights to Thunder Bay, Toronto, Timmins and Ottawa.

FIGURE 5.1 PROPERTY ACCESS AND INFRASTRUCTURE FROM SUDBURY



Source: *NAM Corporate Presentation (June 2021)*

FIGURE 5.2 PROPERTY ACCESS



Source: *P&E (2021)*

5.2 SITE TOPOGRAPHY, ELEVATION AND VEGETATION

The Property lies at a mean elevation of approximately 325 m above sea level. Topographic relief is moderate and typical of the Precambrian Shield The eastern part of the Property around Azen Creek is lower and marshy. Forest cover is mainly poplar with approximately 25% to 33% white pine regrowth.

Outcrop exposure on the Property is limited to approximately 20% locally. The remaining areas are covered mostly by generally <1 m thick deposits of glacial till, gravel, outwash sand, and silt. Locally, these deposits can be up to tens of metres thick. Most of the area around the Dana, Lismer, Varley and Azen Zones has been logged within the past 20 years.

The Property is located in the watershed of the Sturgeon River that flows in a southerly direction toward Lake Nipissing and ultimately into Georgian Bay of Lake Huron through the French River.

5.3 CLIMATE

There is no active weather station at the village of River Valley. The climate in the region is typical Canadian Shield summers and winter, with temperatures averaging from 19°C in the summer to -13°C in the winter. Precipitation is in the form of 30 cm to 64 cm of snow in the winter months, and 77 mm to 101 mm of rain in the summer, according to the website below:

http://www.theweathernetwork.com/statistics/cl6068150

Drilling and geophysical surveys can be carried out year-round from skidder roads. Surface bedrock exploration can be carried out for about seven to eight months of the year.

5.4 INFRASTRUCTURE

The City of Greater Sudbury, a major mining-processing and manufacturing city, can provide all of the infrastructure and technical requirements for any mineral exploration and project development work. Labourers can be hired in the local community of River Valley and other nearby communities.

The Canadian National Railway main line passes through the community of River Valley and is located immediately south of the Property. A 230 kV transmission line is located passing through Warren, approximately 22 km from the Property. A 115 kV transmission line passes through the village of Field, located approximately 15 km to the east of the Project. A gas pipeline passes through the nearby community of River Valley, 10 km south of the Property boundary.

Water is abundant in the region from numerous lakes and rivers to support exploration programs and mining activities. However, NAM will minimize the use of fresh water by using mine water and recycling process water to the maximum extent possible.

6.0 HISTORY

6.1 HISTORICAL EXPLORATION SUMMARY

The exploration history of the River Valley Property region dates back to the 1960s, with work on the Property starting in earnest in 1999 (Zemoroz, 2008). The history of the Property and historical resource estimates are summarized and disclosed below in Table 6.1. Exploration and drilling activities in 2020 and 2021 that postdate the 2019 PEA are summarized in Sections 9 and 10 of this Technical Report.

The historical estimates summarized in the Table 6.1 and in Section 6.6 below are considered relevant, but not reliable. **A Qualified Person has not done sufficient work to classify the historical estimates as current Mineral Resources. NAM is not treating the historical estimates as current Mineral Resources and the historical estimates should not be relied upon.**

TABLE 6.1
PROJECT HISTORY

Year	Company	Activities
1963	Tomrose Mines Ltd.	Prospecting and trenching over Prospectus, furthering prospecting was recommended.
1963	Tomrose Mines Ltd.	Diamond drill program on Tomlinson Property; additional work recommended.
1964	Tomrose Mines Ltd.	Geochemical exploration of overburden areas recommended over Prospectus; several areas across Property were recommended for specific drilling targets.
1965	Falconbridge Ltd.	An electromagnetic ("EM") survey was conducted over Tomrose Option; no further work was recommended.
1966	Azen Mines Ltd.	Magnetometer survey over Harper property; further prospecting of anomalous areas was recommended.
1968	Kenco Exploration (Canada) Ltd.	Airborne mag-EM survey over Janes, Davis, Henry, and Dana Townships.
1969	Kenco Exploration (Canada) Ltd.	J. P. Patrie exposed mineralization in trenches and pits.
1996	WMC International	Geological and geochemical exploration along the Project included: reconnaissance traversing, regional airborne geophysical survey, ground truthing weak EM anomalies, and regional till-sampling program.
1997	Tenajon Resources	Two phases of exploration; the first consisted of mapping/prospecting while the second included stripping, detailed mapping, and channel sampling focused on the Pardo property.
1998	Luhta, Bailey, and Orchard	Prospecting and sampling on 18 contiguous claims in Pardo and Dana Townships.

Table 6.1 Project History		
Year	**Company**	**Activities**
1999	Aquiline Resources	Reconnaissance exploration fieldwork along the edges of intrusion.
1999	Mustang Minerals	Prospecting and grab samples on Mustang South and North Grid (Dana Township), 78 km line cutting and magnetic surveying by Dan Patrie Exploration Ltd.
1999	Pacific North West Capital ("PFN")/ Amplats	Surface exploration program included: establishing detailed and regional exploration grids, regional prospecting and sampling, grid prospecting and sampling, preliminary geological grid mapping, stripping and cleaning of selected outcrops areas, detailed sampling, preliminary mapping, orientation biogeochemical survey, and orientation IP and ground magnetometer geophysical surveys.
2000	Platinum Group Metals Ltd.	Exploration along Brady Janes property included soil and rock samples, prospecting on claims at Henry Township and south-central Janes Township, geological mapping and geochemical sampling program over Henry Block.
2000	Mustang Minerals	Geological exploration along Mustang North Grid which included mapping, sampling, prospecting, and a ground magnetic survey.
2000	Mustang Minerals	Quantec Geoscience conducted IP/resistivity surveys along the North Grid (Dana and McWilliams Townships).
2000	PFN-Amplats JV	Surface program consisted of; grid cutting, geophysical surveys, and regional mapping/prospecting and detailed mapping/sampling of new cleared areas over the Dana Lake Area and Lismer Ridge. From February to March, drilling program consisted of 13 holes totalling 2,000 m on the mineralization at the Dana Lake Area. From June to July, drilling totalled 2,820.8 m in 14 holes with focus on the Dana Lake Area. In September, drilling consisted of 10 holes totalling 1,958.5 m in the Dana Lake Area and 3 holes at Lismer Ridge area.
2001	Aquiline Resources	Geological mapping and sampling on Anaconda Project. Ironbank International was commissioned to complete channel sampling across IP targets. JVX conducted IP/resistivity and magnetometer surveys over Dana North Zone.
2001	Mustang Minerals	Second phase of mapping and sampling was conducted on the North, Southeast, and Regional Central grids. Geophysical survey along Henry Grid, Diagonal Grid. Magnetometer and IP survey carried out on Mustang Mineral's Dana-McWilliams Property conducted by Vision Exploration. Line-cutting in Upper Canada Claim Group by Vision. Quantec Geoscience conducted IP surveying on North Extension of the River Valley Property and Upper Canada Claim Property. Seventeen thousand metre diamond drill program completed.

TABLE 6.1 PROJECT HISTORY		
Year	**Company**	**Activities**
2001	PFN-Amplats JV	Surface program consisted of sample collections from the property with concentrations in the southeastern and western contact areas. From February to July, drilling program consisted of 98 holes totalling 16,027 m.
2002	Aquiline Resources	JVX Ltd. refurbished gridlines and conducted IP/Resistivity and Magnetometer surveys on Anaconda Project, five IP anomalies identified.
2002	Mustang Minerals	Vision Exploration conducted a Magnetometer Survey over Southeast Grid. Two target areas were drilled within the North Grid totalling nine holes. LG Property added to Mustang in 2001 and consisted of line cutting, ground magnetometer, IP survey, mapping, sampling, and prospecting.
2002	PFN-Amplats JV	From period of October to December, Phase IV surface included regional geological mapping and sampling, stripping, detailed mapping and sampling, and line cutting and IP and ground magnetometer geophysical surveys. From period of November to August, drilling consisted of 83 holes with 22,319 assay samples from the Lismer Ridge, Dana South, and Banshee mineralized zones.
2003	Aquiline Resources	Ironbank International was commissioned for design and implementation a drilling program to test geophysical (IP) targets on Aquiline's AQI Project (formerly Anaconda). Fifteen holes were drilled totalling 2,000 m.
2003	PFN-Amplats JV	SPECTREM Air flew airborne EM, mag and radiometric surveys over the River Valley Property.
2004	PFN-Amplats JV	From period May to October, surface work included extensive geological mapping of the eastern portion of the Property with the collection of samples. From period November 2002 to May 2004, drilling consisted of 208 holes totalling 44,131 m of drilling at the Dana Lake, Banshee Lake, Lismer Ridge, MacDonald, Varley, Azen Creek, Razor, Jackson Flats, and Pardo mineralized zones.
2005	PFN-Amplats JV	From December to October, a 35 t to 40 t rock bulk sample was taken from four sites (two at Dana South, one at Road Zone, and one Dana North). Samples shipped to Amplats in South Africa for metallurgical testing. D.S. Dorland Ltd. surveyed the perimeter of the 33-claim block joint venture property in Dana and Pardo Townships. A trenching operation was undertaken on the northeast end of Lismer North. Follow-up geological mapping and sampling was carried out. From September to March, drilling consisted of 103 holes totalling 20,516.4 m on Lismer North, Varley, Azen, Pardo, Jackson Flats, and Casson. From October to November, drilling consisted of 20 holes

TABLE 6.1
PROJECT HISTORY

Year	Company	Activities
		totalling 3,681.15 m with focus on Spade Lake, Jackson's Flat South, Varley Extension/Azen Drop Zone, and Casson.
2006	PFN-Amplats JV	Mapping prospecting and sampling follow-up from the 2005 program. Cut 50 line-km of grid in the Jackson Flats south to perform IP and magnetic survey. Gravity survey in selected traverse. Completed mobile metal ion orientation survey.
2007	PFN-Amplats JV	Power stripping and channel sampling program commenced in September and continued into November. A total of 371 m was stripped and 326 samples taken.
2008	PFN	Starting in April of 2008, Gord Trimble, an independent consultant, was engaged to conduct a geological compilation study on Dana North and Dana South. During June and July, channels samples were cut across three stripped zones in the Dana Lake area. One hundred twenty-nine samples were taken and all were approximately 0.35 m long. The channel sampled areas were mapped at a scale of 1:100.
2011-2012	PFN	From April 2011 to January 2012, drilling consisted of 46 holes totalling 12,767 m on Dana North and Dana South. Completed a surface water, sediment and bathymetric study. Updated Mineral Resource Estimate completed by Tetra-Tech. Two holes totalling 600 m were drilled at Dana North and Dana South for metallurgical testwork materials.
2014	PFN	LiDAR survey flown over the two River Valley mining leases (project summary dated November 14, 2014).
2015	PFN	Two holes totalling 474 m drilled on footwall to Dana North, resulting in discovery of Pine Zone in the footwall to the Dana North Zone.
2016	PFN	In August acquired six mineral claims from Mustang Minerals Corp to extend the PGE mineralized trend by 4 km to the southeast of River Valley (River Valley Extension). In October, 8 mining claims adjacent to the River Valley Extension were staked. In November, an additional 14 mining claims were staked. Selected grab samples collected from River Valley Extension and Dana South. Five holes totalling 1,267 m drilled at Pine Zone.
2017	NAM	PFN changes name to New Age Metals Inc. IP geophysical survey completed over the Pine Zone and Banshee Zone. Drilled 14 holes totalling 3,729 m on Dana North and Pine Zones.
2018	NAM	IP geophysical survey completed over the footwall from Dana North to Dana South Zones. Updated Mineral Resource Estimate completed by WSP.
2019	NAM	Amended updated Mineral Resource Estimate completed by WSP. Preliminary Economic Assessment completed by P&E.

Pertinent aspects of the 2000 to 2019 drilling and exploration programs are summarized below.

6.2 HISTORICAL DRILLING 2000 TO 2019

NAM has carried out diamond drilling programs on the River Valley Palladium Property since 2000. In 2000, a total of 6,779 m of drilling in 40 holes were completed in the Dana North Zone to Dana South Zone area. A total of 16,027 m in 98 holes were drilled in 20021 and 83 holes were drilled in 2002 at the Dana South Zone, Banshee Zone and Lismer Ridge Zone. From late 2002 to May 2004 a total of 44,131 m in 208 holes were drilled, followed by 24,198 m in 123 holes in 2005. During 2011 and 2012, a total of 12,767 m in 46 holes were drilled, mainly at the Dana North and Dana South Zones. By early January 2012, 689 holes totalling 154,972 m had been drilled on the Property.

Since early 2012, two metallurgical holes were drilled at Dana North and Dana South for a total of 600 m of NQ size core. Drilling subsequently paused until 2015. The 2015 drilling program commenced on January 28, 2015 and was completed on February 2, 2015. Jacob and Samuel Drilling Ltd., based in Sudbury, Ontario, was contracted to carry out the diamond drill program using a hydraulic VD 5000 diamond drill rig. A total of two holes were drilled totalling 474 m of NQ sized core. Dip tests were taken approximately every 50 m with a REFLEX tool.

The 2016 drilling program was carried out on the Property in the fall of 2016. Jacob and Samuel Drilling Ltd., based in Sudbury, Ontario, was contracted to carry out the diamond drill program using a hydraulic VD 5000 diamond drill rig. A total of five holes were drilled totalling 1,267 m of NQ sized core. Dip tests were taken approximately every 50 m with a REFLEX tool.

The 2017 drilling program carried out on the Property commenced in June 2017 and was completed in September 2017. Jacob and Samuel Drilling Ltd., based in Sudbury, Ontario, was contracted to carry out the diamond drill program. They completed the drilling with a hydraulic VD 5000 diamond drill rig. A total of 14 holes were drilled totalling 3,728 m of NQ sized core. Dip measurements were made every 50 m with a REFLEX tool.

The collar locations and orientation information for the drill holes completed between 2015 and 2017 are given in Table 6.2. The drill hole collar locations are shown in Figure 6.1. Assay result highlights are presented in Table 6.3. There was no drilling on the Property in 2018 and 2019.

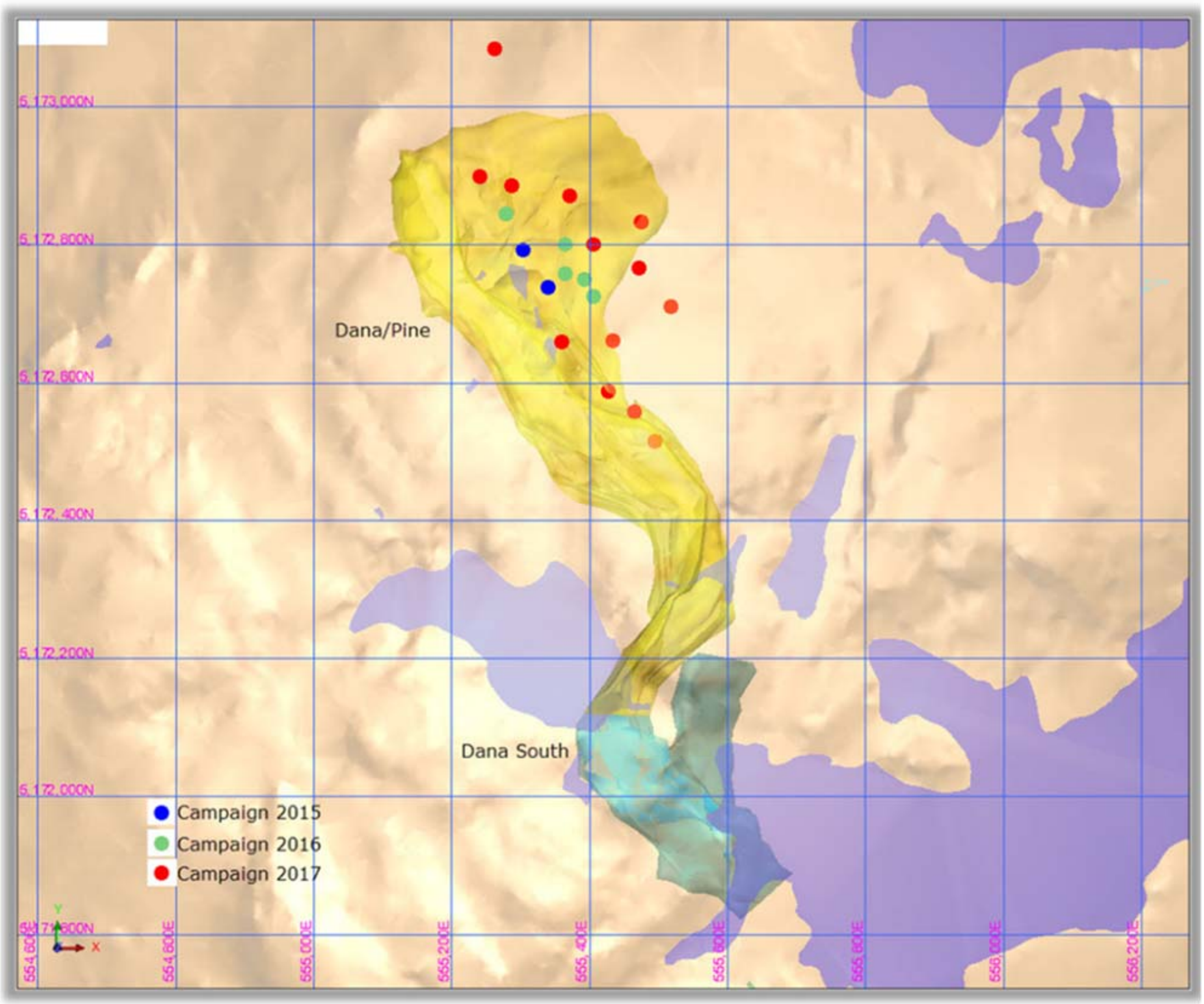
TABLE 6.2
2015 TO 2017 DRILLING COLLAR

Drill Hole ID	Zone	Coordinates *		Elevation (m asl)	Azimuth (°)	Dip (°)	Length (m)
		Easting	Northing				
2015-DN001	Dana North	555,339	5,172,738	323	325	-60	258
2015-DN002	Dana North	555,304	5,172,792	321	325	-60	216
DN-16-T2-03	Pine	555,278	5,172,845	319	325	-60	171
DN-16-T2-06	Pine	555,364	5,172,800	326	325	-60	249
DN-16-T2-10	Pine	555,393	5,172,750	327	325	-60	281

TABLE 6.2 2015 TO 2017 DRILLING COLLAR							
Drill Hole ID	**Zone**	**Coordinates ***		**Elevation (m asl)**	**Azimuth (°)**	**Dip (°)**	**Length (m)**
		Easting	**Northing**				
DN-16-T2-11	Pine	555,406	5,172,724	325	325	-60	298
DN-16-T2-13	Pine	555,364	5,172,757	324	325	-60	268
PZ-17-01	Pine	555,475	5,172,833	325	325	-60	229
PZ-17-02	Pine	555,471	5,172,765	325	325	-60	278
PZ-17-03	Pine	555,370	5,172,871	325	325	-60	182
PZ-17-04	Pine	555,262	5,173,084	325	325	-50	325
PZ-17-05	Pine	555,405	5,172,800	325	325	-60	251
PZ-17-06	Pine	555,364	5,172,800	325	325	-50	212
PZ-17-07	Pine	555,286	5,172,886	325	325	-60	150
PZ-17-08	Pine	555,240	5,172,899	325	325	-60	124
T3-17-01	Dana North	555,360	5,172,659	325	325	-60	282
T3-17-02	Dana North	555,427	5,172,588	325	325	-60	344
T3-17-03	Dana North	555,433	5,172,660	325	325	-60	303
T3-17-04	Dana North	555,494	5,172,516	325	325	-60	381
T3-17-05	Dana North	555,517	5,172,709	325	325	-60	312
T3-17-06	Dana North	555,465	5,172,558	325	325	-60	356

Note: ** Easting and northing coordinates are in UTM NAD83 Zone 17N.*

FIGURE 6.1 2015 TO 2017 DRILL COLLAR LOCATIONS



Note: *Map grid coordinates are in NAD83 UTM Zone 17N.*
Source: *WSP (2019)*

TABLE 6.3
HIGHLIGHT 2015 TO 2017 DIAMOND DRILL RESULT HIGHLIGHTS

Drill Hole ID	Interval (m)	Length (m)	Pd (g/t)	Pt (g/t)	Au (g/t)	3E (g/t)	Cu (%)	Ni (%)
2015-DN001*	184 to 200	16	1.55	0.50	0.09	2.14	0.18	0.04
2015-DN002*	137 to 155	18	2.12	0.67	0.10	2.89	0.22	0.05
DN-16-T2-06	169 to 187	18	1.90	0.67	0.11	2.68	0.18	0.04
DN-16-T2-10	202 to 222	20	1.44	0.48	0.07	1.99	0.14	0.03
DN-16-T2-11	217 to 234	17	1.37	0.47	0.07	1.91	0.15	0.04

TABLE 6.3 HIGHLIGHT 2015 TO 2017 DIAMOND DRILL RESULT HIGHLIGHTS								
Drill Hole ID	**Interval (m)**	**Length (m)**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**3E (g/t)**	**Cu (%)**	**Ni (%)**
DN-16-T2-13	181 to 184	3	1.56	0.60	0.09	2.25	0.16	0.03
PZ-17-06	170 to 192	22	1.08	0.37	0.06	1.51	0.10	0.02
PZ-17-07	77 to 84	7	0.77	0.25	0.04	1.06	0.06	0.02
PZ-17-08	56 to 70	14	1.30	0.48	0.08	2.01	0.15	0.03
T3-17-01	193 to 202	9	1.11	0.37	0.08	1.56	0.14	0.32
T3-17-02	288 to 299	8	1.00	0.33	0.07	1.41	0.17	0.39
T3-17-03	262 to 279	17	0.81	0.26	0.05	1.12	0.11	0.03
T3-17-04	4 to 32	28	1.77	0.57	0.11	2.45	0.11	0.02
T3-17-04	37 to 41	4	2.35	0.83	0.13	3.30	0.19	0.04
T3-17-04	348 to 355	7	1.15	0.39	0.09	1.64	0.11	0.02
T3-17-06	331 to 334	3	0.21	0.11	0.02	0.34	0.02	0.02

Notes: ** Discovery drill holes for the Pine Zone; 3E = 3 elements: Au + Pt + Pd.*

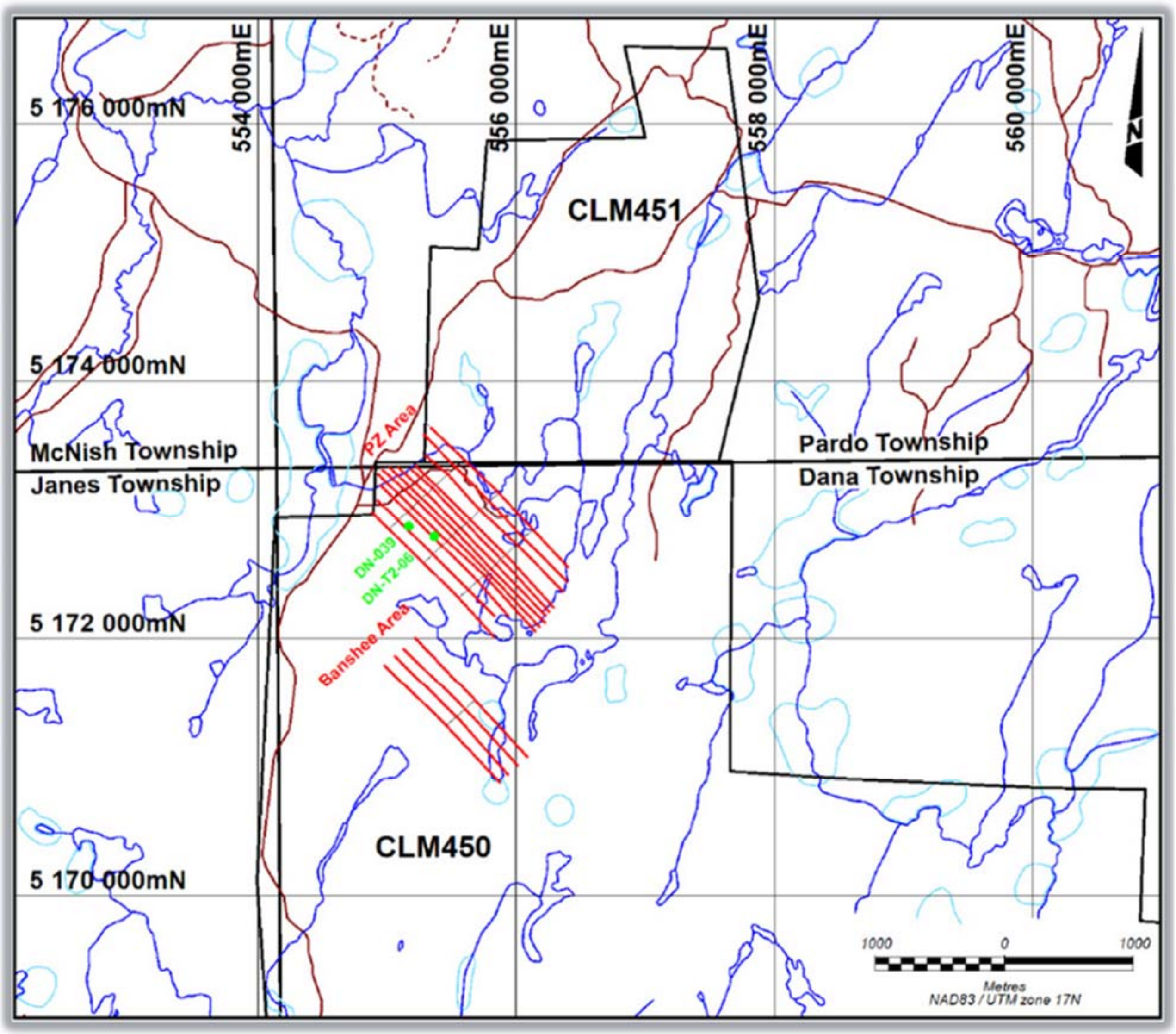
6.3 2017 AND 2018 IP GEOPHYSICAL SURVEYS

With the drill hole discovery of the Pine Zone in the footwall to Dana North in 2015, the footwall to the River Valley Palladium Deposit became a major focus of exploration. Induced polarization ("IP") geophysical surveys were completed by Abitibi Geophysics in 2017 and 2018 and exploration targets generated for drill testing.

6.3.1 2017 Induced Polarization Survey

Abitibi Geophysics (Thunder Bay, Ontario) were contracted by NAM to conduct an induced polarization survey ("IP") along a total of 23.55 line-km of IP survey on cut-line grids over the Pine Zone and the Banshee Zone, and down two historical drill holes (DN-039 and DN-T2-06) at Dana North Zone (Figure 6.2). The surface IP survey data were acquired in June 2017 (Cole, 2017) by a five-member crew. The downhole survey data were acquired on June 18, 2017, with a field crew of two. A team in the Abitibi Geophysics office in Thunder Bay completed the QC review and interpreted the results.

FIGURE 6.2 2017 IP SURVEY GRIDS



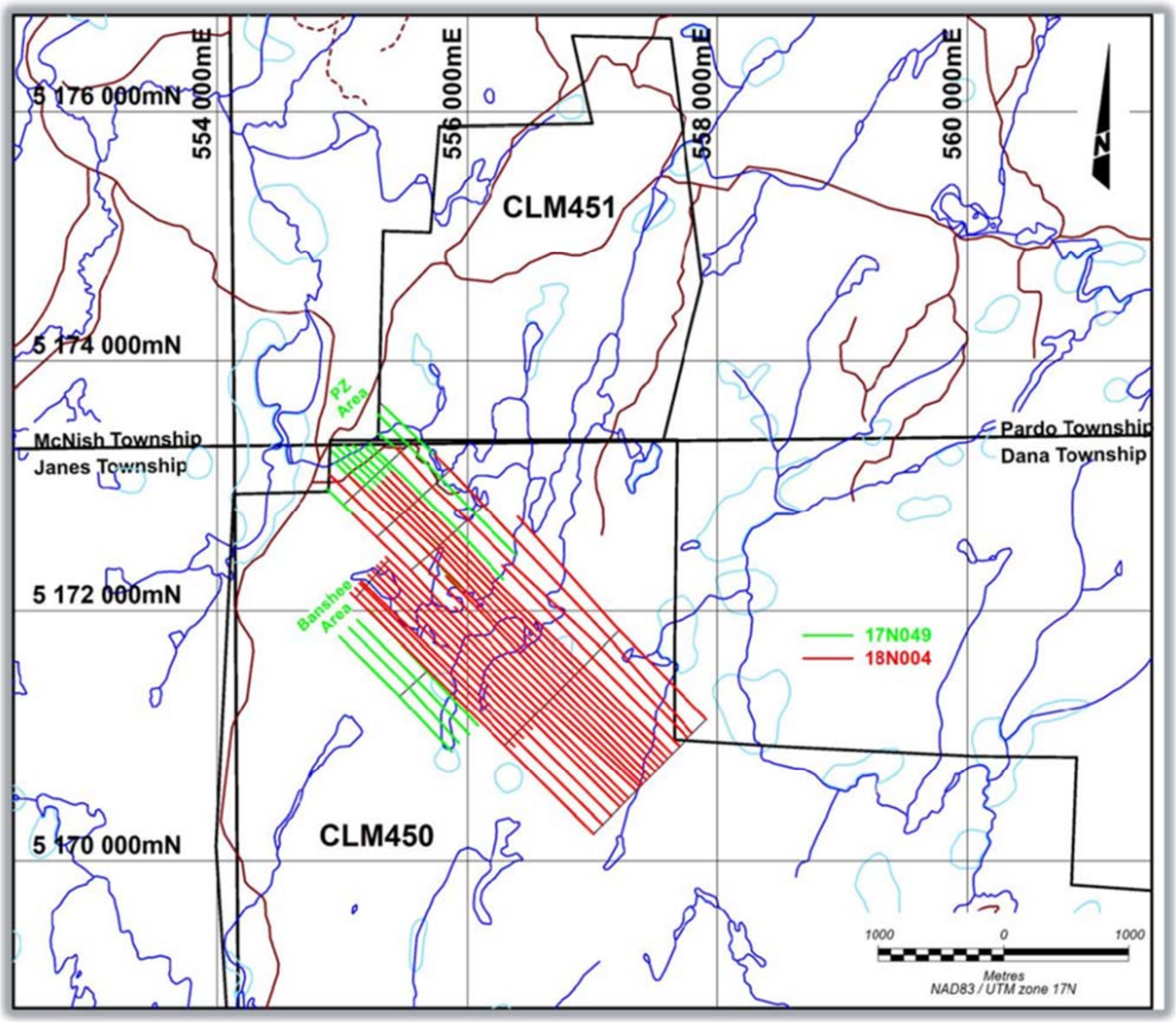
Source: *WSP (2019)*

Following an interpretation of the pseudo-sections and the downhole survey, a total of 40 chargeable sources were modelled. The chargeable sources trend primarily northeast-southwest, similar to the trend displayed at the Pine Zone. Sixteen of the sources are near-surface on the Pine Zone grid and six are near-surface on the Banshee grid. All near-surface sources were field checked by prospecting and, where possible, stripping. Eighteen chargeability sources were deeper and required drilling to evaluate: 13 from the Pine Zone grid and five from the Banshee Zone grid. Most of the sources/targets are 150 to 200 m vertically below surface, with a few targets being 400 m vertically in depth.

6.3.2 2018 Induced Polarization Survey

Abitibi Geophysics was engaged by NAM to conduct a total of 63.79 line-km of IP survey on the Project (Figure 6.3). The survey grid filled-in the gap between the two 2017 grids and extended coverage as far south as the Lismer Ridge Zone. The field data were acquired in January and February 2018 (Cole, 2018) one field crew consisting of five members. A team in the Abitibi Geophysics office in Thunder Bay completed the QC review and interpreted the results.

FIGURE 6.3 2018 IP SURVEY GRID

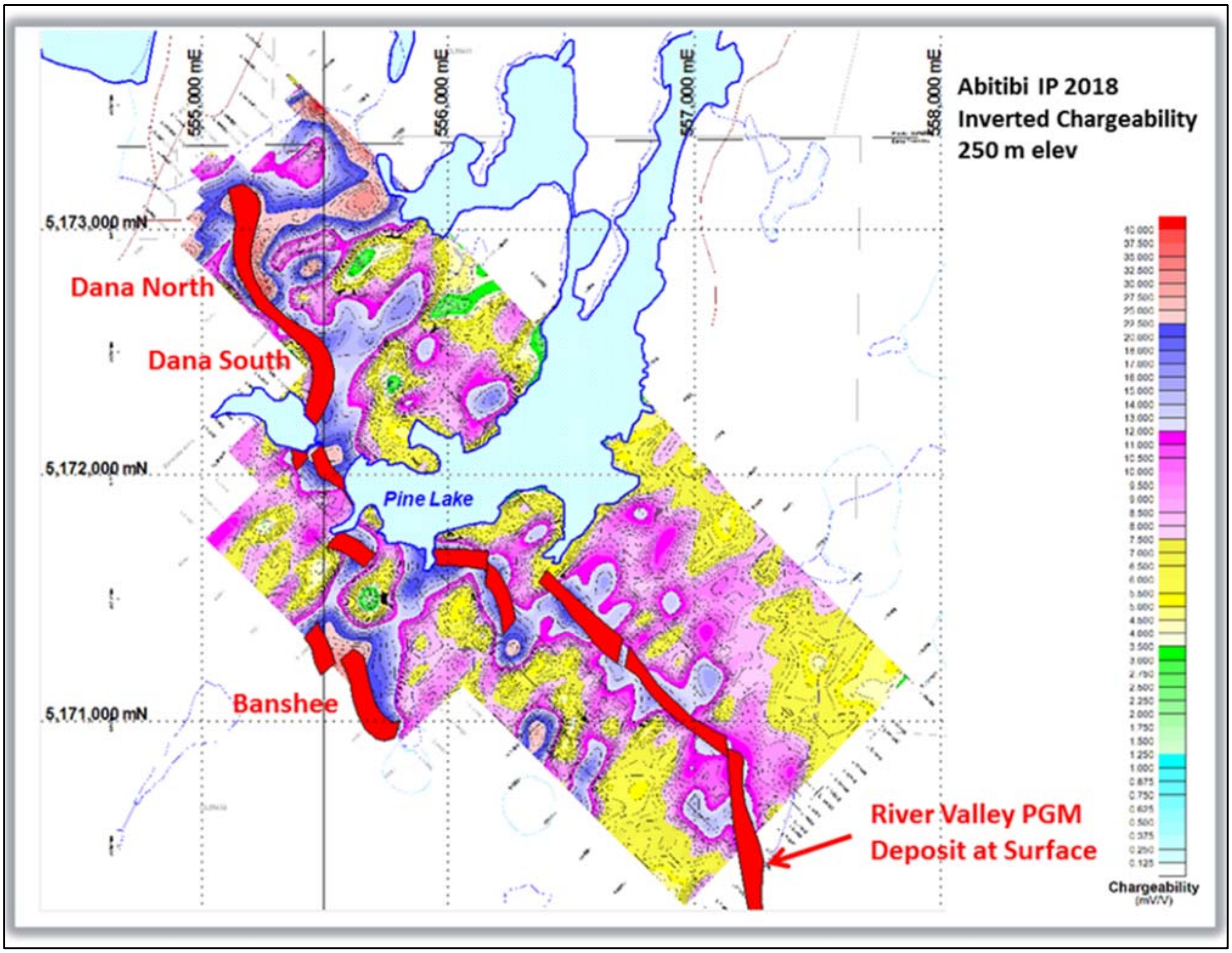


Source: *Cole (2018)*

Following detailed interpretation of pseudo-sections and VOXI vertical sections, a total of 46 chargeable sources were interpreted. The chargeable sources are trending primarily northeast-southwest, which would be a similar trend displayed at the Pine Zone. Fifteen of the sources are near-surface and could be field checked with prospecting and stripping. Twenty-seven sources are deeper and require drilling to evaluate. Most of the targets are in the range of 200 m to 300 m vertical depth below surface. A few targets located at 400 m vertical in depth.

An interpretation of the chargeability at around the 250 m elevation (approximately 75 m below surface) is shown in Figure 6.4. The areas in the footwall with chargeability above 12,000 mV/V were considered to be of interest for possible follow-up.

FIGURE 6.4 2018 CHARGEABILITY RESULTS



Note: *Easting and Northing coordinates are in NAD83 UTM Zone 17N.*
Source: *WSP (2019)*

Follow-up drill testing of the targets generated by the 2017 and 2018 IP surveys was carried out in 2020 and the results are summarized in Section 10 of this Technical Report.

6.4 2016 MINERAL PROSPECTING AND SURFACE SAMPLING PROGRAM

A field program completed in 2016 consisting of geological mapping and mineral prospecting, confirmed the presence of high-grade platinum metal mineralization on the River Valley Extension and expanded the overall footprint of mineralization at the Dana South Zone. Assay results for grab samples are presented in Table 6.4.

TABLE 6.4 2016 GRAB SAMPLE SUMMARY									
Sample Number	**Zone**	**Coordinates ***		**Pd (g/t)**	**Pt (g/t)**	**Pd+Pt (g/t)**	**Au (g/t)**	**Cu (%)**	**Ni (%)**
		Easting	**Northing**						
20429	RV Extension	565,467	5,164,103	0.516	0.554	1.070	0.120	0.073	0.060
20426	RV Extension	565,441	5,164,148	1.540	0.901	2.441	0.020	0.183	0.051
25264	RV Extension	564,562	5,165,932	0.771	0.334	1.105	0.123	0.201	0.130
RZ2016-33	RV Extension	565,449	5,164,142	0.612	0.553	1.165	0.019	0.019	0.003
RZ2016-38	RV Extension	564,922	5,164,616	9.524	3.071	12.595	0.070	0.034	0.025
RZ2016-40	RV Extension	564,922	5,164,607	0.678	1.294	1.972	0.054	0.149	0.027
TR2-2016	Dana South	555,465	5,172,050	3.536	1.215	4.751	0.158	0.248	0.064
Tr1-2016	Dana South	555,482	5,172,043	0.716	0.264	0.980	0.052	0.082	0.010
LH-2016	Dana South	555,588	5,172,015	3.222	1.138	4.360	0.126	0.150	0.015
RZ2016-30	Dana South	555,582	5,172,030	2.716	0.738	3.454	0.164	0.297	0.026
RZ2016-31	Dana South	555,582	5,172,026	1.854	0.499	2.353	0.123	0.282	0.022

Note: ** Easting and Northing coordinates are in NAD83 UTM Zone 17N.*

Three of four targeted areas on the River Valley Extension were mapped and sampled. A grab sample from Target Area 1 returned assay values of 12.60 g/t Pd + Pt from a rusty sulphide zone that extends across the width of the outcrop exposure (Table 6.4). Three surface grab samples from Target Area 4 returned Pd + Pt assay values of >1 g/t, with a maximum of 2.44 g/t Pd+ Pt, 0.2% Cu, and 0.05% Ni from mineralized outcrops of melagabbronorite with pegmatitic clinopyroxenite fragments and quartz veins. A grab sample from Target Area 2 returned a Pd + Pt assay value of 1.11 g/t. Target Area 3 was not sampled, due to limited access.

At Dana South, three grab samples from the footwall to that Zone returned assays of >2 g/t Pd + Pt and 0.15% Cu (Table 6.4). These three samples were taken from outcrops of River Valley Intrusion along the shoreline of Dana Lake, approximately 50 m from the east boundary of the Dana South Zone trench. The area between the outcrop and stripped area was covered, the indications of high-grade mineralization where sampled suggest that the Dana South Zone could potentially be expanded farther eastward, or that an additional mineralized zone may be present.

6.5 HISTORICAL METALLURGICAL STUDIES

Historical metallurgical studies completed on the Project should be considered as limited and selective. Between 1999 and 2006, intermittent testwork was performed on high-grade samples of limited size and not all the zones were tested. These testwork results are described in the sub-sections below. The first comprehensive metallurgical studies were completed in 2012-2013, which are described in Section 13 of this Technical Report.

6.5.1 1999 Metallurgical Feasibility Study

The initial testwork program conducted was for the Dana Lake Area and included a pilot plant grinding and flotation metallurgical testwork program carried out in 1999 by two graduate students from the Michigan Technological University ("MTU"). Approximately 4,264 lb (1,934 kg) of high-grade mineralized rock were extracted from trench exposures of the Dana North and South Zones.

The mineralogy of the samples was determined through x-ray diffraction ("XRD"), reflective light microscopy and Scanning Electron Microscopy ("SEM"). The sulphides identified were chalcopyrite ($CuFeS_2$), pyrrhotite ($Fe_{1-x}S$) and cubanite ($CuFe_2S_3$). The bulk density of the samples was also measured and found to be 2.9 t/m^3.

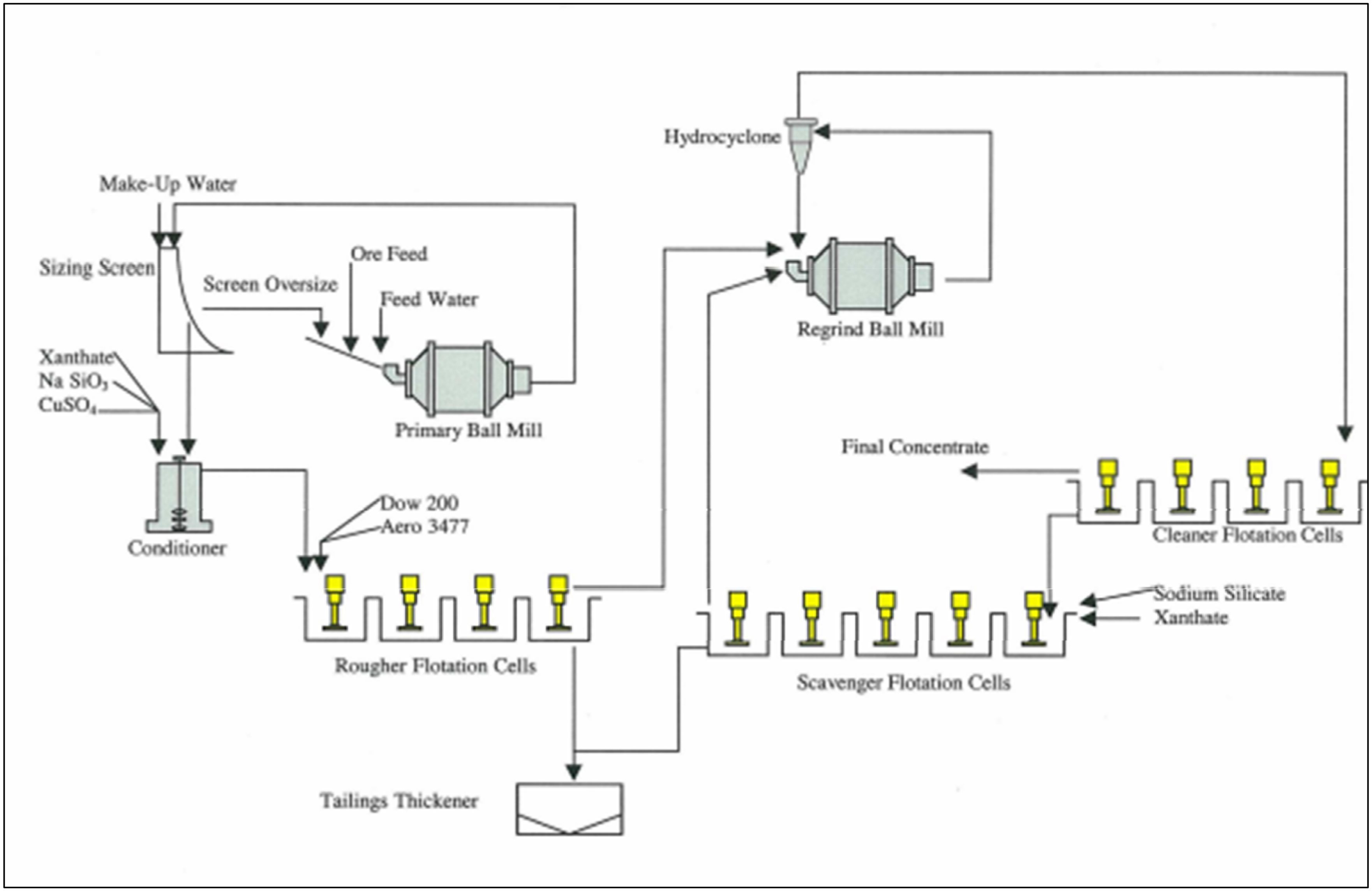
Pilot plant flotation was carried out in three separate stages: rougher, cleaner, and scavenger flotation.

A comparable disseminated sulphide sample to the Dana Lake Zone was at this time being processed by North American Palladium Ltd. ("NAP") at the Lac Des Iles Mine in Northern Ontario. Operational information on reagent levels and operating parameters obtained from NAP was used as a basis for the flotation tests conducted on the Dana Lake sample. The flotation tests in this study were conducted using variable flotation addition rates of reagents whilst comparing the recoveries achieved.

A pilot-scale plant was constructed to process the Dana Lake sample using equipment supplied by MTU. The process flowsheet was developed based on the results of numerous bench scale laboratory tests varying grind size and flotation conditions. The main pilot equipment consisted of a variable rate screw feeder, primary ball mill, sizing screen, conditioner, rougher flotation cells, regrind mill, cleaner and scavenger flotation cells, hydrocyclone and a tailings thickener. The pilot plant flowsheet utilized is shown in Figure 6.5.

The Ball Mill Work Index was measured and determined to be 19.7 kWh/t. The pilot plant testwork completed on the Dana Lake sample proved successful in producing a single high-grade sulphide concentrate containing copper, nickel, gold and PGEs. The overall analytical results of each flotation product and the respective metallurgical recoveries are given in Table 6.5 and Table 6.6.

FIGURE 6.5 FLOWSHEET OF PILOT PLANT CIRCUIT USED TO CONCENTRATE SULPHIDES CONTAINING PGES



Source: *P&E and DRA (2019)*

Table 6.5 Analytical Results for Dana Lake Metallurgical Sample							
Sampling Point	**Cu (%)**	**Ni (%)**	**Au (g/t)**	**Pd (g/t)**	**Pt (g/t)**	**Rh (g/t)**	**Au+Pd+ Pt+Rh (g/t)**
Process Plant Feed	0.32	0.07	0.222	4.22	1.19	0.15	5.782
Rougher Feed	0.34	0.08	0.191	3.91	1.12	0.14	5.361
Rougher Conc.	3.18	0.62	3.700	48.20	15.00	1.30	68.200
Cleaner Conc.	26.60	1.86	10.100	214.70	62.60	4.16	291.560
Scav. Conc.	0.58	0.26	0.302	8.24	2.44	0.45	11.432
Rougher Tails	0.03	0.03	0.056	0.728	0.229	0.07	1.083
Scav. Tails	0.22	0.18	0.081	3.46	1.33	0.34	5.211
Calculated Tails	0.06	0.05	0.060	1.11	0.38	0.11	1.660
Enrichment Ratio on Cleaner Conc.	83	27	45	51	53	27	50

Table 6.6 Metallurgical Recovery Rates Determined for Metals Contained in the Dana Lake Sample	
Metal	**% Recovery**
Copper (Cu)	81.4
Nickel (Ni)	29.4
Gold (Au)	73.4
Palladium (Pd)	74.1
Platinum (Pt)	68.5
Rhodium (Rh)	27.5
Au+Pd+Pt+Rh	71.7

6.5.2 2001 Mineralogical and Metallurgical Investigation of 13 Drill Holes

Thirteen drill cores from the River Valley Deposit were submitted for metallurgical and mineralogical examination by Anglo-Platinum in 2001. The drill cores supplied were then sampled using the highest-grade intersections from each of the drill holes. The individual intersections were crushed to less than 3 mm and small subsections of this crushed material retained for future reference. The remainder of the crushed material from each drill core was combined into one composite sample and a split was taken for mineralogical examination. The rest of the material was used for flotation testwork.

The 13 composited samples were examined by QEM-SEM technology using a bulk modal analysis. The results are given in Table 6.7.

TABLE 6.7
BULK MINERALOGICAL COMPOSITION OF DRILL CORE, USING QEM-SEM

Mineral	RV00-01	RV00-02	RV00-03	RV00-04	RV00-05
Amphibole	53.3	57.7	48.1	44.9	49.0
Feldspar	24.4	23.0	25.8	32.9	30.8
Mica	6.2	4.2	8.4	8.3	8.0
Chlorite	5.0	6.0	9.4	7.0	6.5
Pyroxene/Olivine	0.1	0.3	0.3	0.2	0.1
Total sulphides	2.0	0.8	0.7	1.1	0.9
Oxides*	1.8	0.4	0.8	0.5	0.8
Carbonates	0.3	0.3	0.3	0.5	0.3
Other minerals (mainly quartz)	6.4	7.2	6.1	4.4	3.4
Others	0.5	0.1	0.2	0.2	0.2

Mineral	RV00-06	RV00-07	RV00-08	RV00-09	RV00-10
Amphibole	48.7	53.6	48.8	57.7	47.2
Feldspar	29.4	29.6	38.9	27.6	29.9
Mica	9.9	3.0	3.4	5.4	5.3
Chlorite	4.8	9.8	4.8	5.3	10.0
Pyroxene/Olivine	0.1	0.5	0.1	0.2	0.4
Total sulphides	1.5	1.1	1.8	1.4	1.2
Oxides*	0.5	0.5	0.3	0.3	0.4
Carbonates	0.2	0.2	0.3	0.5	0.3
Other minerals (mainly quartz)	4.6	1.7	1.3	1.4	5.2
Others	0.3	0.1	0.2	0.2	0.2

Mineral	RV00-11	RV00-12	RV00-13
Amphibole (mainly actinolite)	48.9	51.3	48.4
Feldspar	23.9	28.3	33.0
Mica	8.6	3.8	3.4
Chlorite	8.4	11.0	12.6
Pyroxene/Olivine	0.1	0.2	0.3
Total sulphides	0.5	1.1	0.7
Oxides*	0.5	0.5	0.8
Carbonates	0.2	0.4	0.2
Other minerals (mainly quartz)	8.7	3.3	0.5
Others	0.2	0.2	0.2

These results show that actinolite is the predominant mineral present with lesser feldspar and minor amounts of mica and chlorite.

Chalcopyrite and pyrrhotite are the predominant base metal sulphides (“BMS”) present with lesser amounts of pentlandite.

On the basis of the preliminary flotation results four samples were chosen for detailed mineralogical examination. These were RV00-03, RV00-08, RV00-12 and RV00-13, which showed good and moderate Pd recoveries, respectively (Table 6.8).

TABLE 6.8
PGE DISTRIBUTION PD MINERALS ACCOUNT FOR >70% OF THE PGES

Mineral Species	RV00-03	RV00-08	RV00-12	RV00-13
Pd-tellurides	39.2	9.4	61.5	45.9
Pt-tellurides	-	0.1	-	2.4
Pd-arsenides	49.8	82.0	9.9	5.2
Pt-arsenides	5.5	7.4	25.4	19.9
Pd-alloys	5.3	-	1.3	16.1
PtFe-alloys	-	-	-	1.3
PtPd-sulpharsenides	-	0.2	0.2	-
PtPd-sulphides	-	0.6	-	-
Electrum and Gold	0.2	0.4	1.7	9.4
Total	**100.0**	**100.0**	**100.0**	**100.0**
No. of particles	65	66	229	80

The PGE association data shows that most of the PGEs are enclosed in silicate. In RV00-03, a relatively large (45 µm x 30 µm) particle of Pd-arsenide attached to pyrrhotite was observed. This one particle accounts for all the PGE associated with BMS (Table 6.9).

TABLE 6.9
PGE ASSOCIATION DATA

PGE Association	RV00-03	RV00-08	RV00-12	RV00-13
Enclosed in silicate	49.5	82.6	82.2	83.5
Attached to silicate	0.9	3.81	0.1	4.9
Liberated	7.5	-	4.7	11.6
Attached to BMS	42.1	11.8	12.3	-
Enclosed in BMS	-	1.8	0.8	-
Total	**100.0**	**100.0**	**100.0**	**100.0**

The 108 sub-sections that made up the 13 drill cores were individually crushed to <3 mm, and then combined to make 13 composite samples (4 kg). Standard flotation tests were completed in triplicate using 1 kg for each test. A single stage grind of 60% passing 74 µm was used throughout the test program (Table 6.10 and 6.11).

TABLE 6.10
PT, PD, RH AND AU ASSAYS FOR THE ROUGHER TAILINGS (AVERAGE OF TRIPLICATE) AND HEAD SAMPLES

OD Number	Sample Origin	Description	Pt:Pd Ratio	PGE (g/t)			
				Pt	Pd	Rh	Au
1145	RV00-01	Head	0.36	0.8	2.23	0.05	0.16
		Tails	0.44	0.19	0.43	0.03	0.04
1146	RV00-02	Head	0.32	0.85	2.65	0.08	0.16
		Tails	0.50	0.25	0.5	0.03	0.04
1147	RV00-03	Head	0.34	0.54	1.59	0.02	0.07
		Tails	0.43	0.2	0.47	0.02	0.02
1148	RV00-04	Head	0.52	0.61	1.18	0.07	0.08
		Tails	0.43	0.12	0.28	0.02	0.03
1149	RV00-05	Head	0.24	0.53	2.21	0.06	0.11
		Tails	0.43	0.15	0.36	0.02	0.03
1150	RV00-06	Head	0.27	1.03	3.78	0.09	0.15
		Tails	0.43	0.30	0.53	0.04	0.05
1151	RV00-07	Head	0.30	0.54	1.81	0.05	0.10
		Tails	0.36	0.29	0.81	0.03	0.05
1152	RV00-08	Head	0.57	0.45	0.79	0.05	0.12
		Tails	0.39	0.22	0.57	0.03	0.05
1153	RV00-09	Head	0.30	0.67	2.26	0.04	0.16
		Tails	0.44	0.28	0.64	0.03	0.05
1154	RV00-10	Head	0.50	1.55	3.12	0.15	0.18
		Tails	0.33	0.42	1.26	0.01	0.08
1155	RV00-11	Head	0.42	0.86	2.06	0.15	0.18
		Tails	0.36	0.21	0.58	0.02	0.03
1156	RV00-12	Head	0.28	0.79	2.83	0.09	0.09
		Tails	0.35	0.18	0.52	0.01	0.03
1157	RV00-13	Head	0.35	0.82	2.37	0.08	0.14
		Tails	0.34	0.34	0.99	0.02	0.07

There are discrepancies between assay head and reconstituted head for these assays. They have been repeated three times and have yielded a range of head grades, which is indicative of nugget effects. The best correlation with reconstituted head has been used.

RV00-03 and RV00-13 have the worst grade and recovery for both palladium and platinum (Table 6.11). The reason for this is the very high silicate association and fine-grain size of the PGEs. For RV00-03 the PGE association data has been skewed by a relatively large particle associated with the pyrrhotite. Ignoring this particle would mean that approximately 87% of the PGEs would be associated with silicates and no association with BMS. It would also mean that 50% of the grains, by area, would be <7 µm in size. The better recoveries and slightly better grades of RV00-08 and -12 are due to the slightly coarser PGE grain size and a small association with base metal sulphides. The latter criteria would allow the PGEs to float "piggy-back" with the BMS at a coarser grind.

TABLE 6.11
PT, PD ULTIMATE METALLURGICAL RECOVERY AND FINAL GRADE FOR THREE SAMPLES

Sample ID		Mass Pull (%)	Pt Rec. (%)	Final Pt Grade (g/t)	Pd Rec. (%)	Final Pd Grade (g/t)	Pt Recon. Head Grade (g/t)	Pd Recon. Head Grade (g/t)
1145	RV00-01	10.45	77.18	5.60	82.08	16.87	0.76	2.15
1146	RV00-02	10.53	76.46	7.03	84.55	23.07	0.97	2.87
1147	RV00-03	8.13	56.42	2.99	67.49	11.13	0.43	1.34
1148	RV00-04	11.21	85.85	5.81	86.41	14.02	0.76	1.82
1149	RV00-05	8.84	74.14	4.41	80.22	15.36	0.53	1.69
1150	RV00-06	7.91	74.61	10.26	82.85	29.81	1.09	2.85
1151	RV00-07	14.33*	70.80	4.20	69.44	11.00	0.85	2.27
1152	RV00-08	9.77	75.47	6.15	77.50	18.10	0.80	2.28
1153	RV00-09	10.63	74.15	6.02	78.59	17.84	0.94	2.64
1154	RV00-10	11.60	68.64	7.06	68.58	21.01	1.19	3.56
1155	RV00-11	11.58	71.01	3.86	72.66	11.70	0.63	1.87
1156	RV00-12	13.37	82.66	5.47	84.18	18.05	0.89	2.87
1157	RV00-13	11.45	63.00	4.41	63.41	13.22	0.80	2.39

** High mass pull, and therefore a lower grade expected.*
Note: *Rec. = recovery, Recon. = reconstituted.*

The overall metallurgical results are reasonably encouraging in terms of recovery. Further work on larger samples of complete mining intersections, not just the higher-grade zones, will have to be carried out in order to determine whether the final concentrate grade achieved can be improved on, either through re-cleaning or a different reagent regime. Finer grinding may also lead to improved recoveries.

The treatment of the complete life-of-mine ("LOM") tonnage will change the grade recovery relationship.

6.5.3 2004 SGS – Production of Rougher Concentrate

The following analysis presents results obtained by SGS Lakefield Research from a testwork program on the production of a rougher concentrate from River Valley Project core:

- The core was stage crushed and riffled into 10 kg charges, five 2 kg charges and a representative head sample. The head sample was submitted for Cu, Ni, S, Au, Pt, and Pd analyses;

- Two separate grinds were conducted in order to determine the time required for producing a product size P_{80} of 70 µm; and

- A laboratory rougher test of 2 kg was conducted to determine the kinetics of Cu, Au, Pt and Pd. A rougher residence time was selected.

Twenty batch rougher flotations in a 10 kg cell were completed over a five-day period. The first day confirmed the grind and flotation time estimations. Flotation residence time was guided by copper and sulphur assays only. Concentrate assays of Cu, Au, Pt, and Pd were conducted on the combined concentrates from all three flotation tests. Head analysis of the feed composite is shown in Table 6.12.

TABLE 6.12
HEAD ANALYSIS OF THE FEED COMPOSITE

Method/Element	Assay
Fire Assay (g/t)	
Au	0.08
Pt	0.35
Pd	1.27
XRF (%)	
Cu	0.099
Ni	0.032
Leco (%)	
S_T	0.23

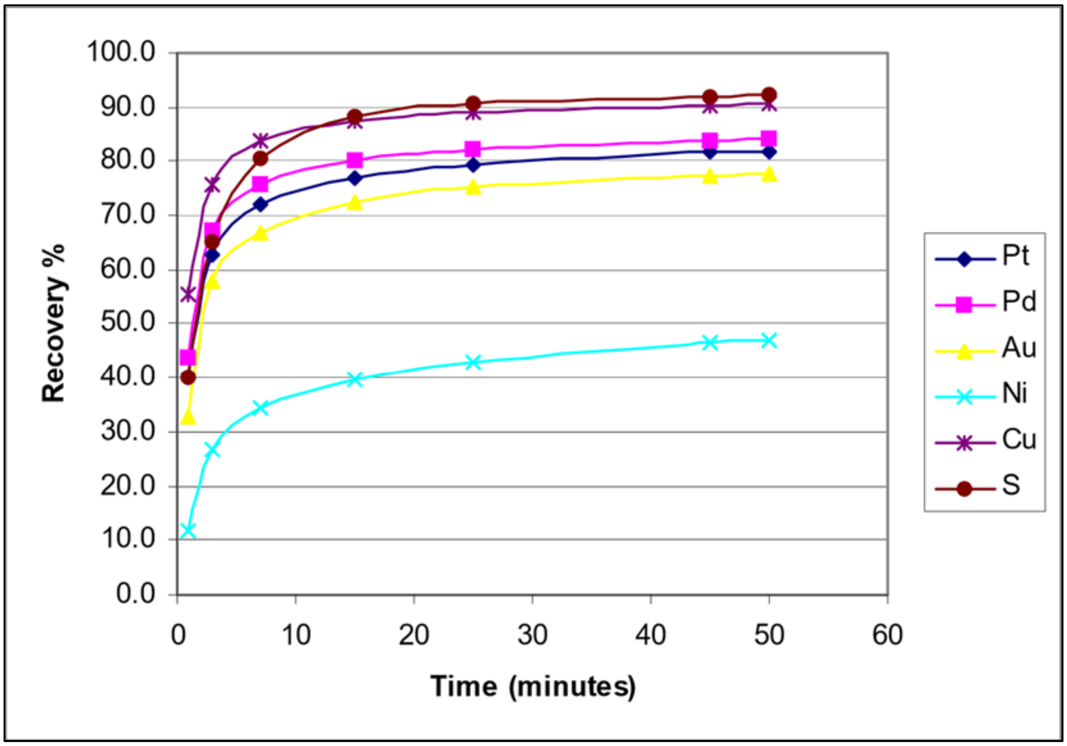
6.5.3.1 Grinding Tests

Grind determination tests were conducted on each of the composites in order to identify the grind time requirements for generating a feed size P_{80} (80% passing size) of 70 µm.

Based on the tests, grind times 50 and 55 minutes were selected for the 2 kg mill. Based upon a scale up factor of 1.4, a grind time of 70 minutes was selected for the 10 kg mill.

The metallurgical balances of individual products and combined products are shown in Table 6.13 below. Assays for Pt, Pd, and Au, are in g/t and those for Ni, Cu, and S are shown as a percentage. The cumulative recovery curve is shown in Figure 6.6.

FIGURE 6.6 CUMULATIVE RECOVERY CURVE



Source: *SGS (2004)*

TABLE 6.13
KINETIC TEST ASSAYS AND METALLURGICAL BALANCE

Product	Weight		Assays						% Distribution					
	(g)	(%)	Pt (g/t)	Pd (g/t)	Au (g/t)	Ni (%)	Cu (%)	S (%)	Pt (%)	Pd (%)	Au (%)	Ni (%)	Cu (%)	S (%)
Rougher Con 1	21.1	1.07	13.90	49.8	2.31	0.33	5.24	8.18	40.2	43.6	32.9	11.7	55.6	40.0
Rougher Con 2	23.7	1.20	6.91	23.9	1.56	0.38	1.69	4.59	22.4	23.5	24.9	15.1	20.2	25.2
Rougher Con 3	52.3	2.64	1.30	4.02	0.26	0.09	0.30	1.26	9.3	8.7	9.2	7.7	7.9	15.3
Rougher Con 4	70.8	3.57	0.50	1.50	0.12	0.04	0.11	0.48	4.8	4.4	5.7	5.0	3.9	7.9
Rougher Con 5	64.1	3.24	0.29	0.76	0.06	0.03	0.049	0.15	2.5	2.0	2.6	3.3	1.6	2.2
Rougher Con 6	76.3	3.85	0.22	0.55	0.04	0.03	0.032	0.08	2.3	1.7	2.1	3.5	1.2	1.4
Rougher Scav Con	9.7	0.49	0.13	0.33	0.04	0.03	0.075	0.12	0.2	0.1	0.3	0.5	0.4	0.3
Rougher Tailing	1,663.0	83.95	0.08	0.23	0.02	0.02	0.011	0.02	18.2	15.9	22.4	53.1	9.2	7.7
Head (calc.)	1,981.0	100.00	0.37	1.22	0.07	0.03	0.10	0.22	100.0	100.0	100.0	100.0	100.0	100.0
Head (direct)			0.35	1.27	0.08	0.03	0.10	0.23						

Combined Products	Weight		Assays						% Distribution					
	(g)	(%)	Pt (g/t)	Pd (g/t)	Au (g/t)	Ni (%)	Cu (%)	S (%)	Pt (%)	Pd (%)	Au (%)	Ni (%)	Cu (%)	S (%)
Rougher Con 1	21.1	1.1	13.90	49.80	2.31	0.33	5.24	8.18	40.2	43.6	32.9	11.7	55.6	40.0
Rougher Con 1-2	44.8	2.3	10.20	36.10	1.91	0.36	3.36	6.28	62.6	67.1	57.8	26.8	75.8	65.2
Rougher Con 1-3	97.1	4.9	5.41	18.82	1.02	0.21	1.71	3.58	71.9	75.8	66.9	34.6	83.7	80.5
Rougher Con 1-4	167.9	8.5	3.34	11.52	0.64	0.14	1.04	2.27	76.8	80.2	72.7	39.6	87.6	88.4
Rougher Con 1-5	232.0	11.7	2.50	8.54	0.48	0.11	0.76	1.68	79.3	82.3	75.3	42.9	89.2	90.6
Rougher Con 1-6	308.3	15.6	1.93	6.57	0.37	0.09	0.58	1.29	81.6	84.0	77.3	46.4	90.4	92.0
Rougher Con 1-Scav	318.0	16.1	1.88	6.38	0.36	0.09	0.57	1.25	81.8	84.1	77.6	46.9	90.8	92.3

6.5.3.2 Batch Rougher Flotation - 10 kg

Concentrates collected from all three batches were combined, filtered and a representative subsample submitted for Pt, Pd, Au and Cu analysis. The consistency of the grind was checked for Tests number F8, F17 and F18 and K80 found to be 62, 74 and 75 microns. The preliminary assay results of the 10 kg floats show similar trends on the rougher concentrate grade. Table 6.14 shows the assay results for the composite rougher floats.

TABLE 6.14
ASSAY RESULTS FOR THE 10 KG FLOATS

Product	Assays			
	Pt (g/t)	Pd (g/t)	Au (g/t)	Cu (%)
F4-6 Ro Conc	1.99	7.15	0.30	0.61
F7-9 Ro Conc	2.68	9.19	0.41	0.80
F10-12 Ro Conc	2.94	11.2	0.56	0.97
F13-15 Ro Conc	3.22	11.5	0.52	0.98
F16-18 Ro Conc	2.78	9.09	0.48	0.82
F19-21 Ro Conc	2.43	8.80	0.50	0.77
F16-18 Ro Conc	2.63	9.58	0.58	0.81

6.5.3.3 Conclusions and Recommendations

- The copper and sulphur assays were used as a guide for the estimation of flotation time. The copper recovery was 90% after floating for 25 minutes, the corresponding sulphur recovery was 92%.

- The copper head grade was 0.099% and PGE grade was 1.7 g/t.

- Pt, Pd, and Au recoveries were 81.8%, 84.1% and 77.6%, respectively. The recovery of nickel was low at 46.9%.

- A cleaner stage is recommended to provide basic information on probable final concentrate grade.

- The process parameters will need to be optimized to identify probable flow-sheet configuration.

6.5.4 2006 Anglo-American Metallurgical Services Flotation Testwork

A poor flotation response of valuable minerals was previously obtained on the River Valley samples (Malysiak, 2006). The objective of the study described below was to investigate possible treatment routes to improve the Pt, Pd and Ni metallurgical recoveries and the concentrate grade. During the testwork, the effect of grind, collector dosage, as well as, type, dispersant, complexing agent and a higher energy input during flotation on grade-recovery relationship was evaluated.

The Pt, Pd, Cu, and Ni analyses obtained on the composite head sample are given in Table 6.15.

TABLE 6.15
PT, PD, CU AND NI CHEMICAL ANALYSES

River Valley	Pt (g/t)	Pd (g/t)	Cu (%)	Ni (%)
Composite Sample	0.77	2.15	0.19	0.10

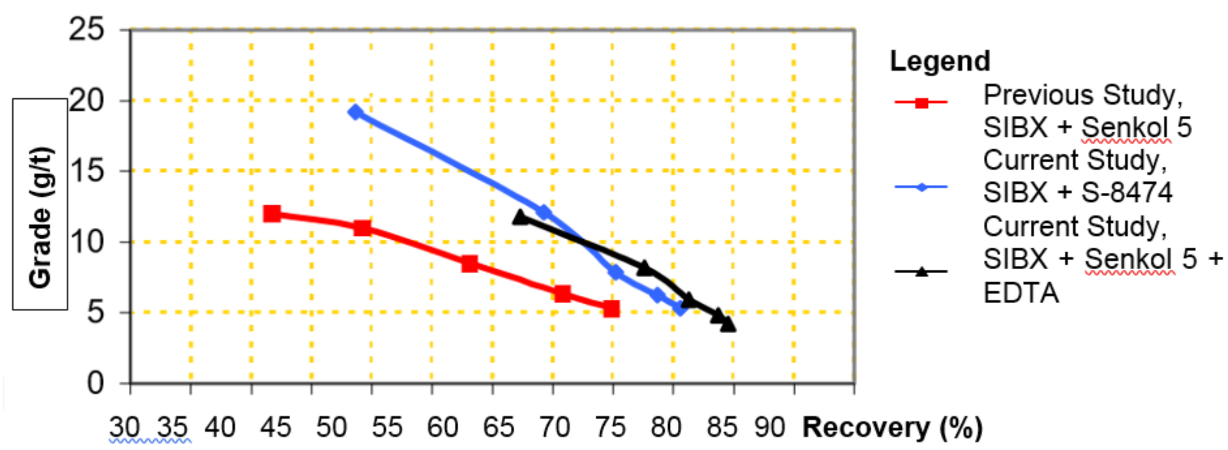
The total Pt and Pd recoveries increased with the fineness of grind. This is, however, more noticeable up to a grind of 80% passing 75 µm. In fact, grinding of the River Valley material finer than this did not enhance the total Pd-bearing minerals recovery.

The Pt and Pd grade-recovery curves obtained previously on the River Valley sample at a grind of 60% passing 75 µm (Malysiak, 2006) and the most favourable ones achieved during this study at a grind of 80% passing 75 µm are compared in Figure 6.7. As depicted in Figure 6.7, the rougher Pt and Pd recoveries obtained at a single-stage grind were enhanced by up to 10% during this study when compared to previously achieved metallurgical results.

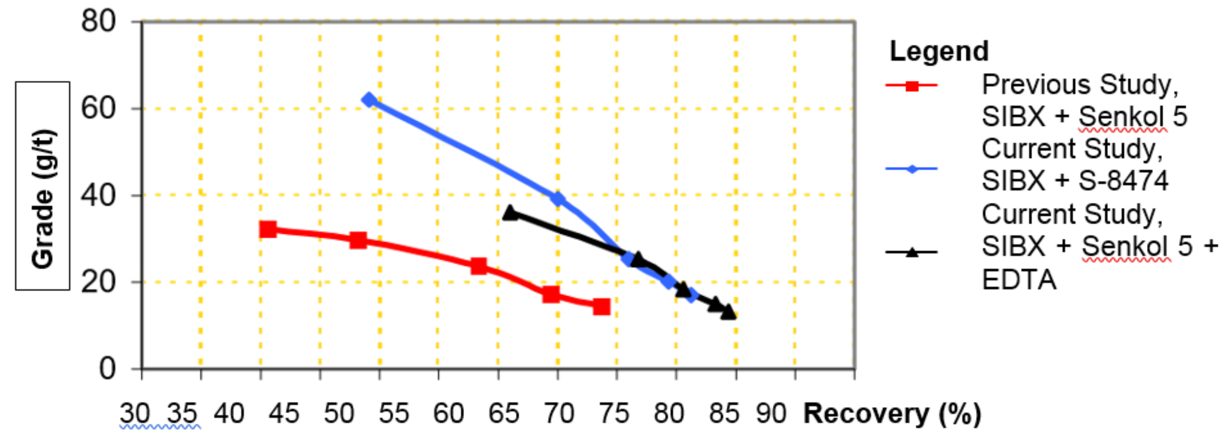
Further investigations, involving a locked cycle test and a possible pilot plant test, will therefore be necessary to optimize the valuable minerals grade-recovery relationship and determine the overall possible recovery and concentrate grade.

FIGURE 6.7 GRADE-RECOVERY CURVES: A. PT BEARING MINERALS AND B. PD BEARING MINERALS

A. PT GRADE VS. RECOVERY CURVES



B. Pd Grade vs. Recovery Curves



Source: *Anglo-American Metallurgical Services (2006)*

The results obtained during the testwork carried out on the River Valley sample showed the following:

- A grind of 80% passing 75 µm gave the most favourable Pt and Pd bearing minerals grade-recovery relationship from the grind sizes investigated;
- The combination of SIBX and Senkol 5 increased the total Pt and Pd recoveries compared to SIBX only, however, at a noticeably lower concentrate grade during the initial stages of flotation;
- EDTA, SIBX and Senkol 5 combination gave a higher concentrate grade during the early stages of flotation and a similar total Pt and Pd recovery when compared to SIBX and Senkol 5 only;
- A higher depressant dosage (200 g/t) slightly increased the concentrate grade during the early stages of flotation, at similar total combined Pt and Pd recovery; and
- A higher energy input during flotation did not enhance the flotation response of Pt and Pd minerals present in the River Valley sample.

It was recommended that the River Valley mineralized material be processed at a grind of 80% passing 75 µm. In terms of the reagent regime, further testwork is required to optimize the reagent dosages and types. However, based on the laboratory data obtained during this study, there is an indication that a collector with low frothing properties would be necessary to achieve an optimal valuable minerals grade-recovery relationship. Nevertheless, in order to assess the overall flotation response of Pt- and Pd-bearing minerals, a locked cycle test and potentially a pilot plant testwork would be required.

6.6 HISTORICAL MINERAL RESOURCE ESTIMATES

The historical Mineral Resource Estimates of River Valley are summarized below. They are considered relevant, but not reliable. **A Qualified Person has not done sufficient work to classify the historical Mineral Resources as current Mineral Resources. NAM is not treating the historical Mineral Resource as current Mineral Resources and the historical Mineral Resources should not be relied upon.**

Historical resource estimates of River Valley completed in 2001, 2002, 2004 and 2006 and more recent Mineral Resource Estimates completed in 2012, 2018 and 2019 are summarized in the sub-sections below. The previous Mineral Resource Estimate of River Valley completed in 2018 and amended in 2019, is superseded by the Mineral Resource Estimate described in Section 14 of this Technical Report.

6.6.1 2001 DMB and W Mineral Resource Study

In 2001, NAM (then Pacific North West Capital) engaged Derry Michener Booth and Wahl ("DMB & W") to complete an Independent Mineral Resource Study of the Dana North, Dana South and Lismer Ridge Zones of the River Valley Palladium Deposit. The Technical Report is dated October 15, 2001, and available on SEDAR. A summary of the Revised Mineral Resource Estimate using a 0.7 g/t Pd + Pt cut-off is presented in Table 6.16.

The database for the 2001 Revised Mineral Resource Study consisted of data from 138 holes totalling 22,791.74 m.

A Qualified Person has not done sufficient work to classify the above historical estimate as a current mineral resource. The Issuer is not treating the historic estimate as a current mineral resource and it should not be relied upon.

The Independent 2001 Mineral Resource Study was superseded by the 2002 Revised Mineral Resource Estimate.

TABLE 6.16
DETAILED SUMMARY OF RIVER VALLEY 2001 MINERAL RESOURCE ESTIMATES AT 0.7 G/T PD + PT CUT-OFF GRADE

Zone	Class	Tonnes	Au (g/t)	Pt (g/t)	Pd (g/t)	Rh (g/t)	Ni (%)	Cu (%)	Pd+Pt (g/t)	3E (g/t)	3E (oz)
Dana North	M & I	5,005,435	0.072	0.356	1.066	0.036	0.022	0.110	1.422	1.494	240,446
Dana South	M & I	2,734,707	0.073	0.398	1.337	0.039	0.021	0.115	1.735	1.808	159,006
Lismer Ridge	M & I	7,740,142	0.057	0.315	0.860	---	0.020	0.091	1.174	1.231	174,157
All Zones	M & I	15,480,284	0.065	0.343	1.011	0.019	0.021	0.101	1.353	1.418	573,609
Lismer Ridge	Inferred	570,415	0.046	0.298	0.740	---	0.016	0.068	1.038	1.084	19,879

Notes: *Class = classification*
M & I = Measured plus Indicated Mineral Resources
3E = 3 elements: Au + Pt + Pd
Source: *DMB & W (2001)*

6.6.2 2002 DMB and W Revised Mineral Resource Estimate

DMB and W completed a Revised Mineral Resource Estimate to incorporate Phase V drill program for the Dana North, Dana South and Lismer Ridge Zones. The Technical Report is dated October 31, 2002, and available on SEDAR. A summary of the Revised Mineral Resource Estimate using a 0.7 g/t Pd + Pt cut-off is presented in Table 6.17.

TABLE 6.17
DETAILED SUMMARY OF RIVER VALLEY 2002 MINERAL RESOURCE ESTIMATES AT 0.7 G/T PD + PT CUT-OFF GRADE

Zone	Class	Tonnes	Au (g/t)	Pt (g/t)	Pd (g/t)	Ni (%)	Cu (%)	PGE (g/t)	3E (g/t)	3E (oz)
Dana North	M & I	5,077,000	0.072	0.362	0.072	0.021	0.110	1.434	1.506	245,800
Dana South	M & I	5,290,000	0.069	0.387	1.269	0.020	0.114	1.655	1.724	293,200
Lismer Ridge	M & I	7,685,000	0.053	0.304	0.804	0.020	0.085	1.108	1.161	286,800
All Zones	**M & I**	**18,053,000**	**0.063**	**0.344**	**1.016**	**0.021**	**0.100**	**1.360**	**1.423**	**825,900**
Dana North	Inferred	956,000	0.065	0.338	0.968	0.018	0.088	1.305	1.371	42,100
Dana South	Inferred	1,326,000	0.043	0.260	0.825	0.016	0.085	1.128	1.128	48,100
Lismer Ridge	Inferred	3,100,000	0.048	0.288	0.771	0.022	0.087	1.107	1.107	110,300
All Zones	**Inferred**	**5,382,000**	**0.050**	**0.290**	**0.819**	**0.020**	**0.086**	**1.159**	**1.159**	**200,600**

Notes: *Class = classification, M & I = Measured and Indicated.*
Numbers rounded after calculation.
3E = 3 elements: Au + Pt + Pd.
Source: *DMB & W (2002)*

The 2002 Revised Mineral Resource Estimate is based on 221 drill holes totalling 42,627 m.

A Qualified Person has not done sufficient work to classify the above historical estimate as a current mineral resource. The Issuer is not treating the historic estimate as a current mineral resource and it should not be relied upon.

The Revised 2002 Mineral Resource Estimate was superseded by the 2004 Revised Mineral Resource Estimate.

6.6.3 2004 DMB and W Revised Mineral Resource Estimate

DMB and W completed a Revised Mineral Resource Estimate to incorporate Phase VI drill program for the Dana Lake, Lismer Ridge and Varley Zones. The Technical Report is dated June 10, 2004, and is available on SEDAR. A summary of the Mineral Resource Estimates using a 0.7 g/t Pd + Pt cut-off is presented in Table 6.18.

TABLE 6.18
DETAILED SUMMARY OF RIVER VALLEY 2004 MINERAL RESOURCE ESTIMATES AT 0.7 G/T PD + PT CUT-OFF GRADE

Zone	Class	Tonnes	Au (g/t)	Pt (g/t)	Pd (g/t)	Cu (%)	Ni (%)	PGE (g/t)	3E (g/t)	3E (oz)
Dana North	Measured	2,623,000	0.080	0.428	1.327	0.12	0.02	1.755	1.835	154,800
Dana South	Measured	1,496,000	0.100	0.625	2.122	0.16	0.03	2.747	2.847	136,900
Lismer Ridge	Measured	4,411,000	0.062	0.357	0.982	0.10	0.02	1.339	1.401	198,600
Total	**Measured**	**8,530,000**	**0.074**	**0.426**	**1.288**	**0.12**	**0.02**	**1.714**	**1.788**	**490,400**
Dana North	Indicated	5,881,000	0.054	0.278	0.777	0.09	0.02	1.055	1.109	209,600
Dana South	Indicated	3,516,000	0.071	0.380	1.229	0.11	0.02	1.609	1.680	189,900
Lismer Ridge	Indicated	7,439,000	0.046	0.255	0.667	0.08	0.02	0.922	0.968	231,500
Total	**Indicated**	**16,836,000**	**0.054**	**0.289**	**0.823**	**0.09**	**0.02**	**1.112**	**1.166**	**631,000**
Dana North	M & I	8,504,000	0.062	0.324	0.947	0.10	0.02	1.271	1.333	364,400
Dana South	M & I	5,012,000	0.079	0.453	1.496	0.13	0.02	1.949	2.028	326,800
Lismer Ridge	M & I	11,850,000	0.052	0.293	0.784	0.09	0.02	1.077	1.129	430,200
Total	**M & I**	**25,366,000**	**0.061**	**0.335**	**0.979**	**0.10**	**0.02**	**1.314**	**1.375**	**1,121,200**
Dana North	Inferred	41,000	0.035	0.209	0.559	0.07	0.02	0.769	0.803	1,100
Dana South	Inferred	552,000	0.047	0.229	0.648	0.08	0.02	0.876	0.923	16,400
Lismer Ridge	Inferred	303,000	0.039	0.219	0.529	0.08	0.02	0.748	0.788	7,700
Varley	Inferred	2,741,000	0.051	0.295	0.812	0.07	0.02	1.107	1.158	102,000
Total	**Inferred**	**3,636,000**	**0.049**	**0.278**	**0.760**	**0.07**	**0.02**	**1.038**	**1.087**	**127,100**

Notes: *Class = classification*
Numbers rounded after calculation.
No allowance made for the respective precious metal prices, or recoveries
Block grades interpolated using the ID^3 method
3E = 3 elements: Au + Pt + Pd
Source: *DMB & W (2004)*

The database for the 2004 Revised Mineral Resource Estimate consisted of data from 416 drill holes totalling 83,838 m.

A Qualified Person has not done sufficient work to classify the above historical estimate as a current mineral resource. The Issuer is not treating the historic estimate as a current mineral resource and it should not be relied upon.

The Revised 2004 Mineral Resource Estimate was superseded by the 2006 Revised Mineral Resource Estimate.

6.6.4 2006 PFN and GeoSim Mineral Resource Estimate

NAM commissioned GeoSim Consultants (GeoSim) to complete a Revised Mineral Resource Estimate on the River Valley Property in 2006 (GeoSim and Londry, 2006). The Technical Report is dated May 2006 and is available on SEDAR. The 2006 Mineral Resource estimation concentrated on the higher-grade material using a Pt + Pd cut-off for five mineral zones. A summary of the Mineral Resource Estimates using a 1.0 g/t Pd + Pt cut-off is presented in Table 6.19.

TABLE 6.19
DETAILED SUMMARY OF RIVER VALLEY 2006 MINERAL RESOURCE ESTIMATES AT 1.0 G/T PD + PT CUT-OFF GRADE

Zone	Class	Tonnes	Au (g/t)	Pt (g/t)	Pd (g/t)	Cu (%)	Ni (%)	Pd+Pt (g/t)	3E (g/t)	3E (oz)
Dana North	Measured	2,523,000	0.082	0.435	1.354	0.12	0.02	1.790	1.87	151,800
Dana South	Measured	1,495,000	0.100	0.626	2.122	0.16	0.03	2.748	2.85	136,900
Lismer Ridge	Measured	3,976,000	0.064	0.368	1.018	0.10	0.02	1.385	1.45	185,300
All Zones	**Measured**	**7,994,000**	**0.076**	**0.437**	**1.331**	**0.12**	**0.02**	**1.768**	**1.84**	**474,000**
Dana North	Indicated	3,067,000	0.061	0.320	0.920	0.09	0.02	1.240	1.301	128,300
Dana South	Indicated	3,304,000	0.072	0.389	1.266	0.11	0.02	1.655	1.73	183,400
Lismer Ridge	Indicated	2,140,000	0.054	0.302	0.824	0.09	0.02	1.127	1.180	81,200
Lismer North	Indicated	716,000	0.071	0.394	1.183	0.13	0.03	1.577	1.65	37,900
Varley	Indicated	2,082,000	0.075	0.448	1.224	0.09	0.02	1.671	1.75	117,000
All Zones	**Indicated**	**11,309,000**	**0.066**	**0.365**	**1.076**	**0.10**	**0.02**	**1.441**	**1.51**	**547,700**
Dana North	M & I	5,590,000	0.070	0.372	1.116	0.11	0.02	1.488	1.56	280,000
Dana South	M & I	4,800,000	0.080	0.463	1.533	0.13	0.02	1.995	2.08	320,300
Lismer Ridge	M & I	6,116,000	0.060	0.345	0.950	0.10	0.02	1.295	1.36	266,600
Lismer North	M & I	716,000	0.071	0.394	1.183	0.13	0.03	1.577	1.65	37,900

TABLE 6.19 DETAILED SUMMARY OF RIVER VALLEY 2006 MINERAL RESOURCE ESTIMATES AT 1.0 G/T PD + PT CUT-OFF GRADE										
Zone	**Class**	**Tonnes**	**Au (g/t)**	**Pt (g/t)**	**Pd (g/t)**	**Cu (%)**	**Ni (%)**	**Pd+Pt (g/t)**	**3E (g/t)**	**3E (oz)**
Varley	M & I	2,082,000	0.076	0.448	1.224	0.08	0.02	1.672	1.75	117,000
All Zones	**M & I**	**19,303,000**	**0.070**	**0.365**	**1.181**	**0.11**	**0.02**	**1.576**	**1.65**	**1,021,700**
Dana South	Inferred	104,000	0.053	0.276	0.819	0.09	0.02	1.094	1.15	3,800
Lismer North	Inferred	345,000	0.091	0.524	1.586	0.03	0.03	2.110	2.2	24,400
Varley	Inferred	432,000	0.063	0.464	1.301	0.01	0.01	1.765	1.83	25,400
All Zones	**Inferred**	**881,000**	**0.073**	**0.465**	**1.356**	**0.02**	**0.02**	**1.821**	**1.89**	**53,600**

Source: *DMB & W (2006)*
Notes: *Class = classification, M & I = Measured and Indicated*
Numbers rounded after calculation.
No allowance made for the respective precious metal prices, or recoveries
Block Au, Pt and Pd grades estimated using the ordinary kriging method; Block grades for Ni and Cu interpolated using the ID^3 method.
3E = 3 elements: Au + Pt + Pd.

The database for the 2006 Revised Mineral Resource Estimate was based on 416 drill holes. The 2006 revised Mineral Resource Estimate was completed for the Dana North, Dana South, Lismer North, Lismer Ridge and Varley Zones. For Dana North and Dana South, precious metal grades were estimated by the ordinary kriging method, whereas Ni and Cu grades were estimated by the ID^2 method, on a capped and composited borehole dataset consistent with industry standards. For Lismer North, Lismer Ridge and Varley Zones, all metal grades were estimated by the ID^2 method on a capped and composited borehole dataset consistent with industry standards. Validation of the results was conducted through the use of visual inspection. Validation of the model was completed by visual comparison of colour coded blocks and composites on plans and sections. Statistical comparisons between global average model grades using a zero cut-off and composite grades showed reasonable correlation.

A Qualified Person has not done sufficient work to classify the above historical estimate as a current mineral resource. The Issuer is not treating the historic estimate as a current mineral resource and it should not be relied upon.

The Revised 2006 Mineral Resource Estimate was superseded by the 2012 Updated Mineral Resource Estimate.

6.7 RECENT HISTORICAL MINERAL RESOURCE ESTIMATES

6.7.1 2012 Tetra Tech Updated Mineral Resource Estimate

The 2012 updated Mineral Resource Estimate was completed by Tetra Tech with an effective date of June 13, 2012. This was the first Mineral Resource Estimate for River Valley that was based on a large, bulk tonnage mining scenario and reported at a PdEq cut-off, and the first to include the Banshee, Azen and Razor Zones. A summary of the Mineral Resource Estimates using a 0.8 g/t PdEq cut-off is presented in Table 6.20.

The database for the 2012 updated Mineral Resource Estimate contains 492 drill hole records. The 2018 updated Mineral Resource Estimate was completed for the Dana North, Dana South, Banshee, Lismer North, Lismer Ridge, Varley, Azen, and Razor Zones using the ordinary kriging (OK) methodology on a capped and composited borehole dataset consistent with industry standards. Validation of the results was conducted through the use of visual inspection, swath plots, and global statistical comparison of the model against inverse distance squared (ID^2) and nearest neighbour (NN) models. The updated Mineral Resources were considered to be amenable to open pit mining.

A Qualified Person has not done sufficient work to classify the above historical estimate as a current mineral resource. The Issuer is not treating the historic estimate as a current mineral resource and it should not be relied upon.

The updated 2012 Mineral Resource Estimate was superseded by the 2018 Updated Mineral Resource Estimate.

TABLE 6.20
DETAILED SUMMARY OF RIVER VALLEY 2012 MINERAL RESOURCE ESTIMATE AT 0.8 G/T PDEQ CUT-OFF GRADE

Zone	Class	Tonnes	Au (g/t)	Pt (g/t)	Pd (g/t)	Rh (g/t)	Ag (g/t)	Cu (%)	Ni (%)	Co (%)	PdEq (g/t)
Dana North	Measured	9,622,180	0.1	0.24	0.66	0.023	0.70	0.07	0.02	0.003	1.56
Dana South	Measured	5,980,550	0.1	0.26	0.79	0.027	0.6	0.06	0.01	0.003	1.68
Lismer Ridge	Measured	9,982,120	0	0.20	0.50	0.018	0.40	0.05	0.02	0.003	1.24
All Zones	**Measured**	**25,584,850**	**0**	**0.23**	**0.63**	**0.022**	**0.6**	**0.06**	**0.02**	**0.003**	**1.46**
Dana North	Indicated	14,076,300	0	0.22	0.60	0.021	0.52	0.07	0.02	0.003	1.45
Dana South	Indicated	8,040,000	0	0.24	0.70	0.024	0.59	0.05	0.01	0.003	1.49
Lismer Ridge	Indicated	16,300,300	0	0.19	0.48	0.018	0.05	0.06	0.02	0.003	1.25
Lismer North	Indicated	13,690,300	0	0.23	0.57	0.021	0.12	0.06	0.02	0.002	1.37
Varley	Indicated	13,647,800	0	0.21	0.53	0.019	0.17	0.05	0.01	0.002	1.27
All Zones	**Indicated**	**65,754,700**	**0**	**0.21**	**0.56**	**0.020**	**0.26**	**0.06**	**0.02**	**0.003**	**1.35**
Dana North	M & I	23,698,480	0	0.23	0.63	0.022	0.6	0.07	0.02	0.003	1.49
Dana South	M & I	14,020,550	0	0.25	0.74	0.025	0.6	0.05	0.01	0.003	1.57
Lismer Ridge	M & I	26,282,420	0	0.19	0.49	0.018	0.2	0.06	0.02	0.003	1.25
Lismer North	M & I	13,690,300	0	0.23	0.57	0.021	0.1	0.06	0.02	0.002	0.37

TABLE 6.20 DETAILED SUMMARY OF RIVER VALLEY 2012 MINERAL RESOURCE ESTIMATE AT 0.8 G/T PDEQ CUT-OFF GRADE											
Zone	**Class**	**Tonnes**	**Au (g/t)**	**Pt (g/t)**	**Pd (g/t)**	**Rh (g/t)**	**Ag (g/t)**	**Cu (%)**	**Ni (%)**	**Co (%)**	**PdEq (g/t)**
Varley	M & I	13,647,800	0	0.21	0.53	0.019	0.2	0.05	0.01	0.002	1.27
All Zones	**M & I**	**91,339,550**	**0**	**0.22**	**0.58**	**0.021**	**0.3**	**0.06**	**0.02**	**0.003**	**1.38**
Azen	Inferred	16,095,000	0	0.15	0.37	0.014	0.1	0.05	0.03	0.001	1.11
Banshee	Inferred	3,320,000	0	0.19	0.35	0.015	---	0.05	0.01	---	1.00
Lismer Ridge	Inferred	303,000	0	0.13	0.31	0.012	---	0.06	0.02	0.002	0.92
Razor	Inferred	16,163,000	0	0.12	0.36	0.013	0.2	0.06	0.03	0.003	1.05
Varley	Inferred	30,000	0	0.15	0.30	0.012	---	0.07	0.01	0.002	0.94
All Zones	**Inferred**	**35,911,000**	**0**	**0.14**	**0.36**	**0.014**	**0.1**	**0.06**	**0.03**	**0.003**	**1.07**

Source: *Tetra Tech (2012)*

Notes: *Class = classification, M & I = Measured + Indicated, PdEq = palladium equivalent.*
Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
Long-term forecast process (US$): $896.oz Pd, $1885/oz Pt, $1271/oz au, $3.0/lb Cu, $9.7/lb Ni and $15.9/lb Co.

6.7.2 2018 WSP Updated Mineral Resource Estimate

The 2018 updated Mineral Resource Estimate was completed by WSP with an effective date of May 4, 2018. This was the first Mineral Resource Estimate for River Valley that included the Pine Zone, which was discovered in 2015, and the River Valley Extension Zone, which was acquired in 2016 from Mustang Minerals. A summary of the Mineral Resource Estimates using a 0.4 g/t PdEq cut-off is presented in Table 6.21.

TABLE 6.21 DETAILED RIVER VALLEY 2018 UPDATED MINERAL RESOURCE SUMMARY AT 0.4 G/T PDEQ CUT-OFF GRADE										
Zone	**Class**	**Tonnes**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Ni (%)**	**Cu (%)**	**Co (%)**	**Rh (g/t)**	**PdEq (g/t)**
Dana North	Measured	32,631,150	0.52	0.20	0.04	0.01	0.06	0.002	0.02	1.05
Pine	Measured	2,568,000	0.55	0.20	0.03	0.02	0.06	0.004	0.01	1.11
Dana South	Measured	9,433,730	0.58	0.21	0.04	0.01	0.05	0.003	0.02	1.10
Lismer Ridge	Measured	18,244,630	0.38	0.16	0.03	0.01	0.04	0.002	0.01	0.80
Total	**Measured**	**62,877,510**	**0.49**	**0.19**	**0.03**	**0.01**	**0.05**	**0.002**	**0.02**	**0.99**
Dana North	Indicated	2,175,700	0.53	0.22	0.02	0.02	0.06	0.003	0.01	1.00
Pine	Indicated	271,600	0.49	0.21	0.02	0.01	0.07	0.001	0.01	0.97
Dana South	Indicated	13,573,600	0.51	0.18	0.03	0.01	0.04	0.003	0.02	0.97

TABLE 6.21
DETAILED RIVER VALLEY 2018 UPDATED MINERAL RESOURCE SUMMARY AT 0.4 G/T PDEQ CUT-OFF GRADE

Zone	Class	Tonnes	Pd (g/t)	Pt (g/t)	Au (g/t)	Ni (%)	Cu (%)	Co (%)	Rh (g/t)	PdEq (g/t)
Lismer Ridge	Indicated	33,356,300	0.35	0.14	0.03	0.02	0.05	0.002	0.01	0.77
Lismer North	Indicated	19,836,300	0.46	0.19	0.03	0.01	0.05	0.002	0.02	0.93
Varley	Indicated	28,632,100	0.37	0.14	0.02	0.01	0.05	0.002	0.01	0.76
Banshee	Indicated	9,600	0.26	0.16	0.03		0.03		0.01	0.55
Total	**Indicated**	**97,855,200**	**0.40**	**0.16**	**0.03**	**0.01**	**0.05**	**0.002**	**0.02**	**0.83**
Dana North	M & I	34,806,850	0.52	0.20	0.04	0.01	0.06	0.002	0.02	1.05
Pine	M & I	2,839,600	0.55	0.20	0.03	0.02	0.06	0.003	0.01	1.10
Dana South	M & I	23,007,330	0.54	0.19	0.03	0.01	0.04	0.003	0.02	1.02
Lismer Ridge	M & I	51,600,930	0.36	0.14	0.03	0.02	0.05	0.002	0.01	0.78
Lismer North	M & I	19,836,300	0.46	0.19	0.03	0.01	0.05	0.002	0.02	0.93
Varley	M & I	28,632,100	0.37	0.14	0.02	0.01	0.05	0.002	0.01	0.76
Banshee	M & I	9,600	0.26	0.16	0.03		0.03		0.01	0.55
Total	**M & I**	**160,732,710**	**0.44**	**0.17**	**0.03**	**0.01**	**0.05**	**0.002**	**0.02**	**0.90**
Dana North	Inferred	272,000	0.56	0.21		0.01	0.05		0.02	0.94
Pine	Inferred	5,100	0.37	0.21			0.04			0.66
Lismer Ridge	Inferred	2,453,000	0.22	0.10	0.02	0.01	0.04	0.002	0.01	0.54
Varley	Inferred	125,000	0.20	0.11	0.03	0.02	0.05	0.002	0.01	0.58
Razor	Inferred	42,744,000	0.26	0.11	0.02	0.03	0.04	0.001	0.01	0.63
Banshee	Inferred	13,893,000	0.25	0.14	0.03	0.01	0.04		0.01	0.57
Azen	Inferred	35,903,000	0.27	0.09	0.02	0.03	0.05		0.01	0.70
River Valley Extension	Inferred	32,221,000	0.29	0.17	0.02	0.03	0.05		0.01	0.70
Total	**Inferred**	**127,662,000**	**0.27**	**0.12**	**0.02**	**0.02**	**0.05**	**0.002**	**0.01**	**0.66**

Source: *WSP (2018)*

Notes: *Class = classification, M & I = Measured and Indicated.*

CIM definition standards were followed for the Mineral Resource calculation.

The 2018 Mineral Resource models used Ordinary Kriging grade estimation within a three-dimensional block model with mineralized zones defined by wireframed solids.

A base cut-off grade of 0.4 g/t PdEq was used for reporting Mineral Resources.

Palladium Equivalent (PdEq) calculated using (US$): $1,000/oz Pd, $1,000/oz Pt, $1,350/oz Au, $1750/oz Rh, $3.20/lb Cu, $5.50/lb Ni, $36/lb Co.

Numbers may not add exactly due to rounding.

Mineral Resources that are not Mineral Reserves do not have economic viability.

The database for the 2018 updated Mineral Resource Estimate contains 710 drill holes with 106,554 assays records in the database, and 2,642 surface channel samplings. Updated Mineral Resource Estimates were completed for the Dana North, Dana South, Pine, Banshee, Lismer, Lismer Extension, Varley, Azen, Razor, and River Valley Extension (Mustang) Zones, using the ordinary kriging (OK) methodology on a capped and composited drill hole dataset consistent with industry standards. Validation of the results was conducted through the use of visual inspection, swath plots, and global statistical comparison of the model against inverse distance squared (ID^2) and nearest neighbour (NN) models. The updated Mineral Resources were considered to be amenable to open pit mining.

A Qualified Person has not done sufficient work to classify the above historical estimate as a current mineral resource. The Issuer is not treating the historic estimate as a current mineral resource and it should not be relied upon.

6.7.3 2019 WSP Mineral Resource Estimate

In 2019, the 2018 Updated Mineral Resource Estimate was amended by WSP and reported with pit constrained and out-of-pit Mineral Resources, with an amended effective date of January 9, 2019. Detailed summaries of the updated Mineral Resource Estimate using a 0.35 g/t PdEq cut-off grade for pit-constrained Mineral Resources and a 2.0 g/t PdEq cut-off grade for out-of-pit Mineral Resources are presented in Table 6.22 and Table 6.23, respectively.

TABLE 6.22
DETAILED RIVER VALLEY 2019 PIT CONSTRAINED UPDATED MINERAL RESOURCE SUMMARY AT 0.35 G/T PDEQ CUT-OFF GRADE (1-6)

Zone	Class	Tonnes	Pd (g/t)	Pt (g/t)	Au (g/t)	Cu (%)	Ni (%)	Co (%)	Rh (g/t)	PdEq (g/t)
Dana North-Pine	Measured	26,745,200	0.57	0.22	0.04	0.07	0.02	0.002	0.020	1.00
Dana south	Measured	10,083,500	0.76	0.26	0.04	0.07	0.02	0.003	0.014	1.22
Lismer Ridge	Measured	19,196,700	0.39	0.16	0.02	0.04	0.03	0.013	0.003	0.70
Total	**Measured**	**56,025,400**	**0.54**	**0.20**	**0.03**	**0.06**	**0.02**	**0.006**	**0.013**	**0.94**
Dana North-Pine	Indicated	1,137,400	0.48	0.23	0.02	0.06	0.02	0.001	0.011	0.86
Dana South	Indicated	540,200	0.43	0.17	0.03	0.05	0.01	0.011	0.009	0.73
Lismer Ridge	Indicated	10,190,800	0.46	0.18	0.04	0.05	0.02	0.003	0.008	0.82
Lismer North	Indicated	14,645,600	0.52	0.21	0.01	0.06	0.03	0.014	0.002	0.89
Varley	Indicated	16,639,300	0.49	0.19	0.03	0.05	0.01	0.002		0.81
Total	**Indicated**	**43,153,300**	**0.49**	**0.19**	**0.03**	**0.05**	**0.02**	**0.006**	**0.003**	**0.84**
Dana North-Pine	M & I	27,882,600	0.57	0.22	0.04	0.07	0.02	0.002	0.020	1.00
Dana South	M & I	10,623,700	0.74	0.25	0.04	0.07	0.02	0.003	0.013	1.20
Lismer Ridge	M & I	29,387,500	0.41	0.17	0.02	0.05	0.02	0.010	0.004	0.74
Lismer North	M & I	14,645,600	0.52	0.21	0.01	0.06	0.03	0.014	0.002	0.89
Varley	M & I	16,639,300	0.49	0.19	0.03	0.05	0.01	0.002		0.81
Total	**M & I**	**99,178,700**	**0.52**	**0.20**	**0.03**	**0.06**	**0.02**	**0.006**	**0.008**	**0.90**

TABLE 6.22 DETAILED RIVER VALLEY 2019 PIT CONSTRAINED UPDATED MINERAL RESOURCE SUMMARY AT 0.35 G/T PDEQ CUT-OFF GRADE (1-6)										
Zone	**Class**	**Tonnes**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Cu (%)**	**Ni (%)**	**Co (%)**	**Rh (g/t)**	**PdEq (g/t)**
Dana North-Pine	Inferred	139,000	0.40	0.20		0.03	0.01		0.003	0.66
Dana South	Inferred	1,000	0.36	0.06		0.03	0.01		0.006	0.50
Lismer Ridge	Inferred	103,000	0.32	0.09	0.02	0.05	0.02	0.003		0.57
Razor	Inferred	10,957,000	0.36	0.15	0.03	0.05	0.03	0.001		0.70
Banshee	Inferred	3,359,000	0.29	0.17	0.03	0.04	0.01			0.55
Azen	Inferred	17,566,000	0.30	0.10	0.02	0.05	0.03	0.003		0.59
Mustang	Inferred	20,181,000	0.31	0.18	0.06	0.03			0.031	0.65
Total	**Inferred**	**52,306,000**	**0.31**	**0.15**	**0.04**	**0.04**	**0.02**	**0.001**	**0.012**	**0.63**

Source: *WSP (2019)*

Notes: *Class = classification, M & I = Measured and Indicated.*

1. *CIM definition standards were followed for the Mineral Resource Estimate.*
2. *The 2018 Mineral Resource models used Ordinary Kriging grade estimation within a three-dimensional block model with mineralized zones defined by wireframed solids.*
3. *A base cut-off grade of 0.35 g/t PdEq was used for reporting Mineral Resources in a constrained pit and 2.00 g/t PdEq was used for reporting the Mineral Resources under the pit.*
4. *Palladium Equivalent (PdEq) calculated using (US$): $950/oz Pd, $950/oz Pt, $1,275/oz Au, $1500/oz Rh, $2.75/lb Cu, $5.25/lb Ni, $36/lb Co.*
5. *Numbers may not add exactly due to rounding.*
6. *Mineral Resources that are not Mineral Reserves do not have economic viability.*

TABLE 6.23 DETAILED RIVER VALLEY 2019 OUT-OF-PIT UPDATED MINERAL RESOURCE SUMMARY AT 2.0 G/T PDEQ CUT-OFF GRADE (1-6)										
Zone	**Class**	**Tonnes**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Cu (%)**	**Ni (%)**	**Co (%)**	**Rh (g/t)**	**PdEq (g/t)**
Dana North-Pine	Measured	13,200	2.14	0.67	0.09	0.19	0.04	0.001	0.021	3.23
Dana South	Measured	58,100	2.37	0.77	0.09	0.10	0.02	0.002	0.040	3.41
Total	**Measured**	**71,300**	**2.33**	**0.75**	**0.09**	**0.12**	**0.02**	**0.002**	**0.036**	**3.38**
Dana North-Pine	Indicated	400	2.56	0.53	0.09	0.21	0.04		0.029	3.46
Dana South	Indicated	400	2.60	0.84	0.02	0.02	0.01	0.002	0.019	3.44
Lismer North	Indicated	4,400	2.17	0.58	0.13	0.02	0.04			3.15
Total	**Indicated**	**5,200**	**2.23**	**0.60**	**0.11**	**0.03**	**0.04**		**0.004**	**3.20**
Dana North-Pine	M & I	13,600	2.15	0.67	0.09	0.19	0.04	0.001	0.021	3.24

TABLE 6.23 DETAILED RIVER VALLEY 2019 OUT-OF-PIT UPDATED MINERAL RESOURCE SUMMARY AT 2.0 G/T PDEQ CUT-OFF GRADE (1-6)										
Zone	**Class**	**Tonnes**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Cu (%)**	**Ni (%)**	**Co (%)**	**Rh (g/t)**	**PdEq (g/t)**
Dana South	M & I	58,500	2.37	0.77	0.09	0.10	0.02	0.002	0.040	3.41
Lismer North	M & I	4,400	2.17	0.58	0.13	0.02	0.04			3.15
Total	**M & I**	**76,500**	**2.32**	**0.74**	**0.09**	**0.11**	**0.02**	**0.002**	**0.034**	**3.36**

Source: *WSP (2019)*

Notes: *Class = classification, M & I = Measured and Indicated.*

1. *CIM definition standards were followed for the Mineral Resource Estimate.*
2. *The 2018 Mineral Resource models used Ordinary Kriging grade estimation within a three-dimensional block model with mineralized zones defined by wireframed solids.*
3. *A base cut-off grade of 0.35 g/t PdEq was used for reporting Mineral Resources in a constrained pit and 2.00 g/t PdEq was used for reporting the out-of-pit Mineral Resources.*
4. *Palladium Equivalent (PdEq) calculated using (US$): $950/oz Pd, $950/oz Pt, $1,275/oz Au, $1500/oz Rh, $2.75/lb Cu, $5.25/lb Ni, $36/lb Co.*
5. *Numbers may not add exactly due to rounding.*
6. *Mineral Resources that are not Mineral Reserves do not have economic viability.*

The amended updated Mineral Resource Estimates were completed on the Dana North, Dana South, Pine, Banshee, Lismer, Lismer Extension, Varley, Azen, Razor, and River Valley Extension (Mustang) Zones, using the ordinary kriging (OK) methodology on a capped and composited borehole dataset consistent with industry standards. Validation of the results was completed by visual inspection, swath plots and global statistical comparison of the model against inverse distance squared (ID^2) and nearest neighbour (NN) models.

This amended, updated Mineral Resource Estimate is superseded by the updated Mineral Resource Estimate described in Section 14 of this Technical Report.

6.8 2019 PRELIMINARY ECONOMIC ASSESSMENT

A Preliminary Economic Assessment ("PEA") study of the River Valley PGM Project was completed by P&E in 2019 (P&E, 2019).

In a Company press release dated August 8, 2019, NAM announced receipt of a positive PEA for the River Valley PGM Project, with an effective date of June 27, 2019. The PEA was based in part on the pit-constrained, updated Mineral Resource Estimate by WSP dated January 9, 2019. The amended effective date of that updated Mineral Resource Estimate is January 9, 2019. The executive summary of the 2019 PEA is provided in Section 24 of this current Technical Report.

6.9 PAST PRODUCTION

The River Valley Palladium Deposit has never been mined.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The River Valley Intrusion is part of the Paleoproterozoic East Bull Lake Intrusive Suite, dated between 2,491 Ma and 2,475 Ma. The East Bull Lake Suite consists of several gabbronorite to gabbroic anorthosite plutons that occur in the Southern and Grenville Provinces at the southern margin of the Superior Province (Figure 7.1) (Easton, 1999; James *et al*., 2002a). The plutons intrude Archean host rocks and are associated with the Paleoproterozic supracrustal rocks of the Southern Province (Figure 7.2).

FIGURE 7.1 REGIONAL GEOLOGY

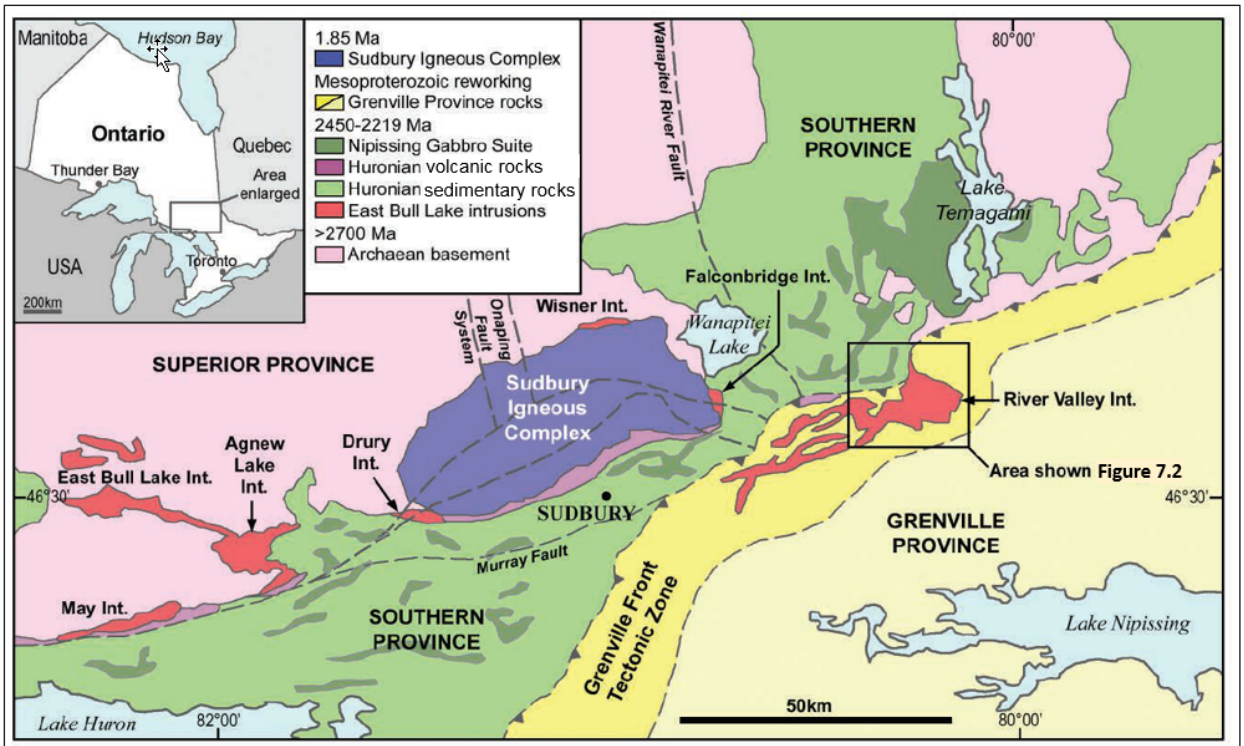
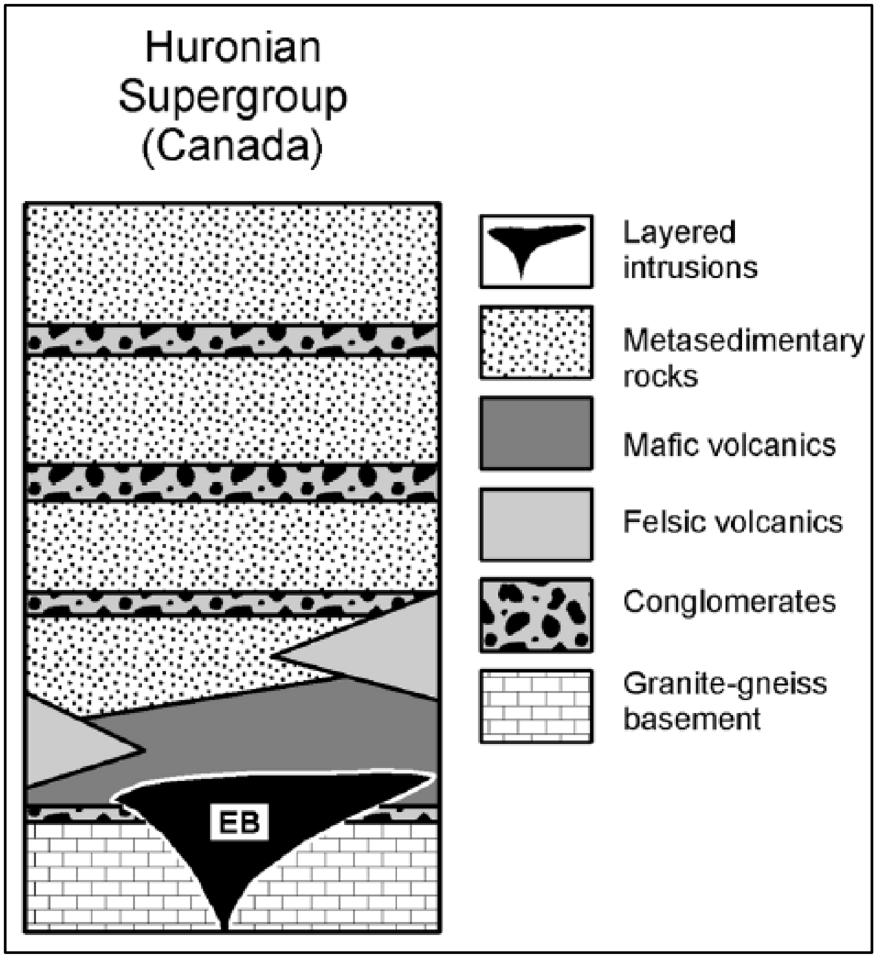


FIG. 1. Geologic map of the Sudbury area, Ontario, showing the major intrusions in the East Bull Lake intrusive suite (after James et al., 2002a).

Source: *Holwell et al. (2014) and P&E (2021)*

FIGURE 7.2 STRATIGRAPHIC COLUMN OF THE PALEOPROTEROZOIC SUPRACRUSTAL SEQUENCE ON THE SOUTHERN SUPERIOR PROVINCE



Source: *Easton et al. (2010)*
EB = East Bull Lake intrusive suite, which includes the River Valley Intrusion

Intrusions of the East Bull Lake Intrusive Suite share a number of common characteristics in addition to lithology, including typically sill-like to lopolithic forms, igneous layering, and anomalous PGE content. The emplacement of the East Bull Lake Intrusive Suite bodies, the subsequent eruption of volcanic rocks belonging to the Huronian Supergroup, and the formation of the depositional basin filled by Huronian Supergroup sediments is attributed by most authors to a Paleoproterozoic intracontinental rifting event, which resulted from a mantle plume that was centered near Sudbury (Easton, 2003; Easton *et al*., 2004). Rift related magmatic activity is also manifested in the gabbroic rocks of the Hearst Matachewan dyke swarm.

The East Bull Lake Suite Intrusions exhibit geochemical characteristics (high aluminum, relatively low magnesium and Large Ion Lithophile ("LIL")-enriched trace element profiles), consistent with derivation from fractionated tholeiitic or high-alumina tholeiitic parental magmas (Peck *et al*., 1993; Peck *et al*., 1995; Vogel *et al*., 1998). The estimated parental magma compositions for the East Bull Lake Intrusive Suite are thus broadly similar to those postulated for the intrusive suite in the world class Noril'sk Talnakh nickel copper-PGE camp in Siberia (Findlay, 2001).

The three largest and most economically interesting bodies of the East Bull Lake Intrusive Suite are the East Bull Lake and Agnew Lake Intrusions (situated within the Sudbury Province) and the River Valley Intrusion (situated in the Grenville Front Tectonic Zone). Smaller bodies include the intrusions in Drury, Falconbridge, May, Street, and Wisner Townships (Easton *et al*., 2004).

The most completely preserved of the three largest mineralized bodies is the Agnew Lake Intrusion with approximately 2 km of preserved stratigraphy, whereas the East Bull Lake and River Valley Intrusions have roughly only 1 km. The significant volume of melanocratic norites and troctolites in the River Valley Intrusion are not present in the intrusions west of the Grenville Front, and may indicate that the former represents a deeper level of intrusion (Easton *et al*., 2004).

An economically important feature commonly shared by the River Valley, Agnew Lake and East Bull Lake Intrusions is the occurrence of the copper-nickel-PGE-bearing Breccia Unit on the base of the intrusions. The breccia units are characterized by inclusions of footwall and cognate mafic to ultramafic xenoliths and autoliths set within a gabbronorite to olivine-bearing gabbronorite matrix. Near the contact, marginal footwall breccias and zones of extensive footwall dykes may also be present. Blebby to disseminated chalcopyrite and pyrrhotite in amounts from 0.5% to 2.0% occur in the matrix of the marginal and brecciated rocks, and within the mafic fragments. This sulphide mineralization commonly contains between 1 g/t and 5 g/t combined platinum-palladium-gold, and remains the focus of current mineral exploration (James *et al.,* 2002a; 2002b).

7.2 PROPERTY GEOLOGY

The River Valley Intrusion, the largest of the East Bull Lake Intrusive Suite by area, covers an area of approximately 200 km^2 (Figure 7.3). On the ground held by NAM, the contact between the River Valley Intrusion and the Archean basement trends southeasterly for approximately 16 km. The mineralized breccia unit occurring on the contact has been identified along most of this 16 km strike length. The mineralized breccia unit contact is divided into many zones. Starting in the northwest and proceeding to the southeastern extent of the Property, these areas are: Dana North, Dana South, Banshee, Lismer Extension, Lismer Ridge, Varley, Azen, Jackson's Flats, Razor and Mustang (also known as River Valley Extension). Drill data suggests that the dip between the contact of the mineralized breccia and the Archean footwall gneiss ranges from about 65º to 75° west, toward the intrusion. The dip is however highly variable along strike, ranging from 65º to 85° west to 65 to 85° east (overturned). East of the Dana South Zone, drill data suggests that the River Valley Intrusion/Archean footwall contact generally dips 60º to 70°W.

FIGURE 7.3 PROPERTY GEOLOGY

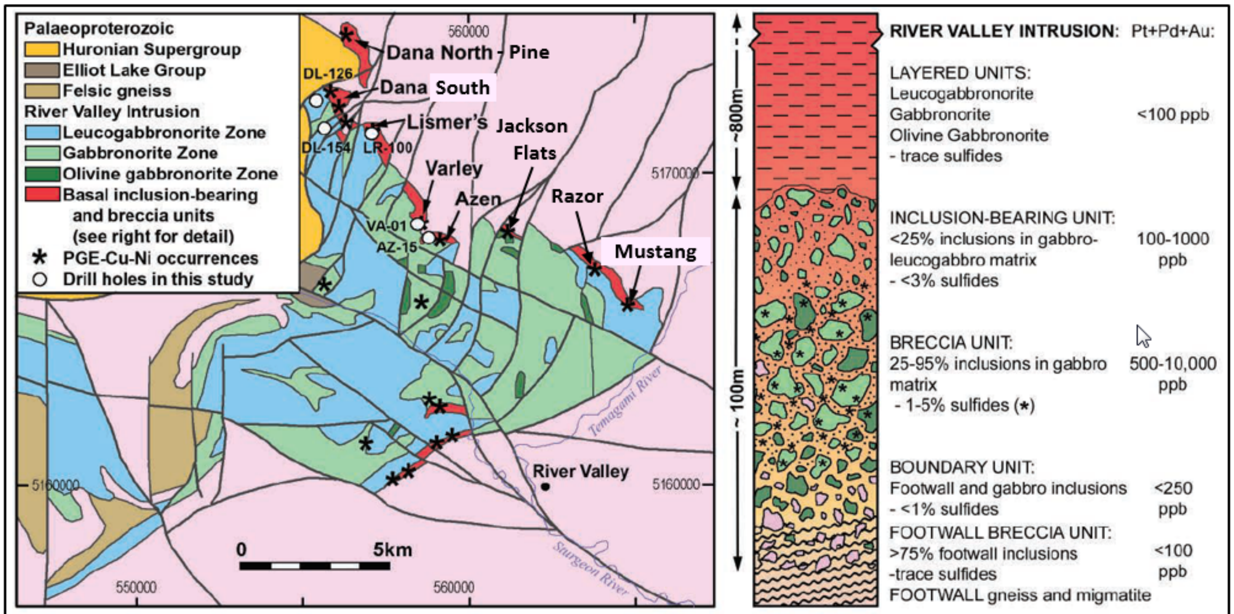


FIG. 2. Geologic map and generalized stratigraphy of the River Valley intrusion (after James et al., 2002b). The stratigraphic column shows in detail the units defined in the basal 100 m of the River Valley intrusion, together with an indication of typical precious metal concentrations (after James et al., 2002b).

Source: *Holwell et al. (2014).*

Along the Grenville Front, in northwest Dana Township, the River Valley Intrusion is in thrust contact with quartzite of the Mississagi Formation (Davidson, 1986). In west-central and southwest Dana Township, the River Valley Intrusion is in contact with mafic and felsic metavolcanic rocks of the lower Huronian Supergroup (Easton and Hrominchuk, 1999).

On the basis of surface mapping and diamond drilling, the idealized sectional stratigraphy of the mineralized environment within the margin of the River Valley Intrusion consists of five major units (see Figure 7.3), which from west to east are as follows:

- **Layered Sequence**: units of massive pyroxenite to anorthosite, forming the bulk of the River Valley Intrusion; layering is poorly developed but where present is subvertical.

- **Inclusion-bearing Zone**: 1.65 m to 98.50 m wide; scattered, elevated PGE values; mainly leucogabbro-gabbro fragments (<20% volume) with either fine-grained mafic matrix or medium-grained felsic matrix; fragments are generally larger (decimetre to metre scale) than those in the Breccia Zone.

- **Breccia Zone**: 11.50 m to 193.05 m wide; elevated PGE values (Main Zone); mainly gabbro melagabbro fragments (>20% volume) with fine- to medium grained mafic matrix; fragments are generally small (centimetre to decimetre scale). This Unit is the most important host rock for PGM mineralization at River Valley.

- **Boundary Zone:** 0 m to 40 m wide; also referred to as footwall breccia; where present, consists of country rock (Archean paragneiss/migmatite) mixed with River Valley Intrusive rocks.

- **Country Rock:** Footwall or hanging wall Archean paragneiss-migmatite-gabbro and Huronian metasedimentary rocks.

7.3 HYDROTHERMAL, METAMORPHIC AND STRUCTURAL OVERPRINTS

In general, the rocks of the River Valley Intrusion are hydrothermally altered, metamorphosed to low- and medium-grade regional metamorphic mineral assemblages, and structurally deformed.

7.3.1 Regional Metamorphism and Structural Geology

The River Valley Intrusion north of the Sturgeon River Fault, shows an increase in metamorphic grade to southeast from the Grenville Front and into the main Grenville Terrane (Figure 7.1). River Valley Intrusion rocks west of Dana Lake show a mid- to upper-greenschist facies regional metamorphic overprint. At the Lismer Ridge Zone, the regional metamorphic grade is lower amphibolite facies. From the Varley to Razor to Mustang Zones, the regional metamorphic grade is mid- to upper-amphibolite facies.

North of the Sturgeon River Fault, numerous northeast-trending discreet shears/faults transect the River Valley Intrusion and are interpreted to be synchronous with development of the Grenville Front Thrust and Grenville Thrust Boundary Fault. In addition, north-trending faults cut the River Valley Intrusion. These north-south faults occur approximately 0.5 km to 1.0 km apart and bound segment of the intrusion that have apparent displacements of up to 1.3 km to the south-southwest or north-northeast. These faults may be part of the Upper Wanapitei River Fault system, which has a protracted history dating back to at least 2,170 Ma (Buchan and Ernst, 1994; Easton, 2003).

A zone of northwest-trending faults transects the River Valley Property parallel to the Sturgeon River Fault (Figure 7.3). The Sturgeon River Fault juxtaposes highly deformed and recrystallized River Valley Intrusion rocks of the Grenville Province against River Valley Intrusion rocks of the Southern-Grenville Province Boundary Zone (Easton, 2003; Figure 7.1). River Valley Intrusion rocks north of the Sturgeon River Fault generally are much less deformed and commonly exhibit preserved or partly preserved primary magmatic textures and even minerals.

7.3.2 Hydrothermal Alteration and Metamorphic Overprints

The manifestations of the hydrothermal and metamorphic overprints of the primary magmatic mineral assemblage and textures are highly variable (Price, 2010; Holwell *et al*., 2014). The following descriptions and interpretations are derived largely from Holwell *et al.* (2014).

7.3.2.1 Mafic Igneous Inclusions

The mafic igneous inclusion rock types are melano-, meso-, and leucogabbros, made up of varied proportions of clinopyroxene and plagioclase. The gabbroic mineralogy is altered in two texturally different ways, with some samples displaying a hydrothermal alteration assemblage and texture (Figure 7.4A) that is possibly related to greenschist metamorphism, and others a recrystallized amphibolite-facies metamorphic assemblage (Figure 7.4B). In the hydrothermally altered rocks, the mineralogy is dominated by partial to total replacement of the pyroxenes by fine-grained acicular tremolite and actinolite (Figure 7.4A). Sulphides are overprinted by the secondary amphiboles and appear to have been present in the interstices to the original silicate minerals (Figure 7.4A).

In rocks with a metamorphic texture, all clinopyroxene recrystallized to fine-grained hornblende and biotite (Figure 7.4B). Plagioclase remains largely unaltered, although it does show evidence of recrystallization. The recrystallized fine to medium-grained amphiboles and biotite lack fabric. Sulphides are blebby and show minor replacement by amphibole around their margins (Figure 7.4B).

FIGURE 7.4 HYDROTHERMAL ALTERATION AND METAMORPHISM IN THE BRECCIA UNIT

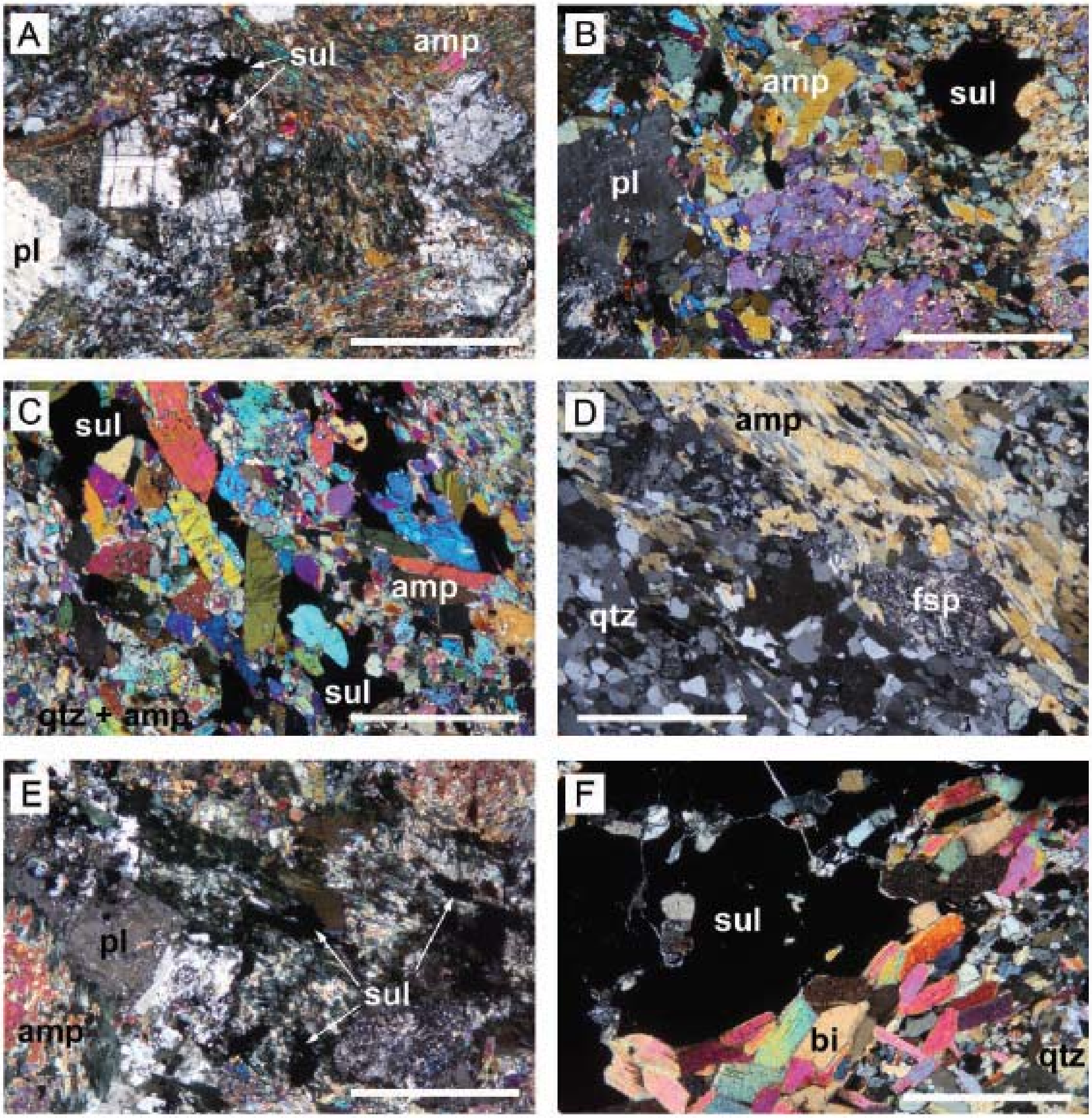


FIG. 4. Petrology (crossed polarized transmitted light) of the main rock types and textural associations in the Breccia zone of the River Valley intrusion. All scales bars = 1 mm. A. hydrothermally altered gabbro inclusion showing relatively unaltered plagioclase (pl), patchily disseminated sulfides (sul), and acicular amphibole (amp) after clinopyroxene. B. Metamorphosed gabbro inclusion showing recrystallized plagioclase and amphibole with blebby sulfides. Amphibole is seen to overprint sulfide around the margins of the blebs. C. Amphibolite inclusion showing both medium- and very fine grained bands of quartz (qtz) and amphibole, with amphibole overprinting sulfide. D. Amphibolite inclusion showing foliation defined by bands of aligned amphiboles and bands of recrystallized quartz. E. Hydrothermally altered leucogabbro matrix showing variably altered plagioclase, patchy sulphides, and alteration amphiboles after clinopyroxene. F. Metamorphosed gabbro matrix with a large bleb of sulfide slightly replaced by biotite (bi) in a recrystallized groundmass of amphibole and quartz.

Source: *Holwell et al., (2014)*

7.3.2.2 Amphibolite Inclusions

Amphibolite inclusions show a recrystallized metamorphic texture of amphibolite grade, composed of aligned hornblende crystals that define a predominant fabric in the rock (Figure 7.4C, -D). Hornblende makes up 70 to 80% of the mineralogy and is present in bands of very fine and medium-grain size, with individual bands several millimetres in thickness (Figure 7.4C). Quartz makes up the remainder of the rock and is recrystallized with 120° triple junctions and lacks evidence for post-crystallization strain (Figure 7.4D). Minor feldspar grains are also present and invariably altered to sericite (Figure 7.4D). Base metal sulphides are overprinted by the metamorphic amphiboles and occur predominantly in the medium-grained bands (Figure 7.4C).

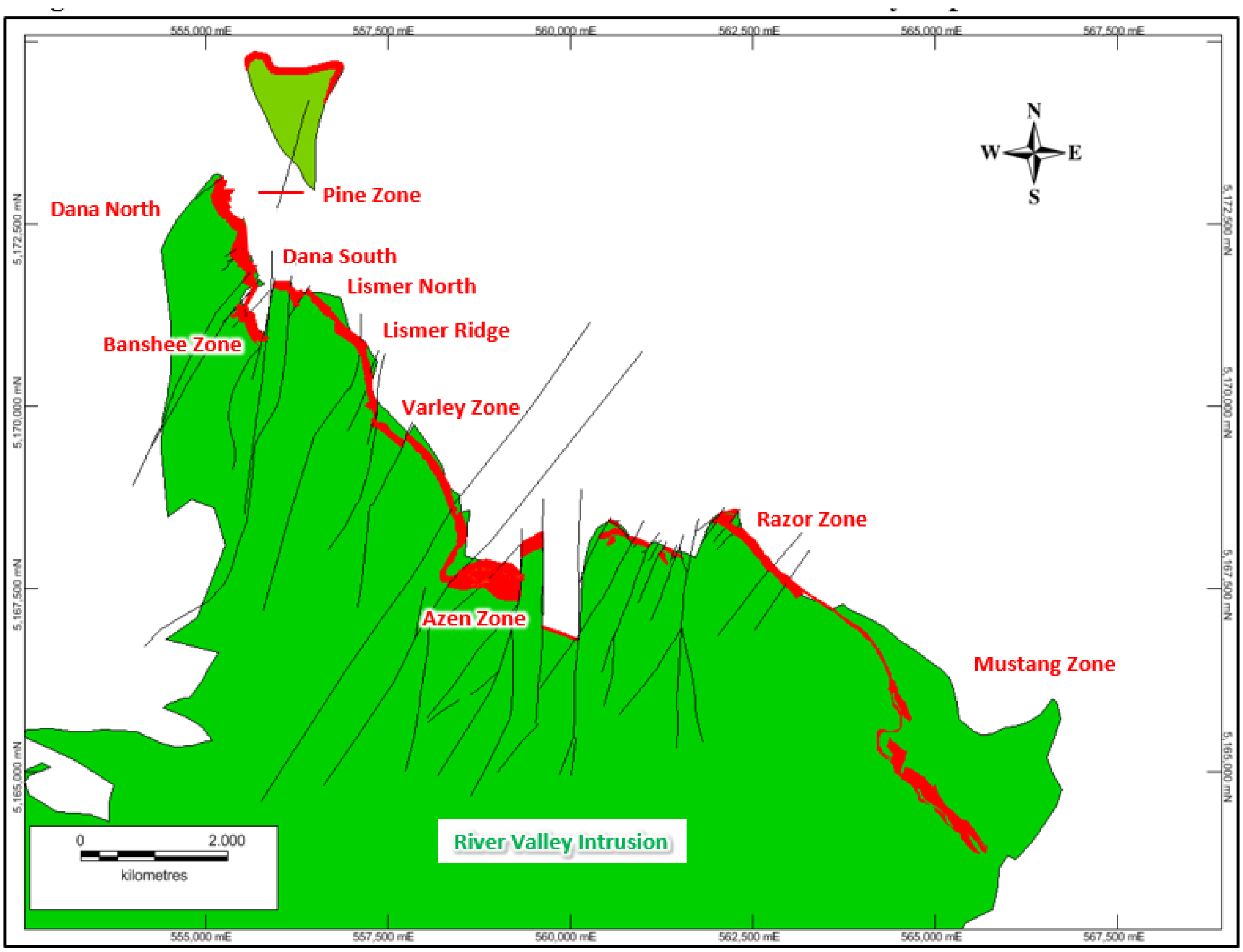
7.3.2.3 Matrix

The matrix of the inclusion-bearing units is composed of mesocratic gabbro that is more homogeneous in terms of modal mineralogy compared with the leuco-, meso-, and melanocratic mafic inclusions. However, the constituent mineralogy and textures of the matrix are almost identical to that of the mafic inclusions, being composed of clinopyroxene (extensively altered or recrystallized to amphibole) and smaller amounts of altered plagioclase. Grain size is medium to coarse and the proportion of plagioclase to ferromagnesian minerals varies and as such, the rocks may be classified as altered leuco-, meso-, or melano-gabbros. As in the mafic inclusions, some samples show a hydrothermal alteration of the clinopyroxenes to fine-grained tremolite and actinolite, which overprint the sulphides producing patches of fine-grained dissemination of sulphides (Figure 7.4E). Other samples show metamorphic textures, with all clinopyroxene recrystallized to fine-grained hornblende and biotite with blebby sulphides with only minor replacement (Figure 7.4F).

7.4 DEPOSIT GEOLOGY

The River Valley Deposit is offset along the high-angle north-northeast trending faults into thirteen separate mineralized zones. Ten of these mineralized zones comprise the Mineral Resource Estimates described in Section 14 of this Technical Report. These ten Zones are: Pine, Dana North, Dana South, Lismer North (also known as Lismer Extension), Lismer Ridge (also known as Lismer Main), Varley, Azen, Razor, and Mustang (Figure 7.5). Each of them is described briefly below.

FIGURE 7.5 DISTRIBUTION OF THE MINERALIZED ZONES OF THE RIVER VALLEY DEPOSIT



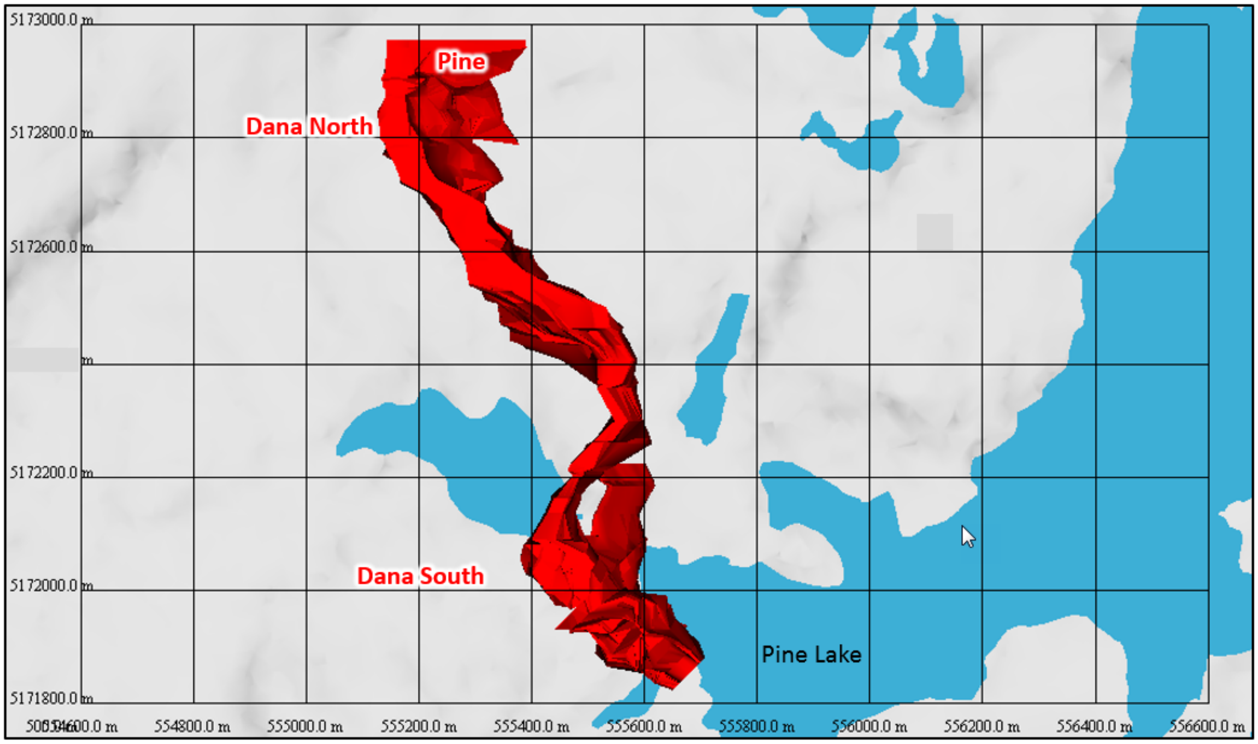
Source: *NAM (2021)*

Description: Geological map showing the offsets of the River Valley Deposit (**red**) along north and northeast-trending faults into the separate mineralized zones. Note that the Pine Zone is not exposed at surface.

7.4.1 Dana North Zone

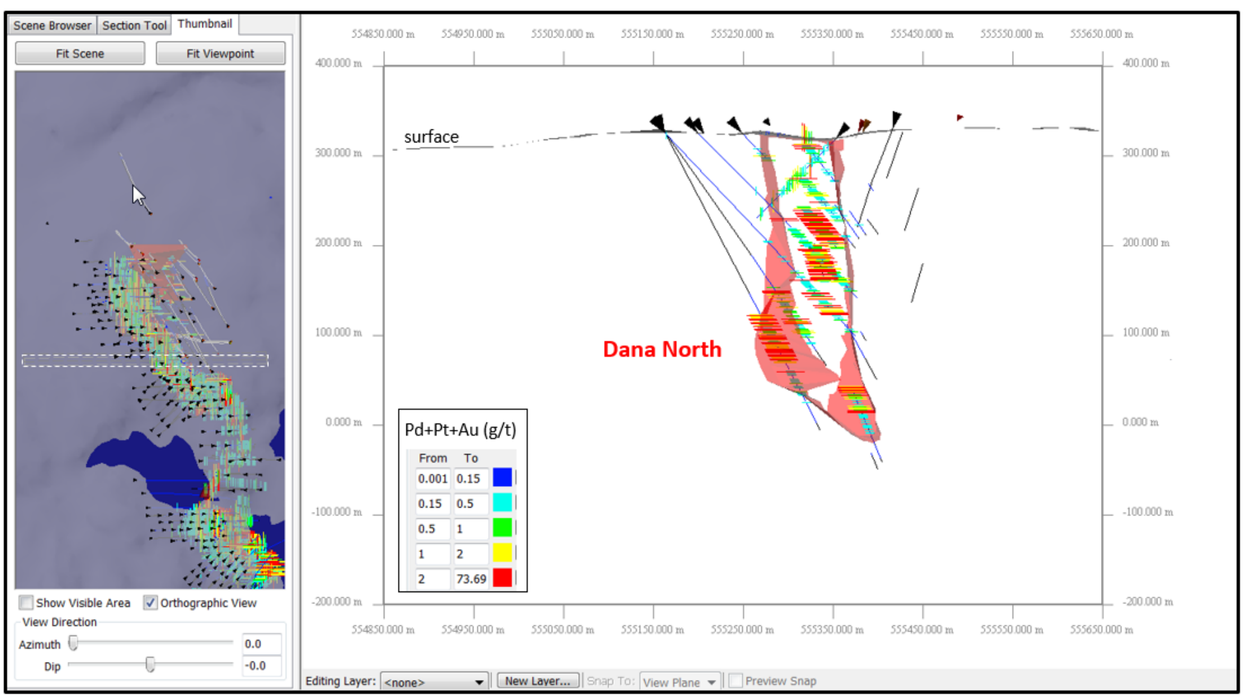
The Dana North Zone is the most northern major mineralized zone of the River Valley Deposit (Figures 7.5 and 7.6). The Zone is well defined by five large, excavated trenches, surface sampling and extensive drilling since 2000. Dana North has a strike length of approximately 1000 m and dips 80 to 85° to the west-southwest, but locally is overturned. The Zone averages 100 m in apparent thickness (Figure 7.7), but varies greatly between drill holes and sections.

FIGURE 7.6 PLAN VIEW OF DANA NORTH-PINE-DANA SOUTH ZONE 3-D MODELS ON TOPOGRAPHY



Source: *P&E (2021)*

FIGURE 7.7 DANA NORTH 3-D CROSS-SECTION PROJECTION 5,172,600 M N



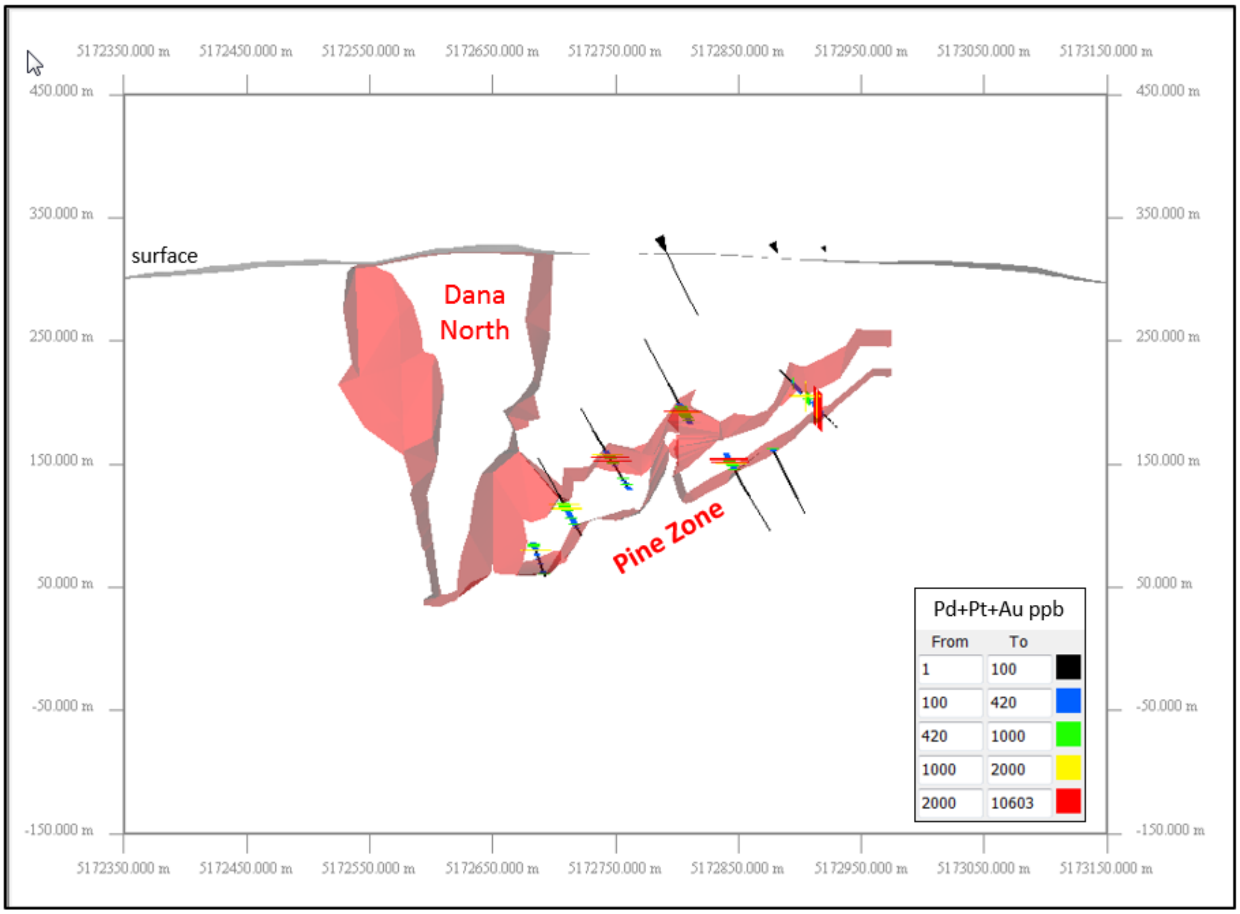
Source: *P&E (2021)*
Description: View looking north through 25 m wide projection window

The host rocks of the Dana North Zone have undergone upper greenschist facies regional metamorphism and appears to have been deformed into an open "S-shape". Magmatic silicate mineralogy (pyroxene and plagioclase) is largely replaced by metamorphic minerals (amphibole and albite). However, primary igneous textures are generally well preserved. Dana North is bound to the north and at depth by the West Boundary Shear Zone and is separated from Dana South by the northeast-trending Platadium Pond Deformation Zone.

7.4.2 Pine Zone

The Pine Zone is a small zone located to the east of Dana North (Figure 7.6). This Zone is not exposed at surface, and therefore is defined completely by drilling. Pine Zone was discovered as a result of two holes drilled to test an IP geophysical feature of interest in 2015. Pine Zone strikes roughly perpendicular to Dana North and dips to the southeast at approximately 40º to 45° (Figure 7.8). The average apparent thickness of the Zone is 45 m, but eastwards it thins to 15 m and ultimately appears to pinch out.

FIGURE 7.8 PINE ZONE 3-D MODEL CROSS-SECTION PROJECTION 555,300 M E



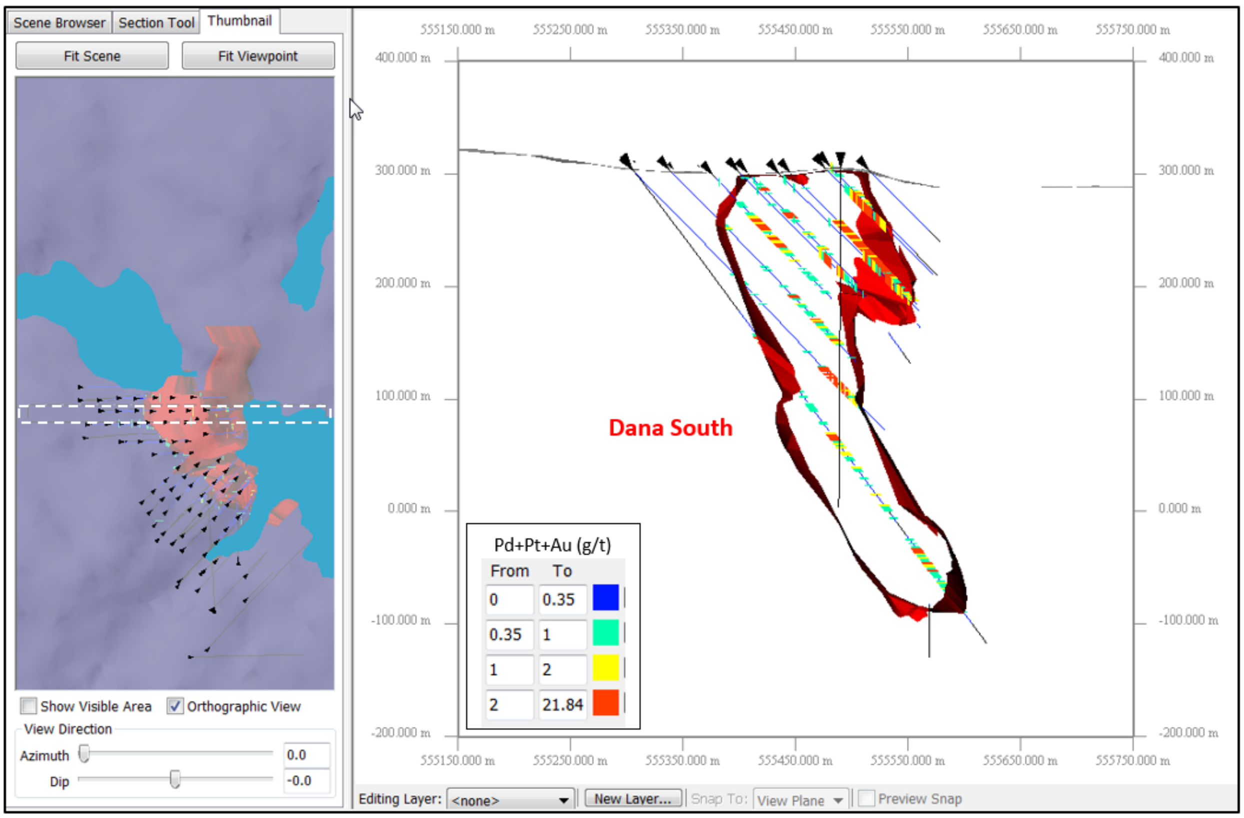
Source: *P&E (2021)*
Description: View looking west through 25 m wide projection window.

Pine Zone is bound to the north and at depth by the West Boundary Shear Zone. Whether the Pine Zone is structurally emplaced or a relict magmatic feeder feature remains to be determined.

7.4.3 Dana South Zone

The Dana South Zone is a moderate size zone located south of Dana North (Figure 7.5). This Zone is defined by exposure in a large, excavated trench (South Zone) and in extensive drilling and surface sampling. This Zone is approximately 500 m in length, strikes roughly north-northwest to northwest and dips 80º to 85° to the west-southwest, but is locally overturned at depth and varies greatly in apparent thickness between drill holes and sections (Figure 7.9). Dana South has been traced in drilling to depths of 500 m below surface, in the deepest drilling completed to date at River Valley.

FIGURE 7.9 DANA SOUTH 3-D MODEL CROSS-SECTION PROJECTION 5,172,050 M N



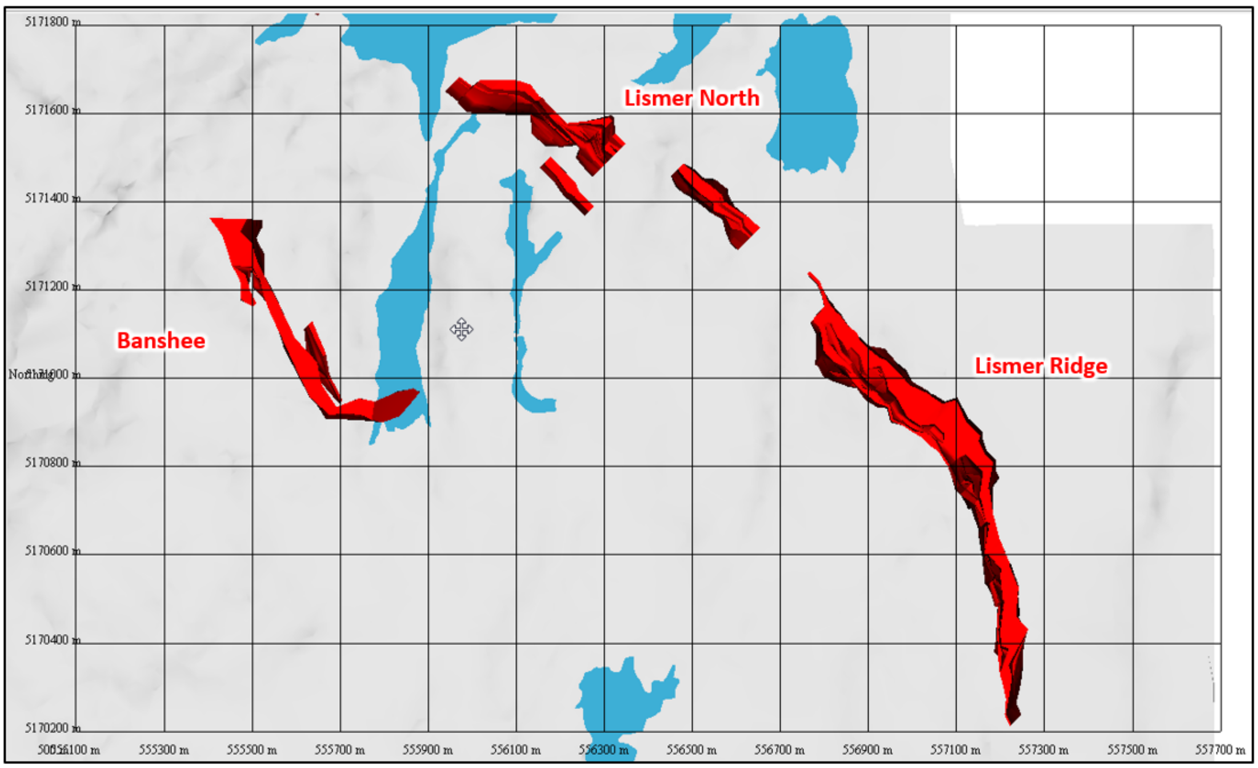
Source: *P&E (2021)*
Description: View looking north through 35 m wide projection window.

The rocks at Dana South have undergone mid- to upper-greenschist metamorphism and the southern extent of this Zone exhibits structural disturbance, due to the proximity of the Dana Lake Shear Zone.

7.4.4 Banshee Zone

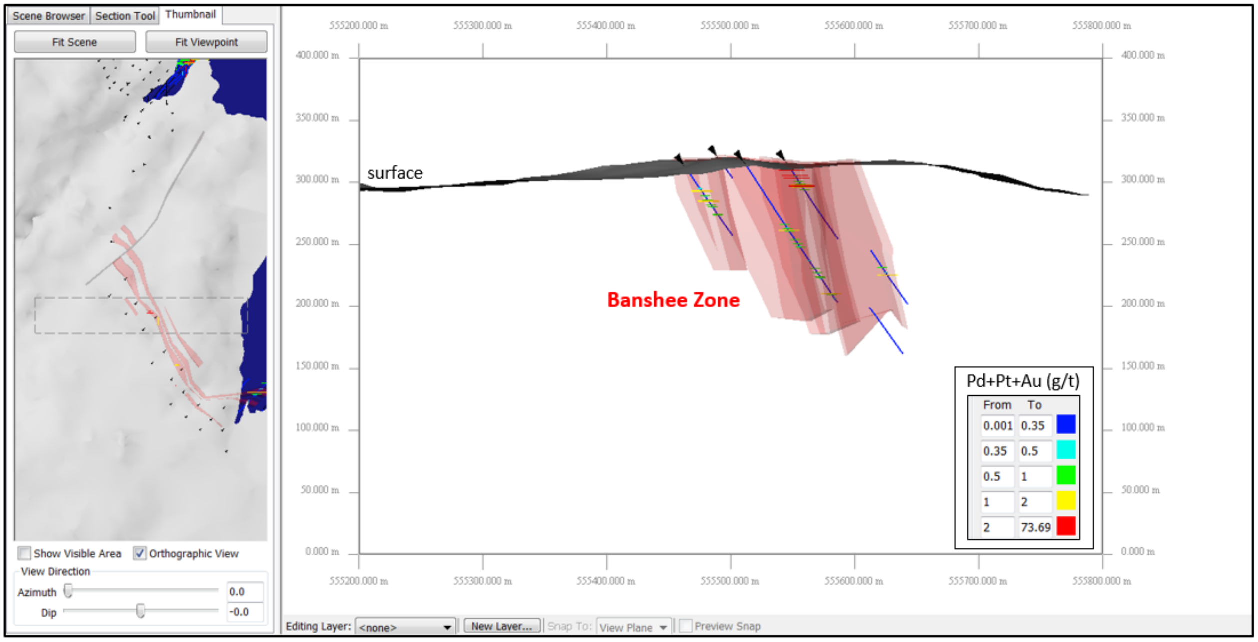
The Banshee Zone is situated to the south of Dana South (Figure 7.5), but has been displaced between 400 and 700 m southwestward relative to the adjacent Dana Zones and Lismer Zones (Figure 7.10). This Zone is defined in surface exposures and in widely spaced drilling (22 drill holes totalling 4.274 m). Banshee is 550 m long, up to 100 m in apparent thickness, strikes generally north-northwest, dips from 60 to 70° southwest to steeply northeast (overturned) and has been traced in drilling to an average depth of only 135 m and a maximum depth 261 m below surface (Figures 7.10 and 7.11).

FIGURE 7.10 PLAN VIEW OF BANSHEE, LISMER NORTH AND LISMER SOUTH ZONES 3-D MODELS



Source: *P&E (2021)*

FIGURE 7.11 BANSHEE ZONE 3-D MODEL CROSS-SECTION PROJECTION 5,171,150 M N



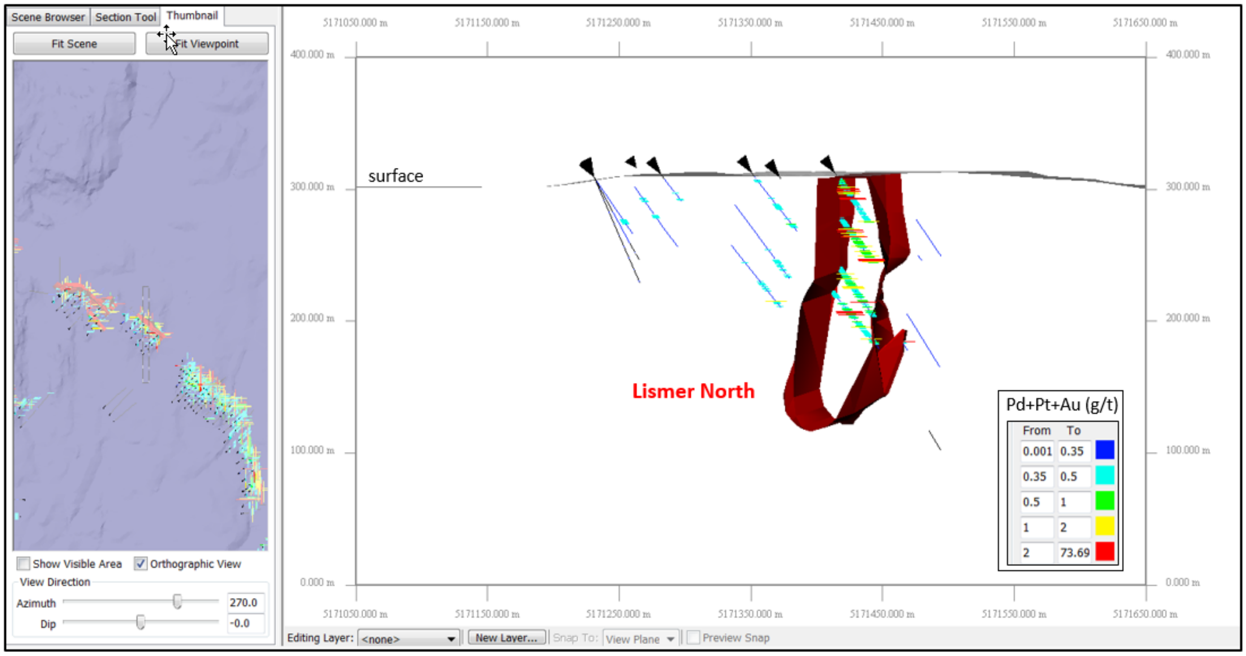
Source: *P&E (2021)*
Description: View looking north through 100 m wide projection window.

The Banshee Zone host rocks have undergone lower amphibolite facies regional metamorphism and show more fractures and penetrative deformation fabrics (shears and foliation) compared to the Dana Zones.

7.4.5 Lismer North Zone

The Lismer North Zone (also known as Lismer Extension) is a structurally complex zone located to the northeast of Banshee Zone, on the eastern side of the Dana Lake Fault Zone system (Figures 7.5 and 7.10). Lismer North has been defined based on surface exposure and drilling. The Lismer North Zone is 850 m long, up to 100 m in apparent thickness, dips from vertical to 60º to 70° south and southwest, and has been traced to depths of approximately 200 m in drilling (Figure 7.12). As in the Dana Zones, the majority of the mineralization is hosted in the Breccia Unit. The Breccia Unit at Lismer North Zone is irregular in shape and widens from 5 m to 10 m at surface to >100 m at depth.

FIGURE 7.12 LISMER NORTH ZONE 3-D MODEL CROSS-SECTION PROJECTION 5,171,350 M N



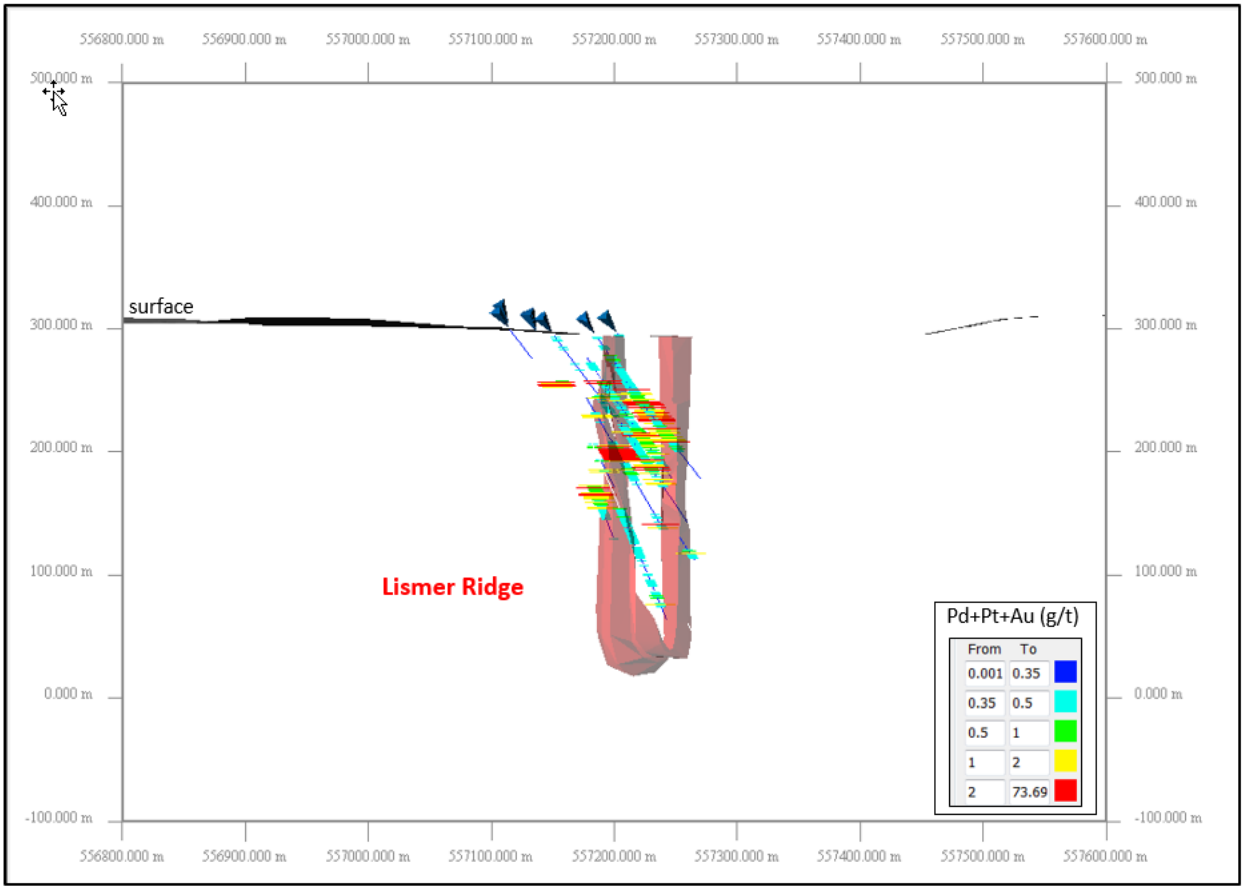
Source: *P&E (2021)*
Description: View looking west through 35 m wide projection window.

The Lismer North Zone is broken by oblique faults and gabbro dykes into three sub-zones that trend east-west, and northwest (Figure 7.10). The regional metamorphic grade is lower- to mid-amphibolite facies and the host rocks exhibit more penetrative structural foliation than the Zones farther north. The rocks are more highly chloritized and contain more biotite relative to the other zones.

7.4.6 Lismer Ridge Zone

The Lismer Ridge Zone is located to the southeast of Lismer North (Figure 7.10). Lismer Ridge is defined from surface exposures and extensive drilling. This Zone is 1600 m long, 25 m to 50 m thick, dips vertically to steeply northeast (i.e., overturned), and has been traced in drilling to a vertical depth of up to 300 m (Figure 7.13). Metamorphic and structural overprints are similar to those at the Lismer North Zone.

FIGURE 7.13 LISMER RIDGE 3-D MODEL CROSS-SECTION PROJECTION 5170450 M E



Source: *P&E (2021)*
Description: View looking north through 100 m wide projection window.

According to Derry *et al*. (2004), mineralization at Lismer Ridge occurs as planar sheets that are steeply dipping to vertical. The sheets vary in thickness from 5 m to 35 m (average 10 m to 25 m) and show excellent continuity along strike. There is also a higher proportion of chalcopyrite relative to pentlandite + pyrrhotite at Lismer Ridge and chalcopyrite is more commonly recrystallized along foliation planes. At Lismer Ridge, blue quartz is not as common in the mineralized rocks as in the Dana Zones.

7.4.7 Varley Zone

The Varley Zone lies southeast of the Lismer Ridge Zone (Figure 7.5) and is similar in geologic setting, mineralization, and geometry. According to GeoSims (2006), between October 2003 and May 2005, 70 holes were drilled totalling 12,811 m at Varley. The drill sites were initially located on 100 m spaced sections spaced approximately 100 m apart, with subsequent in-fill drilling on 50 m spaced sections. A total of 7,183 samples have been analyzed for Pd, Pt, Au, Cu and Ni. The Varley Zone was also included in the detailed lithogeochemical study of Howell *et al.* (2014). A total of 46 samples were analysed for platinum metals. In addition to Pd, Pt and Au, they reported minor PGE values of up to 372 ppb Rh, 32 ppb Ru and 71 ppb Ir.

The drilling defined a continuous zone of low-grade (>0.2 g/t Pd + Pt) mineralization extending for approximately 1,600 m near the steep contact between the gabbro breccia and footwall rocks. At about 5,169,000 m north, the strike of this contact veers from about 345 to 315° as it trends north. Barren mafic dykes were encountered near 5,168,173 m and 5,168,412 m north (in UTM NAD83 Zone 17N).

A relatively higher grade (>1 g/t Pd + Pt) portion is located near the south end of the Varley Zone. This part has been traced in drilling for approximately 400 m along strike and up to 150 m vertically below surface.

7.4.8 Azen Zone

At the Azen Zone, the strike of the basal contact of the River Valley Intrusion changes from north-south to roughly east-west (Figure 7.5). As defined in outcrops, surface excavations, and drilling, the Azen Zone has a strike length of approximately 1,000 m, an apparent thickness of up to 400 m, and dips 30 to 50° south. Twenty holes were drilled totalling 5,166 m, 17 of which were drilled between 2003 and 2005 and three holes were drilled in 2011. Unlike the other Zones to the north, the mineralization at Azen is hosted in the inclusion-bearing or fragment-bearing units rather than the Breccia Unit (Easton *et al.*, 2010). Like Varley, the Azen Zone was also included in the detailed geochemistry study of Howell *et al.* (2014). A total of 39 samples were analyzed for platinum metals and they reported minor PGE values of up to 37 ppb Rh, 6 ppb Ru and 6 ppb Ir.

The host rocks at Azen have been regionally metamorphosed to the mid-amphibolite facies. The mineralization exposed in excavated trenches is described by Hrominchuk and Jobin-Bevans (2000), Easton *et al*. (2004), and Easton and Bevans (2010). The stripped area outcrops contain inclusions of medium-grained gabbronorite, troctolite, amphibolite, alkali feldspar granite and other felsic material within a medium-grained, grey-green olivine gabbronorite. The abundance of inclusions varies and the size ranges from centimetre- to metre-scale (up to 100 m mega-rafts – Easton *et al*., 2006). A variety of pegmatitic veins and pods are also present. The pegmatitic pods are commonly cored by inclusions of felsic material, likely incorporated from the footwall of the intrusion. Mineralization consists of finely disseminated chalcopyrite and pyrrhotite in the matrix and sulphide-rich inclusions. Hrominchuk and Jobin-Bevans (2000) suggest that the Inclusion-Bearing Zone at Azen might be intrusive into the contact zone of the River Valley Intrusion.

7.4.9 Razor Zone

The Razor Zone is located approximately 2 km east of Azen (Figure 7.5). Razor has a strike length of approximately 1,600 m and is up to 150 m in apparent thickness. Dips are 80° southwest at Razor’s north end and steeply northeast (overturned) at its south end. This Zone has been defined in 25 diamond drill holes totalling 4,988 m, all drilled in 2003.

The host rocks have undergone upper amphibolite grade regional metamorphism. Metal grades in drill hole intercepts are relatively low.

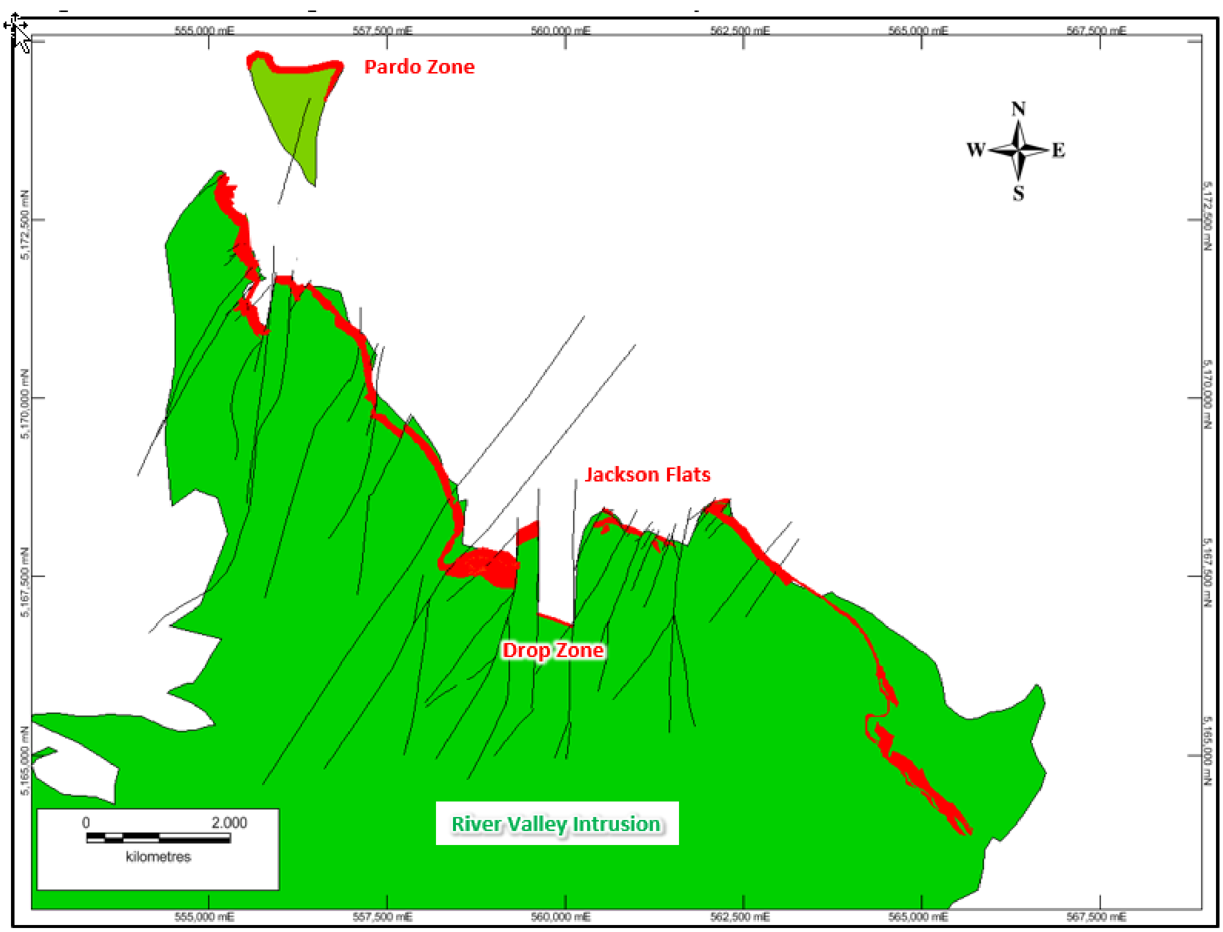
7.4.10 Mustang Zone

The Mustang Zone is located to the southeast and along strike of Razor (Figure 7.14). Mustang is well defined from outcrops and historical excavated trenches and diamond drilling. This Zone has a strike length of 4,000 m, dips 80° to the southwest or northeast (overturned), and is up to 250 m in apparent thickness. In plan view, the Mustang Zone shows a broad "Z-shape". Rather than being on or near the basal contact, much of the Mustang Zone appears to occur within the River Valley Intrusion. However, further geological mapping in the Mustang Zone area is required to confirm this interpretation.

7.4.11 Other Prospects

The Pardo, Drop and Jackson Flats Zones (Figure 7.14) were not included in the Mineral Resource Estimate described in Section 14 of this Technical Report. These Zones were excluded due to lack of drilling, and therefore can be considered targets for future exploration work and Mineral Resource estimation.

FIGURE 7.14 OTHER PROSPECTS OF INTEREST AT RIVER VALLEY



Source: *NAM (2021)*
Description: Geological map showing the offsets of the River Valley Deposit (**red**) along north and northeast-trending faults into the separate mineralized zones. The Pardo, Drop and Jackson Flat Zones are prospects of interest at River Valley.

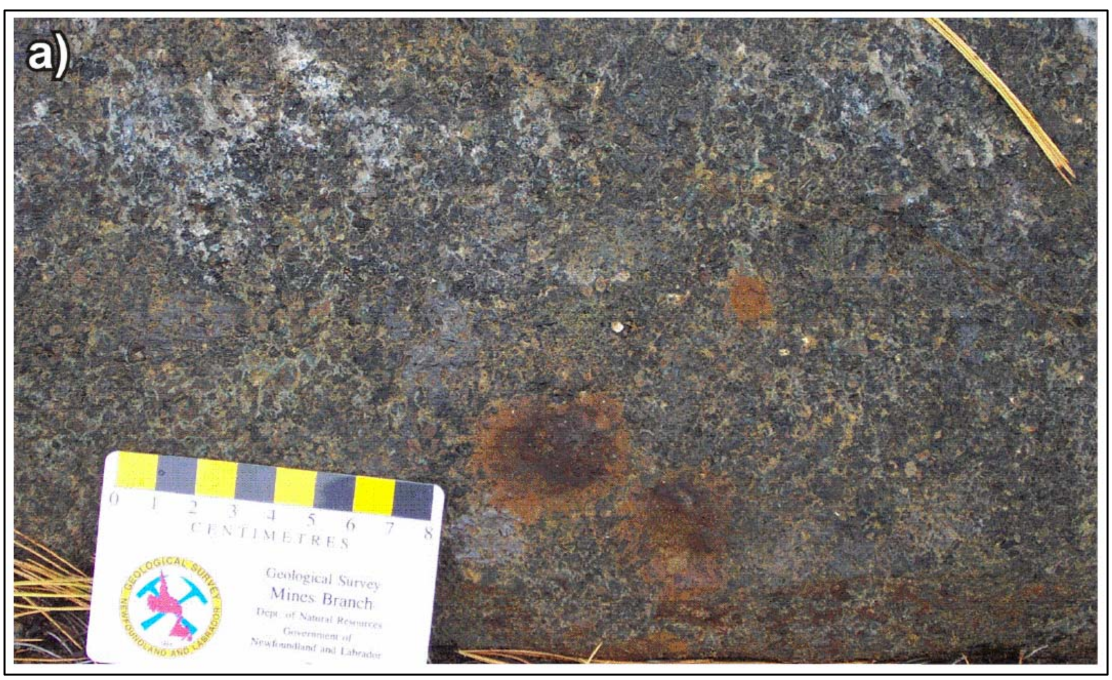
The **Pardo Zone** is the northernmost extent of known mineralization in the River Valley Intrusion (Figure 7.14). This Zone has been traced in outcrops and in drilling for a strike length of approximately 1000 m. Of 106 surface grab samples, nine assayed between 0.35 g/t to 0.50 g/t 3E (the three elements Au + Pt + Pd), six assayed between 0.50 g/t and 1.00 g/t 3E, and one assayed >1.00 g/t 3E. A surface IP survey in 2002 was followed-up by limited drilling in 2004. Eleven holes totalling 2,709 m were drilled on nine 100-m spaced sections. Nine of the drill holes intersected PGM mineralization. The best intersection was 0.631 g/t 3E over 4 m from 188 m downhole in PA-04. In 2020, one of four surface grab assay samples from Pardo returned 0.921 g/t Pd, 0.480 g/t Pt, 0.057 g/t Au and 0.023 g/t Rh.

The Pardo Zone is hosted in River Valley Intrusion located north of the Grenville Front. Its geological relationships with the main body of the River Valley Intrusion, to the south of the Grenville Front, requires further investigation.

The **Drop Zone** is located to the east of the Azen Zone (Figure 7.14). This Zone appears to have been fault offset to the south, somewhat like the Banshee Zone relative to the Dana and Lismer Zones. Drop Zone has a strike length of 500 m and an apparent thickness of 25 m, as defined in eight holes that have been drilled in the area.

The **Jackson Flats Zone** is located between the Drop Zone to the southwest and the Razor Zone to the east (Figure 7.5 and 7.14). It is defined in outcrops (Figure 7.15) and in very limited drilling. The drilling consists of four holes totalling 1,436 m, all drilled in 2005. Within the Zone, mineralization appears to be distributed in five to seven sub-zones (Easton *et al*., 2010), with a total combined strike length of 1,000 m and an apparent thickness of up to 100 m.

FIGURE 7.15 JACKSON FLATS ZONE OUTCROP



Source: *Easton et al. (2010)*
Description: Typical outcrop exposure of mineralized olivine gabbro-norite in the vicinity of the Jackson's Flats Zone, River Valley Intrusion. Note sulphide "burns" to the right of the 8.5 cm long scale card.

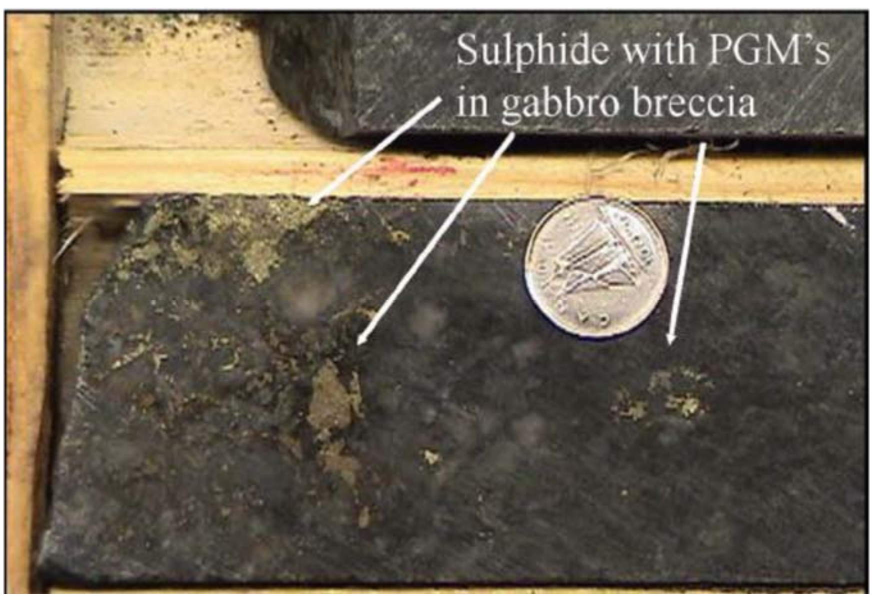
7.5 MINERALIZATION

Disseminated, bleb, fragment, interstitial and veinlet chalcopyrite-pyrrhotite-pentlandite mineralization (<1% to 5% sulphide minerals, up to 10 g/t Pt+Pd) occurs in autolith-rich gabbronorite breccia within 5 to 50 m of the basal contact of the River Valley Intrusion. The mineralization is spatially associated with gabbro-norite cumulates and autoliths that are otherwise poorly represented in the igneous stratigraphy of the River Valley Intrusion.

7.5.1 Sulphide Minerals and Assemblages

The sulphide mineralogy is predominantly pyrrhotite, chalcopyrite and pentlandite, with minor amounts of pyrite and millerite and rare bornite, cubanite, mackinawite and arsenopyrite. Typical sulphides and sulphide mineral associations are shown in Figures 7.16 and 7.17. Large bodies of sulphide are variably altered and replaced by fine-grained secondary amphibole, minor quartz and biotite, which gives many of the bodies irregular contacts or resulted in larger sulphides being reduced in size to small patches of disseminated grains within the alteration silicates. Locally, pyrrhotite altered to pyrite and pentlandite to millerite. Chalcopyrite is also present and may have recrystallized textures. Similar sulphide assemblages, alteration and recrystallization textures have previously been reported associated with PGM mineralization at the Lac des Iles Complex, northwestern Ontario (Djon and Barnes, 2012) and in the Bushveld Complex, South Africa (Smith *et al.*, 2011).

FIGURE 7.16 SULPHIDE MINERALS IN RIVER VALLEY DRILL CORE



Source: *NAM (2021)*

FIGURE 7.17 SULPHIDE MINERALS AND ASSEMBLAGES – MICROSCOPIC

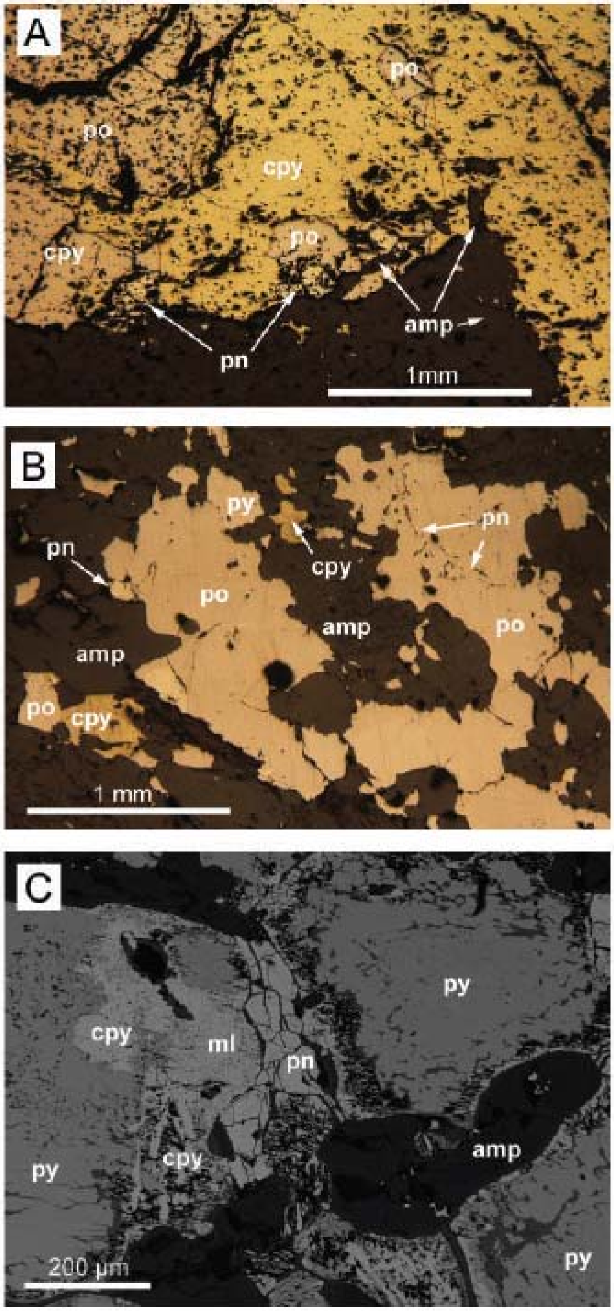


FIG. 5. Mineralogy of the base metal sulfides. A. Reflected light image of typical centimeter-scale bleb of magmatic sulfide from a mafic inclusion containing pyrrhotite (po), chalcopyrite (cpy), and pentlandite (pn) with minor replacement by amphibole (amp) around the margins. B. Reflected light image of magmatic sulfide assemblage of pyrrhotite, pentlandite, and chalcopyrite with minor pyrite (py), overprinted by metamorphic amphibole in an amphibolite inclusion. C. Backscattered electron image of low-temperature alteration of a magmatic sulfide assemblage from a metamorphosed matrix sample, showing total replacement of pyrrhotite by pyrite, partial replacement of pentlandite by millerite (ml), and recrystallization of chalcopyrite, overprinted by amphibole.

Source: *Holwell et al., (2014)*

7.5.1 Platinum Group Minerals and Assemblages

Holwell *et al.* (2014) identified a total of 172 PGM in ten polished thin-sections from mineralized (>1 g/t Pd) samples of mafic inclusions, amphibolite inclusions, and gabbroic matrix from River Valley. Each individual grain was classified by compositional type and textural association (Table 7.1). The vast majority of PGM were Pd and Pt minerals; with a few grains of platarsite, hollingworthite and laurite (the latter two phases being the sole carriers of Rh and Ru). Minerals containing Os or Ir were not identified. The PGM identified were grouped as: (1) Pd, Pt tellurides; (2) Pd antimoarsenides; (3) Pt arsenides; (4) Pd arsenides; (5) Pd stannides; (6) PGE sulpharsenides; (7) Pt, Pd sulphides; and (8) Au- and Ag-bearing minerals. Each occurrence was also classified by its textural association: enclosed in other PGM, enclosed in silicates, at silicate-silicate boundaries, enclosed in base metal sulphides, at sulphide-silicate boundaries, or sulphide-sulphide boundaries.

TABLE 7.1
PLATINUM-GROUP MINERALS AT RIVER VALLEY
BY COMPOSITION AND TEXTURAL ASSOCIATION

			Mafic inclusions			Matrix		
Name	Ideal formula	Type	Hydrothermal	Metamorphic	Amphibolite inclusions	Hydrothermal	Metamorphic	Total
Kotulskite	PdTe	Pt/Pd telluride	11	3	7	58	20	99
Sperrylite	$PtAs_2$	Pt arsenide	1	20		7	3	31
Merteite I	$Pd_{11}(Sb,As)_4$	Pd antimoarsenide	3		2	5		10
Hollingworthite	RhAsS	PGE arsenosulfide				6	1	7
Vysotskite	PdS	PGE sulfide			3	1	2	6
Stillwaterite	Pd_8As_3	Pd arsenide				4	1	5
Electrum	Au-Ag	Au/Ag minerals		1	1	1		3
Moncheite	$PtTe_2$	Pt/Pd telluride		1	1			2
Arsenopalladinite	$Pd_8As_{2.5}Sb_{0.5}$	Pd antimoarsenide				1		1
Atokite	$(PdPt)_3Sn$	Pd stannide			1			1
Braggite	(Pt,Pd)S	PGE sulfide			1			1
Cooperite	PtS	PGE sulfide			1			1
Laurite	RuS_2	PGE sulfide					1	1
Platarsite	PtAsS	PGE arsenosulfide				1		1
Unconstrained	Pd-Te-Bi-As	Pd-Pt telluride				1		1
Unconstrained	Pt-S-As	PGE sulfide				1		1
Unconstrained	(Pd,Pt)-S-Bi	PGE sulfide			1			1
							Total:	172

Source: *Holwell et al. (2014)*

7.5.1.1 Grain Size and Relative Area Analysis

According to Holwell *et al.* (2014), the grain sizes of the PGM ranged from <1 µm to 41 µm, with most <10 µm in their longest dimension. The long and short axes of each PGM grain were measured in micrometres. Relative proportions of the various mineral phases and PGM species type (Table 7.2) are based on an estimation of area by using the long and short axes of each grain to approximate each to the area of an ellipse, as described by Holwell *et al.* (2006). This procedure produces data which accurately reflect the relative proportions of each PGM type within an assemblage and is preferable to proportions of PGM type by number of grains, which can be biased by a relatively large amount of very small grains.

TABLE 7.2
PLATINUM-GROUP MINERALS AT RIVER VALLEY BY MINERAL PHASE

	Mafic inclusions		Amphibolite inclusions	Matrix		
	Hydrothermal	Metamorphosed		Hydrothermal	Metamorphosed	All PGM
Pd/Pt tellurides	27.70	64.07	77.62	47.85	82.85	60.02
Pd antimoarsenides	67.63		1.67	8.55		15.57
Pt arsenides	4.67	35.65		5.89	7.25	10.69
PGE sulfides			14.52	13.26	9.79	7.51
Pd arsenide				19.09	0.03	3.82
PGE sulfarsenides				5.33	0.09	1.08
Pd stannides			5.24			1.05
Au-Ag minerals		0.28	0.95	0.04		0.25

Source: *Holwell et al. (2014)*

7.5.1.2 Assemblages

The PGM assemblage in each lithology is shown in Table 7.2 and the textural associations of the PGM within each lithology are shown in Figure 7.18. Overall, the assemblage is fairly restricted with only six minerals being identified more than five times. The vast majority are Pd phases, with fewer Pt minerals, and rare other phases. Pd-Pt tellurides make up 60% by area of all PGM identified, with kotulskite (PdTe), making up 58% by area of all PGM identified, with a single grain of moncheite (PtTe2) accounting for the other 2%. Sperrylite (PtAs2) is common and Pd arsenides, Pd antimoarsenides, and Pt-Pd sulphides also make up a small, but significant proportion of the overall assemblage. The PGE sulpharsenides hollingworthite (RhAsS)-platarsite (PtAsS)-ruarsite (RuAsS) series carry all of the Rh and most of the Ru observed, but are relatively minor. Electrum is very rare with only four grains identified. Texturally, most PGM identified occur as single-phase grains and although the majority of grains were associated with silicates (Figure 7.18). Note, however, that with all PGM grains identified located less than a mm away from sulphides. In other words, no PGM grains were found in areas free of sulphides.

FIGURE 7.18 PLATINUM-GROUP MINERAL ASSOCIATIONS AT RIVER VALLEY

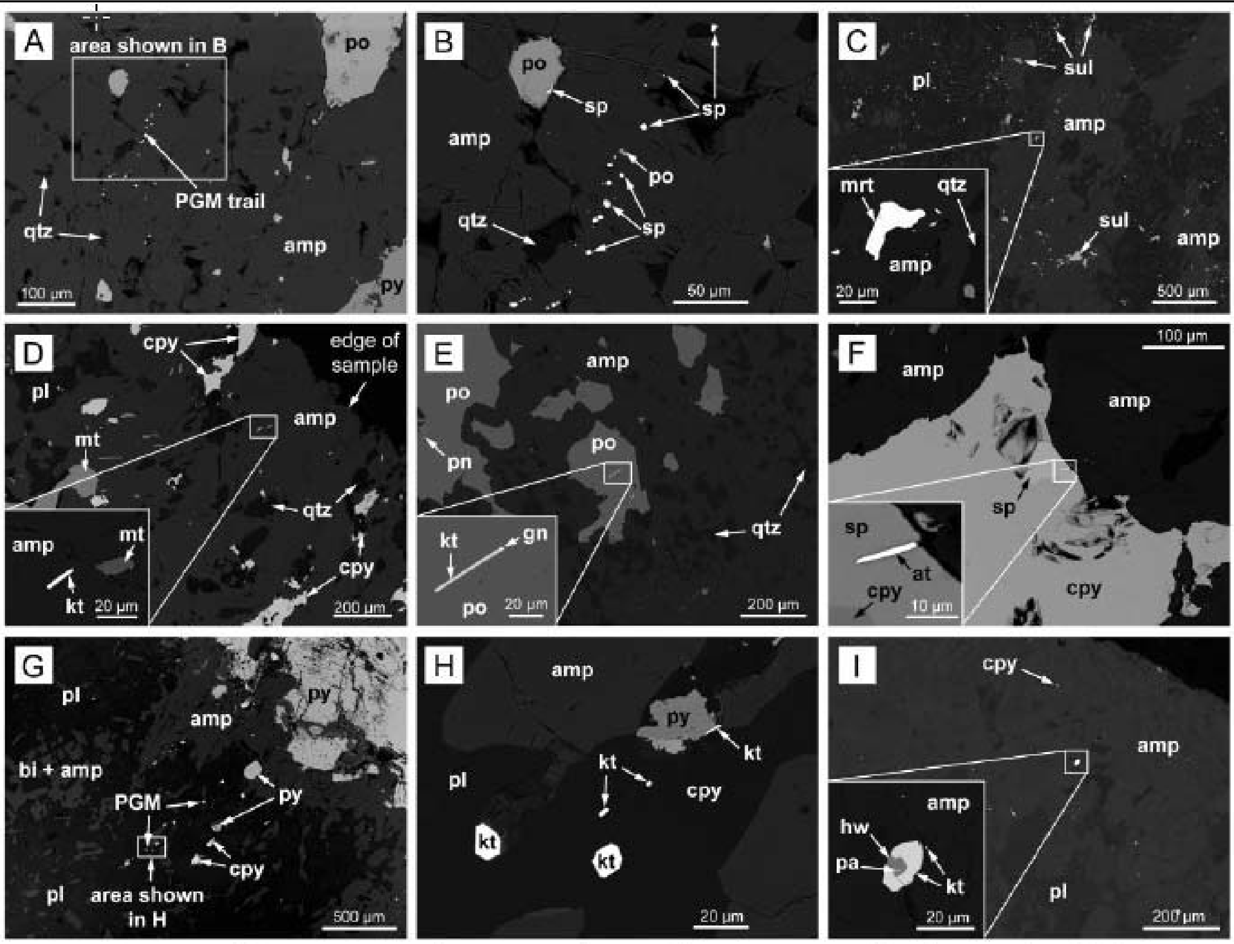


FIG. 6. Typical platinum group mineral associations in the River Valley intrusion. A-C. Mafic inclusions. D-F. Amphibolite inclusions. G-I. Matrix samples. A. Trail of PGM hosted by recrystallized amphiboles (amp) and minor quartz (qtz) close to, but not in contact with, large grain of pyrrhotite (po) and pyrite (py). B. Close-up view of the PGM trail shown in (A), with several euhedral sperrylite (sp) grains hosted by amphibole and a single sperrylite hosted on the margin of a small pyrrhotite grain. C. Fine-grained disseminated PGM and sulfides within hydrothermally altered gabbro made up of plagioclase (pl) and secondary amphiboles. The PGM grain shown in the inset is a merteite I (mrt), hosted in the margin of an amphibole. D. Amphibolite inclusion made up of amphibole and minor quartz with chalcopyrite (cpy) and minor magnetite (mt), showing a lath of kotulskite (kt) included in recrystallized amphibole. E. Amphibolite inclusion showing the replacement of the sulfide blebs composed of pyrrhotite and minor pentlandite (pn) by amphibole and quartz. A lath of kotulskite is present as an inclusion in pyrrhotite, in association with a small grain of galena (gn). F. Amphibolite inclusion showing chalcopyrite and minor sphalerite (sp) being replaced by amphibole. A small lath of atokite (at) is present within the sphalerite. G. Metamorphosed gabbro matrix with recrystallized plagioclase, amphibole, and biotite, and sulfides altered to pyrite and replaced by amphibole. Minor chalcopyrite, pyrite and PGM are present within 1 mm of the main sulfide bleb. H. Close-up view of several euhedral kotulskite grains and minor sulfide hosted by plagioclase shown in (C). I. Polyphase PGM hosted by recrystallized amphibole within metamorphosed gabbro matrix. The PGM grain is made up of kotulskite, hollingworthite (hw), and platarsite (pa).

Source: *Holwell et al. (2014).*

In detail, the PGM assemblages vary with host rock type. The different PGM assemblages are not preferentially associated with the matrix or a particular inclusion type, but rather with the type of alteration the rocks underwent. The hydrothermally altered rocks host Pd antimoarsenides and Pd arsenides; however, these PGM were not observed in the metamorphosed rocks. There is almost twice the amount of Pd-Pt tellurides in the metamorphic textured rocks than in their hydrothermally altered equivalents (Table 7.2).

7.5.1.3 PGM in Mafic Inclusions

Holwell *et al*. (2014) divided the mafic inclusions into those that show hydrothermal alteration and those that show recrystallized metamorphic textures. Both show a very restricted assemblage made-up of tellurides, arsenides, and antimoarsenides (Figure 7.18 A-C). In the hydrothermally altered samples, the majority of the PGM are Pd antimoarsenides (Figure 7.18C) with only 28% Pd-Pt tellurides, whereas in the metamorphosed inclusions, 64% are Pd-Pt tellurides and there are no Pd antimoarsenides (Table 7.2).

In terms of the PGM associations, the hydrothermally altered mafic inclusions also show some differences when compared to the metamorphosed mafic intrusions. In both rock types, the PGM are strongly associated with silicates, commonly as inclusions, and generally in amphibole (Figures 7.18A-C). In Figures 7.18A and B, a trail of sperrylites is apparent included within metamorphic amphiboles, rather than occurring along boundaries, and do not show post-metamorphic mobilization along fractures. In the altered samples, PGM are located within silicates enclosed by patches of altered sulphides (Figure 7.18C).

7.5.1.4 PGM in Amphibolite Inclusions

The PGM assemblages in the amphibolite inclusions are similar to those in the metamorphosed mafic inclusions. They are dominated by Pd-Pt tellurides (Figure 7.18D-E), with minor PGE sulpharsenides, and a single grain of the Pd stannide (atokite; Pd_3Sn) (Figure 7.18F) and Pd antimoarsenides (Table 7.2). The kotulskite grains in amphibolite inclusions commonly form laths and are found as inclusions in silicates (Figure 7.18D) and sulphides (Figure 7.18E-F). Although the PGM in the amphibolite inclusions have the most varied number of associations out of all rock types, the minerals commonly have a close proximity to sulphides. The example shown in Figure 7.18E shows a kotulskite lath included in pyrrhotite overprinted by amphiboles. Figure 7.18D illustrates a more extreme degree of alteration, in which the sulphide has been more completely replaced by amphibole, although the PGM lath appears unaffected by this alteration and now occurs as an inclusion in the silicate.

7.5.1.5 PGM in the Matrix

The rock matrix can also be subdivided into samples that have been altered hydrothermally and those that have undergone metamorphic recrystallization. The difference between the metamorphic and hydrothermal assemblages and associations of matrix rocks is almost identical to those observed for the mafic inclusions (Table 7.2). The most abundant PGM type is Pd-Pt tellurides (Figure 7.18G-I) with almost double the amount in metamorphosed than the hydrothermal matrix rocks (Table 7.2). There are no Pd antimoarsenides in the metamorphosed matrix and only 0.03% Pd arsenides, whereas these two PGM types combined make up 28% of the hydrothermally altered matrix rocks.

The PGM in the matrix rocks are present predominantly as inclusions in silicates with variable amounts of associated base metal sulphides (Figure 7.18G-I). In Figure 7.18G, the PGM are included in silicates, but located at the original boundary of a base metal sulphide grain. Although the PGM are no longer attached to the sulphide, they appear to have undergone little or no recrystallization during alteration of the sulphide. The hydrothermally altered matrix sample shown in Figure 7.18I shows an example of a polyphase crystal of hollingworthite, kotulskite and platarsite included within silicates, with only a few small sulphides within a mm of the PGM. This is an example of where sulphide alteration is most progressive, with little of the original sulphide remaining.

8.0 DEPOSIT TYPES

River Valley is a contact-type PGE mineralization deposit (Figure 8.1) (Peck *et al*., 2001; Kaykowski *et al.*, 2018). Mineral exploration at River Valley has traditionally focused on the contact-type PGE mineralization in the known zones. However, presence of several highly-anomalous assays of surface grab samples of outcrops within higher portions of the River Valley Intrusion stratigraphy suggests that opportunities may exist for reef or stratiform-type PGE mineralization, or narrow, high-grade breccia zones internally within the Intrusion.

FIGURE 8.1 CONTACT-TYPE PGM MINERALIZATION

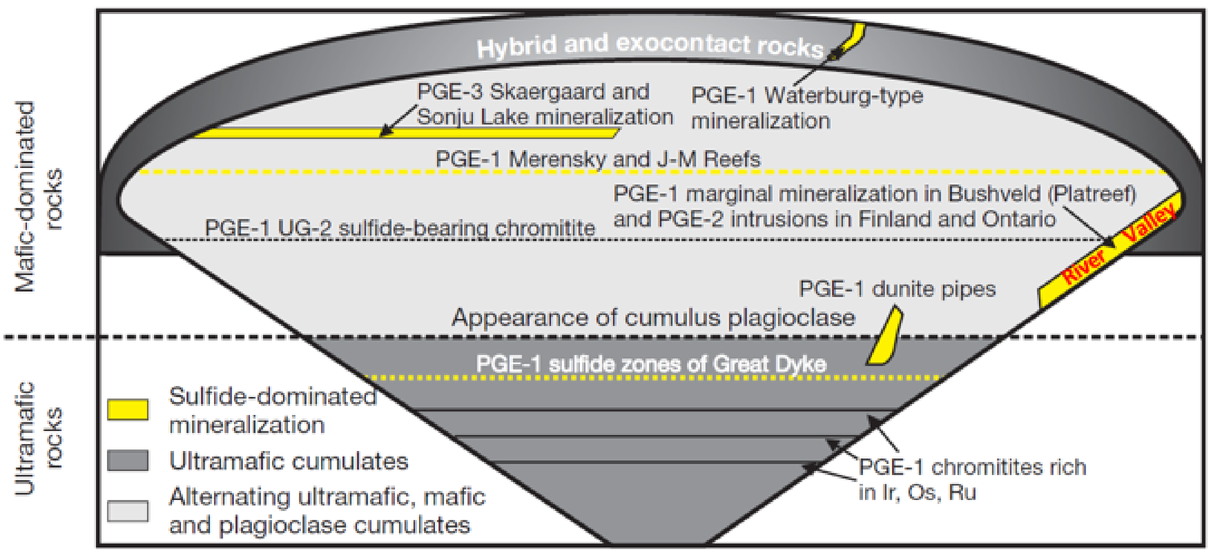


FIG. 4. Schematic model of an LIP-related layered intrusion, showing the relative position and petrological affinities (e.g., chromite vs. sulfide dominated; ultramafic vs. mafic; reef vs. contact styles of mineralization) of the differing types of LIP-related PGE-dominated magmatic sulfide deposits discussed in the text; adapted from Hoatson et al. (2006) and Naldrett (2010a). Note that a single layered intrusion is unlikely to host all of these styles of mineralization, and that PGE deposits with differing magmatic affinities can occur in similar positions within an intrusive system, as exemplified by the similar positions of PGE-1 contact-type mineralization of the Platreef section of the Bushveld Complex, part of the Bushveld LIP, and PGE-2 contact-type mineralization hosted by 2500 to 2450 Ma intrusions of the Baltic LIP (BLIP) of Finland and Russia and the 2490 to 2450 Ma Matachewan LIP of Ontario and Quebec in Canada.

Source: *Modified by P&E after Kaykowski et al. (2018)*

8.1 CONTACT-TYPE PGE MINERALIZATION

Contact-type PGE mineralization develops as the result of sulphur-saturation brought on by the interaction of the fertile parental magma with the surrounding country rock lithologies. The contamination of the initial fertile parental magma by the addition of either SiO_2 and (or) sulphur can directly result in sulphur-saturation and the separation of a PGE-rich immiscible sulphide. The addition of SiO_2 and (or sulphur) is typically achieved by the assimilation of either local country rock lithologies and (or) the assimilation of breccia fragments previously developed along the contact margin. Analogues for this model include the Paleoproterozoic Platreef Deposit (South Africa) (McDonald and Holwell, 2011) and Paleoproterozoic Portimo Complex (Finland) (Alapieti and Lahtinen, 2002), and possibly the Archean Lac des Iles Deposit (northwestern Ontario) (Djon and Barnes, 2012; Djon *et al.*, 2018).

Contact-style PGE mineralization is the most common form of PGE mineralization within the East Bull Lake Intrusive Suite, which includes the River Valley Intrusion. Mineralized zones occur within 200 m to 300 m of the footwall contact and are commonly 20 m to 100 m wide. Mineralization occurs typically as fine- to medium-grained disseminated to blebby chalcopyrite, pyrrhotite and pentlandite within heterolithic and brecciated gabbro or norite.

Vigorous convection and explosive breccia-producing emplacement of sulphide-saturated magma formed PGE-rich zones at the margins (sidewall or floor?). The magmatic sulphide zones are overprinted and enclosed by a broader envelope of metamorphic and (or) hydrothermal sulphide mineralization of similar mineralogy (± pyrite) that extends into adjacent leucogabbronorite to anorthosite units, and less so into the country rocks. The hydrothermally enriched zones contain up to 2% to 10% sulphide minerals with up to 1 g/t to 10 g/t Pt+Pd (and higher), and represent the main exploration target. The higher-grade zones are enclosed by broader, lower-grade mineralization with 20 ppb to 50 ppb Pt + Pd.

8.2 REEF-TYPE PGE MINERALIZATION

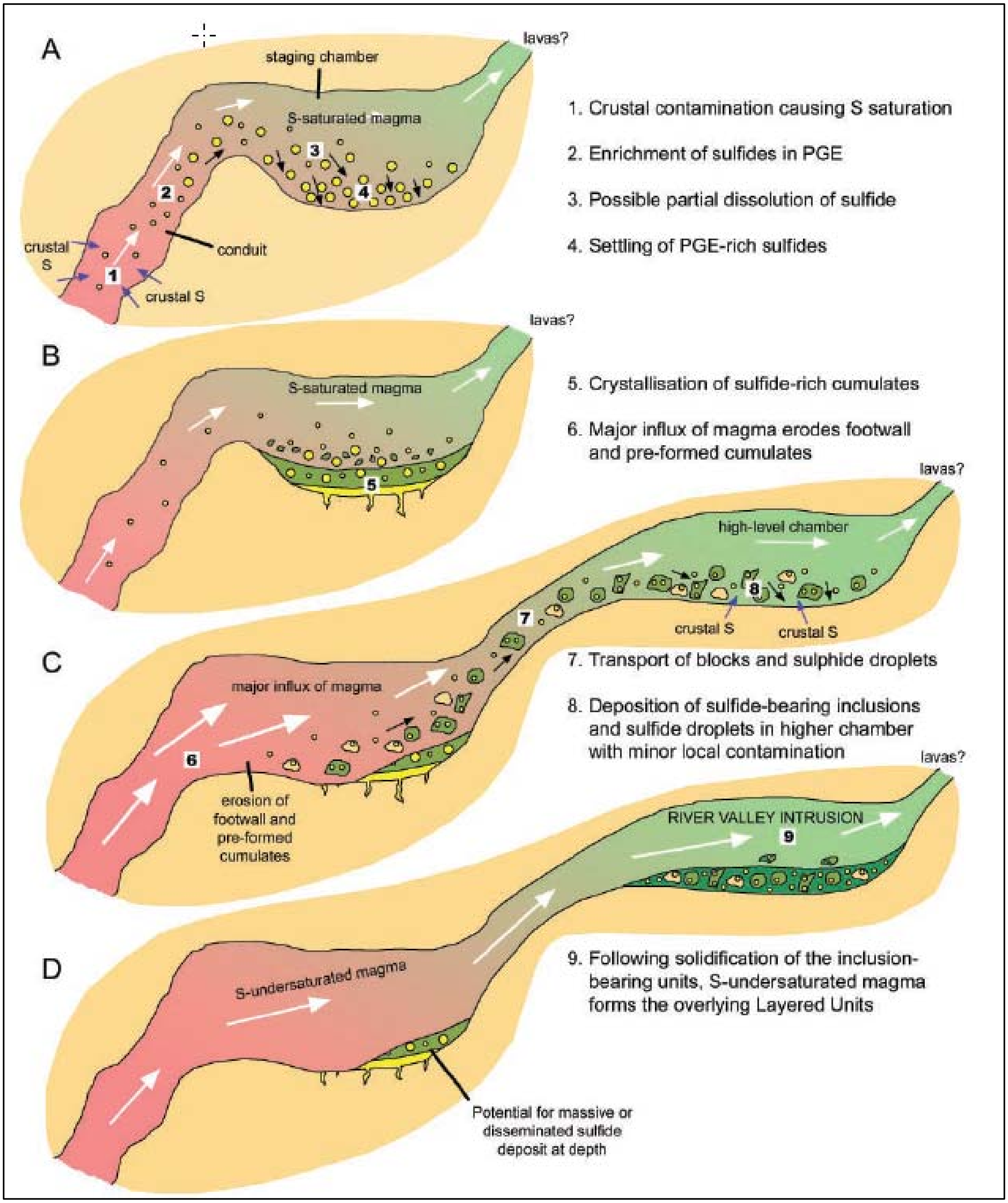
Reef-type PGE mineralization is a stratabound or stratiform style of mineralization that occurs higher up in the stratigraphy of an intrusion at the contact between two separate and distinct lithological units (Naldrett, 2010). Sulphur-saturation and therefore sulphide segregation can be the result of the interaction between distinctly different types of magma, with sulphur-saturation occurring at their interface. Geochemical evolution of the overlying magma can also cause sulphur-saturation and the separation of immiscible sulphides can accumulate between the two units.

Due to the stratigraphic control and narrow target widths (1 to 10 m) of reef-style PGE mineralization, exploration programs must be focused entirely on the productive horizon. In order to identify the proper horizon, geochemical traverses are essential with the goal being to find systematic variations in PGE and (or) nickel-copper tenors across lithological boundaries. When the specific horizon is identified, grid sampling and ground-based geophysics should be used over the target area.

8.3 RIVER VALLEY PGE MINERALIZATION MODEL

Holwell *et al*. (2014) propose a multi-stage, dynamic magma conduit-based model for the formation of the contact-type PGE mineralization in the River Valley Intrusion (Figure 8.2).

FIGURE 8.2 SCHEMATIC MODEL FOR PGE MINERALIZATION IN THE RIVER VALLEY INTRUSION



Source: *Holwell et al. (2014)*

This model is summarized in the following 10 sequential steps:

1. A major contamination event at depth with the addition of S from crustal wall rocks, inducing sulphide saturation in parental magma (Figure 8.2A);

2. Enrichment of sulphide droplets with PGE during turbulent interaction with magma within conduit feeder system (Figure 8.2A);

3. Further upgrading of sulphide metal tenors via dissolution of sulphide (Figure 8.2A);

4. Settling of PGE-enriched sulphide liquid in a staging magma chamber (Figure 8.2A);

5. Partial crystallization of the staging chamber, with PGE-enriched sulphide liquid becoming trapped in mafic cumulates (and some percolating into the footwall) (Figure 8.2B). Some sulphide liquid remains in the magma chamber above the crystallization front;

6. A major pulse of magma entrains sulphide liquid, erodes blocks of crystallized gabbro and blocks of footwall rocks (Figure 8.2C);

7. Transport of mineralized inclusions, footwall inclusions, and PGE-rich sulphide liquid to a higher-level chamber by this mafic magma (Figure 8.2C);

8. Emplacement of an inclusion-bearing package with mineralization present in the inclusions and the matrix, forming the lower 100 m or so of the River Valley Intrusion. Localized minor contamination by immediate floor rocks occurs (Figure 8.2C);

9. Subsequent emplacement of the main River Valley Intrusion magma, forming an erosive contact on top of basal units (with some entrainment of inclusions near base), and formation of the Layered Unit (Figure 8.2D); and

10. Hydrothermal alteration remobilizing S, Cu and Au on a minor scale, and altering primary magmatic minerals, possibly during later metamorphism.

9.0 EXPLORATION

Exploration work completed in 2020 and ongoing in 2021 at River Valley consists of a rhodium assay study of historical drill core, trench excavation and surface mineral prospecting near the Dana South Zone, surface prospecting at the Pardo Zone, and an IP geophysical survey at the Banshee Zone. These activities and results are described below.

9.1 RHODIUM ASSAY STUDY

9.1.1 Background

The primary purpose of the rhodium assay program is to evaluate the concentration of Rh in the River Valley Deposit. the highest-grade assay is 0.873 g/t Rh for a core sample from the Lismer North Zone. However, the overall number of Rh assays and their distribution are limited, due to the high cost of assaying. This precious metal was included in the 2001, 2012, 2018 and 2019 Mineral Resource Estimates (see Section 6 of this Technical Report). Although included in the 2019 Mineral Resource Estimate for the River Valley Palladium Deposit, Rh was excluded in the 2019 Preliminary Economic Assessment as payable metal in the NSR estimates, due to insufficient data points and lack of metallurgical recovery testwork.

In the 2019 updated Mineral Resource Estimate, rhodium grades were estimated based on Rh assay data for 7,471 drill core samples and 2,641 channel samples, for a total of 10,112 assays. Of these, 8,268 drill core and channel sample Rh assays records are for the Dana North Zone, 1,338 core and channel sample Rh assay records for the Dana South Zone, and 506 drill core sample assays for the Lismer North Zone. There were no Rh assays available for the Pardo, Pine, Banshee, Lismer Ridge, Varley, Azen, Razor and RVX Zones. Furthermore, the rhodium mineral hollingworthite (Rh,Pt,Pd)AsS has been identified during historical mineralogical and metallurgical testwork studies of drill core from the Dana North and Dana South Zones.

In addition, a relatively small amount of additional Rh assay data (337 analyses) are available for core samples analyzed during an academic research study of River Valley (Holwell *et al.* 2014) and for surface grab samples (158) assayed during mineral prospecting programs. The highest grades were 0.372 g/t Rh for the drill core and 0.309 g/t Rh for the surface grab samples. However, the surface grab data are not suitable to be used directly for Mineral Resource estimation purposes.

The Rhodium Assay Study is based on re-assaying available drill core samples for Rh. The drill holes sampled are carefully selected from representative drill cross-sections of prioritized mineralized zones, specifically the Pine, Dana South, Lismer North and Lismer Ridge Zones. Samples from mineralized core intervals above the lower cut-off grade and adjacent material are submitted to the Geoscience Laboratory in Sudbury for PGM assay with enhanced detection limits. In addition to Rh (and palladium, platinum and gold), the minor PGM ruthenium (Ru) and iridium (Ir) are also be assayed. Phase 1 commenced in Q4 2020 with focus on the Pine Zone.

9.1.2 Phase 1: Rhodium at Pine Zone

In a Company press release dated March 2, 2021, NAM announced completion of Phase 1 of the Rh assay program. A total of 303 pulp samples from 17 mineralized intervals in 14 drill holes through the Pine Zone were submitted to Geoscience Laboratories of Sudbury for assay. The samples were selected from year 2015 to 2020 drill core sample pulps to provide Rh data for mineralization in two cross-sections spaced 50 m apart through the Pine Zone, located near the north end of the 16 km long River Valley Deposit. In addition to Rh, the samples were also assayed for gold (Au), iridium (Ir), palladium (Pd), platinum (Pt), and ruthenium (Ru). The assays were completed on at the Geoscience Laboratories in Sudbury.

For this study of the Pine Zone, the assays values returned ranged from below the lower limit of detection to 0.177 g/t Rh. Ten samples returned assays of equal to or greater than 0.100 g/t Rh and 50 samples returned assays higher than 0.050 g/t Rh (Table 9.1). The highest assay result for Ir is 0.039 g/t and for Ru is 0.013 g/t. Compared to the other mineralized zones, the range of Rh assay values for Pine Zone appears to be most similar to Dana South Zone (Table 9.2).

TABLE 9.1
RHODIUM ASSAY HIGHLIGHTS FOR THE PINE ZONE

Drill Hole ID	Sample Number	Au (g/t)	Ir (g/t)	Pd (g/t)*	Pt (g/t)	Rh (g/t)	Ru (g/t)
DN-T2-06	RV2016-180	0.368	0.039	>2.700	1.898	0.177	0.013
DN-T2-06	RV2016-186	0.135	0.031	>2.700	1.018	0.136	0.011
DN-T2-06	RV2016-184	0.238	0.028	>2.700	1.237	0.130	0.010
2015-DN002	RV2015-0207	0.148	0.024	>2.700	1.266	0.109	0.010
DN-T2-10	RV2016-490	0.072	0.023	>2.700	1.404	0.106	0.009
2015-DN002	RV2015-0201	0.116	0.022	>2.700	1.115	0.102	0.009
DN-T2-13	RV2016-581	0.142	0.025	>2.700	1.144	0.102	0.009
PZ-20-04	RV2020-0434	0.085	0.019	2.223	0.783	0.102	0.008
2015-DN002	RV2015-0206	0.188	0.022	>2.700	1.289	0.100	0.009
2015-DN002	RV2015-0208	0.119	0.021	>2.700	1.053	0.100	0.008
DN-T2-03	RV2016-037	0.014	0.021	1.078	0.708	0.097	0.007
PZ-17-06	RV2017-0913	0.178	0.021	>2.700	1.050	0.096	0.010
DN-T2-11	RV2016-342	0.102	0.021	>2.700	1.053	0.096	0.008
2015-DN001	RV2015-0074	0.161	0.020	>2.700	0.852	0.093	0.009
DN-T2-10	RV2016-491	0.057	0.020	>2.700	0.864	0.090	0.008
DN-T2-06	RV2016-183	0.165	0.020	2.669	0.809	0.087	0.007
DN-T2-11	RV2016-347	0.164	0.016	1.784	0.549	0.087	0.007
DN-T2-11	RV2016-341	0.063	0.019	2.631	0.684	0.085	0.008
PZ-17-08	RV2017-1048	0.060	0.016	1.573	0.519	0.085	0.006
PZ-17-08	RV2017-1054	0.083	0.019	>2.700	0.790	0.083	0.009
2015-DN001	RV2015-0075	0.137	0.018	2.620	0.861	0.082	0.009
T3-17-04	RV2017-0633	0.212	0.019	2.582	0.938	0.081	0.008
DN-T2-10	RV2016-498	0.143	0.018	2.482	0.798	0.080	0.008
PZ-17-06	RV2017-0914	0.115	0.017	>2.700	0.820	0.078	0.007

TABLE 9.1
RHODIUM ASSAY HIGHLIGHTS FOR THE PINE ZONE

Drill Hole ID	Sample Number	Au (g/t)	Ir (g/t)	Pd (g/t)*	Pt (g/t)	Rh (g/t)	Ru (g/t)
PZ-17-06	RV2017-0915	0.129	0.016	2.402	0.725	0.077	0.007
2015-DN001	RV2015-0030	0.125	0.016	2.695	0.821	0.076	0.007
PZ-17-06	RV2017-0919	0.077	0.017	1.797	0.607	0.076	0.007
2015-DN001	RV2015-0066	0.117	0.016	2.456	0.833	0.075	0.008
2015-DN001	RV2015-0076	0.103	0.017	2.164	0.650	0.075	0.007
T3-17-03	RV2017-0446	0.052	0.016	2.607	0.699	0.073	0.006
2015-DN002	RV2015-0193	0.125	0.016	2.112	0.691	0.072	0.007
2015-DN002	RV2015-0194	0.051	0.022	1.282	0.552	0.072	0.008
DN-T2-11	RV2016-355	0.100	0.017	2.189	0.712	0.072	0.007
DN-T2-06	RV2016-177	0.111	0.015	2.118	0.726	0.071	0.007
PZ-17-06	RV2017-0921	0.107	0.015	2.171	0.774	0.070	0.006
2015-DN002	RV2015-0204	0.149	0.015	2.700	0.845	0.070	0.006
PZ-17-08	RV2017-1047	0.087	0.013	1.968	0.593	0.067	0.006
PZ-17-08	RV2017-1057	0.098	0.014	2.252	0.750	0.066	0.006
T3-17-02	RV2017-0378	0.094	0.015	2.052	0.620	0.065	0.006
2015-DN002	RV2015-0200	0.059	0.015	1.465	0.430	0.065	0.007
DN-T2-06	RV2016-181	0.075	0.015	1.693	0.627	0.063	0.006
2015-DN002	RV2015-0209	0.074	0.013	2.016	0.583	0.060	0.005
PZ-17-08	RV2017-1056	0.034	0.014	1.557	0.571	0.060	0.007
2015-DN001	RV2015-0067	0.081	0.013	1.667	0.526	0.059	0.006
DN-T2-11	RV2016-343	0.056	0.013	2.193	0.736	0.057	0.005
DN-T2-10	RV2016-502	0.051	0.013	1.609	0.566	0.054	0.006
DN-T2-13	RV2016-600	0.313	0.012	1.599	0.663	0.054	0.004
DN-T2-10	RV2016-499	0.140	0.012	1.533	0.528	0.054	0.008
DN-T2-13	RV2016-597	0.090	0.013	1.659	0.568	0.053	0.005
2015-DN002	RV2015-0203	0.041	0.011	1.844	0.564	0.053	0.005
PZ-17-06	RV2017-0918	0.063	0.012	1.508	0.546	0.052	0.005
2015-DN002	RV2015-0196	0.078	0.011	1.825	0.545	0.052	0.005
DN-T2-06	RV2016-189	0.070	0.012	1.249	0.384	0.051	0.005
2015-DN002	RV2015-0197	0.106	0.012	1.739	0.533	0.051	0.005
PZ-17-08	RV2017-1055	0.070	0.012	1.858	0.639	0.051	0.006
2015-DN002	RV2015-0202	0.063	0.011	2.099	0.557	0.051	0.005
DN-T2-06	RV2016-187	0.181	0.012	1.231	0.429	0.051	0.004
DN-T2-10	RV2016-503	0.055	0.012	1.520	0.515	0.050	0.005

Notes: * *2.700 g/t (2700 ppb) Pd was the upper detection limit of the analytical technique employed.*

TABLE 9.2 RHODIUM COMPARISONS TO OTHER ZONES				
Zone	**Number of Samples***	**Count (%)**	**Minimum Rh (g/t)****	**Maximum Rh (g/t)**
Pine	303	3.8	0.025	0.177
Dana North	6,709	84.8	<0.01	0.410
Dana South	392	5.0	<0.01	0.150
Lismer Ridge	506	6.4	<0.01	0.873
Total	**7910**	**100**		

Notes:
** contiguous drill core samples of mineralized intervals*
(channel, surface rock and academic study samples not included)
*** <0.01 g/t (<10 ppb) was lower limit of detection limit at the time of assay*

Rhodium at Pine Zone was determined from 303 samples out of a total of 2,443 (12%) drill core samples from that zone. The results show very strong positive correlation of Rh with the other four PGM (R^2 >0.9) (Table 9.3), consistent with presence in the mineral phase hollingworthite [(Rh,Pt,Pd)AsS]. Rh shows strong correlation (R^2 >0.8) with copper (Cu) and moderate correlation (R^2 >0.5) with sulphur (S). On the other hand, Rh does not correlate (R^2 = -0.015) with chromium, and therefore is not held in Cr-bearing phases (chromite). The occurrence of Rh with sulphides and not chromite differs from other Rh-bearing PGM deposits elsewhere, and could potentially simplify metallurgical recovery processes.

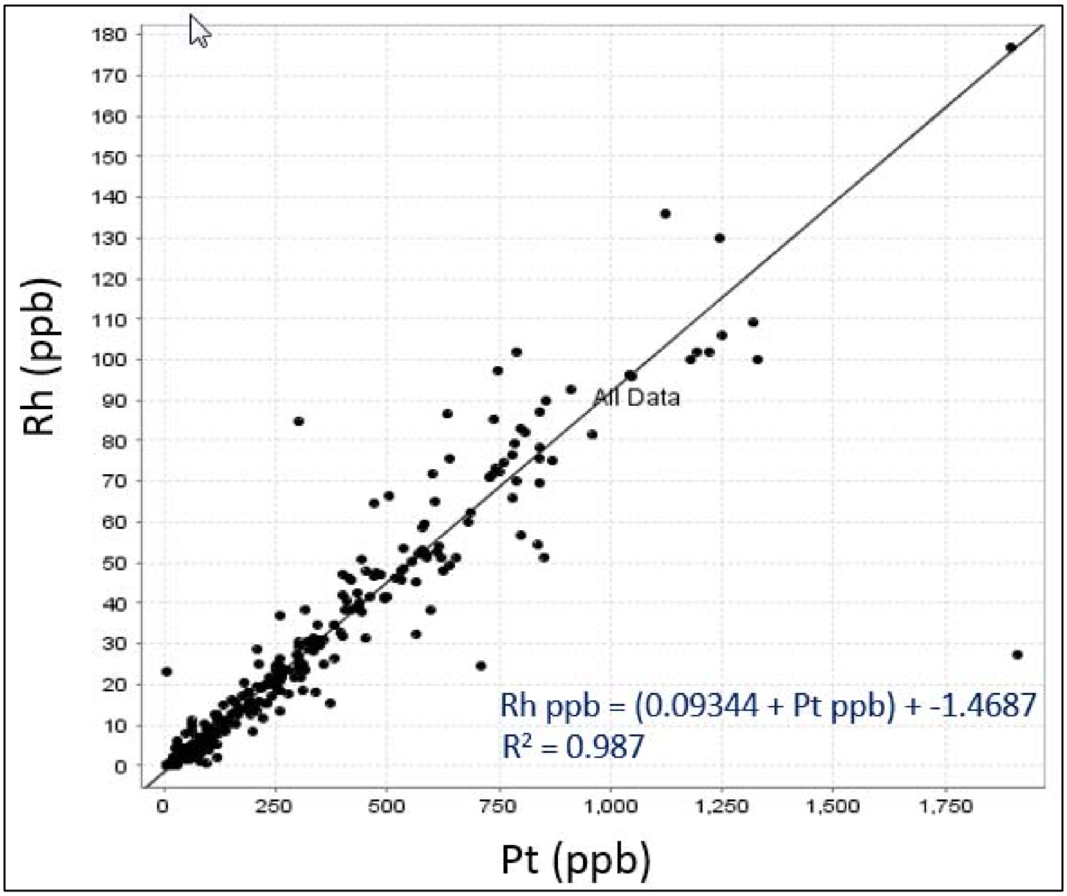
TABLE 9.3
STATISTICAL SUMMARY OF 2021 AND PREVIOUS ASSAY DATA FOR THE PINE ZONE

Parameter	2021 Data - Pine Zone						2015-2019 Data - Pine Zone				
	Au	Ir	Pd	Pt	Rh	Ru	Cu	Ni	Co	S	Cr
Number of Samples*	303	303	303	303	303	303	303	303	303	303	303
Maximum Value**	0.368	0.039	2.700	1.898	0.177	0.013	0.533	0.108	0.014	2.20	0.056
Average Value**	0.045	0.006	0.814	0.292	0.028	0.003	0.101	0.023	0.004	0.32	0.011
Median**	0.034	0.004	0.590	0.213	0.018	0.002	0.080	0.020	0.004	0.27	0.009
Correlation Coefficient***	0.830	0.995	0.940	0.969	1	0.978	0.839	0.756	0.540	0.589	-0.015

Notes:
** 2021 assay data from Geoscience Laboratories and 2015-2019 previous assay data are for the same samples*
***Au, Ir, Pd, Pt, Rh and Ru values in g/t; Cu, Ni, Co, S and Cr values in %*
**** Correlation coefficient for rhodium*

Statistical analysis indicates that Rh values for the remaining 2,140 samples from the Pine Zone can be estimated on the basis of Pt values through regression analysis. **Results of this study indicate that Rh contents are equivalent to be approximately 12% of the Pt grades.** A plot of measured Pt values versus Rh values for the 303 drill core samples from the Pine Zone and the robust simple regression line with its derived equation are shown in Figure 9.1.

FIGURE 9.1 PLOT OF MEASURED PT VERSUS RH VALUES FOR ALL RH ASSAYED SAMPLES (303) FROM THE PINE ZONE AND THE ROBUST SIMPLE REGRESSION LINE WITH DERIVED EQUATION



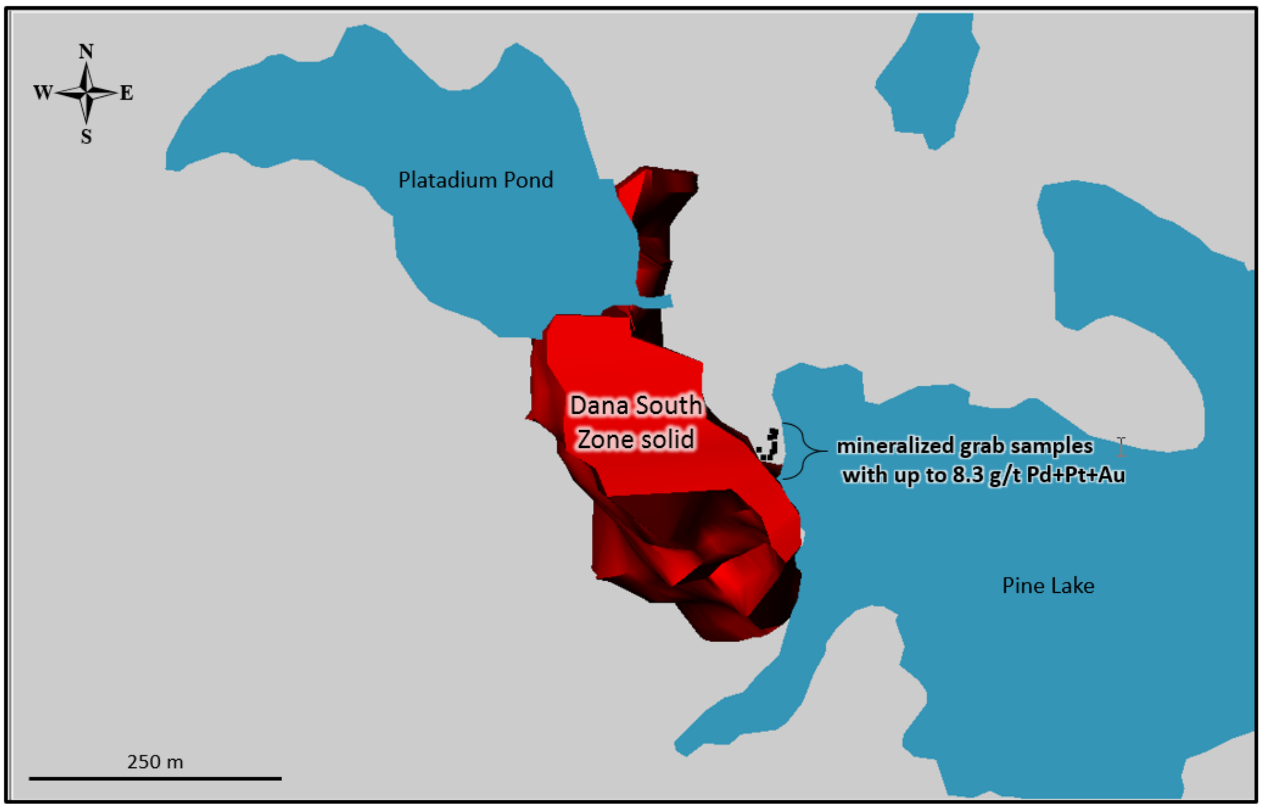
9.1.3 Phase 2: Rhodium at Lismer North Zone

In Phase 2 of the Rhodium Assay Study, Rh data will be generated for the Lismer North Zone. To this end, samples from eight mineralized intervals in four diamond drill cores on a key cross-section through Lismer North have been selected for Rh assay analysis. The historical drill cores, pulps and rejects have been sampled and the 189 samples (plus blind QC samples) delivered to Geoscience Labs in Sudbury for processing, preparation and high-sensitivity assay analysis. The Assay results were pending for the laboratory at the effective date of this Technical Report.

9.2 2020-2021 SURFACE EXPLORATION PROGRAMS

Mineral prospecting activities in 2020 focused on the Dana South and Pardo Zones. At the Dana South Zone (Figure 9.2), the largely covered area between the eastern boundary of the Mineral Resources and the western shoreline of Pine Lake was prospected and sampled. Samples previously collected from this area returned assays of up to 4.91 g/t Pd+Pt+Au and 0.25% Cu (see Company press release dated December 6, 2016). The purpose of returning in 2020 was to confirm the presence of the favourable River Valley Breccia Unit and especially the Cu-Fe sulphide mineralization in outcrop.

FIGURE 9.2 MINERALIZED SURFACE GRAB SAMPLE LOCATIONS BETWEEN THE DANA SOUTH MINERAL RESOURCES MODEL AND DANA LAKE



Source: *NAM (press release dated September 24, 2020)*

Significant assays were returned for seven of the 14 outcrop samples of Breccia Unit (Table 9.4). The highest assay result was 8.29 g/t Pd+Pt+Au and 0.24% Cu. Evidently, the confirmed surface mineralization means that either the footprint of the Dana South is larger than modelled or it represents discovery of a potential new zone approximately 50 to 100 m to the east of the Zone.

TABLE 9.4
ASSAY RESULTS FOR SURFACE GRAB SAMPLES FROM DANA SOUTH ZONE FOOTWALL AND PARDO ZONE

Zone	Sample	Coordinates		Au (g/t)	Pd (g/t)	Pt (g/t)	3E (g/t)	Ni (%)	Cu (%)	Co (%)	S (%)
		Easting	Northing								
Dana South	RZ-005DS	555,584	5,172,012	0.289	6.210	1.790	8.289	0.013	0.242	0.003	0.33
Dana South	RZ-006DS	555,580	5,172,017	0.080	1.470	0.360	1.910	0.013	0.087	0.002	0.14
Dana South	RZ-002DS	555,583	5,172,021	0.058	1.110	0.290	1.458	0.018	0.078	0.003	0.10
Dana South	RZ-003DS	555,584	5,172,018	0.045	0.813	0.230	1.088	0.015	0.044	0.003	0.06
Dana South	RZ-001DS	555,584	5,172,022	0.060	0.416	0.120	0.596	0.014	0.108	0.003	0.15
Dana South	RZ-004DS	555,581	5,172,023	0.011	0.208	0.090	0.309	0.008	0.012	0.002	0.02
Dana South	RZ-011DS	555,571	5,172,007	0.001	0.068	0.050	0.119	0.006	0.001	0.002	<0.01
Dana South	RZ-008DS	555,582	5,172,005	0.001	0.046	0.050	0.097	0.005	0.002	0.002	<0.01
Dana South	RZ-009DS	555,582	5,172,005	0.001	0.045	0.020	0.066	0.006	0.001	0.002	<0.01
Dana South	RZ-007DS	555,584	5,172,006	0.003	0.026	0.030	0.059	0.003	0.005	0.001	0.02
Dana South	RZ-014DS	555,565	5,172,002	0.001	0.048	0.010	0.059	0.004	0.001	0.002	<0.01
Dana South	RZ-013DS	555,575	5,172,001	0.001	0.011	0.010	0.022	0.002	0.002	0.001	<0.01
Dana South	RZ-012DS	555,580	5,172,001	0.001	0.008	0.010	0.019	0.002	0.002	0.001	<0.01
Dana South	RZ-010DS	555,584	5,172,008	0.001	0.007	0.010	0.018	0.007	0.000	0.002	<0.01
Pardo	RZ2020-01	555,963	5,174,603	0.057	0.921	0.480	1.458	0.020	0.116	0.006	0.42
Pardo	RZ2020-04	555,862	5,174,462	0.009	0.227	0.130	0.366	0.006	0.016	0.003	0.13
Pardo	RZ2020-02	555,963	5,174,603	0.012	0.118	0.040	0.170	0.009	0.045	0.004	0.10
Pardo	RZ2020-03	555,844	5,174,445	0.002	0.018	0.020	0.040	0.004	0.008	0.003	0.02

Note: ** Easting and Northing coordinates are in NAD83 UTM Zone 17N, 3E = 3 elements: Au + Pt + Pd.*

In 2021, the surface mineralized area between Dana South and Pine Lake was stripped, in order to better define the extent of the mineralization at surface and investigate whether it was obviously connected to the Dana South Zone. However, no further work had been completed by the effective date of this Technical Report.

In addition to the Pd and Pt, six of the Dana South area grab samples were assayed for Rh, Au and other minor platinum metals at the Geoscience Lab in Sudbury. The assay results for this small sample number range from 0.005 to 0.124 g/t Rh. This range overlaps with historical assays of <0.010 to 0.322 g/t Rh in 618 core samples from eight drill holes and <0.010 to 0.343 g/t Rh in 632 surface channel samples of Dana South. Statistically, Rh correlates strongly and positively with the other PGE and Cu and moderately with S, but not with Co, Ni and Cr.

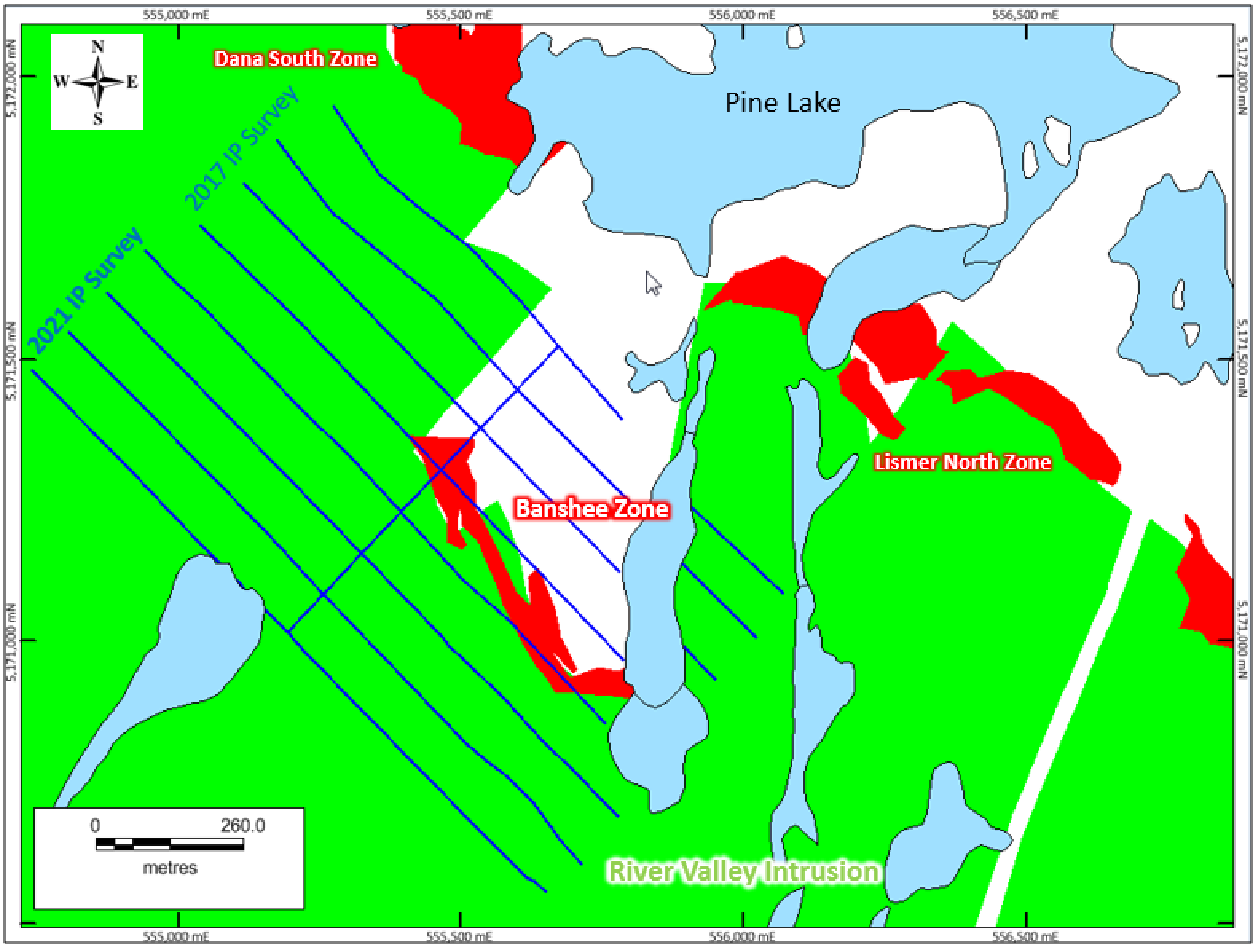
At Pardo Zone, the northernmost mineralized zone of the River Valley Deposit (2 km north of the Dana North Zone), four grab samples of Breccia Unit were taken in 2020 to confirm the presence of surface mineralization indicated in historical sampling. Three of the four samples returned assays indicative of palladium mineralization, with the highest assay result 1.46 g/t Pd+Pt+Au and 0.12% Cu (Table 9.4). With such confirmed indications of palladium mineralization on surface, in addition to presence of such mineralization in historic drilling (eleven holes drilled in 2004), the Pardo Zone is under consideration for additional mineral prospecting and mapping surveys and trenching and drilling work, in order to ultimately support an NI 43-101 compliant Mineral Resource Estimate.

9.3 2021 INDUCED POLARIZATION SURVEY

An OreVision 3-D IP geophysical survey was completed by Abitibi Geophysics over the Banshee Zone in June 2021. The purpose of the survey was to extend IP coverage over the Banshee Zone to support the planning of Mineral Resource infill and expansion drill programs. The configuration of the OreVision 3-D survey deployed in the field has a depth of investigation of up to 485 m below surface. The IP survey is designed to detect chargeability features along the north-northeast trending faults cutting at high-angle to the basal contact, which could correspond to structurally-controlled mineralization. The Pine Zone is the best-known example of what is probably structurally-controlled mineralization at River Valley.

The IP survey was completed on a newly cut 6 line-km grid over the Banshee Zone (Figure 9.3). The new line-grid overlaps with the limit of the previous IP survey (2017) in the Grenvillian footwall, extends into the hanging wall to Banshee, and covers the Banshee Zone itself. Although the survey was completed in June 2021, the IP survey results had not been delivered to NAM by the effective date of this Technical Report.

FIGURE 9.3 LOCATION OF THE CUT-LINE GRID FOR THE OREVISION 3-D IP SURVEY OVER THE BANSHEE ZONE

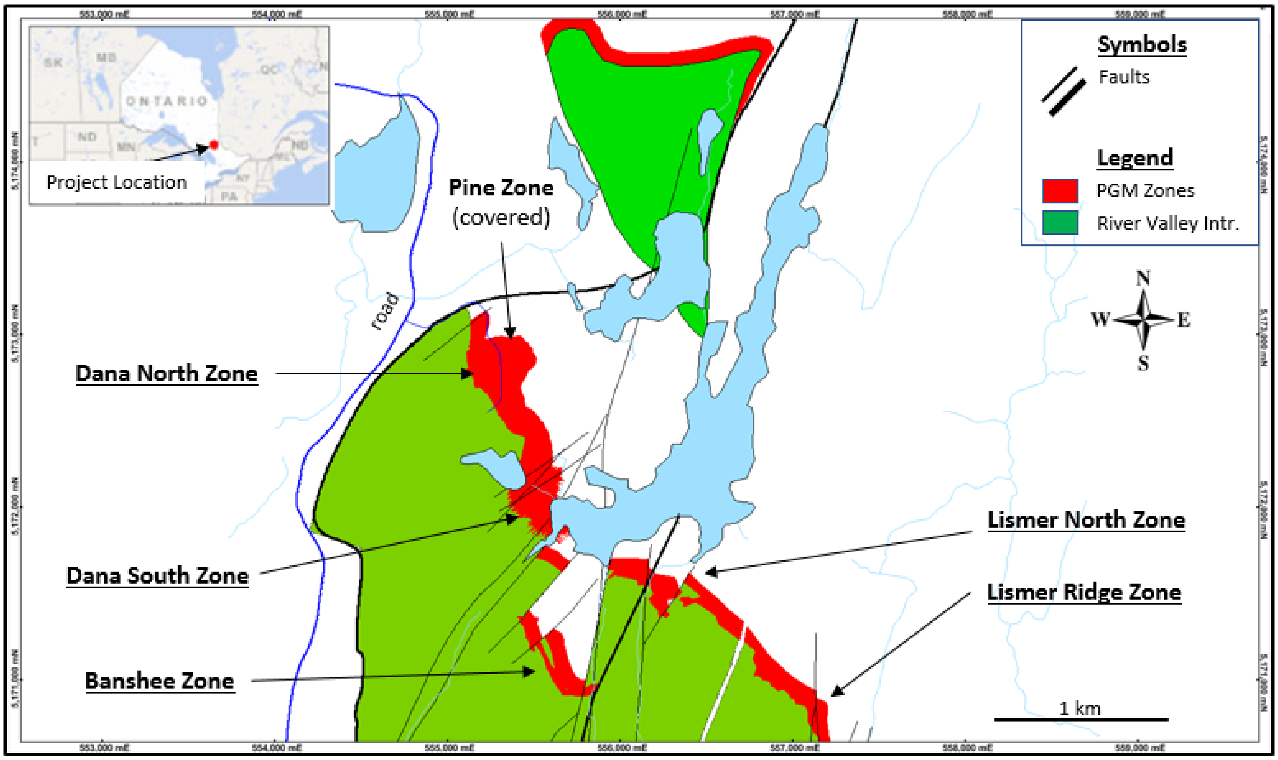


Source: *NAM (press release dated October 26, 2021)*
Notes: *blue lines – cut-line grids 2021 and 2017 for IP surveys, as indicated; red bodies = Banshee Zone, Dana South Zone and Lismer North Zone.*

10.0 DRILLING

In 2020 and 2021, exploration holes were drilled on the Pine and Banshee zones and metallurgical holes were drilled on the Dana North, Dana South, Lismer North and Lismer Ridge zones (Figure 10.1). Each of these drilling programs and results is described below.

FIGURE 10.1 PINE, DANA NORTH, DANA SOUTH, BANSHEE, LISMER NORTH AND LISMER RIDGE ZONES



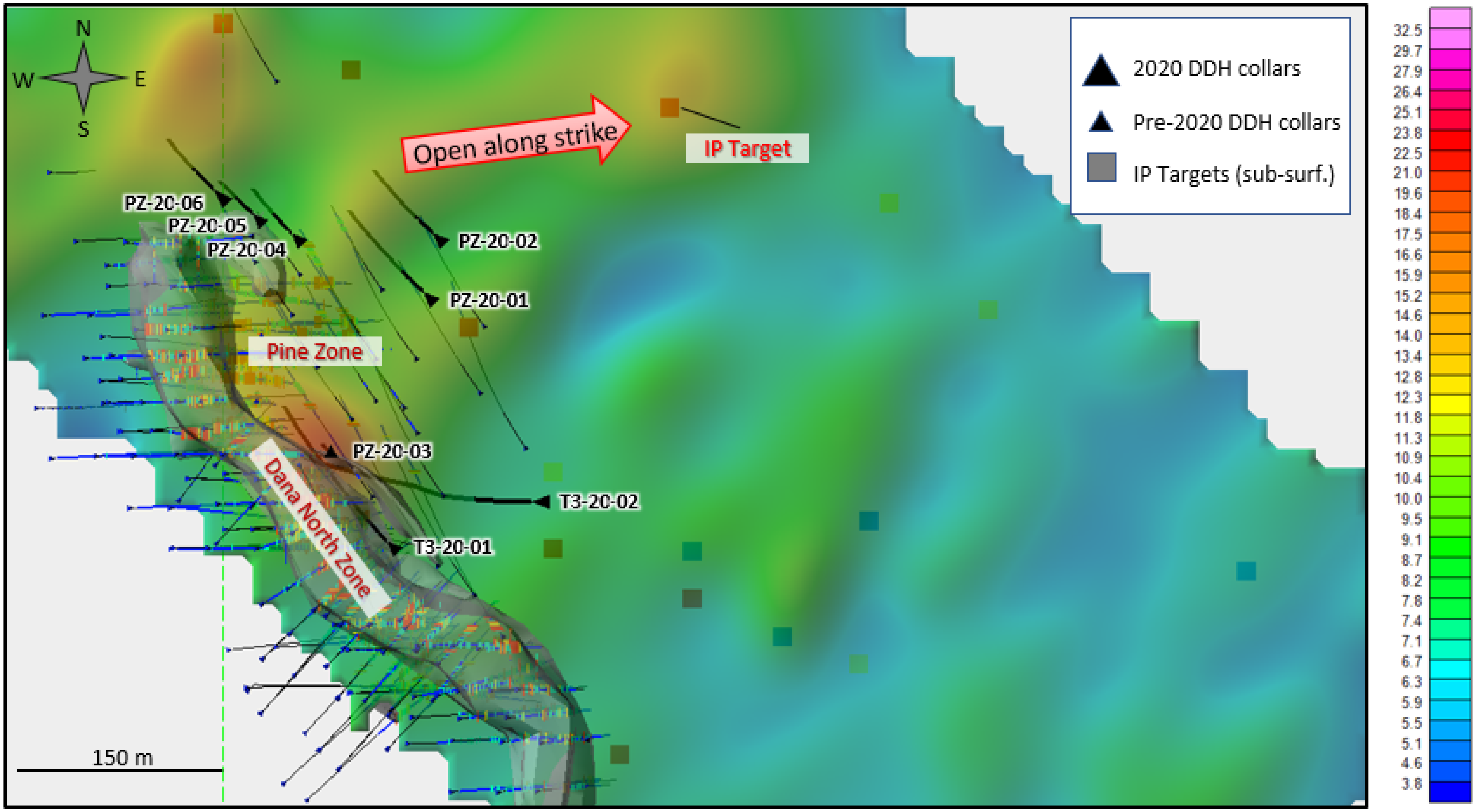
Source: *NAM (press release dated August 17, 2020)*

10.1 PINE ZONE

10.1.1 Phase 1 Drilling March-April 2020

In 2020, drilling at the Pine Zone in 2020 commenced with a 1,600 m program undertaken in March and April 2020. The program consisted of eight holes to test priority targets within and adjacent to the Pine Zone and the nearby Dana North Zone (Figure 10.2; Table 10.1). The drill program was the first phase of a planned two-phase 5,000 m program for 2020.

FIGURE 10.2 2020 PHASE 1 DRILL HOLES AT PINE ZONE



Source: *NAM (press release dated March 2020)*

TABLE 10.1
COLLAR LOCATIONS AND ORIENTATIONS FOR 2020 PHASE 1 DRILL HOLES AT PINE ZONE

Drill Hole ID	Zone	Coordinates*		Elevation (m)	Azimuth (°)	Dip (°)	Length (m)	Purpose/Target
		Easting	Northing					
PZ-20-01	Pine	555,416	5,127,856	323.5	315	-60	215	confirm block model
PZ-20-02	Pine	555,424	5,172,912	316.8	315	-60	170	expand zone
PZ-20-04	Pine	555,281	5,172,924	314.2	315	-60	116	expand zone
PZ-20-05	Pine	555,235	5,172,949	312.0	315	-60	92	expand zone
PZ-20-06	Pine	555,203	5,172,972	310.3	315	-45	102	expand zone
PZ-20-03	Dana North	555,318	5,172,698	320.4	0	-90	283	Pine-Dana linkage
T3-20-01	Dana North	555,383	5,172,602	325.9	315	-60	314	Pine-Dana linkage
T3-20-02	Dana North	555,523	5,172,645	331.0	270	-50	394	Pine-Dana linkage

Notes: ** Collar coordinates are UTM NAD83 Zone 17N*

The Pine Zone was discovered by drilling an IP chargeability high in 2015-2016, in the footwall to the main River Valley Deposit at the Dana North Zone. Seven holes were drilled into the Pine Zone-T3 area in 2015-2016 and 14 in 2017. Prior to 2015, seven holes had been drilled through the Dana North Zone and into the Pine Zone prior to recognition of the latter as a separate, differently oriented mineralized zone.

The objectives of the 2020 drill program at Pine Zone were threefold: 1) expand the limits of the Pine Zone palladium mineralization; 2) investigate possible connection of the Pine Zone to the Dana North Zone at depth; and 3) test palladium mineralization continuity within the 2019 Block Model. The drill program was successful in extending the Pine Zone mineralization up-dip to the north and along strike to the east, thereby demonstrating opportunity for further expansion of the 2019 Mineral Resources.

10.1.2 Phase 1 Results

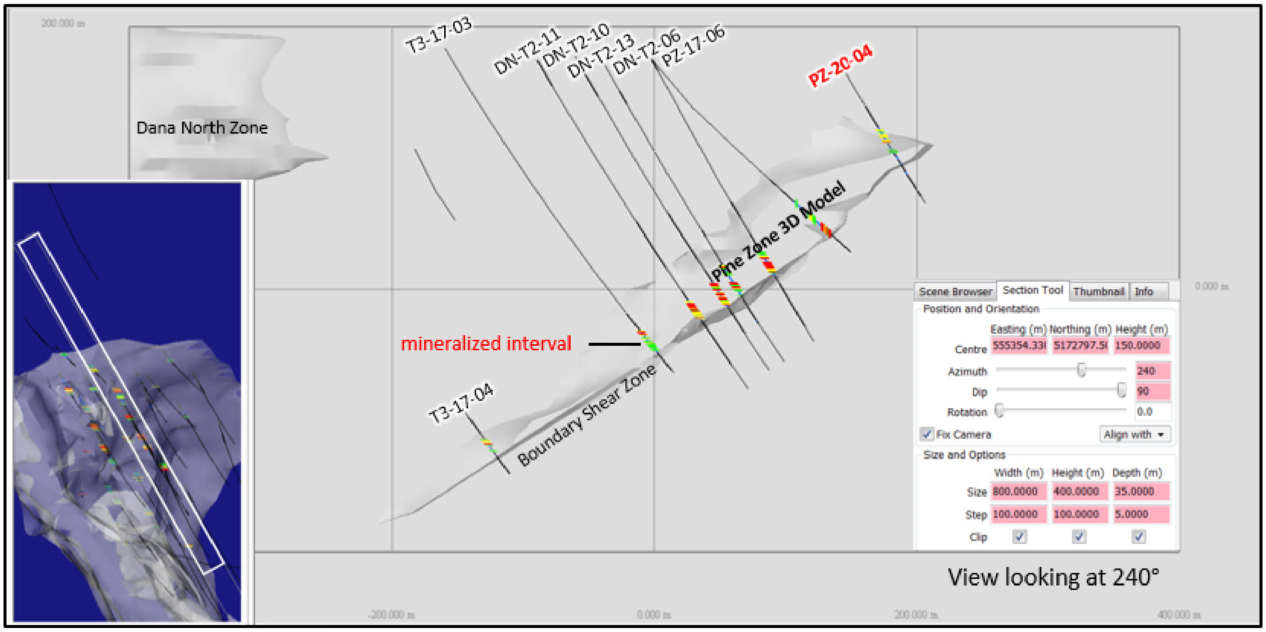
Holes PZ-20-02 and PZ-20-04, PZ-20-05 and PZ-20-06 were drilled to expand the palladium mineralization beyond the 2019 Mineral Resources at the Pine Zone. Hole PZ-20-02 targeted an IP chargeability high and intersected 0.447 g/t Pd+Pt+Au and 0.07% Cu from 125 m downhole (Table 10.2), which expands the mineralization 50 m along strike to the east from the Mineral Resource Block Model. Holes PZ-20-04, PZ-20-05 and PZ-20-06 were drilled to expand the Palladium mineralization up-dip to the north, by 10 m, 50 m and 100 m, respectively (Figures 10.3 and 10.4). Hole PZ-20-04 targeted an IP chargeability high and intersected 12 m grading 1.101 g/t Pd+Pt+Au and 0.07% Cu from only 50 m downhole, including 8 m at 1.361 g/t Pd+Pt+Au and 5 m grading 0.454 g/t Pd+Pt+Au from 66 m downhole. Hole PZ-20-05 intersected 3 m grading 0.603 g/t Pd+Pt+Au and 0.13% Cu from only 50 m downhole. The mineralization in this intersection appears to be slightly more copper rich (Table 10.2). Hole PZ-20-06 lacked significant assay results, but did intersect the favourable Breccia Unit host rock for palladium mineralization at River Valley.

Table 10.2
Palladium Assay Highlights in 2020 Phase 1 Drilling at Pine Zone

Drill Hole ID	From (m)	To (m)	Length (m)	Pd (g/t)	Pt (g/t)	Au (g/t)	Pd+Pt+Au (g/t)*	Cu (%)	Ni (%)	Co (%)
PZ-20-01	168	171	3	0.939	0.287	0.061	1.287	0.092	0.021	0.004
PZ-20-02	125	129	4	0.308	0.115	0.024	0.447	0.070	0.015	0.003
PZ-20-03	197	209	12	0.195	0.073	0.017	0.285	0.039	0.019	0.003
PZ-20-04	50	62	12	0.778	0.291	0.032	1.101	0.068	0.021	0.004
incl	54	62	8	0.974	0.346	0.041	1.361	0.090	0.023	0.004
and	66	71	5	0.279	0.164	0.010	0.453	0.014	0.009	0.002
PZ-20-05	50	53	3	0.282	0.253	0.068	0.603	0.135	0.018	0.005
PZ-20-06	nsa	nsa	nsa	nsa	nsa	nsa	nsa	nsa	nsa	nsa
T3-20-01	248	265	17	0.382	0.146	0.030	0.558	0.072	0.023	0.004
T3-20-02	318	335	17	0.331	0.134	0.023	0.488	0.042	0.019	0.004

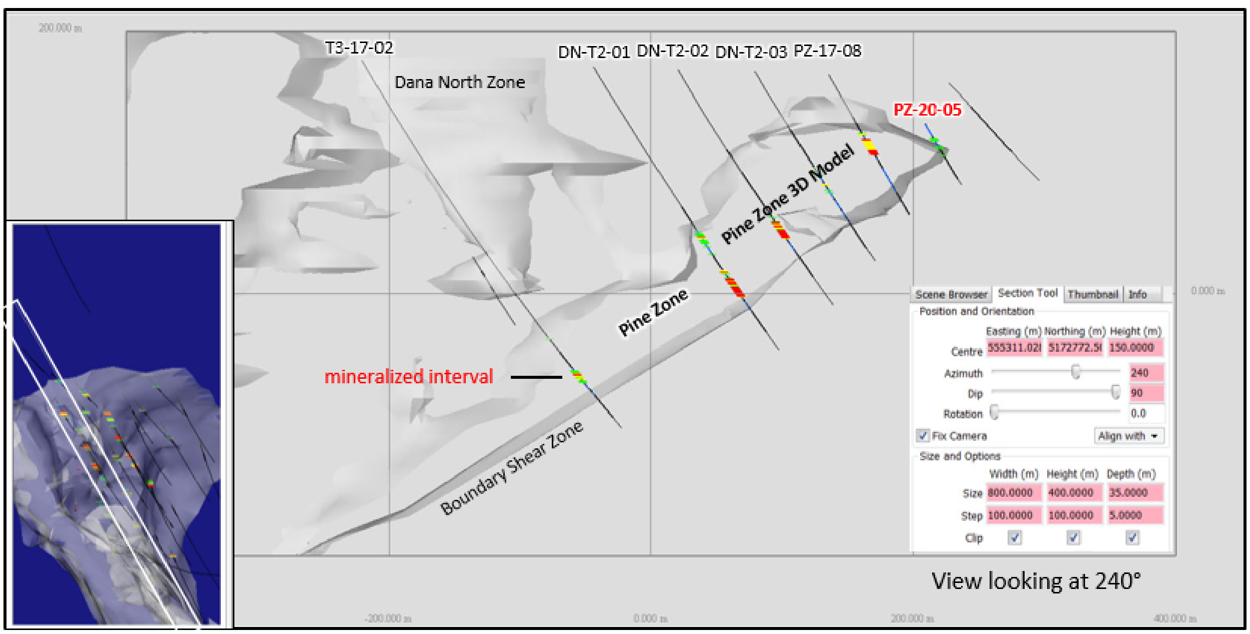
Notes: ** Pd+Pt+Au = 3E = 3 elements, nsa = no significant assays.*
The lengths reported are core lengths, but should approximate true widths.

FIGURE 10.3 PINE ZONE CROSS SECTION PROJECTION 555,350 M E



Source: *NAM Internal Report (October 2020)*

FIGURE 10.4 PINE ZONE CROSS SECTION PROJECTION 555,300 M E



Source: *NAM Internal Report (October 2020)*

Holes T3-20-01, T3-20-02 and PZ-20-03 were drilled to test for the presence of palladium mineralization where the Pine Zone may be connected to the main River Valley Deposit at the Dana North Zone. Palladium mineralization was intersected in all three holes: Hole T3-20-01 intersected 17 m grading 0.599 g/t Pd+Pt+Au and 0.07% Cu from 248 m downhole; T3-20-02 intersected 17 m of 0.488 g/t Pd+Pt+Au and 0.04% Cu from 318 m downhole; and PZ-20-03 intersected 0.285 g/t Pd+Pt+Au and 0.04% Cu from 197 m downhole.

Hole PZ-20-01 was designed to test palladium grade continuity within the 2019 Mineral Resource Model. PZ-20-01 was collared 50 m from the nearest previously drilled hole and intersected 3 m grading 1.287 g/t Pd+Pt+Au and 0.092% Cu from 168 m downhole. This intersection lies within the 2019 Block Model volume.

10.1.3 Discussion

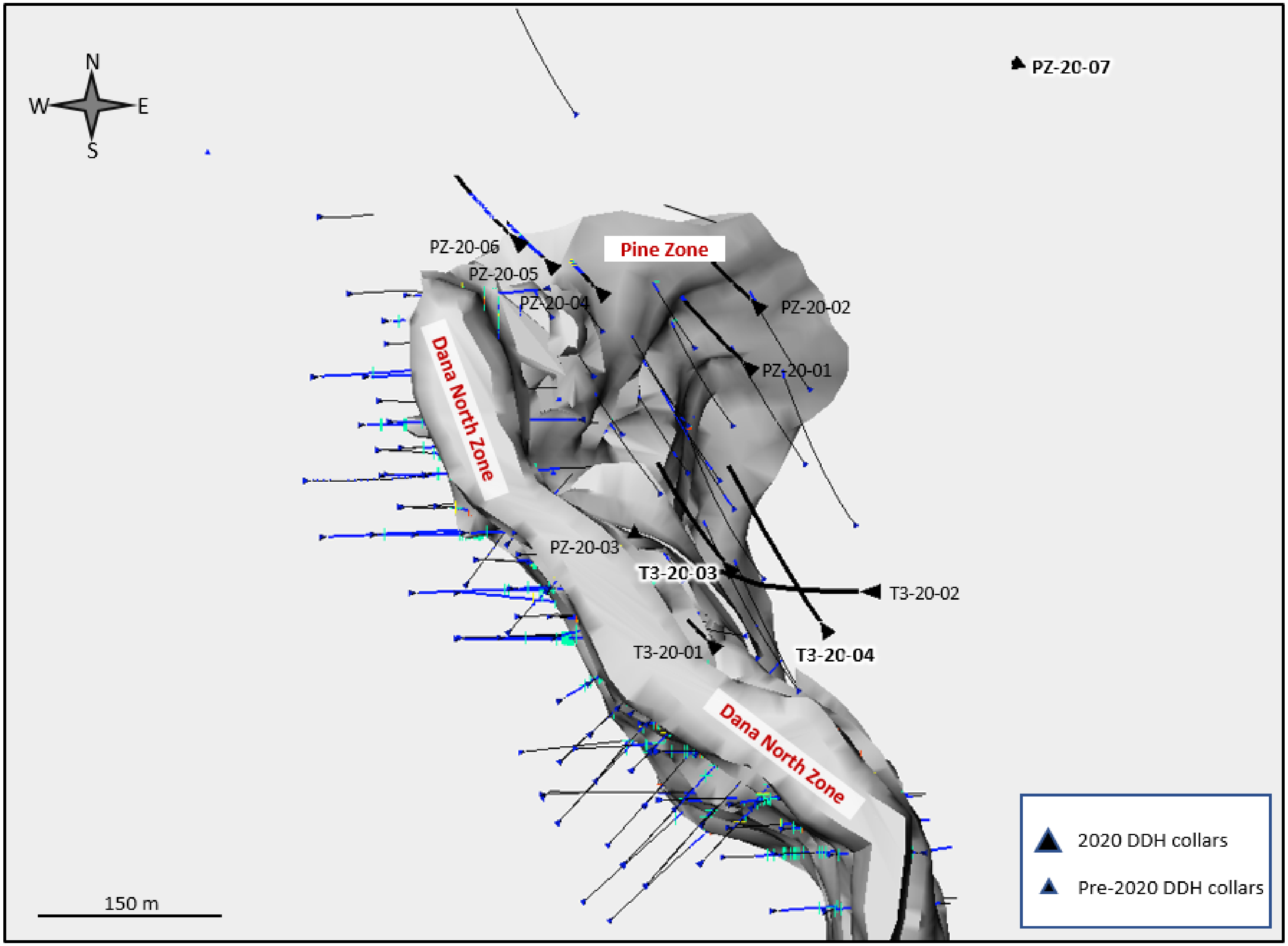
Phase 1 of the 2020 drill program was successful in extending the known limits of the Pine Zone palladium mineralization 50 m up-dip to the north (see Figures 10.3 and 10.4) and 50 m along strike to the east. The palladium mineralization is still open to expansion by drilling to the east, particularly testing a strong IP chargeability high located about 400 m along strike, and also by drilling down-dip to the south. The 2020 drilling was also successful at broadly establishing the presence of palladium mineralization at the connection of the Pine Zone to the Dana North Zone.

The 2020 Phase 1 drilling results brought the cumulative total number of holes intersecting the Pine Zone to 33. The number of palladium mineralized intersections within the Pine Zone now totals 41, over an area measuring about 250 m along strike and 550 m down-dip. Note again that the Pine Zone remains open down-dip and particularly to the east, where the most tantalizing IP chargeability high is located. A Phase 2 drill program was planned to follow-up.

10.1.4 Phase 2 Drill Plan

Following completion of its successful Phase 1 drill program in May, Phase 2 of the 2020 field season commenced in July with exploration drilling continuing through August. The objectives of the Phase 2 drill program are threefold: 1) in-fill a gap in the previous drilling of the T3 target; 2) expand the T3 target along strike and southwards, and 3) test an undrilled IP chargeability high along 300 m along strike from the Pine Zone (Figures 10.5 and 10.6). The T3 target is located downdip/down-plunge of the Pine Zone (originally the T2 target).

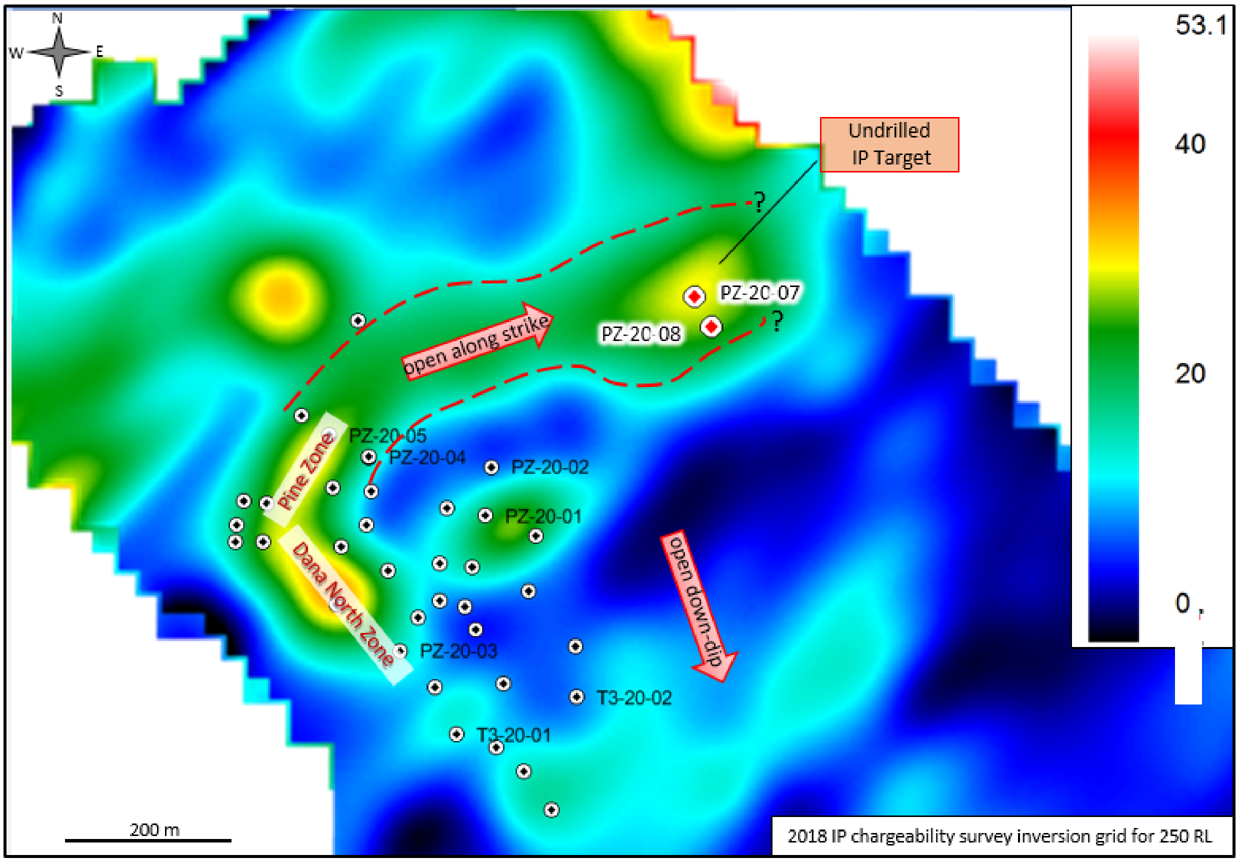
Figure 10.5 2020 Phase 2 Drill Holes at Pine Zone



Source: *NAM press release dated September 24, 2020*
Description: Location of 2020 Phases 1 and 2 drill holes (labelled) and historically drilled holes plotted on 3-D wireframe model of the Dana North Zone (exposed) and Pine Zone (covered).

The drill target prioritized for testing is a large chargeability high detected in the 2017 IP survey (Figure 10.6), which was performed over the Pine Zone and footwall at the northern end of the River Valley Palladium Deposit. The IP target appears to be strongly chargeable, links to the eastern known extent of the Pine Zone Deposit via an apparent curvilinear chargeability trend about 300 m long, and extends from approximately 120 m to 340 m below surface in geophysical inversion modelling of the IP survey results.

FIGURE 10.6 PRIORITY IP CHARGEABILITY-GENERATED TARGET FOR TESTING IN 2020 PHASE 2 DRILL PROGRAM AT PINE ZONE



Source: *NAM press release dated June 24, 2020*
Description: Undrilled priority target from interpretation of 2018 merged IP chargeability maps. The Phase 2 program included two vertical holes (PZ-20-07 and PZ-20-08) totalling 750 m. However, hole PZ-20-08 was cancelled following the termination of PZ-20-07.

The Phase 2 drill program as planned consisted of three holes totalling 800 m (Table 10.3). Drilling commenced in the third week of July and was completed by mid-August. The drilling tested for the presence of the favourable Breccia Unit, fault and fold structures, and palladium mineralization, either an along strike continuation of the Pine Zone or a new zone (Figure 10.2).

TABLE 10.3 COLLAR LOCATIONS AND ORIENTATIONS FOR 2020 PHASE 2 DRILL HOLES AT PINE ZONE								
Drill Hole ID	**Zone**	**Coordinates***		**Elev-ation (m)**	**Azimuth (°)**	**Dip (°)**	**Length (m)**	**Purpose / Target**
		Easting	**Northing**					
T3-20-03	Pine	555,399	5,172,618	328.07	325	-60	285	expansion
T3-20-04	Pine	555,487	5,172,618	330.87	325	-60	341	expansion
PZ-20-07	---	555,667	5,173,126	301.10	315	-60	166	expansion

***Notes:* *** *Collar coordinates are UTM NAD83 Zone 17N*

10.1.5 Phase 2 Drill Results

Holes T3-20-03, T3-20-04 and PZ-20-07 were drilled in Q3 2020 for a total of 792 m (Table 10.4). Hole T3-20-03 was drilled as an in-fill hole within the Pine Zone-T3 Target. The hole intersected three mineralized intervals: 1) 5 m grading 0.21 g/t Pd+Pt+Au and 0.05% Cu from 236 m down hole; 2) 9 m grading 0.27 g/t Pd+Pt+Au and 0.02% Cu from 247 m downhole; and 3) 6 m grading 0.30 g/t Pd+Pt+Au and 0.02% Cu from 259 m downhole. The results confirm presence of the Pine Zone mineralization.

TABLE 10.4 CORE ASSAY INTERVALS FROM PHASE 2 2020 DRILL PROGRAM AT PINE ZONE										
Drill Hole ID	**From (m)**	**To (m)**	**Interval (m)**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Pd+Pt+Au (g/t)***	**Ni (%)**	**Cu (%)**	**Co (%)**
T3-20-03	236	241	5	0.155	0.046	0.012	0.213	0.006	0.045	0.001
T3-20-03	247	256	9	0.192	0.073	0.008	0.273	0.006	0.015	0.002
T3-20-03	259	265	6	0.179	0.103	0.014	0.296	0.011	0.019	0.003
T3-20-04	307	308	1	0.413	0.200	0.030	0.643	0.018	0.021	0.004
PZ-20-07	-		-	-	-	-	-	-	-	-

***Note:* *** *Pd+Pt+Au = 3E (3 elements).*

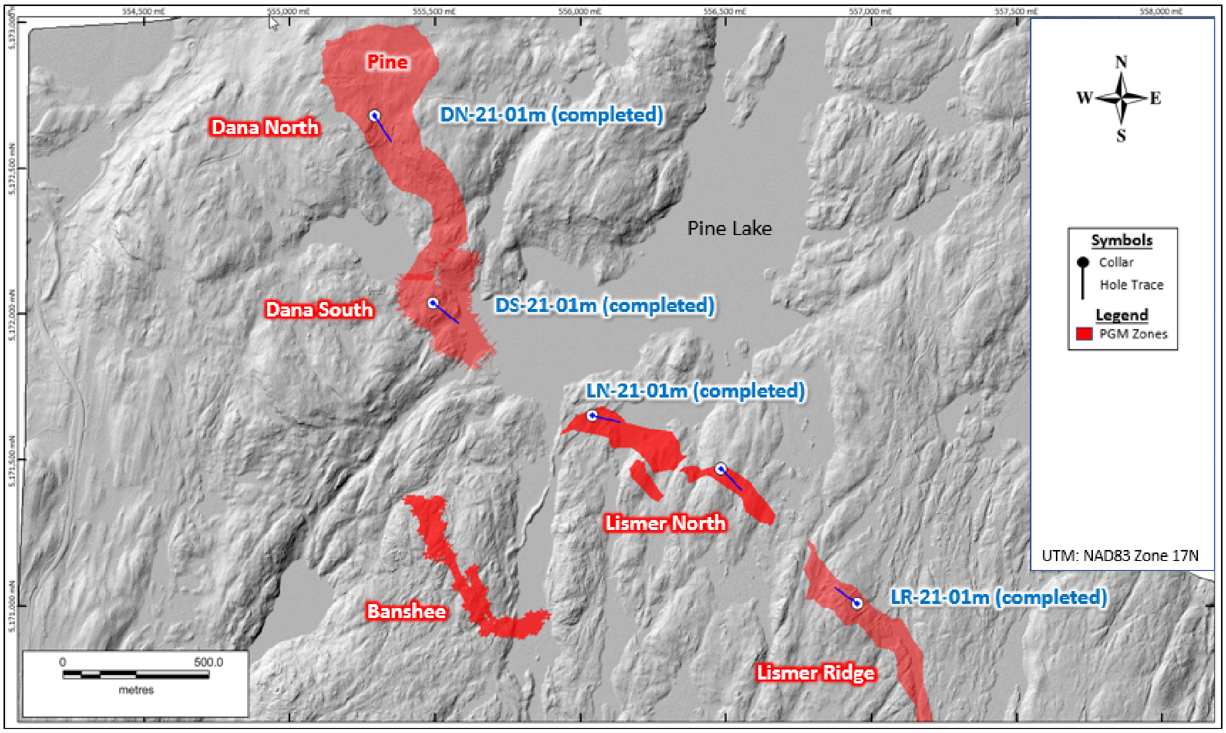
Hole T3-20-04 was drilled to expand the boundaries of the Pine Zone-T3 Target eastwards and southwards. The hole intersected the favourable Breccia Unit, but failed to intersect significant intervals of mineralization. The best assay result was 1 m grading 0.64 g/t Pd+Pt+Au and 0.02% Cu from 307 m downhole.

PZ-20-07 was drilled to test a compelling IP chargeability feature 250 m east along strike from the Pine Zone. The hole was abandoned at 166 m depth, due to the presence of lengthy intersections of heavy pyrite coatings on fractures in core of the Archean basement. No assays were generated, but the IP chargeability feature is explained.

10.2 METALURGICAL DRILLING - 2021

In June and July 2021, four holes totalling 802 m were drilled to provide fresh mineralized rock material for mineral processing and metallurgical testwork. One hole was drilled on each of the Dana North, Dana South, Lismer North and Lismer South Zones, as shown in Figure 10.7. Drill hole collar locations and orientations are listed in Table 10.5. Each of these holes was drilled downwards for approximately 200 m, in order to intersect as much Pd mineralization as possible for mineral processing and metallurgical testwork by SGS Canada Inc. (Lakefield).

FIGURE 10.7 FOUR MINMET HOLES DRILLED IN 2021



Source: *NAM (press release dated August 17, 2021)*
Description*:* Collar location and traces of the four holes drilled in 2021 for mineral processing and metallurgical testwork samples. The fifth (not labelled) drill hole was planned at Lismer North Zone for contingency purposes, but not drilled. The background is a topography image from the 2014 LiDAR survey of the River Valley Property. The Banshee Zone shown here for information only.

From each drill hole, HQ-size core was retrieved, logged and sampled in 1-m intervals by NAM. Eight-hundred 1-m long ½ core samples plus blind quality control ("QC") samples were then delivered to SGS, for processing and preparation for assaying and testwork commenced. The assay results were not available as of the effective date of this Technical Report. When the assay results are available, the samples will be composited for mineralized zone, rock type and particularly grade variability testing. The testwork program at SGS is being managed by D.E.N.M Engineering Ltd. (Burlington, Ontario) on behalf of NAM.

TABLE 10.5 FOUR MINMET HOLES DRILLED IN 2021							
Drill Hole ID	**Zone**	**Coordinates***		**Elevation (m)**	**Length (m)**	**Azimuth (°)**	**Dip (°)**
		Easting	**Northing**				
DN-21-01MET	Dana North	555,290	5,172,680	330	201	146	-57
DS-21-01MET	Dana South	555,490	5,172,040	304	201	128	-55
LN-21-01MET	Lismer North	556,038	5,171,653	288	185	104	-57
LR-21-01MET	Lismer Ridge	556,950	5,171,007	320	215	306	-64

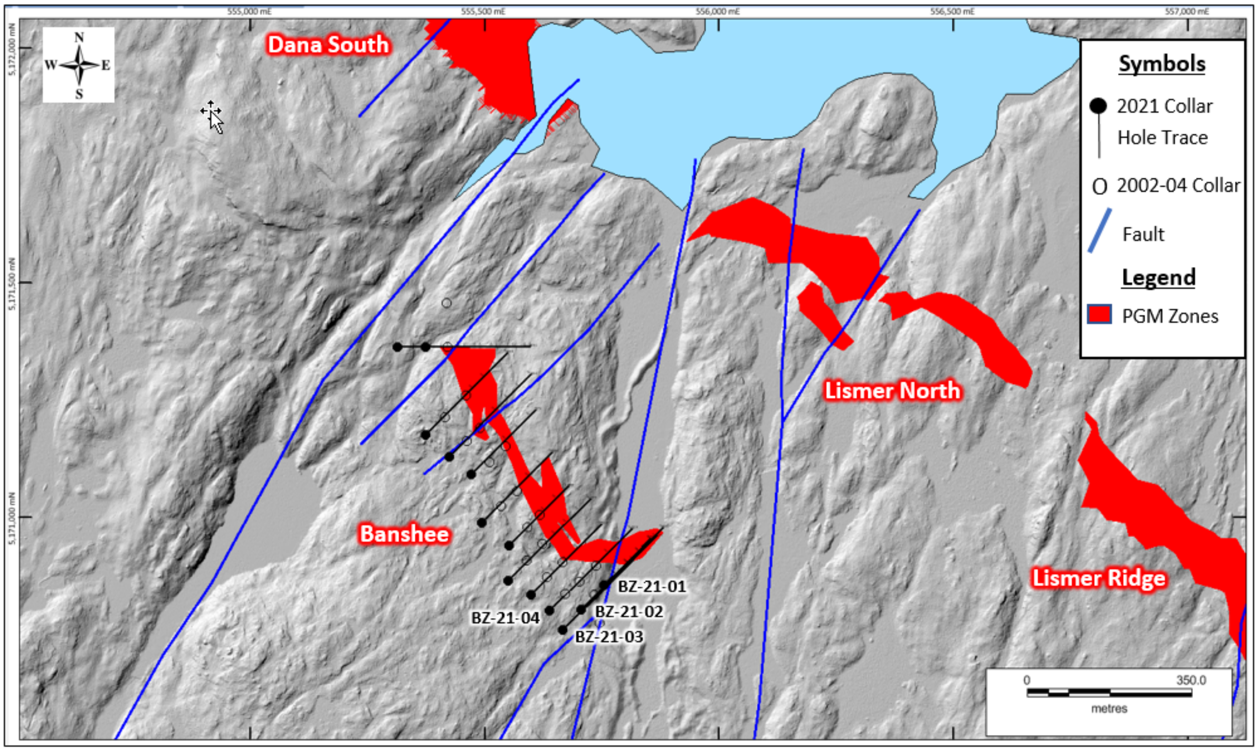
***Note:* *** *Coordinates UTM NAD83 Z17N.*

10.3 BANSHEE ZONE DRILLING – 2021

The Banshee Zone is a focus of the 2021 exploration program (see Figure 10.8). The Banshee Zone was discovered by mineral prospecting and drilling between 2002 to 2004. Despite its central location between the Dana Zones to the north and the Lismer Zones to the east and south, the Banshee Zone has been overlooked in post-2004 exploration programs, probably because of its apparently small size and lower grade. Prior to 2021, just 22 diamond drill holes totalling 4,274 m were drilled at Banshee, with an average depth of only <200 m below surface. Below that depth, the palladium mineralization remains open to expansion by drilling down-dip along the 700 m strike-length of the Zone. A combination of near-historic high Pd price and its central location means that the Banshee Zone could be of strategic importance to any future mining operation at River Valley.

The 2021 exploration plan for Banshee consists of drilling 13 holes totalling 4,175 m, designed to expand the known extents of mineralization mainly down-dip. The exploration drilling commenced at the south end of Banshee in late July 2021, following completion of the IP geophysical survey in June (see Company press release dated July 6, 2021). To date, four of the drill holes have been completed (Figure 10.8) (Table 10.6) and contact-type Cu-Fe sulphide (Pd+Pt) mineralization typical of the River Valley Deposit was encountered. Core sample assays have been submitted to the assay laboratory, but the results were not available as of the effective date of this Technical Report.

FIGURE 10.8 2021 EXPLORATION DRILLING AT BANSHEE ZONE



Source: *NAM (press release dated August 17, 2021)*
Description: The four holes labelled have been drilled as of the effective date of this Technical Report.

TABLE 10.6
COLLAR LOCATIONS AND ORIENTATIONS FOR 2021 EXPANSION DRILLING AT BANSHEE ZONE

Drill Hole ID	Section	Coordinates*		Elevation (m)*	Depth (m)	Azimuth (°)	Dip (°)	Length (m)
		Easting (m)*	Northing (m)*					
BZ1-1	1	555,754	5,170,855	291	0	45	-45	200
BZ1-2	1	555,705	5,170,803	300	0	45	-45	350
BZ1-3	1	555,666	5,170,760	301	0	45	-45	400
BZ2-1	2	555,638	5,170,801	305	0	45	-45	350
Total								**1,277**

Source: *NAM (2021)*
Notes: ** Coordinates in UTM NAD83 Z17N; Easting, Northing and elevation subject to change pending differential GPS survey pick-up.*

11.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY

The following section describes the sample preparation, analyses and security procedures undertaken at the River Valley Property from 2000 through 2020.

11.1 CORE LOGGING AND SAMPLING PROCEDURES

Drill core logging and sampling were completed at the designated drill core logging facility by Company personnel. The sampling procedure was as follows:

- Diamond drill core was delivered to the drill core logging facility on a daily basis;
- The sections of drill core to be sampled were delimited with a grease pencil;
- The core was photographed and racked for sampling;
- The drill core was split using a diamond saw by a technician. Half the drill core was sent out for assay, the other half kept for reference;
- Sampling was carried out by a technician. Each sample was placed in a plastic bag with appropriately numbered tag corresponding to a sampling interval also placed in the bag. That same number was also printed on the outside of the bag as a cross-check. The samples were then put in rice bags and shipped to SGS sample preparation facilities in Sudbury, Ontario;
- Certified reference materials ("CRM's) and blanks were inserted into the sample stream at designated intervals;
- As an additional quality assurance/quality control ("QA/QC" or "QC") procedure, a second split was prepared from the pulp by the primary laboratory, at designated sample intervals;
- The remaining half of the drill core was stored in a tagged core box indicating hole and box numbers and downhole interval. Drill core from some phases of drilling were stored temporarily at the designated logging facility; and
- The drill core was then transported and laid down in the Company's core storage yard near River Valley (Figure 11.1).

FIGURE 11.1 RIVER VALLEY CORE STORAGE FACILITY

Source: *P&E and DRA (2019)*

11.2 SAMPLE PREPARATION AND ANALYSES

NAM has utilized SGS Minerals ("SGS") for sample preparation and analyses during recent phases of drilling. When sufficient samples have accumulated, all samples, including standards and blanks, are place into rice bags and shipped to the SGS sample preparation facility in Sudbury, Ontario.

The following is a brief description of the sample preparation and analyses carried out on the samples submitted (prep code CRU25 and PUL45).

- Samples are sorted and dried;
- Once dried, less than 3.0 kg of the sample is crushed to a 90% passing at 2 mm;
- The sample is split to get a 250 g or 500 g sample for pulverizing;
- 250 g or 500 g of the crushed sample is then pulverized with chromium steel to allow 85% passing of 75 µm;

- Palladium, platinum and gold were assayed by fire assay with ICP-AES finish (GE-FAI313); and

- Copper, Nickel and 32 additional metals were assayed by two acid digestion and ICP-OES finish (GE-ICP14B).

In earlier phases of drilling, all samples were submitted to X-Ray Assay Laboratories ("XRAL"), Rouyn-Noranda, Quebec, and assayed for Pt, Pd, Au, Cu and Ni. Phase 1 samples were also assayed for Rh.

On receipt of a sample shipment at XRAL, samples are unpacked and arranged in numeric order. Samples are first crushed to 90% passing a 10-mesh screen, and then pulverized to 80% passing a 200-mesh screen. Crushing and pulverizing equipment is cleaned with air and (or) brush between samples.

Concentrations of Pt-Pd-Au were determined using standard lead fire assay, followed by dissolution with aqua regia, and measurement with a DCP (direct current plasma) finish. Lower limits of detection (30 g sample) are 1 ppb for Au and Pd and 10 ppb for Pt; upper limits are 10,000 ppb by DCP. Concentrations of Cu and Ni were determined by ICP methods and generally have lower limits of detection of 0.5 ppm for Cu and 1 ppm for Ni; the upper limit for both Cu and Ni is 1%. Rhodium concentrations were determined using an arrested cupellation method that utilizes standard lead fire assay techniques with an ICP-MS finish; lower limit of detection for Rh was 30 ppb. Silver is used during the fire assay procedure.

SGS is an independent laboratory operating more than 2,600 offices and labs worldwide. Sample processing services at SGS are ISO/IEC 17025:2017 accredited by the Standards Council of Canada. Quality Assurance procedures include standard operating procedures for all aspects of the processing, and also include protocols for training and monitoring of staff. ONLINE LIMS is used for detailed worksheets, batch and sample tracking including weights and labeling for all the products from each sample.

XRAL was founded in 1954 as X-Ray Assay Laboratories to exploit the multi-element capabilities of newly developed X-Ray fluorescence instruments and later purchased by the SGS Group in 1988.

11.3 QUALITY ASSURANCE/QUALITY CONTROL REVIEW

NAM implemented a robust quality assurance/quality control ("QA/QC") program from the commencement of Phase 5 drilling in 2002 at the Property. Until this time, the only external check on the primary lab analyses (XRAL) were check analyses carried out by secondary labs: Accurassay Laboratories ("Accurassay") in Thunder Bay, ON and Bondar Clegg Laboratories ("Bondar Clegg", acquired by ALS Minerals in 2001) in Val d'Or, Quebec. CRMs were also inserted into the samples stream, during the latter stages of Phase 4.

11.3.1 2000 to 2001 – Phases 1 to 4 (138 Drill Holes)

11.3.1.1 Performance of Secondary Lab Checks

Samples for check analyses were submitted to both Accurassay and Bondar Clegg during the first four phases of drilling carried out between 2000 and 2001. A total of 1,935 samples (1,767 pulps and 168 coarse rejects) were submitted for Pt-Pd-Au check analyses for this period of drilling. A summary of check assaying undertaken for each phase follows:

- **Phase 1:** 572 pulps/168 course rejects analyzed at Accurassay/Bondar Clegg, with acceptable reproducibility of ±25%. No additional QC samples included;

- **Phase 2:** 296 pulps analyzed at Accurassay, with acceptable reproducibility of ±25%, R^2 values of 0.916 for Au, 0.952 for Pt and 0.958 for Pd and four outliers for Pt and one for Au. QC samples not included;

- **Phase 3:** 94 pulps analyzed at Accurassay, with acceptable reproducibility of ±25% and four samples exceeding threshold. QC samples not included; and

- **Phase 4:** 805 pulps analyzed at Bondar Clegg, with acceptable reproducibility of ±25% and <25% samples exceeding threshold. A low bias was revealed in the primary lab Pd+Pt+Au ("3E") data, with the Bondar-Clegg check assay results approximately 10% higher than the original XRAL assays. In-house CRMs (n=42), NZ2 and SZ, and barren quartzite blanks (n=30) were included with check assays to monitor for accuracy and contamination. Performance of CRMs indicated potential accuracy issues.

11.3.1.2 Performance of In-House Reference Materials

In-house CRMs, NZ-2 and SZ, were inserted into the sample stream every 20th sample, for the final fourteen holes of the Phase 4 program. The CRMs were prepared from mineralized material blasted from the North Zone 2 (NZ-2) and the South Zone (SZ) stripped areas and sent to Accurassay for both preparation and analysis. Recommended CRMs values for Pd, Pt, Au, Cu and Ni were determined by averaging 25 results.

The 3E data from 61 NZ-2 CRM results and 18 SZ CRM results were analyzed and data for both CRMs implied either a high bias in Accurassay's original analyses, or a low bias in XRAL's Phase 4 results.

11.3.1.3 Performance of Additional Secondary Lab Checks with QC Samples

Subsequent to Phase 4 drilling and at the recommendation of Derry, Michener, Booth & Wahl Consultants Ltd. ("DMB & W"), the Company retrieved pulp material from 1,458 samples (560 samples from Phases 1 to 3 and 898 samples from Phase 4) representative of 23 selected holes, for the purpose of carrying out a more robust check assaying program. This recommendation was designed to improve confidence in the XRAL data not supported by external quality controls.

A total of 11 drill holes from Phases 1 to 3 drilling at the Dana Zone, six drill holes (434 samples) from Phase 4 drilling at the Dana Zone, and six drill holes (464 samples) from Phase 4 drilling at the Lismer Ridge Zone, were included in the check assaying program. Check assays were analyzed by XRAL and Accurassay for Au, Pt and Pd.

Accurassay's check assay results for Pt and Pd are consistently higher than XRAL results and, although the data indicate considerable dispersion about the mean value for both Pt and Pd, there appears to be good agreement between XRAL and Accurassay with substantial coefficient of determinations estimated for both Pt and Pd.

11.3.2 2002 – Phase 5 (83 Drill Holes)

The Phase 5 drilling program included the routine insertion of in-house CRMs, duplicates and blanks at a rate of 1 in 20 sample into the sample stream. Throughout this phase of drilling, two new in-house CRMs, one at cut-off grade and the other at mean deposit grade, were also included in QC protocol. QC sample results were monitored and follow up action was taken with failures encountered, including re-running certain samples if deemed necessary.

11.3.2.1 Performance of Certified Reference Materials

Phase 5 drilling utilized 96 CRMs to monitor for accuracy in core sample analyses. A total of eight in-house CRMs were used: DH29-01, DZ-1, DZ-2, NZ-2, NZ-2a, NZ-2b, SZ and SZ-1. The results of the Pt-Pd-Au CRMs were all within ±2 standard deviations of the calculated mean value. Results for the NZ-2b, NZ-2, SZ and SZ-1 C RMs were acceptable. However, relative low biases were evident in the NZ-2 and SZ XRAL data.

Some of the data for the DZ-1, NZ-2a, DH29-01 and DZ-2 CRMs plotted outside of ±2SD from the mean and follow-up investigation determined the cause to be a malfunctioning DCP analytical unit. Corrective action included the use of an ICP analytical unit to analyze the remaining samples and undertaking a re-assaying program of 2,974 samples (1,014 samples prior to and 1,960 samples subsequent to the issue being discovered) at XRAL in Toronto. The Project database was updated with corrected assay results at the conclusion of the re-assaying program.

11.3.2.2 Performance of Blanks

Potential contamination in Phase 5 of drilling at the Property was monitored with the aid of three blanks: the SS-1, SS-2 and SS-3 blanks. The latter two blanks did not return anomalous results, whereas the SS-1 blank returned several anomalously high results (20 ppb to 85 ppb Pd) in drill holes DL-55 to DL-62, within the same sequence of anomalous values for the DZ-2 standard.

11.3.2.3 Performance of Duplicates

A total of 1,134 duplicate samples from 81 drill holes, were sent for analysis during Phase 5 drilling: 522 samples from 35 drill holes at the Dana Zone, 531 samples from 40 holes at the Lismer Ridge Zone and 81 samples from six holes at the Banshee Zone. Duplicate analyses were carried out in two parts, with Parts 1 and 2 including samples from the Dana and Lismer Ridge Zones and Part 2 also including samples from the Banshee Zone. All duplicate samples were analyzed at both XRAL and Accurassay and Part 2 Dana and Lismer Ridge Zone samples were also analyzed at Chemex.

Duplicate data for Pt, Pd and Au were plotted on scatter plots and examined. Acceptable coefficients of determination (R^2) were calculated for both Pd and Pt across all data, with R^2 values estimated between 0.927 to 0.989 for Pd and 0.793 to 0.962 for Pt. There were three extreme outliers noted in the Au data, which when removed, gave R^2 values between 0.746 to 0.893. Without these outliers included in the data, R^2 values for Au ranged from 0.553 to 0.893.

11.3.3 2004 – Phase 6 (208 Drill Holes)

The Phase 6 drilling program again included the routine insertion of in-house reference CRMs, duplicates and blanks at a rate of 1 in 20 sample into the sample stream.

11.3.3.1 Performance of In-House Reference Materials

During Phase 6, a total of three in-house reference materials were created using bulk material from the Property. The in-house reference materials were prepared at Accurassay, Thunder Bay and the expected results were determined by round robin:

- ‘LOW-A’: a low-grade in-house control sample (~ 500 – 750 ppb 3E);
- A mid-grade in-house control sample (~ 1,000 – 1,500 ppb 3E); and
- NZ-2E: a high-grade in-house control sample (~ 6,000 ppb 3E) – ‘NZ-2E’.
  (3E = three elements Au + Pt + Pd).

A total of 1,225 in-house reference materials were inserted into the sample stream during Phase 6.

In January 2005, L. Bloom conducted a review of the QA/QC procedures and data at the Sudbury office. Based on the assays for Pt and Pd for NZ-2E and LOW-A, there was a possibility that SGS may be analyzing low, an observation that was also reported in the Phase 6 QC review.

The results of the in-house reference materials s indicate grouping of high biased Pt, Pd and Au, with Bloom concluding:

> *“It is difficult to estimate the bias across all grades, but as a rough estimate it is in the order of one standard deviation or possibly 50 ppb Pt and 100 ppb Pd.” The pertinent work orders are 72182 to 72191 and 72234 to 72244. This affects about 5% of the over 25,000 samples of Phase 6.”*

11.3.3.2 Performance of Duplicates

The 2004 Phase 6 program included 13 duplicates and 63 CRMs inserted into the sample stream. The results from the Pt-Pd-Au pulp duplicates assays indicated there was an issue duplicating the results at low grades. Gold had four samples that exceeded the 25% threshold, yet three of the samples have grades less than 50 ppb. Only two platinum duplicates exceeded the 25% threshold.

However, all thirteen duplicates of palladium exceeded the 25% threshold. NAM followed up on this issue with SGS and all samples were re-run using new equipment.

11.3.4 2005 – Phases 7 to 8 (123 Drill Holes)

11.3.4.1 Performance of In-House Reference Materials

During Phase 7, only LOW-A and NZ-2E were used as the supply of the mid-grade in-house reference materials was depleted during the previous phase of drilling.

The results of the in-house reference materials were reported to be primarily within ±2 Standard Deviations and show acceptable accuracy.

11.3.4.2 Performance of Blanks

A total of 54 blank results were reviewed by the author for the Phase 7 program. The vast majority of blank results were at or close to detection levels and do not indicate any contamination issues with the data.

11.3.4.3 Performance of Duplicates

A total of 289 field duplicates and 589 pulp duplicates were analyzed during the 2005 Phase 7 drilling program. During Phase 8 drilling, 89 field duplicates and 170 pulp duplicates were analyzed. The results from the Pt-Pd-Au core and pulp duplicates assays again indicate difficulty in duplicating low-grade results.

11.3.4.4 Performance of Check Assays

During the 2005 Phase 7 drill program, a total of 595 check assays were sent to Chemex for umpire assaying to check the original SGS results. The results were plotted on a scatter plot and show acceptable agreement between labs, with a slight high bias evident in the Chemex results.

Later in 2005, for the Phase 8 drilling results, 156 samples were sent to Chemex for umpire assaying to again check the SGS results. The results were plotted on a scatter plot and show acceptable precision, with no bias evident.

11.3.5 2011 to 2012 – Phase 9 (46 Drill Holes)

11.3.5.1 Performance of In-House Reference Materials

In-house reference materials created from bulk material from the Property were used to monitor for accuracy during Phase 9 drilling at the Property:

- RV-1: a high-grade (approximately 2,000 ppb 3E) sample;
- RV-2: a mid-grade (approximately 900 ppb 3E);
- RV-3: a low-grade (approximately 500 ppb 3E).

In-house reference materials were inserted into the sample stream every 40 samples. There were 71 samples for the RV-1 in-house reference material, 74 for RV-2 and 70 for RV-3. All data were plotted on process performance charts against the relevant upper and lower control limits (the median moving range standard deviation ("MRSD") is used to calculate control limits, with the upper and lower control limits calculated at ±3MRSD from the mean).

RV-1, the highest-grade in-house reference material with expected values of 86.1 ppb gold, 486 ppb platinum and 1,525 ppb palladium returned periodic failures for all three elements on the process performance chart. There were six failures (8.5%) for gold and five (7.0%) each for platinum and palladium.

RV-2, the mid-grade in-house reference material with expected values of 53.7 ppb gold, 246 ppb platinum and 644 ppb palladium, returned more failures at the commencement of the program. There were five failures (6.8%) for gold, four (5.4%) for platinum and six (8.1%) for palladium.

The lowest grade RV-3 in-house reference materials, with expected values of 16.2 ppb gold, 160 ppb platinum and 327 ppb palladium, returned the least amount of failures throughout this phase of drilling. There were two failures (2.9%) for gold, four (5.7%) for platinum, and one (1.4.%) for palladium.

11.3.5.2 Performance of Blanks

Pulp blanks were inserted into the sample stream every 40 samples. In addition to pulp blanks, coarse blanks were submitted every 20 samples to test for contamination during sample preparation stages.

All blank data for gold, platinum and palladium were graphed. If the assayed value in the certificate was indicated as being less than detection limit, the value was halved for data treatment purposes. An upper tolerance limit of three times the detection limit value was set. There were 214 data points to examine.

The vast majority of data plots at or below set tolerance limits for gold and platinum, with eight blanks (3.7%) plotting above the set tolerance limit for gold and one (0.5%) for platinum. The highest-grade blank result returned for gold is 32 ppb and 30 ppb for platinum.

The palladium tolerance limit was set at 3 ppb and a total of 38 blanks (17.8%) fall above this set tolerance limit. The highest-grade blank result returned a grade of 38 ppb in the palladium data set and the majority of failures occur in the first three-quarters of the program, after which the majority of palladium blanks fall on or below 3 ppb. The distinct change at this time likely indicates improvement in laboratory protocol. The anomalous blank results generally follow higher grade palladium results and show between 1 to 3% carry over contamination. The author does not consider contamination to be significant to the integrity of the 2011-2012 drilling data.

11.3.6 2015 to 2020 – (29 Drill Holes)

11.3.6.1 Performance of In-House Reference Materials

The same RV-1, RV-2 and RV-3 in-house reference materials used in Phase 9 were used to monitor accuracy at the Project during drilling carried out from 2015 through 2020 (as described in section 11.3.5.1). Data for the four years of drilling (2015, 2016, 2017 and 2020) were assessed together, due to the small amount of data gathered throughout each year, to allow for more robust statistical evaluation.

In-house reference materials were inserted into the sample stream every 40 samples. There were 30 samples for the RV-1 in-house reference material, 32 for RV-2 and 28 for RV-3. All data were plotted on process performance charts against the relevant upper and lower control limits (with the upper and lower control limits calculated at ±3MRSD from the mean).

All data for RV-1, the highest-grade in-house reference material with expected values of 86.1 ppb gold, 486 ppb platinum and 1,525 ppb palladium, returned in-control results (see Figures 11.2 to 11.4).

RV-2, the mid-grade in-house reference material with expected values of 53.7 ppb gold, 246 ppb platinum and 644 ppb palladium, returned a single failure (3.1%) for both gold and platinum and no failures for palladium. Gold results for RV-2 show a low bias (see Figures 11.5 to 11.7).

The lowest grade RV-3 in-house reference material, with expected values of 16.2 ppb gold, 160 ppb platinum and 327 ppb palladium, returned four failures (14.2%) for gold, and one failure each (3.6%) for platinum and palladium (see Figures 11.8 to 11.10).

The author of this Technical Report section considers the in-house reference material data to demonstrate acceptable accuracy and does not consider the reported failures to be of material impact to the Mineral Resource data.

FIGURE 11.2 2015 TO 2020 RV-1 STANDARD PERFORMANCE - AU

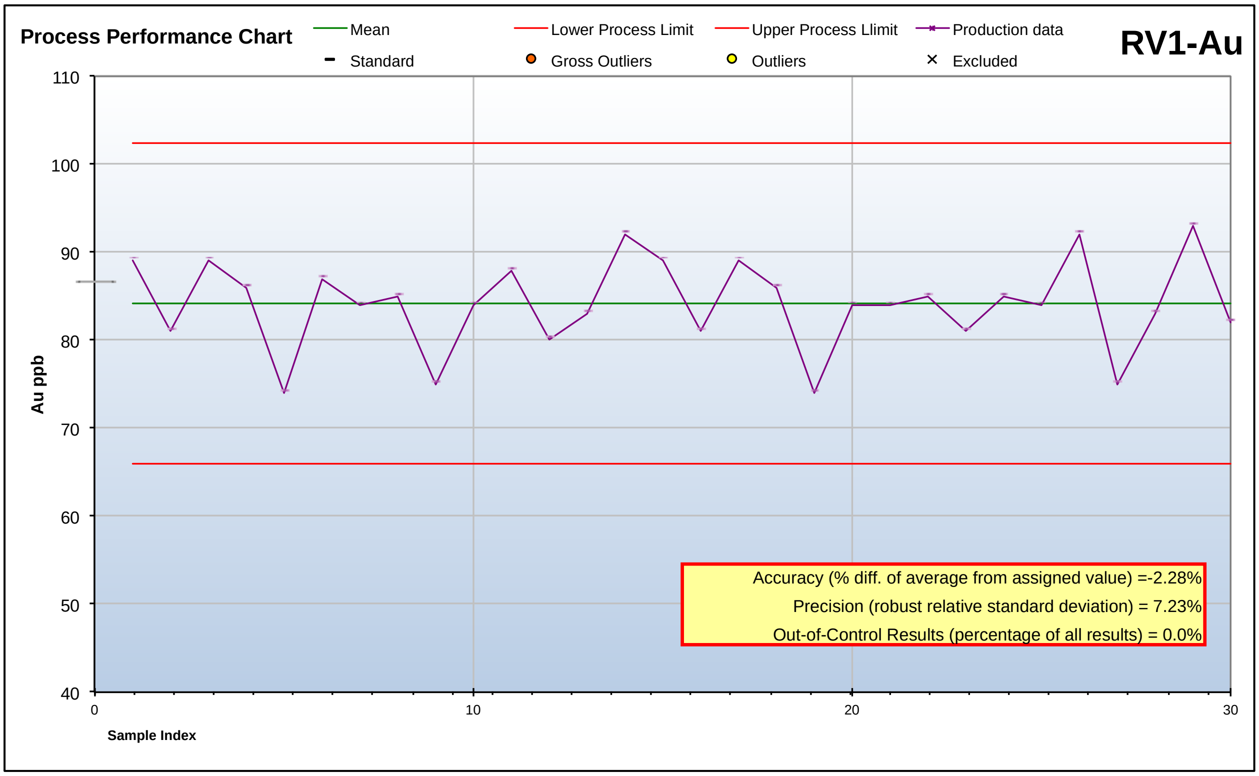


FIGURE 11.3 2015 TO 2020 RV-1 STANDARD PERFORMANCE - PD

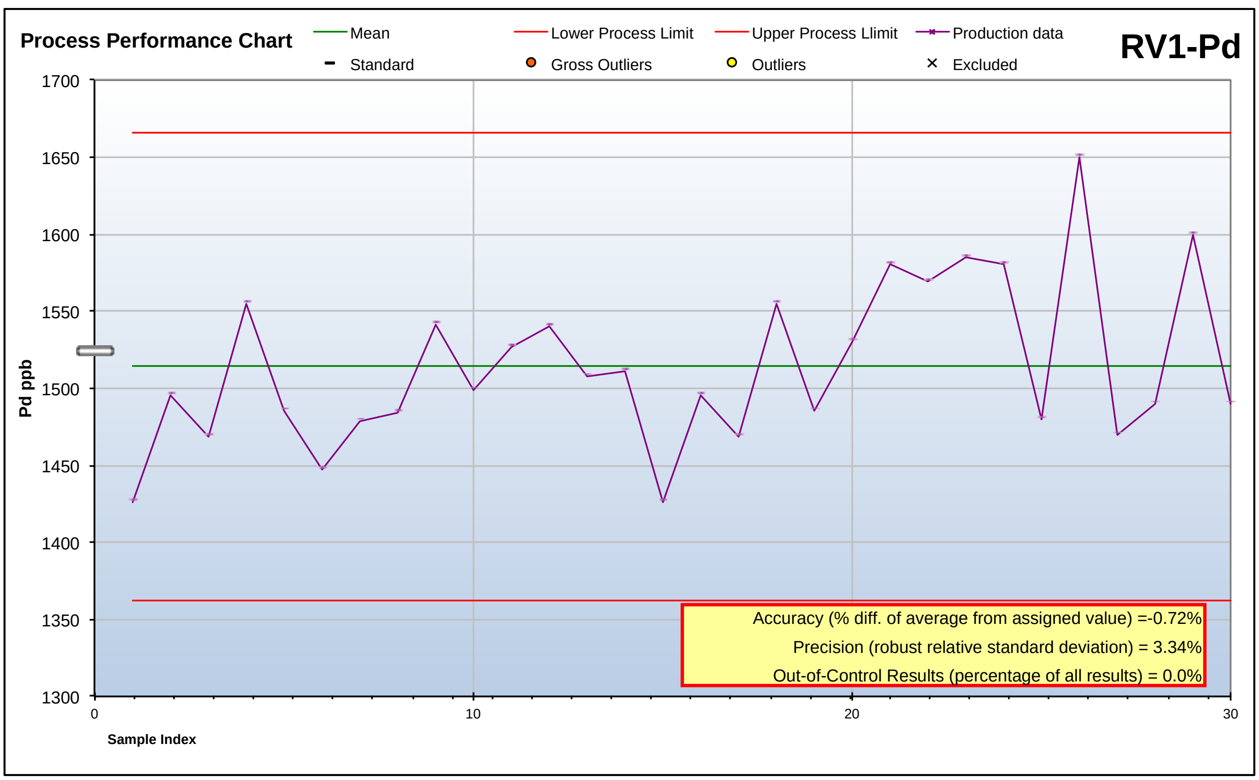


FIGURE 11.4 2015 TO 2020 RV-1 STANDARD PERFORMANCE - PT

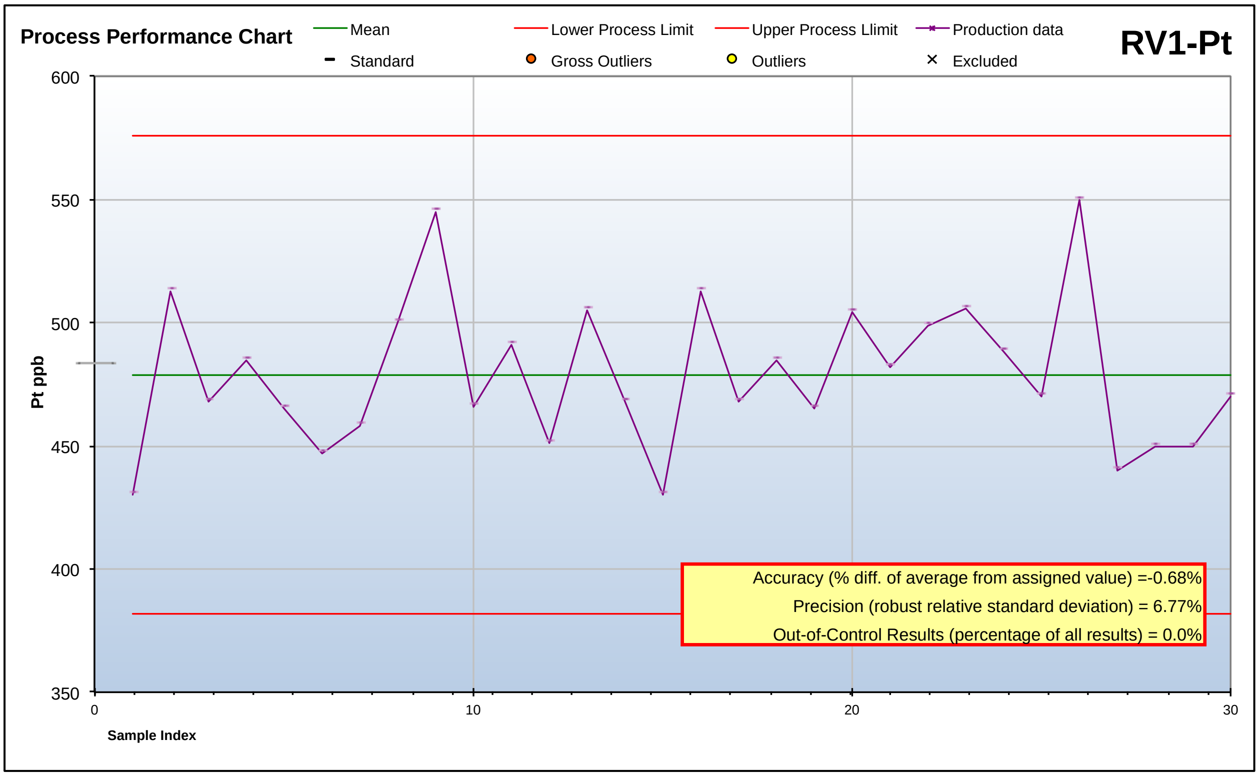


FIGURE 11.5 2015 TO 2020 RV-2 STANDARD PERFORMANCE - AU

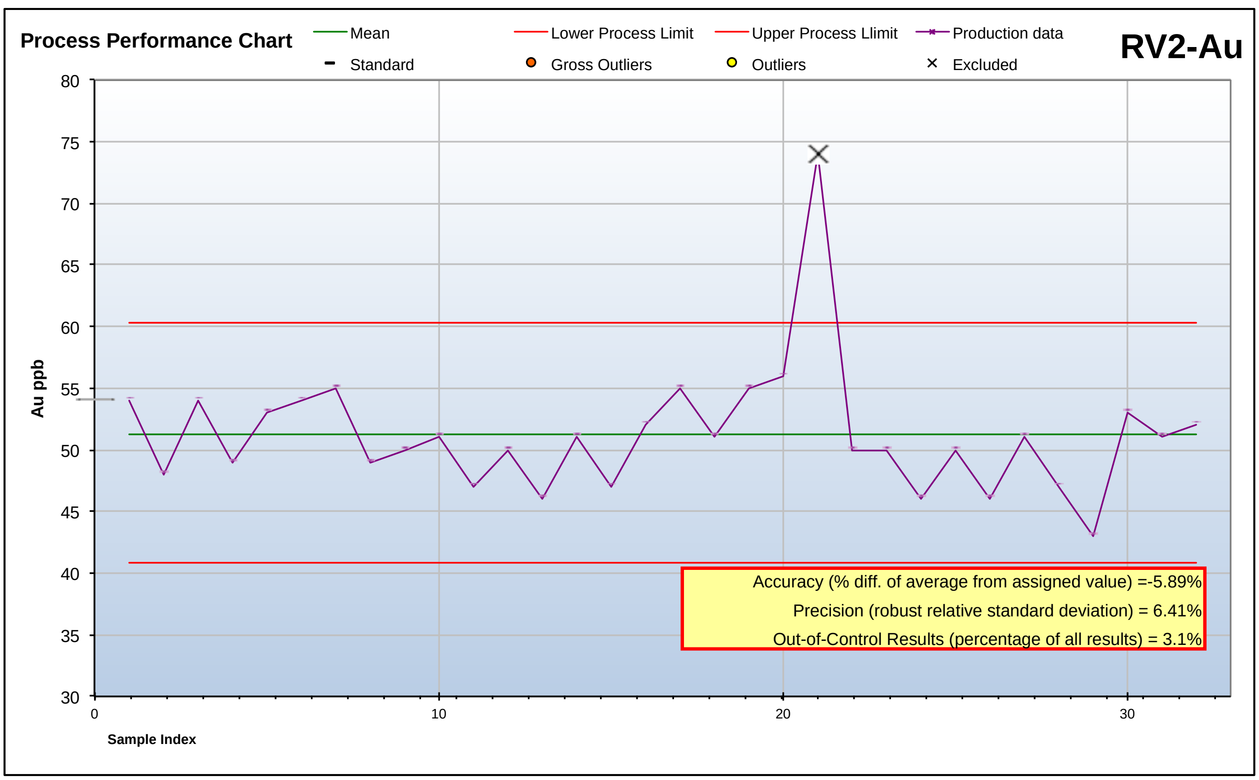


Figure 11.6 2015 to 2020 RV-2 Standard Performance - Pd

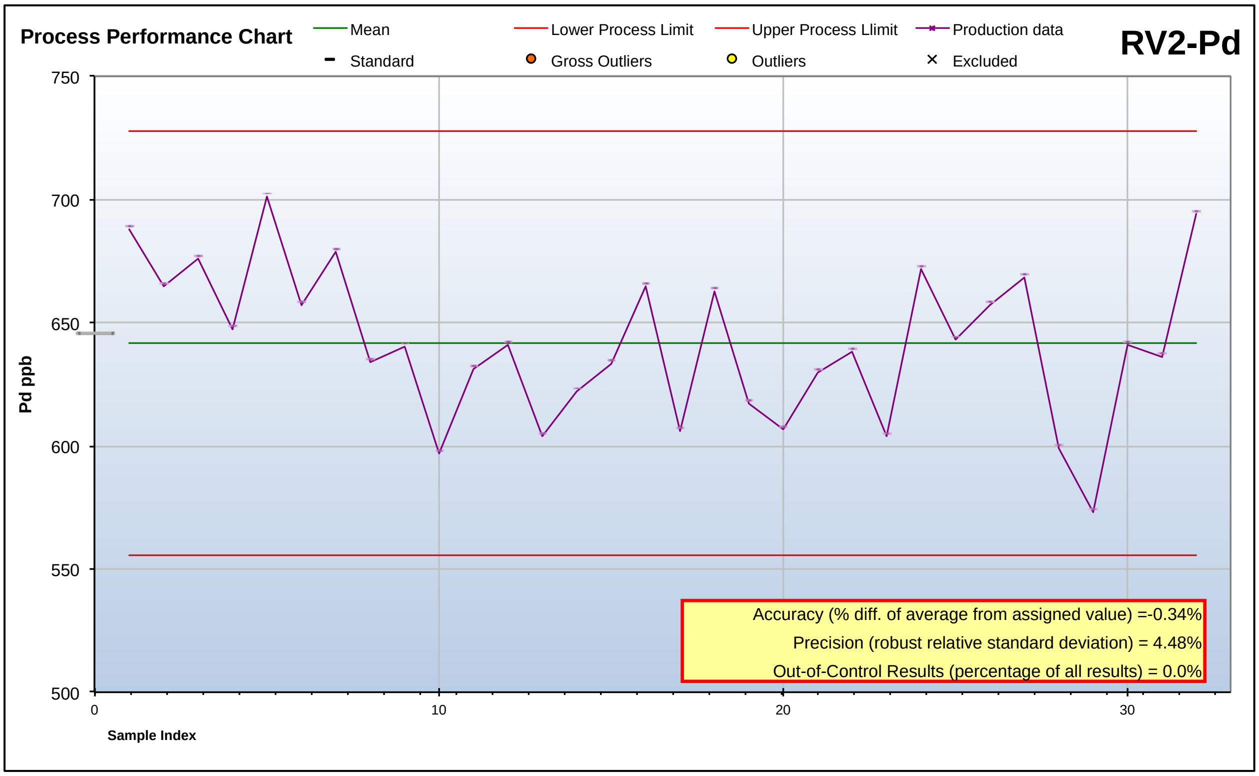


Figure 11.7 2015 to 2020 RV-2 Standard Performance - Pt

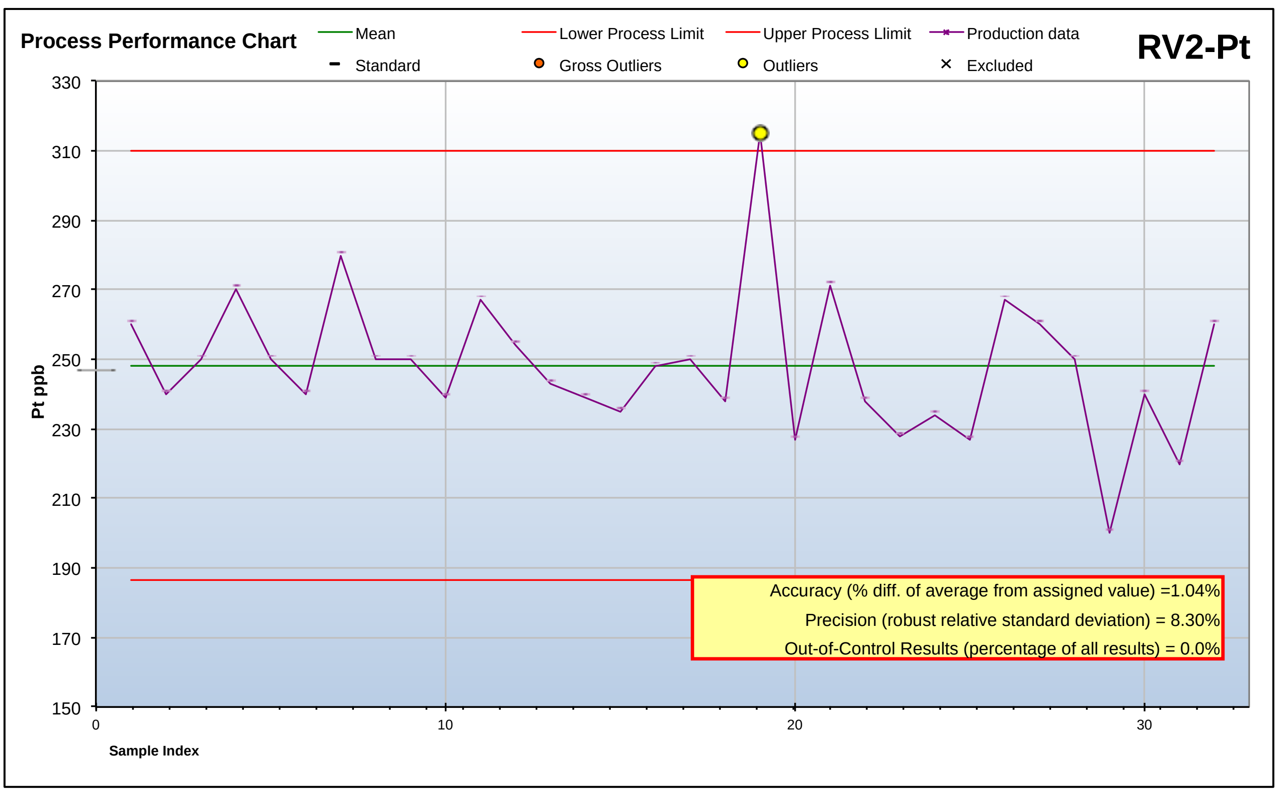


FIGURE 11.8 2015 TO 2020 RV-3 STANDARD PERFORMANCE - AU

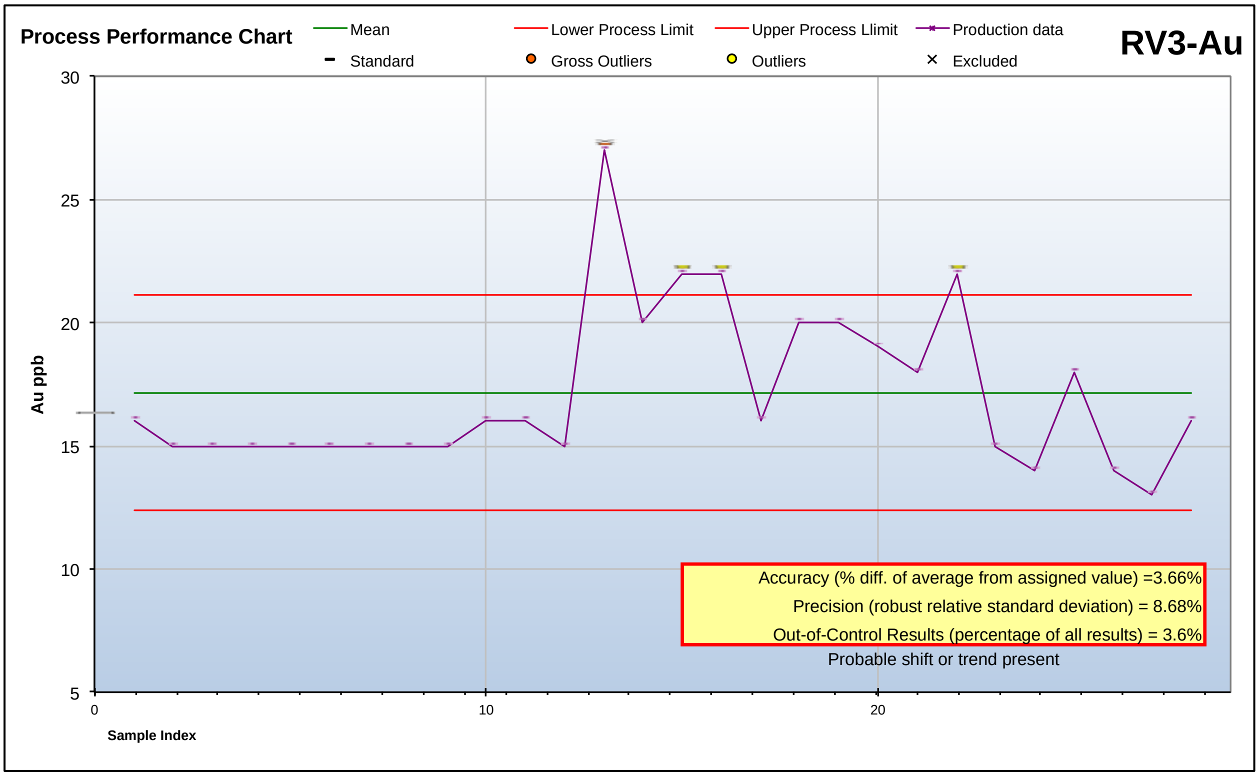


FIGURE 11.9 2015 TO 2020 RV-3 STANDARD PERFORMANCE - PD

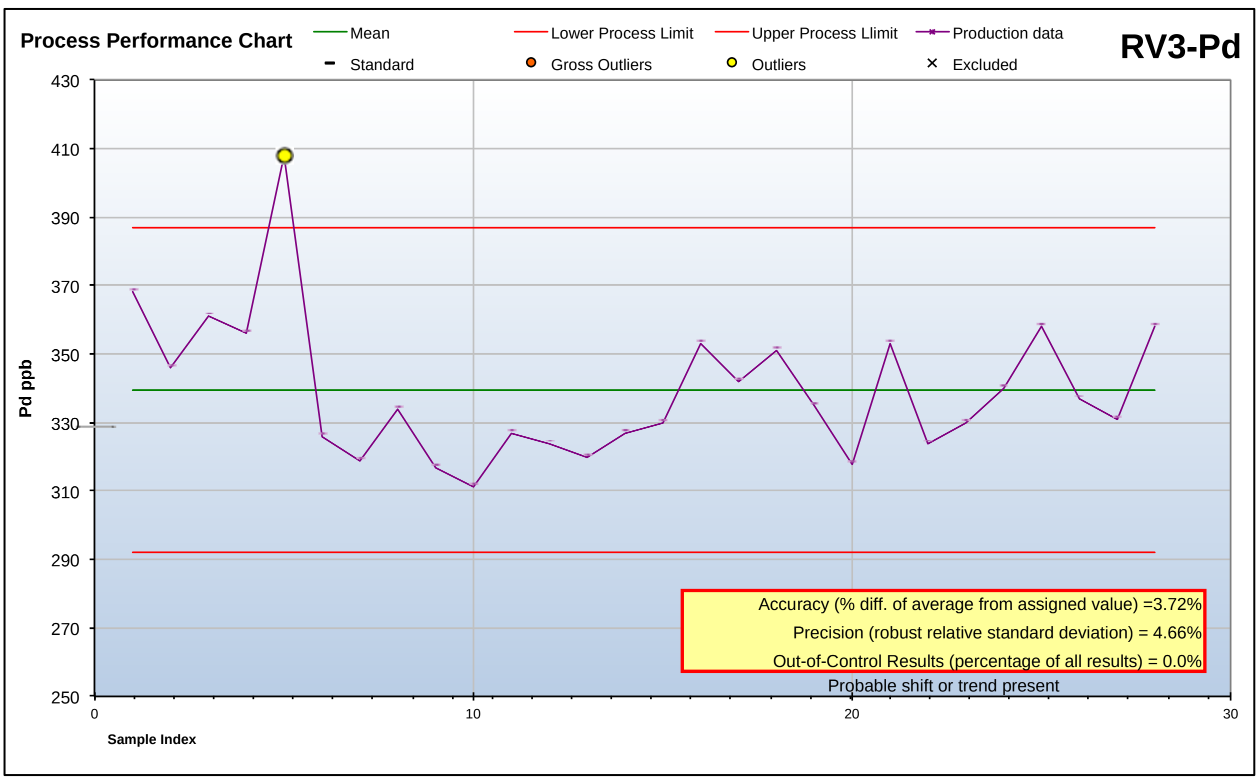
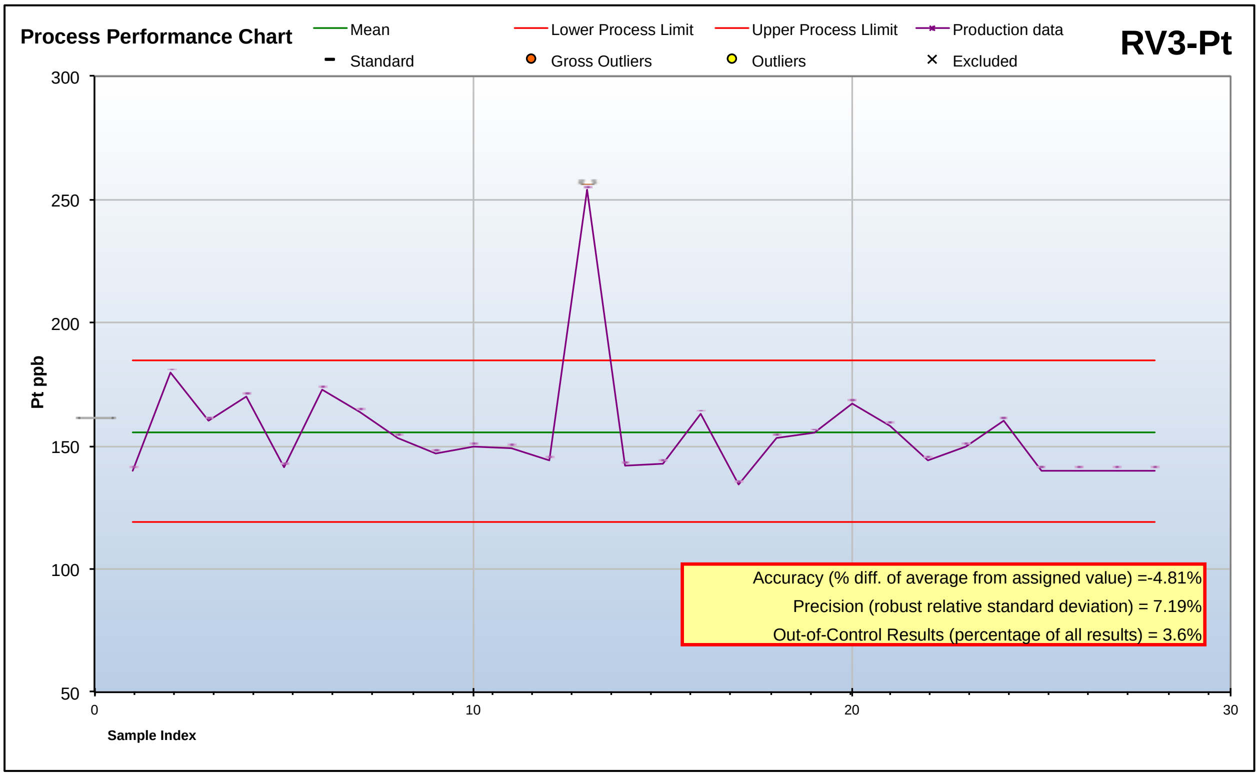


FIGURE 11.10 2015 TO 2020 RV-3 STANDARD PERFORMANCE - PT



11.3.6.2 Performance of Blanks

Pulp blanks were inserted into the sample stream every 40 samples. In addition to pulp blanks, coarse blanks were submitted every 20 samples to test for contamination during sample preparation stages.

All blank data for gold, platinum and palladium were graphed. If the assayed value in the certificate was indicated as being less than detection limit, the value was halved for data treatment purposes. An upper tolerance limit of three times the detection limit value was set. There were 18 data points to examine.

All data for palladium and platinum plots below set tolerance limits. A single gold blank, returning a result of 6 ppb, was the only failure noted for gold.

The author of this Technical Report section does not consider contamination to be significant to the integrity of the 2020 drilling data.

11.3.6.3 Performance of Check Assays

Check assaying was undertaken at Actlabs during the 2015 through 2017 drilling at the Property. The results for palladium and platinum were plotted on scatter plots and show acceptable agreement between labs (Figures 11.11 and 11.12). Between-lab bias is noted in results below ~200 ppb for both elements.

FIGURE 11.11 CHECK ASSAYING FOR PD

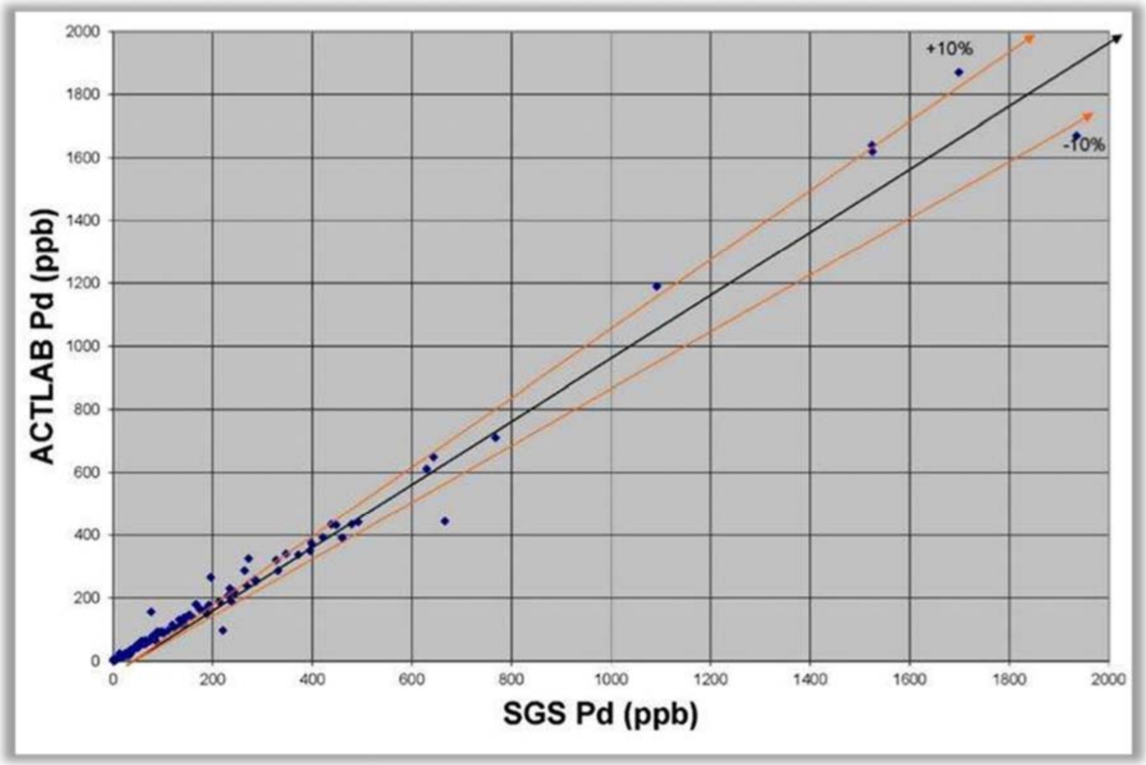
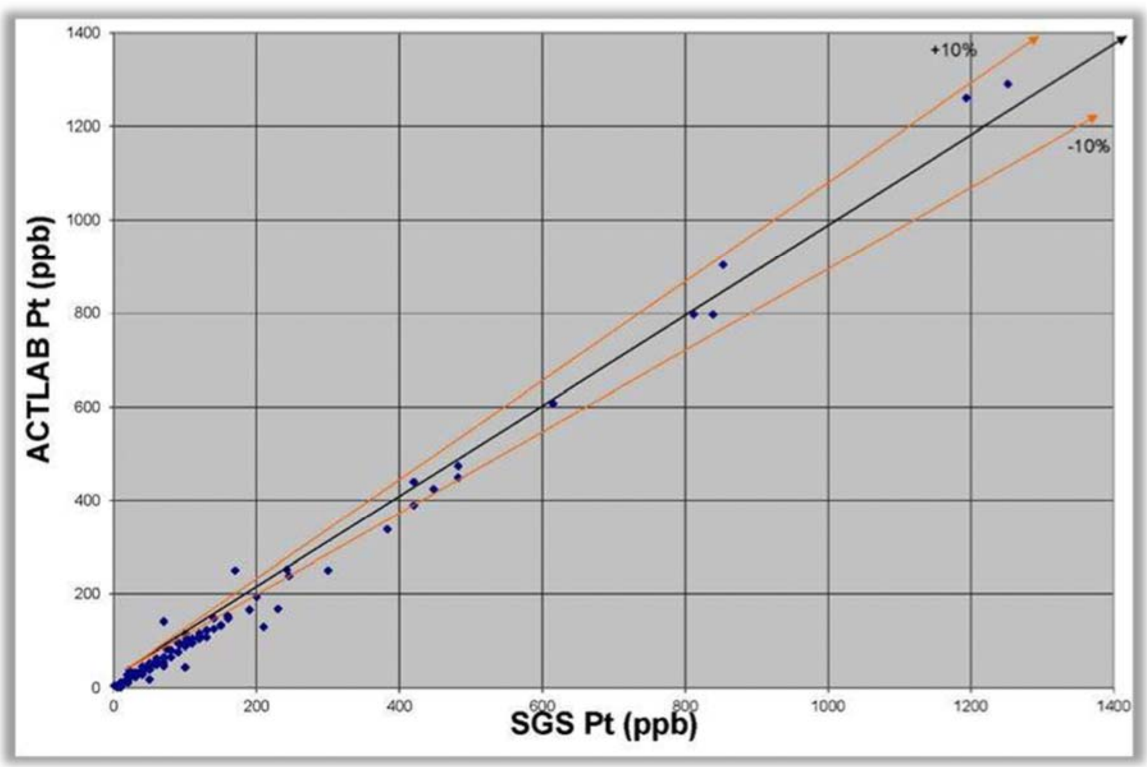


FIGURE 11.12 CHECK ASSAYING FOR PT



11.4 CONCLUSION

It is the opinion of the author of this Technical Report section that sample preparation, security and analytical procedures for the River Valley Project are adequate and that the data are of good quality and satisfactory for use in the Update Mineral Resource Estimate reported in this Technical Report.

12.0 DATA VERIFICATION

12.1 DATABASE VERIFICATION

P&E's Qualified Person conducted verification of NAM's 2000 to 2020 drill hole data in the River Valley Project drill hole assay database for gold, palladium and platinum, by comparison of the database entries with assay certificates. Certificates were provided directly to the Qualified Person by SGS in comma-separated values (csv) format or obtained from work assessment reports, provided to P&E by NAM in portable document format (pdf).

Constrained assay data from 2000 to 2020 were verified for the Project, with 10.6% (6,120 out of a total of 58,007 entries) of the drilling assay data checked for Au, Pd and Pt against the SGS and XRAL certificates. Very few minor discrepancies were encountered during the verification process, which are not considered material to the current Mineral Resource Estimate.

12.2 P&E SITE VISIT AND INDEPENDENT SAMPLING

Mr. Antoine Yassa, P.Geo., visited the Property from June 6 to June 8, 2021, for the purpose of carrying out a site visit and completing an independent verification sampling program. The River Valley drill core was examined during the site visit, with 21 samples taken from five holes during the June 2021 site visit. The archived half-drill core samples were sawn into ¼ splits, with one ¼ split sent for analysis and the remaining ¼ core split returned to its storage box. An effort was made to sample a range of grades.

At no time were any employees of NAM advised as to the identification of the samples to be chosen during the visit.

The samples were selected by Mr. Yassa, and placed into sample bags that were sealed with tape and placed in a rice bag. The samples were sent by couriered by Mr. Yassa to AGAT Laboratory, ("AGAT") in Mississauga, Ontario for analysis.

AGAT has developed and implemented at each of its locations a Quality Management System (QMS) designed to ensure the production of consistently reliable data. The system covers all laboratory activities and takes into consideration the requirements of ISO standards. AGAT maintains ISO registrations and accreditations (ISO 9001:2015 and ISO/IEC 17025:2017).

Platinum, gold and palladium samples were analyzed by fire assay with ICP-OES finish and copper, nickel, cobalt and silver were analyzed using sodium peroxide fusion with ICP-OES/ICP-MS finish.

Results of the River Valley Project site visit samples are presented in Figures 12.1 through 12.7.

FIGURE 12.1 2021 SITE VISIT SAMPLE RESULTS FOR PT

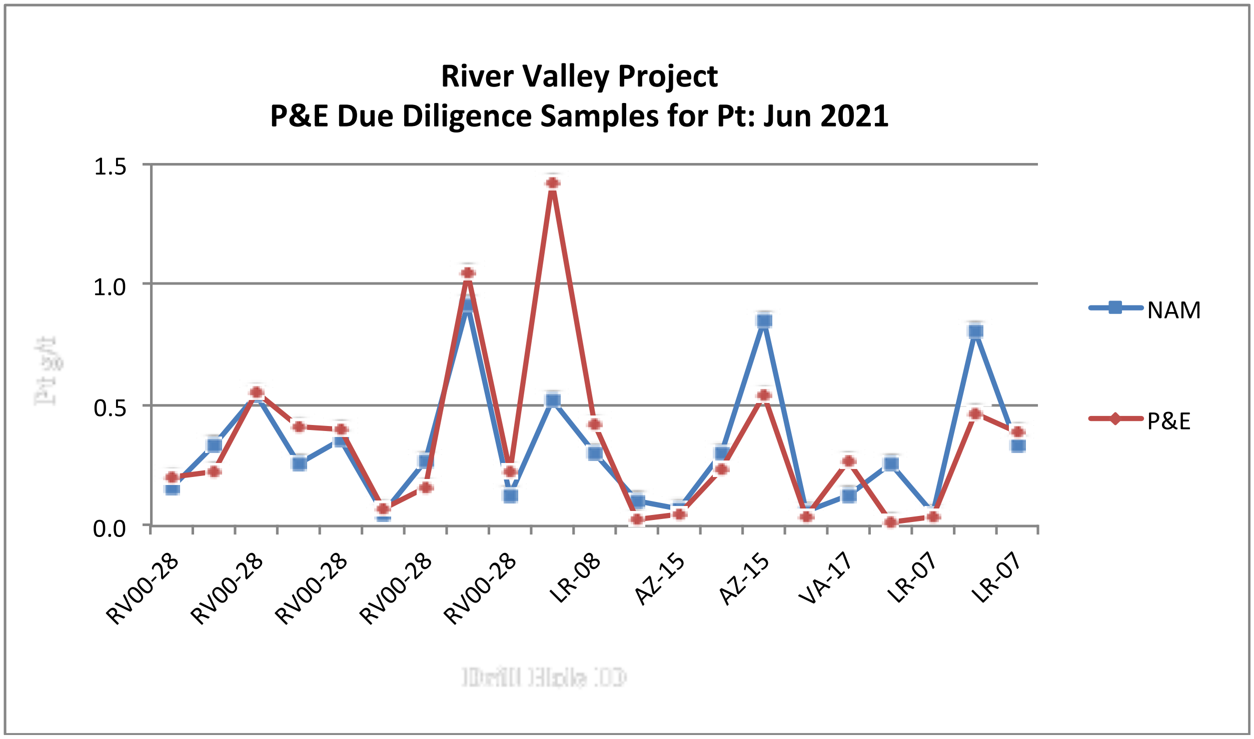


FIGURE 12.2 2021 SITE VISIT SAMPLE RESULTS FOR AU

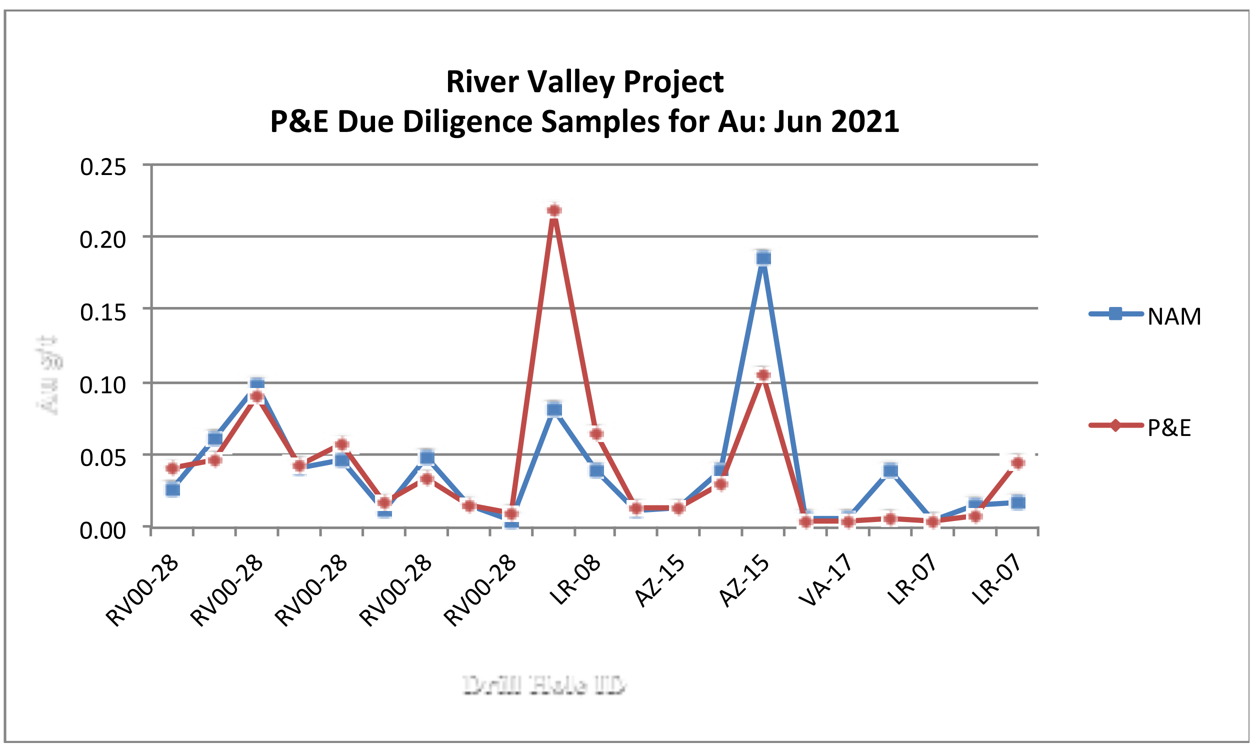


FIGURE 12.3 2021 SITE VISIT SAMPLE RESULTS FOR PD

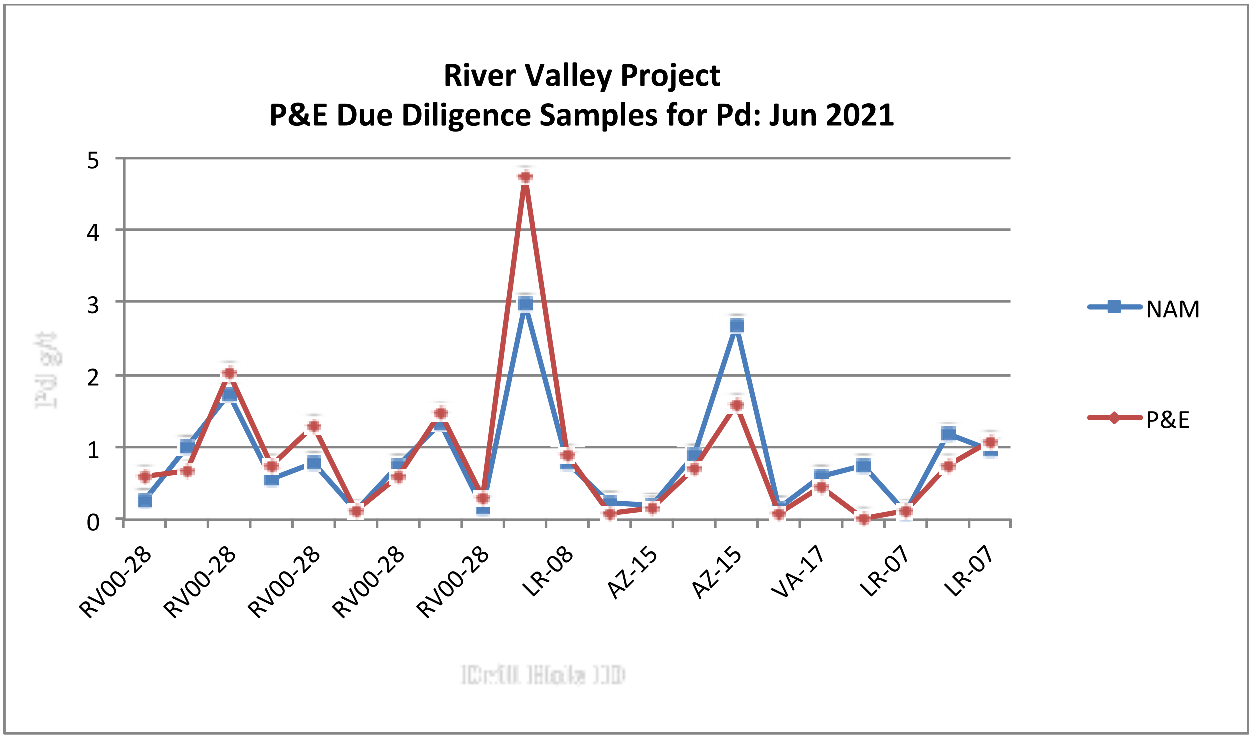


FIGURE 12.4 2021 SITE VISIT SAMPLE RESULTS FOR CU

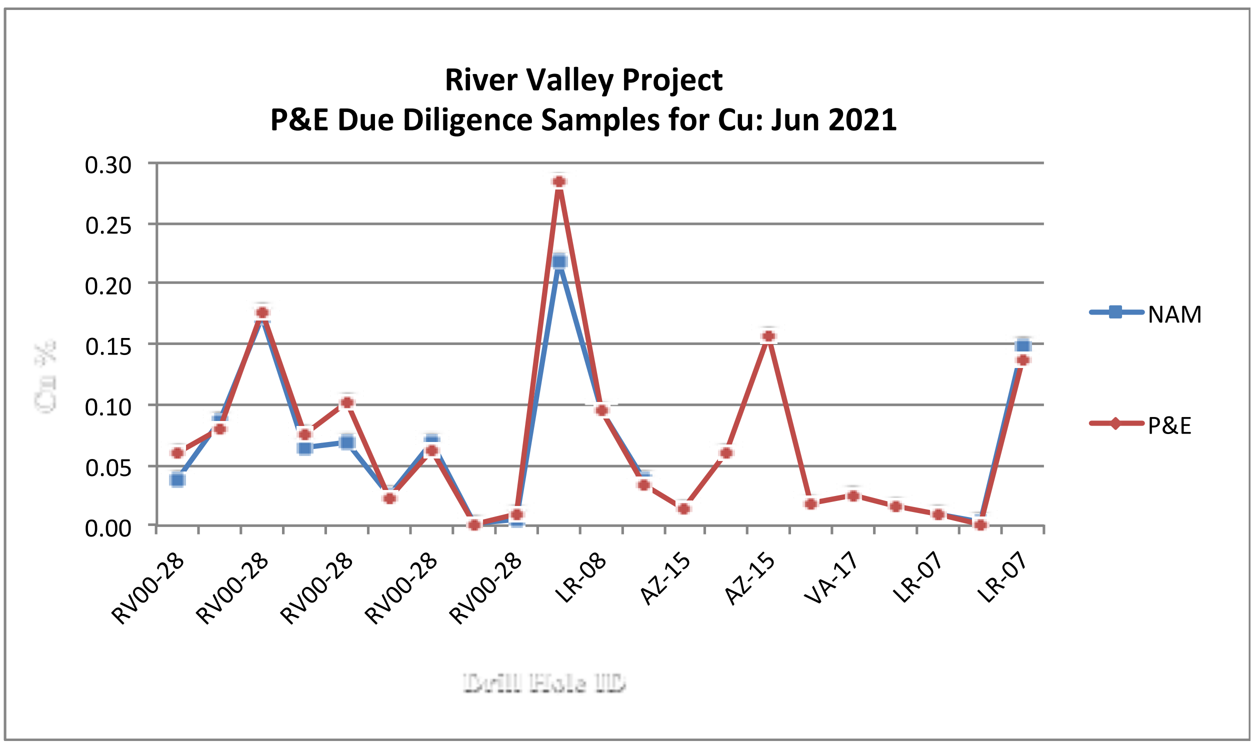


FIGURE 12.5 2021 SITE VISIT SAMPLE RESULTS FOR NI

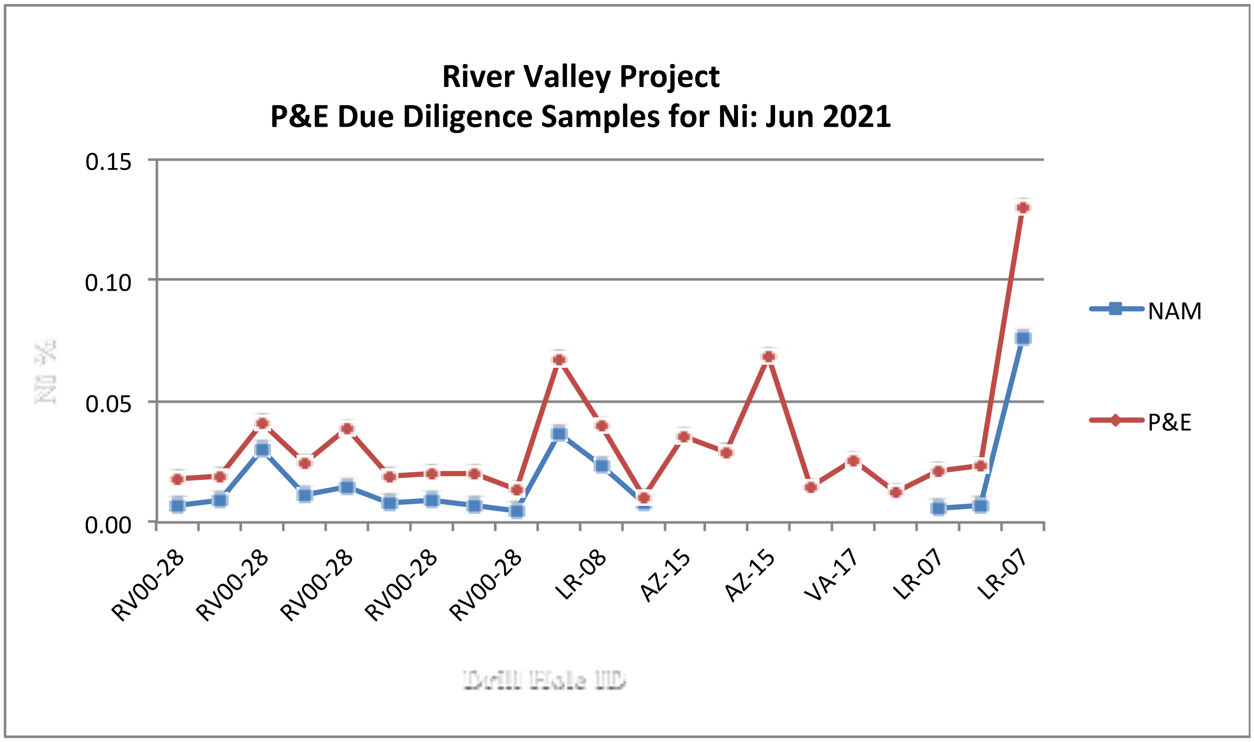


FIGURE 12.6 2021 SITE VISIT SAMPLE RESULTS FOR CO

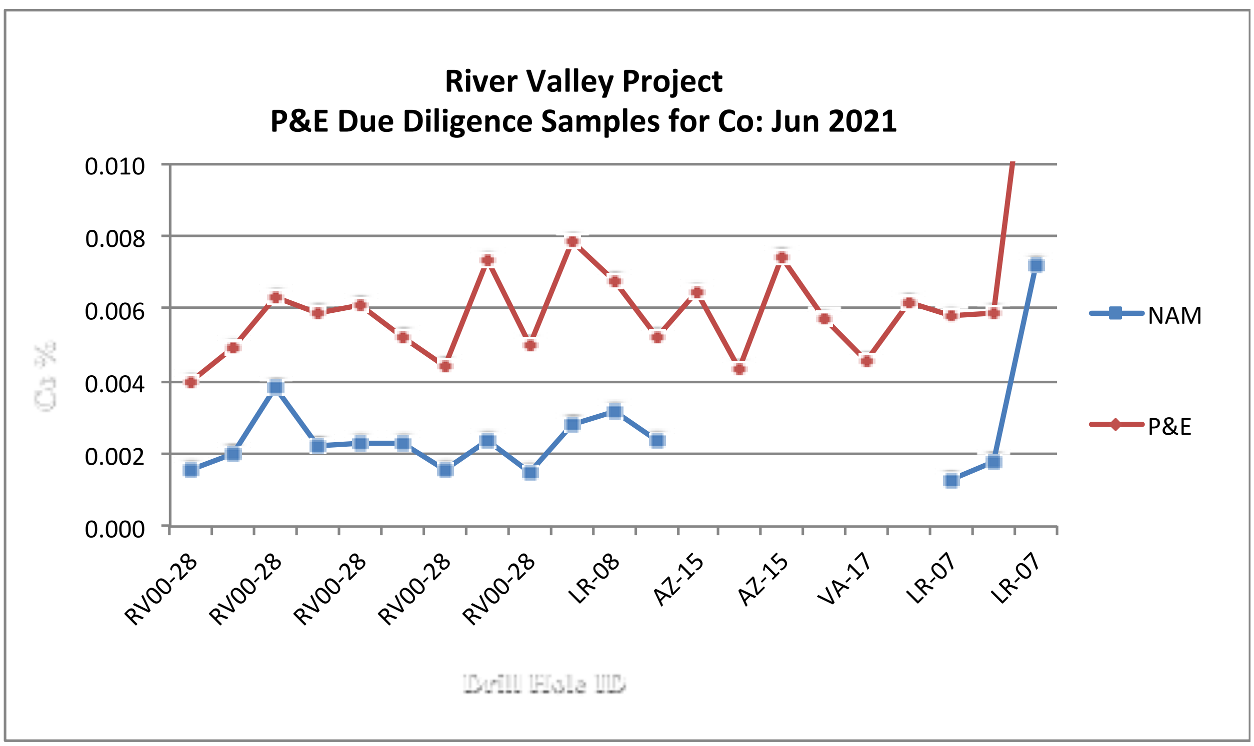
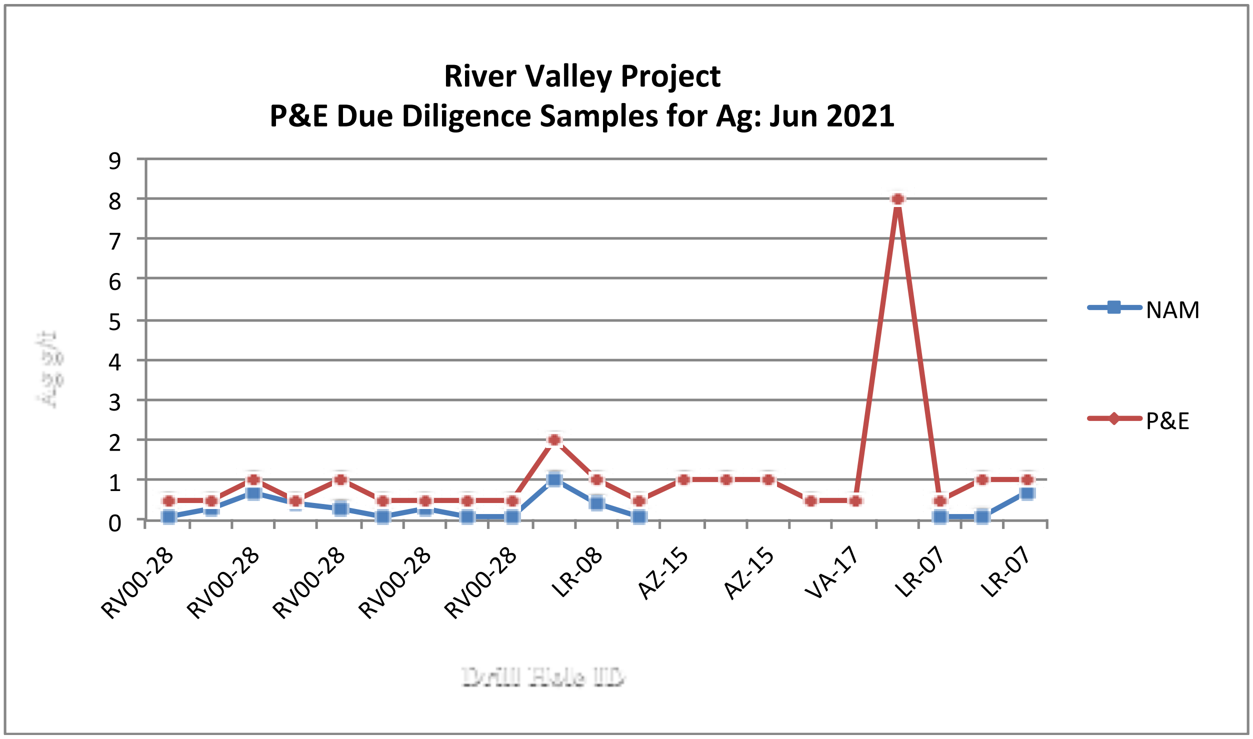


FIGURE 12.7 2021 SITE VISIT SAMPLE RESULTS FOR AG



The authors of this Technical Report section consider that there is acceptable correlation between the Pt, Pd, Au, Cu, Ni, Co and Ag assay values in the Company's database and the independent verification samples collected by P&E and analyzed at AGAT. Uniform increase in grade is evident in P&E's Ni, Co and Ag site visit samples. However, this is an anticipated outcome due to the difference in between-lab analyses. The original assays were carried out by two-acid digest/ICP, whereas P&E's site visit samples were analyzed by sodium peroxide fusion/ICP-OES/ICP-MS.

12.3 CONCLUSION

It is the opinion of the authors of this Technical Report section that the data are of good quality and appropriate for use in the current Updated Mineral Resource Estimate.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Metallurgical testwork studies of the River Valley Deposit materials were completed in 1999, 2001, 2004, 2006, 2012 and 2018. The pre-2012 testwork studies are summarized in Section 6 of this Technical Report. The 2012 and 2018 studies are summarized below.

13.1 2012 SCOPING LEVEL METALLURGICAL TESTING

In 2012-2013**,** scoping level metallurgical tests were conducted at SGS Lakefield on a sample from the River Valley PGM Deposit for NAM. The testwork program worked with composites representing anticipated head grades and mineralogical compositions for both the Dana South Zone and Dana North Zone. Testwork on composites investigated the following parameters:

- Bond Rod Mill Index ("RWI");
- Ball Mill Work Index ("BWI");
- Abrasion Index ("AI");
- Modal Analysis and Deportment;
- Mineral Liberation Analyses ("MLA"); and
- Flotation testwork - including Regrind Effect, Rougher Kinetic testwork and Locked Cycle Testwork ("LCT").

Testwork was also completed on an "Overall" composite prepared from half core intervals from both Dana South Zone and Dana North Zone of the River Valley Deposit. The Overall Composite graded 0.097% Cu, 0.030% Ni, 0.013% Ni(S), and 1.43 g/t PGM. For the purposes of this Technical Report, PGM is defined as Pd+Pt+Au assays. The nickel sulphide assay suggested that only approximately 40% of the nickel would be recoverable through sulphide flotation.

Testwork on both composites included mineralogical analyses, Bond rod mill grindability, and Bond abrasion testing on both Dana South and Dana North composites. Flotation testwork was completed only on the Overall composite to develop a viable flowsheet, evaluating various parameters such as primary grind and regrind fineness, reagent types and dosages, and the generation of a concentrate with a target grade PGM of 200 g/t.

The following conclusions can be made from the testwork completed on the composites from the River Valley Deposit:

- Dana South Zone composite assayed 0.092% Cu, 0.026% Ni, 0.010% Ni(S), and 1.25 g/t PGM (Pd+Pt+Au). Dana North Zone composite contained 0.13% Cu, 0.034% Ni, 0.014% Ni(S), and 1.76 g/t PGM. The Overall Composite, a composite of Dana South Zone and Dana North Zone at a ratio of 1:1, contained 0.097% Cu, 0.030% Ni, 0.013% Ni(S), and 1.43 g/t PGM;

- The Bond rod mill grindability tests indicated that the RWI for Dana South Zone and Dana North Zone composites were 19.9 kWh/t and 20.2 kWh/t, respectively - both composites were identified as being very hard;

- The Bond Abrasion tests ("AI") determined that both composites were in the moderate to hard abrasive range; and

- The modal analysis identified that the dominant minerals in the Dana South Zone and Dana North Zone composites was amphibole/pyroxene and plagioclase, accounting for approximately 54 wt% and 22 wt% to 25 wt%, respectively. The contents of the other minerals present are shown in Table 13.1, (wt% = weight percent).

TABLE 13.1
CONTENT OF MINERALS ON THE DANA SOUTH AND DANA NORTH COMPOSITES

Minerals	Weight %	
	Dana South Composite	Dana North Composite
Chlorite	13.0	12.0
Quartz	5.0	5.0
Micas	3.0	2.0
K-feldspar	1.0	1.0
Chalcopyrite	0.37	0.48
Ni-sulphides	0.04	0.03
Pyrite	0.14	0.13
Pyrrhotite	0.16	0.28

- The liberation and association analysis of the mineralogy samples, which had a P_{80} of approximately 150 µm, revealed the following:
  - Chalcopyrite was 68% liberated (≥80% mineral-of-interest area percent) with Dana North Zone and 74% with Dana South Zone; and
  - Ni-sulphides were 59% liberated with Dana North Zone and 45% with Dana South Zone.

- The element Ni deportment analysis indicated that the major Ni carriers are as shown in Table 13.2.

TABLE 13.2
NI DEPORTMENT ANALYSIS ON THE DANA SOUTH ZONE AND DANA NORTH ZONE COMPOSITES

Ni Carrier	Mass (% Ni)	
	Dana South Zone Composite	Dana North Zone Composite
Ni-Sulphides	45.0	35.0
Pyrrhotite	4.0	7.0
Silicates	51.0	55.0

The high percentage of Ni carried by silicates resulted in the low Ni flotation recoveries.

- The electron microprobe analysis revealed a high Ni content in pyrrhotite at 0.81%, which suggests that recovering pyrrhotite intentionally in flotation is likely to improve Ni recovery. The chlorite and amphibole contained 0.06% Ni and 0.03% Ni, respectively. The major losses of nickel occur with the rejection of these two minerals during the flotation process;

- The flotation testwork was completed on the Overall Composite. Eleven rougher kinetics tests were performed to evaluate effective reagents, dosages, flotation time and primary grind fineness. The cleaner tests (F7 and F13 to F23) were conducted to investigate cleaner circuit configuration, depressants, and regrind fineness.

- A primary grind P_{80} of 75 µm was selected;

- A collector combination of SIBX and Aero 3477 was identified as a suitable collector suite;

- No non-sulphide gangue depressant was required in the rougher stages. CMC was found to be beneficial in the cleaner stages;

- The best test, F18, produced a concentrate grading 8.94% Cu, 1.22% Ni and 109 g/t PGM (Pd+Pt+Au) at recoveries of 86.8% for Cu, 26.7% for Ni and 71.8% for PGM. This concentrate did not meet the grade target of 200 g/t PGM;

- QEMSCAN analysis on a third cleaner concentrate sample revealed that the liberation of sulphide minerals in the concentrate were high between 76% and 89%. Amphibole/pyroxene and plagioclase were the primary gangue minerals in the concentrate at 19 wt% and 16 wt%, respectively. Silicates in the concentrate exhibited high liberation (87%);

- The cleaner tests (F24 and F25) focused on the depression of the gangue minerals achieved significant improvement on the concentrate grade, producing a concentrate grading 21.4% Cu, 1.63% Ni and 242.7 g/t PGM (Pd+Pt+Au) at recoveries of 75.5% for Cu, 17.9% for Ni and 61.9% for PGM. CMC with Na_2SiO_3 or Aero 8860 GL were found to be effective on depression of non-sulphide gangue minerals, and finer regrind was possibly beneficial to PGM metallurgy;

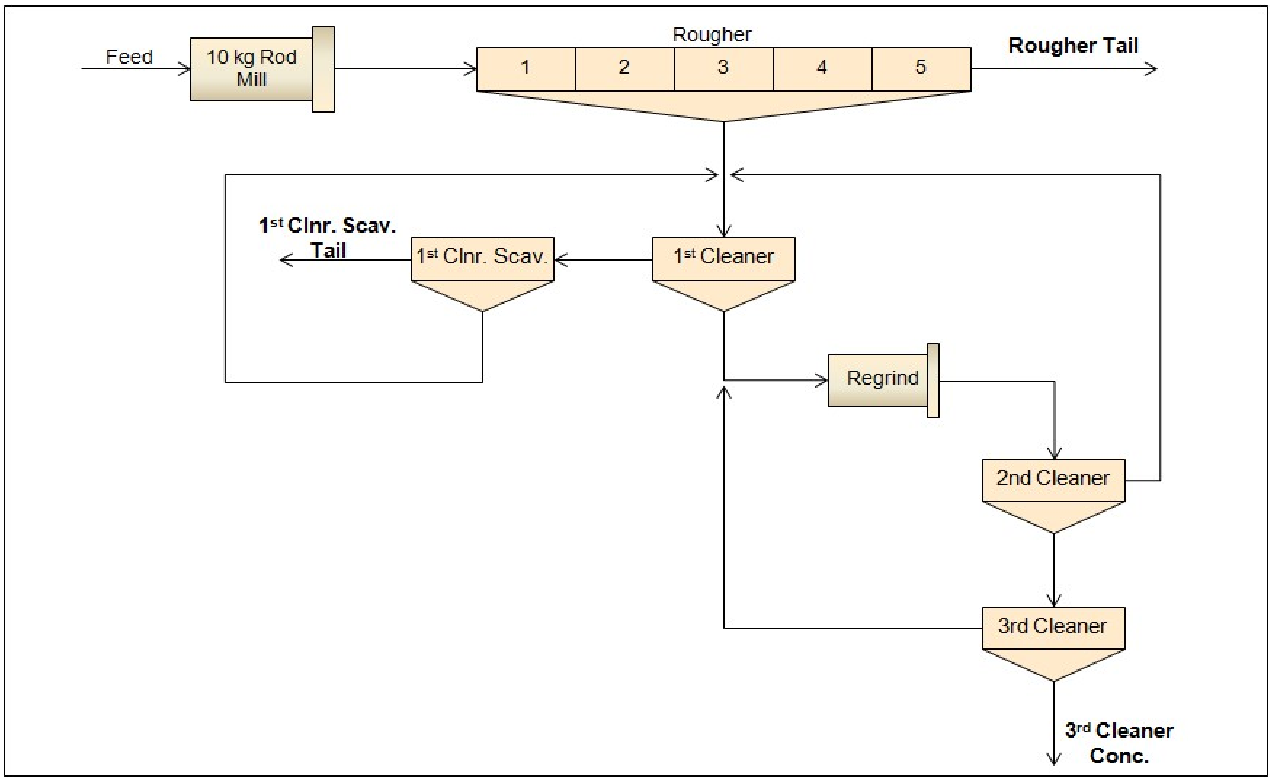
- A LCT produced a concentrate grading 15.5% Cu, 1.67% Ni, and 189 g/t PGM at recoveries of 84.4% for Cu, 22.2% for Ni, and 68.7% for PGM. A P_{80} of 71 µm was achieved in the primary grind, whereas 19 µm was achieved in the regrind;

- Reagents selected and applied in the LCT are shown in Table 13.3; and

- A flowsheet of the LCT is presented in Figure 13.1, and the results are shown in Table 13.4.

TABLE 13.3 REAGENTS SELECTED AND APPLIED IN THE LOCKED CYCLE TEST					
Circuit	**Reagent (g/t)**				
	SIBX	**Aero 3477**	**CMC**	**Na_2SiO_3**	**MIBC**
Rougher	80	30			10
Cleaner	60	30	90	10	15
Total	**140**	**60**	**90**	**10**	**25**

FIGURE 13.1 LOCKED CYCLE TEST



Source: *SGS (2013)*

TABLE 13.4
LOCKED CYCLE TEST PRODUCT ANALYSIS

Product	Weight %	Assays				% Distribution			
		Cu (%)	Ni (%)	S (%)	PGE (g/t)	Cu (%)	Ni (%)	S (%)	PGE (%)
3rd Cleaner Conc.	0.6	15.50	1.670	29.10	189.00	84.4	22.2	67.7	68.7
1st Cleaner Scavenger Tail	6.0	0.09	0.093	0.81	2.32	4.9	12.9	19.6	8.8
Rougher Tail	93.4	0.012	0.030	0.03	0.38	10.7	64.9	12.6	22.5
Rougher Conc.	6.6	1.44	0.230	3.30	18.7	89.3	35.1	87.4	77.5
Head	**100.0**	**0.11**	**0.043**	**0.25**	**1.58**	**100.0**	**100.0**	**100.0**	**100.0**

The following recommendations were made, by SGS in 2013, with respect to additional testwork:

1. Further definition on the effect of primary grind size on rougher flotation recovery. This data would be used in an economic trade-off study with energy requirements as a function of grind size;

2. Mineral sorting and dense media applications could be explored as pre-concentration techniques for the valuable minerals;

3. Flotation optimization testing to improve concentrate grades and recoveries looking at the following:

   - Effective flowsheet configuration. A common approach with this type of nickel-bearing mineralization is a split flowsheet approach similar to that shown in Figure 13.1, above, for test F-15, where the easy-to-float material is cleaned separately from the difficult-to-float material. This type of approach is commonly practiced in processing nickel-bearing sulphide deposits located in the Sudbury region. This split flowsheet was not assessed in the 2012 program;

   - Further investigation should be carried out to explore options to improve nickel recovery. It should be possible to improve recovery from approximately 22% to between 30% and 40%. Variables such as alternative collectors and activators to improve sulphide recovery could be examined;

   - The effect of depressant type and dosage. It was only towards the end of the program when a number of secondary depressants were analyzed. There are other secondary depressants that should be considered. Dosage should be optimized;

   - Effect of regrind size and number of regrind stages. Very little attention was given to this variable in the work to date. A regrind size around a P_{80} of 20 µm was selected, but this size may not be optimal.

- o Detailed mineralogical examination of the occurrence of PGM should be considered, as this could better define flotation conditions for the recovery of these elements, as well as provide an indication of the maximum recovery of these elements.

- o Fresh drill core should be obtained for new metallurgical testwork. All previous metallurgical tests appear to have been conducted on old core and chemical assay rejects.

4. Flotation and grindability variability testing on Dana South Zone and Dana North Zone composite to identify the variability of flotation performance. Variability testing should then extend to investigate a broader range of samples from each zone to investigate the effect of feed grade and rock type on metallurgy.

5. Environment testing on waste rock, and effluent from a locked cycle test, should be completed.

13.2 2018 MINERALOGICAL ANALYSIS OF DANA AND PINE ZONE

In February 2018, XPS released a report on the "Mineralogical Analysis of Dana and Pine Zone Samples", by L. Kormos (Kormos, 2018). Accordingly, a mineralogical analysis was completed on four composites from the River Valley Property. The composites generated were created from assay reject material and included "typical" grade Pine Zone, "high-grade" Pine Zone, "typical" grade Dana Zone and "high-grade" Dana Zone. Whether the Dana Zone samples are from Dana North Zone or Dana South Zone (or both Zones) was not specified.

The composites' grades were determined by triplicate assays (Table 13.5).

TABLE 13.5
CHEMICAL ANALYSIS OF THE DANA AND PINE ZONE SAMPLES

Composite	Cu (%)	Ni (%)	S (%)	Pd (g/t)	Pt (g/t)	Au (g/t)	Fe (%)	Mg (%)	Si (%)
Pine Typical	0.20	0.04	0.49	1.50	0.57	0.11	7.59	4.19	22.57
Pine High-Grade	0.28	0.06	0.68	2.99	0.84	0.43	8.38	5.02	22.87
Dana Typical	0.11	0.03	0.31	0.77	0.27	0.08	6.61	5.19	24.27
Dana High-Grade	0.27	0.06	0.55	3.27	1.08	0.19	8.68	6.03	22.93

The major findings from the mineralogical analysis are provided below:

- Ni sulphide, dominated by pentlandite with trace amounts of millerite and siegenite, represents 40%, 49%, 38% and 44% of the total Ni in the typical grade Pine Zone, high-grade Pine Zone, typical grade Dana Zone and high-grade Dana Zone, respectively. These values represent a theoretical maximum achievable recovery assuming perfect selectively between Ni sulphide and other Ni-bearing phases (pyrrhotite, pyrite, chlorite, biotite and actinolite);

- Pentlandite contains high levels of cobalt (Co). Compositional analysis of pentlandite from all zones averages 2.2% Co;

- Two generations of pyrite were identified in all four composites: 1) a fresh pyrite with a blocky and sometimes euhedral habit; and 2) an altered pyrite with an abnormally elongated fabric. The altered pyrite contains high Ni grades, up to 6.8% in the high-grade Dana Zone sample. The combined population of altered pyrite in the four composites has an average Ni grade of 2.9%;

- A comparison of sulphide ratios in the different samples indicated that chalcopyrite to Fe sulphides ratio is relatively consistent in all samples. Pyrrhotite to pentlandite ratios, a metallurgical indicator in Sudbury ores, is slightly higher in Pine Zone samples compared to Dana Zone samples. The ratio of pyrite to Ni pyrite (an altered pyrite), is relatively consistent in the two Pine Zone samples and the Dana high-grade sample. The ratio is much higher in the typical grade Dana sample, indicating less altered pyrite compared to the other three samples;

- A comparison of modal mineralogy indicates that the Pine Zone contains more epidote and more biotite compared to the Dana Zone samples;

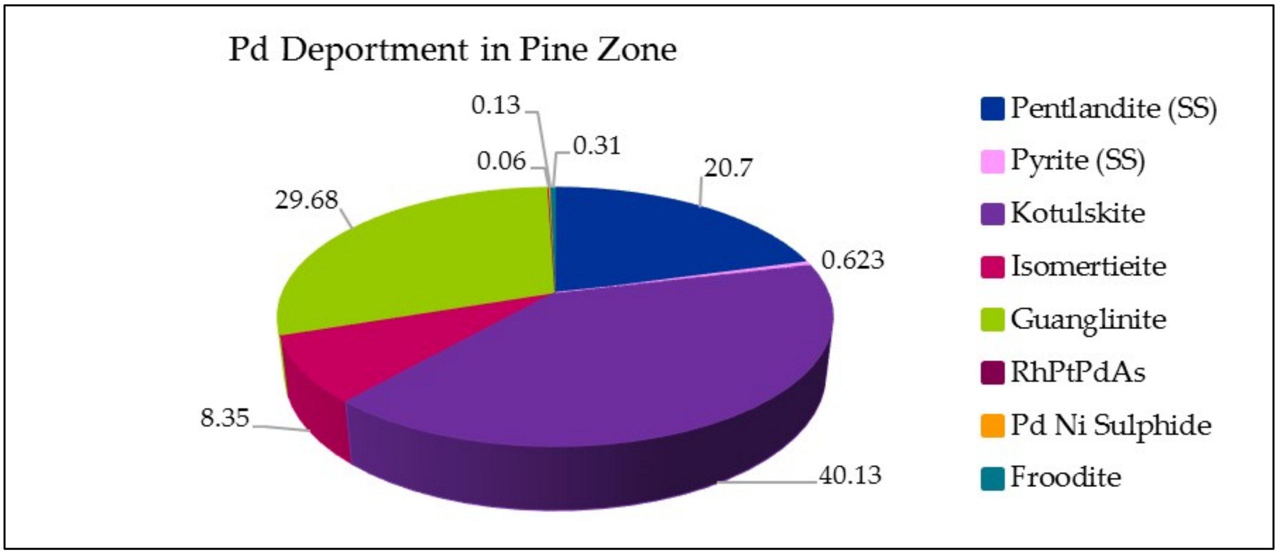
- The high-grade PGM samples contain slightly more quartz than the typically lower grade samples;

- "Bright phase" searches showed the PGM phases to be mainly kotulskite (Pd(Te,Bi)), isomertieite ($Pd_{11}Sb_2As_2$), guanglinite (Pd_3As), and sperrylite ($PtAs_2$);

- At a P_{80} of 75 µm, 51% and 75% of total PGMs are liberated in the high-grade Pine Zone and high-grade Dana Zone concentrates, respectively. When not liberated, the majority of PGMs are locked within silicate gangue. The average grain size of both kotulskite and isomertieite is 5 µm, with the coarsest grains measured in the Dana concentrate up to 30 µm and 60 µm, respectively. Sperrylite averages 4.4 µm in the Pine Zone concentrate and 11 µm in the Dana North Zone concentrate. The largest sperrylite is 100 µm, in the Dana North Zone concentrate;

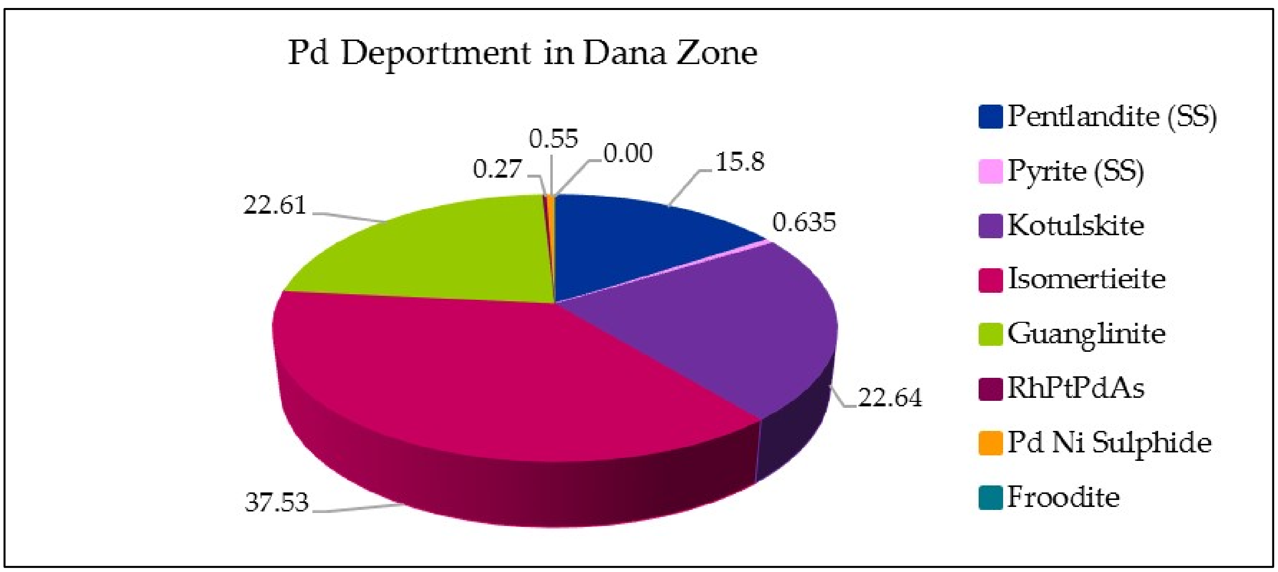
- Element deportment calculations indicate 21% and 16% of palladium (Pd) in the high-grade Pine Zone and high-grade Dana North Zone occurs as solid solution within pentlandite. The remaining Pd occurs as discrete grains, specifically kotulskite, isomertieite or guanglinite. Sperrylite makes up 95% to 96% of the total Pt in both of the zones. Pd deportment is presented in Figure 13.2 for the Pine Zone and Figure 13.3 for the Dana Zone.

FIGURE 13.2 PD DEPORTMENT IN PINE ZONE



Source: *XPS (2018)*

FIGURE 13.3 PD DEPORTMENT IN DANA ZONE



Source: *XPS (2018)*

13.3 MINERALIZED MATERIAL SORTING STUDIES

Upgrading process plant feed grade by physical sorting, magnetic separation or gravity methods could be attractive for the River Valley Mineral Resource. Mineralized material sorting was identified as having the best potential.

Approximately 200 kg of drill core fragments, screen-sized to -50 mm+20 mm was tested in 2018 at the Steinert Multi-Sensor Sorting facility in Walton, Kentucky. Preliminary tests showed that X-Ray Transmission (XRT) was the best sensor to use. Sensors that measured surface properties demonstrated poor sensitivity. The use of XRT is preferred in material sorting, because the washing out of attached fines would not be necessary.

Three separate samples – from the Dana North and South, and Pine Zones, were tested. Some upgrading of the PGM (for these tests Pd+Pt+Au) content was observed, but losses to rejects (13% to 22% weight for Dana and 32% for the Pine composite (the original Pine Zone sample was diluted with barren waste) was between 9% and 12%. The results are summarized in Table 13.6.

XPS reviewed and commented on the sorting results. XPS suggested that the low grade of the mineralized material and the disseminated nature of the sulphides contributed significantly to the poor results of sorting tests. High recovery, >95%, and <30% of feed mass rejection was a preliminary objective. SGS had measured the sulphide content and determined that the total of iron, nickel and copper sulphides was <1%. Even the higher-grade zones (Table 13.5) contain <1% sulphur.

Mineralized material sorting was demonstrated to have limited potential for River Valley and no additional testing is recommended by P&E Mining Consultants Inc.

TABLE 13.6
XRT SORTING RESULTS

Sample		Weight %	%		g/t				Recovery %				
Location	Type		Cu	Ni	Au	Pt	Pd	PGM	Cu	Au	Pt	Pd	PGM
Dana S	Heads	100	0.053	0.091	0.091	0.322	1.085	1.498					
Dana N	Heads	100	0.073	0.039	0.084	0.411	1.278	1.773					
Pine	Heads	100	0.044	0.014	0.027	0.106	0.289	0.421					
Dana N	Conc	87	0.058	0.036	0.097	0.344	1.151	1.592	94.8	92.9	92.9	92.3	92.5
Dana S	Conc	78	0.079	0.042	0.096	0.480	1.484	2.060	84.1	88.8	91.1	90.7	90.7
Pine	Conc	68	0.040	0.015	0.031	0.379	0.379	0.546	62.3	78.0	87.4	87.9	87.9

14.0 MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

The purpose of this Technical Report section is to update the 2019 Mineral Resource Estimate on River Valley Project of New Age Metals (NAM).

The Mineral Resources Estimate presented herein is reported in accordance with the Canadian Securities Administrators' National Instrument 43-101 and were estimated in conformity with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) "Estimation of Mineral Resource and Mineral Reserves Best Practice Guidelines" (November 2019) and reported using the definitions set out in the 2014 CIM Definition Standards on Mineral Resources and Mineral Reserves. Mineral Resources that are not converted to Mineral Reserves do not have demonstrated economic viability. Confidence in the estimate of Inferred Mineral Resource is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Mineral Resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent Mineral Resource Estimates.

This Mineral Resource Estimate was based on information and data supplied by NAM, and was undertaken by Yungang Wu, P.Geo. Antoine Yassa, P.Geo. and Eugene Puritch, P.Eng., FEC, CET of P&E Mining Consultants Inc. of Brampton, Ontario. All of the Qualified Persons are independent of NAM, as defined in NI 43-101.

The effective date of this Mineral Resource Estimate is September 14, 2021.

14.2 PREVIOUS MINERAL RESOURCE ESTIMATE

The previous public Mineral Resource Estimate for the River Valley Project was carried out by WSP with an effective date January 9, 2019 (WSP, 2019). The Mineral Resource Estimate with pit constrained and out-of-pit cut-offs 0.35 g/t PdEq and 2.0 g/t PdEq, respectively, is presented in Table 14.1. This previous Mineral Resource Estimate is superseded by the Mineral Resource Estimate reported herein.

TABLE 14.1 **RIVER VALLEY MINERAL RESOURCE ESTIMATE EFFECTIVE JANUARY 9, 2019**										
Class	**Cut-off PdEq (g/t)**	**Tonnes**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Cu (%)**	**Co (%)**	**Ni (%)**	**Rh (g/t)**	**PdEq (g/t)**
Total Measured	0.35	56,025,400	0.54	0.2	0.03	0.06	0.006	0.02	0.013	0.94
	2.00	71,300	2.33	0.75	0.09	0.12	0.002	0.02	0.036	3.38
	0.35+2.00	56,096,700	0.54	0.20	0.03	0.06	0.006	0.02	0.013	0.94
Total Indicated	0.35	43,153,300	0.49	0.19	0.03	0.05	0.006	0.02	0.003	0.84
	2.00	5,200	2.23	0.60	0.11	0.03	0.000	0.04	0.003	3.20
	0.35+2.00	43,158,500	0.49	0.19	0.03	0.05	0.006	0.02	0.003	0.84
Total Meas + Ind	0.35	99,178,700	0.52	0.20	0.03	0.06	0.006	0.02	0.009	0.90
	2.00	76,500	2.32	0.74	0.09	0.11	0.002	0.02	0.034	3.37
	0.35+2.00	99,255,200	0.52	0.20	0.03	0.06	0.006	0.02	0.009	0.90
Inferred	0.35	52,306,000	0.31	0.15	0.04	0.04	0.001	0.02	0.012	0.63
	2.00	-	-	-	-	-	-	-	-	-
	0.35+2.00	52,306,000	0.31	0.15	0.04	0.04	0.001	0.02	0.012	0.63

Notes: *Class = classification, PdEq = palladium equivalent, Meas + Ind = Measured plus Indicated.*

14.3 DATABASE

All drilling and assay data were provided by NAM in the form of Excel data files. The GEOVIA GEMS™ V6.8.4 database compiled by P&E for this Mineral Resource Estimate consisted of 723 drill holes, totalling 156,421 m Table 14.2. A drill hole plan is shown in Appendix A.

TABLE 14.2 **RIVER VALLEY DRILL HOLE SUMMARY**		
Area	**No. of Holes**	**Metres Drilled**
Dana North	169	37,730.8
Pine	15	2,894.8
Dana South	83	20,409.8
Lismer Ridge	104	20,599.0
Lismer North	54	11,529.0
Azen	33	6,929.4
Banshee	22	4,270.8
Varley	70	12,864.8
Razor	10	1,820.9
Mustang	67	16,441.8
Others*	96	20,929.9
Total	**723**	**156,421.0**

** Casson, Drop Zone, Jackson's Flats, MacDonald (Varley), MRS (Mustang), Pardo, RVP, Spade Lake (Azen), T3 (Pine).*

In addition to the 723 drill holes, the database contains 2,641 surface channel samples, all of which are 0.3 m in length. Since the channel samples exhibited some degree of bias and the areas in which they were taken were well drilled, it was decided to exclude them from the grade interpolation process. The channel samples were used for wireframe boundary creation.

The database contains Pd, Pt, Au, Co, Cu, Ni, Rh and Ag. The basic statistics of all raw assays are presented in Table 14.3.

TABLE 14.3
RIVER VALLEY RAW ASSAY DATABASE SUMMARY

Variable	Pd (g/t)	Pt (g/t)	Au (g/t)	Co (%)	Cu (%)	Ni (%)	Rh (g/t)	Ag (g/t)	Length (m)
Number of samples	124,822	124,822	124,815	57,267	62,095	62,095	20,727	108,374	124,822
Minimum value	0	0	0	0	0	0	0	0	0.04
Maximum value	51.000	22.080	2.430	0.053	1.055	0.457	0.873	50.100	10.00
Mean	0.241	0.102	0.019	0.002	0.033	0.012	0.006	0.271	0.91
Median	0.041	0.033	0.006	0.002	0.011	0.008	0.000	0.000	1.00
Variance	0.476	0.057	0.002	0.000	0.003	0.000	0.000	1.030	0.14
Standard Deviation	0.690	0.238	0.040	0.002	0.057	0.014	0.020	1.015	0.38
Coefficient of variation	2.863	2.326	2.095	0.993	1.697	1.154	3.549	3.748	0.41
Skewness	9.946	14.029	9.063	3.178	4.048	4.582	9.994	38.153	1.47
Kurtosis	314.562	734.941	232.826	45.469	32.651	62.669	242.102	1,834.486	10.94

All drill hole survey and assay values are expressed in metric units, with grid coordinates reported using the NAD 83, Zone 17N UTM system.

14.4 DATA VALIDATION

P&E validated the Mineral Resource Estimate database in GEMS™ by checking for inconsistencies in analytical units, duplicate entries, interval, length or distance values less than or equal to zero, blank or zero-value assay results, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, survey and missing interval and coordinate fields. A few minor errors were identified and corrected in the database. The authors of this Technical Report section are of the opinion that the supplied database is suitable for Mineral Resource estimation.

14.5 DOMAIN INTERPRETATION

A total of ten mineralized domains were determined from lithology, structure, and grade boundary interpretation from visual inspection of drill hole sections. These domains were created with computer screen digitizing on drill hole sections. The domain outlines were influenced by the selection of mineralized material above C$10/t NSR that demonstrated lithological and structural zonal continuity along strike and down dip. In some cases, mineralization below C$10/t NSR was included for the purpose of maintaining zonal continuity and minimum width. The NSR was calculated with formula below:

> NSR C$/t= [(Ni % x 48.15) + (Cu % x 61.59) + (Au g/t x 47.50) + (Ag g/t x 0.40) + (Pt g/t x 28.45) + (Pd g/t x 60.01) + (Rh g/t x 164.39) + (Co % x 49.60)] -0.40

Minimum constrained core length for interpretation was approximately 2.0 m. On each cross-section, polyline interpretations were digitized from drill hole to drill hole but not typically extended more than 50 m into untested territory. Interpreted polylines from each cross-section were wireframed (connected) to form 3-D mineralized domains. The mineralized domains were then clipped against an overburden surface constructed from bottom of casings in drill hole logs. The resulting solids (wireframes or domains) were used for statistical analysis, grade interpolation, rock coding and Mineral Resource estimation. The 3-D domain wireframes are presented in Appendix B. A topographic surface was created using drill hole collars and LIDAR data.

14.6 ROCK CODE DETERMINATION

A unique rock code was assigned to the block model for each mineralized domain as presented in (Table 14.4).

TABLE 14.4
ROCK CODES AND VOLUMES OF MINERALIZED DOMAINS FOR THE MINERAL RESOURCE ESTIMATE

Domain	Rock Type	Volume (m^3)
Dana North	100	12,033,874
Pine	200	771,063
Dana South	300	8,721,516
Lismer Ridge	500	13,879,966
Lismer North	600	4,370,790
Varley	700	9,027,648
Azen	800	12,642,099
Banshee	900	2,781,007
Razor	1000	10,020,632
Mustang	1100	20,379,025

14.7 WIREFRAME CONSTRAINED ASSAYS

Wireframe constrained assays were back coded in the assay database with rock codes that were derived from intersections of the mineralized domains and drill holes. The basic statistics of mineralized wireframe constrained assays are presented in Table 14.5.

TABLE 14.5
BASIC STATISTICS OF ASSAYS CONSTRAINED WITHIN THE WIREFRAMES

Variable	Pd	Pt	Au	Cu	Co	Ni	Rh	Ag	Length
Number of Samples	22,883	22,883	22,883	22,377	20,726	22,377	22,883	20,722	22,883
Minimum Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Maximum Value	15.853	6.673	1.206	0.665	0.037	0.357	0.499	50.100	2.000
Mean	0.443	0.177	0.032	0.054	0.003	0.015	0.013	0.362	1.980
Median	0.178	0.099	0.019	0.057	0.003	0.014	0.006	0.100	2.000
Variance	0.563	0.061	0.002	0.002	0.000	0.000	0.000	1.803	0.020
Standard Deviation	0.751	0.246	0.042	0.044	0.001	0.011	0.022	1.343	0.143
Coefficient of Variation	1.695	1.394	1.288	0.817	0.405	0.745	1.721	3.714	0.072
Skewness	4.749	5.403	4.358	2.705	4.117	5.846	4.956	30.783	-7.523
Kurtosis	44.009	66.436	51.159	16.833	87.309	104.530	50.928	1099.458	60.853

14.8 COMPOSITING

In order to regularize the assay sampling intervals for grade interpolation, a 2.0 m compositing length was selected for the drill hole intervals that fell within the constraints of the above-noted Mineral Resource wireframes. The composites were calculated over 2.0 m lengths starting at the first point of intersection between assay data hole and hanging wall of the 3-D zonal constraint. The compositing process was halted upon exit from the footwall of the 3-D wireframe constraint. Background values below were used for un-assayed intervals during compositing. The background values were derived from average of low-grade constrained assays or by regression. If the last composite interval was less than 0.5 m, the composite length was discarded. This process would not introduce any short sample bias in the grade interpolation process. The constrained composite data were extracted to a point area file for grade capping analysis. The composite statistics are summarized in Table 14.6.

The wireframe constrained background grades used for un-assayed intervals for the Dana North, Pine, Dana South, Lismer North, Lismer Ridge, and Banshee mineralized domain areas are as follows:

- Cu = 0.057%.
- Ni = 0.014%.

- Co = 0.0026%.
- Rh = (Pt – 0.0086844)/10.8009; negative values set to 0.005 g/t.

The wireframe constrained background grades used for un-assayed intervals for the Azen, Razor, Varley, Banshee and Mustang mineralized domains are as follows:

- Cu = 0.014%.
- Ni = 0.010%.
- Co = 0.002%.
- Ag = 1.72 g/t.
- Au = 0.007 g/t.
- Pt = 0.031 g/t.
- Pd = 0.047 g/t.
- Rh = Pt/11.

TABLE 14.6
BASIC COMPOSITE STATISTICS

Variable	Pd	Pt	Au	Co	Cu	Ni	Ag	Rh	Length
Number of Samples	22,883	22,883	22,883	20,726	22,377	22,377	20,722	22,883	22,883
Minimum Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Maximum Value	15.853	6.673	1.206	0.037	0.665	0.357	50.100	0.499	2.000
Mean	0.443	0.177	0.032	0.003	0.054	0.015	0.362	0.013	1.980
Median	0.178	0.099	0.019	0.003	0.057	0.014	0.100	0.006	2.000
Variance	0.563	0.061	0.002	0.000	0.002	0.000	1.803	0.000	0.020
Standard Deviation	0.751	0.246	0.042	0.001	0.044	0.011	1.343	0.022	0.143
Coefficient of Variation	1.695	1.394	1.288	0.405	0.817	0.745	3.714	1.721	0.072
Skewness	4.749	5.403	4.358	4.117	2.705	5.846	30.783	4.956	-7.523
Kurtosis	44.009	66.436	51.159	87.309	16.833	104.530	1099.458	50.928	60.853

14.9 GRADE CAPPING

Grades capping was performed on the 2.0 m composite values in the database within the constraining domains to control the possible bias resulting from erratic high-grade composite values in the database. Log-normal histograms and log-probability plots for composites were generated for each mineralization domain. Selected histograms and probability plots are presented in Appendix C. The grade capping values are detailed in Table 14.7. The capped composite statistics are summarized in Table 14.8. The capped composites were utilized to develop variograms and for block model grade interpolation.

TABLE 14.7
GRADE CAPPING VALUES

Pd Capping								
Domains	**Total No. of Composites**	**Capping Value Pd (g/t)**	**No. of Capped Composites**	**Mean of Composites**	**Mean of Capped Composites**	**CoV of Composites**	**CoV of Capped Composites**	**Capping Percentile**
Dana North	7,02	6.30	4	0.476	0.475	1.557	1.541	99.9
Pine	429	no cap	0	0.725	0.725	1.310	1.310	100.0
Dana South	5,541	8.00	6	0.521	0.519	1.882	1.846	99.9
Lismer Ridge	3,633	6.00	1	0.396	0.393	1.438	1.332	100.0
Lismer North	1,343	7.00	2	0.533	0.523	1.597	1.385	99.9
Varley	1,369	5.50	3	0.415	0.412	1.618	1.576	99.8
Azen	703	no cap	0	0.257	0.257	1.120	1.120	100.0
Banshee	506	3.00	1	0.274	0.266	1.492	1.179	99.8
Razor	702	no cap	0	0.283	0.283	1.061	1.061	100.0
Mustang	1,655	no cap	0	0.216	0.216	1.219	1.219	100.0
Pt Capping								
Domains	**Total No. of Composites**	**Capping Value Pt (g/t)**	**No. of Capped Composites**	**Mean of Composites**	**Mean of Capped Composites**	**CoV of Composites**	**CoV of Capped Composites**	**Capping Percentile**
Dana North	7,002	2.00	7	0.187	0.186	1.271	1.253	99.9
Pine	429	no cap	0	0.254	0.254	1.175	1.175	100.0
Dana South	5,541	3.00	3	0.188	0.187	1.548	1.502	99.9
Lismer Ridge	3,633	2.00	3	0.168	0.167	1.219	1.115	99.9
Lismer North	1,343	2.00	4	0.222	0.216	1.432	1.138	99.7
Varley	1,369	1.70	7	0.161	0.158	1.550	1.422	99.5

TABLE 14.7
GRADE CAPPING VALUES

Azen	703	no cap	0	0.092	0.092	1.013	1.013	100.0
Banshee	506	1.50	2	0.166	1.590	1.492	1.054	99.6
Razor	702	1.00	1	0.122	0.121	1.064	0.979	99.9
Mustang	1,655	1.50	5	0.137	0.135	1.269	1.100	99.7

Au Capping

Domains	Total No. of Composites	Capping Value Au (g/t)	No. of Capped Composites	Mean of Composites	Mean of Capped Composites	CoV of Composites	CoV of Capped Composites	Capping Percentile
Dana North	7,002	no cap	0	0.035	0.035	1.224	1.224	100.0
Pine	429	no cap	0	0.042	0.042	1.157	1.157	100.0
Dana South	5,541	0.60	2	0.034	0.034	1.437	1.380	100.0
Lismer Ridge	3,633	no cap	0	0.030	0.030	1.127	1.127	100.0
Lismer North	1,343	no cap	0	0.036	0.036	1.052	1.052	100.0
Varley	1,369	no cap	0	0.028	0.028	1.450	1.450	100.0
Azen	703	no cap	0	0.019	0.019	1.201	1.201	100.0
Banshee	506	no cap	0	0.029	0.029	1.096	1.096	100.0
Razor	702	no cap	0	0.023	0.023	1.330	1.330	100.0
Mustang	1,655	no cap	0	0.030	0.030	1.279	1.279	100.0

Cu Capping

Domains	Total No. of Composites	Capping Value Cu (%)	No. of Capped Composites	Mean of Composites	Mean of Capped Composites	CoV of Composites	CoV of Capped Composites	Capping Percentile
Dana North	7,002	no cap	0	0.059	0.059	0.807	0.807	100.0
Pine	429	no cap	0	0.066	0.066	0.813	0.813	100.0
Dana South	5,541	0.50	1	0.060	0.060	0.849	0.844	100.0

Table 14.7 Grade Capping Values								
Lismer Ridge	3,633	no cap	0	0.056	0.056	0.532	0.532	100.0
Lismer North	1,343	no cap	0	0.058	0.058	0.356	0.356	100.0
Varley	1,369	no cap	0	0.029	0.029	1.076	1.076	100.0
Azen	703	no cap	0	0.029	0.029	1.170	1.170	100.0
Razor	702	no cap	0	0.023	0.023	1.011	1.011	100.0
Mustang	1,655	no cap	0	0.046	0.046	0.958	0.958	100.0
Ni Capping								
Domains	**Total No. of Composites**	**Capping Value Ni (%)**	**No. of Capped Composites**	**Mean of Composites**	**Mean of Capped Composites**	**CoV of Composites**	**CoV of Capped Composites**	**Capping Percentile**
Dana North	7,002	no cap	0	0.014	0.014	0.601	0.601	100.0
Pine	429	no cap	0	0.021	0.021	1.155	1.155	100.0
Dana South	5,541	no cap	0	0.014	0.014	0.622	0.622	100.0
Lismer Ridge	3,633	no cap	0	0.014	0.014	0.480	0.480	100.0
Lismer North	1,343	no cap	0	0.013	0.013	0.261	0.261	100.0
Varley	1,369	no cap	0	0.011	0.011	0.545	0.545	100.0
Azen	703	no cap	0	0.016	0.016	0.936	0.936	100.0
Razor	702	no cap	0	0.016	0.016	0.937	0.937	100.0
Mustang	1,655	no cap	0	0.024	0.024	0.928	0.928	100.0
Co Capping								
Domains	**Total No. of Composites**	**Capping Value Co (%)**	**No. of Capped Composites**	**Mean of Composites**	**Mean of Capped Composites**	**CoV of Composites**	**CoV of Capped Composites**	**Capping Percentile**
Dana North	7,002	no cap	0	0.003	0.003	0.373	0.373	100.0

TABLE 14.7
GRADE CAPPING VALUES

Pine	429	no cap	0	0.003	0.003	0.372	0.372	100.0
Dana South	5,541	no cap	0	0.003	0.003	0.384	0.384	100.0
Lismer Ridge	3,633	no cap	0	0.003	0.003	0.298	0.298	100.0
Lismer North	1,343	no cap	0	0.003	0.003	0.208	0.208	100.0
Varley	1,369	no cap	0	0.002	0.002	0.298	0.298	100.0
Azen	703	0.02	5	0.002	0.002	1.061	0.819	99.3
Razor	702	no cap	0	0.002	0.002	0.526	0.526	100.0
Mustang	,655	no cap	0	0.002	0.002	0.333	0.333	100.0

Rh Capping

Domains	Total No. of Composites	Capping Value Rh (g/t)	No. of Capped Composites	Mean of Composites	Mean of Capped Composites	CoV of Composites	CoV of Capped Composites	Capping Percentile
Dana North	7,002	no cap	0	0.016	0.016	1.406	1.406	100.0
Pine	429	no cap	0	0.023	0.023	1.190	1.190	100.0
Dana South	5,541	0.30	3	0.017	0.017	1.623	1.579	99.9%
Lismer Ridge	3,633	0.25	1	0.015	0.015	1.272	1.182	100.0
Lismer North	1,343	0.20	4	0.020	0.019	1.331	1.189	99.7

Ag Capping

Domains	Total No. of Composites	Capping Value Ag (g/t)	No. of Capped Composites	Mean of Composites	Mean of Capped Composites	CoV of Composites	CoV of Capped Composites	Capping Percentile
Dana North	7,002	no cap	0	0.459	0.459	1.159	1.159	100.0
Pine	429	no cap	0	0.684	0.684	0.700	0.700	100.0
Dana South	5,541	no cap	0	0.357	0.357	1.326	1.326	100.0

TABLE 14.7
GRADE CAPPING VALUES

Lismer Ridge	3,633	no cap	0	0.152	0.152	2.006	2.006	100.0
Lismer North	1,343	no cap	0	0.095	0.095	2.479	2.479	100.0
Varley	1,369	no cap	0	0.125	0.125	2.195	2.195	100.0
Azen	703	30.00	12	1.431	1.093	4.727	4.050	98.3
Razor	702	no cap	0	0.217	0.217	1.627	1.627	100.0

Note: *CoV = coefficient of variation.*

TABLE 14.8 BASIC CAPPED COMPOSITE STATISTICS								
Variable	**Pd**	**Pt**	**Au**	**Cu**	**Co**	**Ni**	**Rh**	**Ag**
Number of Samples	22,883	22,883	22,883	22,377	20,726	22,377	22,883	20,722
Minimum Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Maximum Value	8.000	3.000	0.729	0.577	0.02	0.357	0.309	30
Mean	0.441	0.175	0.032	0.054	0.003	0.015	0.013	0.350
Median	0.178	0.099	0.019	0.057	0.003	0.014	0.006	0.100
Variance	0.526	0.053	0.002	0.002	0.000	0.000	0.000	0.894
Standard Deviation	0.725	0.231	0.041	0.044	0.001	0.011	0.022	0.946
Coefficient of Variation	1.646	1.314	1.271	0.815	0.389	0.745	1.676	2.701
Skewness	3.847	3.630	3.617	2.649	2.184	5.846	4.075	23.054
Kurtosis	23.201	22.317	26.142	15.786	25.631	104.542	29.068	687.159

14.10 VARIOGRAPHY

A variography analysis was attempted using the palladium capped composites within individual domains as a guide to determining a grade interpolation search distance and ellipse orientation strategy. Selected variograms are presented in Appendix D.

Continuity ellipses based on the observed ranges were subsequently generated and utilized as the basis for estimation search ranges, distance weighting calculations and Mineral Resource classification criteria.

14.11 BULK DENSITY

A total of 432 bulk density samples were tested from Dana North, Dana South and Lismer Ridge Zones. The bulk density ranged from 2.61 t/m^3 to 3.26 t/m^3 with average of 2.94 t/m^3. A uniform density 2.94 t/m^3 was applied for all mineralized domains for this Mineral Resource Estimate.

It is recommended to collect more bulk density samples from all zones, various rock types and mineralization types in order to create future bulk density models.

14.12 BLOCK MODELLING

The River Valley block model was constructed using GEOVIA GEMS™ V6.8.4 modelling software. The block model origin and block size are presented in Table 14.9. The block model consists of separate model attributes for estimated grades, NSR, rock type (mineralization domains), volume percent, bulk density, and classification.

TABLE 14.9 RIVER VALLEY BLOCK MODEL DEFINITION			
Direction	**Origin***	**No. of Blocks**	**Block Size (m)**
X	554,600	2,330	5
Y	5,163,000	2,100	5
Z	350	102	5
Rotation	0 º		

** Origin for a block model in GEMS™ represents the coordinate of the outer edge of the block with minimum X and Y, and maximum Z.*

All blocks in the rock type block model were initially assigned a waste rock code of 99, corresponding to the surrounding country rocks. The mineralization domain was used to code all blocks within the rock type block model that contain 0.01% or greater volume within the wireframe domain. These blocks were assigned individual rock codes as presented in Table 14.2. The overburden and topographic surfaces were subsequently utilized to assign respective rock codes 10 and 0, corresponding to overburden and air for all blocks 50% or greater above the surfaces.

A volume percent block model was set up to accurately represent the volume and subsequent tonnage that was occupied by each block inside the constraining wireframe domain. As a result, the domain boundary was properly represented by the volume percent model ability to measure individual infinitely variable block inclusion percentages within that domain. The minimum percentage of the mineralization block was set to 0.01%.

Palladium, platinum, gold, rhodium and silver grades were interpolated into the blocks using Inverse Distance weighting to the third power (ID^3), whereas copper, nickel and cobalt grades were interpolated with Inverse Distance squared (ID^2). Nearest Neighbour (NN) was run for validation purpose. Multiple passes were executed for the grade interpolation to progressively capture the sample points, to avoid over-smoothing and preserve local grade variability. Grade blocks were interpolated using the parameters in Table 14.10.

TABLE 14.10 RIVER VALLEY BLOCK MODEL GRADE INTERPOLATION PARAMETERS						
Pass	**No. of Composites**			**Search Range (m)**		
	Min	**Max**	**Max per Hole**	**Major**	**Semi-Major**	**Minor**
I	5	15	2	30	30	15
II	3	15	2	50	50	25
III	1	15	2	150	150	75

For rhodium, the grades used for un-assayed intervals were calculated with the following formula, based on a Robust Simple Regression analysis:

- Rh g/t = (Pt g/t -0.0086844/10.8009).

Robust Regression reduces the influence of outlier assay points on the analysis (Rousseeuw and Leroy, 1987; Rollinson 1993). The Robust Simple Regression analysis for rhodium was completed by NAM in ioGAS version 6.1 modelling software.

Selected vertical cross-sections and plans for Pd and NSR blocks are presented in Appendices E and F, respectively.

14.13 MINERAL RESOURCE CLASSIFICATION

In the opinion of the authors of this Technical Report section, all the drilling, assaying and exploration work on the River Valley Project supports this Mineral Resource Estimate and is based on spatial continuity of the mineralization within a potentially mineable shape are sufficient to indicate a reasonable potential for economic extraction, thus qualifying it as a Mineral Resource under the 2014 CIM Definition Standards. The Mineral Resource was classified as Measured, Indicated, and Inferred based on the geological interpretation, Pd variogram performance and drill hole spacing.

Measured Mineral Resources were classified for the blocks interpolated with the Pass I in Table 14.10, which used at least three holes with a 30 m spacing. Indicated Mineral Resources were classified for the blocks interpolated with the Pass II in Table 14.10, which used at least two holes with a 50 m spacing. Inferred Mineral Resources were classified for the blocks interpolated with the Pass III in Table 14.10, which used at least one hole with a 150 m of spacing. The classifications were manually adjusted on a longitudinal projection to reasonably reflect the distribution of each classification. Selected classification block vertical sections and plans are attached in Appendix G.

14.14 NSR CUT-OFF VALUE CALCULATION

The River Valley Mineral Resource Estimate was derived from applying NSR cut-off values to the block model and reporting the resulting tonnes and grades for potentially mineable areas.

The following parameters were used to calculate the NSR values that determine pit constrained and out-of-pit potentially economic portions of the constrained mineralization:

- US$1,850/oz (approx. three-year trailing average July 31, 2021)
- Pt price: US$900/oz (approx. three-year trailing average July 31, 2021)
- Au price: US$1,600/oz (approx. three-year trailing average July 31, 2021)
- Ag price: US$18.50/oz (approx. three-year trailing average July 31, 2021)
- Rh price: US$8,000/oz (approx. three-year trailing average July 31, 2021)
- Ni price: US$6.50/lb (approx. three-year trailing average July 31, 2021)
- Cu price: US$3.0/lb (approx. three-year trailing average July 31, 2021)
- Co price: US$16/lb (approx. three-year trailing average July 31, 2021)

- Currency exchange rate: CDN$/US$=0.75
  (approx. three-year trailing average July 31, 2021)
- Pd process recovery: 80%
- Pt process recovery: 80%
- Au process recovery: 80%
- Ag process recovery: 80%
- Rh process recovery: 80%
- Ni process recovery: 30%
- Cu process recovery: 85%
- Co process recovery: 25%
- Pd smelter payable: 80%
- Pt smelter payable: 80%
- Au smelter payable: 85%
- Ag smelter payable: 65%
- Rh smelter payable: 80%
- Ni smelter payable: 90%
- Cu smelter payable: 85%
- Co smelter payable: 50%
- Open pit marginal processing and G&A cost of CDN$15/t; and
- Underground mining, processing and G&A cost of CDN$50/t.

The NSR cut-off value of the pit constrained Mineral Resource is CDN$15/t. The NSR cut-off value of the out-of-pit Mineral Resource is CDN$50/t.

14.14.1 Pit Optimization Parameters

The block model was further investigated with a pit optimization to ensure that a reasonable assumption of potential economic extraction could be made (see pit shell in Appendix H). The following parameters were utilized in the pit optimization:

- Metal Values: From parameters above
- All Materials Mining Cost: CDN$2.25/t mined
- Process Cost: CDN$12.50/t processed
- General & Administration Cost: CDN$2.50/t processed
- Process Capacity: 15,000 tpd
- Pit Slopes: 50°

14.15 MINERAL RESOURCE ESTIMATE

The Mineral Resource Estimate is reported with an effective date of September 14, 2021, and is tabulated in Table 14.11. The authors of this Technical Report section consider the mineralization of the River Valley Project to be potentially amenable to open pit and underground mining methods.

Table 14.11 River Valley Mineral Resource Estimate (1-4)																			
River Valley Pit Constrained Mineral Resources @ CDN$15/t NSR Cut-off																			
Zone	**Class**	**Tonnes (k)**	**Pd (g/t)**	**Pd (koz)**	**Pt (g/t)**	**Pt (koz)**	**Au (g/t)**	**Au (koz)**	**Cu (%)**	**Cu (Mlb)**	**Co (%)**	**Co (Mlb)**	**Ni (%)**	**Ni (Mlb)**	**Rh (g/t)**	**Rh (koz)**	**Ag (g/t)**	**Ag (koz)**	**NSR (CDN$/t)**
Dana North	Measured	8,418	0.63	170.0	0.23	63.4	0.04	12.0	0.07	13.0	0.003	0.5	0.02	3	0.020	5.5	0.57	153.7	54.84
	Indicated	16,733	0.53	283.5	0.21	111.0	0.04	20.0	0.06	22.4	0.003	1.0	0.01	5	0.018	9.7	0.33	178.0	46.53
	Inferred	1,884	0.48	29.1	0.20	12.0	0.04	2.2	0.06	2.5	0.003	0.1	0.02	1	0.017	1.0	0.17	10.4	43.26
Pine	Measured	559	0.91	16.4	0.31	5.6	0.05	0.9	0.07	0.8	0.003	0.0	0.02	0.2	0.029	0.5	0.49	8.8	75.55
	Indicated	1,019	0.62	20.4	0.22	7.3	0.04	1.2	0.06	1.3	0.003	0.1	0.02	0.4	0.020	0.7	0.80	26.1	53.36
	Inferred	2	0.16	0.0	0.14	0.0	0.03	0.0	0.05	0.0	0.003	0.0	0.01	0.0	0.012	0.0	0.95	0.1	20.89
Dana South	Measured	6,508	0.77	160.7	0.26	53.4	0.05	9.8	0.07	9.9	0.003	0.4	0.02	2	0.023	4.8	0.38	79.8	64.23
	Indicated	8,866	0.62	176.9	0.23	65.0	0.04	10.8	0.06	12.3	0.003	0.5	0.01	3	0.020	5.8	0.35	99.1	53.34
	Inferred	1,165	0.42	15.6	0.16	5.8	0.03	1.0	0.06	1.4	0.003	0.1	0.01	0.4	0.014	0.5	0.23	8.7	37.02
Banshee	Indicated	2,438	0.29	22.5	0.17	13.5	0.03	2.6	0.06	3.1	0.003	0.1	0.01	1	0.015	1.2			30.11
	Inferred	3,514	0.29	32.8	0.16	17.6	0.03	3.1	0.06	4.4	0.003	0.2	0.01	1	0.014	1.5			29.28
Azen	Inferred	23,417	0.37	282.2	0.12	93.1	0.03	18.9	0.03	16.1	0.003	1.3	0.02	9	0.011	8.5	0.75	564.1	31.85
Lismer Ridge	Indicated	24,473	0.46	364.2	0.19	149.1	0.03	26.5	0.06	32.1	0.003	1.4	0.02	8	0.017	13.1	0.17	133.4	41.70
	Inferred	6,280	0.39	79.7	0.16	31.8	0.03	5.7	0.05	7.1	0.002	0.3	0.01	2	0.015	3.0	0.09	19.1	35.51
Lismer North	Indicated	8,140	0.54	142.5	0.23	59.3	0.04	9.7	0.06	10.6	0.003	0.4	0.01	2	0.020	5.3	0.11	28.6	48.27
	Inferred	2,754	0.61	54.0	0.24	21.5	0.04	3.6	0.06	3.5	0.003	0.2	0.01	1	0.022	1.9	0.02	1.7	52.95
Razor	Inferred	16,677	0.36	191.3	0.15	82.6	0.03	15.7	0.03	9.7	0.002	0.7	0.02	7	0.014	7.5	0.22	118.0	29.46
Mustang	Inferred	30,889	0.27	266.3	0.17	166.0	0.04	36.2	0.06	37.6			0.03	18	0.015	15.1			26.82
Varley	Indicated	11,844	0.50	188.9	0.19	71.5	0.03	11.9	0.03	8.1	0.002	0.5	0.01	3	0.017	6.5	0.12	47.5	41.64
	Inferred	6,097	0.42	82.3	0.16	31.4	0.03	5.4	0.03	3.8	0.002	0.3	0.01	2	0.015	2.9	0.10	18.6	35.50
Total	Measured	15,485	0.70	347.1	0.25	122.4	0.05	22.7	0.07	23.7	0.003	0.9	0.02	5.2	0.02	10.8	0.49	242.3	59.53
	Indicated	73,513	0.51	1,198.9	0.20	476.7	0.03	82.7	0.06	89.9	0.002	4.0	0.01	22.4	0.02	42.3	0.22	512.7	44.70
	M+I	**88,998**	**0.54**	**1,546.0**	**0.21**	**599.1**	**0.04**	**105.4**	**0.06**	**113.6**	**0.002**	**4.9**	**0.01**	**27.6**	**0.02**	**53.1**	**0.26**	**755.0**	**47.28**
	Inferred	92,679	0.35	1,033.3	0.15	461.8	0.03	91.8	0.04	86.1	0.002	3.2	0.02	41.4	0.01	41.9	0.25	740.7	31.06

TABLE 14.11
RIVER VALLEY MINERAL RESOURCE ESTIMATE (1-4)

RIVER VALLEY OUT-OF-PIT MINERAL RESOURCES @ CDN$50/T NSR CUT-OFF

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Dana North	Measured	0.1	1.01	0.00	0.43	0.00	0.06	0.00	0.05	0.00	0.003	0.00	0.01	0.00	0.038	0.00	0.05	0.00	85.44
	Indicated	130.3	1.19	4.99	0.41	1.73	0.08	0.32	0.07	0.19	0.003	0.01	0.02	0.04	0.038	0.16	0.08	0.35	97.58
	Inferred	94.4	0.88	2.67	0.34	1.03	0.07	0.21	0.09	0.19	0.003	0.01	0.02	0.04	0.030	0.09	0.53	1.61	77.14
Pine	Measured	2.8	1.06	0.09	0.36	0.03	0.07	0.01	0.10	0.01	0.003	0.00	0.03	0.00	0.033	0.00	0.53	0.05	89.92
	Indicated	26.4	0.77	0.66	0.25	0.22	0.05	0.04	0.09	0.05	0.004	0.00	0.08	0.04	0.023	0.02	1.00	0.85	69.34
Dana South	Indicated	354.2	1.15	13.05	0.35	3.96	0.06	0.67	0.09	0.67	0.003	0.02	0.02	0.15	0.031	0.36	0.29	3.36	92.64
	Inferred	210.3	0.98	6.63	0.30	2.05	0.06	0.39	0.08	0.38	0.003	0.02	0.02	0.09	0.027	0.18	0.52	3.49	80.71
Banshee	Indicated	1.3	0.65	0.03	0.23	0.01	0.03	0.00	0.06	0.00	0.003	0.00	0.01	0.00	0.020	0.00	-	-	54.20
	Inferred	91.2	0.68	1.99	0.35	1.04	0.02	0.06	0.06	0.11	0.003	0.01	0.01	0.03	0.032	0.09	-	-	60.96
Azen	Inferred	40.5	0.77	1.00	0.23	0.30	0.04	0.06	0.07	0.06	0.003	0.00	0.04	0.03	0.021	0.03	0.86	1.12	64.43
Lismer Ridge	Indicated	31.0	0.94	0.94	0.36	0.36	0.06	0.06	0.06	0.04	0.003	0.00	0.01	0.01	0.033	0.03	0.00	0.00	78.98
	Inferred	499.1	0.78	12.46	0.32	5.14	0.04	0.64	0.05	0.58	0.002	0.02	0.01	0.13	0.035	0.56	0.53	8.58	67.06
Lismer North	Indicated	54.4	0.83	1.46	0.32	0.56	0.05	0.08	0.06	0.07	0.003	0.00	0.01	0.02	0.029	0.05	0.00	0.00	69.95
	Inferred	164.6	0.75	3.95	0.36	1.89	0.06	0.32	0.06	0.21	0.003	0.01	0.01	0.05	0.032	0.17	0.00	0.02	66.99
Razor	Inferred	96.9	0.91	2.82	0.40	1.24	0.04	0.12	0.02	0.04	0.002	0.00	0.01	0.02	0.036	0.11	0.08	0.26	68.98
Mustang	Inferred	325.6	0.69	7.19	0.53	5.54	0.05	0.54	0.06	0.42	-	-	0.02	0.15	0.048	0.50	-	-	62.91
Varley	Indicated	41.6	0.81	1.08	0.32	0.43	0.06	0.08	0.05	0.05	0.002	0.00	0.02	0.01	0.029	0.04	0.17	0.23	68.81
	Inferred	66.7	0.78	1.66	0.27	0.58	0.05	0.10	0.04	0.05	0.002	0.00	0.01	0.02	0.025	0.05	0.09	0.20	63.14
Total	Measured	2.9	1.05	0.10	0.37	0.03	0.07	0.01	0.10	0.01	0.003	0.00	0.03	0.00	0.033	0.00	0.51	0.05	89.72
	Indicated	639.3	1.08	22.21	0.35	7.26	0.06	1.25	0.08	1.06	0.003	0.04	0.02	0.28	0.032	0.66	0.23	4.79	88.46
	M+I	**642.1**	**1.08**	**22.31**	**0.35**	**7.29**	**0.06**	**1.25**	**0.08**	**1.07**	**0.003**	**0.04**	**0.02**	**0.28**	**0.032**	**0.66**	**0.23**	**4.84**	**88.47**
	Inferred	1,589.2	0.79	40.38	0.37	18.82	0.05	2.44	0.06	2.04	0.002	0.07	0.02	0.56	0.035	1.79	0.30	15.29	68.14

TABLE 14.11
RIVER VALLEY MINERAL RESOURCE ESTIMATE (1-4)

RIVER VALLEY TOTAL MINERAL RESOURCES @ CDN$15 & CDN$50/T NSR CUT-OFF

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Total	Measured	15,488	0.70	347.2	0.25	122.4	0.05	22.7	0.07	23.7	0.003	0.9	0.02	5.2	0.022	10.8	0.49	242.4	59.54
	Indicated	74,152	0.51	1,221.1	0.20	484.0	0.04	84.0	0.06	91.0	0.002	4.0	0.01	22.7	0.018	43.0	0.22	517.5	45.08
	M+I	**89,640**	**0.54**	**1,568.3**	**0.21**	**606.4**	**0.04**	**106.7**	**0.06**	**114.7**	**0.002**	**4.9**	**0.01**	**27.9**	**0.019**	**53.8**	**0.26**	**759.8**	**47.58**
	Inferred	94,268	0.35	1,073.7	0.16	480.6	0.03	94.2	0.04	88.1	0.002	3.3	0.02	42.0	0.014	43.7	0.25	756.0	31.69

Notes: *Class = classification, M+I = Measured and Indicated.*

1. *Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.*
2. *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
3. *The Inferred Mineral Resource in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of the Inferred Mineral Resource could potentially be upgraded to an Indicated Mineral Resource with continued exploration.*
4. *The Mineral Resources were estimated in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions (2014) and Best Practices Guidelines (2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.*

14.16 MINERAL RESOURCE SENSITIVITIES

Mineral Resources are sensitive to the selection of a reporting NSR cut-off value and are demonstrated in Tables 14.12 and Table 14.13 for pit constrained, and in Table 14.14 for out-of-pit Mineral Resources, respectively.

TABLE 14.12
RIVER VALLEY PIT CONSTRAINED MINERAL RESOURCES SENSITIVITY @ CDN$25/T NSR CUT-OFF

Zone	Class	Tonnes (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Dana North	Measured	6,143	0.79	156.2	0.28	55.9	0.05	10.7	0.08	10.8	0.003	0.4	0.02	2.4	0.025	4.9	0.60	119.1	67.86
	Indicated	11,159	0.70	251.5	0.26	93.6	0.05	16.9	0.07	16.2	0.003	0.7	0.02	3.7	0.023	8.3	0.36	130.2	60.23
	Inferred	1,305	0.61	25.8	0.24	10.2	0.04	1.8	0.06	1.8	0.003	0.1	0.02	0.5	0.022	0.9	0.19	7.8	53.98
Pine	Measured	479	1.03	15.9	0.35	5.4	0.06	0.8	0.07	0.8	0.003	0.0	0.02	0.2	0.032	0.5	0.48	7.3	84.91
	Indicated	756	0.77	18.7	0.27	6.5	0.04	1.0	0.07	1.1	0.003	0.0	0.02	0.3	0.024	0.6	0.79	19.2	65.17
	Inferred	0	0.20	0.0	0.18	0.0	0.05	0.0	0.08	0.0	0.004	0.0	0.02	0.0	0.016	0.0	0.96	0.0	28.47
Dana South	Measured	4,650	1.00	150.1	0.32	47.4	0.06	8.5	0.08	7.9	0.003	0.3	0.02	1.7	0.029	4.3	0.43	64.7	82.22
	Indicated	5,823	0.85	159.7	0.29	54.9	0.05	9.0	0.07	9.0	0.003	0.4	0.02	2.1	0.027	5.1	0.36	66.8	71.12
	Inferred	751	0.54	13.0	0.19	4.7	0.03	0.7	0.06	1.0	0.003	0.0	0.02	0.2	0.017	0.4	0.22	5.3	46.37
Banshee	Indicated	1,374	0.38	16.6	0.22	9.8	0.04	1.6	0.06	1.7	0.003	0.1	0.01	0.4	0.02	0.9	0.00	0.0	37.85
	Inferred	2,000	0.37	23.7	0.19	12.3	0.03	1.8	0.06	2.5	0.003	0.1	0.01	0.6	0.017	1.1	0.00	0.0	35.64
Azen	Inferred	14,685	0.47	221.4	0.15	71.3	0.03	14.2	0.03	11.0	0.002	0.6	0.02	6.2	0.014	6.6	0.73	345.6	39.17
Lismer Ridge	Indicated	16,100	0.61	315.2	0.24	122.2	0.04	21.7	0.06	22.7	0.003	1.1	0.02	5.7	0.021	10.9	0.20	102.5	53.16
	Inferred	3,501	0.55	62.0	0.22	24.2	0.04	4.2	0.05	4.1	0.003	0.2	0.01	1.0	0.021	2.4	0.10	11.5	48.03
Lismer North	Indicated	6,238	0.66	132.6	0.27	53.1	0.04	8.6	0.06	8.3	0.003	0.4	0.01	1.9	0.024	4.8	0.12	24.3	57.33
	Inferred	2,210	0.72	50.9	0.28	19.5	0.05	3.3	0.06	2.8	0.003	0.1	0.01	0.7	0.025	1.8	0.02	1.4	61.07
Razor	Inferred	8,043	0.50	129.8	0.21	54.6	0.04	9.6	0.03	5.1	0.002	0.4	0.02	3.2	0	0.0	0.21	53.8	40.35
Mustang	Inferred	12,719	0.40	164.0	0.22	90.8	0.04	18.0	0.06	16.8	0	0.0	0.03	8.7	0	0.0	0.00	0.0	37.25
Varley	Indicated	7,345	0.65	153.5	0.24	56.9	0.04	9.4	0.04	5.7	0.002	0.3	0.01	1.9	0.022	5.2	0.15	35.2	53.86
	Inferred	3,212	0.59	60.4	0.22	22.3	0.04	3.7	0.03	2.3	0.002	0.1	0.01	0.8	0.020	2.1	0.12	12.1	48.45
Total	Measured	11,272	0.89	322.2	0.30	108.7	0.06	20.0	0.05	19.5	0.002	0.7	0.01	4.4	0.027	9.8	0.53	191.1	74.51
	Indicated	48,795	0.67	1,047.8	0.25	397.1	0.04	68.3	0.04	64.7	0.002	3.1	0.01	16.0	0.023	35.7	0.24	378.2	57.31
	M+I	**60,066**	**0.71**	**1,370.0**	**0.26**	**505.7**	**0.05**	**88.4**	**0.04**	**84.2**	**0.002**	**3.8**	**0.01**	**20.4**	**0.024**	**45.4**	**0.29**	**569.3**	**60.54**
	Inferred	48,426	0.48	751.0	0.20	309.9	0.04	57.3	0.03	47.4	0.001	1.8	0.01	21.8	0.010	15.2	0.28	437.5	41.48

Notes: *Class = classification, M+I = Measured and Indicated.*

TABLE 14.13
SENSITIVITIES OF PIT CONSTRAINED MINERAL RESOURCE ESTIMATE

Zone	Class	Cut-off NSR (CDN$/t)	Tonnage (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
Dana North	Measured	30	5,296	0.87	148.4	0.31	52.1	0.06	9.9	0.08	9.9	0.003	0.3	0.02	2	0.027	4.6	0.62	105.6	74.28
		25	6,143	0.79	156.2	0.28	55.9	0.05	10.7	0.08	10.8	0.003	0.4	0.02	2.4	0.025	4.9	0.60	119.1	67.86
		20	7,229	0.70	163.7	0.26	59.8	0.05	11.4	0.07	11.9	0.003	0.4	0.02	3	0.022	5.2	0.59	136.1	60.99
		15	8,418	0.63	170.0	0.23	63.4	0.04	12.0	0.07	13.0	0.003	0.5	0.02	3	0.020	5.5	0.57	153.7	54.84
		10	9,680	0.56	174.3	0.21	66.1	0.04	12.6	0.07	14.0	0.003	0.6	0.02	3	0.018	5.7	0.55	171.1	49.32
	Indicated	30	9,232	0.78	233.0	0.29	85.0	0.05	15.2	0.07	14.0	0.003	0.6	0.02	3	0.025	7.6	0.38	111.7	66.76
		25	11,159	0.70	251.5	0.26	93.6	0.05	16.9	0.07	16.2	0.003	0.7	0.02	3.7	0.023	8.3	0.36	130.2	60.23
		20	13,683	0.61	268.0	0.23	102.2	0.04	18.4	0.06	19.2	0.003	0.8	0.02	5	0.020	9.0	0.34	151.7	53.01
		15	16,733	0.53	283.5	0.21	111.0	0.04	20.0	0.06	22.4	0.003	1.0	0.01	5	0.018	9.7	0.33	178.0	46.53
		10	19,701	0.46	293.2	0.19	117.3	0.03	21.1	0.06	25.3	0.003	1.1	0.01	6	0.016	10.2	0.32	200.9	41.41
	Inferred	30	1,100	0.68	23.9	0.27	9.4	0.05	1.7	0.07	1.6	0.003	0.1	0.02	0.4	0.024	0.8	0.20	7.0	58.88
		25	1,305	0.61	25.8	0.24	10.2	0.04	1.8	0.06	1.8	0.003	0.1	0.02	0.5	0.022	0.9	0.19	7.8	53.98
		20	1,524	0.56	27.3	0.22	11.0	0.04	2.0	0.06	2.1	0.003	0.1	0.02	1	0.020	1.0	0.18	8.9	49.38
		15	1,884	0.48	29.1	0.20	12.0	0.04	2.2	0.06	2.5	0.003	0.1	0.02	1	0.017	1.0	0.17	10.4	43.26
		10	2,234	0.42	30.2	0.18	12.7	0.03	2.3	0.06	2.9	0.003	0.1	0.02	1	0.015	1.1	0.16	11.7	38.47
Pine	Measured	30	445	1.09	15.5	0.37	5.3	0.06	0.8	0.07	0.7	0.003	0.0	0.02	0.2	0.034	0.5	0.46	6.6	89.22
		25	479	1.03	15.9	0.35	5.4	0.06	0.8	0.07	0.8	0.003	0.0	0.02	0.2	0.032	0.5	0.48	7.3	84.91
		20	518	0.97	16.1	0.33	5.5	0.05	0.9	0.07	0.8	0.003	0.0	0.02	0.2	0.030	0.5	0.48	8.0	80.14
		15	559	0.91	16.4	0.31	5.6	0.05	0.9	0.07	0.8	0.003	0.0	0.02	0.2	0.029	0.5	0.49	8.8	75.55
		10	609	0.85	16.6	0.29	5.7	0.05	0.9	0.06	0.9	0.003	0.0	0.02	0.2	0.027	0.5	0.50	9.8	70.37
	Indicated	30	655	0.84	17.8	0.29	6.1	0.05	1.0	0.07	1.0	0.003	0.0	0.02	0.3	0.026	0.6	0.78	16.3	71.03
		25	756	0.77	18.7	0.27	6.5	0.04	1.0	0.07	1.1	0.003	0.0	0.02	0.3	0.024	0.6	0.79	19.2	65.17
		20	869	0.70	19.6	0.25	6.9	0.04	1.1	0.06	1.2	0.003	0.1	0.02	0.4	0.022	0.6	0.79	22.2	59.60
		15	1,019	0.62	20.4	0.22	7.3	0.04	1.2	0.06	1.3	0.003	0.1	0.02	0.4	0.020	0.7	0.80	26.1	53.36

TABLE 14.13
SENSITIVITIES OF PIT CONSTRAINED MINERAL RESOURCE ESTIMATE

Zone	Class	Cut-off NSR (CDN$/t)	Tonnage (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
		10	1,270	0.52	21.2	0.19	7.9	0.03	1.3	0.05	1.5	0.003	0.1	0.02	1	0.017	0.7	0.79	32.3	45.22
	Inferred	20	1	0.19	0.0	0.17	0.0	0.04	0.0	0.06	0.0	0.004	0.0	0.01	0.0	0.015	0.0	0.94	0.0	25.06
		15	2	0.16	0.0	0.14	0.0	0.03	0.0	0.05	0.0	0.003	0.0	0.01	0.0	0.012	0.0	0.95	0.1	20.89
		10	7	0.13	0.0	0.10	0.0	0.01	0.0	0.03	0.0	0.003	0.0	0.01	0.0	0.008	0.0	0.94	0.2	14.71
Dana South	Measured	30	4,129	1.09	145.2	0.34	45.4	0.06	8.2	0.08	7.3	0.003	0.3	0.02	2	0.031	4.1	0.45	59.9	89.10
		25	4,650	1.00	150.1	0.32	47.4	0.06	8.5	0.08	7.9	0.003	0.3	0.02	1.7	0.029	4.3	0.43	64.7	82.22
		20	5,386	0.90	155.2	0.29	50.0	0.05	9.1	0.07	8.7	0.003	0.3	0.02	2	0.026	4.5	0.41	71.1	74.01
		15	6,508	0.77	160.7	0.26	53.4	0.05	9.8	0.07	9.9	0.003	0.4	0.02	2	0.023	4.8	0.38	79.8	64.23
		10	8,247	0.63	166.1	0.22	57.1	0.04	10.7	0.06	11.5	0.003	0.5	0.01	3	0.019	5.1	0.35	91.6	53.31
	Indicated	30	4,921	0.96	151.6	0.32	50.9	0.05	8.4	0.07	7.8	0.003	0.3	0.02	2	0.029	4.6	0.36	57.1	79.10
		25	5,823	0.85	159.7	0.29	54.9	0.05	9.0	0.07	9.0	0.003	0.4	0.02	2.1	0.027	5.1	0.36	66.8	71.12
		20	7,077	0.74	168.1	0.26	59.5	0.04	9.9	0.07	10.4	0.003	0.4	0.02	2	0.024	5.3	0.35	79.9	62.43
		15	8,866	0.62	176.9	0.23	65.0	0.04	10.8	0.06	12.3	0.003	0.5	0.01	3	0.020	5.8	0.35	99.1	53.34
		10	10,757	0.53	183.0	0.20	69.4	0.03	11.7	0.06	14.1	0.003	0.6	0.01	3	0.018	6.1	0.34	116.9	46.17
	Inferred	30	555	0.63	11.2	0.22	3.9	0.03	0.6	0.06	0.7	0.003	0.0	0.02	0.2	0.020	0.4	0.22	4.0	53.09
		25	751	0.54	13.0	0.19	4.7	0.03	0.7	0.06	1.0	0.003	0.0	0.02	0.2	0.017	0.4	0.22	5.3	46.37
		20	955	0.47	14.5	0.17	5.3	0.03	0.9	0.06	1.2	0.003	0.1	0.02	0.3	0.015	0.5	0.22	6.8	41.31
		15	1,165	0.42	15.6	0.16	5.8	0.03	1.0	0.06	1.4	0.003	0.1	0.01	0.4	0.014	0.5	0.23	8.7	37.02
		10	1,380	0.37	16.4	0.14	6.2	0.02	1.1	0.05	1.6	0.003	0.1	0.01	0.4	0.012	0.5	0.24	10.8	33.22
Banshee	Indicated	30	941	0.43	13.0	0.26	7.7	0.04	1.2	0.06	1.2	0.003	0.1	0.01	0.3	0.023	0.7			42.72
		25	1,374	0.38	16.6	0.22	9.8	0.04	1.6	0.06	1.7	0.003	0.1	0.01	0.4	0.02	0.9	0.00	0.0	37.85
		20	1,922	0.33	20.1	0.19	12.0	0.04	2.2	0.06	2.4	0.003	0.1	0.01	1	0.017	1.1			33.45
		15	2,438	0.29	22.5	0.17	13.5	0.03	2.6	0.06	3.1	0.003	0.1	0.01	1	0.015	1.2			30.11
		10	2,649	0.27	23.1	0.16	13.9	0.03	2.7	0.06	3.3	0.003	0.2	0.01	1	0.014	1.2			28.73
	Inferred	30	1,129	0.45	16.5	0.23	8.3	0.03	1.0	0.06	1.4	0.003	0.1	0.01	0.3	0.020	0.7			42.37

TABLE 14.13
SENSITIVITIES OF PIT CONSTRAINED MINERAL RESOURCE ESTIMATE

Zone	Class	Cut-off NSR (CDN$/t)	Tonnage (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
		25	2,000	0.37	23.7	0.19	12.3	0.03	1.8	0.06	2.5	0.003	0.1	0.01	0.6	0.017	1.1	0.00	0.0	35.64
		20	2,883	0.32	29.7	0.17	15.9	0.03	2.6	0.06	3.6	0.003	0.2	0.01	1	0.015	1.4			31.82
		15	3,514	0.29	32.8	0.16	17.6	0.03	3.1	0.06	4.4	0.003	0.2	0.01	1	0.014	1.5			29.28
		10	3,781	0.28	33.6	0.15	18.0	0.03	3.3	0.06	4.8	0.003	0.2	0.01	1	0.013	1.6			28.11
Azen	Inferred	30	11,367	0.51	187.9	0.16	59.5	0.03	11.7	0.03	8.7	0.002	0.6	0.02	5	0.015	5.4	0.68	246.9	42.53
		25	14,685	0.47	221.4	0.15	71.3	0.03	14.2	0.03	11.0	0.002	0.6	0.02	6.2	0.014	6.6	0.73	345.6	39.17
		20	18,589	0.42	252.7	0.14	82.1	0.03	16.5	0.03	13.4	0.003	1.0	0.02	8	0.012	7.5	0.75	445.6	35.58
		15	23,417	0.37	282.2	0.12	93.1	0.03	18.9	0.03	16.1	0.003	1.3	0.02	9	0.011	8.5	0.75	564.1	31.85
		10	28,523	0.33	302.5	0.11	101.6	0.02	20.7	0.03	18.8	0.003	1.6	0.02	11	0.010	9.2	0.75	689.5	28.38
Lismer Ridge	Indicated	30	13,060	0.68	287.1	0.26	109.5	0.05	19.3	0.07	18.9	0.003	0.8	0.02	5	0.023	9.7	0.20	85.6	59.05
		25	16,100	0.61	315.2	0.24	122.2	0.04	21.7	0.06	22.7	0.003	1.1	0.02	5.7	0.021	10.9	0.20	102.5	53.16
		20	20,102	0.53	342.1	0.21	136.4	0.04	24.2	0.06	27.3	0.003	1.2	0.02	7	0.019	12.0	0.18	118.6	46.95
		15	24,473	0.46	364.2	0.19	149.1	0.03	26.5	0.06	32.1	0.003	1.4	0.02	8	0.017	13.1	0.17	133.4	41.70
		10	27,507	0.42	374.1	0.18	155.5	0.03	27.7	0.06	35.3	0.003	1.6	0.01	9	0.015	13.6	0.16	142.6	38.51
	Inferred	30	2,819	0.61	55.5	0.24	21.7	0.04	3.7	0.05	3.3	0.002	0.2	0.01	1	0.023	2.1	0.10	9.3	53.04
		25	3,501	0.55	62.0	0.22	24.2	0.04	4.2	0.05	4.1	0.003	0.2	0.01	1.0	0.021	2.4	0.10	11.5	48.03
		20	4,602	0.47	70.1	0.19	27.7	0.03	4.8	0.05	5.4	0.002	0.2	0.01	1	0.018	2.7	0.10	14.1	41.92
		15	6,280	0.39	79.7	0.16	31.8	0.03	5.7	0.05	7.1	0.002	0.3	0.01	2	0.015	3.0	0.09	19.1	35.51
		10	7,265	0.35	82.8	0.14	33.4	0.03	6.0	0.05	8.3	0.002	0.4	0.01	2	0.013	3.1	0.10	22.4	32.37
Lismer North	Indicated	30	5,264	0.73	122.8	0.29	48.5	0.05	7.9	0.06	7.1	0.003	0.3	0.01	2	0.026	4.4	0.12	20.8	62.36
		25	6,238	0.66	132.6	0.27	53.1	0.04	8.6	0.06	8.3	0.003	0.4	0.01	1.9	0.024	4.8	0.12	24.3	57.33
		20	7,229	0.59	138.0	0.24	56.5	0.04	9.3	0.06	9.5	0.003	0.4	0.01	2	0.022	5.1	0.12	26.9	52.12
		15	8,140	0.54	142.5	0.23	59.3	0.04	9.7	0.06	10.6	0.003	0.4	0.01	2	0.020	5.3	0.11	28.6	48.27
		10	8,585	0.52	143.9	0.22	60.2	0.04	9.9	0.06	11.1	0.003	0.5	0.01	3	0.020	5.4	0.11	29.2	46.43
	Inferred	30	1,928	0.78	48.4	0.30	18.3	0.05	3.1	0.06	2.4	0.003	0.1	0.01	1	0.027	1.7	0.02	1.2	65.92

TABLE 14.13
SENSITIVITIES OF PIT CONSTRAINED MINERAL RESOURCE ESTIMATE

Zone	Class	Cut-off NSR (CDN$/t)	Tonnage (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	Ag (g/t)	Ag (koz)	NSR (CDN$/t)
		25	2,210	0.72	50.9	0.28	19.5	0.05	3.3	0.06	2.8	0.003	0.1	0.01	0.7	0.025	1.8	0.02	1.4	61.07
		20	2,489	0.66	52.7	0.26	20.6	0.04	3.5	0.06	3.1	0.003	0.1	0.01	1	0.023	1.9	0.02	1.6	56.69
		15	2,754	0.61	54.0	0.24	21.5	0.04	3.6	0.06	3.5	0.003	0.2	0.01	1	0.022	1.9	0.02	1.7	52.95
		10	2,903	0.58	54.5	0.23	21.8	0.04	3.6	0.06	3.7	0.003	0.2	0.01	1	0.021	2.0	0.02	1.7	50.89
Razor	Inferred	30	5,536	0.58	103.7	0.24	43.1	0.04	7.0	0.03	3.6	0.002	0.2	0.02	2	0.022	3.9	0.19	33.9	46.19
		25	8,043	0.50	129.8	0.21	54.6	0.04	9.6	0.03	5.1	0.002	0.4	0.02	3.2	0	0.0	0.21	53.8	40.35
		20	11,438	0.43	158.1	0.18	67.0	0.03	12.1	0.03	7.2	0.002	0.5	0.02	5	0.017	6.1	0.22	81.3	34.96
		15	16,677	0.36	191.3	0.15	82.6	0.03	15.7	0.03	9.7	0.002	0.7	0.02	7	0.014	7.5	0.22	118.0	29.46
		10	20,795	0.31	209.5	0.14	91.8	0.03	18.0	0.02	11.4	0.002	0.9	0.02	8	0.012	8.3	0.22	145.9	26.14
Mustang	Inferred	30	8,651	0.46	129.2	0.25	68.5	0.05	13.1	0.06	11.6			0.03	6	0.022	6.2			42.04
		25	12,719	0.40	164.0	0.22	90.8	0.04	18.0	0.06	16.8	0	0.0	0.03	8.7	0	0.0	0.00	0.0	37.25
		20	20,265	0.33	213.9	0.19	126.7	0.04	26.4	0.06	26.3			0.03	13	0.018	11.5			31.74
		15	30,889	0.27	266.3	0.17	166.0	0.04	36.2	0.06	37.6			0.03	18	0.015	15.1			26.82
		10	40,102	0.23	299.6	0.15	189.7	0.03	42.1	0.05	45.1			0.02	21	0.013	17.2			23.59
Varley	Indicated	30	6,024	0.74	142.9	0.27	52.5	0.04	8.6	0.04	4.8	0.002	0.3	0.01	2	0.025	4.8	0.16	30.4	60.78
		25	7,345	0.65	153.5	0.24	56.9	0.04	9.4	0.04	5.7	0.002	0.3	0.01	1.9	0.022	5.2	0.15	35.2	53.86
		20	9,583	0.57	175.0	0.21	65.5	0.04	10.9	0.03	6.9	0.002	0.4	0.01	3	0.019	6.0	0.13	41.6	47.36
		15	11,844	0.50	188.9	0.19	71.5	0.03	11.9	0.03	8.1	0.002	0.5	0.01	3	0.017	6.5	0.12	47.5	41.64
		10	13,742	0.45	196.9	0.17	75.2	0.03	12.6	0.03	9.1	0.002	0.6	0.01	4	0.015	6.8	0.12	52.0	37.64
	Inferred	30	2,296	0.70	51.9	0.25	18.8	0.04	3.2	0.03	1.7	0.002	0.1	0.01	1	0.023	1.7	0.13	9.4	57.70
		25	3,212	0.59	60.4	0.22	22.3	0.04	3.7	0.03	2.3	0.002	0.1	0.01	0.8	0.020	2.1	0.12	12.1	48.45
		20	4,892	0.48	74.8	0.18	28.3	0.03	4.8	0.03	3.2	0.002	0.2	0.01	1	0.016	2.6	0.10	16.4	39.92
		15	6,097	0.42	82.3	0.16	31.4	0.03	5.4	0.03	3.8	0.002	0.3	0.01	2	0.015	2.9	0.10	18.6	35.50
		10	6,803	0.39	85.4	0.15	32.8	0.03	5.7	0.03	4.2	0.002	0.3	0.01	2	0.014	3.0	0.09	19.7	33.17

Note: *Class = classification.*

TABLE 14.14
SENSITIVITIES OF OUT-OF-PIT MINERAL RESOURCE ESTIMATE

Zone	Class	Cut-off NSR (CDN$/t)	Tonnage (k)	Pd (g/t)	Pd (koz)	Pt (g/t)	Pt (koz)	Au (g/t)	Au (koz)	Ag (g/t)	Ag (koz)	Cu (%)	Cu (Mlb)	Co (%)	Co (Mlb)	Ni (%)	Ni (Mlb)	Rh (g/t)	Rh (koz)	NSR (CDN$/t)
All Zones	Measured	90	1.2	1.21	0.05	0.41	0.02	0.08	0.00	0.57	0.02	0.11	0.00	0.004	0.00	0.04	0.00	0.037	0.00	102.02
		70	2.8	1.07	0.10	0.37	0.03	0.07	0.01	0.50	0.04	0.10	0.01	0.003	0.00	0.03	0.00	0.033	0.00	90.84
		50	2.9	1.05	0.10	0.37	0.03	0.07	0.01	0.51	0.05	0.10	0.01	0.003	0.00	0.03	0.00	0.033	0.00	89.72
		30	3.7	0.91	0.11	0.32	0.04	0.06	0.01	0.52	0.06	0.09	0.01	0.003	0.00	0.03	0.00	0.029	0.00	78.36
	Indicated	90	218.4	1.66	11.68	0.52	3.64	0.08	0.60	0.32	2.27	0.10	0.47	0.003	0.02	0.02	0.10	0.047	0.33	133.25
		70	344.3	1.41	15.56	0.45	4.95	0.07	0.83	0.27	2.98	0.09	0.66	0.003	0.02	0.02	0.15	0.041	0.45	113.42
		50	639.3	1.08	22.21	0.35	7.26	0.06	1.25	0.23	4.79	0.08	1.06	0.003	0.04	0.02	0.28	0.032	0.66	88.46
		30	1,257.7	0.76	30.62	0.26	10.57	0.05	1.84	0.23	9.20	0.07	1.91	0.003	0.08	0.02	0.49	0.023	0.95	63.83
	Inferred	90	144.3	1.36	6.32	0.51	2.37	0.08	0.35	0.29	1.35	0.07	0.21	0.003	0.01	0.02	0.06	0.047	0.22	110.77
		70	566.9	1.03	18.72	0.45	8.28	0.05	0.85	0.40	7.27	0.05	0.62	0.002	0.03	0.01	0.16	0.048	0.87	86.23
		50	1,589.2	0.79	40.38	0.37	18.82	0.05	2.44	0.30	15.29	0.06	2.04	0.002	0.07	0.02	0.56	0.035	1.79	68.14
		30	6,119.8	0.51	99.50	0.25	48.43	0.04	8.02	0.29	57.13	0.05	7.33	0.002	0.24	0.02	2.31	0.022	4.42	45.27

Note: *Class = classification.*

14.17 MODEL VALIDATION

The block model was validated using a number of industry standard methods including visual and statistical methods. Visual examination of composites and block grades on successive plans and cross-sections were performed on-screen to confirm that the block models correctly reflect the distribution of composite grades (see Appendix E for Pd and F for NSR block models and grades). The review of estimation parameters included:

- Number of composites used for grade estimation;
- Number of drill holes used for grade estimation;
- Mean distance to sample used;
- Number of passes used to estimate grade;
- Actual distance to closest point;
- Grade of true closest point; and,
- Mean value of the composites used.

The Inverse Distance Cubed (ID^3) estimate was compared to a Nearest-Neighbour (NN) estimate along with composites. A comparison of Pd mean composite grades with the block model at a zero grade Pd cut-off are presented in Table 14.15.

TABLE 14.15
PD AVERAGE GRADE COMPARISON OF COMPOSITES WITH BLOCK MODEL

Zone	Data Type	Pd (g/t)
Dana North, Pine, Dana South	Composites	0.50
	Capped composites	0.50
	Block model interpolated with ID^3	0.47
	Block model interpolated with NN	0.47
Lismer Ridge, Lismer North	Composites	0.43
	Capped composites	0.43
	Block model interpolated with ID^3	0.41
	Block model interpolated with NN	0.41
Varley	Composites	0.41
	Capped composites	0.42
	Block model interpolated with ID^3	0.38
	Block model interpolated with NN	0.39
Azen	Composites	0.26
	Capped composites	0.26
	Block model interpolated with ID^3	0.29
	Block model interpolated with NN	0.30
Banshee	Composites	0.27
	Capped composites	0.27

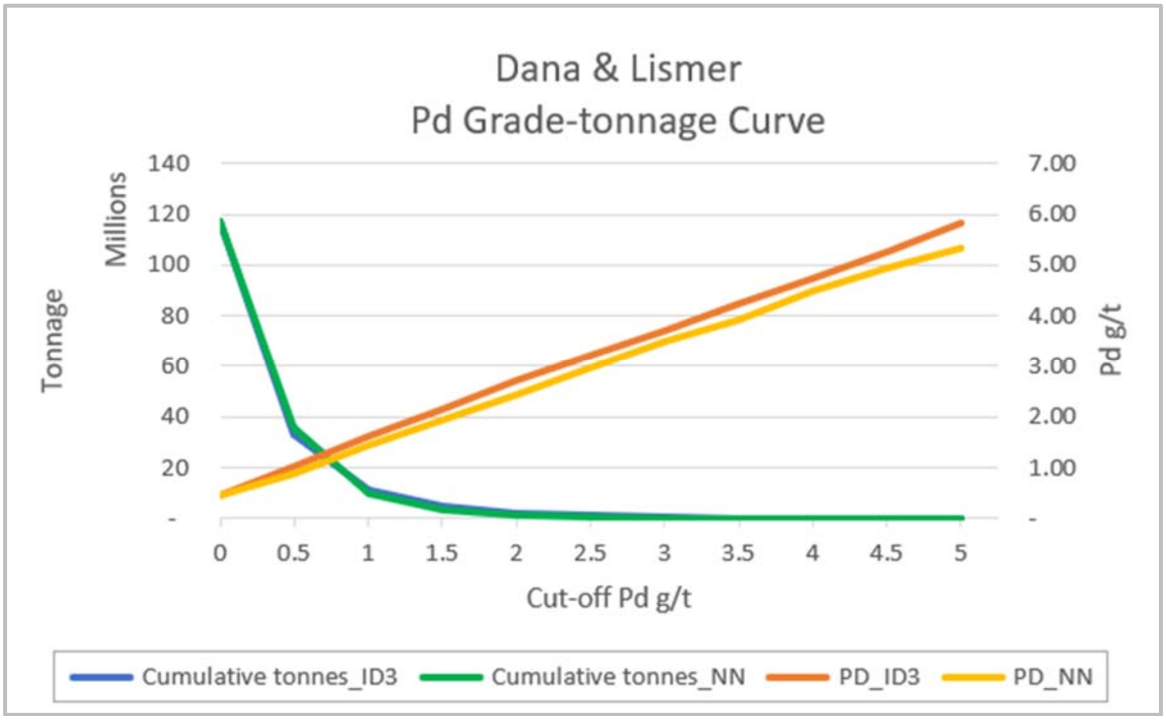
TABLE 14.15 **PD AVERAGE GRADE COMPARISON OF COMPOSITES WITH BLOCK MODEL**		
Zone	**Data Type**	**Pd (g/t)**
	Block model interpolated with ID^3	0.27
	Block model interpolated with NN	0.28
Razor	Composites	0.28
	Capped composites	0.28
	Block model interpolated with ID^3	0.27
	Block model interpolated with NN	0.27
Mustang	Composites	0.22
	Capped composites	0.22
	Block model interpolated with ID^3	0.21
	Block model interpolated with NN	0.21

Notes: *ID^3 - interpolated with Inverse Distance Cubed, NN - interpolated using Nearest Neighbour.*

The comparison above shows the average grade of block model was slightly different from that of the capped composites used for grade estimation. These were most likely due to grade de-clustering and interpolation process. The block model values will be more representative than the composites, due to 3-D spatial distribution characteristics of the block model.

A comparison of the Pd grade-tonnage curves interpolated with ID^3 and NN on a global mineralization basis is shown in Figure 14.1.

FIGURE 14.1 PD DANA AND LISMER GRADE–TONNAGE CURVE



Local trends of Pd and Pt were evaluated by comparing the ID^3 and NN estimate against the composites. Swath plots for Dana and Lismer are shown in Figures 14.2 to 14.4.

FIGURE 14.2 DANA AND LISMER PD AND PT GRADE EASTING SWATH PLOTS

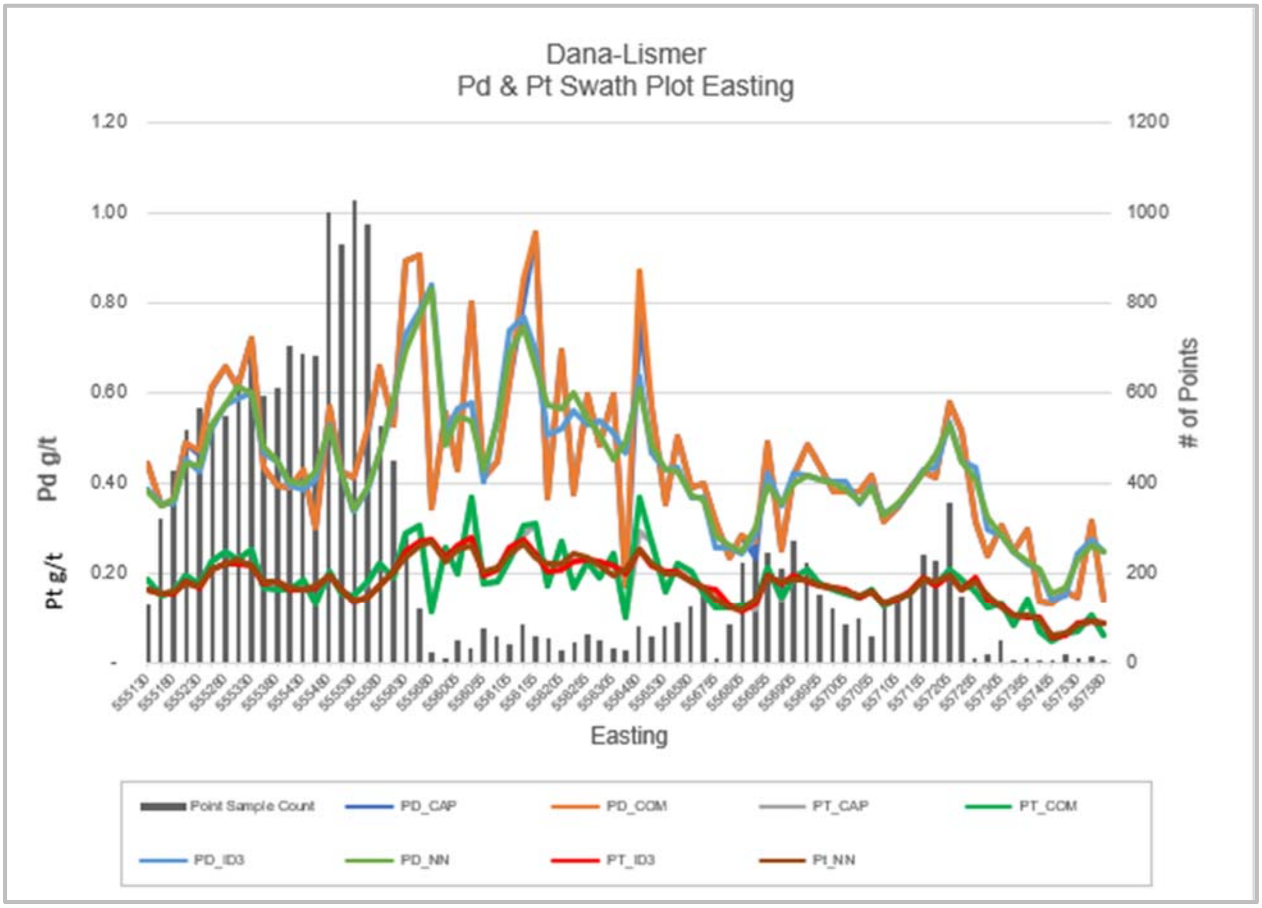


FIGURE 14.3 DANA AND LISMER PD AND PT GRADE NORTHING SWATH

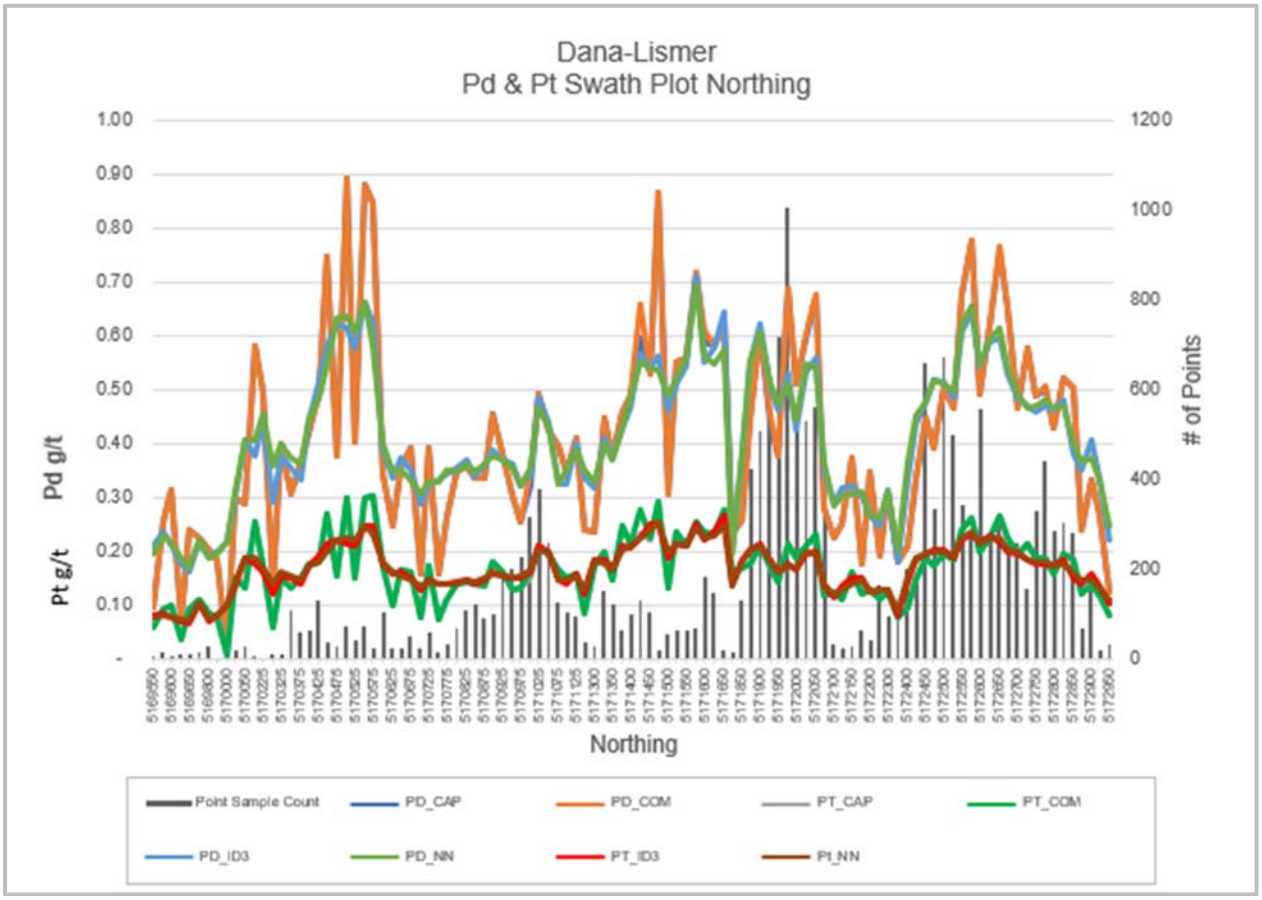
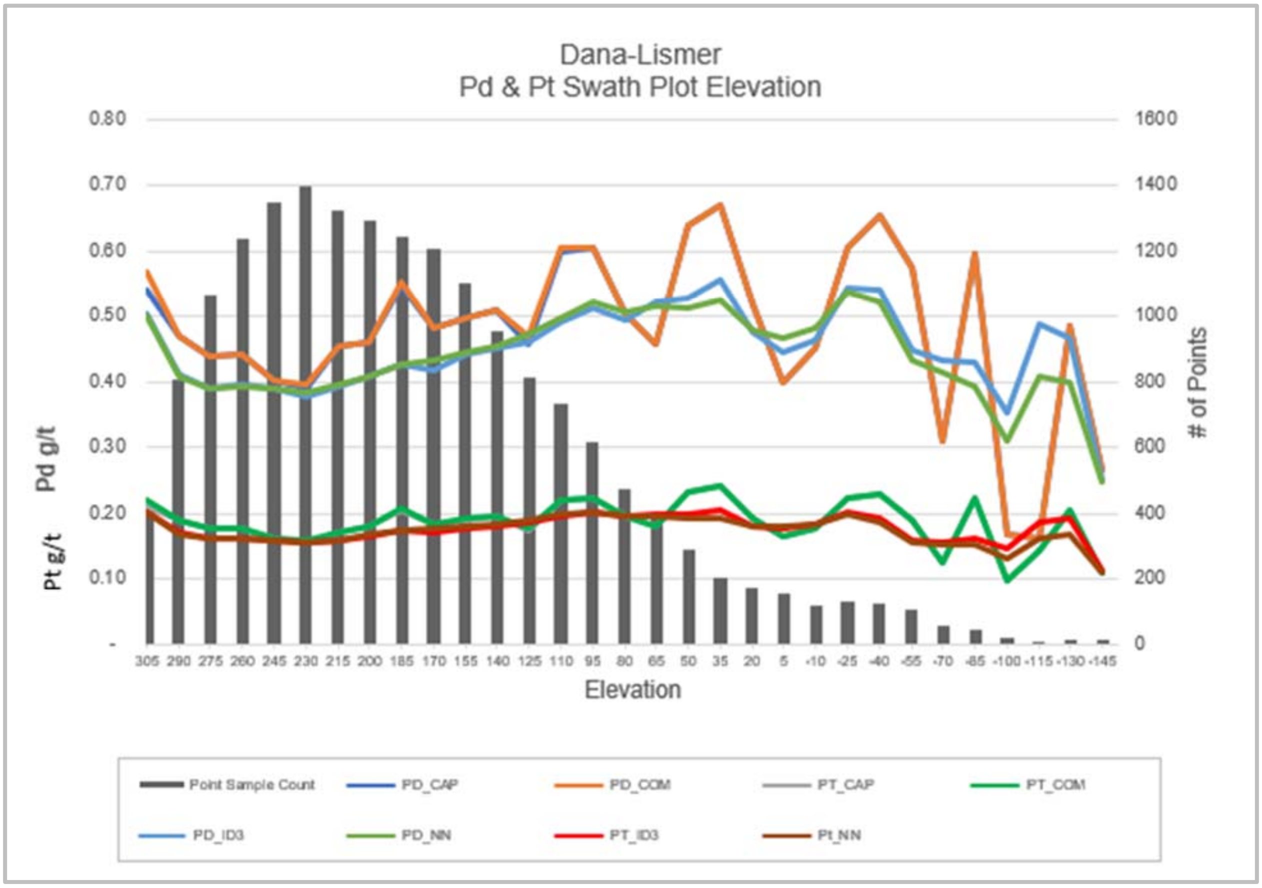


FIGURE 14.4 DANA AND LISMER PD AND PT GRADE ELEVATION SWATH PLOTS



Comparison to the previous updated 2019 Mineral Resource Estimate is shown in Table 14.16.

TABLE 14.16
RIVER VALLEY MINERAL CURRENT MINERAL RESOURCE COMPARISON TO JANUARY 9, 2019

Date	Class	Cut-off PdEq (g/t)	Tonnes (k)	Pd (g/t)	Pt (g/t)	Au (g/t)	Cu (%)	Co (%)	Ni (%)	Rh (g/t)
Jan 2019 Mineral Resource Estimate	Measured	0.35 Pit Constrained+ 2.0 Out-of-Pit	56,097	0.54	0.20	0.03	0.06	0.006	0.02	0.013
	Indicated		43,159	0.49	0.19	0.03	0.05	0.006	0.02	0.003
	M+I		99,255	0.52	0.20	0.03	0.06	0.006	0.02	0.009
	Inferred		52,306	0.31	0.15	0.04	0.04	0.001	0.02	0.012
Date	**Class**	**Cut-off NSR (CDN$/t)**	**Tonnes (k)**	**Pd (g/t)**	**Pt (g/t)**	**Au (g/t)**	**Cu (%)**	**Co (%)**	**Ni (%)**	**Rh (g/t)**
Current Mineral Resource Estimate	Measured	$15 Pit Constrained+ $50 Out-of-Pit	15,488	0.70	0.25	0.05	0.07	0.003	0.02	0.022
	Indicated		74,152	0.51	0.20	0.04	0.06	0.002	0.01	0.018
	M+I		89,640	0.54	0.21	0.04	0.06	0.002	0.01	0.019
	Inferred		94,268	0.35	0.16	0.03	0.04	0.002	0.02	0.014

Notes: *Class = classification, M+I = Measured and Indicated.*

The updated 2021 Mineral Resource Estimate is based on all historical and 2020 diamond drilling, more conservative mineralized domain wireframing strategy and revised mineralized domain modelling, inverse distance grade interpretation methodology, and higher overall metal prices, particularly for palladium. As a result, metal grades and Measured and Indicated Mineral Resources increased in comparison to the previous 2019 Mineral Resource Estimate. Moreover, at the CDN$15/t NSR cut-off, the pit constrained Measured and Indicated Mineral Resources total of 89 Mt grading 0.79 g/t Pd+Pt+Au (2.3 Moz) significantly exceeds the 78 Mt of mineable resources grading 0.79 g/t Pd+Pt+Au (2.0 Moz) in the 2019 Preliminary Economic Assessment of River Valley (P&E and DRA, 2019).

15.0 MINERAL RESERVE ESTIMATES

There is no Mineral Reserve Estimate stated for the River Valley Palladium Deposit. This section does not apply to this Technical Report.

16.0 MINING METHODS

This section does not apply to this Technical Report.

17.0 RECOVERY METHODS

This section does not apply to this Technical Report.

18.0 PROJECT INFRASTRUCTURE

This section does not apply to this Technical Report.

19.0 MARKET STUDIES AND CONTRACTS

This section does not apply to this Technical Report.

20.0 ENVIRONMENTAL STUDIES, PERMITS, AND SOCIAL OR COMMUNITY IMPACTS

The River Valley Palladium Property is located equally distant from Sudbury and North Bay (100 km by road each) and 20 km north of the Trans Canada Highway No. 17. The Property area is uninhabited. The closest full-time habitation is seven km south at Glen Afton, and at the Village of River Valley 10 km farther southeast along the Sturgeon River. Previous exploration activities on the Property have included trenching, surface drilling, geophysical surveys, geological mapping and exploration trail development as shown in Figure 20.1. No significant environmental liabilities related to previous exploration activities are known to exist on the Property. The trails and cleared zones to the east (Figure 20.1) are the result of provincially-permitted forestry activities.

FIGURE 20.1 RIVER VALLEY PROPERTY LOCAL ENVIRONMENT (EXPLORATION SITES – RED ARROWS)

Source: *Google Earth 2018*

The River Valley Palladium Project, though a proposed large-scale mining operation, is anticipated to have no discernable off-site impacts during development, operations and closure. No hazardous chemicals will be used to process mineralized feed material, and that mineralized material and waste rock is not expected to be acid generating or metal leaching. Elements of potential concern commonly found with Mineral Resources (e.g., arsenic) are present, but at only background concentrations. The Project is expected to be designed for closure with mined-out pits to be used for tailings disposal 5- to 6-years after Project initiation, and the initial tailings management facility ("TMF") will be closed out in the early years of operations.

A major environmental aspect of the River Valley Project that will be outlined in a Project Description and in the expected Environmental Assessments is the intrusion of mine pits into the footprint of one small and one larger surface water body (Pine Lake) at the Project site.

The partitioning off of surface water bodies for mining has been a relatively common occurrence in Canada. Engineered dykes have been used at gold (Nunavut), uranium (Saskatchewan), and diamond (Northwest Territories) mines and at several mines, in order to temporarily isolate a portion of a lake for safe open pit development. In general, when mining is completed, the dykes are breached to allow the lake footprint to be re-established.

Protection of fish habitat by either temporarily or permanently establishing habitat that is similar to that which has been removed is a general strategy employed at mine sites. Protection of lake water quality is generally another key aspect that will be undertaken in agreement with River Valley Project environmental criteria and with official regulations.

20.1 ENVIRONMENTAL STUDIES

Baseline environmental studies for the River Valley Project have been three-fold:

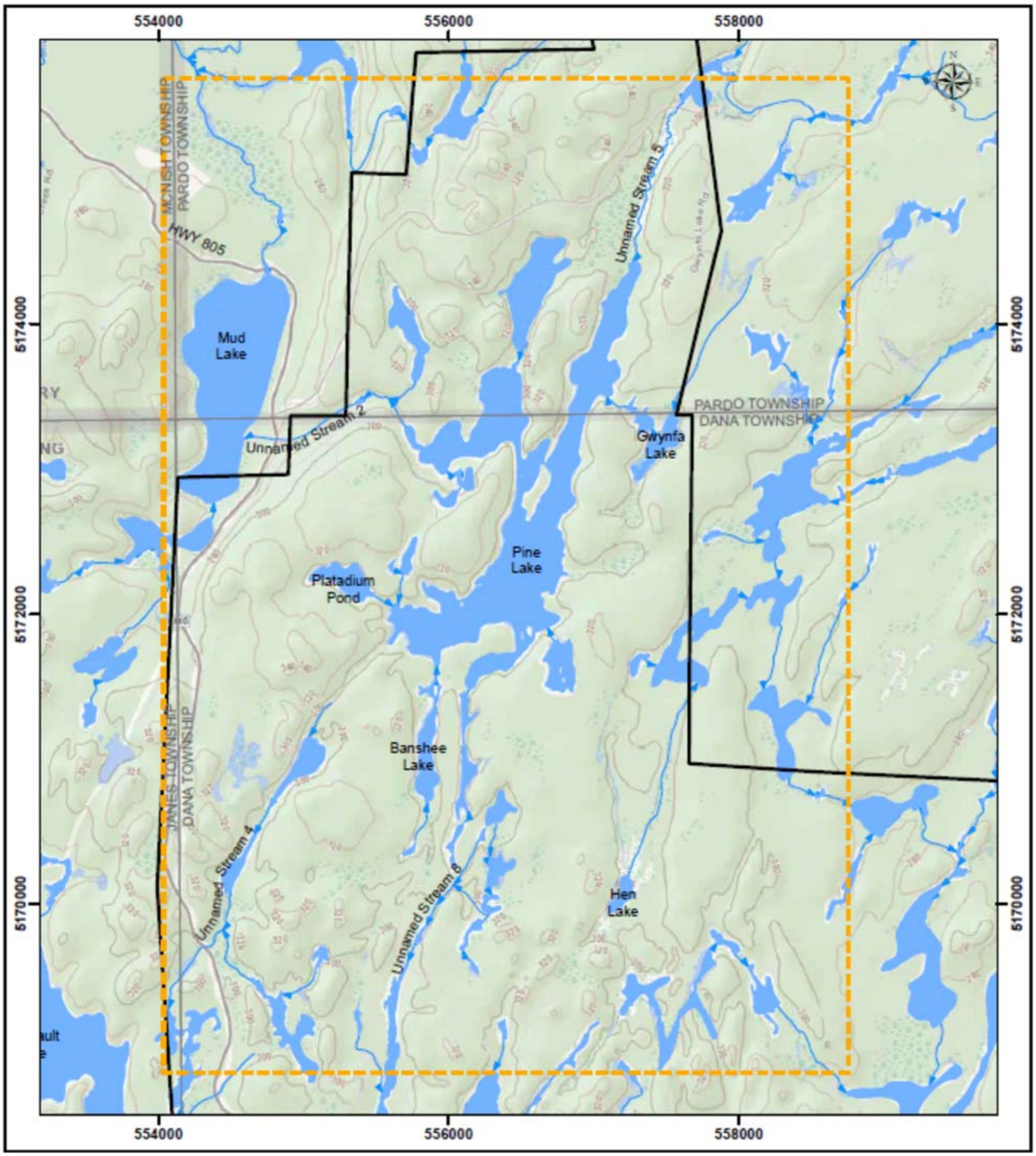
- A 2011 study of surface water quality, sediment analyses and benthic identifications by DST Consulting Engineers. The November 2011 study involved sampling the area representing locations of a part of the Mineral Resource and mining-related activity.
- Baseline studies conducted by Story Environmental in 2020 that included:
    - Surface water quality on an-off site reference lake, shallow and deep, inlet and outlet samples of Pine Lake and other accessible waterbodies within the Project footprint (Figure 20.2).
    - Hydrology – flow gauging of Pine Lake outlet.
    - Aquatics baseline – fish community and habitat survey of Pine Lake, inlets and outlet, and other water bodies within the Project footprint.
- A two-stage Archeological Assessment, conducted by Horizon Archaeology in 2020 and 2021.

The 2020 baseline studies revealed surface water quality meets provincial surface water (PWQO) quality objectives, except for copper, which exceeded slightly the very strict objective of 0.001 mg/L (ppb).

Two flow measurements were taken of Pine Lake discharge in June and September 2020. Modest flows of 0.064 m^3/s and 0.071 m^3/s were observed.

The fish studies using minnow traps and two sizes of gill nets revealed healthy populations in the Project area water bodies.

FIGURE 20.2 2020 BASELINE STUDY AREA – STORY ENVIRONMENTAL (BASELINE STUDY AREA ORANGE DASHED LINE)



Source: *Story Environmental, 2020 Baseline Studies, New Age Metals Project*

Additional baseline environmental studies will be required in the earliest stage of the Project development and the preparation of an Environmental Impact Assessment. These studies are expected to include:

- Meteorology and air quality. The nearest climate station data may be the Sudbury Airport, approximately 50 km west of the Project site;
- Soils. The soil cover in the area is mainly composed of glacial till. The soils study will include the consideration of organic and aggregate resources suitable for the development and closing of the Project. The soils at the proposed plant and infrastructure locations will be closely evaluated;
- Waste rock and mineralization geochemistry. This will be a laboratory-based testing program for acid generation ("ARD") and metal leaching ("ML");
- Hydrogeology. An assessment is needed to determine the hydraulic properties of the overburden and of the bedrock, particularly in the proposed mine pit locations. Groundwater quality can be determined from sampling water in existing drill holes.
- Vegetative communities of the Project Area; and
- Wildlife surveys including a Species at Risk Assessment.

These studies will establish baseline conditions for a detailed Environmental Assessment that will likely be required for the River Valley Project.

Two areas of environmental-engineering focus will be the tailings embankment bases and the bathymetry profiles and foundation geotechnical characteristics for the placement of dykes in Pine Lake to facilitate the development of the Dana South Pits. This may apply to other un-named water bodies for the development of other pits in future years operations.

20.2 ENVIRONMENTAL REGULATIONS AND PERMITTING

The federal and provincial Environmental Assessment ("EA") processes and permitting framework for metal mining in Canada are well established. Following the EA approval, the River Valley Project will enter a permitting phase that will regulate the Project through all phases - construction, operation, closure, and even post-closure. Throughout all these processes, consultation with and advice from, local First Nations and local communities is considered essential.

20.2.1 Federal Environmental Assessment Process

The 1992 Canadian Environmental Assessment Act ("CEAA") was updated to CEAA 2012. CEAA 2012 is currently being updated under Federal Legislation C-69, which if implemented, will increase the potential for stronger public participation in consideration of whether or not a project should proceed. The updated act includes the earlier definition of what aspects may "trigger" a federal EA. Under CEAA 2012 and C-69, an EA focuses on issues within federal jurisdiction including:

- Fish, fish habitat and other aquatic species;
- Migratory birds;
- Federal lands and effects of crossing interprovincial boundaries;
- Effects on Aboriginal peoples such as their use of traditional lands and resources; and
- A physical activity that is designated by the Federal Minister of Environment that can cause adverse environmental effects or result in public concerns.

The development of pits, and to a lesser extent tailings management, can be considered to adversely impact fish habitat, a federal EA may be triggered by that aspect alone. However, with careful design, the anticipated impact of the River Valley Project on fisheries could be considered small. In other words, the Harmful Alteration, Disruption or Destruction of Fish Habitat ("HADD") is anticipated to be small, and a detailed fisheries compensation plan and the absence of significant public concern could potentially allow the Federal Minister to waive the need of a federal EA. However, Federal Legislation C-68, which came into effect in August 2019, strengthens the protection of fisheries habitat of all fish (not just "important" species) and emphasizes public input including meaningful consultations and partnering with indigenous people.

A requirement of an EA under federal legislation is anticipated for the River Valley Project.

20.2.2 Provincial Environmental Assessment Process

The Ontario EA process is administered by the Ministry of Environment, Conservation and Parks ("MECP"). In addition to promoting responsible environmental management, interested third parties (e.g., members of the public) can comment on a mining project and request that the MECP minister call for an EA.

Ontario mining projects are not commonly subject to the EA Act since many mine development activities are not specified in the relevant Act. However, specifications do include:

- Transfer of Crown resources including land;
- Building electric power generation facilities or transmission lines;
- Constructing new roads and transport facilities; and
- Establishing a tailings management facility.

Other than marginal timber resources, no Crown resources are affected by the Project. The construction of a power line allowance and a 115 KV transmission line will require Provincial approval. Upgrading of the 6 km trail from Glen Afton will be required to handle industrial transport and provide safe access by workers.

20.2.3 Environmental Assessment Requirements for the River Valley Project

This section briefly summarizes EA requirements for the Project.

20.2.3.1 Federal EA Requirements

New Age Metals is expected to consult with the CEAA Agency to determine whether the Project is subject to a Federal EA. The submission of a Project Description is the normal initial step.

As noted above, since mining and tailings management is expected to impact fisheries habitat, a Federal EA can be anticipated. The proposed large-scale of mine and processing operations could also be a factor in triggering a Federal EA.

20.2.3.2 Provincial EA Requirements

It is reasonably possible, if a Federal EA is required, a joint Federal- Provincial EA would be agreed upon by the respective agencies. The Province of Ontario will review, in particular, monitoring commitments by River Valley as well as Closure Plans and associated financial commitments.

20.2.3.3 Project Permitting

The Project will seek all permits, Environmental Compliance Approvals ("ECAs") and authorizations from both federal and provincial agencies to construct, operate and close out the River Valley Project. These permit items are quite numerous and will require significant commitment by Project personnel.

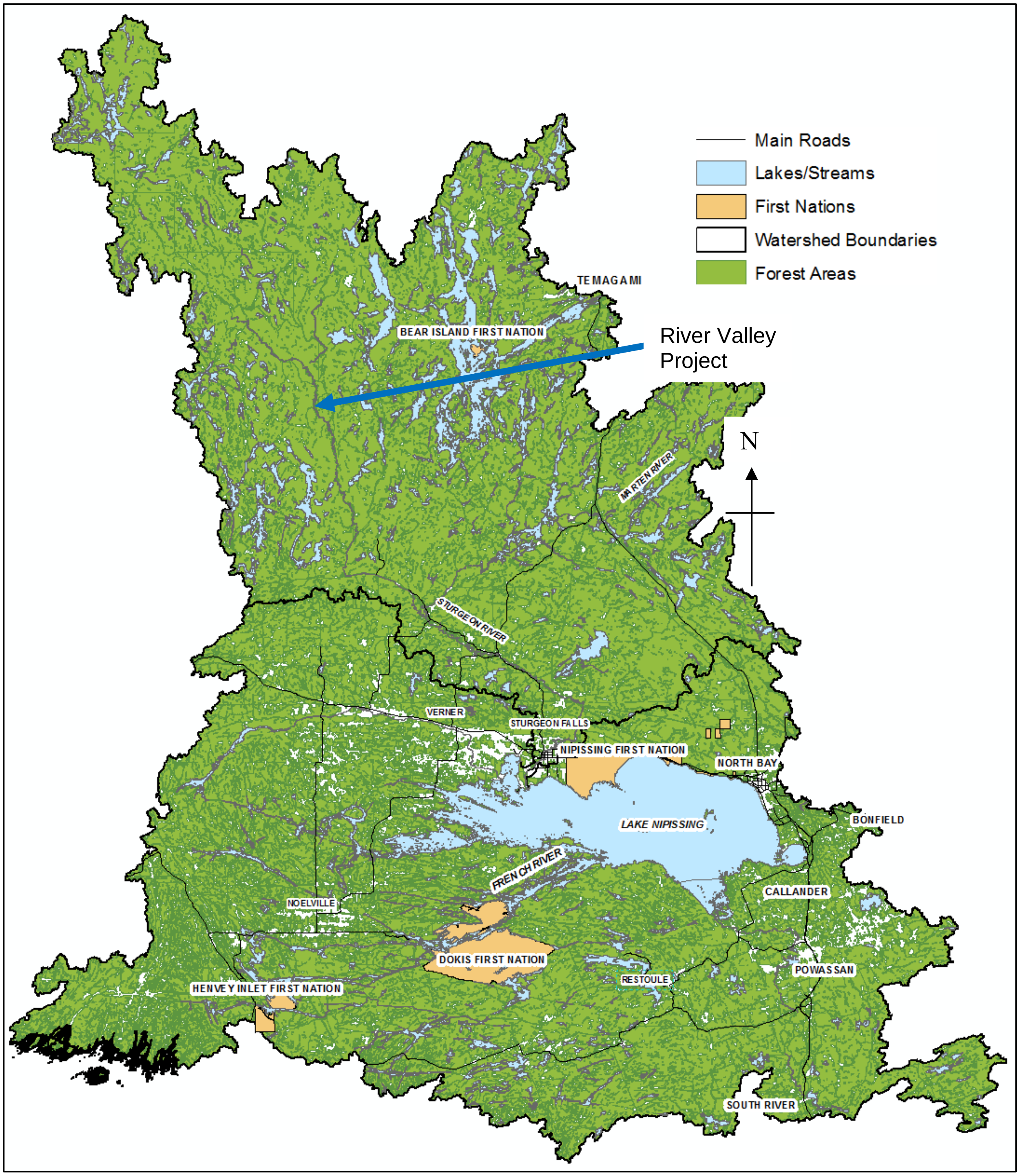
A high-level of compliance is anticipated for the Project. Challenges experienced during operations by other projects of similar size and scope in the Province of Ontario generally revolve around the management of ammonia (from blasting) and suspended solids in effluents from surface runoff, waste rock management and pit water. Tailings decant water originating from the TMF and from pit tailings disposal will be returned to the process plant during operations.

20.3 SOCIAL AND COMMUNITY REQUIREMENTS

River Valley will consult in a meaningful way with all local communities and the two local First Nations organizations that have traditional interests in the River Valley Project site.

The two First Nations are the Bear Island First Nation ("Temagami First Nation"), which has an interest in the northern section of the Project site, and the Nipissing First Nation, which has an interest in the southern section. The locations of these First Nations relative to the River Valley Project site are shown in Figure 20.3.

FIGURE 20.3 FIRST NATIONS, RIVER VALLEY PROJECT LOCATIONS IN THE LAKE NIPISSING WATERSHED



Source: *https://lnsbr.nipissingu.ca/, Lake Nipissing State of the Basin Report*

It is anticipated that Participation Agreements may be entered into with these First Nations and these Agreements could cover the following aspects:

- Environmental protection;
- Employment;
- Education and training;
- Business opportunities; and
- Financial.

A Memorandum of Understanding ("MOU") covering these aspects was signed with Temagami First Nation in 2014 and an amended MOU signed in 2017. Discussions and meetings with Nipissing First Nation have ongoing intermittently since 2015 and continued in 2021.

Communities in the area south of the Project site, including as far south as Verner and West Nipissing (formerly Sturgeon Falls), and small communities on the Sturgeon River (e.g., River Valley, Field) are also anticipated to express interest in the opportunities and potential risks represented by the Project. Some interest may arise from the fact that the Project site drains west into the Sturgeon River. The Temagami River is another major river in the area and flows into the Sturgeon River at River Valley. The combined the rivers flow through West Nipissing into Lake Nipissing. The Sturgeon River is the source of municipal water in West Nipissing.

20.4 MINE CLOSURE

NAM will develop a reclamation and Closure Plan for the River Valley Project that will satisfy all regulatory requirements and will be consistent with best Canadian industrial practice. The Plan will be submitted to the Ontario Ministry of Energy, Northern Development and Mines is expected to include:

- Results of consultations with First Nations, local communities and provincial agencies;
- Provision for progressive closure of tailings, waste rock storage and mined-out pits;
- Restoration of creek diversions, ponds, and dyked lake sections; and
- Restoration of plant and infrastructure sites.

For closure planning and financial assurance considerations closure will be addressed in four phases:

- Construction and Pre-production;
- Production and modification of production;
- End of operations; and
- Post-closure.

The closed-out River Valley Project site should essentially be a "walk-away" situation; that is, no post-operation active treatment should be required. Surface water quality should return to pre-mining conditions and pits will either be flooded, allowing aquatic biology to self-establish, or will be filled with tailings. A vegetative cover will be established on the in-pit tailings storage when self-consolidation of the tailings mass is completed.

21.0 CAPITAL AND OPERATING COSTS

This section does not apply to this Technical Report.

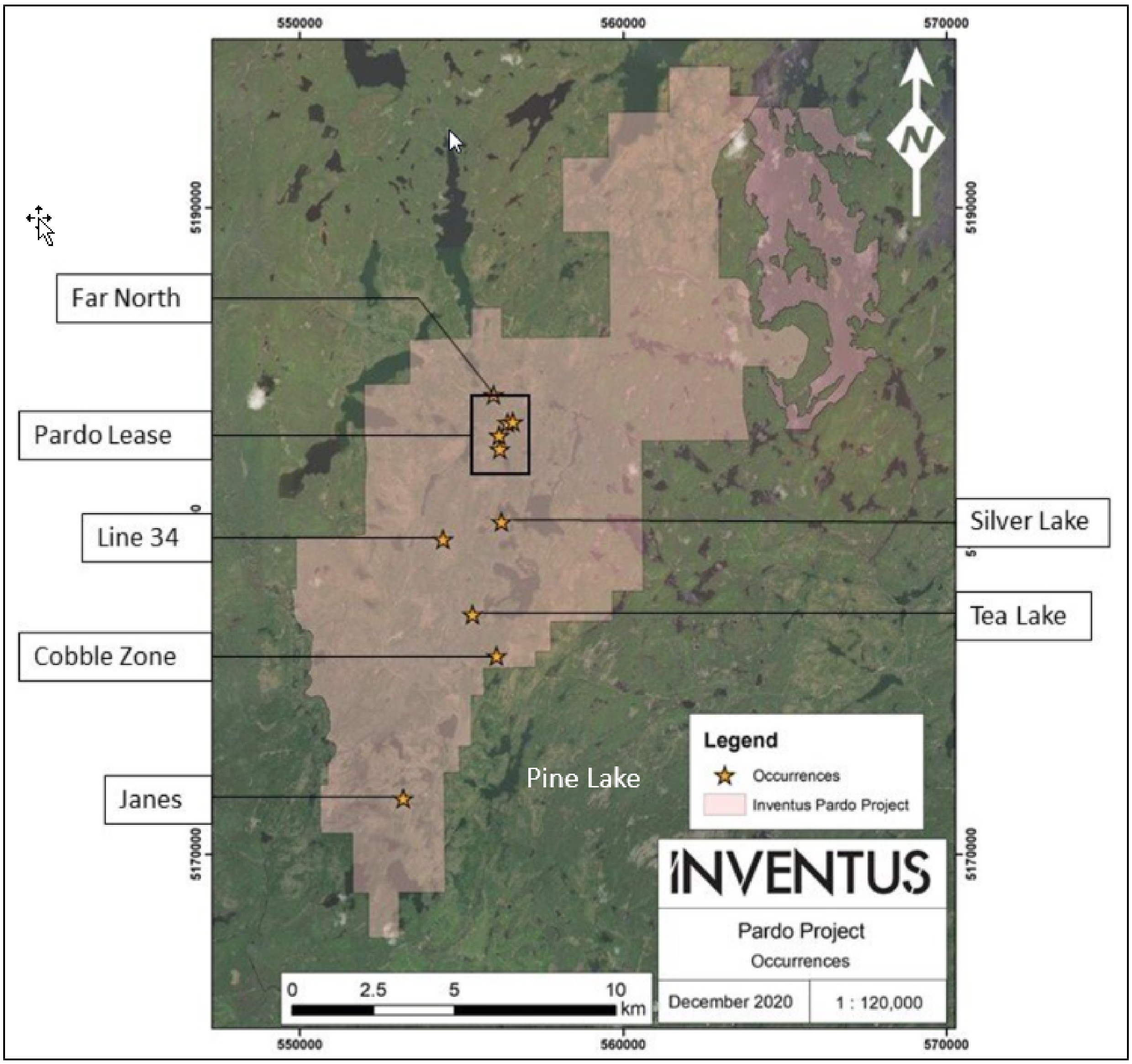
22.0 ECONOMIC ANALYSIS

This section does not apply to this Technical Report.

23.0 ADJACENT PROPERTIES

The only property of significance adjacent to River Valley is the Pardo Gold Property owned by Inventus Mining Inc. ("Inventus"). The Pardo Gold Property is located west and north adjacent to the River Valley Palladium Property (Figure 23.1). Pardo consists of 3.8 sq. km of mining leases and 180 sq. km of mining claims. According to Inventus, Pardo is the largest and most advanced paleoplacer gold occurrence in North America. The style of gold mineralization is similar to paleoplacer gold deposits found in the Witswatersrand gold fields of South Africa (Whymark and Frimmel, 2018).

FIGURE 23.1 PARDO GOLD PROPERTY, INVENTUS MINING CORP.



Source: *Inventus Mining Corp website (2021)*

Gold mineralization occurs in conglomerate layers or "reefs" that are horizontal and typically 1 m to 4 m in thickness. The reefs are laterally extensive and occur on or near surface. Gold grades >10 g/t Au occur concentrated in fluvial channels or "pay streaks", and embayments in the footwall on which the mineralized conglomerate was deposited. The gold-bearing conglomerates, if economically feasible, would be subject to low-cost surface strip mining methods.

Inventus' 2018 Technical Report (Nordmin, 2018) outlined three exploration target ranges for the gold-bearing conglomerate; P10, P50, and P90 (Table 23.1).

TABLE 23.1
EXPLORATION TARGET RANGES FOR THE PARDO GOLD PROPERTY

Parameter	P10	P50	P90
Tonnage (t)	450,000	8,600,000	12,500,000
Gold Grade (g/t)	4.20	3.50	3.50
Gold Content (oz)	60,000	950,000	1,400,000

Source: *Inventus website (2021)*

The potential tonnages and grades are conceptual in nature and based on surface mapping, drilling and channel sampling results that define the approximate thickness, extent and grade of the mineralized conglomerate unit. Currently, there has been insufficient exploration to define a Mineral Resource.

Inventus is currently pursuing a 50,000 t advanced exploration bulk sample program at Pardo to build confidence in the gold grade. In late 2017 Inventus conducted its first bulk sample at Pardo from the Trench 1 Occurrence. The 1,000 t sample was processed the material at the McEwen Mining's Black Fox Process Plant near Timmins and calculated to contain 133.8 ounces of gold, equivalent to 4.2 g/t Au. Diamond drilling prior to extraction of the bulk sample returned an average grade of 1.3 g/t Au representing a >200% increase in grade from the bulk sample.

The highest-grade occurrences to date have been the 007, Eastern Reef and Godzilla Zones. Surface channel sampling highlights from these Zones include:

- 36.5 g/t gold over 31 m at the 007 Zone.
- 4.2 g/t gold over 92.5 m at Eastern Reef Zone.
- 5.2 g/t gold over 140 m at the Godzilla Zone.

The reader is cautioned by the author of this Technical Report section that the grades and lengths of gold mineralization at the Pardo Property are not necessarily indicative of mineralization on the River Valley Palladium Property.

24.0 OTHER RELEVANT DATA AND INFORMATION

The following information in Section 24 is an extract from the Preliminary Economic Assessment (PEA) of the River Valley Palladium Project by P&E and DRA (2019) and the Technical Report is filed on SEDAR. The reader is cautioned that portions of the PEA are not current.

24.1 PRELIMINARY ECONOMIC ASSESSMENT

24.1.1 Introduction

The following Technical Report summary was prepared to provide a National Instrument ("NI") 43-101 Technical Report, Updated Mineral Resource Estimate and Preliminary Economic Assessment ("PEA") for the River Valley Deposit ("the Deposit"), located approximately 60 km northeast of Sudbury, Ontario, Canada that is 100% owned by New Age Metals Inc. ("NAM" or "the Company"). The Deposit is located at UTM NAD83 Zone 17T 555,371 m E, 5,172,514 m N. The River Valley Property ("the Property") mineralization is primarily platinum group elements ("PGE"), with Pd being the dominant metal and lessor amounts of Pt, Au, Cu, Ni and Co. Rhodium and Ag are also present, but are not currently considered payable metals.

WSP Canada Inc. ("WSP") completed an Updated Mineral Resource Estimate for the River Valley Deposit with an effective date of October 31, 2018. P&E Mining Consultants Inc. ("P&E") completed this PEA based on the Updated Mineral Resource Estimate. The reporting of the Updated Mineral Resource Estimate complies with all disclosure requirements for Mineral Resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects. The classification of the Updated Mineral Resource is consistent with CIM Definition Standards - For Mineral Resources and Mineral Reserves.

DRA Americas Inc. ("DRA") completed the metallurgical testing and process plant design aspects of the River Valley Project ("the Project") for this PEA.

24.1.2 Property Description, Location, Access, and Physiography

The River Valley Property hosts a magmatic contact-hosted platinum-palladium-gold PGE Deposit located in northeastern Ontario, approximately 60 km northeast of Sudbury. Sudbury is one of the largest mining districts in North America with several operating mines, two sulphide process plants, two nickel-copper-PGE smelters, and a nickel refinery. The Property claim group consists of 310 single cell mining claims and 18 boundary cell mining claims totalling approximately 10,700 ha. The claims are located within Dana, Janes, McWilliams, and Pardo Townships. The claim groups are all contiguous and surround two mining leases (5,402.12 ha) that are centered at approximately 555,371 m E and 5,172,514 m N (North American Datum ("NAD") 83-Universal Transverse Mercator ("UTM") Zone 17T). The claims are currently 100% owned by NAM, formerly known as Pacific North West Capital ("PFN").

The Property lies at a mean elevation of approximately 325 m asl. Relief is moderate and typical of Precambrian Shield topography. The eastern part around Azen Creek is lower and marshy. Forest cover is mainly poplar with about 25% to 33% white pine regrowth.

The Property is accessed from Sudbury by traveling east along Trans-Canada Highway 17 for 50 km to the Town of Warren, at this point turn north onto Highway 539. Travel north along Highway 539 for 22 km to the junction of Highway 805. Travel northwest along Highway 805 from the Village of River Valley, a distance of about 19.5 km from the Temagami River. Turn right onto a logging road, for about 800 m, then right at a fork in the road, and continue an additional 200 m. At this point several skidder roads and access trails lead south toward the mineralized zones. The Property lies at a mean elevation of approximately 325 m asl. The climate in the region is typical Canadian Shield summers and winter with temperatures averaging from 19°C in the summer to -13°C in the winter.

A 230 kV transmission line is located passing through Warren, approximately 22 km from the Project. A 115 kV transmission line passes through the Village of Field, located approximately 15 km to the east of the Project.

Water is abundant in region from numerous lakes and rivers to support exploration programs and mining activities.

The City of Greater Sudbury, a major mining and manufacturing city, can provide all of the infrastructure and technical requirements for any exploration and development work.

24.1.3 History

The exploration history of the region dates back to the 1960s, with work on the Property starting in earnest in 1999, and exploration drilling starting in 2000 in the Dana Lake area. Surface and airborne exploration programs, along with numerous drill programs were carried out over the years to present day.

24.1.4 Geology, Mineralization and Deposit Type

The Deposit is part of the Paleoproterozoic East Bull Lake Intrusive Suite, dated between 2,491 Ma and 2,475 Ma, and mineralization consists of a total of nine distinct zones hosted in dominantly gabbronorite to gabbroic anorthosite.

The East Bull Lake Suite Intrusions exhibit geochemical characteristics consistent with being derived from fractionated tholeiitic or high-alumina tholeiitic parental magmas. The estimated parental magma compositions for the East Bull Lake Suite Intrusives are thus broadly similar to those postulated for the intrusive suite in the world class Noril'sk-Talnakh nickel-copper-PGE camp in Siberia.

The three largest and most economically interesting, mineralized bodies of the East Bull Lake Suite Intrusives are the East Bull Lake and Agnew Lake Intrusions (situated within the Sudbury Province), and the River Valley Intrusion (situated in the Grenville Front Tectonic Zone). The River Valley Intrusion, the largest of the East Bull Lake Intrusive Suite by area, covers an area of approximately 200 km^2. An economically important feature commonly shared by the Agnew Lake, East Bull Lake, and River Valley Intrusions is the occurrence of a copper-nickel-PGE bearing breccia unit situated at the base of the intrusions, where the footwall contact is preserved.

The contact between the River Valley Intrusion and the Archean basement trends southeasterly for a distance of approximately 16 km. On the basis of surface mapping and diamond drilling, the idealized sectional stratigraphy of the mineralized environment comprises five major units, from the layered rocks of the River Valley Intrusion in the west to the igneous basal contact of the intrusion to the east.

The mineralized breccia unit occurring at the contact has been identified along most of the 16 km strike length. The contact is divided into several areas based on structural offsetting, alteration grades, and grade distribution. The zones of mineralized breccia starting in the northwest and proceeding to the southeastern extent of the contact on the Property are Dana North, Dana South, Banshee, Lismer North, Lismer Ridge, Varley, Azen, Razor, and River Valley Extension.

Two styles of mineralization have been observed at the Project: contact nickel-PGE mineralization and reef PGE mineralization. The presence of several highly-anomalous assays from rocks lying within higher portions of the River Valley Intrusion’s stratigraphy suggests that there are opportunities for PGE mineralization such as reef or stratabound-type targets, or narrow, high-grade breccia zones.

24.1.5 Exploration and Drilling

NAM has conducted exploration on the Property since 1999, consisting of surface exploration, Numerous ground and airborne geophysical surveys induced polarization (“IP”) surveys and drilling.

In 2000 a total of 6,779 m of drilling in 40 holes was conducted in the Dana Lake area. 16,027 m in 98 holes were drilled in 2001, and 83 holes were drilled in 2002 at Lismer Ridge, Dana South and Banshee Lake. From late 2002 to May 2004 a total of 44,131 m in 208 holes were drilled, followed by 24,198 m in 123 holes in 2005. During 2011 and 2012 a total of 12,767 m in 46 holes were drilled in Dana North and Dana South.

In 2015, a total of 474 m in two holes were drilled at Dana North. In 2016 five holes were drilled for a total of 1,267 m at the Pine Zone. In 2017, a total of 3,728 m in 14 holes were drilled at Dana North and the Pine Zone.

In 2018 the Dana North/Pine Zone area was channel sampled. There was no drilling on the Property in 2018.

24.1.6 Mineral Processing and Metallurgical Testing

The earliest records for metallurgical testwork regarding the River Valley Project relate to metallurgical testwork on the Dana Lake Zone with these first tests conducted in 1999.

Since then, other metallurgical testwork and mineralogical studies have been carried out to assist in establishing viable process flowsheet options for obtaining a single sulphide concentrate containing both Platinum Group Metals ("PGEs") and base metals.

The first of these metallurgical testwork programs was carried out in 1999 at the Michigan Technological University ("MTU"). Initial testwork included mineralogical analysis, bulk density measurements of the mineralization, physical characterization and pilot plant flotation on the Dana Lake mineralization to produce a sulphide concentrate containing PGEs and base metals.

In 2001, a testwork program was conducted on samples taken from 13 separate drill holes from the River Valley Deposit. These tests were carried out by the owner at the time, Anglo American Platinum Limited ("Amplats"), to determine mineralogical composition. Preliminary flotation tests were also carried out on these samples to determine the mineralogy of the concentrates produced and the recovery of palladium.

In 2004, the new owner of River Valley, Pacific North West Capital Corporation, contracted SGS Lakefield Research ("SGS") to carry out kinetic flotation tests on River Valley Project drill core. The testwork produced a rougher concentrate.

In 2006, flotation testwork was carried out by Anglo-American Metallurgical Services on a sample of River Valley mineralization. The objective of the study was to investigate possible treatment routes to improve Platinum ("Pt"), Palladium ("Pd") and Nickel ("Ni") recoveries and the concentrate grades of these minerals. The effect of feed grind size, collector type and dosage, as well as the impact of dispersants, complexing agents and a higher energy input during flotation on grade-recovery relationship, was evaluated.

In 2013**,** scoping level metallurgical testing was conducted at SGS on a sample from the River Valley Deposit for Pacific North West Capital Corporation. The testwork program produced head grades and mineralogical compositions of the sample and concentrate for both the Dana South Zone ("DSZ") and Dana North Zone ("DNZ"). A composite sample of both zones was generated with the following analysis conducted:

- Bond Rod Mill Index ("RWI");
- Ball Mill Work Index ("BWI");
- Abrasion Index ("AI");
- Modal Analysis and Deportment;
- Mineral Liberation Analysis ("MLA"); and
- Flotation testwork including Regrind Effect, Rougher Kinetic testwork and Locked Cycle Testwork ("LCT").

In February 2018, Expert Process Solutions ("XPS") released a report on the "Mineralogical Analysis of Dana and Pine Zone Samples". A mineralogical analysis was completed on four composites from the River Valley Property. The composites generated were created from assay reject material and included "typical" grade Pine Zone, "high grade" Pine Zone, "typical" grade Dana Zone and "high-grade" Dana Zone.

A significant amount of testwork was conducted and reviewed to develop a preliminary flowsheet for the development of the River Valley process plant design. The merits of a crushing, grinding and sequential flotation flowsheet were evaluated during the program and analyzed. Adequate testwork has been conducted to support the basis of this Technical Report.

The metallurgical programs concluded that a sequential flotation flowsheet for the recovery of PGE-bearing concentrate may be the preferred processing route. Improvements and optimization with further testwork will be required to confirm an increase in PGE recovery.

24.1.7 Updated Mineral Resource Estimate

The Updated Mineral Resource Estimate was completed on the Dana North, Dana South, Pine, Banshee, Lismer, Lismer Extension, Varley, Azen, Razor, and River Valley Extension Zones, using the ordinary kriging ("OK") grade interpolation methodology on a composited borehole dataset consistent with industry standards. The database contains 710 drill holes with 106,554 assays records in the database, and 2,642 surface channel samplings. It was determined that grade capping was not required on any element in the dataset. The potential of smearing high-grade samples will be controlled by the kriging process. A block size of 2.5 m x 5 m x 2.5 m was selected in order to accommodate the nature of the mineralization and to be amenable for potential open pit extraction. Validation of the results was conducted through the use of visual inspection, swath plots, and global statistical comparison of the model against inverse distance squared ("ID^2") and nearest neighbour ("NN") grade models.

The effective date of the Updated Mineral Resource Estimate is June 27, 2019. The Updated Mineral Resource is amenable to open pit mining. Table 24.1 summarizes the results of the Updated Mineral Resource Estimate using a 0.35 g/t PdEq cut-off grade for a pit constrained Mineral Resource Estimate and 2.0 g/t PdEq cut-off grade for potential out-of-pit Mineral Resources. Table 24.2 summarizes the contained metal within the Updated Mineral Resource Estimate.

24.1.8 Mineral Reserve Estimate

There is no Mineral Reserve Estimate stated for the River Valley Deposit.

Table 24.1 River Valley Updated Mineral Resource Estimate (using 0.35 g/t PdEq and 2.00 g/t PdEq Cut-off Grades)										
Classification	**PdEq Cut-off (g/t)**	**Tonnes**	**Pd (g/t)**	**Pt (g/t)**	**Rh (g/t)**	**Au (g/t)**	**Cu (%)**	**Ni (%)**	**Co (%)**	**PdEq (g/t)**
Measured	0.35	56,025,400	0.54	0.20	0.013	0.03	0.06	0.02	0.006	0.94
	2.00	71,300	2.33	0.75	0.036	0.09	0.12	0.02	0.002	3.38
	0.35+2.00	**56,096,700**	**0.54**	**0.20**	**0.013**	**0.03**	**0.06**	**0.02**	**0.006**	**0.94**
Indicated	0.35	43,153,300	0.49	0.19	0.003	0.03	0.05	0.02	0.006	0.84
	2.00	5,200	2.23	0.60	0.003	0.11	0.03	0.04	0.000	3.20
	0.35+2.00	**43,158,500**	**0.49**	**0.19**	**0.003**	**0.03**	**0.05**	**0.02**	**0.006**	**0.84**
Meas +Ind	0.35	99,178,700	0.52	0.20	0.009	0.03	0.06	0.02	0.006	0.90
	2.00	76,500	2.32	0.74	0.034	0.09	0.11	0.02	0.002	3.37
	0.35+2.00	**99,255,200**	**0.52**	**0.20**	**0.009**	**0.03**	**0.06**	**0.02**	**0.006**	**0.90**
Inferred	0.35	52,306,000	0.31	0.15	0.012	0.04	0.04	0.02	0.001	0.63
	2.00	-	-	-	-	-	-	-	-	-
	0.35+2.00	**52,306,000**	**0.31**	**0.15**	**0.012**	**0.04**	**0.04**	**0.02**	**0.001**	**0.63**

Note: *Total Meas +Ind = Total Measured + Indicated.*

Table 24.2 River Valley Updated Mineral Resource Estimate In-situ Metals (using 0.35 g/t PdEq and 2.00 g/t PdEq Cut-off Grades)									
Classification	**PGE + Au (koz)**	**Pd (koz)**	**Pt (koz)**	**Au (koz)**	**Rh (koz)**	**PdEq (koz)**	**Cu (klb)**	**Ni (klb)**	**Co (klb)**
Measured	1,394	983	362	49	23	1,701	74,209	24,705	7,405
Indicated	983	678	264	42	4	1,166	47,515	19,009	5,701
Meas +Ind	2,377	1,661	626	91	28	2,867	121,724	43,714	13,107
Inferred	841	521	252	67	20	1,059	46,071	23,036	1,152

Note: *Total Meas +Ind = Total Measured + Indicated; Metal units are in thousands.*

24.1.9 Mining Methods

The River Valley Deposit is relatively shallow and lends itself to conventional open pit mining methods. Accordingly, the PEA mine plan entails developing 14 open pits aligned across approximately 16 km on the Property. An open pit mining and processing schedule has been developed for the Project. The mine production plan utilizes Measured, Indicated and Inferred Mineral Resources. Inferred Mineral Resources are considered too speculative geologically to have the economic considerations applied to them to be categorized as Mineral Reserves, and there is no certainty that the Inferred Mineral Resources will be upgraded to a higher Mineral Resource classification.

Open pit optimizations were run based on an NSR cut-off value of $11.45/t and a pit slope angle of 48°, with a mining cost for all materials of $2.00/t. A slope angle of 50° for PEA level pit optimization was recommended by Mine Design Engineering Inc. ("MDEng"), and it was subsequently flattened by 2° in the pit optimizations to allow for haulage ramps. Benches and haul roads were added during the creation of each pit design.

Mining dilution of 9.5% and 3% mining losses at diluting grades that averaged 0.22 g/t PdEq were incorporated to estimate the diluted potentially mineable portion of the Updated Mineral Resource Estimate (process plant feed). Total process plant feed was estimated at 78.1 Mt at a LOM average grade of 0.88 g/t PdEq. Total waste material within the open pits was estimated at 278 Mt, giving a LOM strip ratio of 3.6:1. A production schedule was generated at 6.0 Mtpy process plant feed. The open pit production schedule consists of one year of pre-production for pre-stripping followed by 13 years of mining and a partial final year of stockpile reclaim. The target peak annual mining rate is 40 Mt tonnes of material per year, or 110,000 tpd.

It is assumed that the open pits will be operated as a contract mining operation using conventional open pit mining diesel equipment consisting of 254 mm rotary drills, 29 m^3 hydraulic excavators, 221 t off-highway haul trucks and auxiliary equipment. The open pit operation will require the development of several waste rock storage facilities ("WRF") located immediately adjacent to the mining areas. A management and supervision team of NAM employees will direct the mining contractor. The River Valley mining operation will require a steady-state open pit workforce of approximately 189 personnel.

24.1.10 Recovery Methods

The preliminary process plant design is derived from the results obtained from historical testwork with emphasis given to the pilot plant testwork program conducted by MTU in 1999 and the bench scale Locked Cycle Testwork ("LCT") program conducted by SGS in 2013. The data and results were used to develop the process design criteria develop a mass and water balance, size the major equipment and develop an operating cost ("OPEX") and capital cost estimate ("CAPEX"). The reason why these two particular tests were used as a basis for design is that they were based on the most optimized results obtained from all previous mineralogical, elemental deportment and kinetics tests, and because LCTs simulate how the actual process plant will be running, therefore, valuable predictions about the process can be made.

The run-of-mine ("ROM") mineralized material is crushed in a single primary crushing stage prior to the milling circuit. The grinding circuit consists of a SAG mill in closed circuit with a pebble crusher and two ball mills in parallel. These are followed by rougher-scavenger flotation, then by three stages of cleaner flotation, and are designed to process 21,920 tpd (6.0 Mtpy) of run-of-mine ("ROM") mineralized material.

The process plant will produce a single concentrate for sale using conventional sulphide flotation techniques. The flotation circuit configuration and design are based on the LCT conducted by SGS in 2013. Concentrate and tailings products will be dewatered using high-rate thickeners and the concentrate will be further dewatered by conventional plate and frame pressure filtration.

Process water will be recovered from the concentrate and tailings thickener overflow. Raw water is assumed to be sourced from the local environment and will be used as make-up water. It is assumed that 10% of the fresh water make-up will come from fresh water sources in case there is not enough recovered water from the tailings storage facility ("TSF") during winter or very dry conditions.

24.1.11 Project Infrastructure

There is currently no mining infrastructure at the River Valley Project site. The process plant, TSF, low-grade stockpile, offices, and initial open pits to be mined will all be located in the northwest corner of the Property. The initial mine site infrastructure is compact, and NAM will strive to contain this small footprint during future operations. A security building and gate will be located at the entrance to the mine site.

The process plant facilities will consist of the following:

- Primary crusher building;
- Grinding, flotation, thickening and filtration building that will also house areas for:
  - Laboratory,
  - Offices,
  - Lunchroom,
  - Medical services,
  - Control room,
  - Water treatment plant;
- Reagents storage and mixing building;
- Spare parts warehouse building;
- Main electrical substation.

Contracted mining operations are planned for open pit extraction. Infrastructure required includes access roads to each open pit and to overburden and waste rock storage areas. The contractor will install its own equipment maintenance facilities with the main location near the process plant. A portable office for supporting technical services is required for the owner's supervisory personnel. An explosives magazine and bulk explosives plant will be established by the mining contractor at required safe distances from the process plant or office or maintenance facility area.

There will be no camp facilities at site. Personnel and contractors will be responsible for their own housing and will travel from local communities.

A 230 kV transmission line is located passing through the town of Warren, approximately 22 km from the Project. A 115 kV transmission line passes through the village of Field, located approximately 15 km to the east of the Project. It is assumed that electrical power will be provided by the local utility via either of these overland power lines. The total utilized electrical power estimate for the process plant, during steady state operation, is estimated at 26.7 MW. A diesel generator at the process plant will be used for emergency power generation.

Raw (fresh) water for the process plant will be withdrawn from local fresh water sources. A combined raw and fire water tank will hold sufficient quantities of water to meet the instantaneous demands of the process plant. The use of external make-up water for the process plant has been minimized as part of the process plant design. Effluent water from the process plant will be directed to a treatment plant.

Tailings management at River Valley will occur in two phases. For the first 5- to 6-years, tailings will be stored in a surface TSF constructed with an engineered single perimeter embankment. The embankment will be a downstream design constructed mainly with sized mine waste rock. The upstream embankment face will be composed of a protected, impervious layer which will be keyed into a solid rock base below the embankment. The impervious layer will be backed by a filter zone. Approximately 30 Mt of tailings will be stored on surface. To minimize size segregation of tailings solids, the tailings will be thickened in the process plant to 55% solids or higher before being pumped to the TSF for deposition.

At the end of 5- or 6-years of operation, the surface TSF will cease to operate. Thickened tailings will then be deposited under a water/ice cover in the mined-out open pits. A water cover will be maintained with the excess water clarified in dedicated surface ponds for either treatment and release or sent to the process plant as make up water.

24.1.12 Market Studies and Contracts

P&E followed the approximate long-term price consensus forecasts by various banks and brokerage firms for Au, Pt, Ni and Cu. For Pd, Co and the CDN$:US$ exchange rate, these were adjusted to more closely follow recent trends. The metal prices and FX are listed in Table 24.3.

TABLE 24.3
METAL PRICE ASSUMPTIONS AND FX (US$)

Commodity	Au/oz	Pd/oz	Pt/oz	Ni/lb	Cu/lb	Co/lb	CDN$:US$
Price	1,350	1,200	1,050	8.00	3.25	35.00	1.37

There are no existing contracts in place related to the River Valley Project.

24.1.13 Environmental Studies, Permits, and Social or Community Impacts

The River Valley Property is located equally distant from Sudbury and North Bay (100 km by road each) and 20 km north of the Trans-Canada Highway No. 17. The Property area is uninhabited with the closest full-time habitation 7 km south at Glen Afton, and at the village of River Valley, 10 km farther southeast along the Sturgeon River. Previous exploration activities on the Property have included trenching, surface drilling, geophysical surveys, geological mapping and exploration trail development. No significant environmental liabilities related to previous exploration activities are known to exist at the Property. The trails and cleared zones to the east of the Deposit are the result of provincially-permitted forestry.

The River Valley Project, while a proposed large-scale mining project, is expected to have no discernable off-site impacts during development, operations and closure. No hazardous chemicals will be used to process mineralized feed material and the waste rock is not expected to be acid generating or metal leaching. Elements of potential concern often found with Mineral Resources (e.g., arsenic) are present at background concentrations. The Project will be designed for closure with mined-out pits to be used for tailings disposal 5 to 6 years after Project initiation and the initial TSF will be cease operation in the early years of mine life.

A major environmental aspect of the Project that will be outlined in a Project Description and in the expected Environmental Assessments is the intrusion of mine pits into the footprint of small and one larger surface water body (Pine Lake) on the Project site.

Baseline environmental studies for the Project have been limited to a 2011 study of surface water quality, sediment analyses and benthic identifications. More extensive baseline environmental studies will be required in the earliest stage of the Project development and for an Environmental Impact Assessment.

The federal and provincial Environmental Assessment ("EA") processes and permitting framework for metal mining in Canada are well established. A requirement of an EA under federal legislation is anticipated for the River Valley Project. It is reasonably possible that a joint Federal-Provincial EA would be agreed upon by the respective agencies. Following the EA approval, the Project will enter a permitting phase which will regulate the Project through all phases - construction, operation, closure, and possibly post-closure. Throughout all of these processes, consultation with, and advice from, local First Nations and local communities is considered essential. The two First Nations are the Temagami First Nation which has an interest in the northern section of the Property, and the Nipissing First Nation which has an interest in the southern section. NAM has initiated these consultations.

Other than marginal timber resources, no Crown resources are affected by the Project. The construction of a power line allowance and a 115 KV transmission line will require Provincial approval. Upgrading of the 6 km trail to the Project from Glen Afton will be required to handle industrial transport and provide safe access for workers.

NAM will develop a reclamation and Closure Plan that will satisfy all regulatory requirements and will be consistent with best Canadian industrial practice. The Closure Plan will be submitted to the Ontario Ministry of Northern Development, Mines and Energy. The closed-out Project site should essentially be a "walk-away" situation, that is, no post operation active treatment should be required. Surface water quality should return to pre-mining conditions and pits will either be flooded, allowing aquatic biology to self-establish, or will be filled with tailings. A vegetative cover will be established on the in-pit tailings once self-consolidation of the tailings mass is completed.

24.1.14 Capital and Operating Costs

Capital and operating costs are listed in Q2 2019 Canadian dollars ("$") unless otherwise stated as United States dollars ("US$").

24.1.14.1 Project Capital Costs

Mining Capital Costs

Mining capital costs are for pre-stripping Open Pit 1. A total of 7.7 Mt of material, mostly waste rock, will be mined during the pre-production period at a cost of $2.25/t for a total estimated cost of $17.3M. A 1.5 Mt stockpile of process plant feed will also be established during pre-production.

Process Plant Capital Costs

The process plant capital cost estimate was compiled by DRA and is summarized in Table 24.4. DRA developed the process plant, plant infrastructure and plant indirect capital cost estimates for the Project scope described in this Technical Report. The process plant Total Installed Cost ("TIC") is estimated at $441M (US$322M).

TABLE 24.4
PROCESS PLANT CAPITAL COSTS IN US$

Description	Installation Cost	Material Cost	Equipment Supply Cost	Subcontractor	Total Installed
Factored Commodities					
Earthworks and Civil	$ 4,607,925	$ 511,992	$ -		$ 5,119,916
Concrete	$ 4,319,929	$ 5,279,914	$ -		$ 9,599,843
Structural Steel	$ 4,607,925	$ 6,911,887	$ -		$ 11,519,811
Platework	$ 2,303,962	$ 2,815,954	$ -		$ 5,119,916
Buildings, Architectural	$ -	$ -	$ -		$ -
Building Services	$ -	$ -	$ -		$ -
Electrical	$ 3,455,943	$ 2,419,160	$ 5,644,708		$ 11,519,811
Instrumentation	$ 2,687,956	$ 1,996,767	$ 2,995,151		$ 7,679,874
Piping	$ 6,399,895	$ 5,759,906	$ 639,990		$ 12,799,790
Insulation and Protection	$ 959,984	$ 959,984	$ -		$ 1,919,969
Subtotal Process Plant Factored Commo	**$ 29,343,519**	**$ 26,655,563**	**$ 9,279,848**	**$ -**	**$ 65,278,931**
Subtotal Process Plant	**38,468,560**	**31,249,563**	**59,559,759**	**$ -**	**$ 129,277,882**
Utilities					
Flocculant Plant	$ 157,281	$ 71,218	$ 237,412		$ 465,910
Air Reticulation	$ 235,774	$ 80,015	$ 471,618		$ 787,407
Process Water	$ 59,171	$ 54,897	$ 29,739		$ 143,806
Gland Water	$ 48,478	$ 44,949	$ 24,429		$ 117,856
Fire Water	$ 157,510	$ 169,207	$ 56,983		$ 383,700
Reagent mixing Plant	$ 300,850	$ 174,326	$ 394,117		$ 869,294
Subtotal Plant Utilities	**959,064.6**	**594,611.8**	**1,214,297.0**	**-**	**2,767,973.5**
Infrastructure					
Plant Terracing-General Site Clearing & Grub	$ 1,170,000				$ 1,170,000
Primary Crusher Building	$ 1,500,000	$ 2,025,000	$ 225,000		$ 3,750,000
Process Building	$ 15,400,000	$ 20,790,000	$ 2,310,000		$ 38,500,000
Reagent Storage	$ 480,000	$ 720,000	$ -		$ 1,200,000
Flocculant area	$ 300,000	$ 450,000	$ -		$ 750,000
Main Electrical Substation	$ 900,000	$ -	$ 3,600,000		$ 4,500,000
Overland Tailings piping	$ 506,250	$ 556,875	$ 61,875		$ 1,125,000
Water Treatment Plant	$ 415,938	$ 210,788	$ 583,275		$ 1,210,000
Satelite Communications System	$ 168,000	$ 93,600	$ 218,400		$ 480,000
Plant Mobile Equipment	$ 418,922		$ 3,770,302		$ 4,189,224
Subtotal Plant Infrastructure	**21,259,110**	**24,846,263**	**10,768,852**	**-**	**56,874,224**
Total Direct Cost	**60686734.92**	**$ 56,690,438**	**$ 71,542,907**	**$ -**	**$ 188,920,080**
Indirect Costs					
Contractor Field Indirects				$ 51,724,639.61	$ 51,724,640
Spare Parts				$ 2,382,390.34	$ 2,382,390
Initial Fills				$ 2,400,000	$ 2,400,000
Vendor Supervision				$ 2,382,390.34	$ 2,382,390
Freight, Transport and Insurance for Process Equipment				$ 5,723,432.57	$ 5,723,433
Freight, Transport and Insurance for Steel, EC&I & Piping				$ 2,544,926.63	$ 2,544,927
Third Party Engineering				$ 550,000.00	$ 550,000
Start-up/Commissioning Support				$ 1,786,792.76	$ 1,786,793
Engineering Procurement				$ 18,473,085.57	$ 18,473,086
Construction Management				$ 12,931,159.90	$ 12,931,160
Construction Power				$ 1,626,075.00	$ 1,626,075
Construction Fuel				$ 1,267,643.52	$ 1,267,644
Construction Camp and Catering					$ -
Taxes, Duties & Permits					$ -
1 year Spares & Inventory					$ -
Owner's Cost					$ -
Subtotal Indirect Cost	**-**	**-**	**-**	**103,792,536**	**103,792,536**
Subtotal Direct + Indirect	**$ 60,686,735**	**$ 56,690,438**	**$ 71,542,907**	**$ 103,792,536**	**$ 292,712,616**
Contingency				$ 29,271,261.60	$ 29,271,262
Project Total	**$ 60,686,735**	**$ 56,690,438**	**$ 71,542,907**	**$ 133,063,798**	**$ 321,983,878**

Description	Installation Cost	Material Cost	Equipment Supply Cost	Subcontractor	Total Installed
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Platework	$ 2,303,962	$ 2,815,954	$ -		$ 5,119,916
Buildings, Architectural	$ -	$ -	$ -		$ -
Building Services	$ -	$ -	$ -		$ -
Electrical	$ 3,455,943	$ 2,419,160	$ 5,644,708		$ 11,519,811
Instrumentation	$ 2,687,956	$ 1,996,767	$ 2,995,151		$ 7,679,874
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Subtotal Process Plant Factored Commo	**$ 29,343,519**	**$ 26,655,563**	**$ 9,279,848**	**$ -**	**$ 65,278,931**
Subtotal Process Plant	**38,468,560**	**31,249,563**	**59,559,759**	**$ -**	**$ 129,277,882**
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Process Water	$ 59,171	$ 54,897	$ 29,739		$ 143,806
Gland Water	$ 48,478	$ 44,949	$ 24,429		$ 117,856
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Reagent mixing Plant	$ 300,850	$ 174,326	$ 394,117		$ 869,294
Subtotal Plant Utilities	**959,064.6**	**594,611.8**	**1,214,297.0**	**-**	**2,767,973.5**
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Plant Terracing-General Site Clearing & Grub	$ 1,170,000				$ 1,170,000
Primary Crusher Building	$ 1,500,000	$ 2,025,000	$ 225,000		$ 3,750,000
Process Building	$ 15,400,000	$ 20,790,000	$ 2,310,000		$ 38,500,000
Reagent Storage	$ 480,000	$ 720,000	$ -		$ 1,200,000
Flocculant area	$ 300,000	$ 450,000	$ -		$ 750,000
Main Electrical Substation	$ 900,000	$ -	$ 3,600,000		$ 4,500,000
Overland Tailings piping	$ 506,250	$ 556,875	$ 61,875		$ 1,125,000
Water Treatment Plant	$ 415,938	$ 210,788	$ 583,275		$ 1,210,000
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Subtotal Plant Infrastructure	**21,259,110**	**24,846,263**	**10,768,852**	**-**	**56,874,224**
Total Direct Cost	**60686734.92**	**$ 56,690,438**	**$ 71,542,907**	**$ -**	**$ 188,920,080**
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Contractor Field Indirects				$ 51,724,639.61	$ 51,724,640
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Freight, Transport and Insurance for Steel, EC&I & Piping				$ 2,544,926.63	$ 2,544,927
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Engineering Procurement				$ 18,473,085.57	$ 18,473,086
Construction Management				$ 12,931,159.90	$ 12,931,160
Construction Power				$ 1,626,075.00	$ 1,626,075
Construction Fuel				$ 1,267,643.52	$ 1,267,644
Construction Camp and Catering					$ -
Taxes, Duties & Permits					$ -
1 year Spares & Inventory					$ -
Owner's Cost					$ -
Subtotal Indirect Cost	**-**	**-**	**-**	**103,792,536**	**103,792,536**
Subtotal Direct + Indirect	**$ 60,686,735**	**$ 56,690,438**	**$ 71,542,907**	**$ 103,792,536**	**$ 292,712,616**
Contingency				$ 29,271,261.60	$ 29,271,262
Project Total	**$ 60,686,735**	**$ 56,690,438**	**$ 71,542,907**	**$ 133,063,798**	**$ 321,983,878**

Site Infrastructure Capital Costs

Required site infrastructure located close to the process plant is estimated at $20M. This includes connection to the nearby power grid, offices, gate house, fencing, site access roads, and construction of a dam on the eastern side of open pits 1 and 2 at the south end of Pine Lake.

Tailings Storage Facility Capital Costs

The cost to construct the tailings storage facility near the process plant site was estimated at $8M. The TSF will be of sufficient size for up to 6 years of tailings storage. In-pit tailings storage in mined-out open pits will be utilized subsequently.

Owner Capital Costs

Owner capital costs were estimated at $5M to support the owner's team during Project construction and for mining contractor mobilization.

Contingency

A 10% contingency was added to all capital costs except pre-stripping. The total contingency cost was estimated at $43.4M.

Initial Project Capital Costs

A summary of the Project initial capital cost estimates is presented in Table 24.5.

TABLE 24.5
INITIAL PROJECT CAPITAL COST ESTIMATES

Item	Capital Cost ($M)
Mining Pre-Stripping	17.3
Process Plant	401.3
Site Infrastructure	20.0
Tailings Storage Facility	8.0
Owner Costs	5.0
10% Contingency	43.4
Total	**495.0**

Sustaining Capital Costs

A reclamation bond paid over the LOM was estimated at $26M to cover closure costs.

Salvage Value

The salvage value of the process plant is estimated at 10% of its direct capital costs, or $25M.

24.1.14.2 Project Operating Costs

Mining Operating Costs

Owner mining operating costs were calculated from first principles and were estimated at $1.90/t material. 18% was added to the cost to allow for contractor profit and depreciation costs on equipment. A mining contractor cost over the LOM was thus estimated at $2.25/t of material mined. An additional cost of $0.03/t over the LOM was added for long hauls from the open pits in the southern half of the Property. Therefore, the total mining cost over the LOM was estimated at $2.28/t material. At a LOM strip ratio (waste:process plant feed) of 3.6:1 this equates to a cost of $10.17/t of process plant feed.

Process Plant Operating Costs

A summary of the process plant operating cost estimate is presented in Table 24.6. Direct employment during operations will total approximately 109 people.

According to Table 24.6, the total operating cost for the process plant is $8.44 (US$6.16) per tonne ROM material processed.

TABLE 24.6
PROCESS PLANT OPERATING COSTS

Item	Cost (US$k/Year)	Distribution (%)	ROM (US$/t)	PdEq (US$/oz)
Labour	7,982	21.58	1.33	43.87
Reagents	2,696	7.29	0.45	14.82
Consumables	13,264	35.87	2.21	72.90
Power	9,110	24.64	1.52	50.08
Maintenance	3,029	8.19	0.50	16.65
G&A Costs	900	2.43	0.15	4.95
Total OPEX	**36,980**	**100**	**6.16**	**203.27**

***Note**: ROM = run-of-mine, PdEq = palladium equivalent.*

The largest contributors to the process plant operating cost are power, consumables and labour, contributing to 82.1% of the total process plant operating cost.

Site General and Administration Operating Costs

General and administration ("G&A") operating costs were estimated at $5 M/yr. Salaries included in G&A were for Management, Mine Management, IT, Security, Health and Safety, Environmental, Accounting, Purchasing, Warehouse, Community Relations and Human Resources. Other items were general and office expenses, vehicles, software, consultants and insurance. This equated to a G&A unit operating cost of $0.86/t process plant feed over the LOM.

There will be no camp facilities at the Project site. All personnel will be responsible for their own housing and will travel from local communities.

Total Project Operating Costs

Table 24.7 presents a summary of estimated Project operating costs.

TABLE 24.7
OPERATING COST ESTIMATES

Item	Operating Cost ($/t)
Mining (per tonne material mined)	2.28
Mining (per tonne process plant feed)	10.17
Process Plant (per tonne process plant feed)	8.44
G&A (per tonne process plant feed)	0.86
Total	**19.47**

Site Manpower

Peak year site manpower is estimated at 325 people, consisting of 193 mining, 109 process plant and 23 G&A. Maintenance personnel are included in the mining and process plant numbers.

24.1.15 Economic Analysis

The River Valley Project's economic results are summarized in Table 24.8 and indicate an after-tax net present value ("NPV") of $138M at a 5% discount rate, an internal rate of return ("IRR") of 10% and a 7-year payback. The initial capital expenditure is estimated at $495M. All currency values are expressed in Q2 2019 Canadian dollars unless otherwise noted. All cash flows are calculated for the period in which they are incurred and are not adjusted for incoming and outgoing payments.

TABLE 24.8
ECONOMICS RESULTS SUMMARY

Item	Pre-Tax	After Tax
Undiscounted NPV ($M)	586	384
NPV (5%) ($M)	262	138
IRR (%)	13	10
Payback (years)	6.6	7.0

A 3% NSR royalty is currently payable. NAM has the option to reduce the royalty to 1.5% on making a $1.5M payment. This cost has been scheduled in the Project financial model to make the $1.5M payment at the end of the pre-production period in order that a 1.5% royalty is applicable during the production years.

In the first year of production (Year+1), the process plant is assumed to achieve 70% of the nameplate throughput capacity, or 4.2 Mt processed compared to steady-state 6.0 Mtpy design capacity. The process plant will produce a single concentrate for sale using conventional sulphide flotation techniques. It has been assumed that it will be a copper concentrate and will be transported by road to the Sudbury area for smelting and refining. The transport cost has been estimated at $20.6/wet tonne. The moisture content of the concentrate has been assumed to be 8%. Treatment costs (estimated at $123/t), payable metal content, refining costs, marketing, insurance, security and assaying supervision costs have been estimated according to other recent copper concentrate (with PGE credits) contracts that exist in the mining industry.

Mining operations in non-remote areas of Ontario are subject to three tiers of taxes: a federal income tax of 15% under the Income Tax Act (Canada), a provincial income tax of 11.5%, and an Ontario mining tax of 10%. The Ontario tax is applied to the annual profit in excess of $0.5M. A mining tax exemption of up to $10M of profit during an exempt period is available for each new mine. The exempt period for a non-remote mine is three years.

The estimated annual LOM cash flow for the River Valley Project is summarized in Table 24.9.

TABLE 24.9
CASH FLOW SUMMARY

Item	Unit	Amount
Mine Production		
Waste Mined	Mt	276.4
Overburden Mined	Mt	1.2
Process Plant Feed Mined	Mt	78.1
Total Material Mined	kt	355.7
Revenue		
	US$(M)	1,930.4
	CDN$(M)	2,644.6
Royalties		
Royalty Payable Including $1.5 M Payment	CDN$(M)	41.2
Operating Cost		LOM
Mining Cost	$/t material	2.28
Mining Cost	$/t plant feed	10.17
Processing Cost	$/t plant feed	8.44
G&A	$/t plant feed	0.86
Unit Operating	$/t plant feed	19.47
Cash Flow (LOM)		
Revenue from Concentrate	CDN$(M)	2,644.6
(-) Operating Cost	CDN$(M)	- 1,521.3
(-) Royalties	CDN$(M)	- 41.2
(-) Taxes	CDN$(M)	- 202.5
(-) Capital Spending	CDN$(M)	- 496.1

TABLE 24.9 CASH FLOW SUMMARY		
Item	**Unit**	**Amount**
Cash Flow (undiscounted)	CDN$(M)	383.8
Cash Flow (5%)	CDN$(M)	137.7

Note: *LOM = Life of Mine.*

The River Valley Project sensitivity analysis was conducted on metal price and cost variables. The results are shown in Figure 24.1 and 24.2.

Changes in metal prices will have the greatest impact on the Project economics while capital costs will have the least impact. For instance, the palladium price as of June 25, 2019 was US$1,510/oz, which would return a pre-tax IRR of 21% and an after-tax IRR of 16%.

FIGURE 24.1 NPV 5% SENSITIVITY

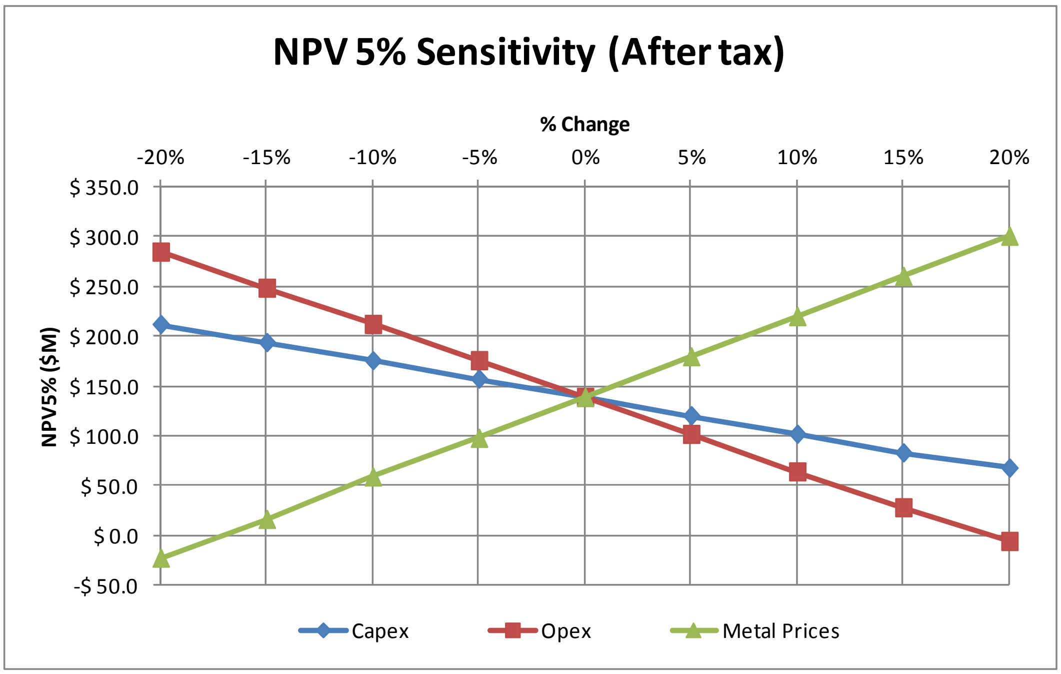
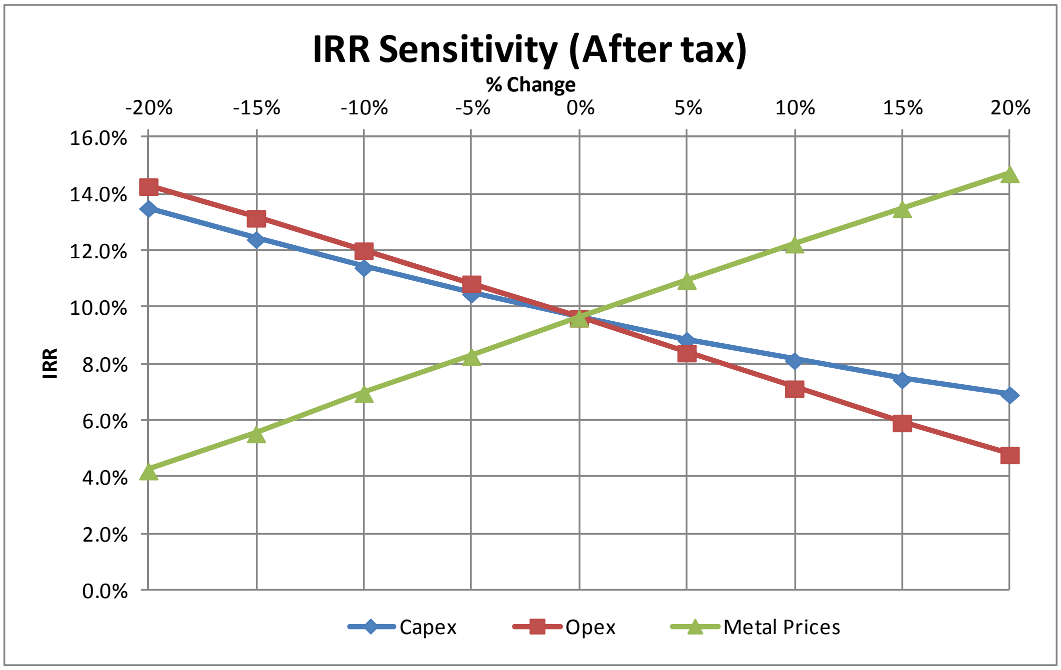


FIGURE 24.2 IRR SENSITIVITY



24.1.16 Project Risks and Opportunities

24.1.16.1 Risks

Approximately 27% of the contained metal at the reported PdEq cut-off grade in the current Updated Mineral Resource Estimate is in the Inferred Mineral Resource classification. The Inferred Resource is based on limited information and although it is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated or Measured Mineral Resources with infill drilling, that upgrade is not guaranteed.

Since this study is at a PEA level of engineering and costing, it is possible that operating and capital costs could increase at more detailed levels of study. Mining contractors should be asked to provide bids for inclusion in future engineering studies.

There have been no bulk density measurements done on waste rock and the tonnage of waste rock in the open pit designs could be higher or lower than noted in the LOM mine production schedule.

Further study is required on the geochemistry of the waste rock since acid generating rock may entail more onerous placement and water treatment costs.

There is currently limited geotechnical information other than rock quality designation ("RQD") logging and visual inspection of the drill core, and there is no hydrogeological information. Mining costs could increase if poor ground conditions or significant water inflows are encountered.

There is limited metallurgical testwork and parameters such as grind size, flotation performance and metal recovery may not be as assumed in this Technical Report.

24.1.16.2 Opportunities

There is an opportunity to extend known mineralization at depth and elsewhere on the Property. The Property covers an approximate 16 km strike length that contains mineralization in various Zones, and not all areas have been explored.

The Pine Zone is a recent discovery that is not well understood compared to the contact mineralization. More exploration and study are required since this may expand the Mineral Resource near surface and at depth with higher nickel/PGE values.

Since the majority of production is planned from the four northerly pits, exploration should be concentrated in this region to expand the mine life at potentially reduced mining costs.

The applicability of new innovative technologies to improve PGE recoveries can be investigated.

Rhodium ("Rh") and silver ("Ag") grades are included in the Updated Mineral Resource Estimate, however, are not included as payable metals in the NSR estimates. Metallurgical testing may potentially indicate a methodology to recover sufficient quantities in order that those metals become payable.

It may be possible to backfill mined-out open pits with waste rock, which will shorten the waste haulage distances and minimize environmental disturbance.

With well-developed open pit grade control programs and blast optimization studies, it may be possible to reduce mining dilution and improve process plant feed grades.

24.1.17 Conclusions

The following information is an extract from the Preliminary Economic Assessment (PEA) of the River Valley Palladium Project by P&E and DRA (2019) and the Technical Report is filed on SEDAR. The reader is cautioned that portions of the PEA are not current

24.1.17.1 Summary

P&E concludes that the River Valley Project has economic potential as an open pit mining operation, utilizing an on-site processing plant to produce a bulk copper concentrate that contains PGE's. The PEA outlines 78 Mt of process plant feed (inclusive of mining dilution and loss factors) with payable metals averaging 0.54 g/t Pd, 0.21 g/t Pt, 0.04 g/t Au, 0.06% Cu, 0.02% Ni, 0.003% Co for a PdEq grade of 0.88 g/t within 14 open pits. The Project has an estimated initial capital cost of $495 M, a strip ratio at 3.6:1, and estimated economics of an after-tax NPV of $138 M at a 5% discount rate, an after-tax IRR of 10%, and a seven year payback period using metal prices of US$1,200/oz Pd, US$1,050/oz Pt, US$1,350/oz Au, US$3.25/lb Cu, US$8.00/lb Ni, US$35.00/lb Co and an exchange rate of US$1.00 = CDN$1.37.

P&E recommends that NAM advance the River Valley Project with extended and advanced drill exploration and technical studies with the intention of moving the Project toward a production decision.

24.1.17.2 Conclusions and Interpretations

The following information is an extract from the Preliminary Economic Assessment (PEA) of the River Valley Palladium Project by P&E and DRA (2019) and the Technical Report is filed on SEDAR. The reader is cautioned that portions of the PEA are not current.

The Property is currently held 100% by NAM.

NAM has a strong understanding of the regional and local geology to support the interpretation of the mineralized zones on the Property. Mineralization is currently defined in nine zones of various thicknesses over a strike length of approximately 16 km.

IP surveys and limited drilling campaigns east of the footwall contact of the River Valley Intrusion have identified a new style of the mineralization at the Pine Zone, which opens up a new area for exploration on the Project. In addition, targets have been identified on the Property with characteristics of reef-style mineralization that warrant further investigation.

At a PdEq cut-off grade of 0.35 g/t, the combined Updated Measured and Indicated Mineral Resource constrained within a pit shell is 99.2 Mt with an average grade of 0.52 g/t Pd, 0.29 g/t Pt, 0.06 g/t Rh, 0.03 g/t Au, 0.05% Cu, 0.03% Ni, and 0.006% Co. The Updated Inferred Mineral Resource totals 52.2 Mt with an average grade of 0.31 g/t Pd, 0.15 g/t Pt, 0.0 g/t Rh, 0.03 g/t Au, 0.05% Cu, 0.03% Ni, and 0.001% Co.

At a PdEq cut-off grade of 2.00 g/t, the combined Updated Measured and Indicated Mineral Resource underground constrained potential is 76 Kt with an average grade of 2.32 g/t Pd, 0.74 g/t Pt, 0.03 g/t Rh, 0.09 g/t Au, 0.12% Cu, 0.02% Ni, and 0.002% Co. There is no underground constrained Updated Inferred Mineral Resource at this cut-off grade.

The Updated Mineral Resource Zones at the Property remain open in the down-dip direction.

The potentially mineable portion of the Updated Mineral Resource Estimate was determined to be 78 Mt at a PdEq grade of 0.88 g/t from 14 open pits. Waste rock and overburden material was estimated at 278 Mt for a LOM strip ratio of 3.6:1.

Conventional open pit mining equipment and methodologies will be utilized. Contractor mining is planned in order to reduce initial capital costs compared to an owner-operated strategy. The contractor will supply its own maintenance and explosives facilities.

In general, the mine plan initially targeted the large zones in the northwest area of the Property, and then advanced southeast. Waste rock storage facilities were designed alongside each open pit. However, there will be opportunity to backfill mine-out pits with waste rock.

The initial mine site infrastructure planned for the northwest corner of the Property is compact, and NAM will strive to contain this small footprint during future operations. There will be no camp facilities at site. Personnel and contractors will be responsible for their own housing and will travel from local communities. An office complex for NAM management and supporting technical services is required. Connection to the nearby electrical power grid is planned.

Tailings management at River Valley will occur in two phases. For the first 5 to 6 years, tailings will be stored in a surface facility behind within an engineered embankment. Approximately 30 Mt of tailings will be stored on surface. Subsequent tailings will be deposited into mined-out open pits.

Effluent water from the process plant will be directed to a treatment plant. Raw (fresh) water for the process plant will be drawn from local fresh water sources.

The historical metallurgical testwork conducted to date is preliminary but adequate to confirm that a conventional crushing, grinding and flotation flowsheet is required for the production of a single PGE-rich sulphide concentrate. The preliminary River Valley process plant flowsheet and design allows for the treatment of the plant feed as per the process production schedule. The design considers three stages of cleaner flotation. The River Valley processing plant is designed to process 21,920 tpd (6.0 Mtpy) of ROM material.

The testwork to date revealed that a PGE recovery of approximately 80% can be attained for the samples tested. Since the testwork conducted to date is considered preliminary, it is understood that there is potential for PGE and base metal recovery improvements with the completion of an optimized and targeted metallurgical testwork program in the future. Fresh drill core should be obtained for new metallurgical testwork.

The River Valley Project, while a proposed large-scale mining project, is expected to have no discernable off-site impacts during development, operations and closure. No hazardous chemicals will be used to process plant feed material, and the mineralized material and waste rock is not expected to be acid generating or metal leaching.

No significant baseline environmental studies have yet been performed for the River Valley Project. These studies will establish baseline conditions for a detailed Environmental Assessment that will likely be required for the River Valley Project.

The federal and provincial Environmental Assessment ("EA") processes and permitting framework for metal mining in Canada are well established. Following the EA approval, the River Valley Project will enter a permitting phase which will regulate the Project through all phases - construction, operation, closure, and possibly post-closure. Throughout all of these processes, consultation with, and advice from, local First Nations and local communities is considered essential.

NAM will need to develop a reclamation and Closure Plan that will satisfy all regulatory requirements and will be consistent with best Canadian industrial practice.

Open pit mining costs have been estimated to average $2.28/t material over the LOM. At a strip ratio of 3.6:1, mining costs equate to $10.17/t of process plant feed. Processing costs ($8.44/t) and site G&A ($0.86/t) contribute to a total LOM cost of $19.47/t processed.

Initial capital costs are estimated at $495 M and include a 10% contingency. Sustaining capital costs are estimated at $26 M, and a salvage value is estimated at $25 M.

Using the PEA metal pricing of US$1,200/oz Pd, US$1,050/oz Pt, US$1,350/oz Au, US$3.25/lb Cu, US$8.00/lb Ni, US$35.00/lb Co and an exchange rate of US$1.00 = CDN$1.37, the Project has an estimated pre-tax NPV at a 5% discount of $261 M and an IRR of 13%. Post-tax NPV and IRR are estimated at $138 M and 10%, respectively. A 1.5% NSR royalty is payable after a payment of $1.5 M. NPV figures calculated on an after-tax basis factor in a 15% Federal income tax rate, an 11.5% Provincial tax rate and a 10% Ontario mining tax.

The PEA has highlighted several opportunities to increase Project economics and reduce identified risks. These include exploration opportunities to improve the quantity and quality of Mineral Resources and opportunities to optimize the mine plan.

24.1.18 Recommendations

The following information is an extract from the Preliminary Economic Assessment (PEA) of the River Valley Palladium Project by P&E and DRA (2019) and the Technical Report is filed on SEDAR. The reader is cautioned that portions of the PEA are not current.

Additional exploration and study expenditures are warranted to improve the viability of the Project and advance it towards a Pre-Feasibility Study. It is recommended that NAM undertake a two-stage exploration program focused on delineation and expansion drill programs that will concentrate on the open pit potential along strike and down-dip of the known Mineral Resources.

It is recommended that the Phase 1 activities be completed before commencing the Phase 2 activities.

24.1.18.1 Phase 1

The first exploration program in Phase 1 is planned to expand and increase confidence in the Mineral Resource by improving classification categories in the Dana North area for which 5,000 m of drilling is planned. The Dana North area contains the bulk of the mineralization to be mined in the PEA production plan.

The Dana North area contains the newly discovered Pine Zone. The Pine Zone is located east of the main River Valley Deposit in an area previously not known for mineralization. The 2016 drill program confirmed the higher-grade near-surface PGE discovery made in the 2015 drill program and highlighted the continuity of the PGE mineralization into the footwall. The Pine Zone remains open along strike and at depth.

After examination of the data from the 2011 infill drill campaign it was noticed that there appeared to be a repetition of the main breccia zone on the other side of the Archean footwall rocks. Subsequent 3-D modelling of the data suggested the existence of an extension of the Deposit eastwards and tucked below the footwall rocks. The 2015 drill program seemed to confirm this theory and it was collaborated by the 2016 drill program results. This new mineralized area was dubbed the "Pine Zone" and in effect is the same mineralization as the main Deposit. An Induced Polarization ("IP") survey was planned based on data obtained from the drilling results. This facilitated the planning and optimal orientation of the grid and allowed a more refined resolution of the ensuing IP survey. This survey was done in the spring of 2017 and was successful in defining many zones of moderate to high chargeability underlying the footwall rocks to the east of the Deposit. Some of these chargeability zones were tested with a drill program in the fall of 2017. All but one hole drilled encountered the Pine Zone. This unit was intersected in drill holes as far as 200 m from the surface projection of the Deposit.

A similar IP survey was conducted in 2018, extending the coverage to 4 km of footwall adjacent to the Deposit. This survey also identified numerous zones of high chargeability adjacent to the Deposit. These zones have yet to be drill tested. The Pine Zone is open to the east and south. In Dana South the Pine Zone appears to come to the surface along the shores of Dana Lake.

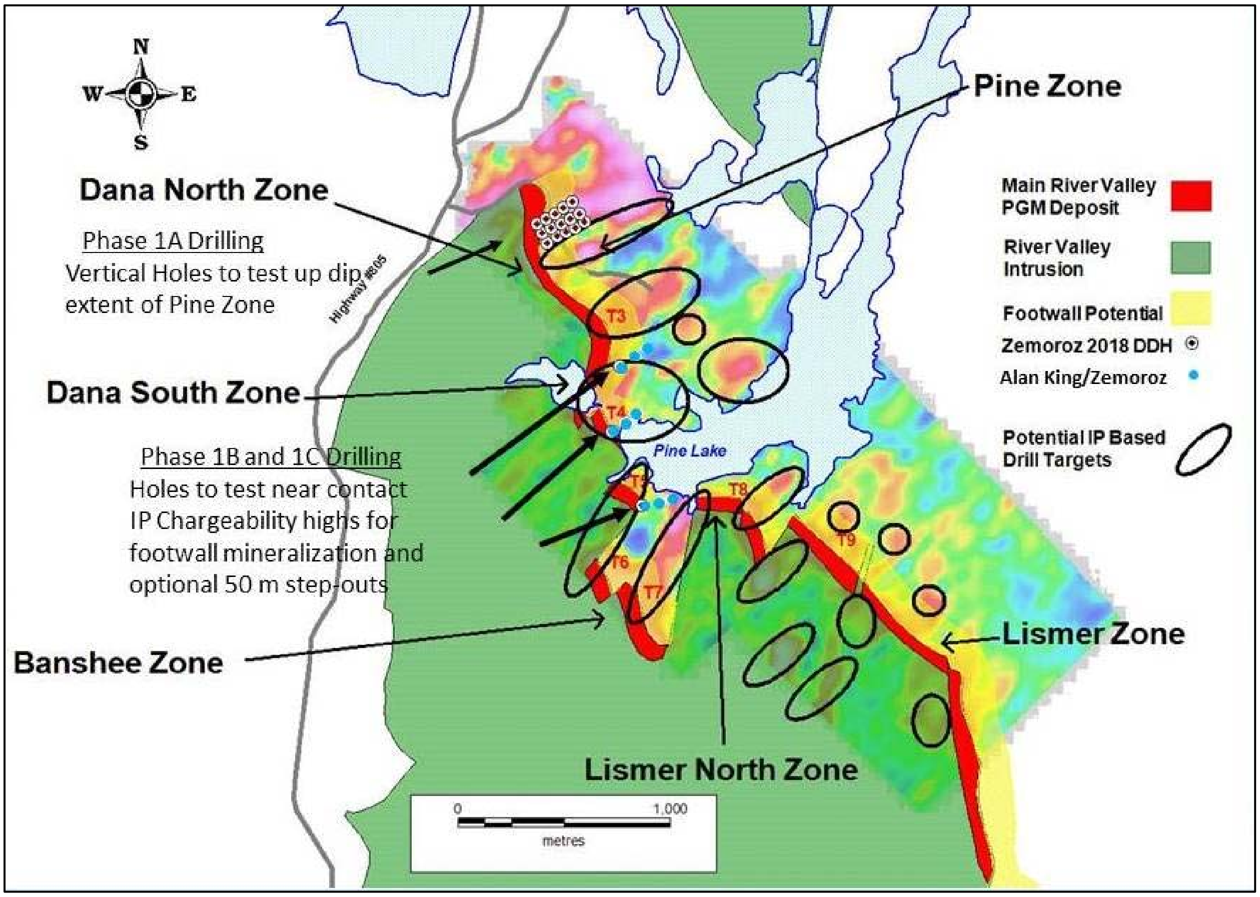
A 5,000 m drill program is recommended to test the up-dip extension of the Pine Zone in Dana North and to test some of the better chargeability highs identified in the previously completed IP surveys, see Figure 24.3.

- Phase 1A is composed of three fences of short vertical holes on a nominal 5 m x 50 m pattern to test the up-dip and easterly extension of the Pine Zone and the vertical depth of the Pine Zone.

- Phase 1B is to test chargeability highs along and east of the Deposit where good assays were obtained.

- Phase 1C is step-out drilling from Phase 1B in 50 m intervals to test the lateral extent of any mineralization.

FIGURE 24.3 PLAN VIEW SHOWING RECOMMENDED PHASE 1 EXPLORATION



Source: *NAM (2019)*

Follow-up on step-out drilling will be planned based on the results of this program.

IP surveys on the footwall contact of the River Valley intrusive have identified a new style of mineralization (the Pine Zone), which opens up a new area for exploration on the Project. It appears that the Pine Zone is a shelf-like extension of the Deposit that potentially extends the entire 16 km strike length of the Deposit. This raises the potential of adding significantly to the existing Mineral Resource. Several new IP targets south the Pine Zone have been identified for future drilling. An IP program south of the Pine Zone over approximately 12 km is recommended on the adjacent footwall rocks and any identified zones of high chargeability that will need to be drill tested.

Another exploration program in Phase 1 (Phase 1D) should test footwall targets along the Deposit. This is a large program, with 50,000 m planned.

After logging and sampling analysis, the fresh core should be preserved and submitted for mineralogical studies and metallurgical testwork. Subsequent metallurgical studies should be completed to confirm or potentially improve process recoveries and more accurately estimate concentrate grades. The process plant flowsheet would be optimized to support a Pre-Feasibility Study ("PFS").

An environmental baseline study should be initiated. The collection of flora, fauna, water quality, and weather would be done to Ontario Ministry of Environment and Climate Change standards. Initial contact should be made with federal and provincial environmental agencies.

The estimated cost to complete Phase 1 is estimated to be CDN$9.7M. Table 24.10 summarizes the proposed Phase 1 budget.

TABLE 24.10
PHASE 1 BUDGET

Activity	Rate (CDN$k)	Units	Cost (CDN$k)
Diamond Drilling (NQ) Dana North Phases 1A,1B,1C	0.113	5,000 m	565
Assays, Support for Drill Phases 1A,1B,1C	171	1	171
Induced Polarization Study and Line Cutting, 12.5 km	1,629	1	1,629
Diamond Drilling (NQ) Step-Out, Footwall Phase 1D	0.113	50,000 m	5,650
Assays, Support for Step-Out Drilling Phase 1D	1,270		1,270
Metallurgical Study	200	1	200
Environmental Baseline Study	200	1	200
Total			**9,685**

24.1.18.2 Phase 2

The Phase 2 exploration program is planned to test the extension and continuity of high-grade mineralized domains.

The geological staff will continue to conduct surface exploration and prospecting of untested anomalies and structure and review the potential of reef style mineralization outside of the known Mineral Resource.

Infill drilling of the footwall mineralization is recommended. This is another large program, with 18,000 m planned.

Once the drilling is near completion, samples can be collected for further metallurgical testing to confirm recoveries in untested Zones and to optimize the process plant flowsheet.

A geotechnical study involving geotechnical logging, orientated drilling and strength testing of drill core is recommended. A geotechnical engineer would train the field geologist to properly collect the geotechnical data from the drill core before sampling. Selected core samples of the various lithologies and mineralization styles would be sent for strength testing. A 3-D geomechnical block model would be generated to support a PFS and utilized to estimate pit wall slopes in design sectors. Geotechnical analysis is also required for process plant foundations, TSF construction, and WRF construction.

A hydrogeological study is required to estimate water in-flows to the open pits and generate a site water management plan in support of a PFS.

The PFS will evaluate the Project at an intermediate engineering and financial level of study.

The estimated cost to complete Phase 2 program is approximately $CDN4.5 M. Table 24.11 summarizes the proposed Phase 2 budget.

TABLE 24.11
PHASE 2 BUDGET

Activity	Rate (CDN$k)	Units	Cost (CDN$k)
Infill Drilling (NQ), Footwall	0.113	18,000 m	2,340
Assays, Support for Infill Drilling	457	1	457
Final Metallurgical Study	150	1	150
Geotechnical Study	200	1	200
Hydrogeological Study	150	1	150
Pre-Feasibility Study	1,200	1	1,200
Total			**4,497**

24.1.18.3 Other Recommendations

Mineral Resource Estimate

It is recommended that NAM increase the frequency of bulk density measurements from drill core in order to build up the mineralized and non-mineralized bulk density database. The bulk density database should represent at a minimum 5% of the total assay dataset. In order to build the bulk density data, measurements should be collected at 20 m downhole intervals.

Due to the low-sulphide content of the mineralized rock on the Property, a regression formula is unlikely to be successfully generated using assay data. The bulk density data needs to be linked not only to the analytical results but to the lithology and alteration of the rocks.

It is recommended to continue to analyze a smaller subset of data for rhodium, cobalt, and silver. These minerals are potential payable metals, yet the cost of analysis can be prohibitive to assay every sample. It is recommended to assay approximately 5% of the data with a good representative spatial distribution.

When channel samples are being collected on surface, they should be cut as one continuous swath across the outcrop. The use of channel samples can be important in Mineral Resource estimations as it provides near-surface data which is not available from diamond drill holes and allows confident grade interpolation to surface.

The current storage of course rejects and pulps is subject to contamination. The currently utilized 45-gallon barrels are placed in an upright position and the lids are rusting through. The barrels should be laid on the side and stacked appropriately, or the material placed inside larger storage containers such as shipping containers.

Logging procedures should be modified to initiate the collection of more detailed geotechnical data prior to geological logging and sampling for the purposes of rock mechanics and slope stability studies. A geotechnical engineer can provide the basics of the data collection procedures. This data will form the basis to justify slope angles during any open pit optimization studies.

All the data collected on the Project should be validated and then secured in a single master database system with set policies and procedures as to who has access to the data. A back-up copy of the database should be created weekly and placed in a separate storage location.

Validation of the data completed during this study identified several minor inconsistencies between the database and the logs. Corrections have been made, yet there may be further corrections required in the master file.

The creation of a structural vectoring model is recommended to better understand the geometry of the zones. The presence of potential cross-faults, folds, and footwall mineralization can have a significant impact on the Mineral Resource Estimate.

Mining

A geotechnical study is required to estimate the pit wall slopes by design sector, and to provide analysis for process plant foundations, TSF construction, and WRF construction.

A hydrogeological study is required to estimate open pit water in-flows and to generate a site water management plan.

Acid generation and metal leaching tests are required on waste rock and tailings. The potential for metal leaching and acid rock drainage is needed for proper design of material storage facilities and water management.

Discussion with mining contractors is recommended in order that several future quotations can be provided for a PFS.

Discussions with Hydro One for electrical power installation is recommended to determine the costs associated with installing and supplying grid power to the Project site.

Mineral Processing and Metallurgical Testing

Further confirmatory testwork through the testing of additional composite and variability samples can improve the process design conditions and PGE recovery and concentrate grade.

Flotation and grindability variability testing on the DSZ and DNZ composites is recommended to identify the variability in flotation performance.

Effective flowsheet configuration: A common approach with this type of nickel-bearing mineralization is a split flowsheet approach where the easy-to-float material is cleaned separately from the difficult-to-float material. This type of approach to the flowsheet design is commonly practiced in nickel-bearing sulphide deposits located in the Sudbury region.

Investigate the applicability of new innovative technologies to improve PGE recoveries. The use of new flotation reagents and/or suites, flowsheet configurations, tank cells and different vertical mills for regrinding are examples of potential opportunities. Trade-off studies on various flowsheet options should be investigated and completed.

Detailed mineralogical examination of the occurrence of PGE should be considered as this could better define flotation conditions for the recovery of these elements, as well as provide an indication of the maximum recovery of these elements.

Further definition on the effect of primary grind size on flotation recovery is required. Very little attention was given to the effect of regrind size and number of regrind stages in the work to date. A regrind size around a P_{80} of 20 μm was selected, but not optimized.

Pre-concentration techniques such as mineralized material sorting and dense media separation should be explored for the valuable minerals. It should be noted that mineralized material sorting for the River Valley mineralized material was investigated by DRA and it did not look promising, due to very low-grades in the feed.

Environment testing on waste rock, and tailings solids and effluent from a locked cycle test, should be completed on samples relevant to the latest LOM plan developed by P&E.

From all the testwork conducted thus far, it was revealed that there is no clear relationship between the process plant head and tailings grades, therefore, a consistent recovery cannot be predicted. Although the Pd recoveries hovered around 70%, a Pd recovery between 70% and 80% can be expected when River Valley is benchmarked against similar PGE projects in the region and also considering the limited amount of testwork conducted to date. A Pd recovery of 80% could be considered an optimistic figure, though possible, through appropriate and targeted testwork.

24.2 PRE-FEASIBILITY STUDY

In accordance with the recommendations of the PEA, a Pre-Feasibility Study commenced in April 2021 and is due for completion in H2 of 2022. The Pre-Feasibility Study consists of several integral components: advanced mineral processing and metal recovery studies; geomechanical, geotechnical and hydrogeological engineering site investigations and tailings testing; environmental baseline, hydrology community relations and consultations; and mine planning and site optimization. The results of the Pre-Feasibility Study will impact NAM's plans for exploration and development programs to advance the Project.

The preceding information in Section 24 is an extract from the Preliminary Economic Assessment (PEA) of the River Valley Palladium Project by P&E and DRA (2019) and the Technical Report is filed on SEDAR. The reader is cautioned that portions of the PEA are not current.

25.0 INTERPRETATION AND CONCLUSIONS

NAM's 100% owned River Valley Property is a dominantly palladium property composed of 310 single cell mining claims, 18 boundary claims, and two mining leases covering an area totalling approximately 10,700 ha in the Sudbury Mining Division of Ontario. Contact-type palladium mineralization associated with disseminated copper-nickel sulphides is currently defined in ten zones of various sizes over a strike length of approximately 16 km. Several additional mineralized zones are known, and with further exploration drilling are an opportunity to delineate additional Mineral Resources.

The Property benefits significantly from excellent access and close proximity to the Sudbury mining camp. Mineral exploration, mining, along with milling and smelting are major components of the local economy. Access and weather conditions allow for exploration and development work to be conducted year-round.

In the opinion of the authors of this Technical Report, the sample preparation, analytical procedures, security and QA/QC program meet industry standards, and that the data are of good quality and satisfactory for use in the Mineral Resource Estimate reported in this Technical Report. It is recommended that the Company continue with the current QC protocol, which includes the insertion of appropriate certified reference materials, blanks and duplicates, and to further support this protocol with umpire assaying (on at least 5% of samples) at a reputable secondary laboratory. P&E's due diligence sampling show acceptable correlation with the original NAM assays and it is this Technical Report author's opinion that NAM's results are suitable for use in the current Mineral Resource Estimate.

In 2012 and 2013**,** scoping level metallurgical testing was conducted at SGS on samples from the River Valley Deposit for Pacific North West Capital Corporation (now NAM). The testwork program produced head grades and mineralogical compositions of the samples and concentrate for both the Dana South Zone ("DSZ") and Dana North Zone ("DNZ"). In 2018, Expert Process Solutions ("XPS") released a report on the "Mineralogical Analysis of Dana and Pine Zone Samples". A mineralogical analysis was completed on four composites from the River Valley Property. The composites generated were created from assay reject material and included "typical" grade Pine Zone, "high-grade" Pine Zone, "typical" grade Dana Zone, and "high-grade" Dana Zone. Copper and nickel sulphides and Co-bearing sulphides were identified, as were palladium and platinum minerals and a rhodium-bearing mineral.

A significant amount of testwork was conducted and reviewed to develop a preliminary flowsheet for the development of the River Valley process plant design. The merits of a crushing, grinding and sequential flotation flowsheet were evaluated during the program and analyzed. Adequate testwork has been conducted to support the basis of this Technical Report. The metallurgical programs concluded that a sequential flotation flowsheet for the recovery of PGE-bearing concentrate may be the preferred processing route. Improvements and optimization with further testwork will be required to confirm an increase in PGE recovery.

At cut-offs of CDN$15/t NSR (pit constrained) and CDN$50/t NSR (out-of-pit), the updated 2021 Mineral Resource Estimate consists of: 89.9 Mt grading 0.54 g/t Pd, 0.21 g/t Pt, 0.04 g/t Au and 0.06% Cu, or CDN$47.58/t NSR in the Measured and Indicated classifications; and 94 Mt grading 0.35 g/t Pd, 0.16 g/t Pt, 0.04 g/t Au and 0.06% Cu, or CDN$31.69/t NSR in the Inferred classification. Contained metal contents are 2.3 Moz Pd+Pt+Au in the Measured and Indicated classifications and 1.6 Moz Pd+Pt+Au in the Inferred classification.

The Mineral Resource Estimates are sensitive to the selection of a reporting NSR cut-off value. At a cut-off of $CDN25/t NSR, the pit constrained Mineral Resources consist of: 60 Mt grading 0.71 g/t Pd, 0.26 g/t Pt, 0.05 g/t Au and 0.04% Cu, or CDN$60.54/t NSR in the Measured and Indicated classifications; and 48 Mt grading 0.48 g/t Pd, 0.20 g/t Pt, 0.05 g/t Au and 0.03% Cu, or CDN$31.69/t NSR in the Inferred classification. Contained metal contents are 2.0 Moz Pd+Pt+Au in the Measured and Indicated classifications and 1.1 Moz Pd+Pt+Au in the Inferred classification.

The predominance of Pd + Pt (88.4%) in a breakdown of relative metal contribution to the NSR is particularly noteworthy, given the sparsity of such true PGM deposits in secure and established mining jurisdictions globally.

26.0 RECOMMENDATIONS

Additional exploration and study expenditures are warranted to improve the viability of the Project and advance it towards a Feasibility Study. The recommendations of the authors of this Technical Report include step-out and in-fill drilling, geological, geophysical and geochemical studies, metallurgical testwork and a Pre-Feasibility Study.

P&E recommends additional drilling on the Property to expand the current Mineral Resources, add new Mineral Resources, and upgrade Inferred Mineral Resources to Indicated Mineral Resources. The current Mineral Resources are generally open to expansion by drilling down-dip. Inferred Mineral Resources at Banshee, Azen, Razor and Mustang should be drilled to Indicated Mineral Resources. Mineralized Zones at Pardo, Jackson Flats and possibly Drop remain to be drilled sufficiently for Mineral Resource estimation. Additional metallurgical testwork is warranted to establish optimum material grinding and metal recovery parameters.

IP surveys and relatively limited drilling programs east of the footwall contact of the River Valley Intrusion have discovered a new zone of mineralization at the Pine Zone, and this opens up a new area for exploration on the Property. Additionally, historical targets with characteristics of reef-style mineralization internally within the River Valley Intrusion warrant further investigation. Orientation MT and gravity surveys should be completed over the River Valley Intrusion. Additional recommendations include:

- Upgrading storage of coarse rejects and pulps to better prevent contamination;
- Institution of a safe and secure off-site database for the Project;
- Completion of the Rh assay study of historical and fresh mineralized and barren drill core; acquisition of additional bulk density measurements (should represent up to 5% of the total assay dataset); and
- Completion of 3-D lithostructural model of the Deposit host rocks to aid future exploration and engineering studies.

The authors of this Technical Report recommend that a Pre-Feasibility Study ("PFS") be completed to estimate Mineral Reserves and develop a mine and site operations plan as a basis for future, more advanced engineering and economic studies.

The Company re-commenced permitting and baseline studies in 2020 and it is recommended that work continue on these initiatives, including:

- Continued aquatic, terrestrial and atmospheric field studies to support permitting activities;
- Ongoing groundwater and hydrogeology monitoring on a quarterly basis;
- Stakeholder engagement and consultation.

The estimated cost to complete recommended program is estimated to be $CDN19.6M (Table 26.1). The program should be completed in the next 12 to 18 months.

Table 26.1 Recommended Program and Budget		
Program	**Description**	**Budget (CDN$)**
In-fill Drilling	35,000	7,000,000
Exploration Drilling	25,000	5,000,000
Upgraded Drill Core and Drilling Data Storage	containers and Acquire	250,000
Geophysical Surveys	IP, MT-Gravity	500,000
Geological and Geochemical Studies	lithostructural, rhodium	500,000
Metallurgical Studies	laboratory testwork	400,000
Permitting and Environmental Studies	aquatic, terrestrial, hydrology	300,000
Consultation Work	First Nations, government	100,000
Engineering and Pre-Feasibility Study	geotechnical, geomechanical, hydrogeological studies; Mineral Reserves estimation, mine and site planning	3,000,000
Subtotal		**17,050,000**
Contingency (15%)		2,557,500
Total		**19,607,500**

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28.0 CERTIFICATES

CERTIFICATE OF QUALIFIED PERSON

RICHARD SUTCLIFFE, PH.D., P. GEO.

I, Richard Sutcliffe, Ph.D., P. Geo., residing at 130 Foxridge Drive, Ancaster, Ontario, do hereby certify that:

1. I am an independent geological consultant and Senior Geological Advisor, P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Technical Report and Updated Mineral Resource Estimate of the River Valley Palladium Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", (The "Technical Report") with an effective date of September 14, 2021.
3. I am a graduate of the University of Toronto with a Bachelor of Science degree in Geology (1977). In addition, I have a Master of Science in Geology (1980) from University of Toronto and a Ph.D. in Geology (1986) from the University of Western Ontario. I have worked as a geologist for over 35 years since obtaining my M.Sc. degree. I am a geological consultant currently licensed by the Association of Professional Geoscientists of Ontario (License No 852).

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is:
   - Precambrian Geologist, Ontario Geological Survey 1980-1989
   - Senior Research Geologist, Ontario Geological Survey 1989-1991
   - Associate Professor of Geology, University of Western Ontario. 1990-1992
   - President and CEO, URSA Major Minerals Inc. 1992-2012
   - President and CEO, Patricia Mining Corp. 1998-2008
   - President and CEO, Auriga Gold Corp. 2010-2012
   - Founder and President, Pavey Ark Minerals Inc. 2012-present
   - Consulting Geologist 1992-Present
4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Sections 2 to 10, and co-authoring Sections 1, 25, and 26 of this Technical Report.
6. I am independent of the issuer applying the test in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and this Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: September 14, 2021
Signed Date: November 19, 2021

{SIGNED AND SEALED}
[Richard Sutcliffe]

____
Dr. Richard H. Sutcliffe, P.Geo.

CERTIFICATE OF QUALIFIED PERSON

EUGENE PURITCH, P. ENG., FEC, CET

I, Eugene J. Puritch, P. Eng., FEC, CET, residing at 44 Turtlecreek Blvd., Brampton, Ontario, L6W 3X7, do hereby certify that:

1. I am an independent mining consultant and President of P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Technical Report and Updated Mineral Resource Estimate of the River Valley Palladium Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", (The "Technical Report") with an effective date of September 14, 2021.
3. I am a graduate of The Haileybury School of Mines, with a Technologist Diploma in Mining, as well as obtaining an additional year of undergraduate education in Mine Engineering at Queen's University. In addition, I have also met the Professional Engineers of Ontario Academic Requirement Committee's Examination requirement for a Bachelor's degree in Engineering Equivalency. I am a mining consultant currently licensed by the: Professional Engineers and Geoscientists New Brunswick (License No. 4778); Professional Engineers, Geoscientists Newfoundland and Labrador (License No. 5998); Association of Professional Engineers and Geoscientists Saskatchewan (License No. 16216); Ontario Association of Certified Engineering Technicians and Technologists (License No. 45252); Professional Engineers of Ontario (License No. 100014010); Association of Professional Engineers and Geoscientists of British Columbia (License No. 42912); and Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (No. L3877). I am also a member of the National Canadian Institute of Mining and Metallurgy.

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   I have practiced my profession continuously since 1978. My summarized career experience is as follows:

   - Mining Technologist - H.B.M.& S. and Inco Ltd., 1978-1980
   - Open Pit Mine Engineer – Cassiar Asbestos/Brinco Ltd., 1981-1983
   - Pit Engineer/Drill & Blast Supervisor – Detour Lake Mine, 1984-1986
   - Self-Employed Mining Consultant – Timmins Area, 1987-1988
   - Mine Designer/Resource Estimator – Dynatec/CMD/Bharti, 1989-1995
   - Self-Employed Mining Consultant/Resource-Reserve Estimator, 1995-2004
   - President – P&E Mining Consultants Inc, 2004-Present
4. I have visited the Property that is the subject of this Technical Report on September 10, 2018.
5. I am responsible for authoring Sections 23 and 24, and co-authoring Sections 1, 14, 25, and 26 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101.
7. I have had prior involvement with the Project that is the subject of this Technical Report. I was a "Qualified Person" for a Technical Report titled "Technical Report, Updated Mineral Resource Estimate and Preliminary Economic Assessment of the River Valley Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", with an effective date of June 27, 2019.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: September 14, 2021
Signed Date: November 19, 2021

{SIGNED AND SEALED}
[Eugene Puritch]

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Eugene Puritch, P.Eng., FEC, CET

CERTIFICATE OF QUALIFIED PERSON

YUNGANG WU, P.GEO.

I, Yungang Wu, P. Geo., residing at 3246 Preserve Drive, Oakville, Ontario, L6M 0X3, do hereby certify that:

1. I am an independent consulting geologist contracted by P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Technical Report and Updated Mineral Resource Estimate of the River Valley Palladium Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", (The "Technical Report") with an effective date of September 14, 2021.
3. I am a graduate of Jilin University, China, with a Master's degree in Mineral Deposits (1992). I have worked as a geologist for 25 plus years since graduating. I am a geological consultant and a registered practising member of the Association of Professional Geoscientists of Ontario (Registration No. 1681).

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is as follows:

   - Geologist –Geology and Mineral Bureau, Liaoning Province, China 1992-1993
   - Senior Geologist – Committee of Mineral Resources and Reserves of Liaoning, China 1993-1998
   - VP – Institute of Mineral Resources and Land Planning, Liaoning, China 1998-2001
   - Project Geologist–Exploration Division, De Beers Canada 2003-2009
   - Mine Geologist – Victor Diamond Mine, De Beers Canada 2009-2011
   - Resource Geologist– Coffey Mining Canada 2011-2012
   - Consulting Geologist 2012-Present

4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for co-authoring Sections 1, 14, 25, and 26 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: September 14, 2021
Signed Date: November 19, 2021

{SIGNED AND SEALED}
[Yungang Wu]

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Yungang Wu, P.Geo.

CERTIFICATE OF QUALIFIED PERSON

JARITA BARRY, P.GEO.

I, Jarita Barry, P.Geo., residing at 4 Creek View Close, Mount Clear, Victoria, Australia, 3350, do hereby certify that:

1. I am an independent geological consultant contracted by P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Technical Report and Updated Mineral Resource Estimate of the River Valley Palladium Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", (The "Technical Report") with an effective date of September 14, 2021.
3. I am a graduate of RMIT University of Melbourne, Victoria, Australia, with a B.Sc. in Applied Geology. I have worked as a geologist for over 15 years since obtaining my B.Sc. degree. I am a geological consultant currently licensed by Engineers and Geoscientists British Columbia (License No. 40875), Professional Engineers and Geoscientists Newfoundland & Labrador (License No. 08399) and Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (License No. L3874). I am also a member of the Australasian Institute of Mining and Metallurgy of Australia (Member No. 305397);

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is:

• Geologist, Foran Mining Corp.	2004
• Geologist, Aurelian Resources Inc.	2004
• Geologist, Linear Gold Corp.	2005-2006
• Geologist, Búscore Consulting	2006-2007
• Consulting Geologist (AusIMM)	2008-2014
• Consulting Geologist, P.Geo. (APEGBC/AusIMM)	2014-Present

4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Section 11 and co-authoring Sections 1, 12, 25, and 26 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: September 14, 2021
Signed Date: November 19, 2021

{SIGNED AND SEALED}
[Jarita Barry]

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Jarita Barry, P.Geo.

CERTIFICATE OF QUALIFIED PERSON

D. GRANT FEASBY, P. ENG.

I, D. Grant Feasby, P. Eng., residing at 12,209 Hwy 38, Tichborne, Ontario, K0H 2V0, do hereby certify that:

1. I am currently the Owner and President of:
   FEAS - Feasby Environmental Advantage Services
   38 Gwynne Ave, Ottawa, K1Y1W9
2. This certificate applies to the Technical Report titled "Technical Report and Updated Mineral Resource Estimate of the River Valley Palladium Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", (The "Technical Report") with an effective date of September 14, 2021.
3. I graduated from Queens University in Kingston Ontario, in 1964 with a Bachelor of Applied Science in Metallurgical Engineering, and a Master of Applied Science in Metallurgical Engineering in 1966. I am a Professional Engineer registered with Professional Engineers Ontario. I have worked as a metallurgical engineer for over 50 years since my graduation from university.

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report has been acquired by the following activities:
   - Metallurgist, Base Metal Processing Plant.
   - Research Engineer and Lab Manager, Industrial Minerals Laboratories in USA and Canada.
   - Research Engineer, Metallurgist and Plant Manager in the Canadian Uranium Industry.
   - Manager of Canadian National Programs on Uranium and Acid Generating Mine Tailings.
   - Director, Environment, Canadian Mineral Research Laboratory.
   - Senior Technical Manager, for large gold and bauxite mining operations in South America.
   - Expert Independent Consultant associated with several companies, including P&E Mining Consultants, on mineral processing, environmental management, and mineral-based radiation assessment.
4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Sections 13 and 20, and co-authoring Sections 1, 25, and 26 of this Technical Report.
6. I am independent of the issuer applying the test in Section 1.5 of NI 43-101.
7. I have had prior involvement with the Project that is the subject of this Technical Report. I was a "Qualified Person" for a Technical Report titled "Technical Report, Updated Mineral Resource Estimate and Preliminary Economic Assessment of the River Valley Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", with an effective date of June 27, 2019.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: September 14, 2021
Signed Date: November 19, 2021

{SIGNED AND SEALED}
[D. Grant Feasby]

___

D. Grant Feasby, P.Eng.

CERTIFICATE OF QUALIFIED PERSON

ANTOINE R. YASSA, P.GEO.

I, Antoine R. Yassa, P.Geo. residing at 3602 Rang des Cavaliers, Rouyn-Noranda, Quebec, J0Z 1Y2, do hereby certify that:

1. I am an independent geological consultant contracted by P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Technical Report and Updated Mineral Resource Estimate of the River Valley Palladium Project, Dana, Janes, McWilliams, and Pardo Townships, Sudbury Mining Division, Ontario", (The "Technical Report") with an effective date of September 14, 2021.
3. I am a graduate of Ottawa University at Ottawa, Ontario with a B. Sc (HONS) in Geological Sciences (1977) with continuous experience as a geologist since 1979. I am a geological consultant currently licensed by the Order of Geologists of Québec (License No 224) and by the Association of Professional Geoscientist of Ontario (License No 1890);

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

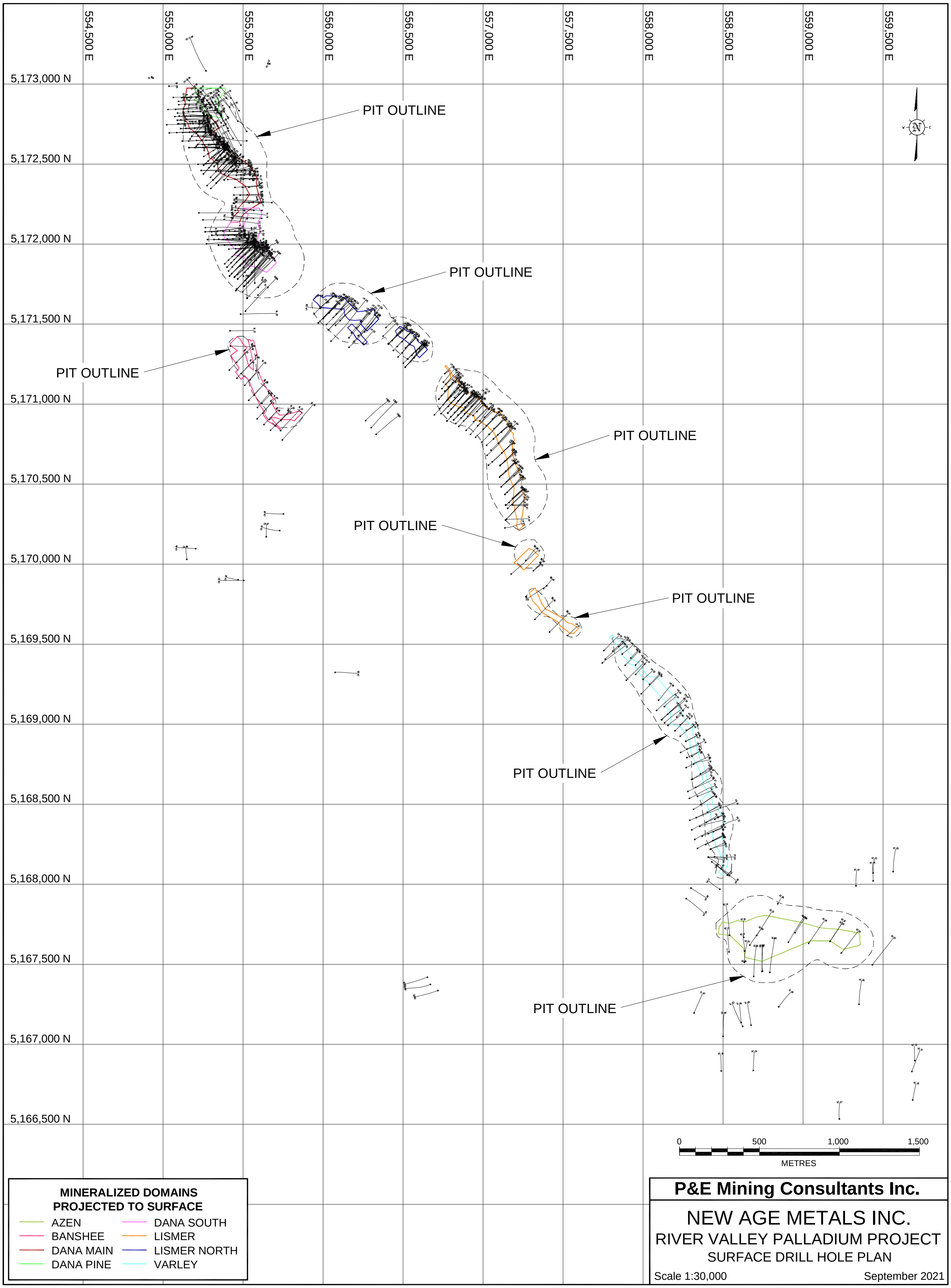
   My relevant experience for the purpose of the Technical Report is:
   - Minex Geologist (Val d'Or), 3-D Modeling (Timmins), Placer Dome 1993-1995
   - Database Manager, Senior Geologist, West Africa, PDX, 1996-1998
   - Senior Geologist, Database Manager, McWatters Mine 1998-2000
   - Database Manager, Gemcom modeling and Resources Evaluation (Kiena Mine) 2001-2003
   - Database Manager and Resources Evaluation at Julietta Mine, Bema Gold Corp. 2003-2006
   - Consulting Geologist 2006-present
4. I have visited the Property that is the subject of this Technical Report on June 6 to June 8, 2021.
5. I am responsible for co-authoring Sections 1, 12, 14, 25, and 26 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: September 14, 2021
Signed Date: November 19, 2021

{SIGNED AND SEALED}
[Antoine R. Yassa]

____
Antoine R. Yassa, P.Geo.

APPENDIX A SURFACE DRILL HOLE PLAN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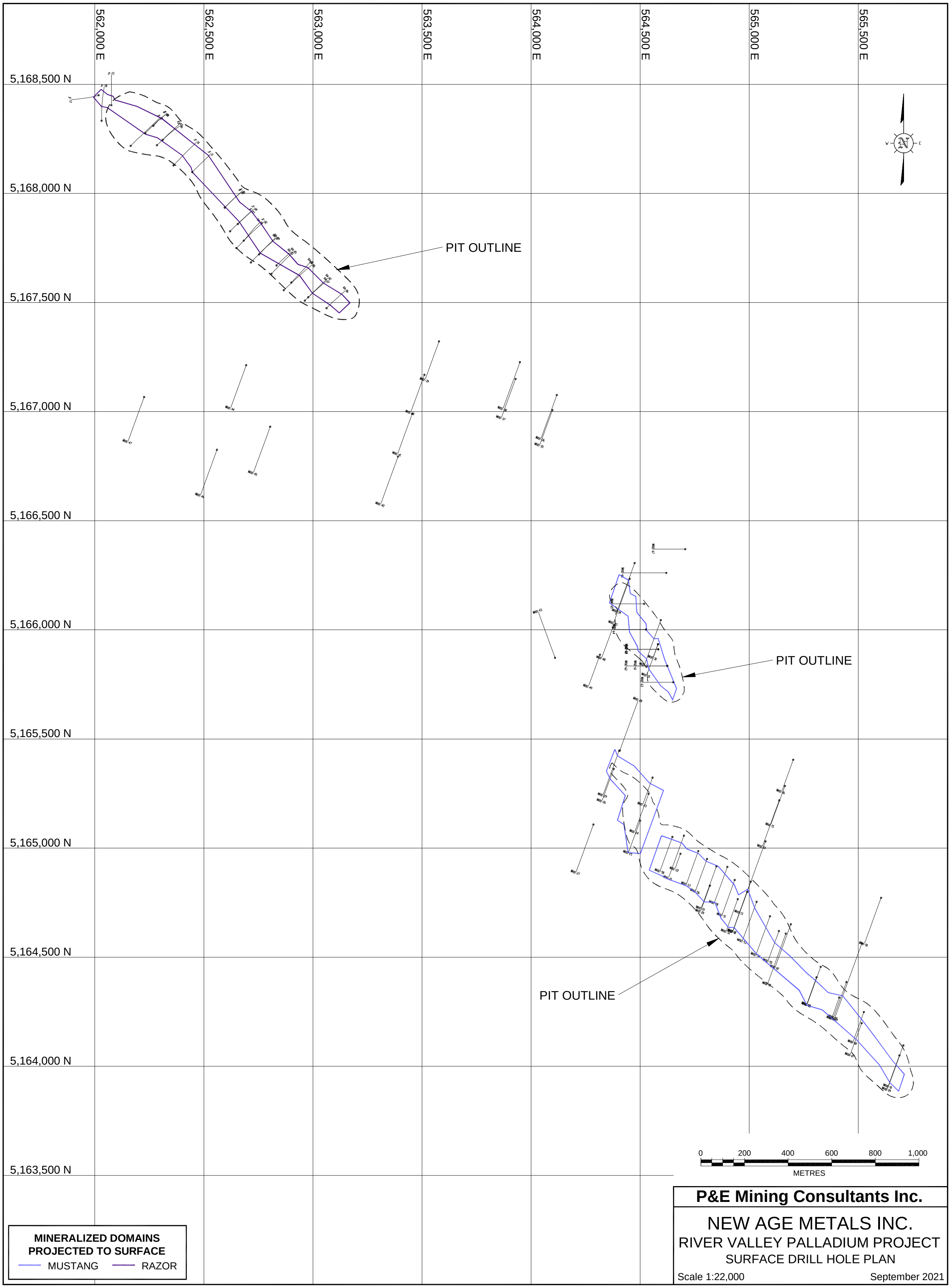
5,167,000 N
5,166,500 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
0
500
1,000
1,500
METRES
MINERALIZED DOMAINS
PROJECTED TO SURFACE
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
SURFACE DRILL HOLE PLAN
Scale 1:30,000
September 2021



562,000 E
562,500 E
563,000 E
563,500 E
564,000 E
564,500 E
565,000 E
565,500 E
5,168,500 N
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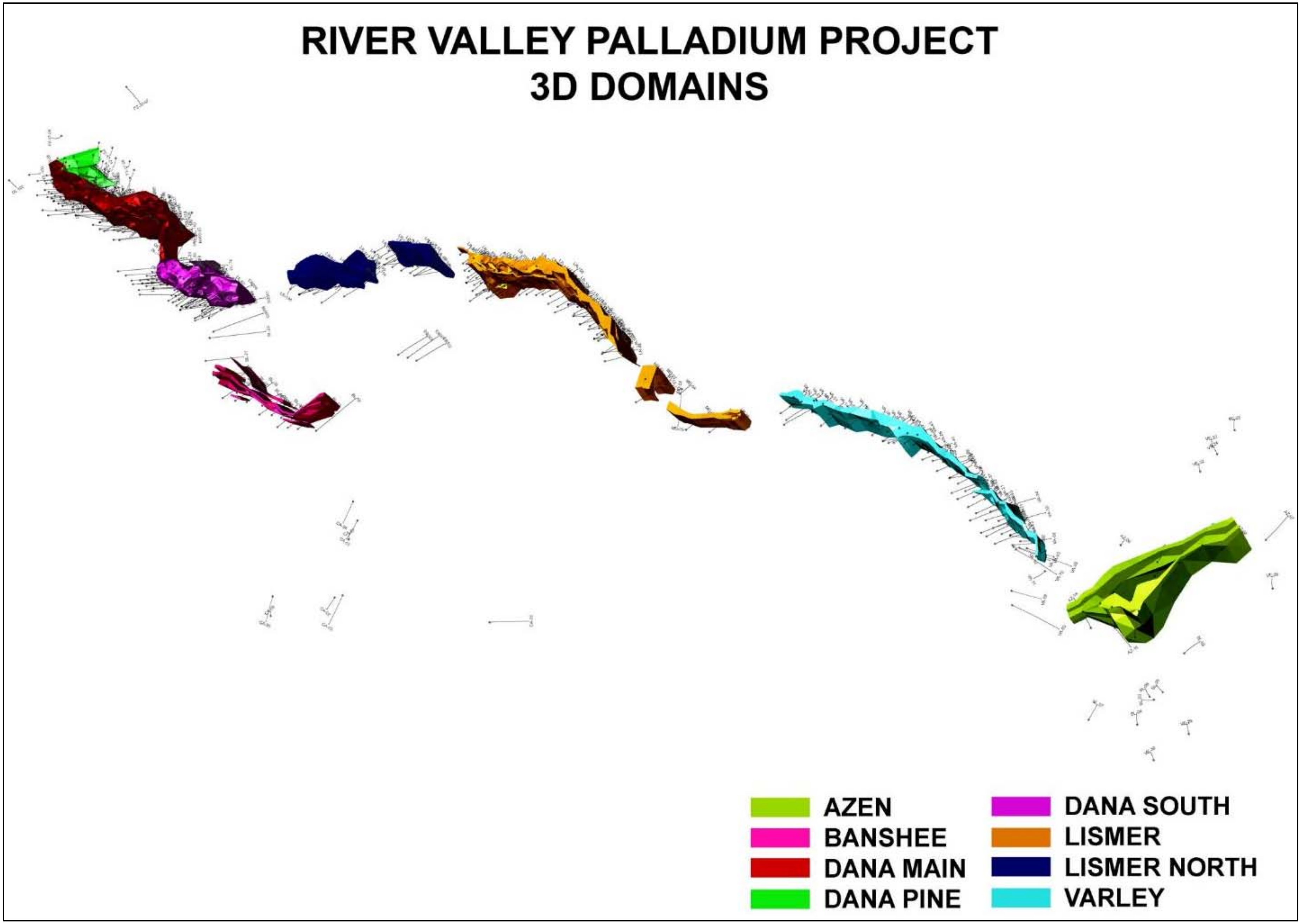
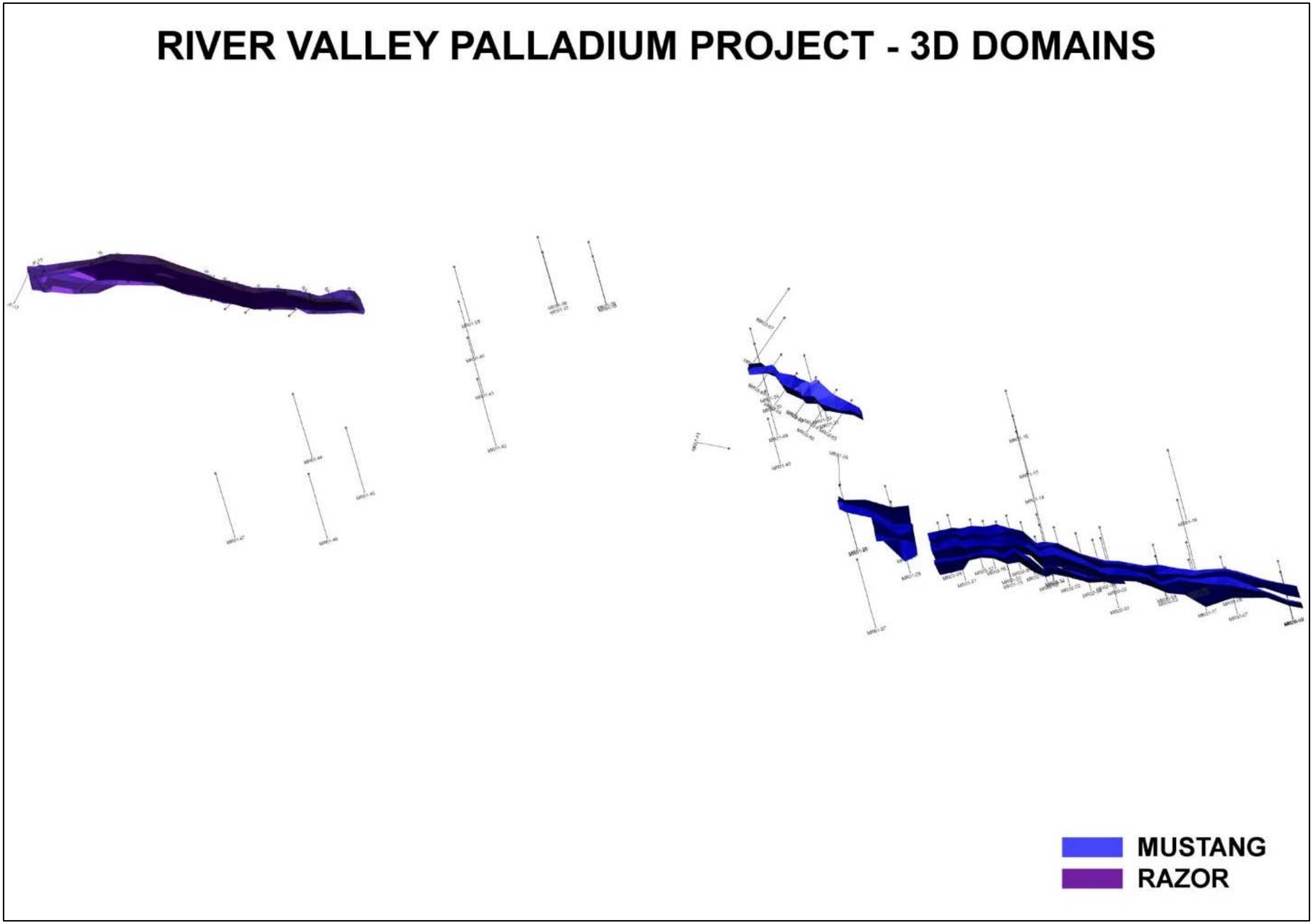
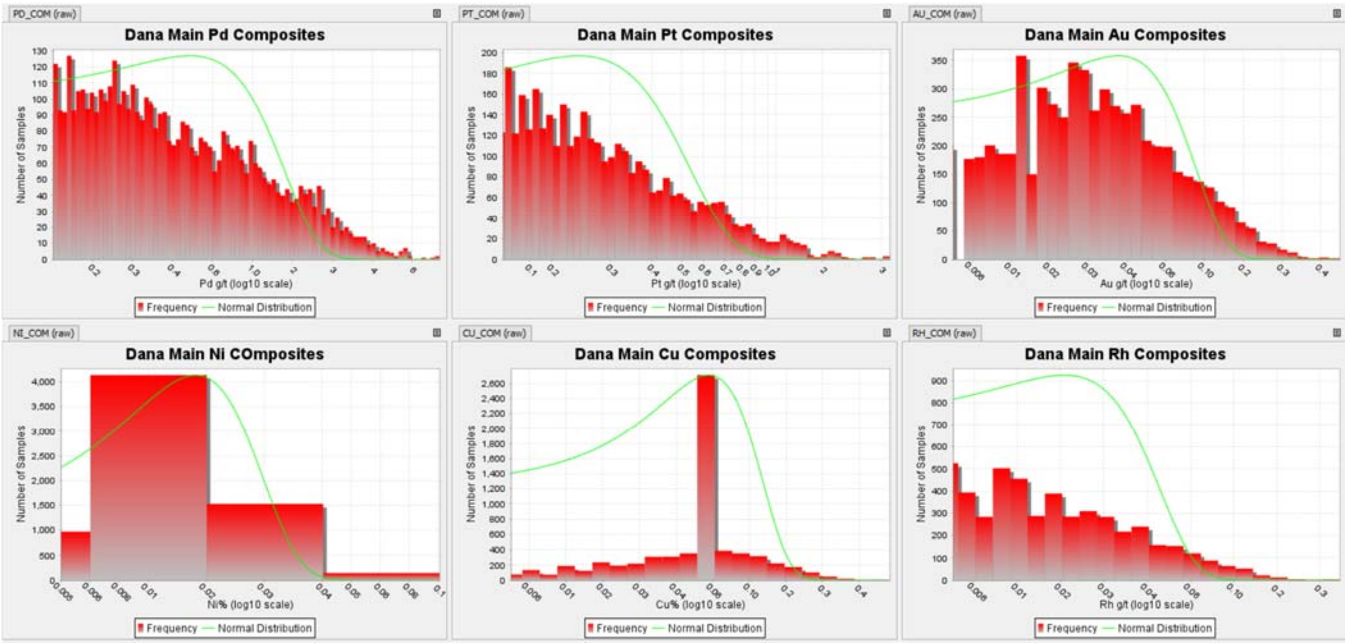
5,167,500 N
5,167,000 N
5,166,500 N
5,166,000 N
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
5,163,500 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
SURFACE DRILL HOLE PLAN
Scale 1:22,000
September 2021
MINERALIZED DOMAINS
PROJECTED TO SURFACE
MUSTANG
RAZOR

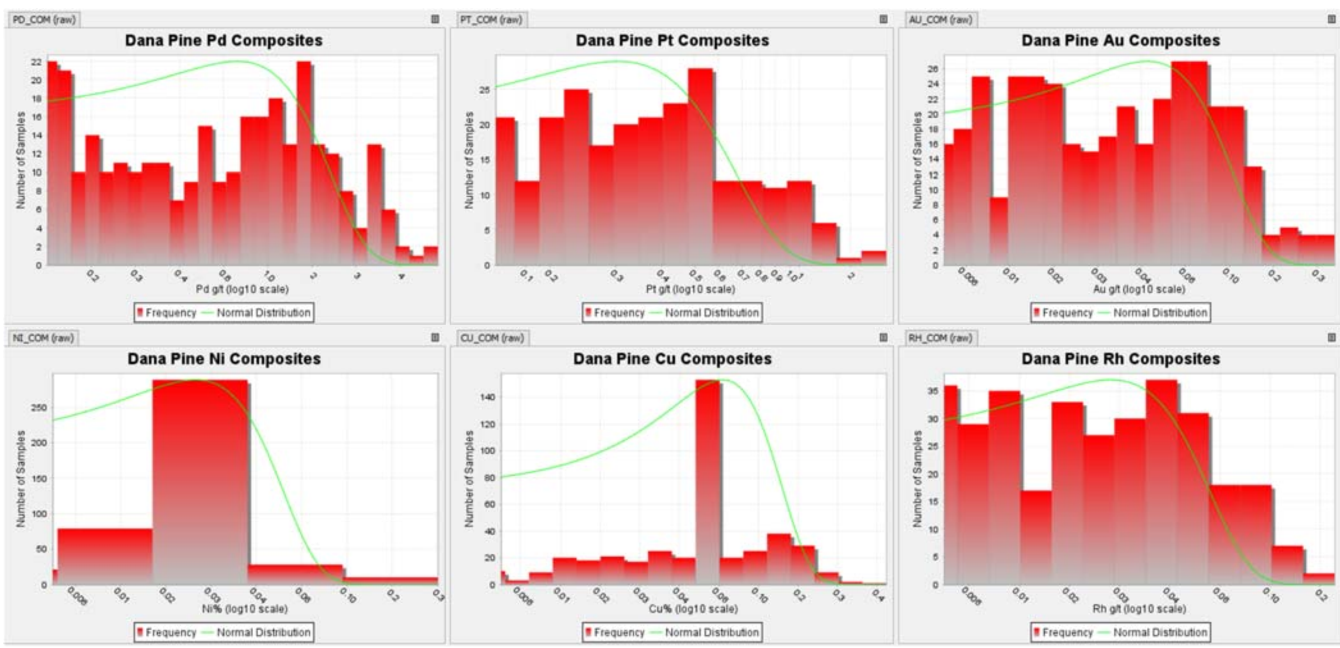
APPENDIX B 3-D DOMAINS

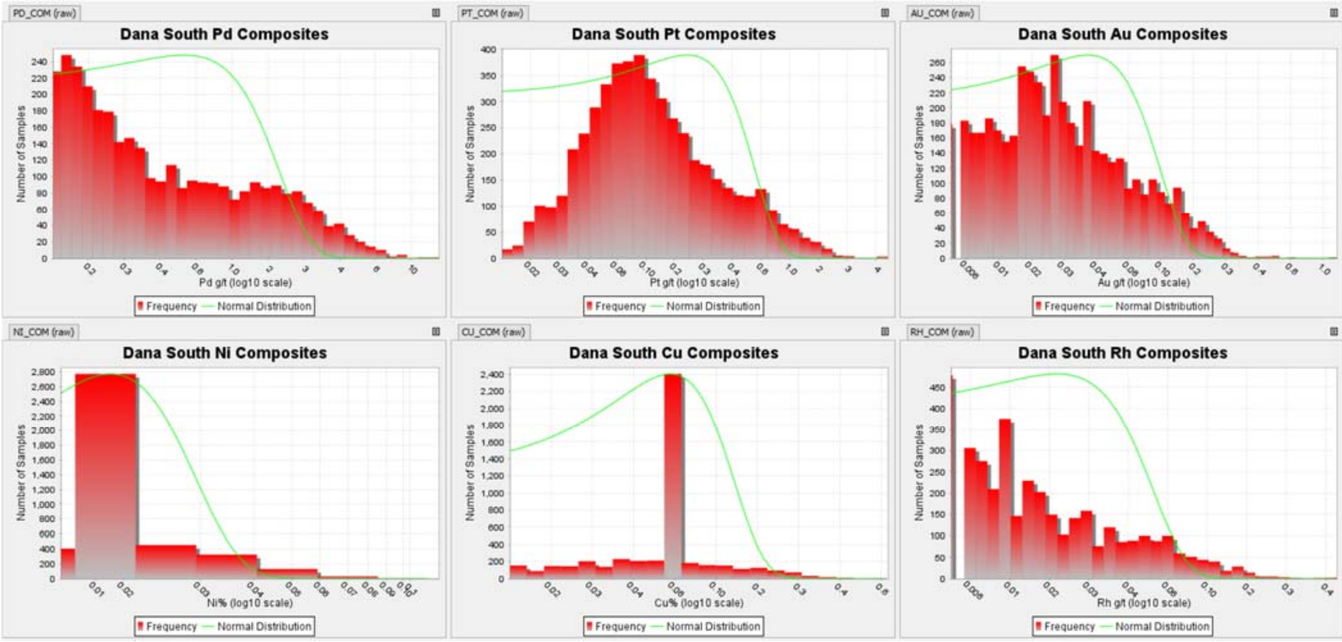

RIVER VALLEY PALLADIUM PROJECT
3D DOMAINS
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY

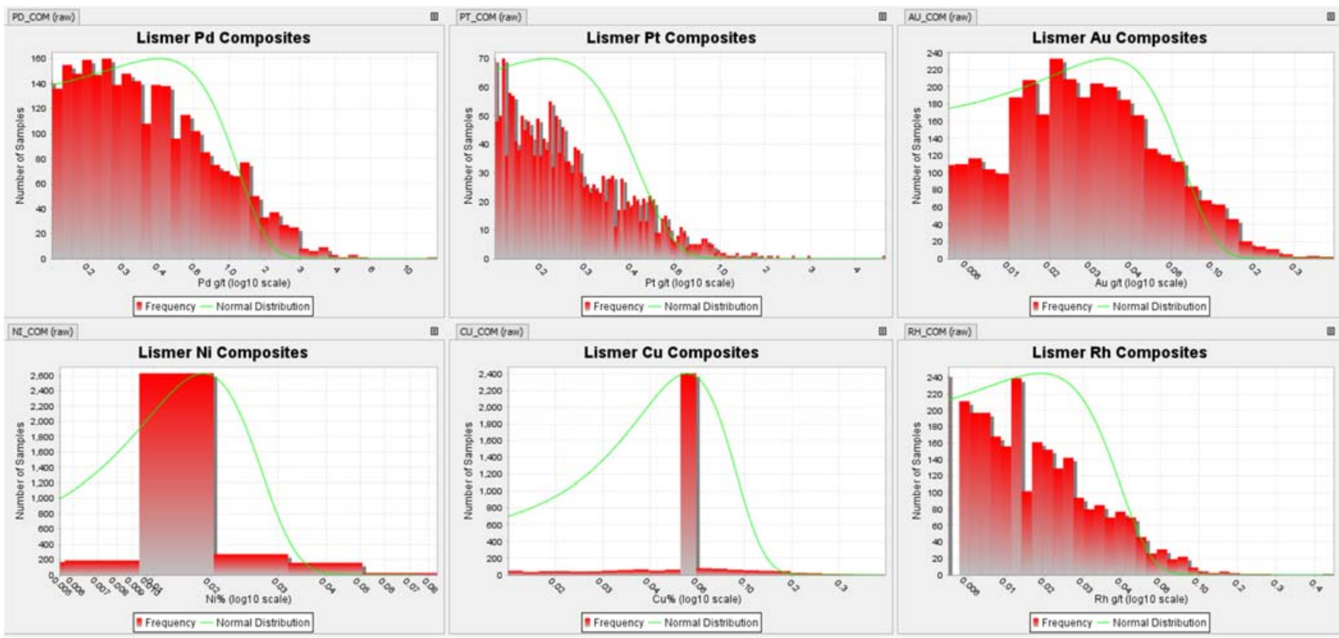

RIVER VALLEY PALLADIUM PROJECT - 3D DOMAINS
MUSTANG
RAZOR

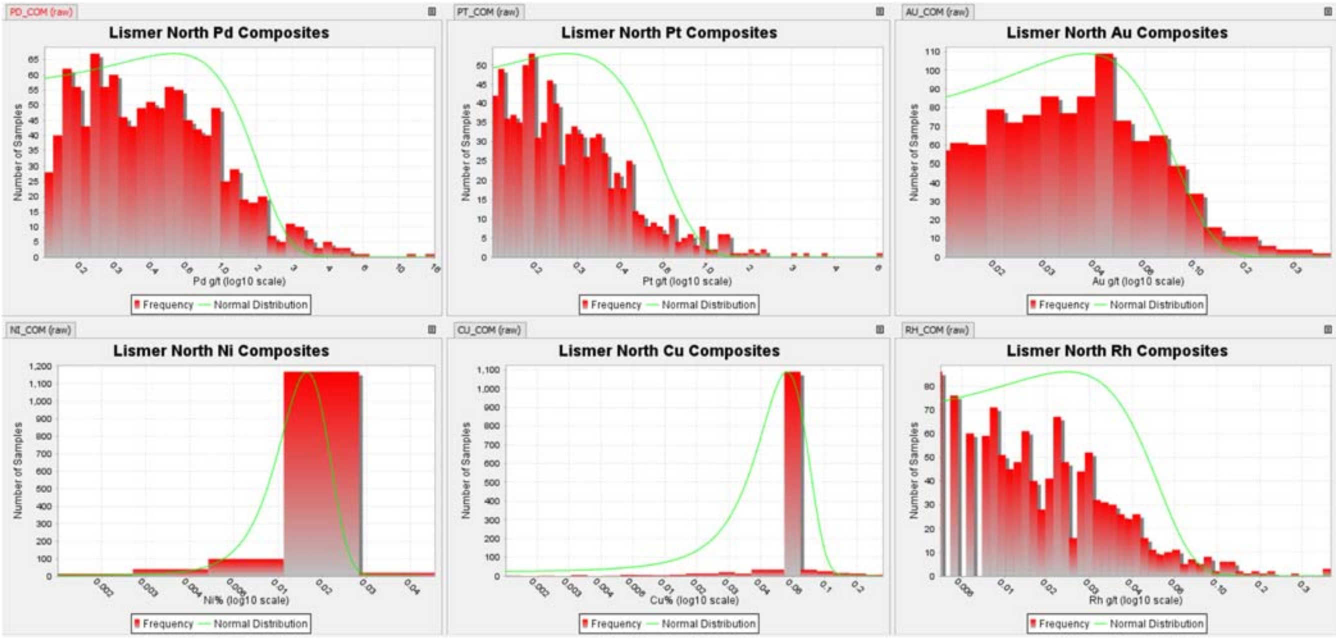
APPENDIX C LOG NORMAL HISTOGRAMS

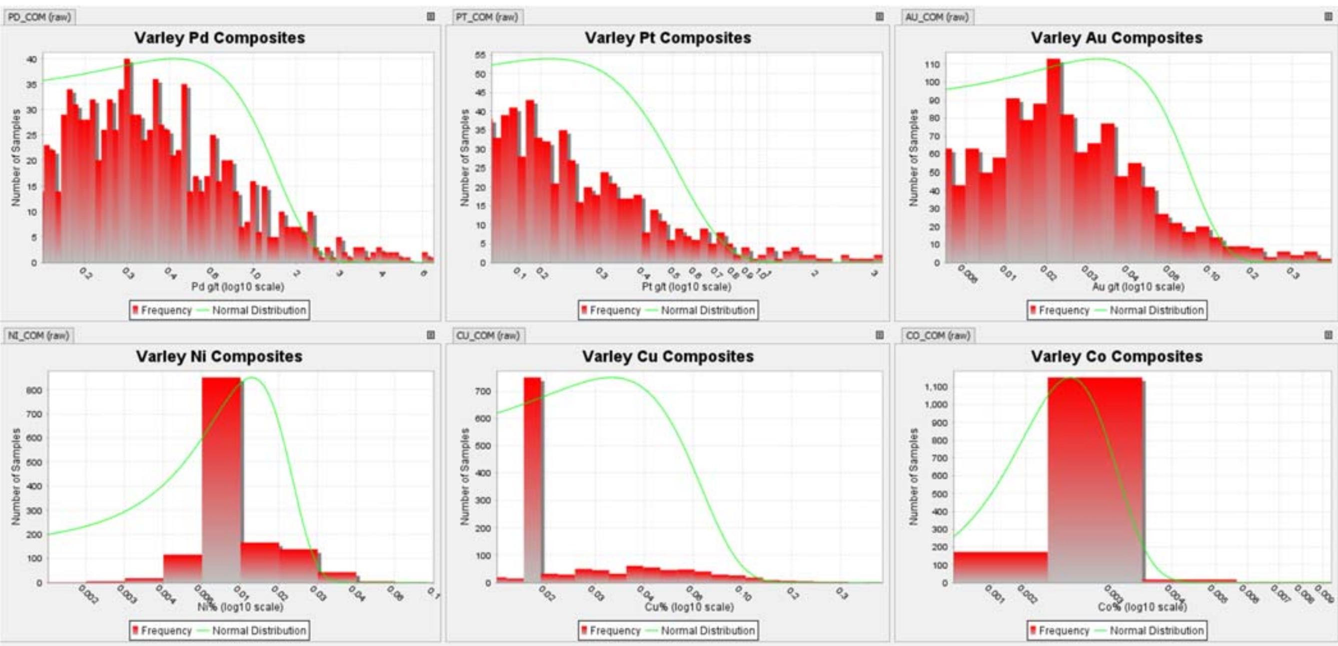


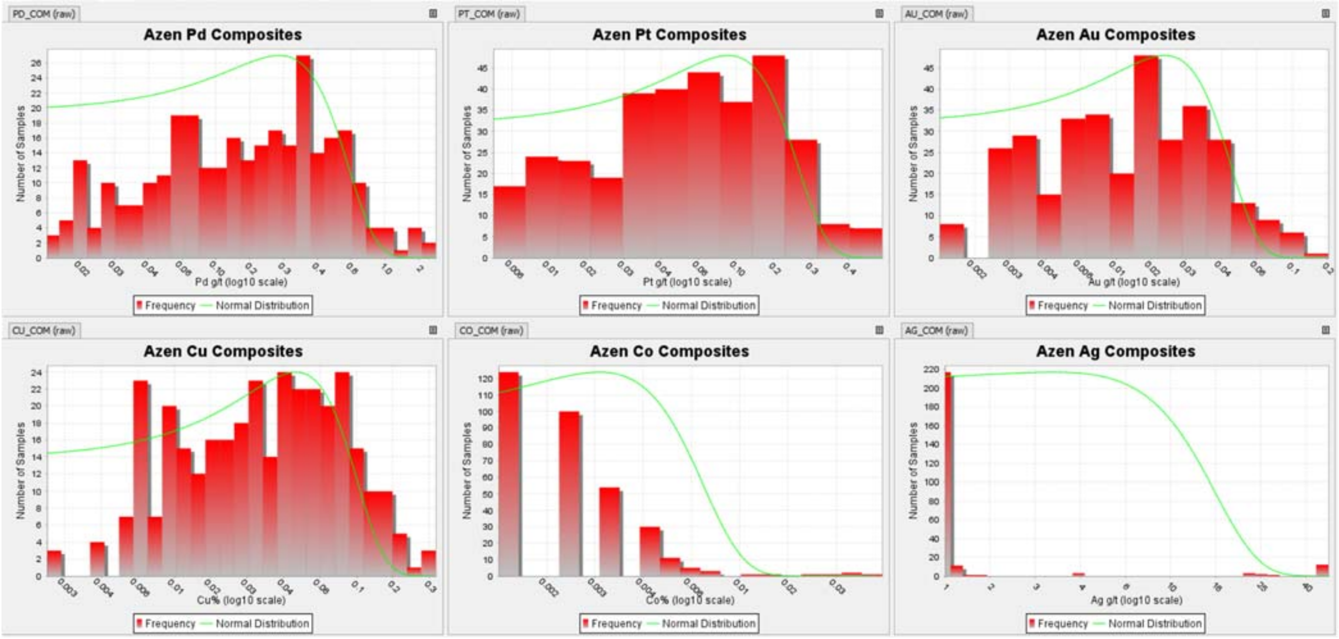


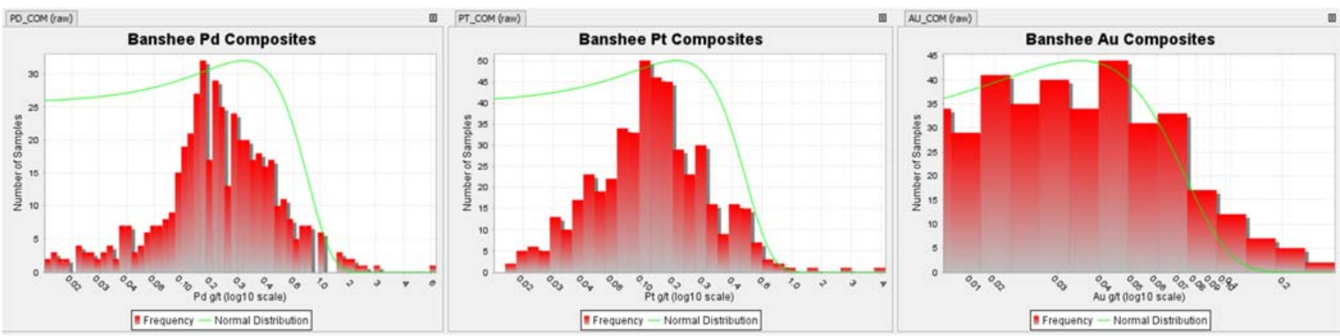

PD_COM (raw)
Dana South Pd Composites
Number of Samples
Pd g/t (log10 scale)
Frequency — Normal Distribution
PT_COM (raw)
Dana South Pt Composites
Number of Samples
Pt g/t (log10 scale)
Frequency — Normal Distribution
AU_COM (raw)
Dana South Au Composites
Number of Samples
Au g/t (log10 scale)
Frequency — Normal Distribution
NI_COM (raw)
Dana South Ni Composites
Number of Samples
Ni% (log10 scale)
Frequency — Normal Distribution
CU_COM (raw)
Dana South Cu Composites
Number of Samples
Cu% (log10 scale)
Frequency — Normal Distribution
RH_COM (raw)
Dana South Rh Composites
Number of Samples
Rh g/t (log10 scale)
Frequency — Normal Distribution

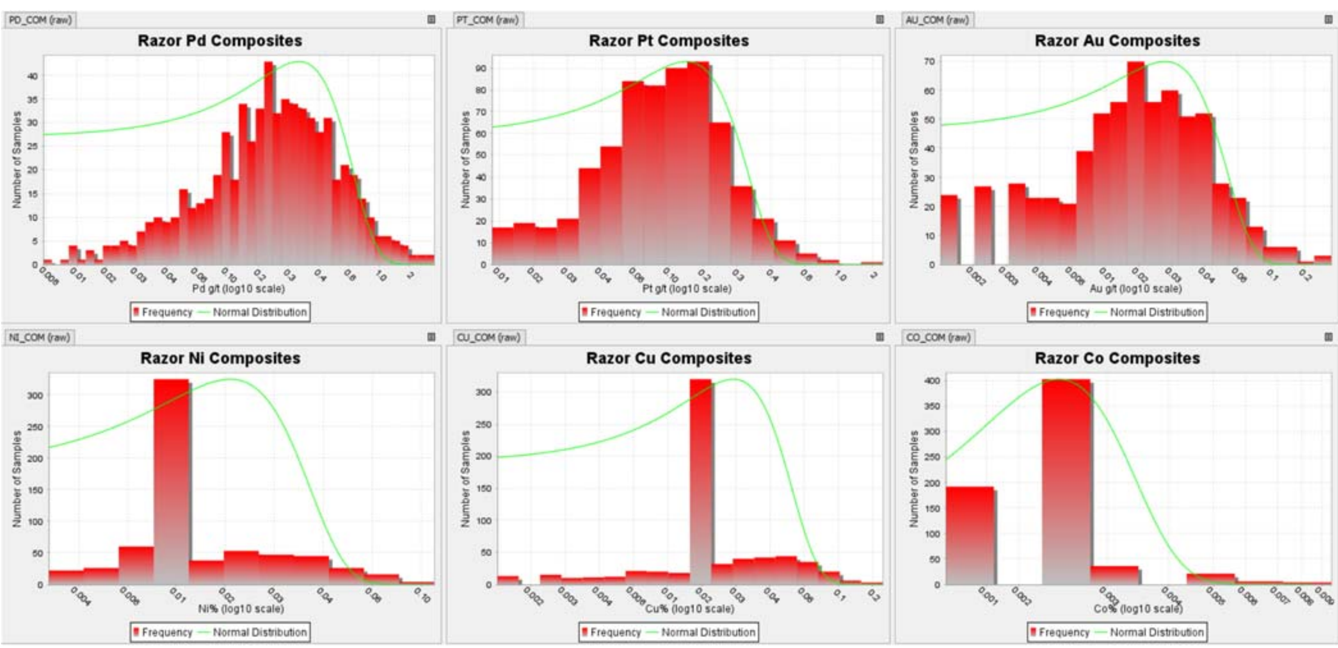

PD_COM (raw)
Lismer Pd Composites
Number of Samples
Pd g/t (log10 scale)
Frequency — Normal Distribution
PT_COM (raw)
Lismer Pt Composites
Number of Samples
Pt g/t (log10 scale)
Frequency — Normal Distribution
AU_COM (raw)
Lismer Au Composites
Number of Samples
Au g/t (log10 scale)
Frequency — Normal Distribution
NI_COM (raw)
Lismer Ni Composites
Number of Samples
Ni% (log10 scale)
Frequency — Normal Distribution
CU_COM (raw)
Lismer Cu Composites
Number of Samples
Cu% (log10 scale)
Frequency — Normal Distribution
RH_COM (raw)
Lismer Rh Composites
Number of Samples
Rh g/t (log10 scale)
Frequency — Normal Distribution

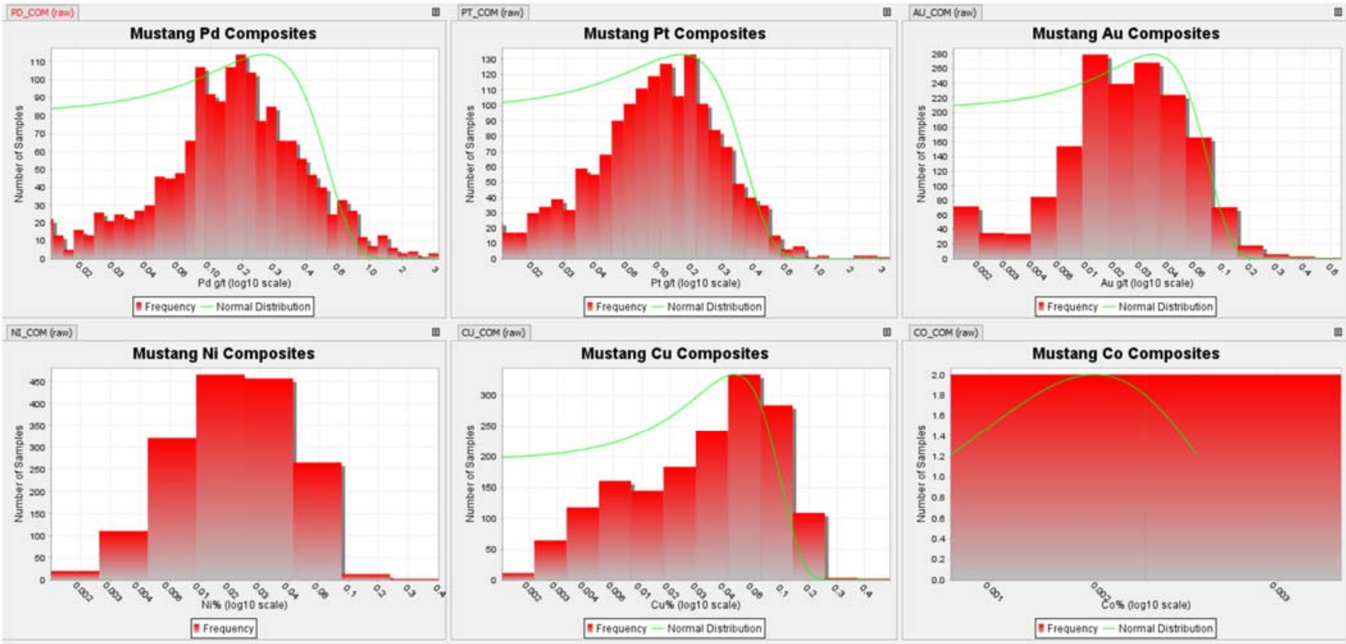

PD_COM (raw)
Lismer North Pd Composites
Number of Samples
Pd g/t (log10 scale)
Frequency
Normal Distribution
PT_COM (raw)
Lismer North Pt Composites
Number of Samples
Pt g/t (log10 scale)
Frequency
Normal Distribution
AU_COM (raw)
Lismer North Au Composites
Number of Samples
Au g/t (log10 scale)
Frequency
Normal Distribution
NI_COM (raw)
Lismer North Ni Composites
Number of Samples
Ni% (log10 scale)
Frequency
Normal Distribution
CU_COM (raw)
Lismer North Cu Composites
Number of Samples
Cu% (log10 scale)
Frequency
Normal Distribution
RH_COM (raw)
Lismer North Rh Composites
Number of Samples
Rh g/t (log10 scale)
Frequency
Normal Distribution


PD_COM (raw)
Varley Pd Composites
Number of Samples
Pd g/t (log10 scale)
Frequency
Normal Distribution
PT_COM (raw)
Varley Pt Composites
Number of Samples
Pt g/t (log10 scale)
Frequency
Normal Distribution
AU_COM (raw)
Varley Au Composites
Number of Samples
Au g/t (log10 scale)
Frequency
Normal Distribution
NI_COM (raw)
Varley Ni Composites
Number of Samples
Ni% (log10 scale)
Frequency
Normal Distribution
CU_COM (raw)
Varley Cu Composites
Number of Samples
Cu% (log10 scale)
Frequency
Normal Distribution
CO_COM (raw)
Varley Co Composites
Number of Samples
Co% (log10 scale)
Frequency
Normal Distribution

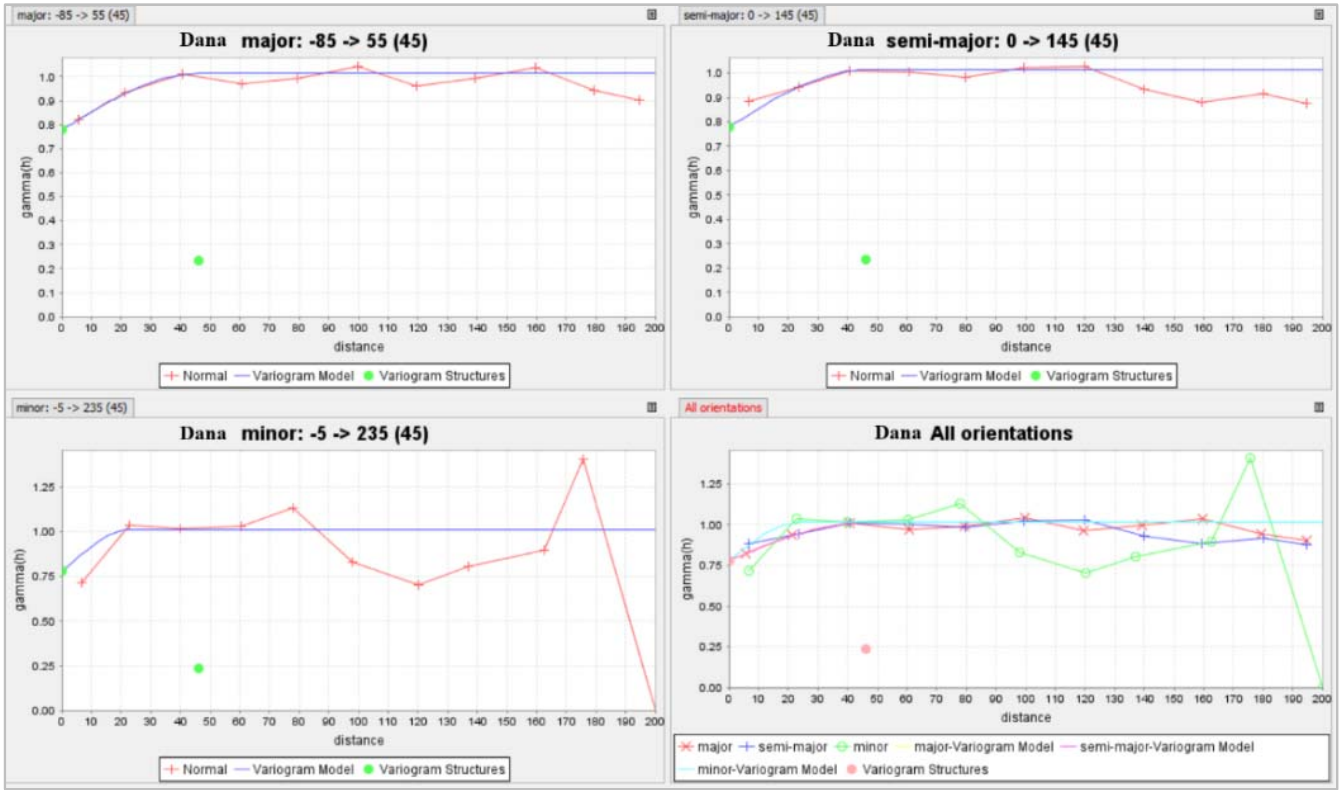

Azen Pd Composites
Pd g/t (log10 scale)
Azen Pt Composites
Pt g/t (log10 scale)
Azen Au Composites
Au g/t (log10 scale)
Azen Cu Composites
Cu% (log10 scale)
Azen Co Composites
Co% (log10 scale)
Azen Ag Composites
Ag g/t (log10 scale)
Number of Samples
Frequency
Normal Distribution

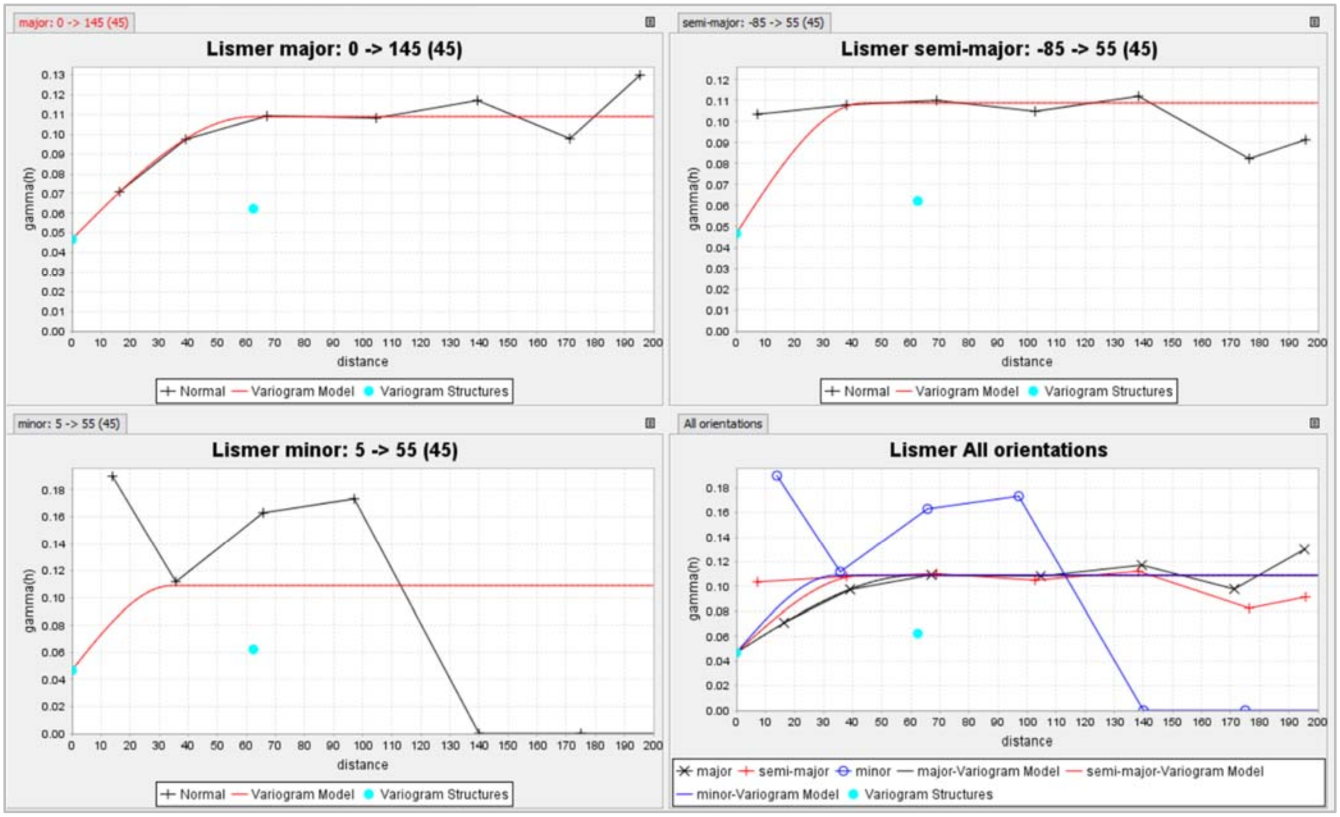

Banshee Pd Composites
Pd g/t (log10 scale)
Banshee Pt Composites
Pt g/t (log10 scale)
Banshee Au Composites
Au g/t (log10 scale)
Number of Samples
Frequency
Normal Distribution

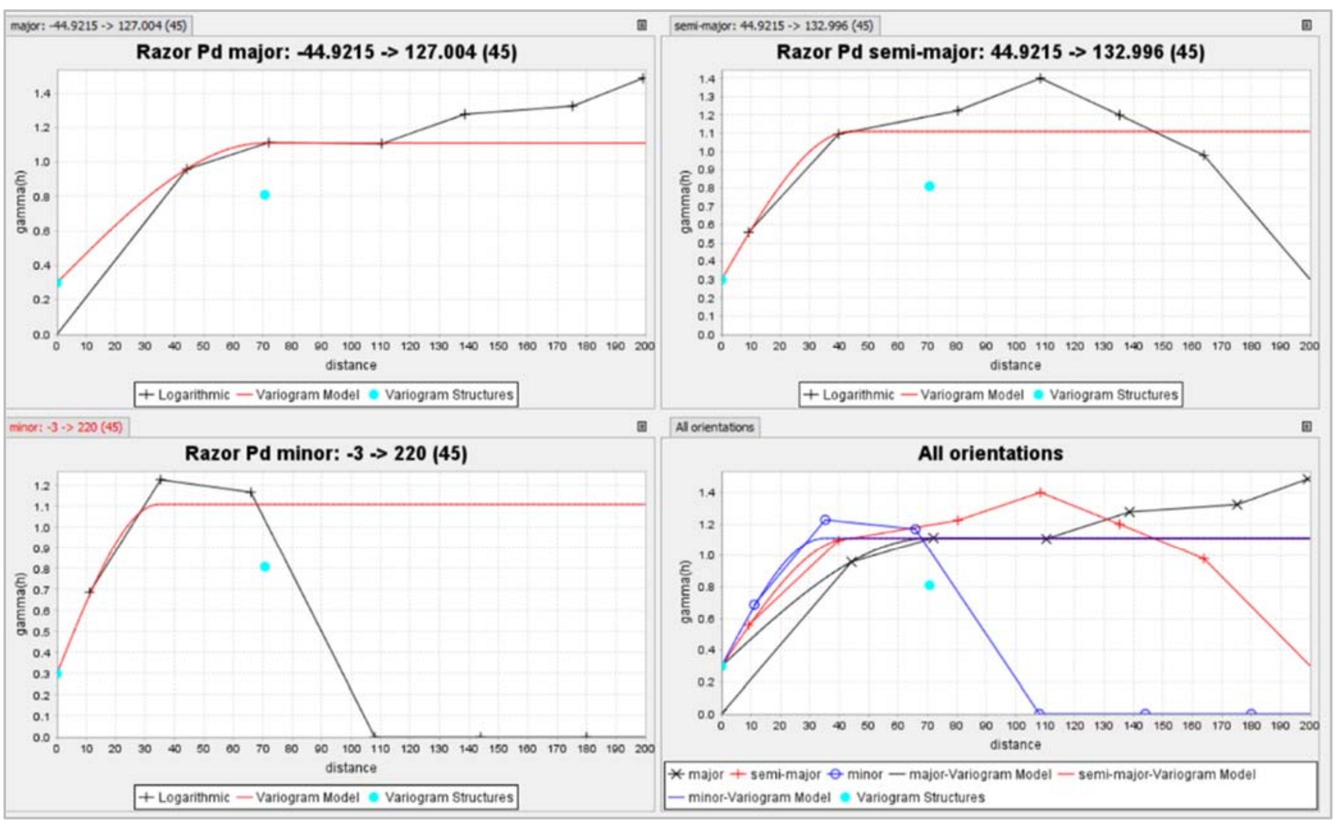

Razor Pd Composites
Pd g/t (log10 scale)
Razor Pt Composites
Pt g/t (log10 scale)
Razor Au Composites
Au g/t (log10 scale)
Razor Ni Composites
Ni% (log10 scale)
Razor Cu Composites
Cu% (log10 scale)
Razor Co Composites
Co% (log10 scale)
Number of Samples
Frequency
Normal Distribution

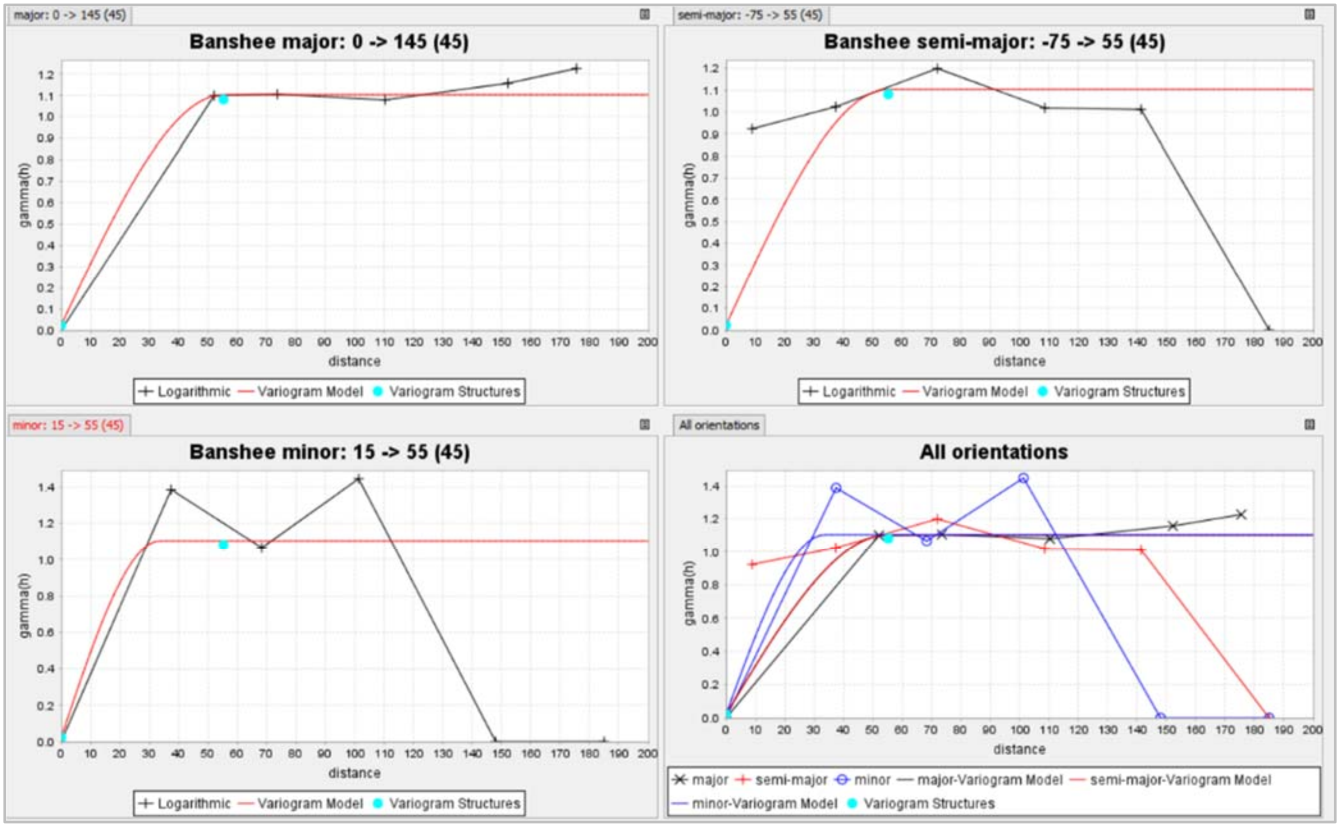

PD_COM (raw)
Mustang Pd Composites
Number of Samples
Pd g/t (log10 scale)
Frequency
Normal Distribution
PT_COM (raw)
Mustang Pt Composites
Number of Samples
Pt g/t (log10 scale)
Frequency
Normal Distribution
AU_COM (raw)
Mustang Au Composites
Number of Samples
Au g/t (log10 scale)
Frequency
Normal Distribution
NI_COM (raw)
Mustang Ni Composites
Number of Samples
Ni% (log10 scale)
Frequency
CU_COM (raw)
Mustang Cu Composites
Number of Samples
Cu% (log10 scale)
Frequency
Normal Distribution
CO_COM (raw)
Mustang Co Composites
Number of Samples
Co% (log10 scale)
Frequency
Normal Distribution

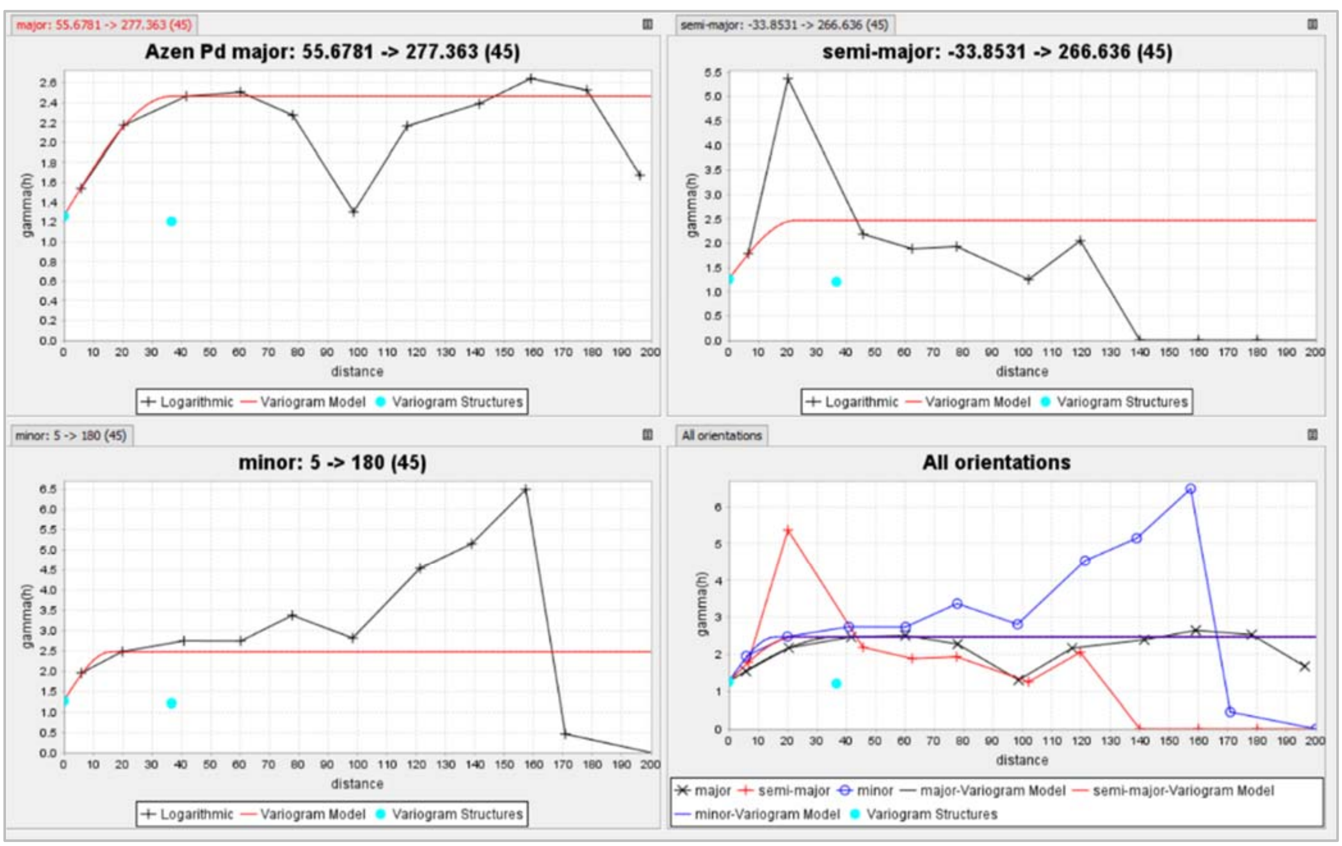
APPENDIX D VARIOGRAMS

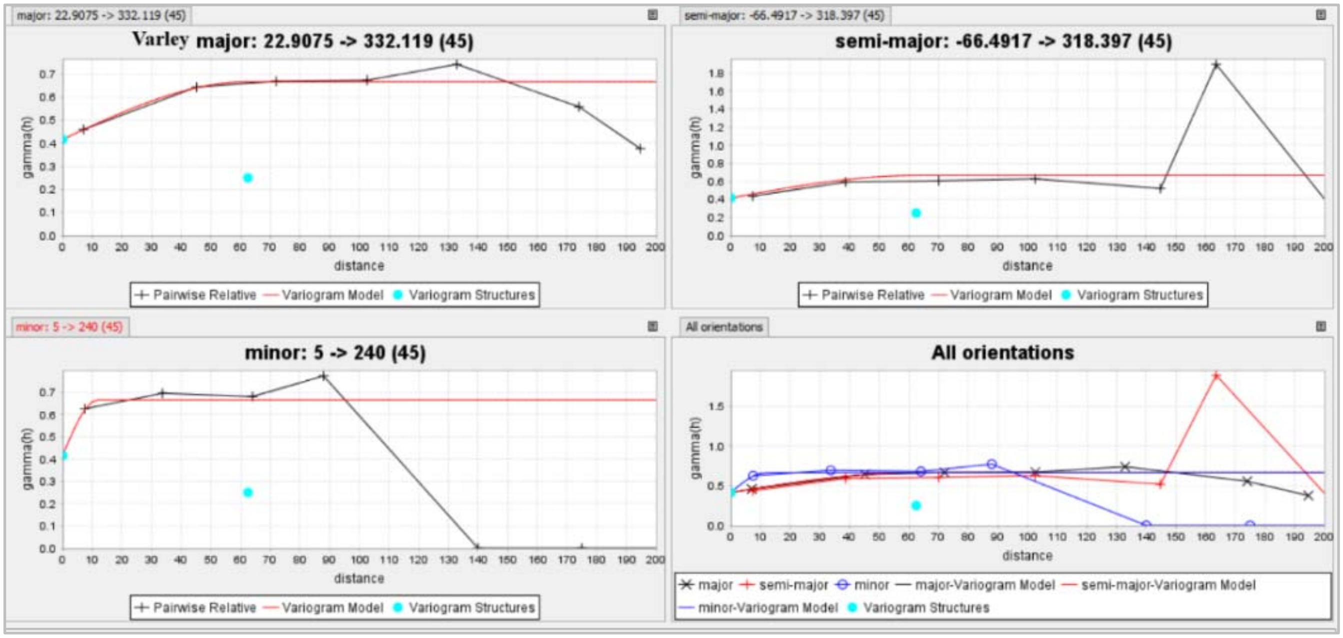



major: 0 -> 145 (45)
Lismer major: 0 -> 145 (45)
gamma(h)
distance
Normal
Variogram Model
Variogram Structures
semi-major: -85 -> 55 (45)
Lismer semi-major: -85 -> 55 (45)
gamma(h)
distance
Normal
Variogram Model
Variogram Structures
minor: 5 -> 55 (45)
Lismer minor: 5 -> 55 (45)
gamma(h)
distance
Normal
Variogram Model
Variogram Structures
All orientations
Lismer All orientations
gamma(h)
distance
major
semi-major
minor
major-Variogram Model
semi-major-Variogram Model
minor-Variogram Model
Variogram Structures

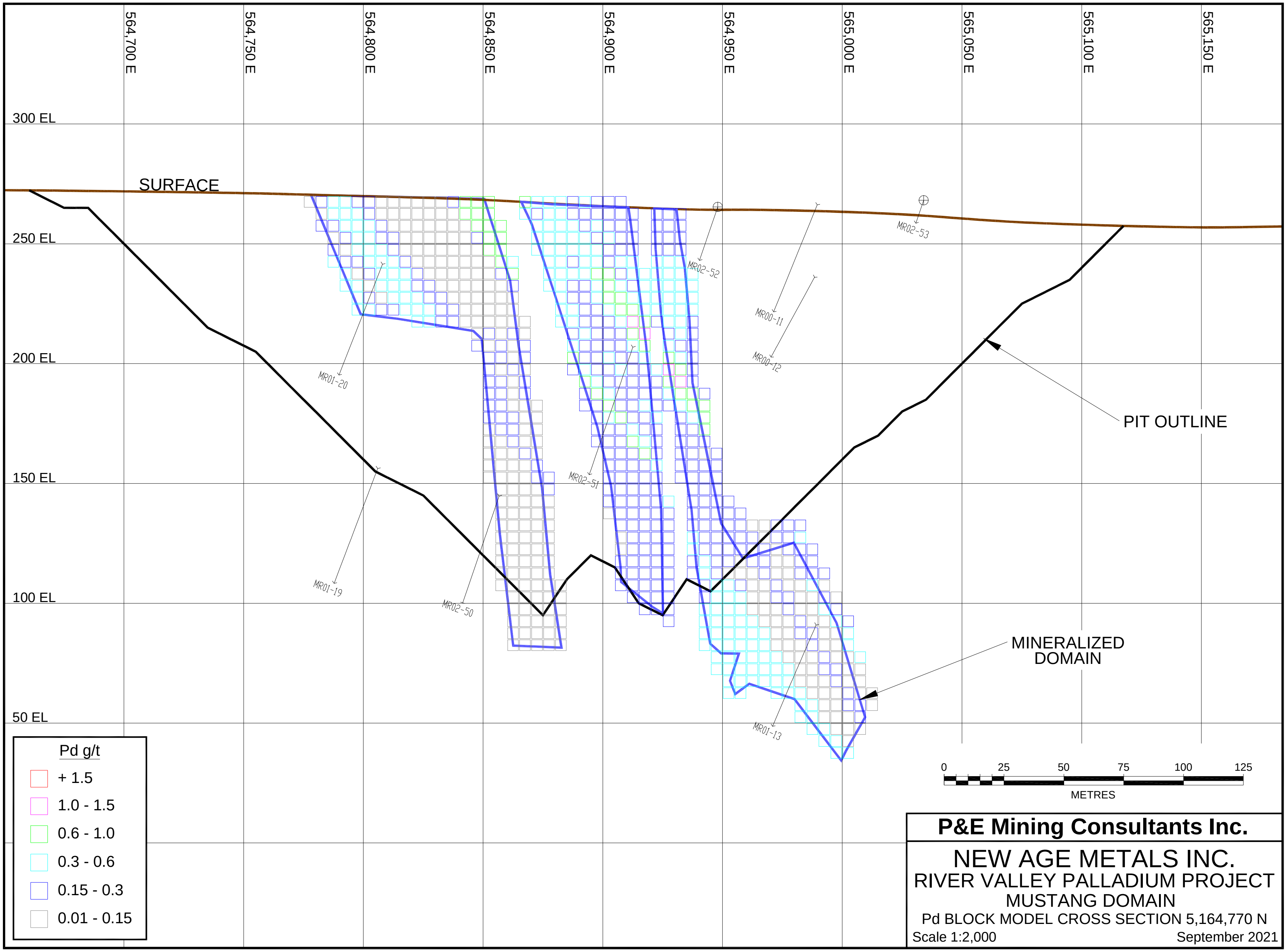

major: -44.9215 -> 127.004 (45)
Razor Pd major: -44.9215 -> 127.004 (45)
gamma(h)
distance
Logarithmic
Variogram Model
Variogram Structures
semi-major: 44.9215 -> 132.996 (45)
Razor Pd semi-major: 44.9215 -> 132.996 (45)
gamma(h)
distance
Logarithmic
Variogram Model
Variogram Structures
minor: -3 -> 220 (45)
Razor Pd minor: -3 -> 220 (45)
gamma(h)
distance
Logarithmic
Variogram Model
Variogram Structures
All orientations
All orientations
gamma(h)
distance
major
semi-major
minor
major-Variogram Model
semi-major-Variogram Model
minor-Variogram Model
Variogram Structures


major: 0 -> 145 (45)
Banshee major: 0 -> 145 (45)
semi-major: -75 -> 55 (45)
Banshee semi-major: -75 -> 55 (45)
minor: 15 -> 55 (45)
Banshee minor: 15 -> 55 (45)
All orientations
All orientations
gamma(h)
distance
Logarithmic
Variogram Model
Variogram Structures
major
semi-major
minor
major-Variogram Model
semi-major-Variogram Model
minor-Variogram Model

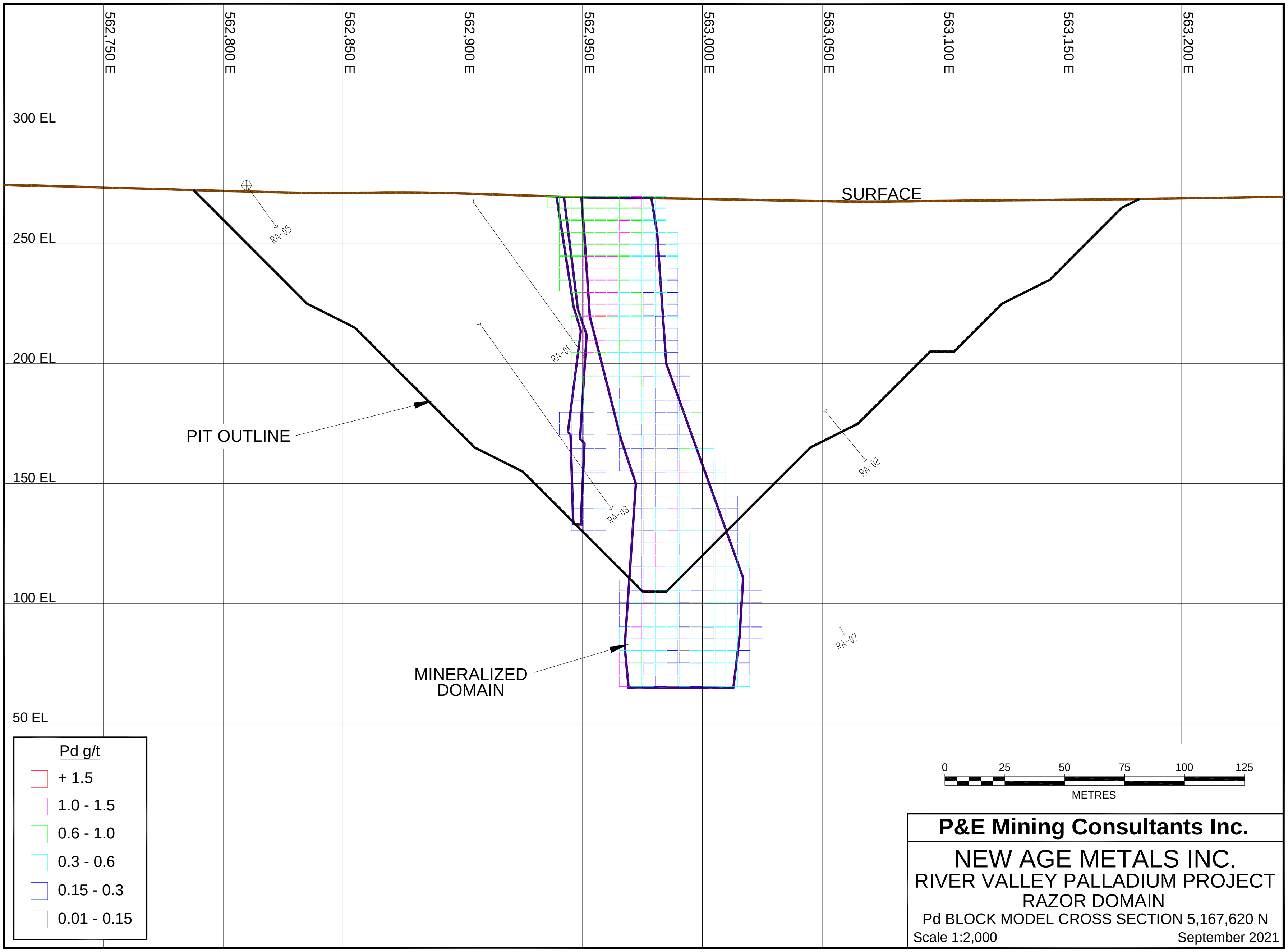

major: 55.6781 -> 277.363 (45)
Azen Pd major: 55.6781 -> 277.363 (45)
semi-major: -33.8531 -> 266.636 (45)
semi-major: -33.8531 -> 266.636 (45)
minor: 5 -> 180 (45)
minor: 5 -> 180 (45)
All orientations
All orientations
gamma(h)
distance
Logarithmic
Variogram Model
Variogram Structures
major
semi-major
minor
major-Variogram Model
semi-major-Variogram Model
minor-Variogram Model


major: 22.9075 -> 332.119 (45)
Varley major: 22.9075 -> 332.119 (45)
gamma(h)
distance
Pairwise Relative
Variogram Model
Variogram Structures
semi-major: -66.4917 -> 318.397 (45)
semi-major: -66.4917 -> 318.397 (45)
minor: 5 -> 240 (45)
minor: 5 -> 240 (45)
All orientations
All orientations
major
semi-major
minor
major-Variogram Model
semi-major-Variogram Model
minor-Variogram Model
Variogram Structures

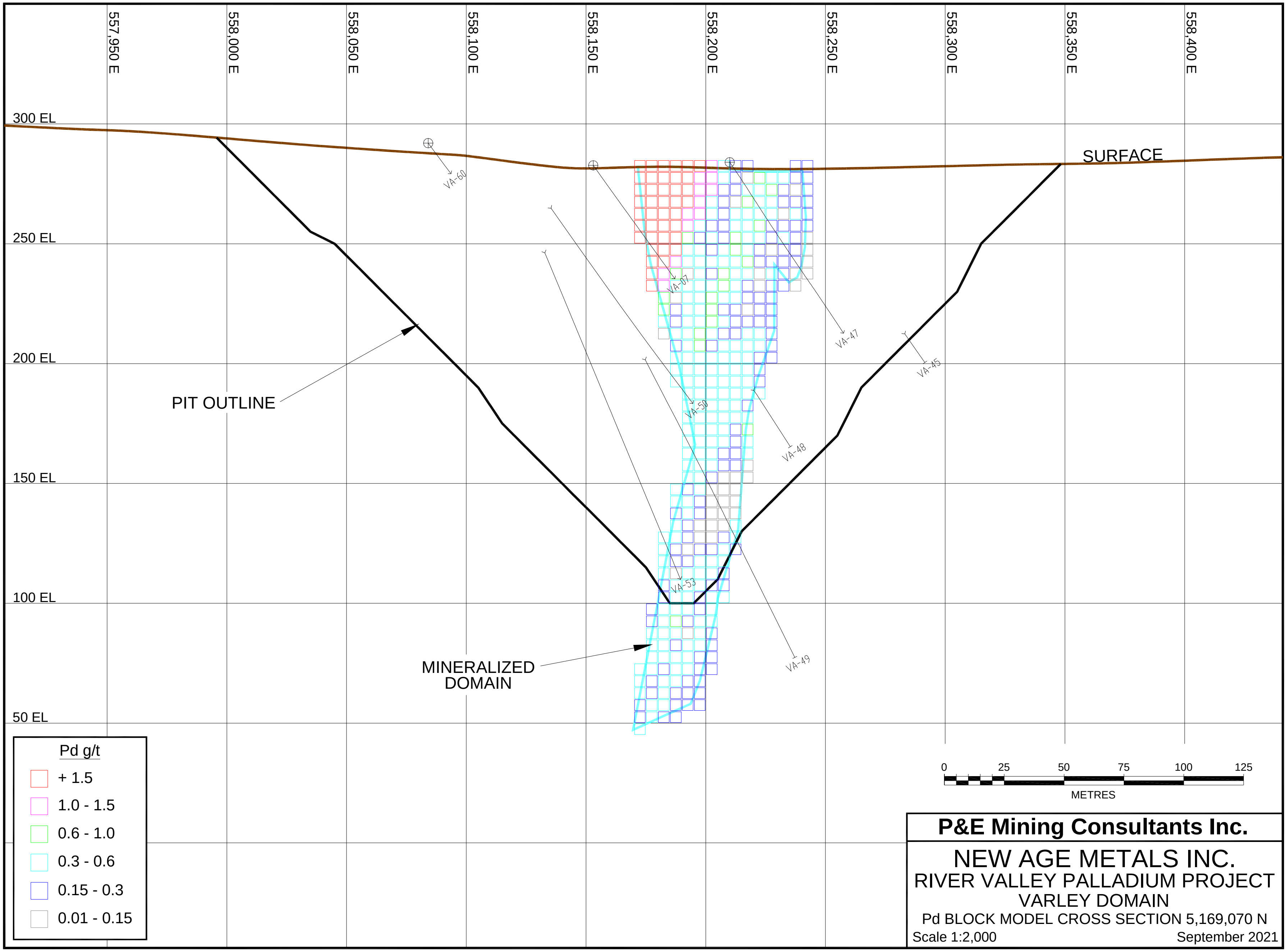
APPENDIX E PD BLOCK MODEL CROSS SECTIONS AND PLANS

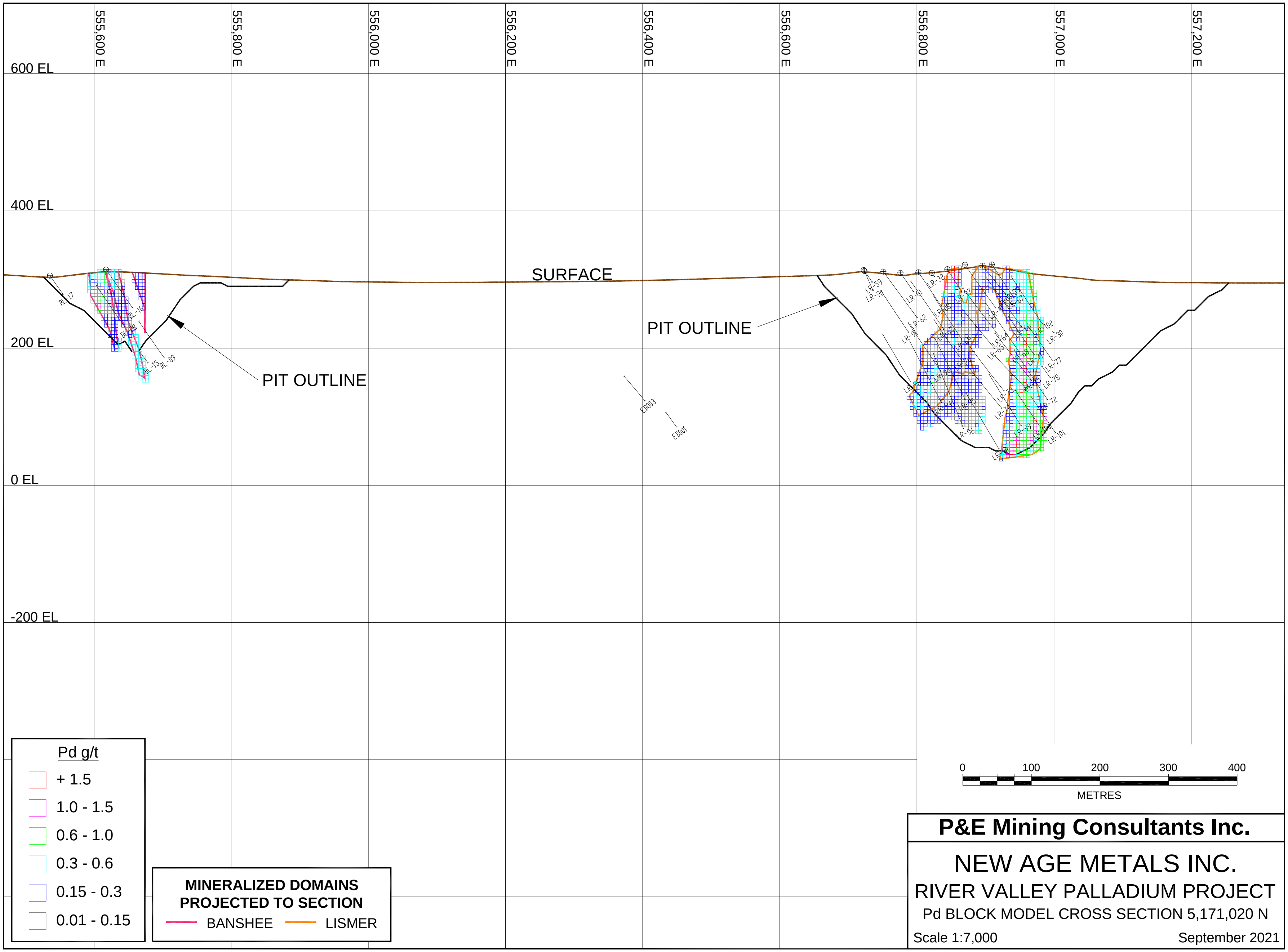


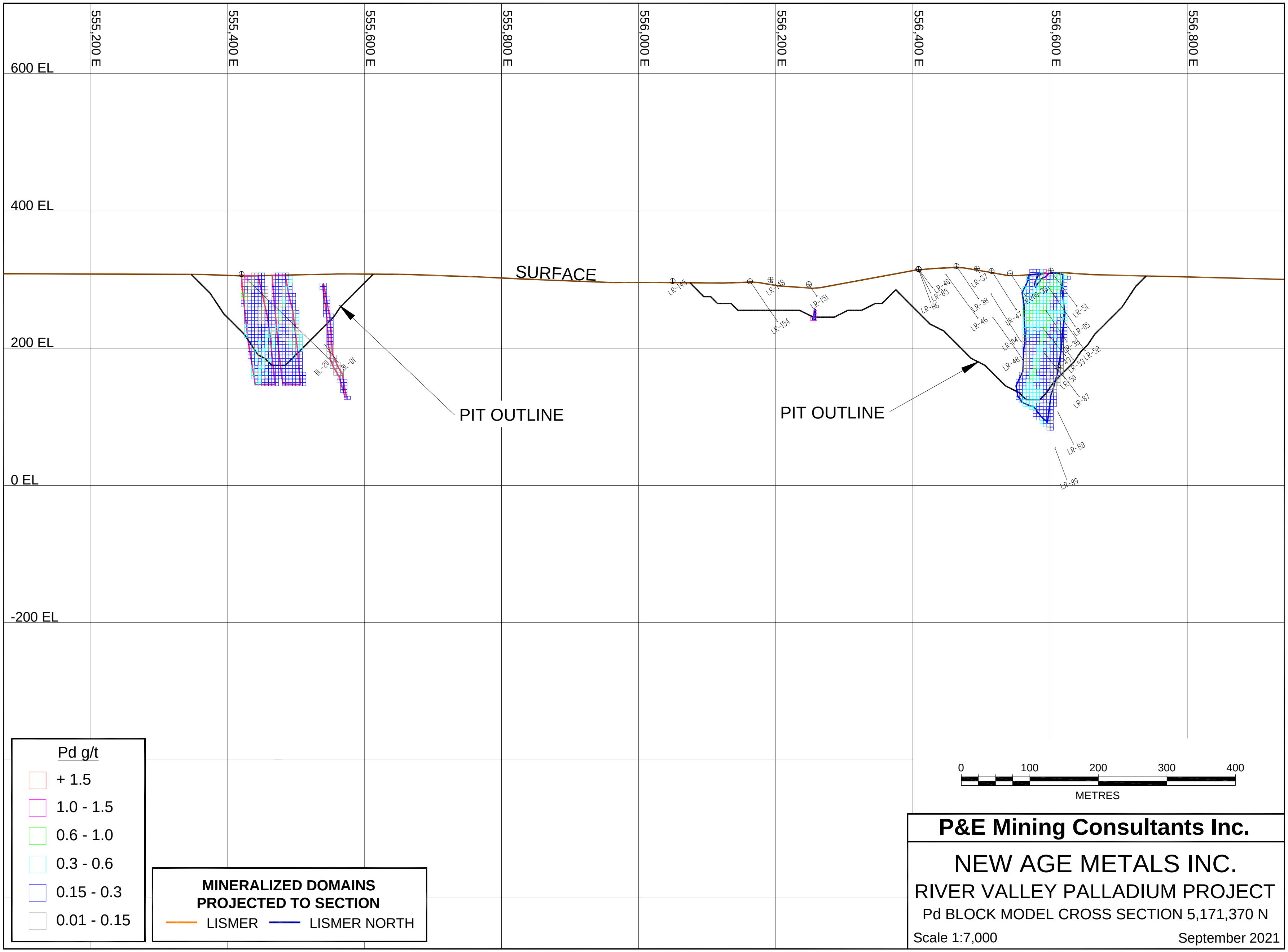
564,700 E
564,750 E
564,800 E
564,850 E
564,900 E
564,950 E
565,000 E
565,050 E
565,100 E
565,150 E
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
MR01-20
MR01-19
MR02-50
MR02-51
MR02-52
MR00-11
MR00-12
MR02-53
MR01-13
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
MUSTANG DOMAIN
Pd BLOCK MODEL CROSS SECTION 5,164,770 N
Scale 1:2,000
September 2021

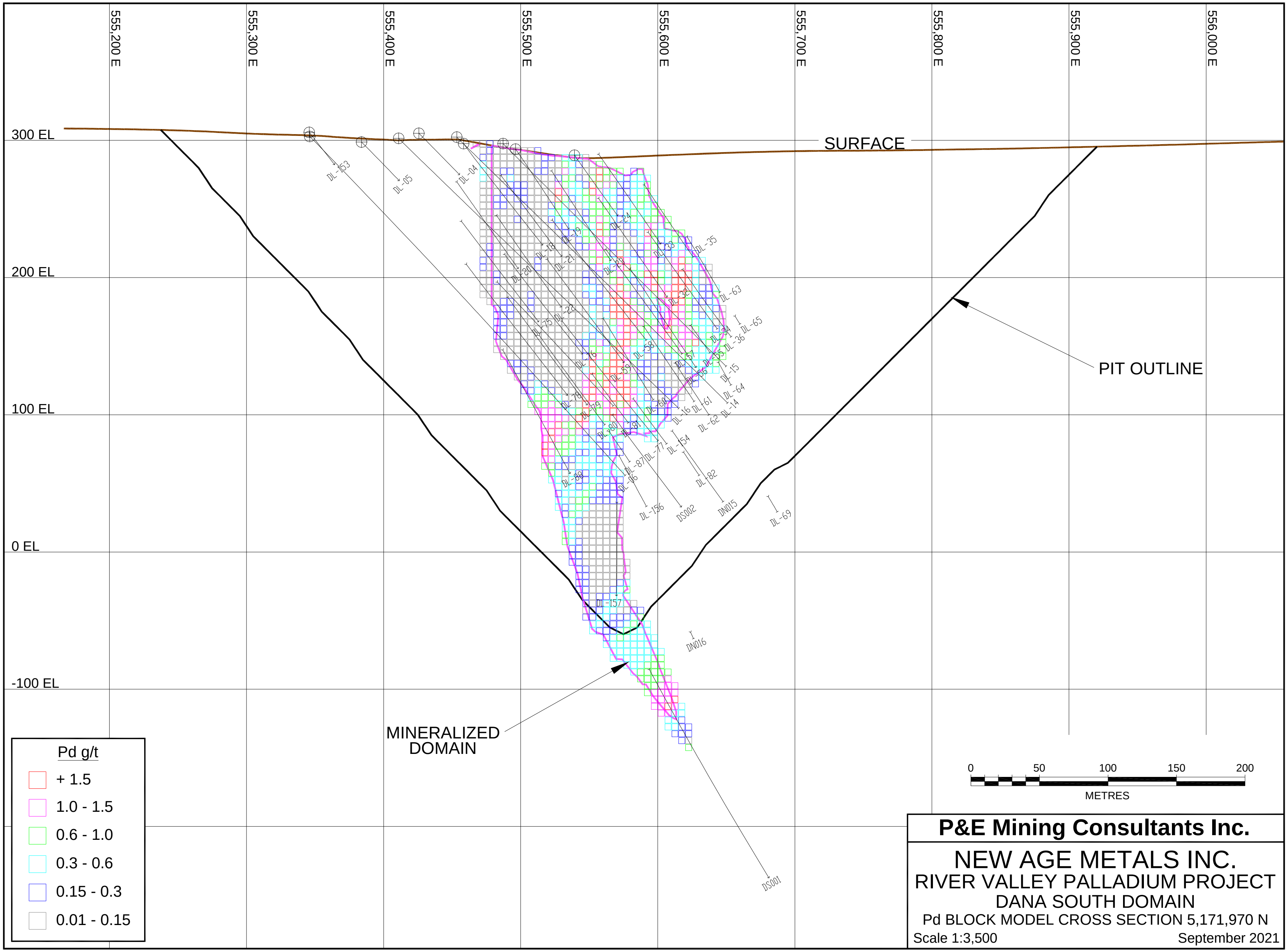


562,750 E
562,800 E
562,850 E
562,900 E
562,950 E
563,000 E
563,050 E
563,100 E
563,150 E
563,200 E
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
RA-05
RA-01
RA-08
RA-02
RA-07
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
0 25 50 75 100 125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
RAZOR DOMAIN
Pd BLOCK MODEL CROSS SECTION 5,167,620 N
Scale 1:2,000
September 2021


557,950 E
558,000 E
558,050 E
558,100 E
558,150 E
558,200 E
558,250 E
558,300 E
558,350 E
558,400 E
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
VA-60
VA-07
VA-47
VA-45
VA-50
VA-48
VA-53
VA-49
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
VARLEY DOMAIN
Pd BLOCK MODEL CROSS SECTION 5,169,070 N
Scale 1:2,000
September 2021


555,600 E
555,800 E
556,000 E
556,200 E
556,400 E
556,600 E
556,800 E
557,000 E
557,200 E
600 EL
400 EL
200 EL
0 EL
-200 EL
SURFACE
PIT OUTLINE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO SECTION
BANSHEE
LISMER
0
100
200
300
400
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL CROSS SECTION 5,171,020 N
Scale 1:7,000
September 2021


555,200 E
555,400 E
555,600 E
555,800 E
556,000 E
556,200 E
556,400 E
556,600 E
556,800 E
600 EL
400 EL
200 EL
0 EL
-200 EL
SURFACE
PIT OUTLINE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO SECTION
LISMER
LISMER NORTH
0
100
200
300
400
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL CROSS SECTION 5,171,370 N
Scale 1:7,000
September 2021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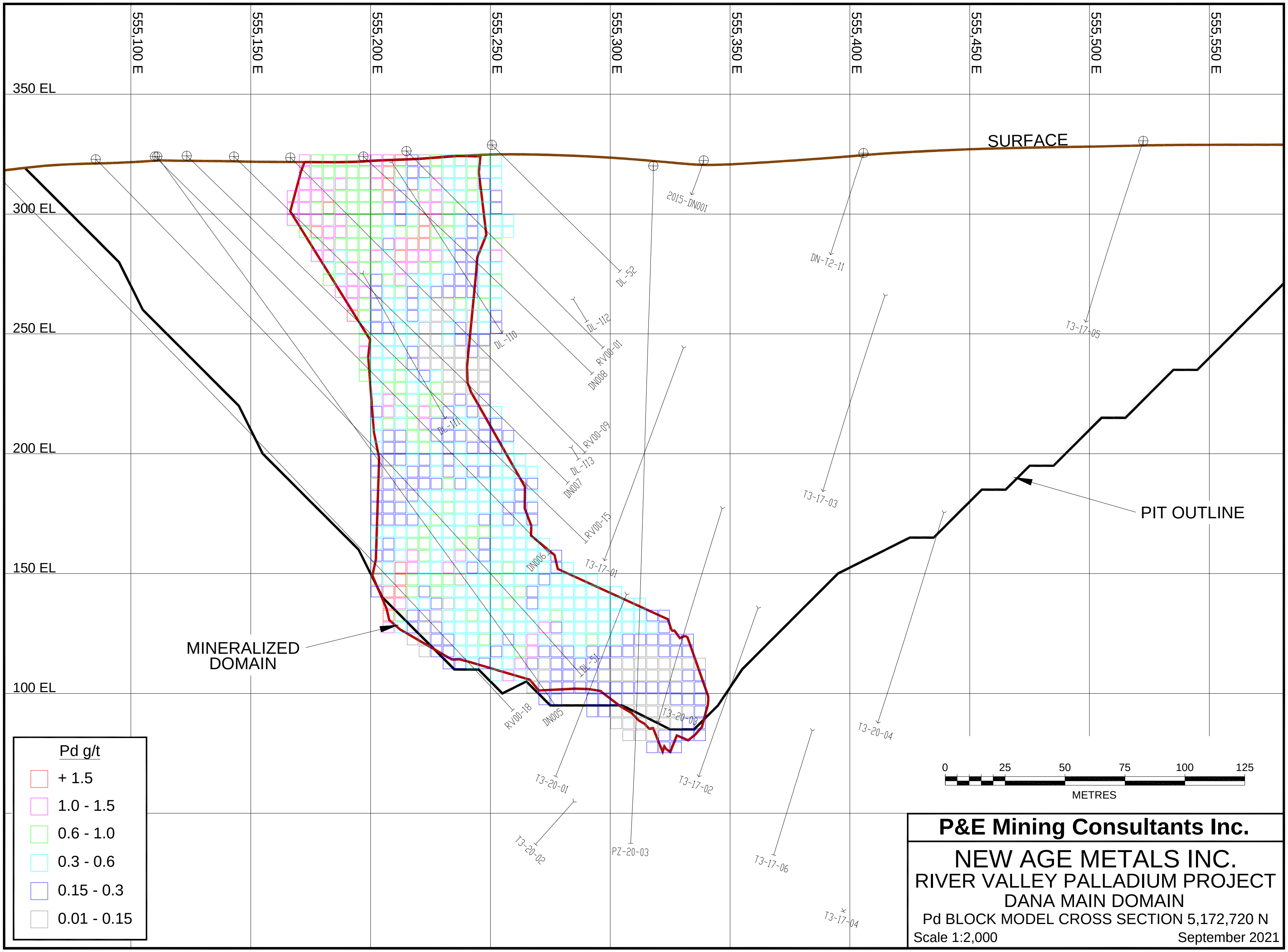
200 EL
100 EL
0 EL
-100 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
DANA SOUTH DOMAIN
Pd BLOCK MODEL CROSS SECTION 5,171,970 N
Scale 1:3,500
September 2021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350 EL
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250 EL
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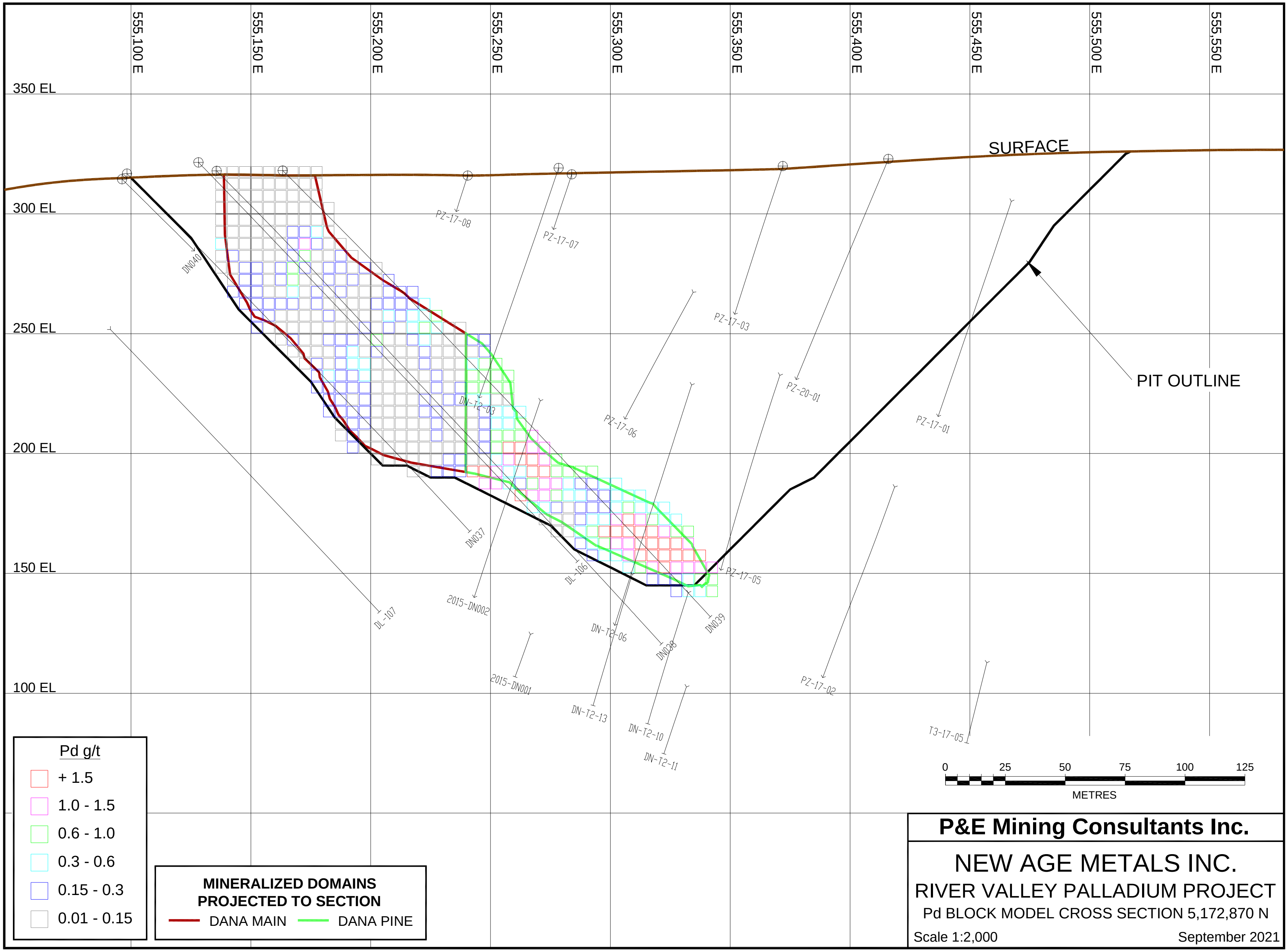
150 EL
100 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
2015-DN001
DN-T2-11
DL-52
DL-112
DL-110
RV00-01
DN008
T3-17-05
DL-111
RV00-09
DL-113
DN007
T3-17-03
RV00-15
DN006
T3-17-01
DL-51
RV00-18
DN005
T3-20-03
T3-20-04
T3-20-01
T3-17-02
T3-20-02
PZ-20-03
T3-17-06
T3-17-04
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
DANA MAIN DOMAIN
Pd BLOCK MODEL CROSS SECTION 5,172,720 N
Scale 1:2,000
September 2021



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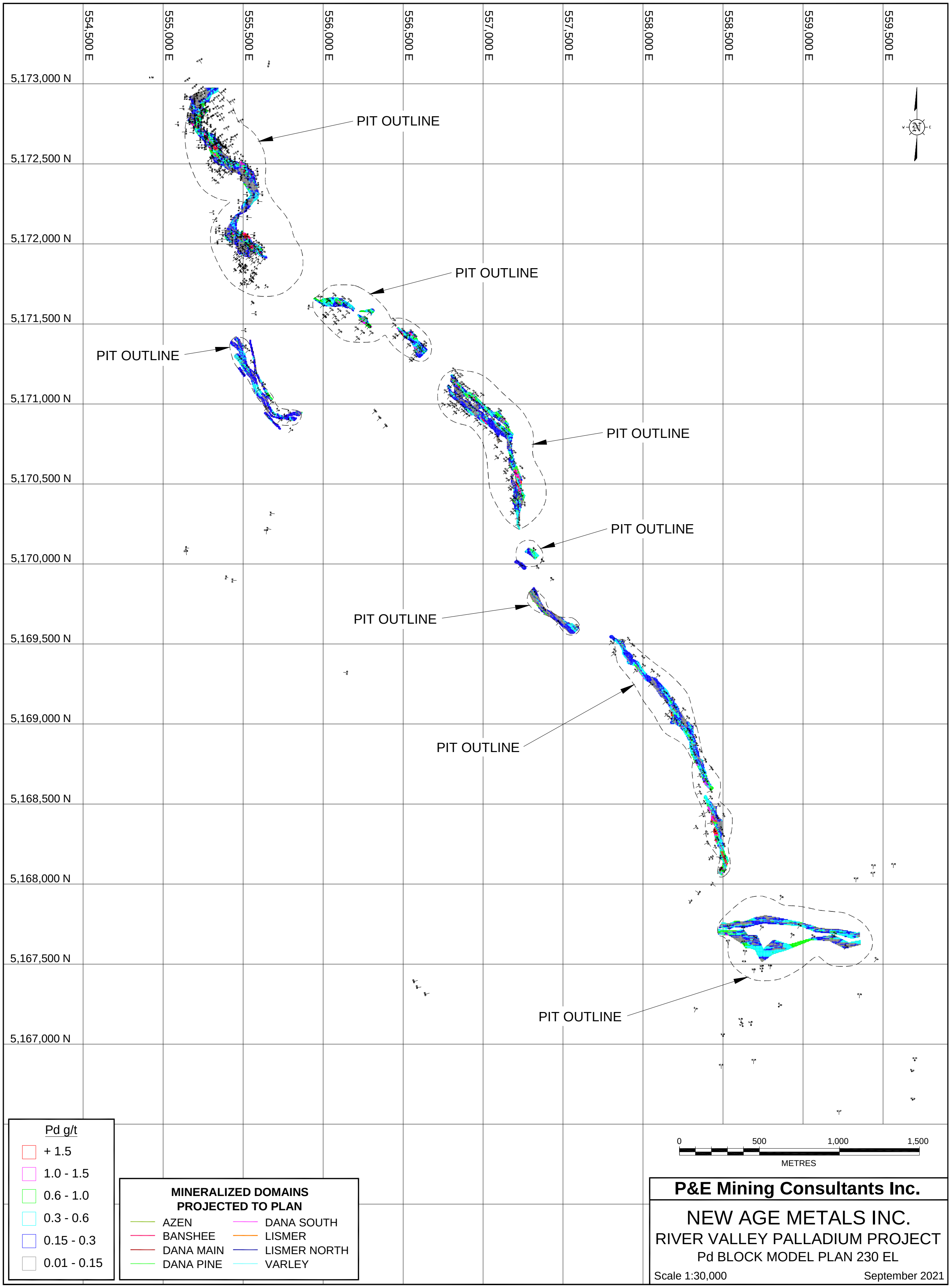
555,550 E
350 EL
300 EL
250 EL
200 EL
150 EL
100 EL
SURFACE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO SECTION
DANA MAIN
DANA PINE
0 25 50 75 100 125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL CROSS SECTION 5,172,870 N
Scale 1:2,000
September 2021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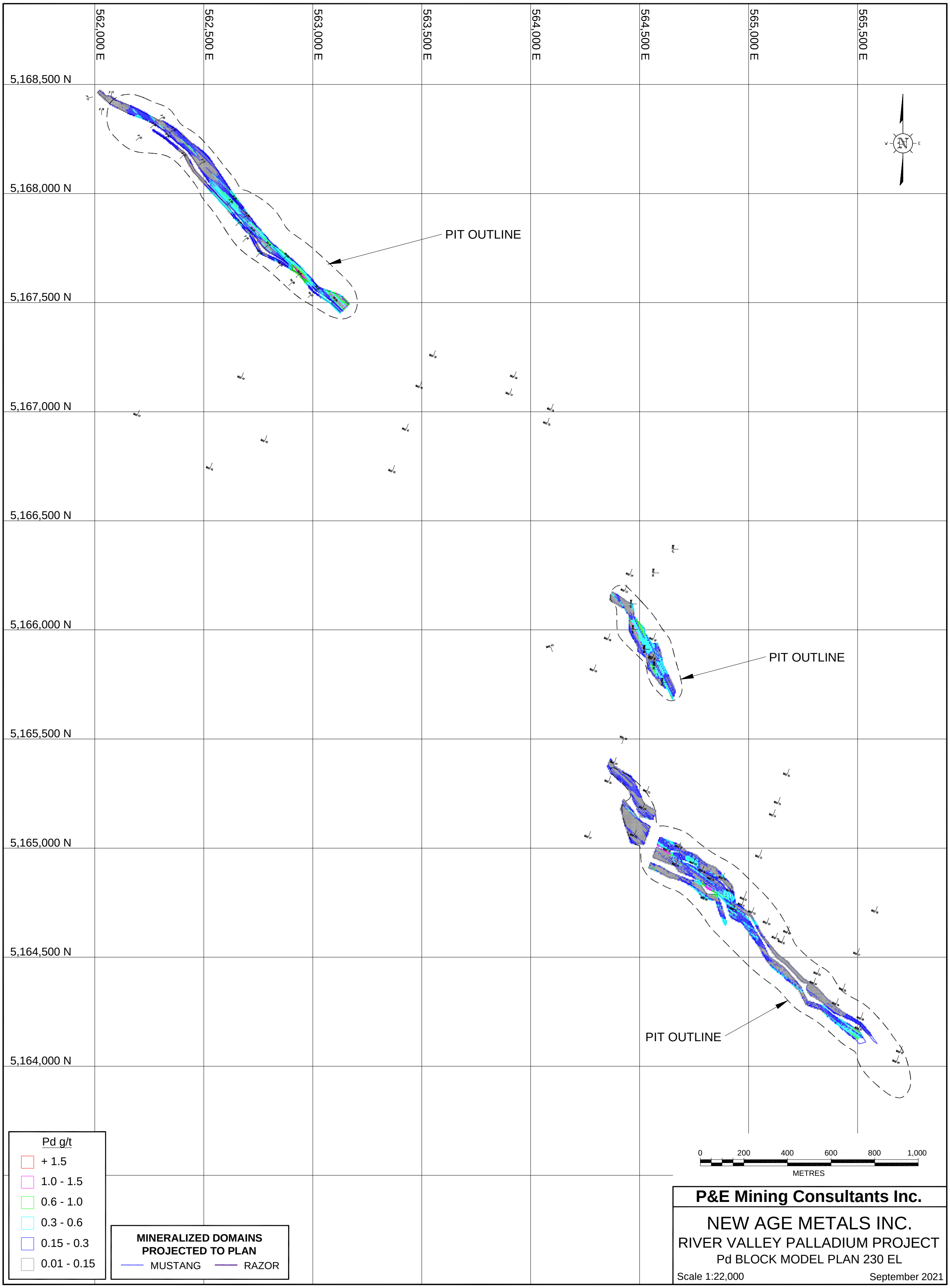
5,169,500 N
5,169,000 N
5,168,500 N
5,168,000 N
5,167,500 N
5,167,000 N
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL PLAN 230 EL
Scale 1:30,000
September 2021



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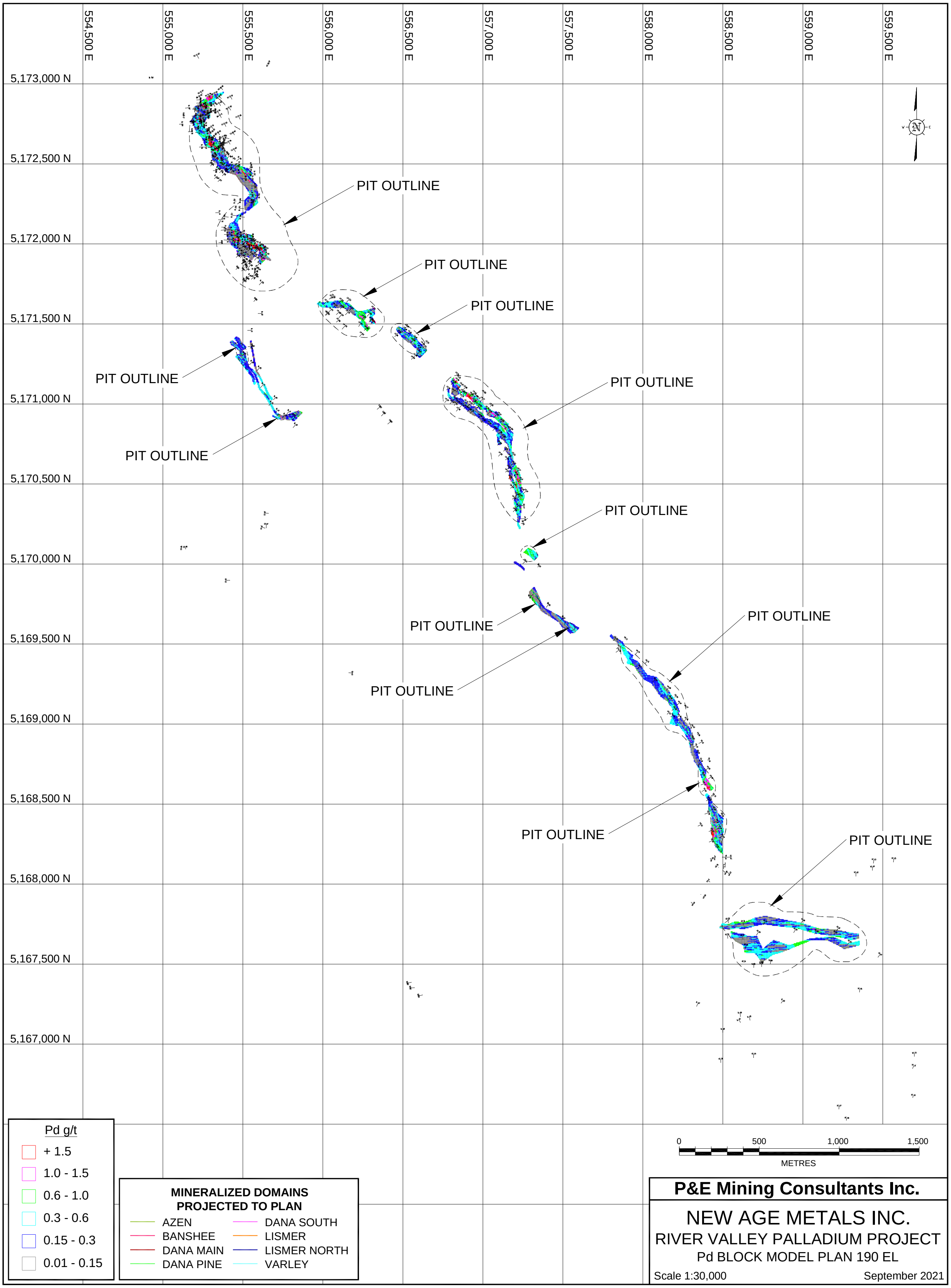
5,167,000 N
5,166,500 N
5,166,000 N
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL PLAN 230 EL
Scale 1:22,000
September 2021



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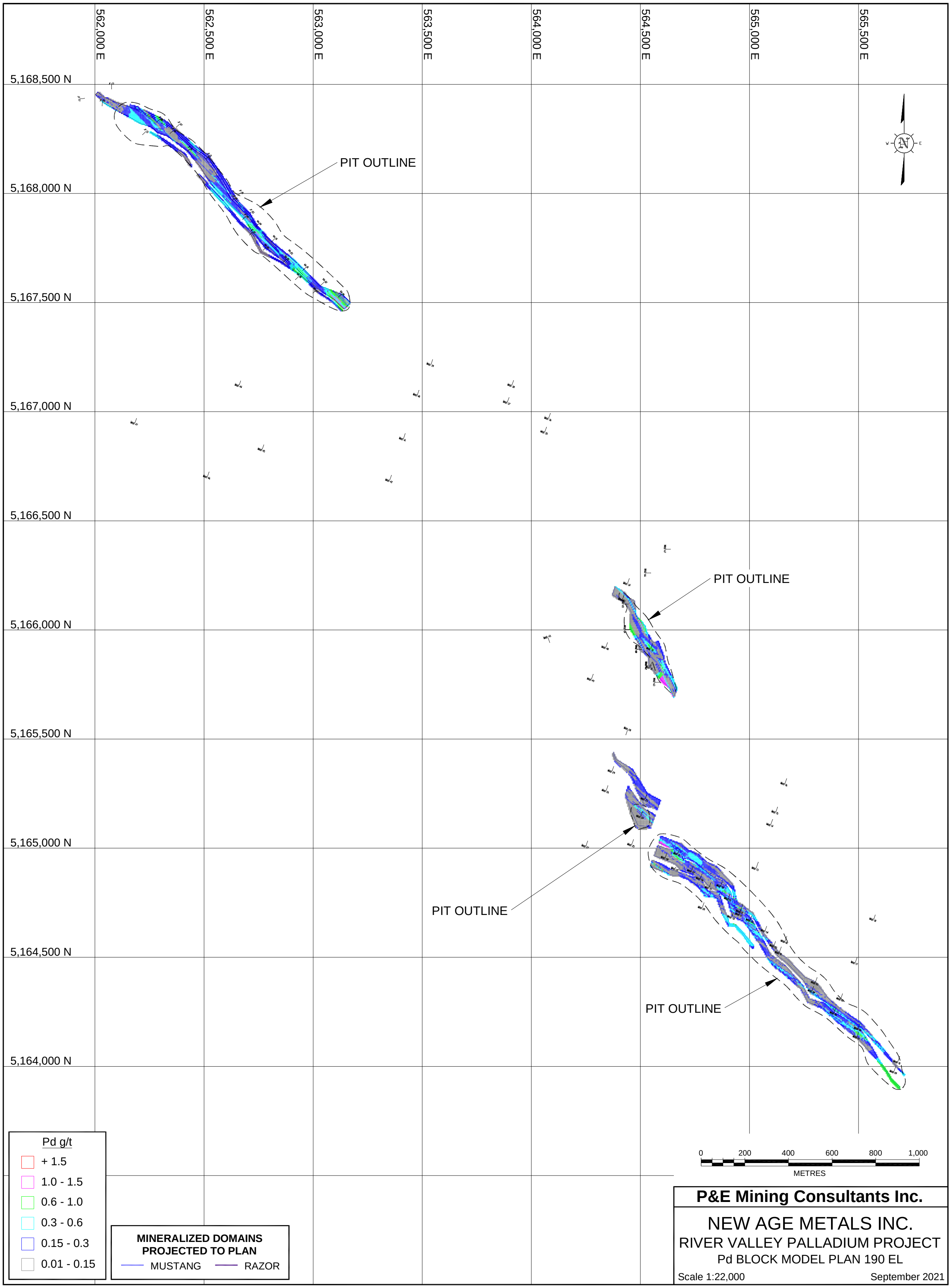
5,171,000 N
5,170,500 N
5,170,000 N
5,169,500 N
5,169,000 N
5,168,500 N
5,168,000 N
5,167,500 N
5,167,000 N
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL PLAN 190 EL
Scale 1:30,000
September 2021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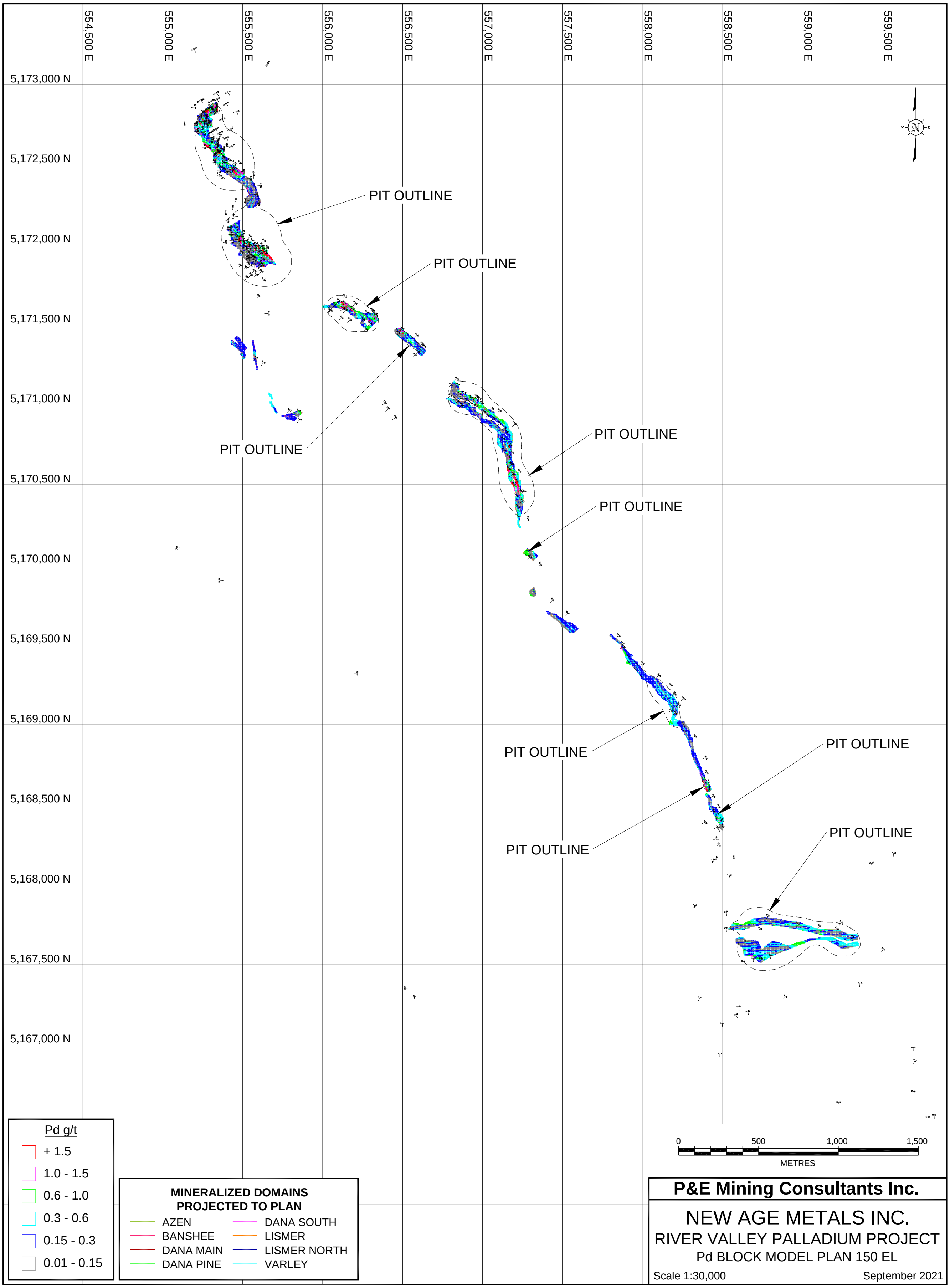
5,167,000 N
5,166,500 N
5,166,000 N
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS PROJECTED TO PLAN
MUSTANG
RAZOR
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL PLAN 190 EL
Scale 1:22,000
September 2021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5,170,500 N
5,170,000 N
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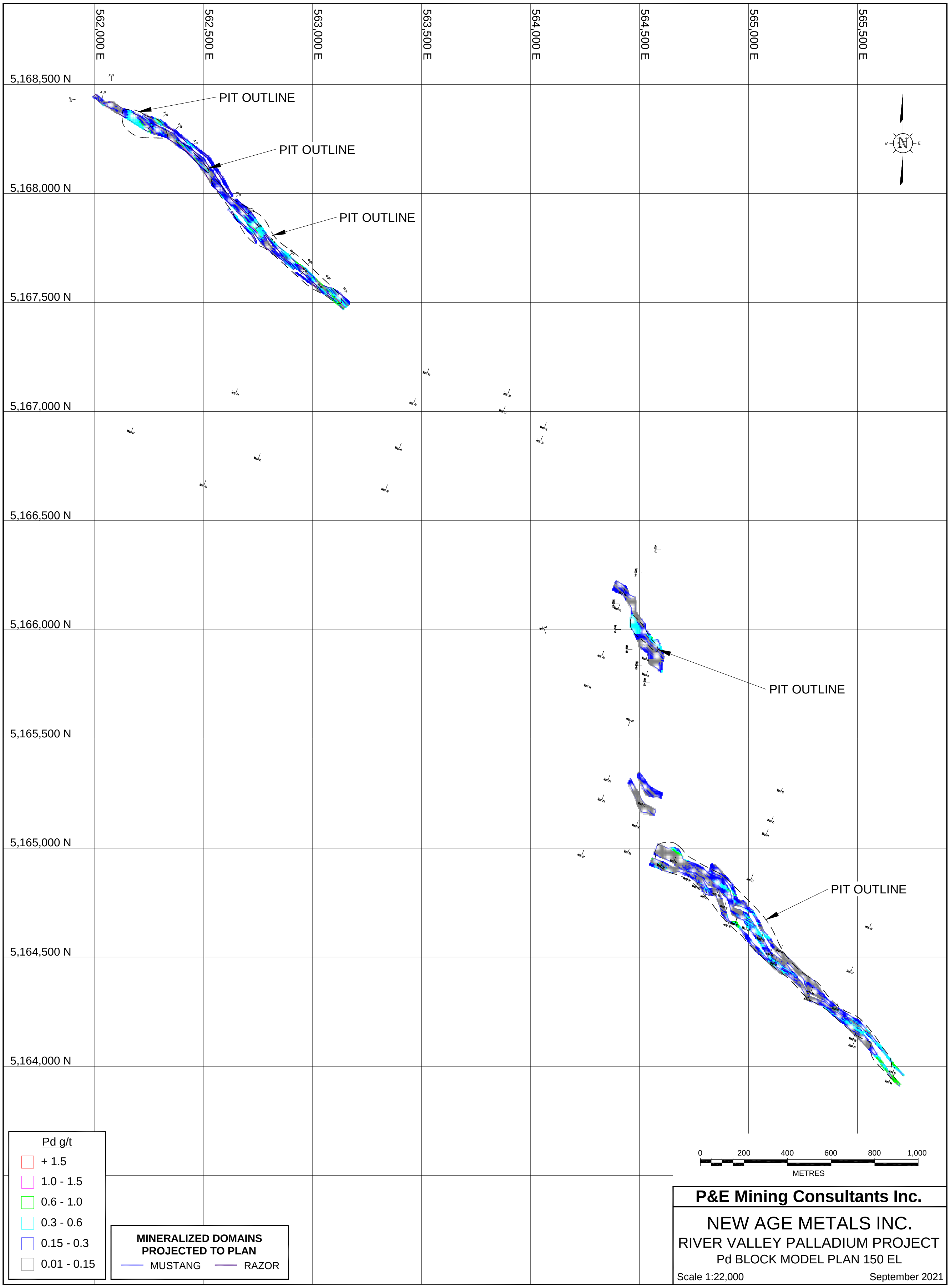
5,169,000 N
5,168,500 N
5,168,000 N
5,167,500 N
5,167,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL PLAN 150 EL
Scale 1:30,000
September 2021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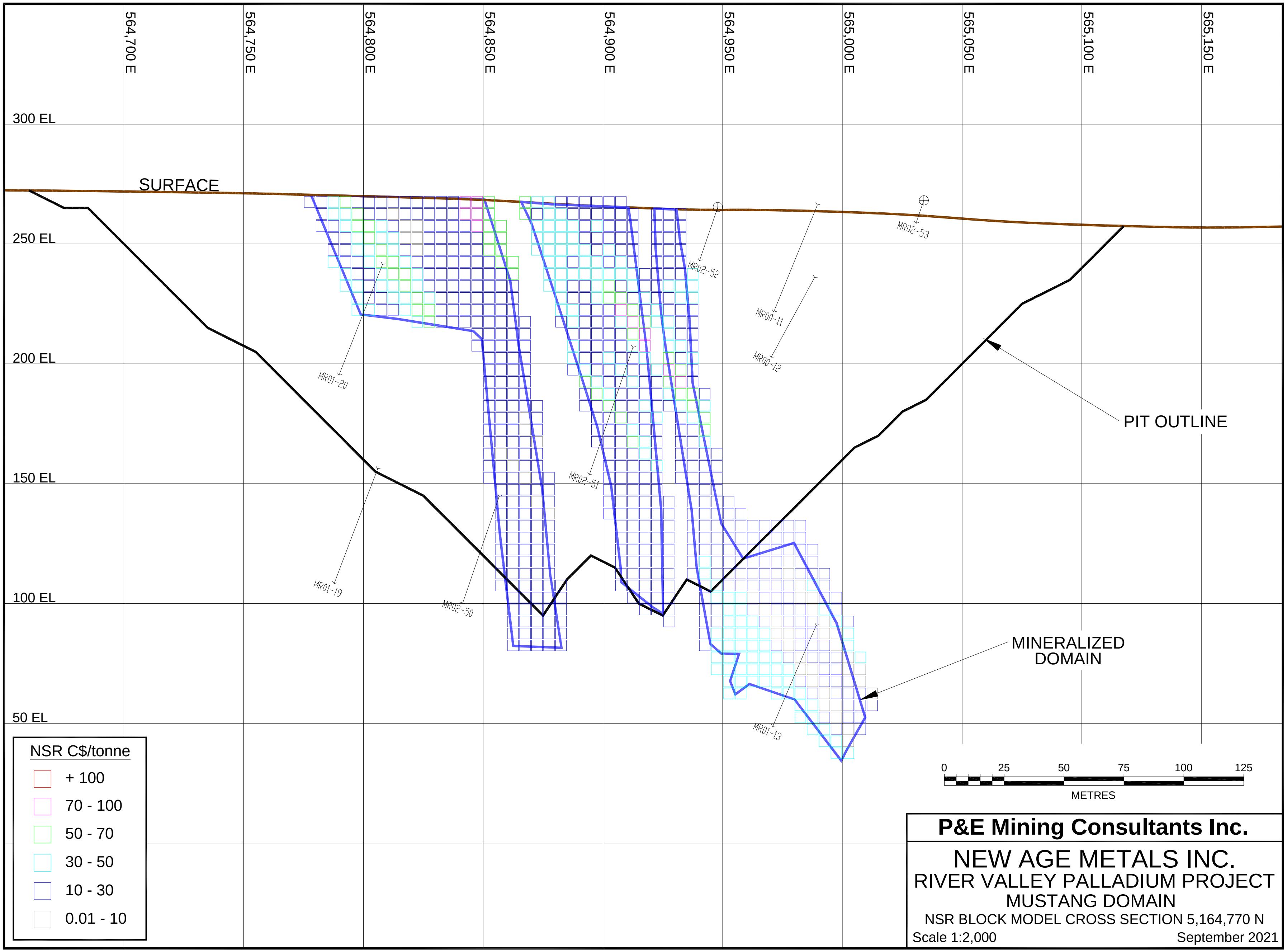
5,166,500 N
5,166,000 N
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
Pd g/t
+ 1.5
1.0 - 1.5
0.6 - 1.0
0.3 - 0.6
0.15 - 0.3
0.01 - 0.15
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
Pd BLOCK MODEL PLAN 150 EL
Scale 1:22,000
September 2021

APPENDIX F NSR BLOCK MODEL CROSS SECTIONS AND PLANS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565,100 E
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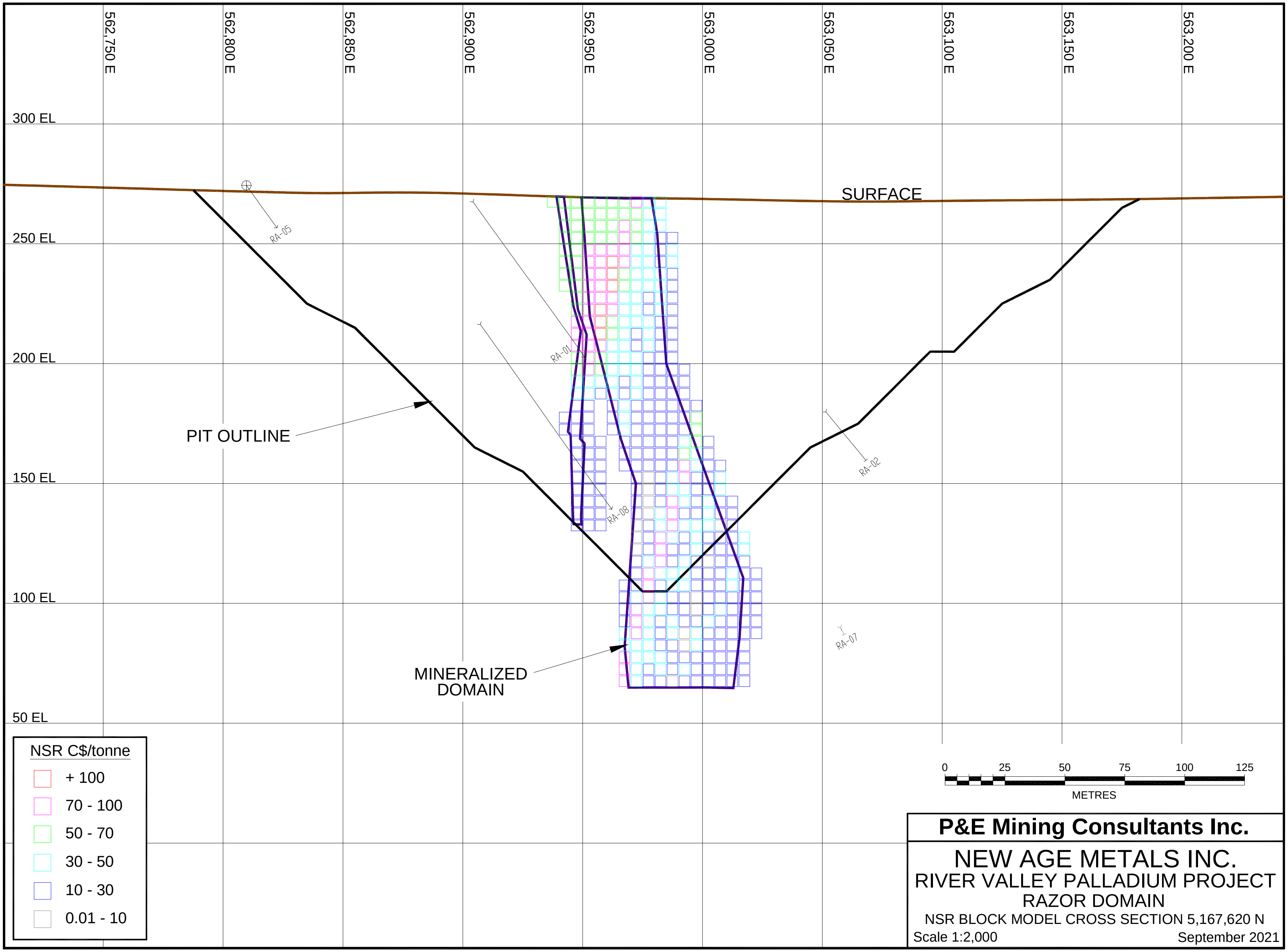
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
MR02-53
MR02-52
MR00-11
MR00-12
MR01-20
MR02-51
MR01-19
MR02-50
MR01-13
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
MUSTANG DOMAIN
NSR BLOCK MODEL CROSS SECTION 5,164,770 N
Scale 1:2,000
September 2021



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562,950 E
563,000 E
563,050 E
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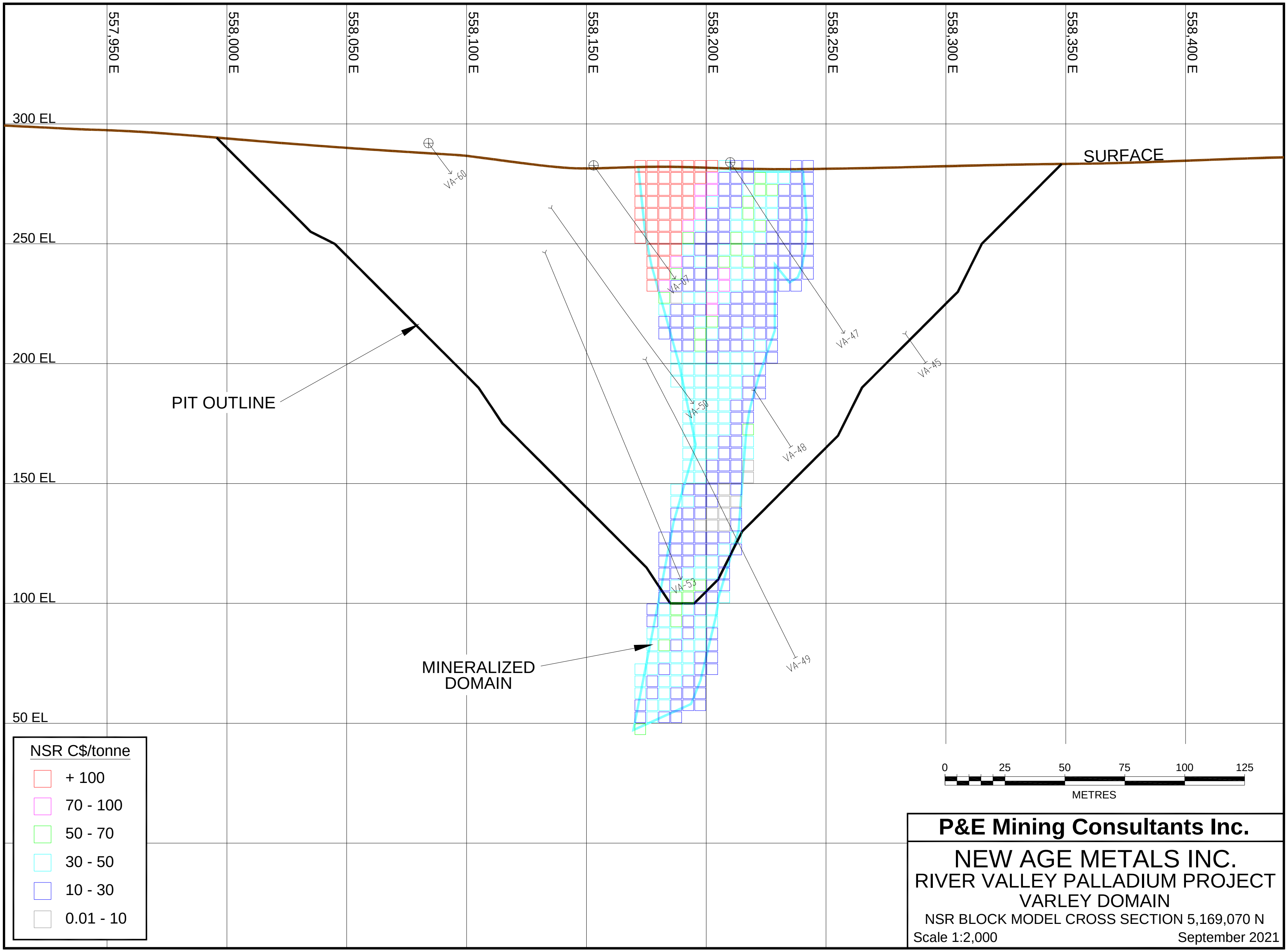
563,150 E
563,200 E
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
RA-05
RA-01
RA-08
RA-02
RA-07
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
RAZOR DOMAIN
NSR BLOCK MODEL CROSS SECTION 5,167,620 N
Scale 1:2,000
September 2021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300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
VA-60
VA-57
VA-50
VA-53
VA-47
VA-48
VA-45
VA-49
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
VARLEY DOMAIN
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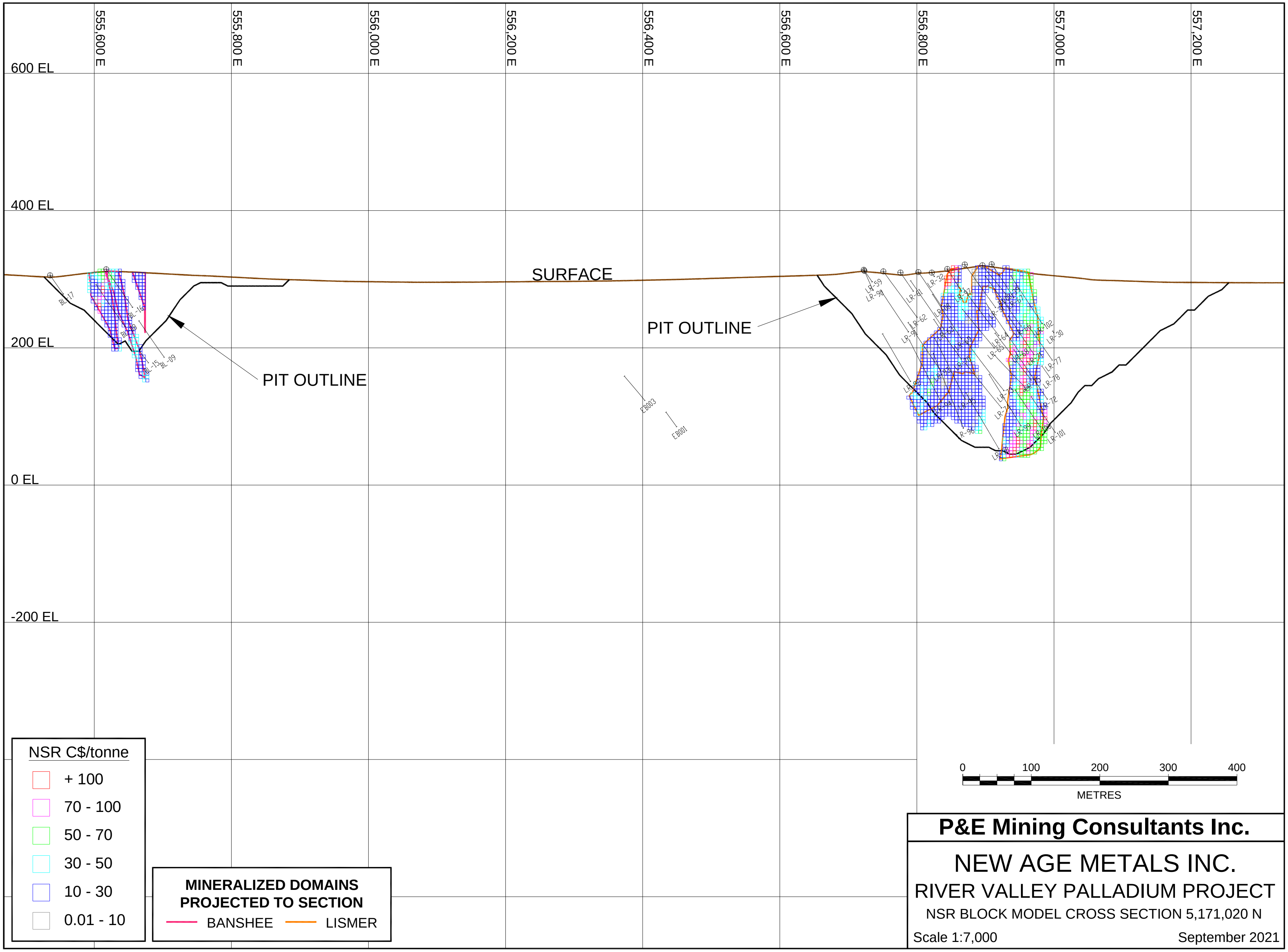
Scale 1:2,000
September 2021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600 EL
400 EL
200 EL
0 EL
-200 EL
SURFACE
PIT OUTLINE
PIT OUTLINE
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO SECTION
BANSHEE
LISMER
0
100
200
300
400
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
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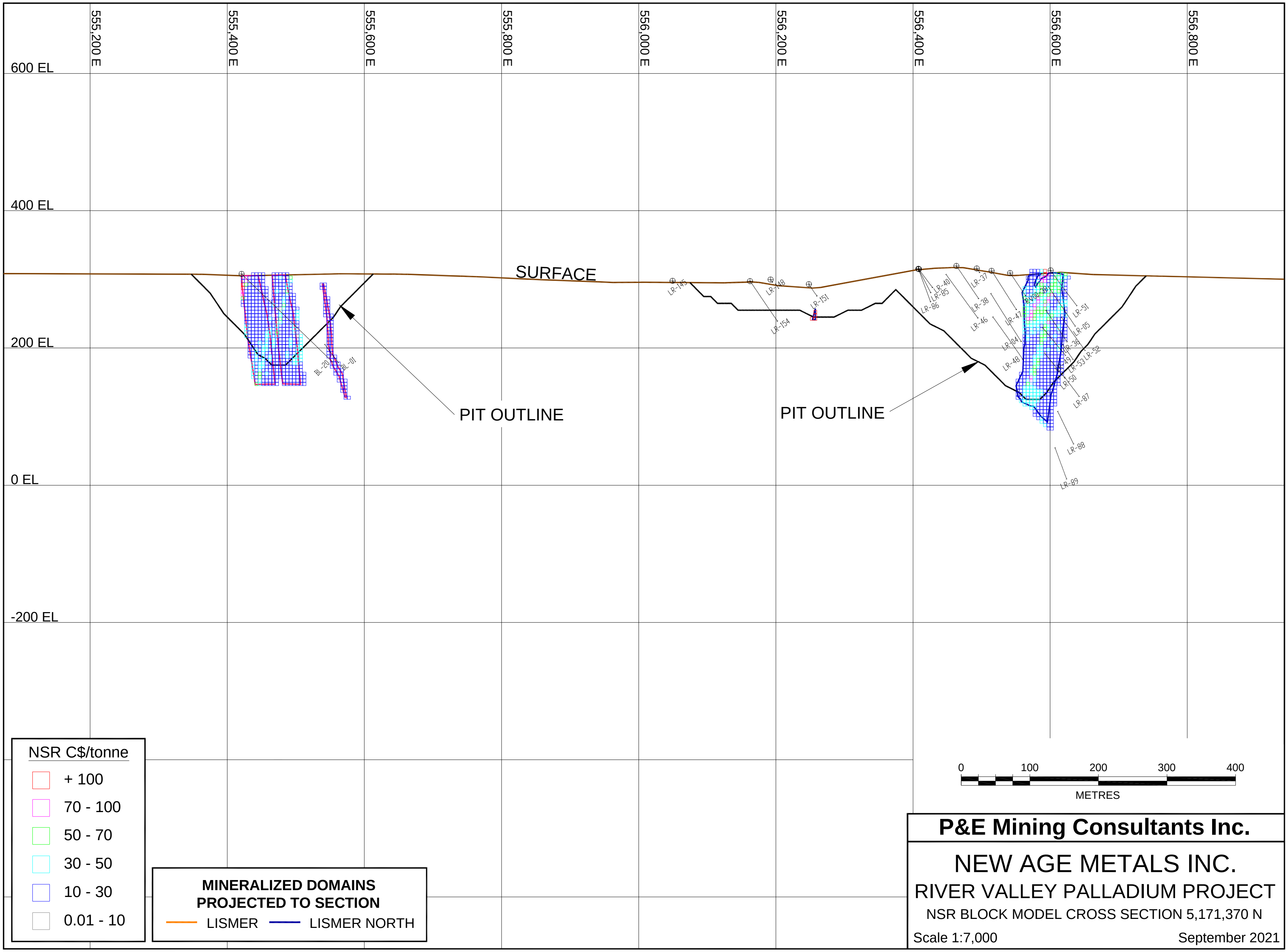
Scale 1:7,000
September 2021



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556,200 E
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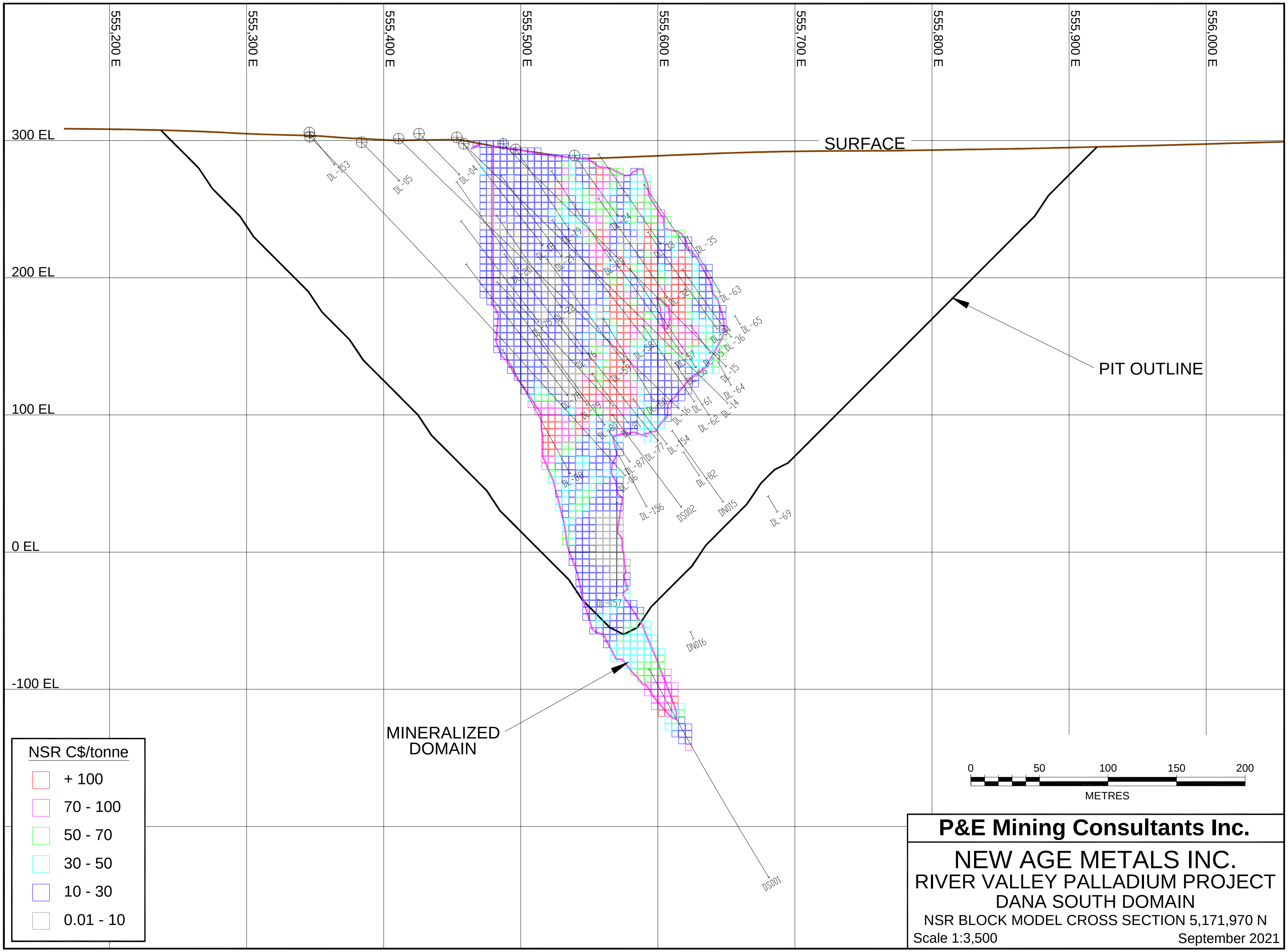
556,800 E
600 EL
400 EL
200 EL
0 EL
-200 EL
SURFACE
PIT OUTLINE
PIT OUTLINE
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO SECTION
LISMER
LISMER NORTH
0
100
200
300
400
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL CROSS SECTION 5,171,370 N
Scale 1:7,000
September 2021



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555,600 E
555,700 E
555,800 E
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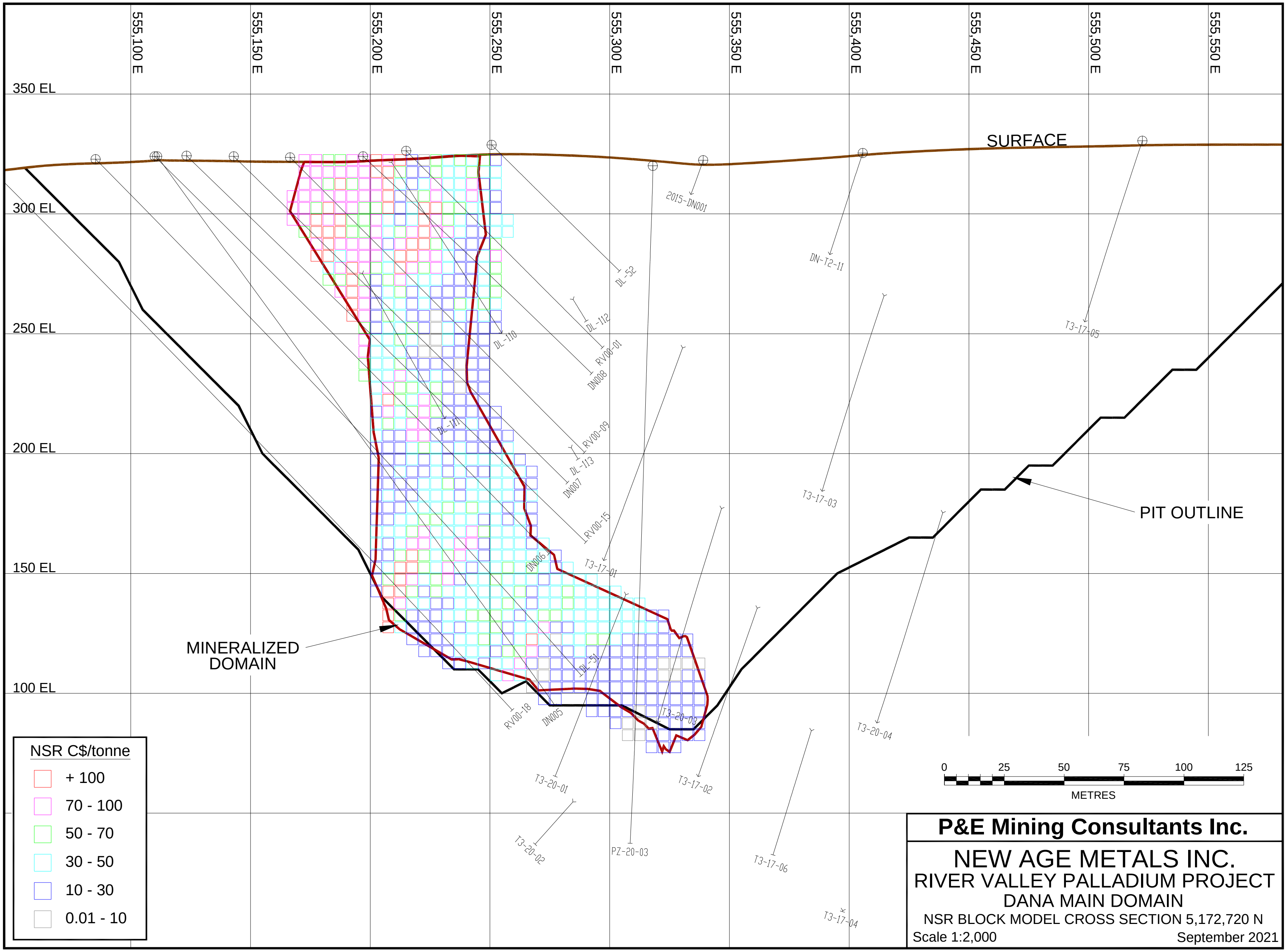
556,000 E
300 EL
200 EL
100 EL
0 EL
-100 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
DANA SOUTH DOMAIN
NSR BLOCK MODEL CROSS SECTION 5,171,970 N
Scale 1:3,500
September 2021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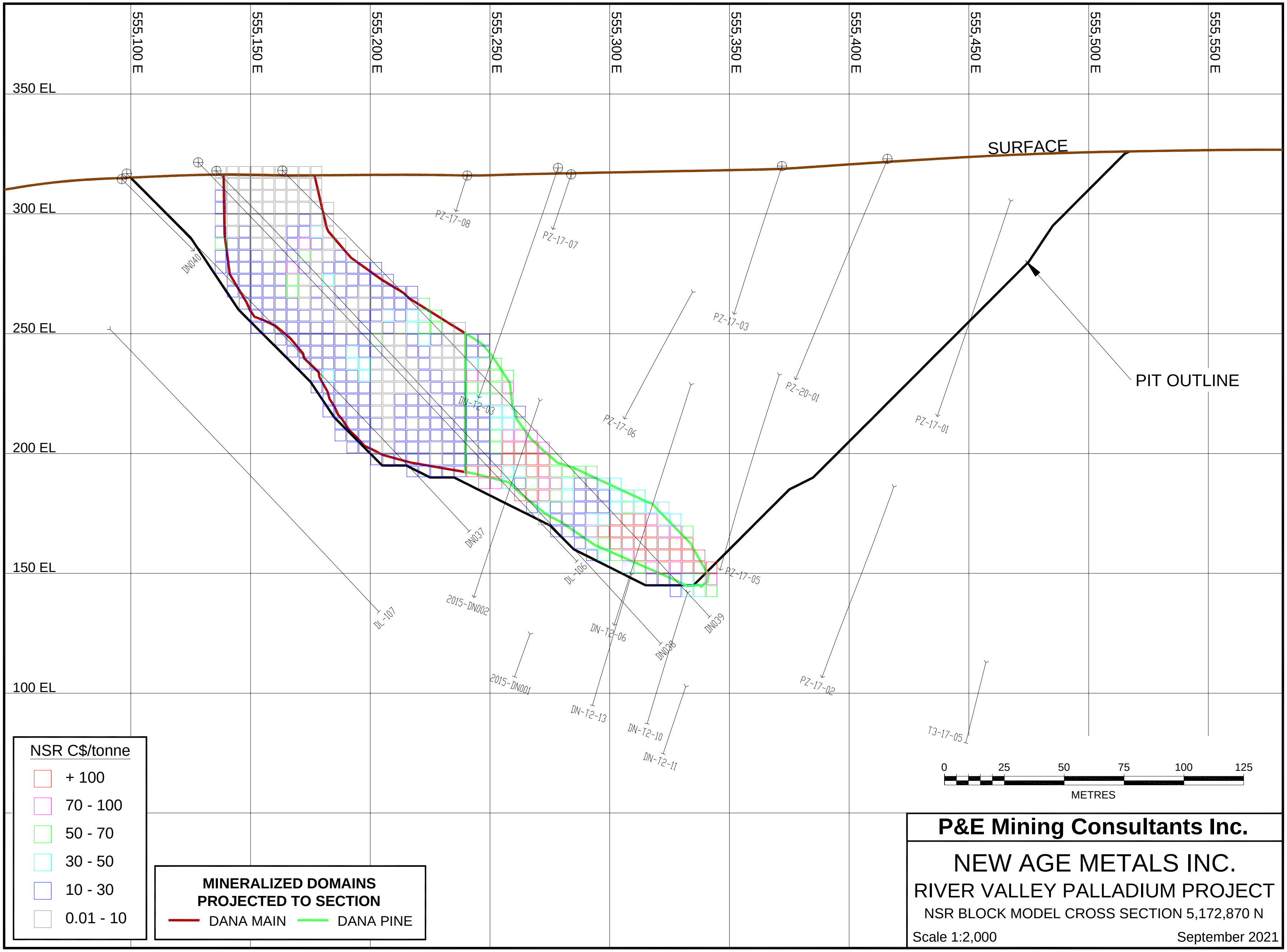
300 EL
250 EL
200 EL
150 EL
100 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
DANA MAIN DOMAIN
NSR BLOCK MODEL CROSS SECTION 5,172,720 N
Scale 1:2,000
September 2021



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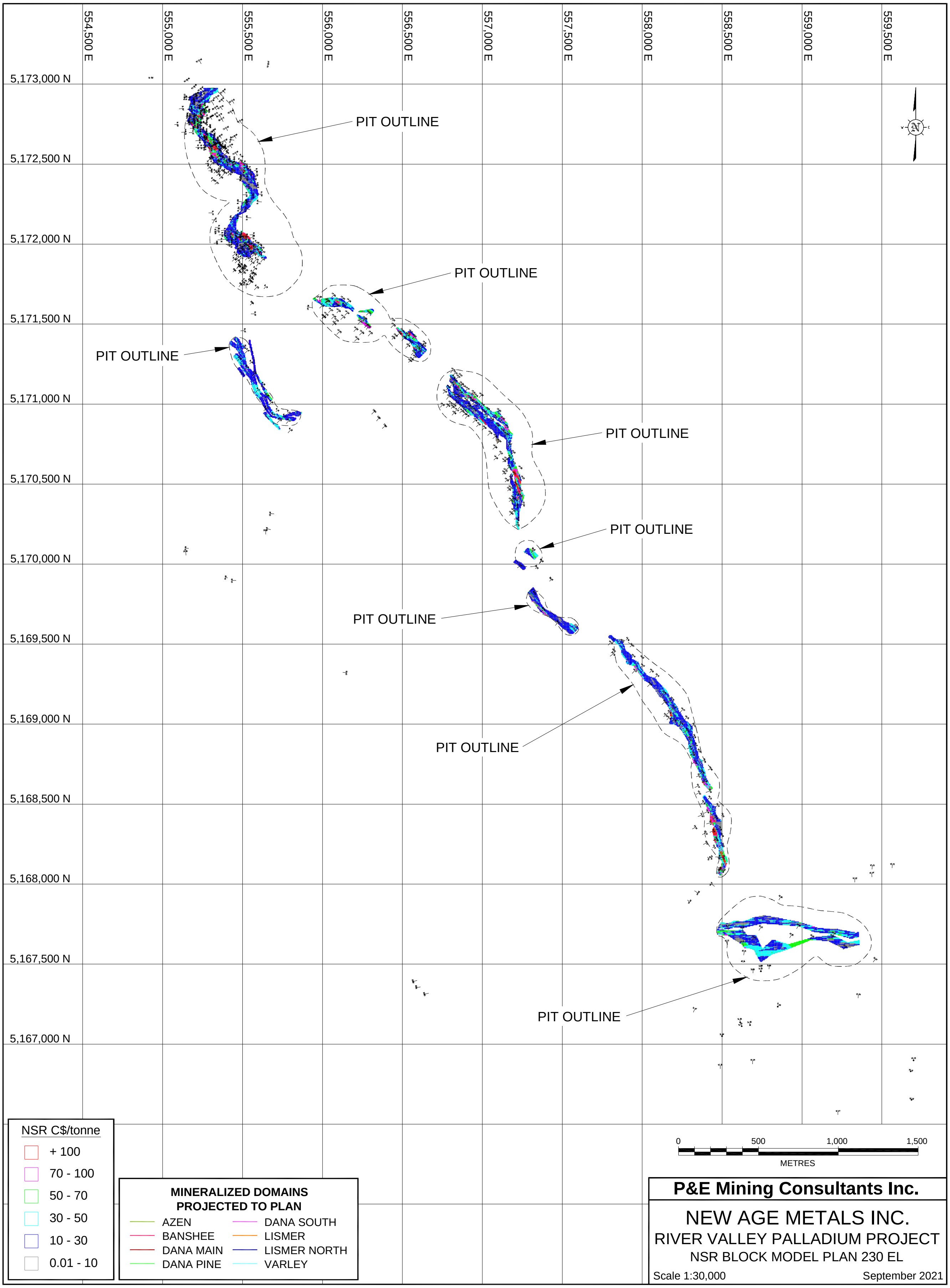
350 EL
300 EL
250 EL
200 EL
150 EL
100 EL
SURFACE
PIT OUTLINE
PZ-17-08
PZ-17-07
PZ-17-03
PZ-20-01
PZ-17-01
PZ-17-06
PZ-17-05
PZ-17-02
DN040
DN037
DN038
DN039
DL-107
DL-106
2015-DN002
2015-DN001
DN-T2-06
DN-T2-13
DN-T2-10
DN-T2-11
T3-17-05
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO SECTION
DANA MAIN
DANA PINE
0
25
50
75
100
125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL CROSS SECTION 5,172,870 N
Scale 1:2,000
September 2021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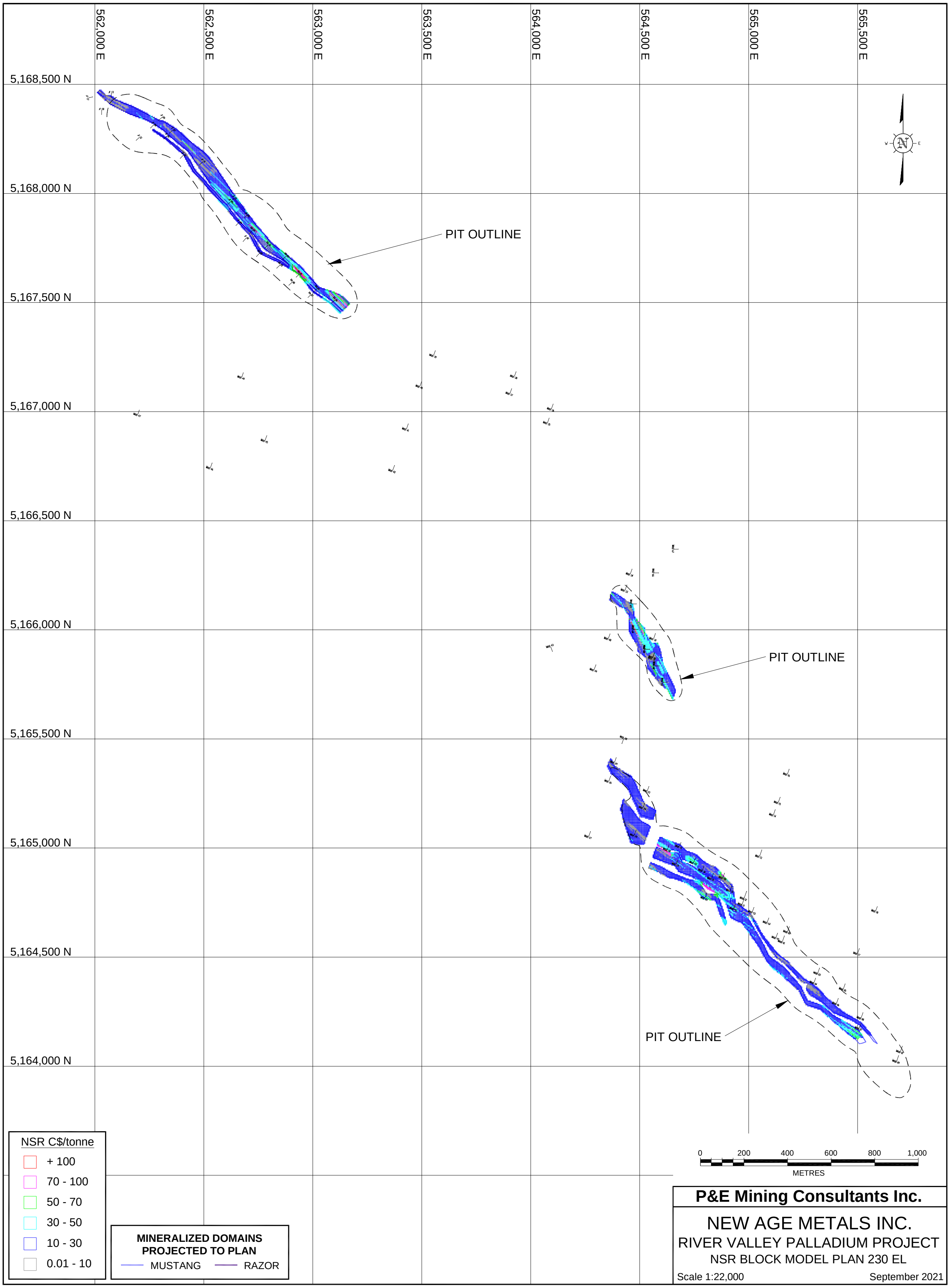
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
N
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL PLAN 230 EL
Scale 1:30,000
September 2021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565,500 E
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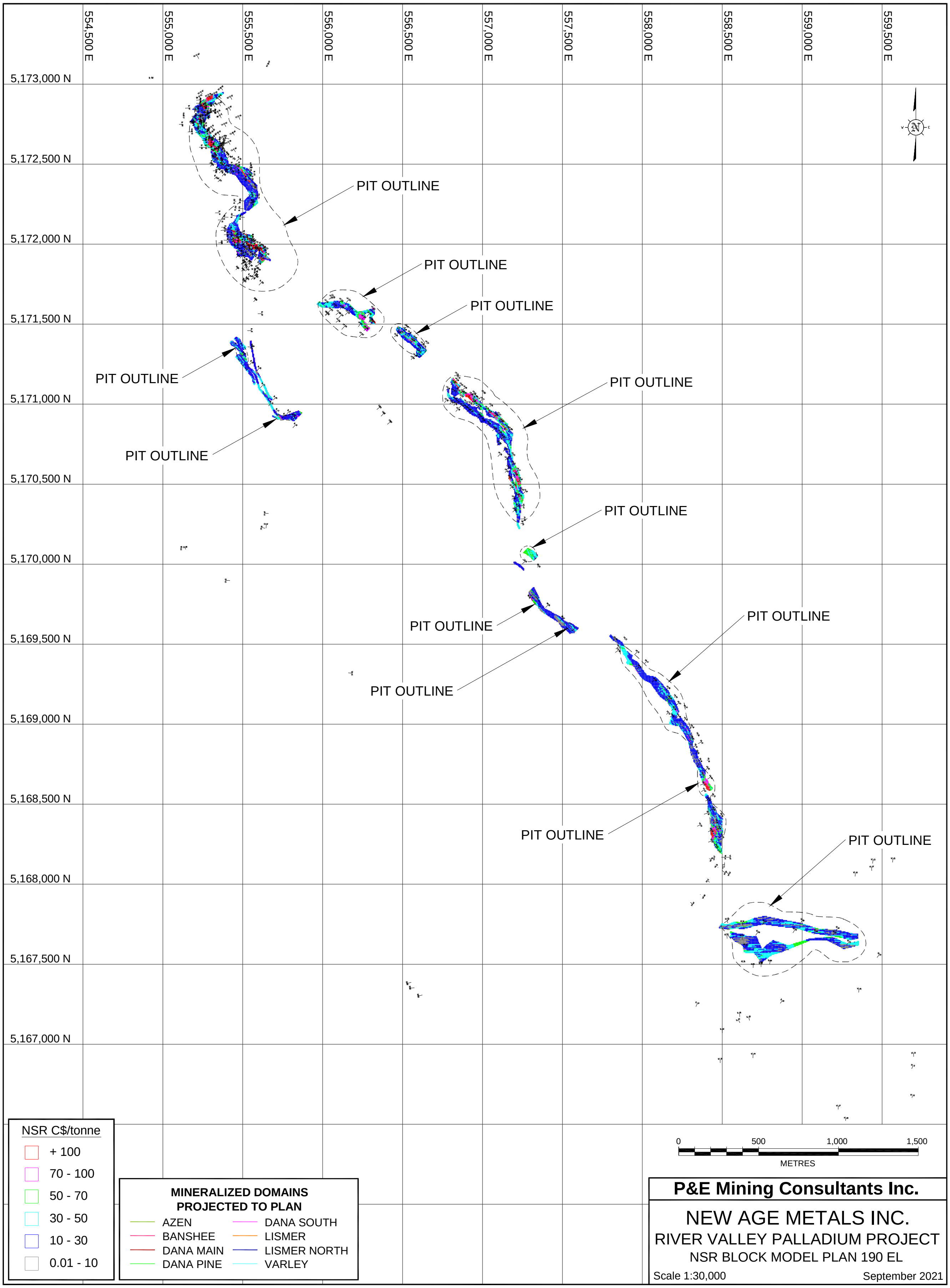
5,167,000 N
5,166,500 N
5,166,000 N
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
N
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL PLAN 230 EL
Scale 1:22,000
September 2021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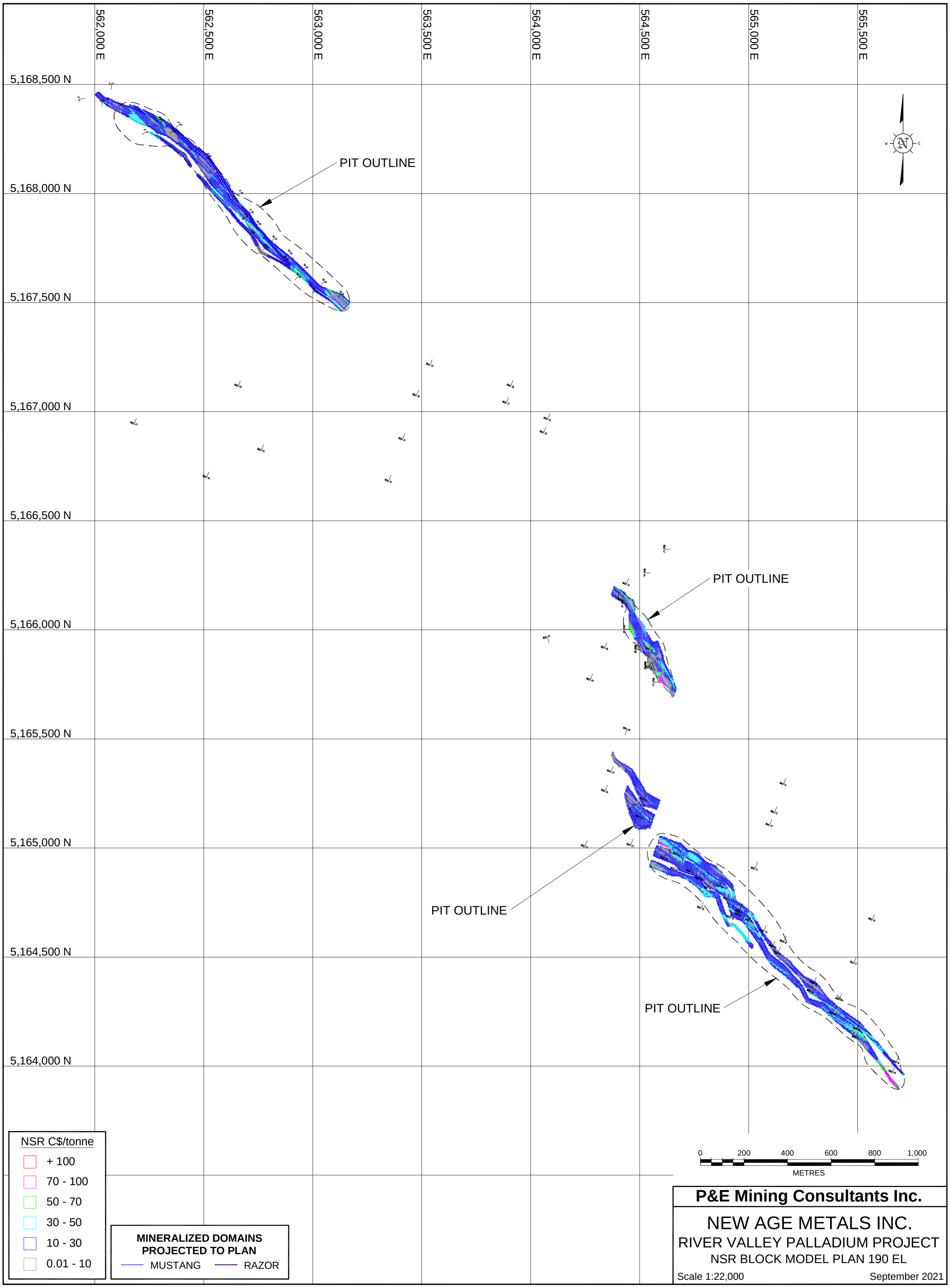
5,170,000 N
5,169,500 N
5,169,000 N
5,168,500 N
5,168,000 N
5,167,500 N
5,167,000 N
PIT OUTLINE
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL PLAN 190 EL
Scale 1:30,000
September 2021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5,166,500 N
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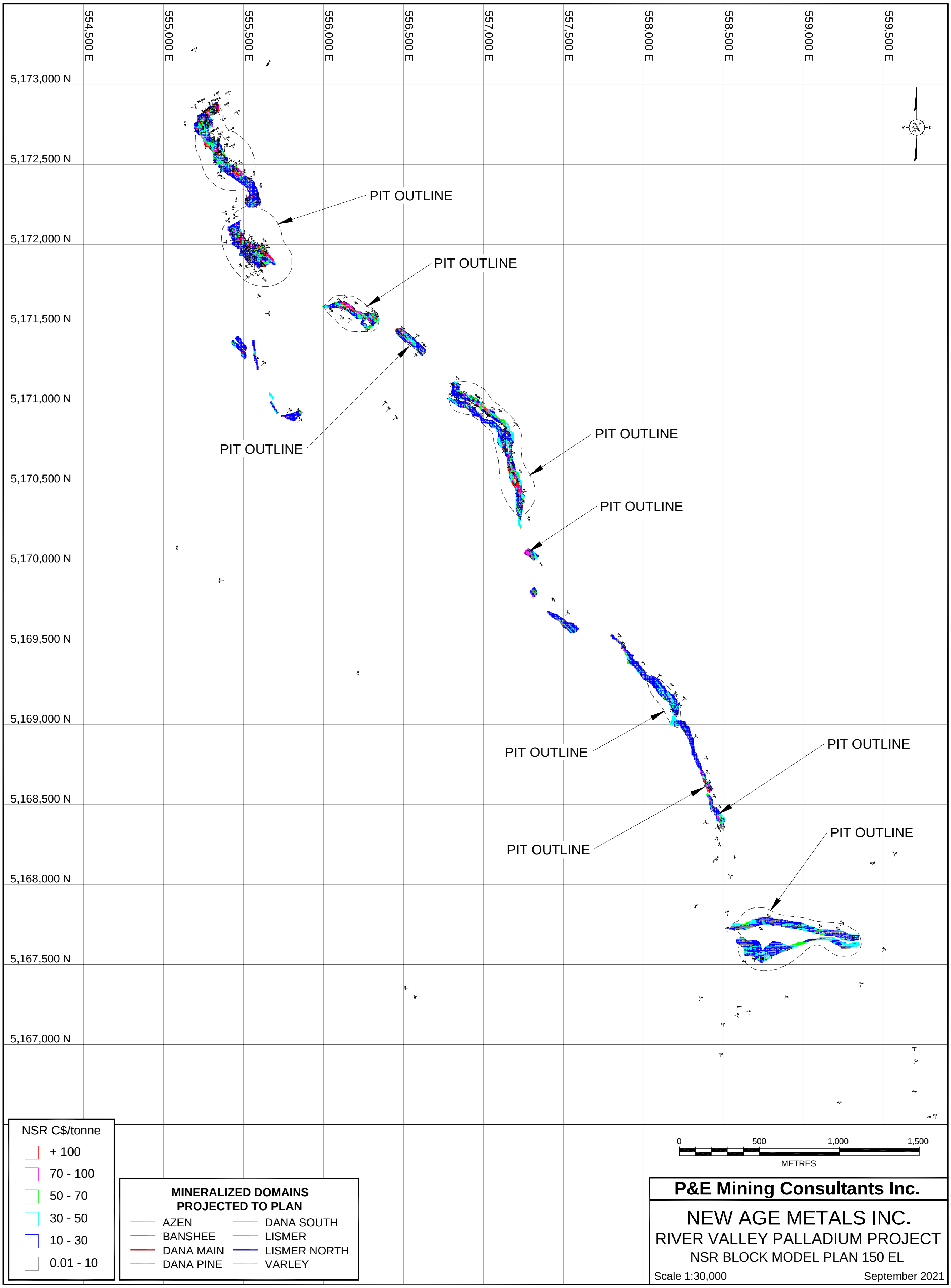
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL PLAN 190 EL
Scale 1:22,000
September 2021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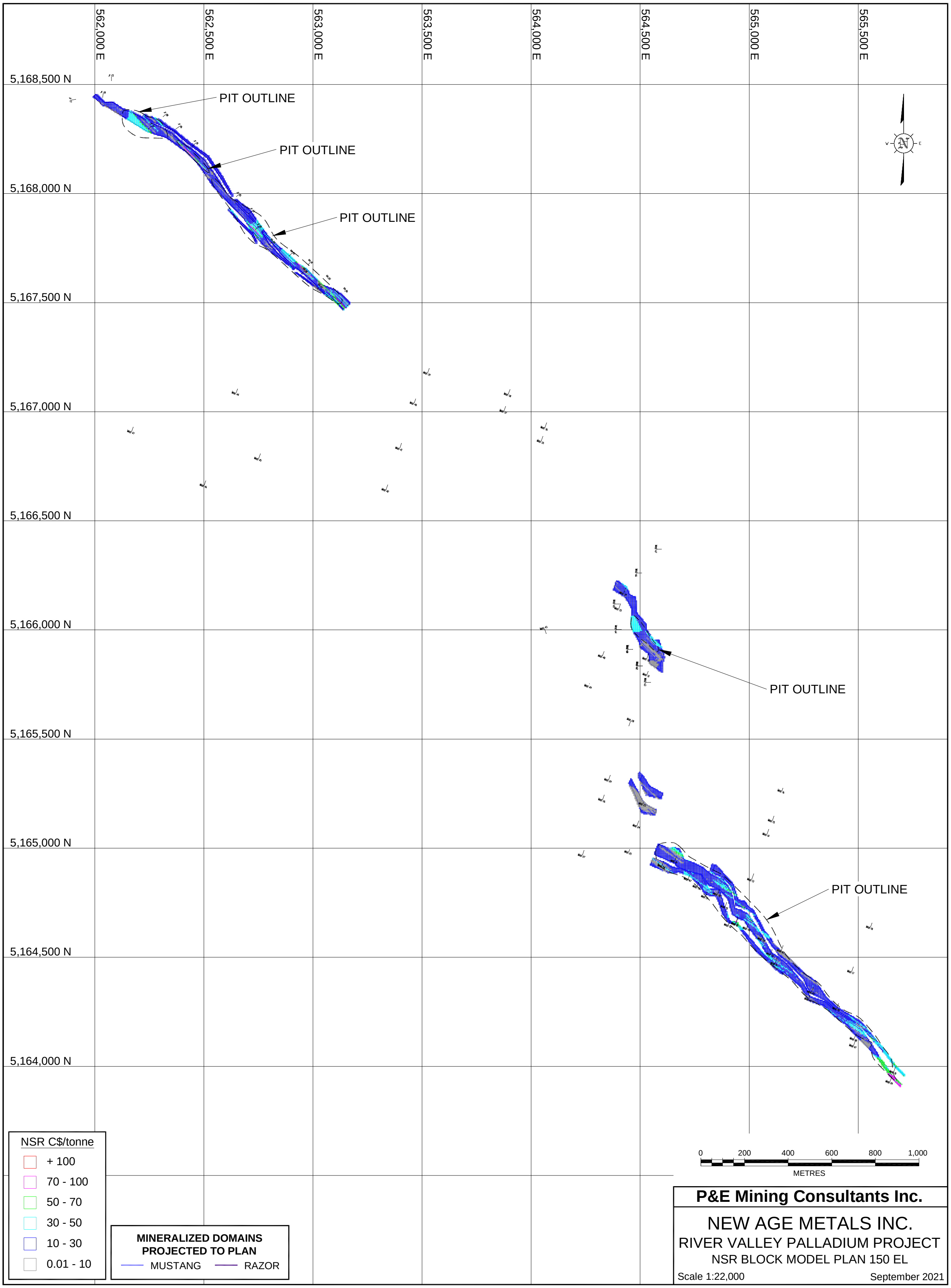
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
N
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL PLAN 150 EL
Scale 1:30,000
September 2021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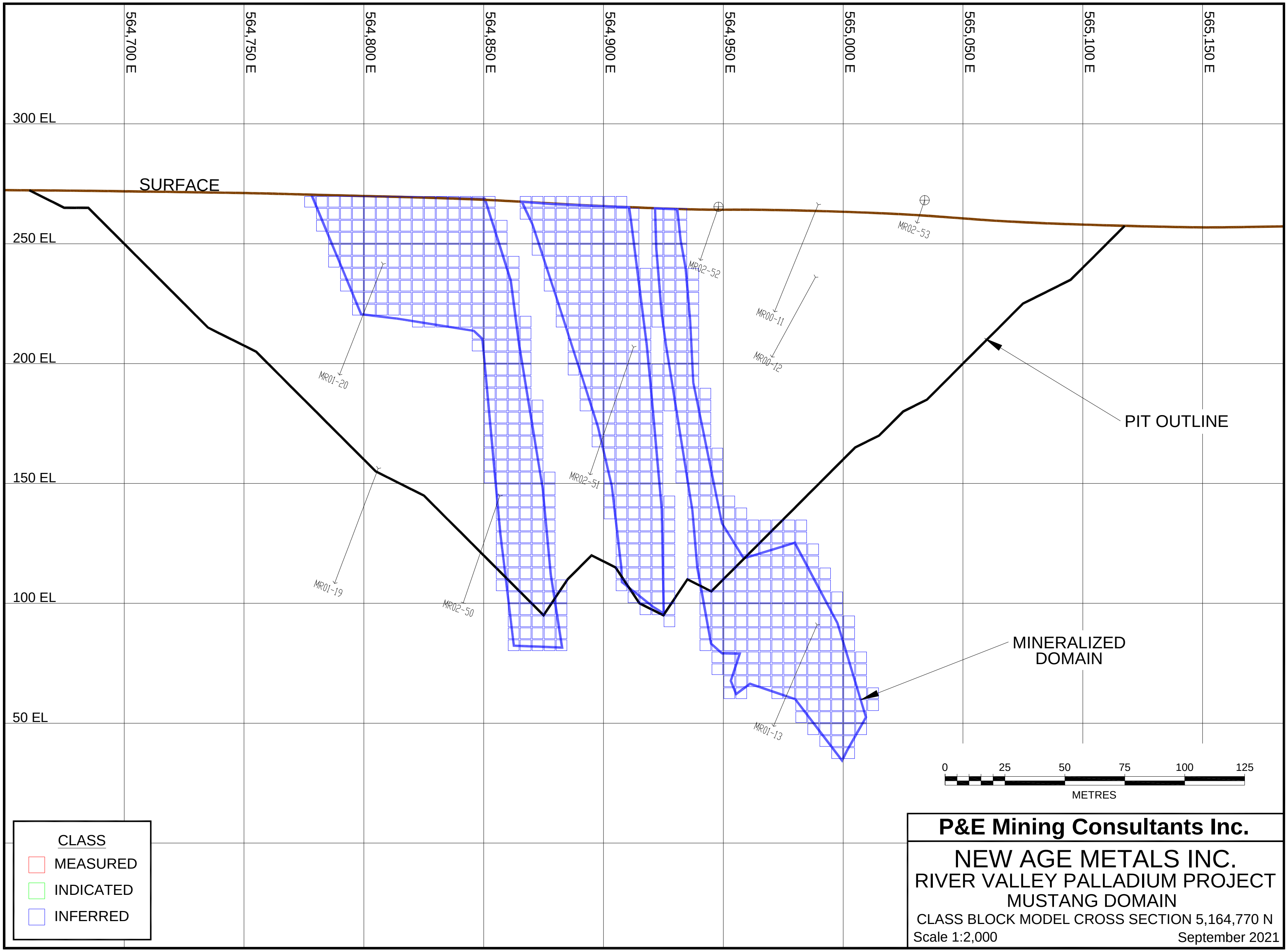
5,165,500 N
5,165,000 N
5,164,500 N
5,164,000 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
NSR C$/tonne
+ 100
70 - 100
50 - 70
30 - 50
10 - 30
0.01 - 10
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
0
200
400
600
800
1,000
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
NSR BLOCK MODEL PLAN 150 EL
Scale 1:22,000
September 2021

APPENDIX G CLASSIFICATION BLOCK MODEL CROSS SECTIONS AND PLANS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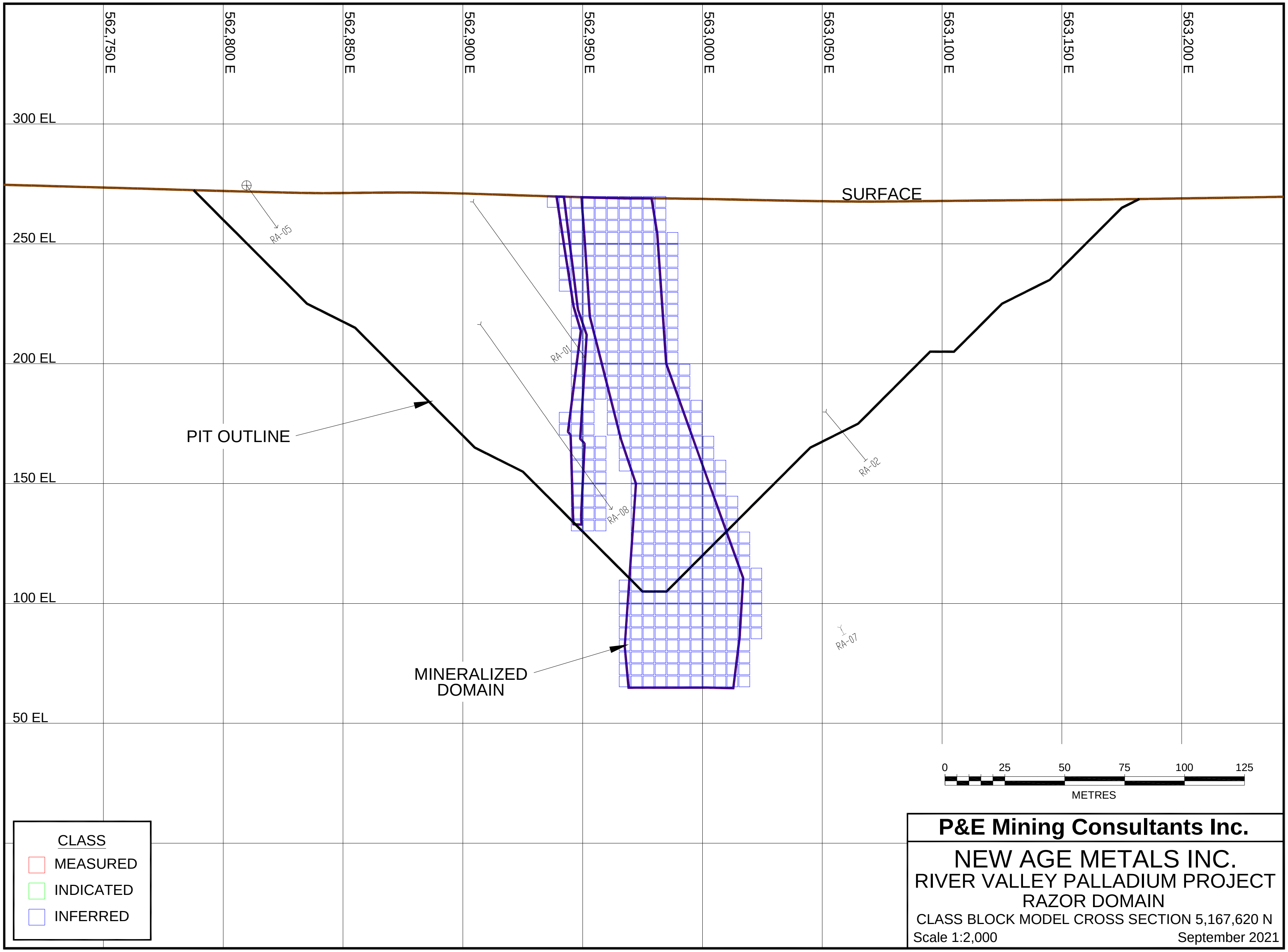
564,900 E
564,950 E
565,000 E
565,050 E
565,100 E
565,150 E
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
MR02-52
MR02-53
MR00-11
MR00-12
MR01-20
MR02-51
MR01-19
MR02-50
MR01-13
0
25
50
75
100
125
METRES
CLASS
MEASURED
INDICATED
INFERRED
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
MUSTANG DOMAIN
CLASS BLOCK MODEL CROSS SECTION 5,164,770 N
Scale 1:2,000
September 2021



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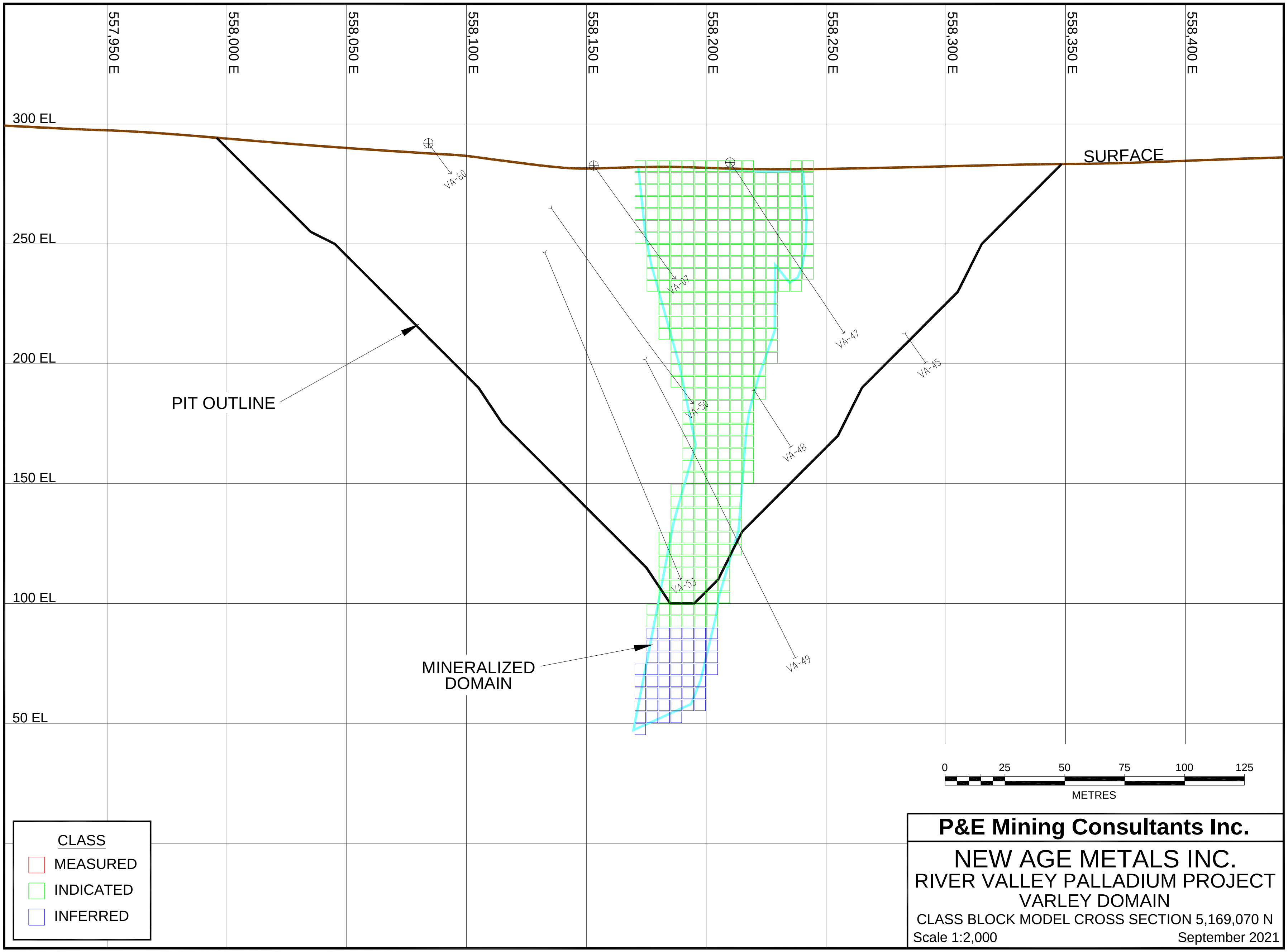
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
RA-05
RA-01
RA-08
RA-02
RA-07
0
25
50
75
100
125
METRES
CLASS
MEASURED
INDICATED
INFERRED
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
RAZOR DOMAIN
CLASS BLOCK MODEL CROSS SECTION 5,167,620 N
Scale 1:2,000
September 2021



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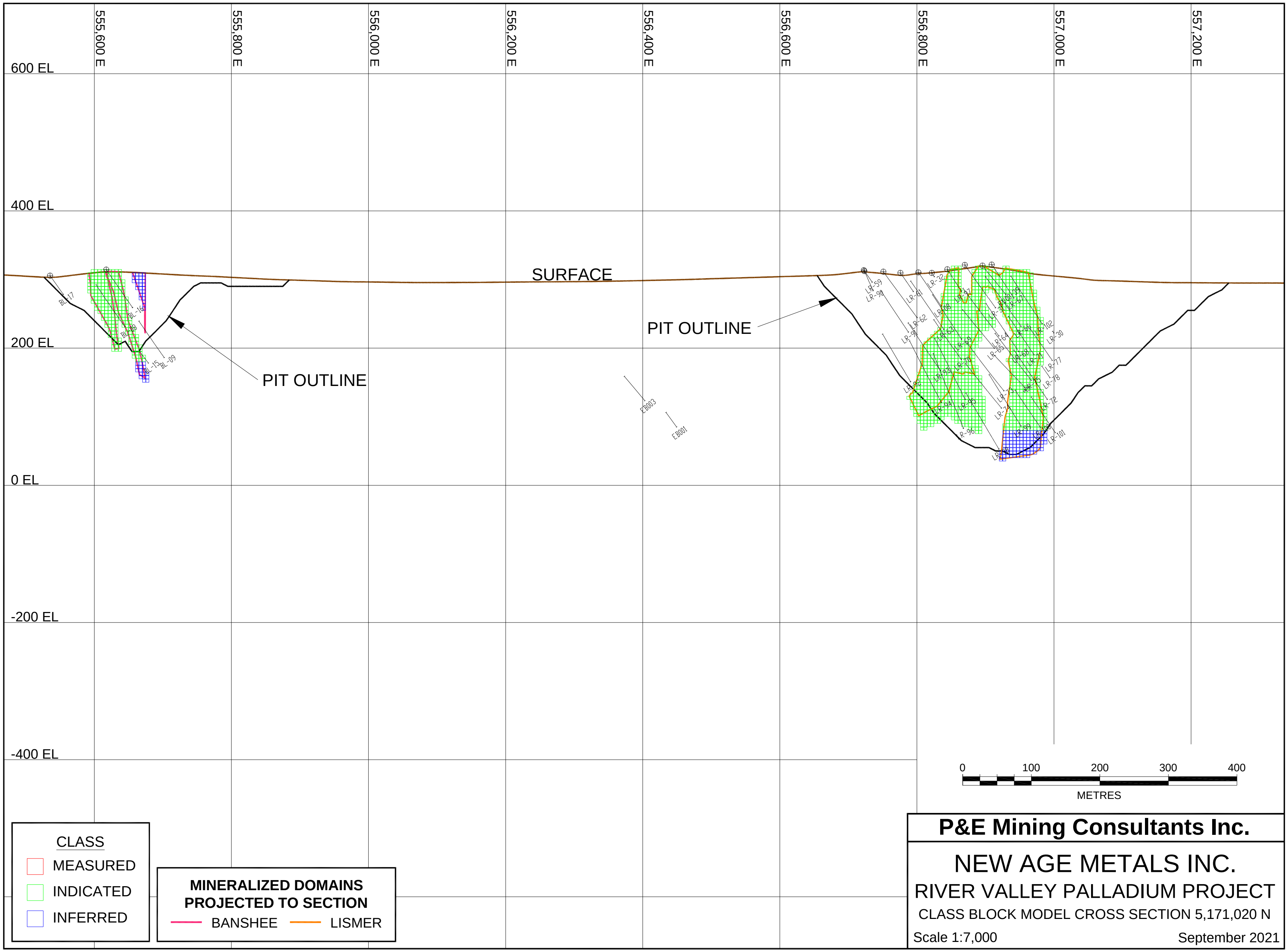
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
VA-60
VA-07
VA-47
VA-45
VA-50
VA-48
VA-53
VA-49
0
25
50
75
100
125
METRES
CLASS
MEASURED
INDICATED
INFERRED
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
VARLEY DOMAIN
CLASS BLOCK MODEL CROSS SECTION 5,169,070 N
Scale 1:2,000
September 2021



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556,800 E
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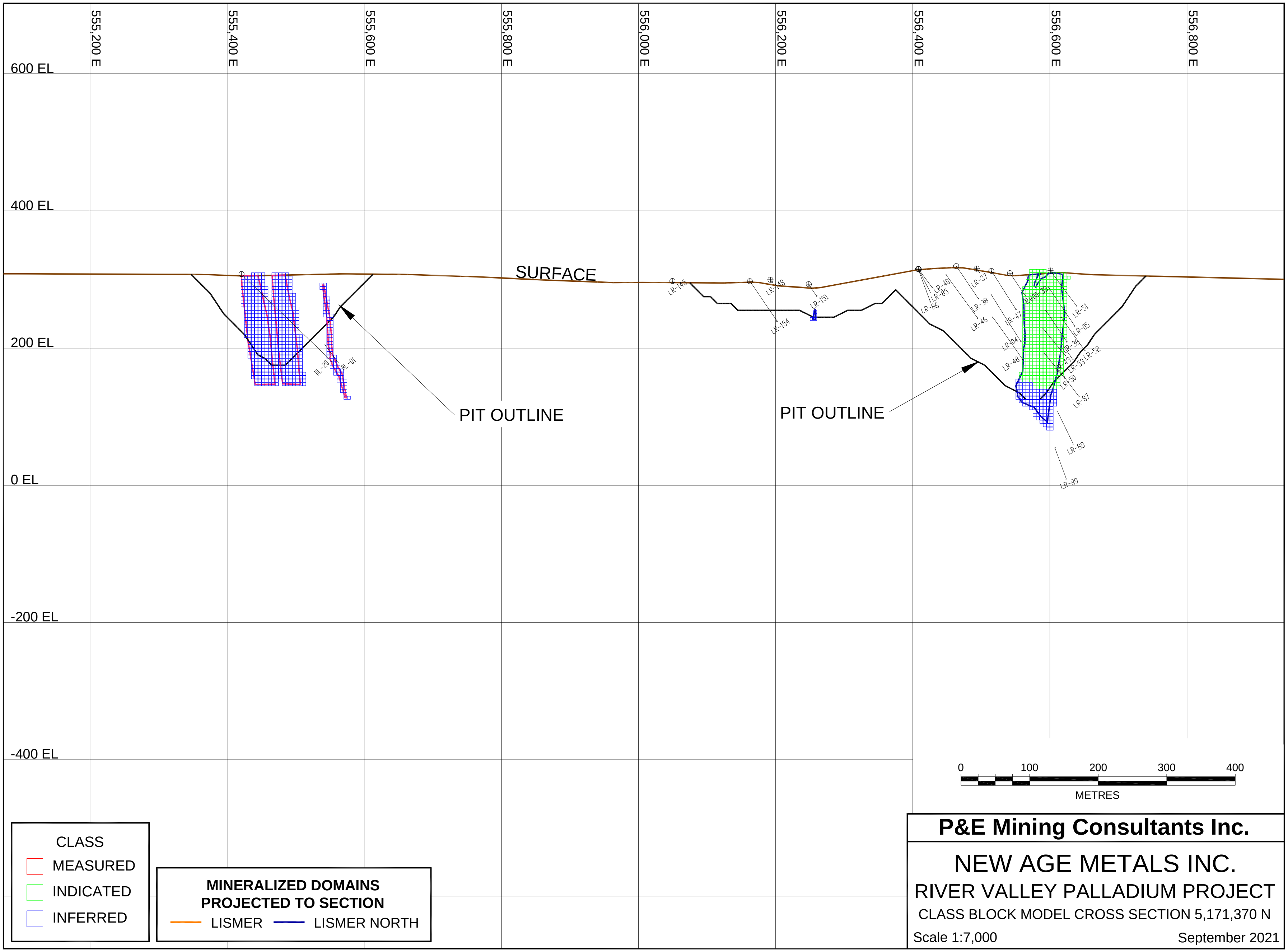
557,200 E
600 EL
400 EL
200 EL
0 EL
-200 EL
-400 EL
SURFACE
PIT OUTLINE
PIT OUTLINE
0
100
200
300
400
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO SECTION
BANSHEE
LISMER
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL CROSS SECTION 5,171,020 N
Scale 1:7,000
September 2021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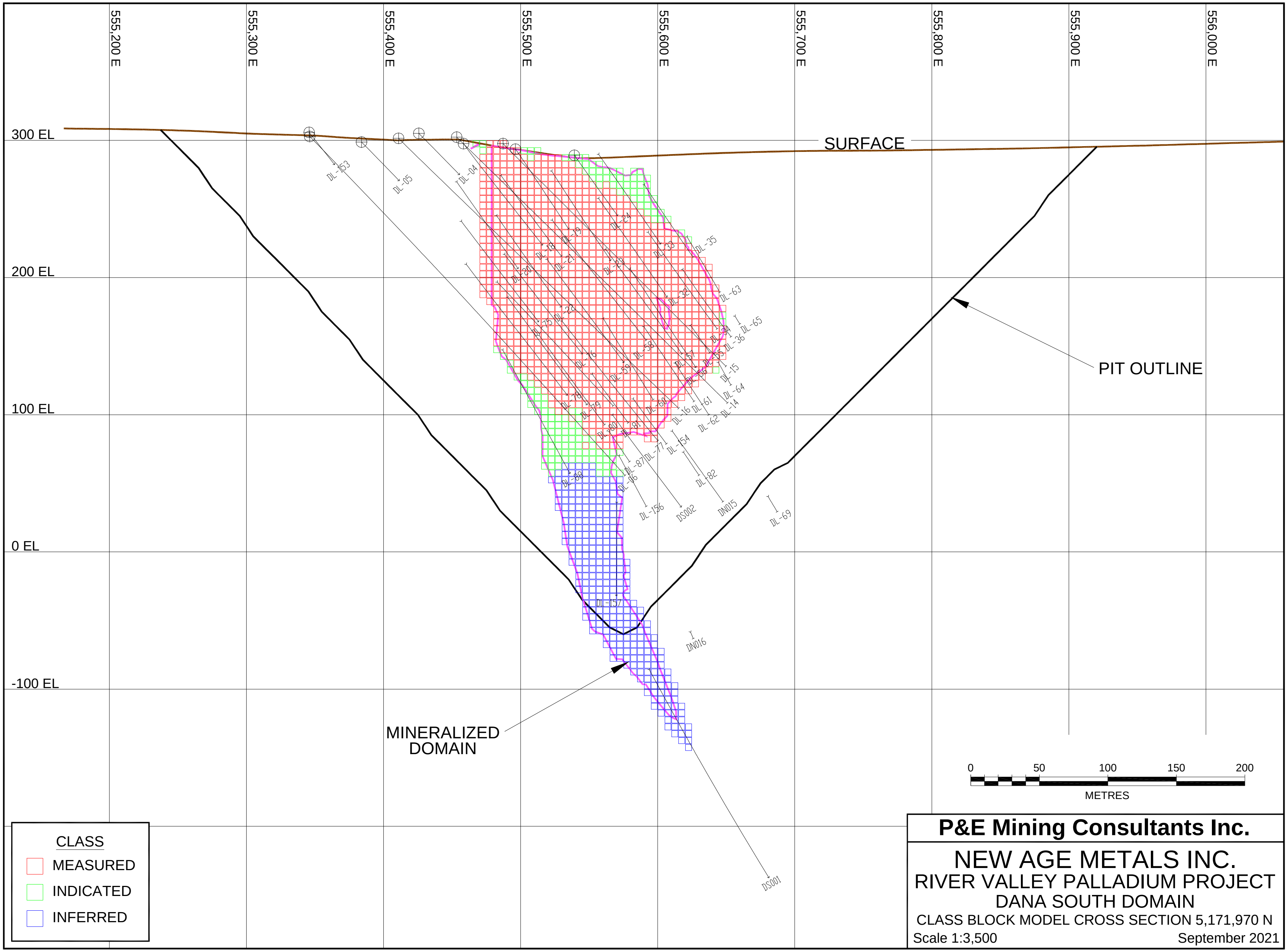
400 EL
200 EL
0 EL
-200 EL
-400 EL
SURFACE
PIT OUTLINE
PIT OUTLINE
0
100
200
300
400
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO SECTION
LISMER
LISMER NORTH
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL CROSS SECTION 5,171,370 N
Scale 1:7,000
September 2021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200 EL
100 EL
0 EL
-100 EL
SURFACE
PIT OUTLINE
MINERALIZED
DOMAIN
0
50
100
150
200
METRES
CLASS
MEASURED
INDICATED
INFERRED
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
DANA SOUTH DOMAIN
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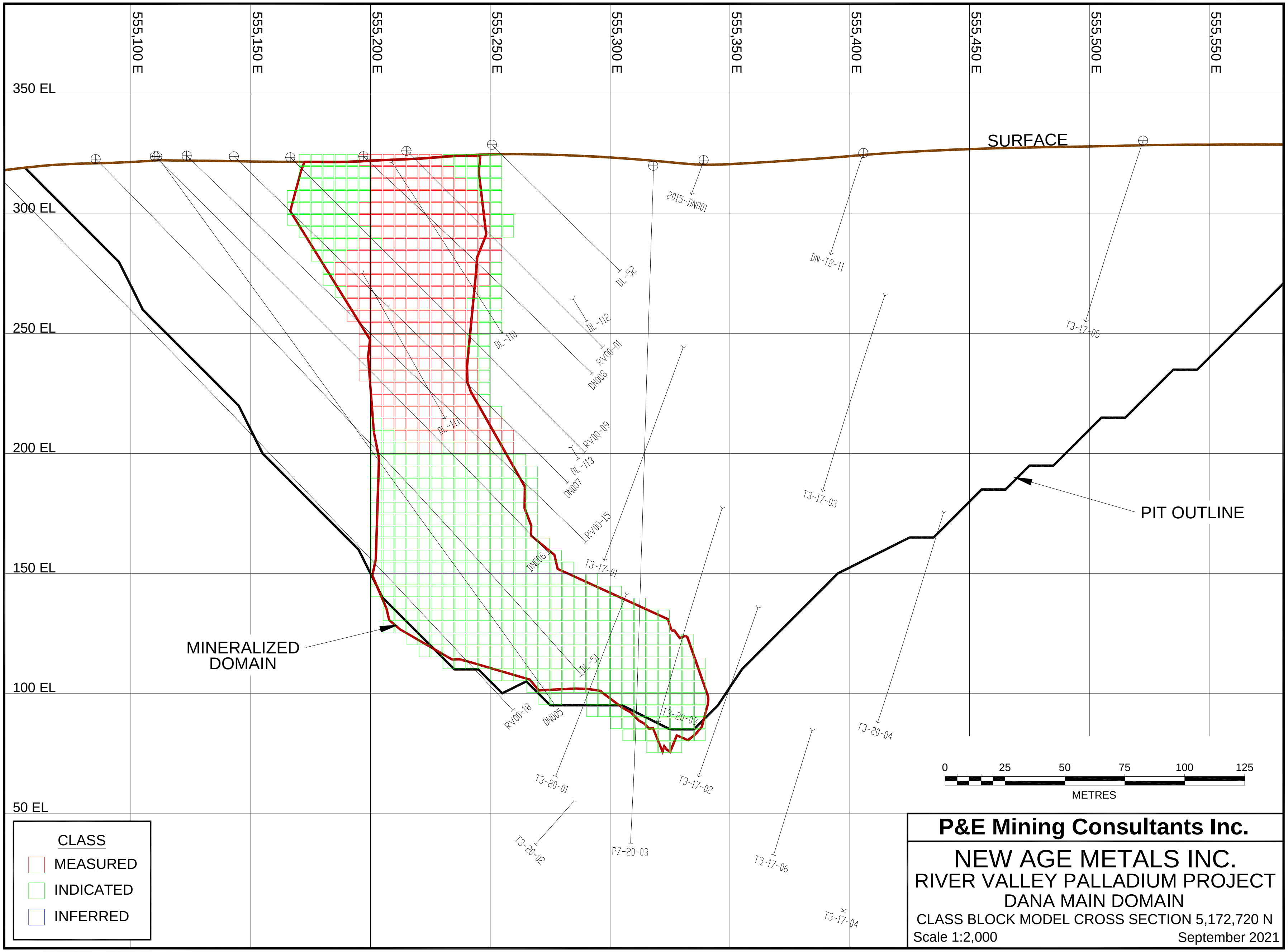
September 2021



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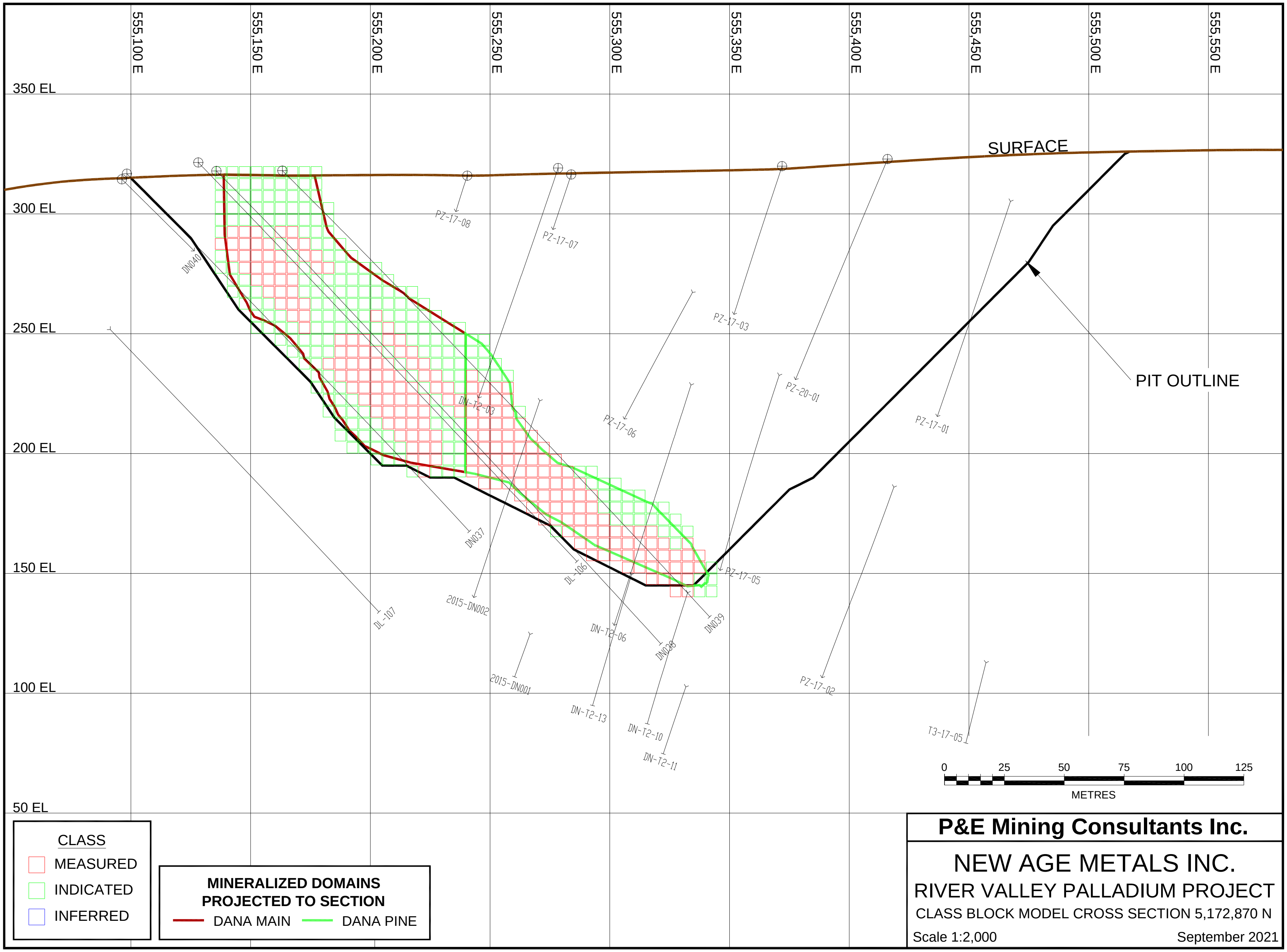
350 EL
300 EL
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
MINERALIZED DOMAIN
CLASS
MEASURED
INDICATED
INFERRED
0 25 50 75 100 125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
DANA MAIN DOMAIN
CLASS BLOCK MODEL CROSS SECTION 5,172,720 N
Scale 1:2,000
September 2021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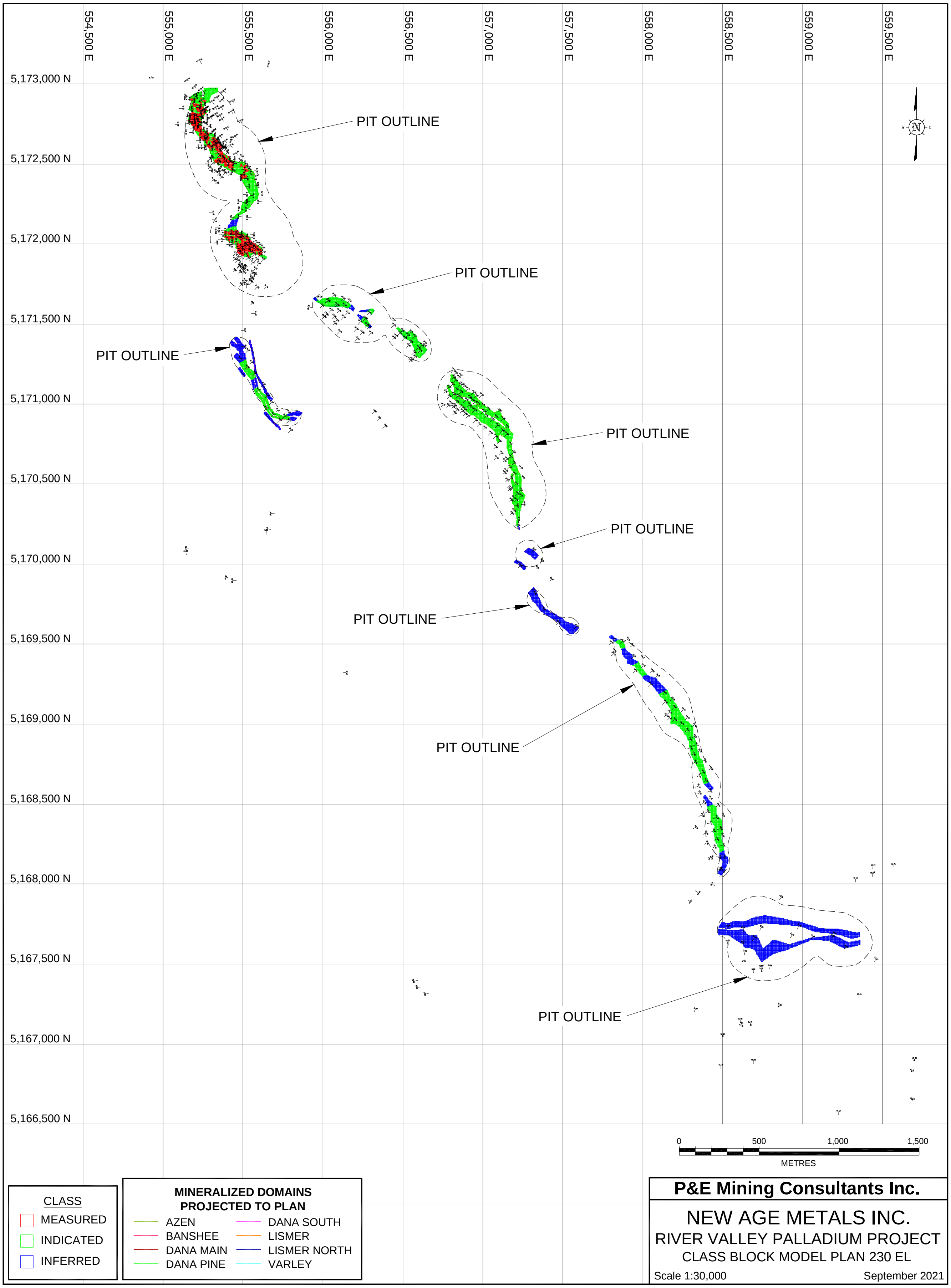
250 EL
200 EL
150 EL
100 EL
50 EL
SURFACE
PIT OUTLINE
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS PROJECTED TO SECTION
DANA MAIN
DANA PINE
0 25 50 75 100 125
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL CROSS SECTION 5,172,870 N
Scale 1:2,000
September 2021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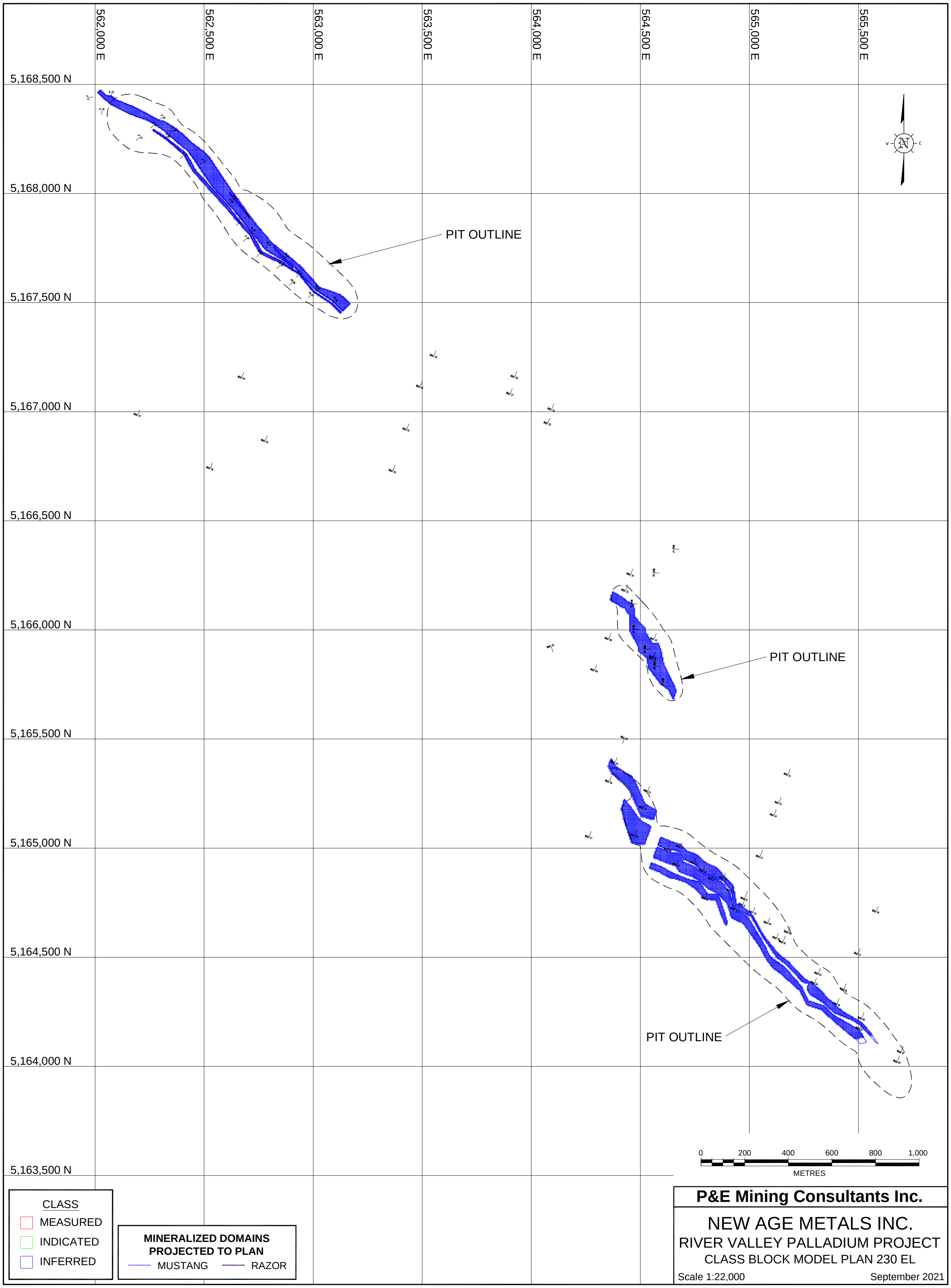
PIT OUTLINE
0
500
1,000
1,500
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL PLAN 230 EL
Scale 1:30,000
September 2021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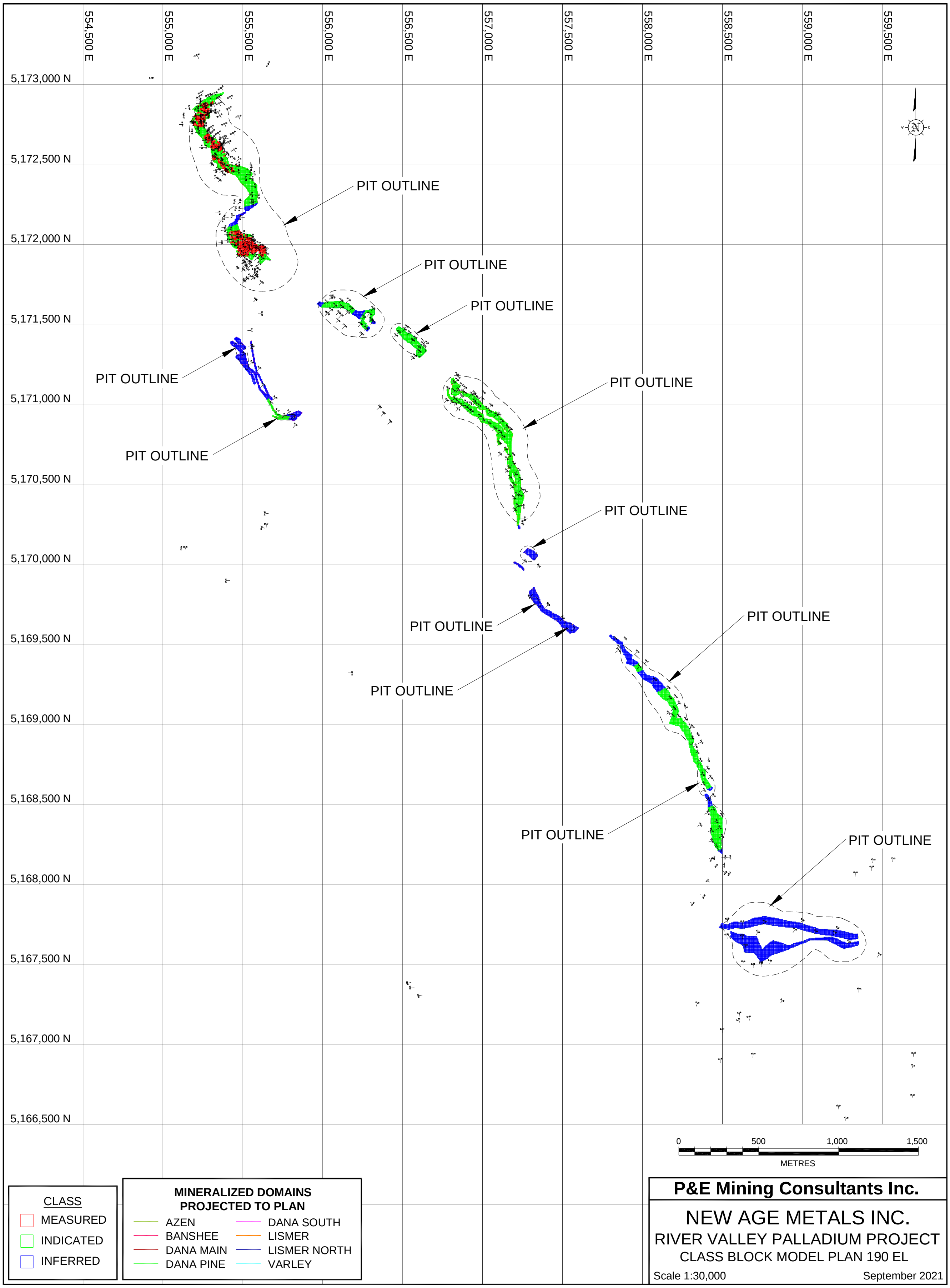
5,163,500 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
N
0 200 400 600 800 1,000
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL PLAN 230 EL
Scale 1:22,000
September 2021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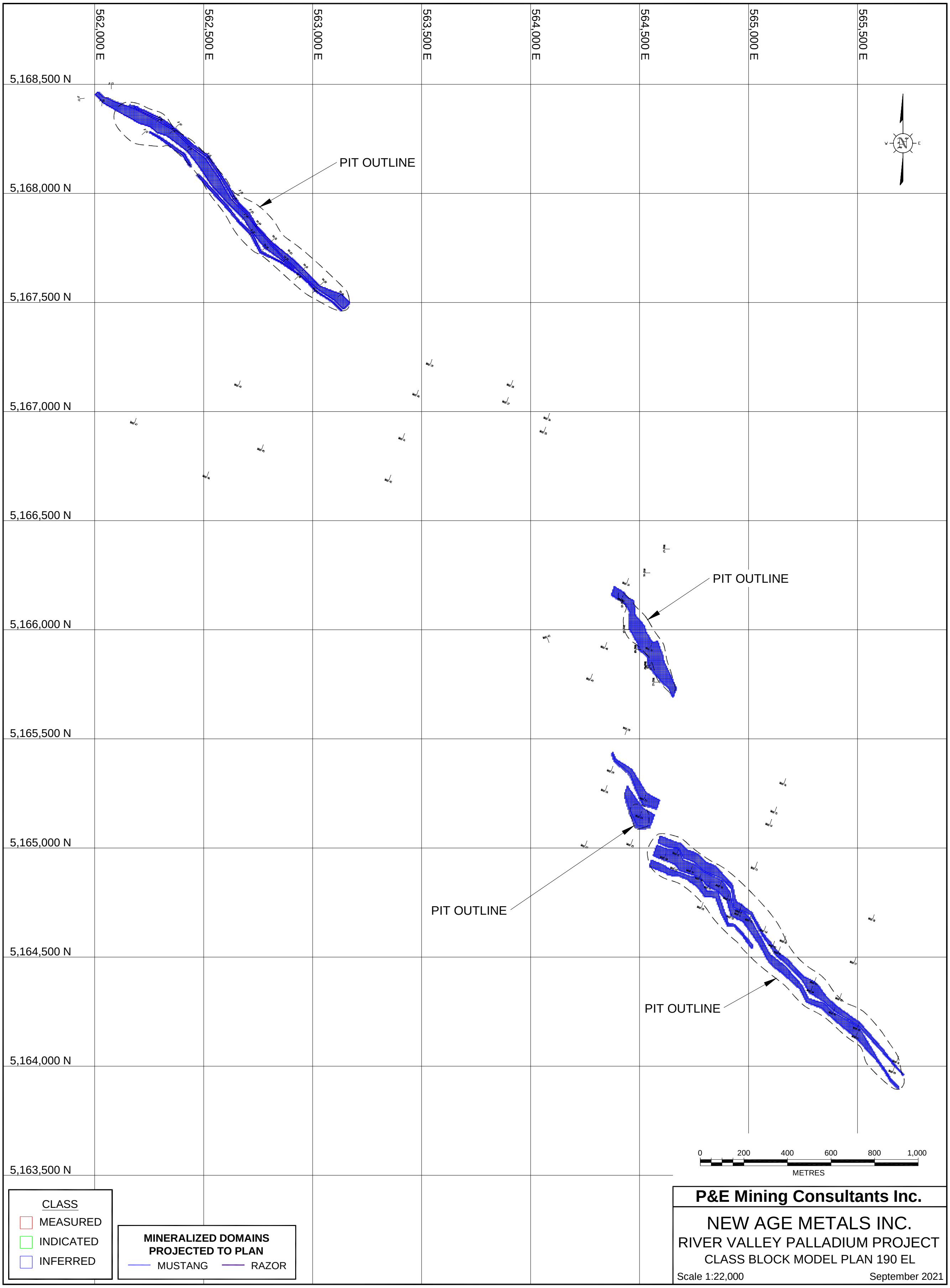
PIT OUTLINE
0
500
1,000
1,500
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL PLAN 190 EL
Scale 1:30,000
September 2021



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5,163,500 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
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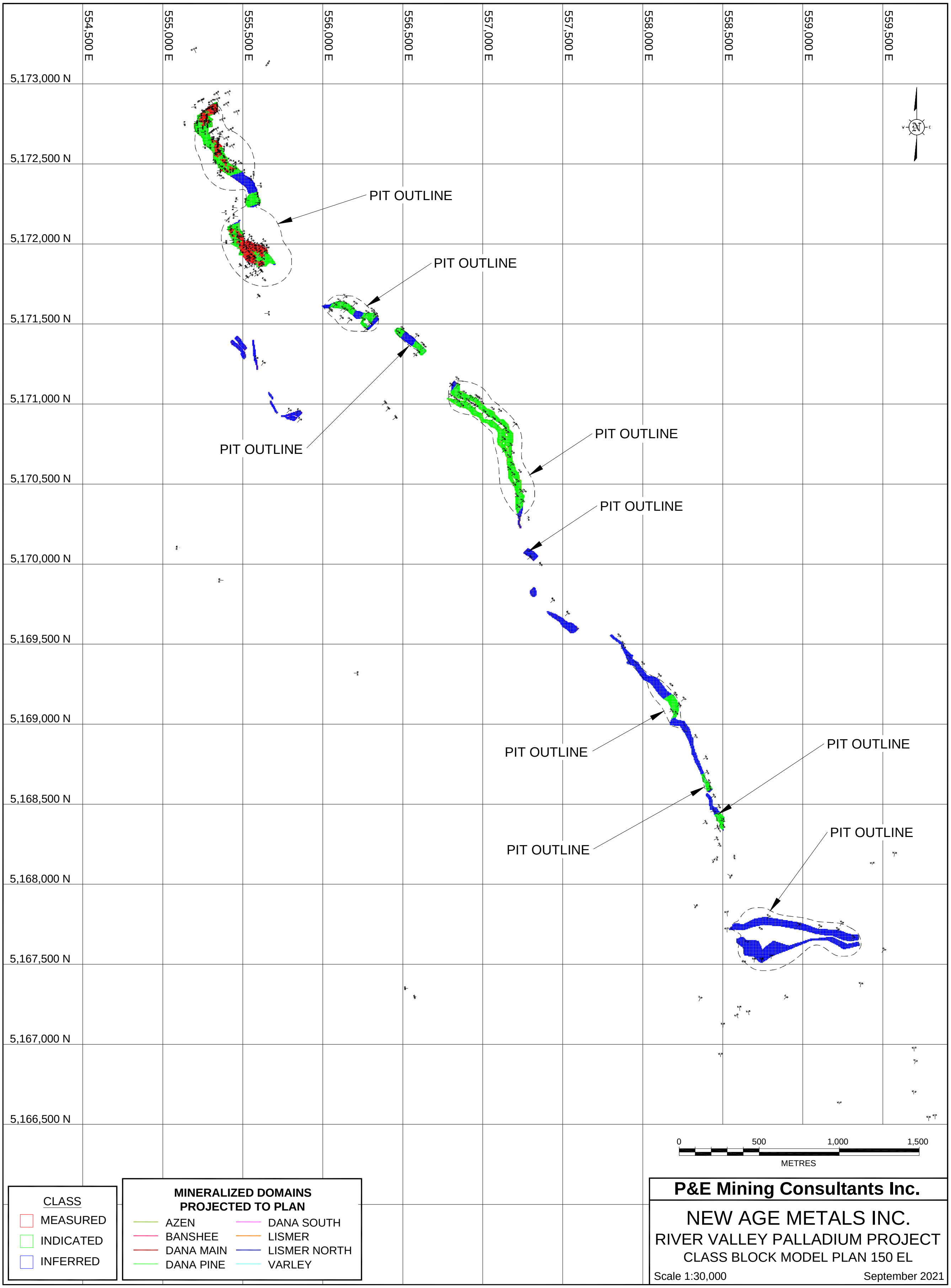
200
400
600
800
1,000
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS PROJECTED TO PLAN
MUSTANG
RAZOR
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL PLAN 190 EL
Scale 1:22,000
September 2021



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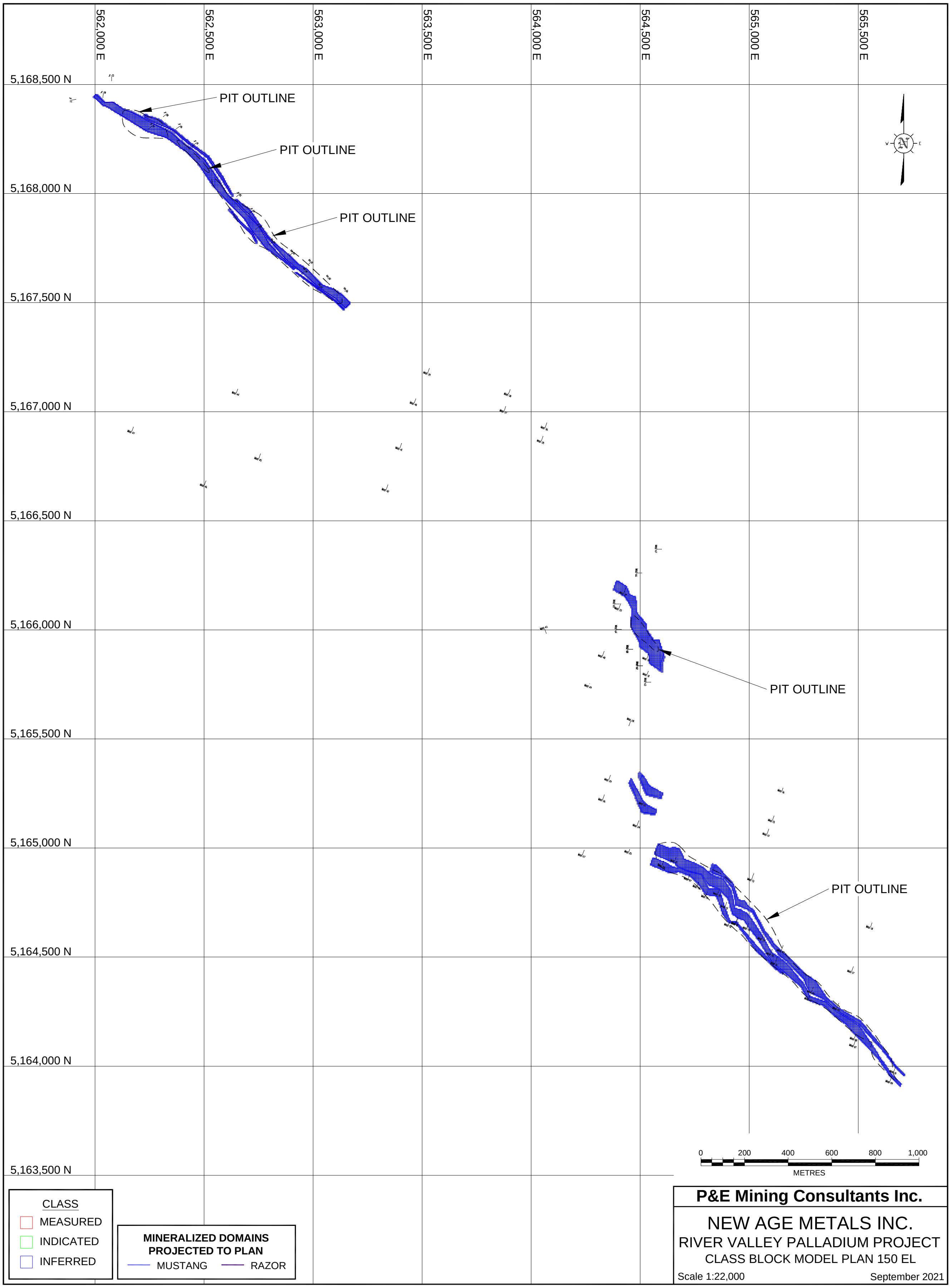
5,168,000 N
5,167,500 N
5,167,000 N
5,166,500 N
PIT OUTLINE
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO PLAN
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY
0
500
1,000
1,500
METRES
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL PLAN 150 EL
Scale 1:30,000
September 2021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5,167,500 N
5,167,000 N
5,166,500 N
5,166,000 N
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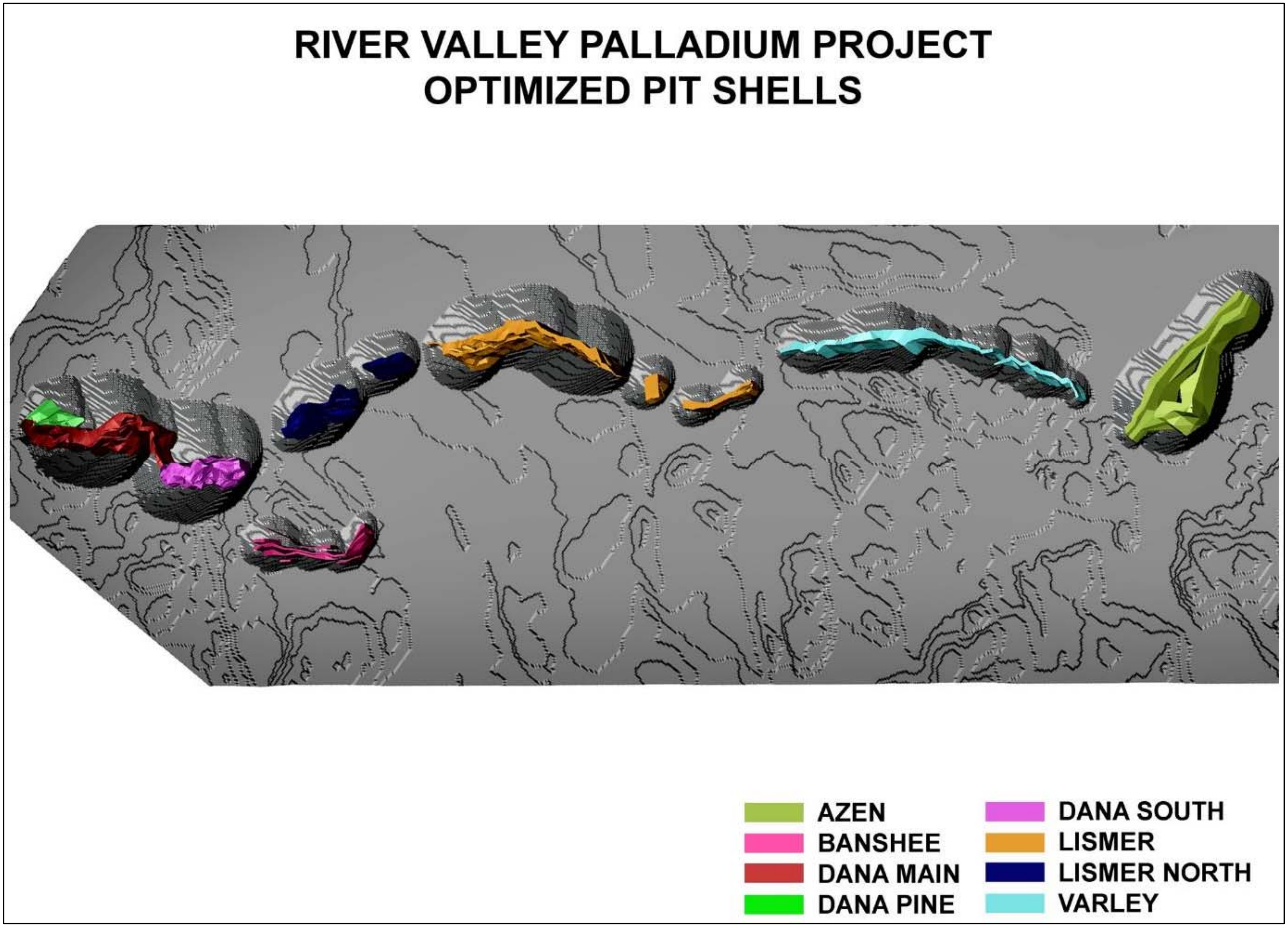
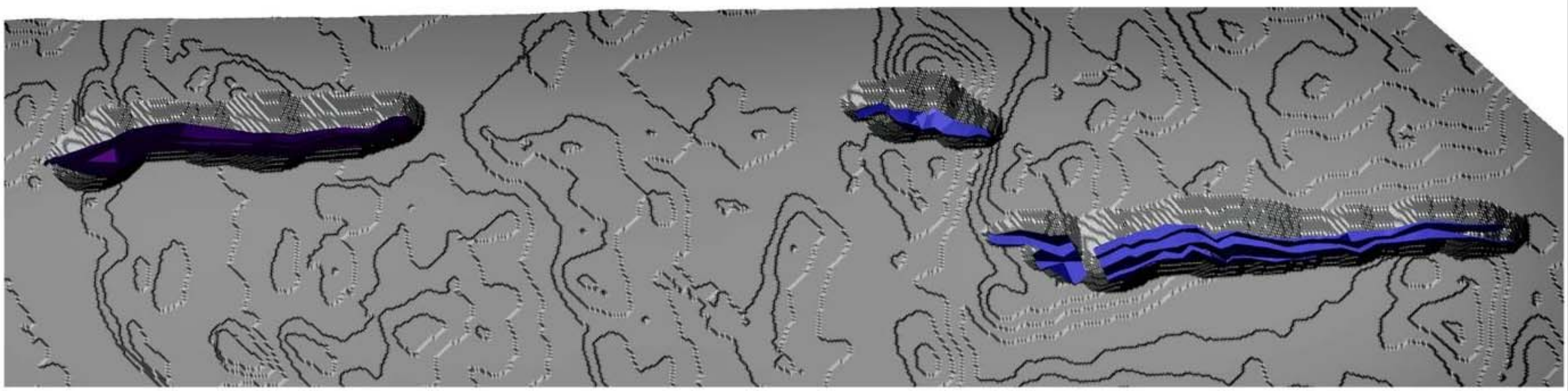
5,165,000 N
5,164,500 N
5,164,000 N
5,163,500 N
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
PIT OUTLINE
0 200 400 600 800 1,000
METRES
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO PLAN
MUSTANG
RAZOR
P&E Mining Consultants Inc.
NEW AGE METALS INC.
RIVER VALLEY PALLADIUM PROJECT
CLASS BLOCK MODEL PLAN 150 EL
Scale 1:22,000
September 2021

APPENDIX H OPTIMIZED PIT SHELL


RIVER VALLEY PALLADIUM PROJECT
OPTIMIZED PIT SHELLS
AZEN
BANSHEE
DANA MAIN
DANA PINE
DANA SOUTH
LISMER
LISMER NORTH
VARLEY

RIVER VALLEY PALLADIUM PROJECT
OPTIMIZED PIT SHELLS



MUSTANG
RAZOR

APPENDIX I LAND TENURE RECORDS

TABLE APPENDIX H.1 LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*						
Tenure Number	**Title Type**	**Tenure Status**	**Issue Date**	**Anniversary**	**Holder**	**Area (ha)**
102741	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
104765	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
104766	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
105097	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
105098	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
105591	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
105919	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
105921	Single Cell Mining Claim	Active	20180410	20221116	(100) NEW AGE METALS INC.	22.1
105944	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
106519	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
106571	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
106572	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
107066	Single Cell Mining Claim	Active	20180410	20230525	(100) NEW AGE METALS INC.	22.1
109529	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
118059	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
120739	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
120770	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
120782	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
123988	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
123996	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
124148	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
125447	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1
LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*

Tenure Number	Title Type	Tenure Status	Issue Date	Anniversary	Holder	Area (ha)
125448	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
127874	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
127898	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
127899	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
128818	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
129263	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
130026	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
130032	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
130733	Single Cell Mining Claim	Active	20180410	20230525	(100) NEW AGE METALS INC.	22.1
131410	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
131411	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
131450	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
132079	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
132218	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
132754	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
132766	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
135986	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
135988	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
135991	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
136150	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
139358	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
140846	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
140848	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
140897	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
140898	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
140899	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
142943	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
147429	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
147430	Single Cell Mining Claim	Active	20180410	20221116	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1 LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*						
Tenure Number	**Title Type**	**Tenure Status**	**Issue Date**	**Anniversary**	**Holder**	**Area (ha)**
147447	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
148207	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
148728	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
151890	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
151893	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
153888	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
155875	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
161091	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
163968	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
163974	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
165173	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
165270	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
165929	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
167144	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
168509	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
168510	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
168511	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
168514	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
168515	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
170243	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
170546	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
171854	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
171855	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
172386	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
172661	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
174020	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
174048	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
174874	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
177436	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1
LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*

Tenure Number	Title Type	Tenure Status	Issue Date	Anniversary	Holder	Area (ha)
177437	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
177995	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
181353	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
182007	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
183413	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
183414	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
183415	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
183444	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
183473	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
184051	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
184071	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
184756	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
186618	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
187988	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
187992	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
188468	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
188469	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
188795	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
189442	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
190005	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
190006	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
191338	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
191366	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
192852	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
192853	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
192891	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
192914	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
193344	Single Cell Mining Claim	Active	20180410	20230525	(100) NEW AGE METALS INC.	22.1
200331	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1 **LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY***						
Tenure Number	**Title Type**	**Tenure Status**	**Issue Date**	**Anniversary**	**Holder**	**Area (ha)**
200968	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
211603	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
215899	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
217301	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
218417	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
218418	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
218419	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
218680	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
218808	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
219331	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
219332	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
220638	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
223261	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
223281	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
223852	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
224001	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
224002	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
224527	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
224550	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
226127	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
226371	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
226372	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
228145	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
228180	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
228181	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
228628	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
228629	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
228630	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
231272	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1
LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*

Tenure Number	Title Type	Tenure Status	Issue Date	Anniversary	Holder	Area (ha)
231312	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
231313	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
231885	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
232529	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
232579	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
234446	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
234447	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
234448	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
234449	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
235834	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
235842	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
235923	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
237384	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
237385	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
237441	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
237559	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
237560	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
239407	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
239408	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
239409	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
239410	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
240756	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
240757	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
240778	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
240779	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
242130	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
243401	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
243402	Single Cell Mining Claim	Active	20180410	20221116	(100) NEW AGE METALS INC.	22.1
244692	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1
LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*

Tenure Number	Title Type	Tenure Status	Issue Date	Anniversary	Holder	Area (ha)
244724	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
244742	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
244743	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
248044	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
248077	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
249013	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
249014	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
249552	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
249568	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
251570	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
252094	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
254642	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
254643	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
254646	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
254647	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
254896	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
254897	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
254898	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
256217	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
265649	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
271820	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
272511	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
272512	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
273590	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
273591	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
279263	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
279310	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
279910	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
280039	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1 LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*						
Tenure Number	**Title Type**	**Tenure Status**	**Issue Date**	**Anniversary**	**Holder**	**Area (ha)**
280040	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
280041	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
280577	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
280591	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
280593	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
282412	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
283790	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
283796	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
283797	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
284081	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
284082	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
284738	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
285671	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
285672	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
285673	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
285826	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
287175	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
287176	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
287177	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
287204	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
287205	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
287281	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
288618	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
288663	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
290485	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
291984	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
291985	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
292141	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
292759	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1 LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*						
Tenure Number	**Title Type**	**Tenure Status**	**Issue Date**	**Anniversary**	**Holder**	**Area (ha)**
296139	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
296702	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
299235	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
299283	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
299284	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
300047	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
300048	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
300049	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
300050	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
300051	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
300141	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
300813	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
304121	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
304771	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
306029	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
306030	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
307405	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
307406	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
310897	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
311563	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
312174	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
312175	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
315379	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
316152	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
316153	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
316157	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
316772	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
316773	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
317409	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1
LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*

Tenure Number	Title Type	Tenure Status	Issue Date	Anniversary	Holder	Area (ha)
317442	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
317461	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
321720	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
322541	Single Cell Mining Claim	Active	20180410	20230603	(100) NEW AGE METALS INC.	22.1
325179	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
331069	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
331070	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
331076	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
331077	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
336442	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
336936	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
337525	Single Cell Mining Claim	Active	20180410	20230525	(100) NEW AGE METALS INC.	22.1
338225	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
338253	Single Cell Mining Claim	Active	20180410	20211116	(100) NEW AGE METALS INC.	22.1
338342	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
338889	Single Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	22.1
338998	Single Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	22.1
338999	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
339000	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
339001	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
339540	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
339560	Single Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	22.1
342062	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
343662	Single Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	22.1
521421	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521422	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521423	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521424	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521425	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1

TABLE APPENDIX H.1 **LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY***						
Tenure Number	**Title Type**	**Tenure Status**	**Issue Date**	**Anniversary**	**Holder**	**Area (ha)**
521426	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521427	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521428	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521429	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521430	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521431	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521432	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521433	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521434	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521435	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521436	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521437	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521438	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521439	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521440	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521441	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521442	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521443	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521444	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521445	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
521446	Single Cell Mining Claim	Active	20180517	20220517	(100) NEW AGE METALS INC.	22.1
551042	Single Cell Mining Claim	Active	20190604	20220604	(100) NEW AGE METALS INC.	22.1
551043	Single Cell Mining Claim	Active	20190604	20220604	(100) NEW AGE METALS INC.	22.1
551044	Single Cell Mining Claim	Active	20190604	20220604	(100) NEW AGE METALS INC.	22.1
551045	Single Cell Mining Claim	Active	20190604	20220604	(100) NEW AGE METALS INC.	22.1
551046	Single Cell Mining Claim	Active	20190604	20220604	(100) NEW AGE METALS INC.	22.1
551047	Single Cell Mining Claim	Active	20190604	20220604	(100) NEW AGE METALS INC.	22.1
106193	Boundary Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	1.97
106520	Boundary Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	1.58

TABLE APPENDIX H.1
LAND TENURE RECORDS FOR THE RIVER VALLEY PROPERTY*

Tenure Number	Title Type	Tenure Status	Issue Date	Anniversary	Holder	Area (ha)
125099	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	5.22
132217	Boundary Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	5.93
135987	Boundary Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	4.80
140847	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	3.87
146312	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	8.15
148177	Boundary Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	6.12
150739	Boundary Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	6.51
168512	Boundary Cell Mining Claim	Active	20180410	20220913	(100) NEW AGE METALS INC.	11.69
194387	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	8.37
241500	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	1.47
246712	Boundary Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	6.22
288617	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	8.59
296138	Boundary Cell Mining Claim	Active	20180410	20220602	(100) NEW AGE METALS INC.	7.93
299234	Boundary Cell Mining Claim	Active	20180410	20230610	(100) NEW AGE METALS INC.	1.97
319441	Boundary Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	0.67
319442	Boundary Cell Mining Claim	Active	20180410	20220805	(100) NEW AGE METALS INC.	5.78

** Land tenure information effective September 14, 2021.*