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National Instrument 43-101
Standards of Disclosure for Mineral Projects

PART 1 DEFINITIONS AND INTERPRETATION

1.1 Definitions – In this Instrument

“acceptable foreign code” means the JORC Code, the PERC Code, the SAMREC Code, SEC Industry Guide 7, the Certification Code, or any other code, generally accepted in a foreign jurisdiction, that defines mineral resources and mineral reserves in a manner that is consistent with mineral resource and mineral reserve definitions and categories set out in sections 1.2 and 1.3;

“adjacent property” means a property

- (a) in which the issuer does not have an interest;
- (b) that has a boundary reasonably proximate to the property being reported on; and
- (c) that has geological characteristics similar to those of the property being reported on;

“advanced property” means a property that has

- (a) mineral reserves, or
- (b) mineral resources the potential economic viability of which is supported by a preliminary economic assessment, a pre-feasibility study or a feasibility study;

“Certification Code” means the Certification Code for Exploration Prospects, Mineral Resources and Ore Reserves prepared by the Mineral Resources Committee of the Institution of Mining Engineers of Chile, as amended;

“data verification” means the process of confirming that data has been generated with proper procedures, has been accurately transcribed from the original source and is suitable to be used;

“disclosure” means any oral statement or written disclosure made by or on behalf of an issuer and intended to be, or reasonably likely to be, made available to the public in a jurisdiction of Canada, whether or not filed under securities legislation, but does not include written disclosure that is made available to the public only by reason of having been filed with a government or agency of government pursuant to a requirement of law other than securities legislation;

“early stage exploration property” means a property for which the technical report being filed has

- (a) no current mineral resources or mineral reserves defined; and
- (b) no drilling or trenching proposed;

“effective date” means, with reference to a technical report, the date of the most recent scientific or technical information included in the technical report;

“exploration information” means geological, geophysical, geochemical, sampling, drilling, trenching, analytical testing, assaying, mineralogical, metallurgical, and other similar information concerning a particular property that is derived from activities undertaken to locate, investigate, define, or delineate a mineral prospect or mineral deposit;

“historical estimate” means an estimate of the quantity, grade, or metal or mineral content of a deposit that an issuer has not verified as a current mineral resource or mineral reserve, and which was prepared before the issuer acquiring, or entering into an agreement to acquire, an interest in the property that contains the deposit;

“initial deposit period” has the meaning ascribed to that term in section 1.1 of National Instrument 62-104 *Take-Over Bids and Issuer Bids*.

“JORC Code” means the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia, as amended;

“mineral project” means any exploration, development or production activity, including a royalty or similar interest in these activities, in respect of

diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals;

“PERC Code” means the Pan-European Code for Reporting of Exploration Results, Mineral Resources and Reserves prepared by the Pan-European Reserves and Resources Reporting Committee, as amended;

“preliminary economic assessment” means a study, other than a pre-feasibility or feasibility study, that includes an economic analysis of the potential viability of mineral resources;

“producing issuer” means an issuer with annual audited financial statements that disclose

- (a) gross revenue, derived from mining operations, of at least \$30 million Canadian for the issuer’s most recently completed financial year; and
- (b) gross revenue, derived from mining operations, of at least \$90 million Canadian in the aggregate for the issuer’s three most recently completed financial years;

“professional association” means a self-regulatory organization of engineers, geoscientists or both engineers and geoscientists that

- (a) is
 - (i) given authority or recognition by statute in a jurisdiction of Canada, or
 - (ii) a foreign association that is generally accepted within the international mining community as a reputable professional association;
- (b) admits individuals on the basis of their academic qualifications, experience, and ethical fitness;
- (c) requires compliance with the professional standards of competence and ethics established by the organization;
- (d) requires or encourages continuing professional development; and
- (e) has and applies disciplinary powers, including the power to suspend or expel a member regardless of where the member practises or resides;

“qualified person” means an individual who

- (a) is an engineer or geoscientist with a university degree, or equivalent accreditation, in an area of geoscience, or engineering, relating to mineral exploration or mining;
- (b) has at least five years of experience in mineral exploration, mine development or operation, or mineral project assessment, or any combination of these, that is relevant to his or her professional degree or area of practice;
- (c) has experience relevant to the subject matter of the mineral project and the technical report;
- (d) is in good standing with a professional association; and
- (e) in the case of a professional association in a foreign jurisdiction, has a membership designation that
 - (i) requires attainment of a position of responsibility in their profession that requires the exercise of independent judgment; and
 - (ii) requires
 - A. a favourable confidential peer evaluation of the individual's character, professional judgement, experience, and ethical fitness; or
 - B. a recommendation for membership by at least two peers, and demonstrated prominence or expertise in the field of mineral exploration or mining;

"quantity" means either tonnage or volume, depending on which term is the standard in the mining industry for the type of mineral;

"SAMREC Code" means the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves prepared by the South African Mineral Resource Committee (SAMREC) under the Joint Auspices of the Southern African Institute of Mining and Metallurgy and the Geological Society of South Africa, as amended;

"SEC Industry Guide 7" means the mining industry guide entitled "Description of Property by Issuers Engaged or to be Engaged in Significant Mining Operations" contained in the Securities Act Industry Guides published by the United States Securities and Exchange Commission, as amended;

“specified exchange” means the Australian Stock Exchange, the Johannesburg Stock Exchange, the London Stock Exchange Main Market, the Nasdaq Stock Market, the New York Stock Exchange, or the Hong Kong Stock Exchange;

“technical report” means a report prepared and filed in accordance with this Instrument and Form 43-101F1 Technical Report that includes, in summary form, all material scientific and technical information in respect of the subject property as of the effective date of the technical report; and

“written disclosure” includes any writing, picture, map, or other printed representation whether produced, stored or disseminated on paper or electronically, including websites.

1.2 Mineral Resource - In this Instrument, the terms “mineral resource”, “inferred mineral resource”, “indicated mineral resource” and “measured mineral resource” have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended.

1.3 Mineral Reserve - In this Instrument, the terms “mineral reserve”, “probable mineral reserve” and “proven mineral reserve” have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended.

1.4 Mining Studies – In this Instrument, the terms “preliminary feasibility study”, “pre-feasibility study” and “feasibility study” have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended.

1.5 Independence - In this Instrument, a qualified person is independent of an issuer if there is no circumstance that, in the opinion of a reasonable person aware of all relevant facts, could interfere with the qualified person’s judgment regarding the preparation of the technical report.

PART 2 REQUIREMENTS APPLICABLE TO ALL DISCLOSURE

2.1 Requirements Applicable to All Disclosure - All disclosure of scientific or technical information made by an issuer, including disclosure of a mineral resource or mineral reserve, concerning a mineral project on a property material to the issuer must be

- (a) based upon information prepared by or under the supervision of a qualified person; or
- (b) approved by a qualified person.

2.2 All Disclosure of Mineral Resources or Mineral Reserves - An issuer must not disclose any information about a mineral resource or mineral reserve unless the disclosure

- (a) uses only the applicable mineral resource and mineral reserve categories set out in sections 1.2 and 1.3;
- (b) reports each category of mineral resources and mineral reserves separately, and states the extent, if any, to which mineral reserves are included in total mineral resources;
- (c) does not add inferred mineral resources to the other categories of mineral resources; and
- (d) states the grade or quality and the quantity for each category of the mineral resources and mineral reserves if the quantity of contained metal or mineral is included in the disclosure.

2.3 Restricted Disclosure

- (1) An issuer must not disclose
 - (a) the quantity, grade, or metal or mineral content of a deposit that has not been categorized as an inferred mineral resource, an indicated mineral resource, a measured mineral resource, a probable mineral reserve, or a proven mineral reserve;
 - (b) the results of an economic analysis that includes or is based on inferred mineral resources or an estimate permitted under subsection 2.3(2) or section 2.4;
 - (c) the gross value of metal or mineral in a deposit or a sampled interval or drill intersection; or
 - (d) a metal or mineral equivalent grade for a multiple commodity deposit, sampled interval, or drill intersection, unless it also discloses the grade of each metal or mineral used to establish the metal or mineral equivalent grade.
- (2) Despite paragraph (1)(a), an issuer may disclose in writing the potential quantity and grade, expressed as ranges, of a target for further exploration if the disclosure

- (a) states with equal prominence that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to define a mineral resource and that it is uncertain if further exploration will result in the target being delineated as a mineral resource; and
 - (b) states the basis on which the disclosed potential quantity and grade has been determined.
- (3) Despite paragraph (1)(b), an issuer may disclose the results of a preliminary economic assessment that includes or is based on inferred mineral resources if the disclosure
 - (a) states with equal prominence that the preliminary economic assessment is preliminary in nature, that it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary economic assessment will be realized;
 - (b) states the basis for the preliminary economic assessment and any qualifications and assumptions made by the qualified person; and
 - (c) describes the impact of the preliminary economic assessment on the results of any pre-feasibility or feasibility study in respect of the subject property.
- (4) An issuer must not use the term preliminary feasibility study, pre-feasibility study or feasibility study when referring to a study unless the study satisfies the criteria set out in the definition of the applicable term in section 1.4.

2.4 Disclosure of Historical Estimates - Despite section 2.2, an issuer may disclose an historical estimate, using the original terminology, if the disclosure

- (a) identifies the source and date of the historical estimate, including any existing technical report;
- (b) comments on the relevance and reliability of the historical estimate;
- (c) to the extent known, provides the key assumptions, parameters, and methods used to prepare the historical estimate;

- (d) states whether the historical estimate uses categories other than the ones set out in sections 1.2 and 1.3 and, if so, includes an explanation of the differences;
- (e) includes any more recent estimates or data available to the issuer;
- (f) comments on what work needs to be done to upgrade or verify the historical estimate as current mineral resources or mineral reserves; and
- (g) states with equal prominence that
 - (i) a qualified person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves; and
 - (ii) the issuer is not treating the historical estimate as current mineral resources or mineral reserves.

PART 3 ADDITIONAL REQUIREMENTS FOR WRITTEN DISCLOSURE

3.1 Written Disclosure to Include Name of Qualified Person - If an issuer discloses in writing scientific or technical information about a mineral project on a property material to the issuer, the issuer must include in the written disclosure the name and the relationship to the issuer of the qualified person who

- (a) prepared or supervised the preparation of the information that forms the basis for the written disclosure; or
- (b) approved the written disclosure.

3.2 Written Disclosure to Include Data Verification - If an issuer discloses in writing scientific or technical information about a mineral project on a property material to the issuer, the issuer must include in the written disclosure

- (a) a statement whether a qualified person has verified the data disclosed, including sampling, analytical, and test data underlying the information or opinions contained in the written disclosure;
- (b) a description of how the data was verified and any limitations on the verification process; and
- (c) an explanation of any failure to verify the data.

3.3 Requirements Applicable to Written Disclosure of Exploration Information

- (1) If an issuer discloses in writing exploration information about a mineral project on a property material to the issuer, the issuer must include in the written disclosure a summary of
 - (a) the material results of surveys and investigations regarding the property;
 - (b) the interpretation of the exploration information; and
 - (c) the quality assurance program and quality control measures applied during the execution of the work being reported on.

- (2) If an issuer discloses in writing sample, analytical or testing results on a property material to the issuer, the issuer must include in the written disclosure, with respect to the results being disclosed,
 - (a) the location and type of the samples;
 - (b) the location, azimuth, and dip of the drill holes and the depth of the sample intervals;
 - (c) a summary of the relevant analytical values, widths, and to the extent known, the true widths of the mineralized zone;
 - (d) the results of any significantly higher grade intervals within a lower grade intersection;
 - (e) any drilling, sampling, recovery, or other factors that could materially affect the accuracy or reliability of the data referred to in this subsection; and
 - (f) a summary description of the type of analytical or testing procedures utilized, sample size, the name and location of each analytical or testing laboratory used, and any relationship of the laboratory to the issuer.

3.4 Requirements Applicable to Written Disclosure of Mineral Resources and Mineral Reserves - If an issuer discloses in writing mineral resources or mineral reserves on a property material to the issuer, the issuer must include in the written disclosure

- (a) the effective date of each estimate of mineral resources and mineral reserves;
- (b) the quantity and grade or quality of each category of mineral resources and mineral reserves;

- (c) the key assumptions, parameters, and methods used to estimate the mineral resources and mineral reserves;
- (d) the identification of any known legal, political, environmental, or other risks that could materially affect the potential development of the mineral resources or mineral reserves; and
- (e) if the disclosure includes the results of an economic analysis of mineral resources, an equally prominent statement that mineral resources that are not mineral reserves do not have demonstrated economic viability.

3.5 Exception for Written Disclosure Already Filed - Sections 3.2 and 3.3 and paragraphs (a), (c) and (d) of section 3.4 do not apply if the issuer includes in the written disclosure a reference to the title and date of a document previously filed by the issuer that complies with those requirements.

PART 4 OBLIGATION TO FILE A TECHNICAL REPORT

4.1 Obligation to File a Technical Report Upon Becoming a Reporting Issuer

- (1) Upon becoming a reporting issuer in a jurisdiction of Canada an issuer must file in that jurisdiction a technical report for each mineral property material to the issuer.
- (2) Subsection (1) does not apply if the issuer is a reporting issuer in a jurisdiction of Canada and subsequently becomes a reporting issuer in another jurisdiction of Canada.
- (3) Subsection (1) does not apply if
 - (a) the issuer previously filed a technical report for the property;
 - (b) at the date the issuer becomes a reporting issuer, there is no new material scientific or technical information concerning the subject property not included in the previously filed technical report; and
 - (c) the previously filed technical report meets any independence requirements under section 5.3.

4.2 Obligation to File a Technical Report in Connection with Certain Written Disclosure about Mineral Projects on Material Properties

- (1) An issuer must file a technical report to support scientific or technical information that relates to a mineral project on a property material to the issuer, or in the case of paragraph (c), the resulting issuer, if the

information is contained in any of the following documents filed or made available to the public in a jurisdiction of Canada:

- (a) a preliminary prospectus, other than a preliminary short form prospectus filed in accordance with National Instrument 44-101 *Short Form Prospectus Distributions*;
- (b) a preliminary short form prospectus filed in accordance with National Instrument 44-101 *Short Form Prospectus Distributions* that discloses for the first time
 - (i) mineral resources, mineral reserves or the results of a preliminary economic assessment on the property that constitute a material change in relation to the issuer; or
 - (ii) a change in mineral resources, mineral reserves or the results of a preliminary economic assessment from the most recently filed technical report if the change constitutes a material change in relation to the issuer;
- (c) an information or proxy circular concerning a direct or indirect acquisition of a mineral property where the issuer or resulting issuer issues securities as consideration;
- (d) an offering memorandum, other than an offering memorandum delivered solely to accredited investors as defined under securities legislation;
- (e) for a reporting issuer, a rights offering circular;
- (f) an annual information form;
- (g) a valuation required to be prepared and filed under securities legislation;
- (h) an offering document that complies with and is filed in accordance with Policy 4.6 - *Public Offering by Short Form Offering Document* and Exchange Form 4H - *Short Form Offering Document*, of the TSX Venture Exchange, as amended;
- (i) a take-over bid circular that discloses mineral resources, mineral reserves or the results of a preliminary economic assessment on the property if securities of the offeror are being offered in exchange on the take-over bid; and
- (j) any written disclosure made by or on behalf of an issuer, other than in a document described in paragraphs (a) to (i), that discloses for the first time

- (i) mineral resources, mineral reserves or the results of a preliminary economic assessment on the property that constitute a material change in relation to the issuer; or
 - (ii) a change in mineral resources, mineral reserves or the results of a preliminary economic assessment from the most recently filed technical report if the change constitutes a material change in relation to the issuer.
- (2) Subsection (1) does not apply for disclosure of an historical estimate in a document referred to in paragraph (1)(j) if the disclosure is made in accordance with subsection 2.4.
- (3) If a technical report is filed under paragraph (1)(a) or (b), and new material scientific or technical information concerning the subject property becomes available before the filing of the final version of the prospectus or short form prospectus, the issuer must file an updated technical report or an addendum to the technical report with the final version of the prospectus or short form prospectus.
- (4) The issuer must file the technical report referred to in subsection (1) not later than the time it files or makes available to the public the document listed in subsection (1) that the technical report supports.
- (5) Despite subsection (4), an issuer must
 - (a) file a technical report supporting disclosure under paragraph (1)(j) not later than
 - (i) if the disclosure is also contained in a preliminary short form prospectus, the earlier of 45 days after the date of the disclosure and the date of filing the preliminary short form prospectus;
 - (ii) if the disclosure is also contained in a directors' circular, the earlier of 45 days after the date of the disclosure and 3 business days before the expiry of the initial deposit period; and
 - (iii) in all other cases, 45 days after the date of the disclosure;
 - (b) issue a news release at the time it files the technical report disclosing the filing of the technical report and reconciling any material differences in the mineral resources, mineral reserves or results of a preliminary economic assessment, between the technical report and the issuer's disclosure under paragraph (1)(j).

- (6) Despite subsection (4), if a property referred to in an annual information form first becomes material to the issuer less than 30 days before the filing deadline for the annual information form, the issuer must file the technical report within 45 days of the date that the property first became material to the issuer.
- (7) Despite subsection (4) and paragraph (5)(a), an issuer is not required to file a technical report within 45 days to support disclosure under subparagraph (1)(j)(i), if
 - (a) the mineral resources, mineral reserves or results of a preliminary economic assessment
 - (i) were prepared by or on behalf of another issuer who holds or previously held an interest in the property;
 - (ii) were disclosed by the other issuer in a document listed in subsection (1); and
 - (iii) are supported by a technical report filed by the other issuer;
 - (b) the issuer, in its disclosure under subparagraph (1)(j)(i),
 - (i) identifies the title and effective date of the previous technical report and the name of the other issuer that filed it;
 - (ii) names the qualified person who reviewed the technical report on behalf of the issuer; and
 - (iii) states with equal prominence that, to the best of the issuer's knowledge, information, and belief, there is no new material scientific or technical information that would make the disclosure of the mineral resources, mineral reserves or results of a preliminary economic assessment inaccurate or misleading; and
 - (c) the issuer files a technical report supporting its disclosure of the mineral resources, mineral reserves or results of a preliminary economic assessment;
 - (i) if the disclosure is also contained in a preliminary short form prospectus, by the earlier of 180 days after the date of the disclosure and the date of filing the short form prospectus; and

- (ii) in all other cases, within 180 days after the date of the disclosure.
- (8) Subsection (1) does not apply if
 - (a) the issuer previously filed a technical report that supports the scientific or technical information in the document;
 - (b) at the date of filing the document, there is no new material scientific or technical information concerning the subject property not included in the previously filed technical report; and
 - (c) the previously filed technical report meets any independence requirements under section 5.3.

4.3 Required Form of Technical Report - A technical report that is required to be filed under this Part must be prepared

- (a) in English or French; and
- (b) in accordance with Form 43-101F1.

PART 5 AUTHOR OF TECHNICAL REPORT

5.1 Prepared by a Qualified Person - A technical report must be prepared by or under the supervision of one or more qualified persons.

5.2 Execution of Technical Report - A technical report must be dated, signed and, if the qualified person has a seal, sealed by

- (a) each qualified person who is responsible for preparing or supervising the preparation of all or part of the report; or
- (b) a person or company whose principal business is providing engineering or geoscientific services if each qualified person responsible for preparing or supervising the preparation of all or part of the report is an employee, officer, or director of that person or company.

5.3 Independent Technical Report

- (1) A technical report required under any of the following provisions of this Instrument must be prepared by or under the supervision of one or more qualified persons that are, at the effective and filing dates of the technical report, all independent of the issuer:
 - (a) section 4.1;

- (b) paragraphs (a) and (g) of subsection 4.2(1); or
- (c) paragraphs (b), (c), (d), (e), (f), (h), (i) and (j) of subsection 4.2(1), if the document discloses
 - (i) for the first time mineral resources, mineral reserves or the results of a preliminary economic assessment on a property material to the issuer, or
 - (ii) a 100 percent or greater change in the total mineral resources or total mineral reserves on a property material to the issuer, since the issuer's most recently filed independent technical report in respect of the property.
- (2) Despite subsection (1), a technical report required to be filed by a producing issuer under paragraph (1)(a) is not required to be prepared by or under the supervision of an independent qualified person if the securities of the issuer trade on a specified exchange.
- (3) Despite subsection (1), a technical report required to be filed by a producing issuer under paragraph (1)(b) or (c) is not required to be prepared by or under the supervision of an independent qualified person.
- (4) Despite subsection (1), a technical report required to be filed by an issuer concerning a property which is or will be the subject of a joint venture with a producing issuer is not required to be prepared by or under the supervision of an independent qualified person, if the qualified person preparing or supervising the preparation of the report relies on scientific and technical information prepared by or under the supervision of a qualified person that is an employee or consultant of the producing issuer.

PART 6 PREPARATION OF TECHNICAL REPORT

6.1 The Technical Report - A technical report must be based on all available data relevant to the disclosure that it supports.

6.2 Current Personal Inspection

- (1) Before an issuer files a technical report, the issuer must have at least one qualified person who is responsible for preparing or supervising the preparation of all or part of the technical report complete a current inspection on the property that is the subject of the technical report.
- (2) Subsection (1) does not apply to an issuer provided that

- (a) the property that is the subject of the technical report is an early stage exploration property;
 - (b) seasonal weather conditions prevent a qualified person from accessing any part of the property or obtaining beneficial information from it; and
 - (c) the issuer discloses in the technical report, and in the disclosure that the technical report supports, that a personal inspection by a qualified person was not conducted, the reasons why, and the intended time frame to complete the personal inspection.
- (3) If an issuer relies on subsection (2), the issuer must
- (a) as soon as practical, have at least one qualified person who is responsible for preparing or supervising the preparation of all or part of the technical report complete a current inspection on the property that is the subject of the technical report; and
 - (b) promptly file a technical report and the certificates and consents required under Part 8 of this Instrument.

6.3 Maintenance of Records - An issuer must keep for 7 years copies of assay and other analytical certificates, drill logs, and other information referenced in the technical report or used as a basis for the technical report.

6.4 Limitation on Disclaimers

- (1) An issuer must not file a technical report that contains a disclaimer by any qualified person responsible for preparing or supervising the preparation of all or part of the report that
- (a) disclaims responsibility for, or limits reliance by another party on, any information in the part of the report the qualified person prepared or supervised the preparation of; or
 - (b) limits the use or publication of the report in a manner that interferes with the issuer's obligation to reproduce the report by filing it on SEDAR.
- (2) Despite subsection (1), an issuer may file a technical report that includes a disclaimer in accordance with Item 3 of Form 43-101F1.

PART 7 USE OF FOREIGN CODE

7.1 Use of Foreign Code

- (1) Despite section 2.2, an issuer may make disclosure and file a technical report that uses the mineral resource and mineral reserve categories of an acceptable foreign code, if the issuer
 - (a) is incorporated or organized in a foreign jurisdiction; or
 - (b) is incorporated or organized under the laws of Canada or a jurisdiction of Canada, for its properties located in a foreign jurisdiction.
- (2) If an issuer relies on subsection (1), the issuer must include in the technical report a reconciliation of any material differences between the mineral resource and mineral reserve categories used and the categories set out in sections 1.2 and 1.3.

PART 8 CERTIFICATES AND CONSENTS OF QUALIFIED PERSONS FOR TECHNICAL REPORTS

8.1 Certificates of Qualified Persons

- (1) An issuer must, when filing a technical report, file a certificate that is dated, signed, and if the signatory has a seal, sealed, of each qualified person responsible for preparing or supervising the preparation of all or part of the technical report.
- (2) A certificate under subsection (1) must state
 - (a) the name, address, and occupation of the qualified person;
 - (b) the title and effective date of the technical report to which the certificate applies;
 - (c) the qualified person's qualifications, including a brief summary of relevant experience, the name of all professional associations to which the qualified person belongs, and that the qualified person is a "qualified person" for purposes of this Instrument;
 - (d) the date and duration of the qualified person's most recent personal inspection of each property, if applicable;
 - (e) the item or items of the technical report for which the qualified person is responsible;
 - (f) whether the qualified person is independent of the issuer as described in section 1.5;

- (g) what prior involvement, if any, the qualified person has had with the property that is the subject of the technical report;
- (h) that the qualified person has read this Instrument and the technical report, or part that the qualified person is responsible for, has been prepared in compliance with this Instrument; and
- (i) that, at the effective date of the technical report, to the best of the qualified person's knowledge, information, and belief, the technical report, or part that the qualified person is responsible for, contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

8.2 Addressed to Issuer - All technical reports must be addressed to the issuer.

8.3 Consents of Qualified Persons

- (1) An issuer must, when filing a technical report, file a statement of each qualified person responsible for preparing or supervising the preparation of all or part of the technical report, dated, and signed by the qualified person
 - (a) consenting to the public filing of the technical report;
 - (b) identifying the document that the technical report supports;
 - (c) consenting to the use of extracts from, or a summary of, the technical report in the document; and
 - (d) confirming that the qualified person has read the document and that it fairly and accurately represents the information in the technical report or part that the qualified person is responsible for.
- (2) Paragraphs (1)(b), (c) and (d) do not apply to a consent filed with a technical report filed under section 4.1.
- (3) If an issuer relies on subsection (2), the issuer must file an updated consent that includes paragraphs (1)(b), (c) and (d) for the first subsequent use of the technical report to support disclosure in a document filed under subsection 4.2(1).

PART 9 EXEMPTIONS

9.1 Authority to Grant Exemptions

- (1) The regulator or the securities regulatory authority may, on application, grant an exemption from this Instrument, in whole or in part, subject to such conditions or restrictions as may be imposed in the exemption in response to an application.
- (2) Despite subsection (1), in Ontario, only the regulator may grant such an exemption.
- (3) Except in Ontario, an exemption referred to in subsection (1) is granted under the statute referred to in Appendix B to National Instrument 14-101 *Definitions* opposite the name of the local jurisdiction.

9.2 Exemptions for Royalty or Similar Interests

- (1) An issuer whose interest in a mineral project is only a royalty or similar interest is not required to file a technical report to support disclosure in a document under subsection 4.2(1) if
 - (a) the operator or owner of the mineral project is
 - (i) a reporting issuer in a jurisdiction of Canada, or
 - (ii) a producing issuer whose securities trade on a specified exchange and that discloses mineral resources and mineral reserves under an acceptable foreign code;
 - (b) the issuer identifies in its document under subsection 4.2(1) the source of the scientific and technical information; and
 - (c) the operator or owner of the mineral project has disclosed the scientific and technical information that is material to the issuer.
- (2) An issuer whose interest in a mineral project is only a royalty or similar interest and that does not qualify to use the exemption in subsection (1) is not required to
 - (a) comply with section 6.2; and
 - (b) complete those items under Form 43-101F1 that require data verification, inspection of documents, or personal inspection of the property to complete those items.
- (3) Paragraphs (2)(a) and (b) only apply if the issuer

- (a) has requested but has not received access to the necessary data from the operator or owner and is not able to obtain the necessary information from the public domain;
- (b) under Item 3 of Form 43-101F1, states the issuer has requested but has not received access to the necessary data from the operator or owner and is not able to obtain the necessary information from the public domain and describes the content referred to under each item of Form 43-101F1 that the issuer did not complete; and
- (c) includes in all scientific and technical disclosure a statement that the issuer has an exemption from completing certain items under Form 43-101F1 in the technical report required to be filed and includes a reference to the title and effective date of that technical report.

9.3 Exemption for Certain Types of Filings - This Instrument does not apply if the only reason an issuer files written disclosure of scientific or technical information is to comply with the requirement under securities legislation to file a copy of a record or disclosure material that was filed with a securities commission, exchange, or regulatory authority in another jurisdiction.

PART 10 EFFECTIVE DATE AND REPEAL

10.1 Effective Date - This Instrument comes into force on June 30, 2011.

10.2 Repeal - National Instrument 43-101 *Standards of Disclosure for Mineral Projects*, which came into force on December 30, 2005, is repealed.

Form 43-101F1
Technical Report

INSTRUCTIONS:

- (1) *The objective of the technical report is to provide a summary of material scientific and technical information concerning mineral exploration, development, and production activities on a mineral property that is material to an issuer. This Form sets out the requirements for the preparation and content of a technical report.*
- (2) *Terms used in this Form that are defined or interpreted in National Instrument 43-101 Standards of Disclosure for Mineral Projects (the "Instrument") will have that definition or interpretation. In addition, a general definition instrument has been adopted as National Instrument 14-101 Definitions that contains definitions of certain terms used in more than one national instrument. Readers of this Form should review both these national instruments for defined terms.*
- (3) *The qualified person preparing the technical report should keep in mind that the intended audience is the investing public and their advisors who, in most cases, will not be mining experts. Therefore, to the extent possible, technical reports should be simplified and understandable to a reasonable investor. However, the technical report should include sufficient context and cautionary language to allow a reasonable investor to understand the nature, importance, and limitations of the data, interpretations, and conclusions summarized in the technical report.*
- (4) *The qualified person preparing the technical report must use all of the headings of Items 1 to 14 and 23 to 27 in this Form and provide the information specified under each heading. For advanced properties, the*

qualified person must also use the headings of Items 15 to 22 and include the information required under each of these headings. The qualified person may create sub-headings. Disclosure included under one heading is not required to be repeated under another heading.

- (5) *The qualified person preparing the technical report may refer to information in a technical report previously filed by the issuer for the subject property if the information is still current and the technical report identifies the title, date and author of the previously filed technical report. However, the qualified person must still summarize or quote the referenced information in the current technical report and may not disclaim responsibility for the referenced information. Except as permitted by subsection 4.2(3) of the Instrument, an issuer may not update or revise a previously filed technical report by filing an addendum.*
- (6) *While the Form mandates the headings and general format of the technical report, the qualified person preparing the technical report is responsible for determining the level of detail required under each Item based on the qualified person's assessment of the relevance and significance of the information.*
- (7) *The technical report may only contain disclaimers that are in accordance with section 6.4 of the Instrument and Item 3 of this Form.*
- (8) *Since a technical report is a summary document the inclusion and filing of comprehensive appendices is not generally necessary to comply with the requirements of the Form.*
- (9) *The Instrument requires certificates and consents of qualified persons, prepared in accordance with sections 8.1 and 8.3 respectively, to be filed at the same time as the technical report. The Instrument does not specifically require the issuer to file the certificate of qualified person as a separate document. It is generally acceptable for the qualified person to include the certificate in the technical report and to use the certificate as the date and signature page.*

CONTENTS OF THE TECHNICAL REPORT

Title Page - Include a title page setting out the title of the technical report, the general location of the mineral project, the name and professional designation of each qualified person, and the effective date of the technical report.

Date and Signature Page – The technical report must have a signature page, at either the beginning or end of the technical report, signed in accordance with section 5.2 of the Instrument. The effective date of the technical report and date of signing must be on the signature page.

Table of Contents - Provide a table of contents listing the contents of the technical report, including figures and tables.

Illustrations – Technical reports must be illustrated by legible maps, plans and sections, all prepared at an appropriate scale to distinguish important features. Maps must be dated and include a legend, author or information source, a scale in bar or grid form, and an arrow indicating north. All technical reports must be accompanied by a location or index map and a compilation map outlining the general geology of the property. In addition, all technical reports must include more detailed maps showing all important features described in the text, relative to the property boundaries, including but not limited to

- (a) for exploration projects, areas of previous or historical exploration, and the location of known mineralization, geochemical or geophysical anomalies, drilling, and mineral deposits;
- (b) for advanced properties other than properties under development or in production, the location and surficial outline of mineral resources, mineral reserves, and, to the extent known, areas for potential access and infrastructure; and
- (c) for properties under development or in production, the location of pit limits or underground development, plant sites, tailings storage areas, waste disposal areas, and all other significant infrastructure features.

If information is used from other sources in preparing maps, drawings, or diagrams, disclose the source of the information. If adjacent or nearby properties have an important bearing on the potential of the subject property, the location of the properties and any relevant mineralized structures discussed in the report must be shown in relationship to the subject property.

INSTRUCTION: Summarize and simplify the illustrations so that they are legible and suitable for electronic filing. For ease of reference, consider inserting the illustration in the text of the report in relative proximity to the text they illustrate.

Requirements for All Technical Reports

Part 1 Summary – Briefly summarize important information in the technical report, including property description and ownership, geology and mineralization, the status of exploration, development and operations, mineral resource and

mineral reserve estimates, and the qualified person's conclusions and recommendations.

Part 2 Introduction - Include a description of

- 2.1 the issuer for whom the technical report is prepared;
- 2.2 the terms of reference and purpose for which the technical report was prepared;
- 2.3 the sources of information and data contained in the technical report or used in its preparation, with citations if applicable; and
- 2.4 the details of the personal inspection on the property by each qualified person or, if applicable, the reason why a personal inspection has not been completed.

Part 3 Reliance on Other Experts - A qualified person who prepares or supervises the preparation of all or part of a technical report may include a limited disclaimer of responsibility if:

- (a) The qualified person is relying on a report, opinion, or statement of another expert who is not a qualified person, or on information provided by the issuer, concerning legal, political, environmental, or tax matters relevant to the technical report, and the qualified person identifies
 - (1) the source of the information relied upon, including the date, title, and author of any report, opinion, or statement;
 - (2) the extent of reliance; and
 - (3) the portions of the technical report to which the disclaimer applies.
- (b) The qualified person is relying on a report, opinion, or statement of another expert who is not a qualified person, concerning diamond or other gemstone valuations, or the pricing of commodities for which pricing is not publicly available, and the qualified person discloses the date, title, and author of the report, opinion, or statement;
 - (4) the qualifications of the other expert and why it is reasonable for the qualified person to rely on the other expert;
 - (5) any significant risks associated with the valuation or pricing; and
 - (6) any steps the qualified person took to verify the information provided.

Part 4 Property Description and Location - To the extent applicable, describe

- 4.1 the area of the property in hectares or other appropriate units;
- 4.2 the location, reported by an easily recognizable geographic and grid location system;
- 4.3 the type of mineral tenure (claim, license, lease, etc.) and the identifying name or number of each;
- 4.4 the nature and extent of the issuer's title to, or interest in, the property including surface rights, legal access, the obligations that must be met to retain the property, and the expiration date of claims, licences, or other property tenure rights;
- 4.5 to the extent known, the terms of any royalties, back-in rights, payments, or other agreements and encumbrances to which the property is subject;
- 4.6 to the extent known, all environmental liabilities to which the property is subject;
- 4.7 to the extent known, the permits that must be acquired to conduct the work proposed for the property, and if the permits have been obtained; and
- 4.8 to the extent known, any other significant factors and risks that may affect access, title, or the right or ability to perform work on the property.

Part 5 Accessibility, Climate, Local Resources, Infrastructure and Physiography - Describe

- 5.1 topography, elevation, and vegetation;
- 5.2 the means of access to the property;
- 5.3 the proximity of the property to a population centre, and the nature of transport;
- 5.4 to the extent relevant to the mineral project, the climate and the length of the operating season; and
- 5.5 to the extent relevant to the mineral project, the sufficiency of surface rights for mining operations, the availability and sources of power, water, mining personnel, potential tailings storage areas, potential waste disposal areas, heap leach pad areas, and potential processing plant sites.

Part 6 History - To the extent known, describe

- 6.1 the prior ownership of the property and ownership changes;

- 6.2 the type, amount, quantity, and general results of exploration and development work undertaken by any previous owners or operators;
- 6.3 any significant historical mineral resource and mineral reserve estimates in accordance with section 2.4 of the Instrument; and
- 6.4 any production from the property.

INSTRUCTION: *If the technical report includes work that was conducted outside the current property boundaries, clearly distinguish this work from the work conducted on the property that is the subject of the technical report.*

Part 7 Geological Setting and Mineralization - Describe

- 7.1 the regional, local, and property geology; and
- 7.2 the significant mineralized zones encountered on the property, including a summary of the surrounding rock types, relevant geological controls, and the length, width, depth, and continuity of the mineralization, together with a description of the type, character, and distribution of the mineralization.

Part 8 Deposit Types - Describe the mineral deposit type(s) being investigated or being explored for and the geological model or concepts being applied in the investigation and on the basis of which the exploration program is planned.

Part 9 Exploration – Briefly describe the nature and extent of all relevant exploration work other than drilling, conducted by or on behalf of, the issuer, including

- 9.1 the procedures and parameters relating to the surveys and investigations;
- 9.2 the sampling methods and sample quality, including whether the samples are representative, and any factors that may have resulted in sample biases;
- 9.3 relevant information of location, number, type, nature, and spacing or density of samples collected, and the size of the area covered; and
- 9.4 the significant results and interpretation of the exploration information.

INSTRUCTION: *If exploration results from previous operators are included, clearly identify the work conducted by or on behalf of the issuer.*

Part 10 Drilling - Describe

- 10.1 the type and extent of drilling including the procedures followed and a summary and interpretation of all relevant results;

- 10.2 any drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results;
- 10.3 for a property other than an advanced property
 - (7) the location, azimuth, and dip of any drill hole, and the depth of the relevant sample intervals;
 - (8) the relationship between the sample length and the true thickness of the mineralization, if known, and if the orientation of the mineralization is unknown, state this; and
 - (9) the results of any significantly higher grade intervals within a lower grade intersection.

INSTRUCTIONS:

- (1) *For properties with mineral resource estimates, the qualified person may meet the requirements under Item 10 (c) by providing a drill plan and representative examples of drill sections through the mineral deposit.*
- (2) *If drill results from previous operators are included, clearly identify the results of drilling conducted by or on behalf of the issuer.*

Part 11 Sample Preparation, Analyses, and Security – Describe

- 11.1 sample preparation methods and quality control measures employed before dispatch of samples to an analytical or testing laboratory, the method or process of sample splitting and reduction, and the security measures taken to ensure the validity and integrity of samples taken;
- 11.2 relevant information regarding sample preparation, assaying and analytical procedures used, the name and location of the analytical or testing laboratories, the relationship of the laboratory to the issuer, and whether the laboratories are certified by any standards association and the particulars of any certification;
- 11.3 a summary of the nature, extent, and results of quality control procedures employed and quality assurance actions taken or recommended to provide adequate confidence in the data collection and processing; and
- 11.4 the author's opinion on the adequacy of sample preparation, security, and analytical procedures.

Part 12 Data Verification – Describe the steps taken by the qualified person to verify the data in the technical report, including

- 12.1 the data verification procedures applied by the qualified person;
- 12.2 any limitations on or failure to conduct such verification, and the reasons for any such limitations or failure; and
- 12.3 the qualified person's opinion on the adequacy of the data for the purposes used in the technical report.

Part 13 Mineral Processing and Metallurgical Testing - If mineral processing or metallurgical testing analyses have been carried out, discuss

- 13.1 the nature and extent of the testing and analytical procedures, and provide a summary of the relevant results;
- 13.2 the basis for any assumptions or predictions regarding recovery estimates;
- 13.3 to the extent known, the degree to which the test samples are representative of the various types and styles of mineralization and the mineral deposit as a whole; and
- 13.4 to the extent known, any processing factors or deleterious elements that could have a significant effect on potential economic extraction.

Part 14 Mineral Resource Estimates – A technical report disclosing mineral resources must

- 14.1 provide sufficient discussion of the key assumptions, parameters, and methods used to estimate the mineral resources, for a reasonably informed reader to understand the basis for the estimate and how it was generated;
- 14.2 comply with all disclosure requirements for mineral resources set out in the Instrument, including sections 2.2, 2.3, and 3.4;
- 14.3 when the grade for a multiple commodity mineral resource is reported as metal or mineral equivalent, report the individual grade of each metal or mineral and the metal prices, recoveries, and any other relevant conversion factors used to estimate the metal or mineral equivalent grade; and
- 14.4 include a general discussion on the extent to which the mineral resource estimates could be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors.

INSTRUCTIONS:

- (a) *A statement of quantity and grade or quality is an estimate and should be rounded to reflect the fact that it is an approximation.*
- (b) *Where multiple cut-off grade scenarios are presented, the qualified person must identify and highlight the base case, or preferred scenario. All estimates resulting from each of the cut-off grade scenarios must meet the test of reasonable prospect of economic extraction.*

Additional Requirements for Advanced Property Technical Reports

Part 15 Mineral Reserve Estimates - A technical report disclosing mineral reserves must

- 15.1 provide sufficient discussion and detail of the key assumptions, parameters, and methods used for a reasonably informed reader to understand how the qualified person converted the mineral resources to mineral reserves;
- 15.2 comply with all disclosure requirements for mineral reserves set out in the Instrument, including sections 2.2, 2.3, and 3.4;
- 15.3 when the grade for a multiple commodity mineral reserve is reported as metal or mineral equivalent, report the individual grade of each metal or mineral and the metal prices, recoveries, and any other relevant conversion factors used to estimate the metal or mineral equivalent grade; and
- 15.4 discuss the extent to which the mineral reserve estimates could be materially affected by mining, metallurgical, infrastructure, permitting, and other relevant factors.

Part 16 Mining Methods - Discuss the current or proposed mining methods and provide a summary of the relevant information used to establish the amenability or potential amenability of the mineral resources or mineral reserves to the proposed mining methods. Consider and, where relevant, include

- 16.1 geotechnical, hydrological, and other parameters relevant to mine or pit designs and plans;
- 16.2 production rates, expected mine life, mining unit dimensions, and mining dilution factors used;
- 16.3 requirements for stripping, underground development, and backfilling; and
- 16.4 required mining fleet and machinery.

INSTRUCTION: *Preliminary economic assessments, pre-feasibility studies, and feasibility studies generally analyse and assess the same geological, engineering, and economic factors with increasing detail and precision. Therefore, the criteria for Items 16 to 22 can be used as a framework for reporting the results of all three studies.*

Part 17 Recovery Methods – Discuss reasonably available information on test or operating results relating to the recoverability of the valuable component or commodity and amenability of the mineralization to the proposed processing methods. Consider and, where relevant, include

- 17.1 a description or flow sheet of any current or proposed process plant;
- 17.2 plant design, equipment characteristics and specifications, as applicable; and
- 17.3 current or projected requirements for energy, water, and process materials.

Part 18 Project Infrastructure – Provide a summary of infrastructure and logistic requirements for the project, which could include roads, rail, port facilities, dams, dumps, stockpiles, leach pads, tailings disposal, power, and pipelines, as applicable.

Part 19 Market Studies and Contracts

- 19.1 Provide a summary of reasonably available information concerning markets for the issuer's production, including the nature and material terms of any agency relationships. Discuss the nature of any studies or analyses completed by the issuer, including any relevant market studies, commodity price projections, product valuations, market entry strategies, or product specification requirements. Confirm that the qualified person has reviewed these studies and analyses and that the results support the assumptions in the technical report.
- 19.2 Identify any contracts material to the issuer that are required for property development, including mining, concentrating, smelting, refining, transportation, handling, sales and hedging, and forward sales contracts or arrangements. State which contracts are in place and which are still under negotiation. For contracts that are in place, discuss whether the terms, rates or charges are within industry norms.

Part 20 Environmental Studies, Permitting, and Social or Community Impact - Discuss reasonably available information on environmental, permitting, and social or community factors related to the project. Consider and, where relevant, include

- (a) a summary of the results of any environmental studies and a discussion of any known environmental issues that could materially impact the issuer's ability to extract the mineral resources or mineral reserves;
- (b) requirements and plans for waste and tailings disposal, site monitoring, and water management both during operations and post mine closure;
- (c) project permitting requirements, the status of any permit applications, and any known requirements to post performance or reclamation bonds;
- (d) a discussion of any potential social or community related requirements and plans for the project and the status of any negotiations or agreements with local communities; and
- (e) a discussion of mine closure (remediation and reclamation) requirements and costs.

Part 21 Capital and Operating Costs – Provide a summary of capital and operating cost estimates, with the major components set out in tabular form. Explain and justify the basis for the cost estimates.

Part 22 Economic Analysis – Provide an economic analysis for the project that includes

- 22.1 a clear statement of and justification for the principal assumptions;
- 22.2 cash flow forecasts on an annual basis using mineral reserves or mineral resources and an annual production schedule for the life of project;
- 22.3 a discussion of net present value (NPV), internal rate of return (IRR), and payback period of capital with imputed or actual interest;
- 22.4 a summary of the taxes, royalties, and other government levies or interests applicable to the mineral project or to production, and to revenue or income from the mineral project; and
- 22.5 sensitivity or other analysis using variants in commodity price, grade, capital and operating costs, or other significant parameters, as appropriate, and discuss the impact of the results.

INSTRUCTIONS:

- (1) *Producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production unless the technical report includes a material expansion of current production.*
- (2) *The economic analysis in technical reports must comply with paragraphs 2.3(1)(b) and (c), subsections 2.3(3) and (4), and paragraph 3.4(e), of the Instrument, including any required cautionary language.*

Requirements for All Technical Reports

Part 23 Adjacent Properties - A technical report may include relevant information concerning an adjacent property if

- 23.1 such information was publicly disclosed by the owner or operator of the adjacent property;
- 23.2 the source of the information is identified;
- 23.3 the technical report states that its qualified person has been unable to verify the information and that the information is not necessarily indicative of the mineralization on the property that is the subject of the technical report;
- 23.4 the technical report clearly distinguishes between the information from the adjacent property and the information from the property that is the subject of the technical report; and
- 23.5 any historical estimates of mineral resources or mineral reserves are disclosed in accordance with paragraph 2.4(a) of the Instrument.

Part 24 Other Relevant Data and Information - Include any additional information or explanation necessary to make the technical report understandable and not misleading.

Part 25 Interpretation and Conclusions - Summarize the relevant results and interpretations of the information and analysis being reported on. Discuss any significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information, mineral resource or mineral reserve estimates, or projected economic outcomes. Discuss any reasonably foreseeable impacts of these risks and uncertainties to the project's potential economic viability or continued viability. A technical report concerning exploration information must include the conclusions of the qualified person.

Part 26 Recommendations - Provide particulars of recommended work programs and a breakdown of costs for each phase. If successive phases of work are recommended, each phase must culminate in a decision point. The recommendations must not apply to more than two phases of work. The recommendations must state whether advancing to a subsequent phase is contingent on positive results in the previous phase.

INSTRUCTION: *In some specific cases, the qualified person may not be in a position to make meaningful recommendations for further work. Generally, these situations will be limited to properties under development or in production where material exploration activities and engineering studies have largely concluded. In such cases, the qualified person should explain why they are not making further recommendations.*

Part 27 **References** - Include a detailed list of all references cited in the technical report.