

**REPORT ON THE SUNRISE  
PROPERTY, NWT**

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**PREPARED FOR SILVER STANDARD  
RESOURCES INC.**

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PROPERTY, NWT**

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RESOURCES INC.**

**Authors:-**

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**September 3, 2003**

**ROSCOE POSTLE ASSOCIATES INC.**

**Toronto, Ontario.  
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## **SUMMARY**

Roscoe Postle Associates Inc. (RPA) has been retained by Silver Standard Resources Inc. (SSR) to prepare an independent report on the Sunrise Property. The Sunrise Property is located in the southern end of the Beaulieu greenstone belt about 130 km by air east-northeast of Yellowknife. Access to the property is typically by ski- or float-equipped aircraft.

The Sunrise Property consists of 6 mining leases, which form a contiguous block with an aggregate area of 1618 ha. SSR purchased the property from Aber Resources Ltd., now Aber Diamond Corporation, (Aber) and Northern Hemisphere Development Corp. (Hemisphere). The property is subject to a 5% Net Profits Interest.

Hemisphere and Aber discovered the Sunrise deposit in October 1987. The initial diamond drill hole designed to test a geophysical anomaly intersected low-grade zinc-lead-silver mineralization. The drilling completed at that time was carried out in two phases and totalled 18,951 m in 65 diamond drill holes on the Sunrise deposit and 1,280 m in 12 holes on peripheral targets.

No further work was reported after 1990 until the summer of 1998, when Aber and Hemisphere completed 7 diamond drill holes aggregating 1,543 m.

None of the previous resource estimates completed over the past 15 years are considered to be compliant with the current standards of NI 43-101.

The Sunrise Property lies within the Slave Lithostructural Province of Archean age and covers part of an Archean volcanic complex, the Beaulieu Group. Near the deposit, the stratigraphy has been divided into seven informal, discrete lithological suites. The deposit is underlain by a rhyolite, considered to be a felsic dome related to the formation of the Sunrise deposit. After the formation of the dome, there was a period of relative quiescence while the argillites and felsic tuffs of the footwall were deposited. This was

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followed by deposition of rhyolitic crystal and felsic tuffs that host at least one and possibly two massive sulphide zones.

A sequence of mafic volcanic rocks, consisting of mafic to intermediate flows and lapilli tuffs, and overlies the sulphides. These rocks have been intensely carbonated altered and somewhat brecciated.

The Sunrise deposit consists of a lens of polymetallic massive sulphides on top of a complex zone of low-grade mineralization. The massive sulphide lens is 3 m to 4 m thick and has a strike length of about 120 m at the surface. At depth it is up to 190 m long. The deposit remains open down plunge.

SSR has estimated an Indicated and Inferred Resource for the massive sulphide zone and an Inferred Resource for the footwall stringer zone resource as stated in the table below.

### RESOURCE ESTIMATE (UNCUT) Silver Standard Resources Inc. Sunrise Property

| Resource Category | Tonnes    | % Pb | % Zn | % Cu | Ag g/t | Au g/t |
|-------------------|-----------|------|------|------|--------|--------|
| Indicated         | 1,522,000 | 2.39 | 5.99 | 0.08 | 262    | 0.67   |
| Inferred          | 2,555,000 | 1.92 | 4.42 | 0.07 | 169    | 0.51   |

RPA has reviewed the reported methodology used to estimate the resources and agrees that it is generally appropriate for the style of mineralization and that the work has been as thorough and accurate as possible given the available database. RPA is of the opinion that the classification of Indicated and Inferred Resources as reported meets the definitions as stated by NI 43-101 and defined by the CIM Standards on Mineral Resources and Reserves definitions and guidelines as adopted by the CIM Council on August 20, 2002.

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RPA considers that mining the Sunrise deposit is uneconomic at this time. The economic parameters of any mining venture would be enhanced by an increase in the resources, either by extending the existing deposit, or discovering other deposits close to the present deposit to share infrastructure. The proposed work program includes data compilation and re-assessment to identify remaining exploration targets in the vicinity of the Sunrise deposit and on the rest of the property in addition to further deep penetrating geophysics to investigate the potential of the favourable horizon at depth along strike. Cost of the proposed program is estimated at \$140,000.

RPA has reviewed the work program and budget and is of the opinion that the property is of sufficient merit to warrant the work program and budget as proposed.

## **INTRODUCTION AND TERMS OF REFERENCE**

Roscoe Postle Associates Inc. (RPA) has been retained by Silver Standard Resources Inc. (SSR) to prepare an independent report on the Sunrise Property located in the Northwest Territories.

This report was prepared by Mr. Stewart Wallis, P.Geo., Associate Consulting Geologist and Dr. W. E. Roscoe, P.Eng., a Consulting Geologist and a principal of RPA. This report is an update of previous RPA reports on the Sunrise Property prepared for Aber Resources Ltd., now Aber Diamond Corporation, (Aber) in 1988, 1996, 1999 and Northern Hemisphere Development Corp. (Hemisphere) in 2000. Mr. Wallis has not visited the property but Dr. Roscoe visited the property during the period when the bulk of the diamond drilling was completed in 1988. Max Holtby, P.Geo., Senior Geologist with SSR, provided the information used for the preparation of this report. Discussions have also been held with geologists associated with Covello, Bryan and Associates Ltd., (CBA) which carried out the original 1987-88 field work and also the work completed in 1998.

RPA has used Canadian dollars (\$) and metric units throughout this report unless otherwise noted.

## **DISCLAIMER**

This report has been prepared by RPA for SSR. The information, conclusions, opinions, and estimates contained herein are based on:

- information available to RPA at the time of preparation of this report,
- assumptions, conditions, and qualifications as set forth in this report, and,
- data, reports, and opinions supplied by SSR and other third party sources listed as references. RPA does not guarantee the accuracy of conclusions,



opinions, or estimates that rely on third party sources for information that is outside the area of technical expertise of RPA.

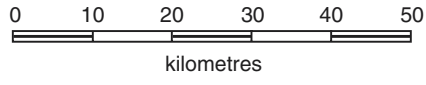
RPA relied on SSR for information regarding the legal title and status of the mining leases and any outstanding environmental liabilities or non-compliance notices.

## **PROPERTY DESCRIPTION AND LOCATION**

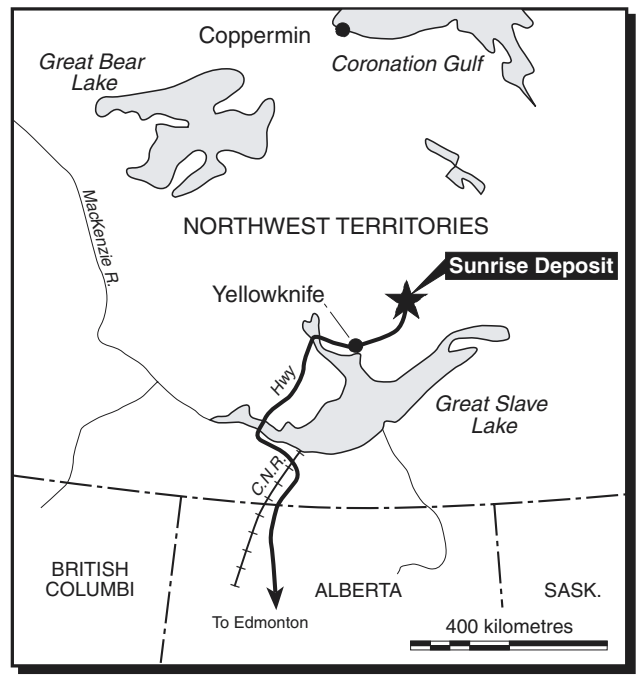
The Sunrise Property is located in the southern end of the Beaulieu greenstone belt (Figure 1). The property is about 130 km by air east-northeast of Yellowknife and is centred on co-ordinates 122° 22'W and 62° 55'N on NTS sheets 85 I/16.

The Sunrise Property consists of 6 mining leases, which form a contiguous block with an aggregate area of 1618 ha. (Figure 2). SSR purchased the property from Hemisphere who owned 51.73% interest and Aber, who owned 48.27%. Under the agreement dated June 9<sup>th</sup> 2003, SSR paid a total of \$488,000 in cash and issued a total of 83,004 treasury shares. The property is subject to a 5% Net Profits Interest payable to CBA.

Figure 1  
Silver Standard Resources Inc.  
**Sunrise Deposit**  
Yellowknife, Northwest Territories  
**Location Map**



**Winter Road to Lupin Mine**



**Sunrise Deposit**

Gordon Lake

All Weather Road

Yellowknife

Great Slave Lake

Surveyed and Cleared Right of Way (for road extension)

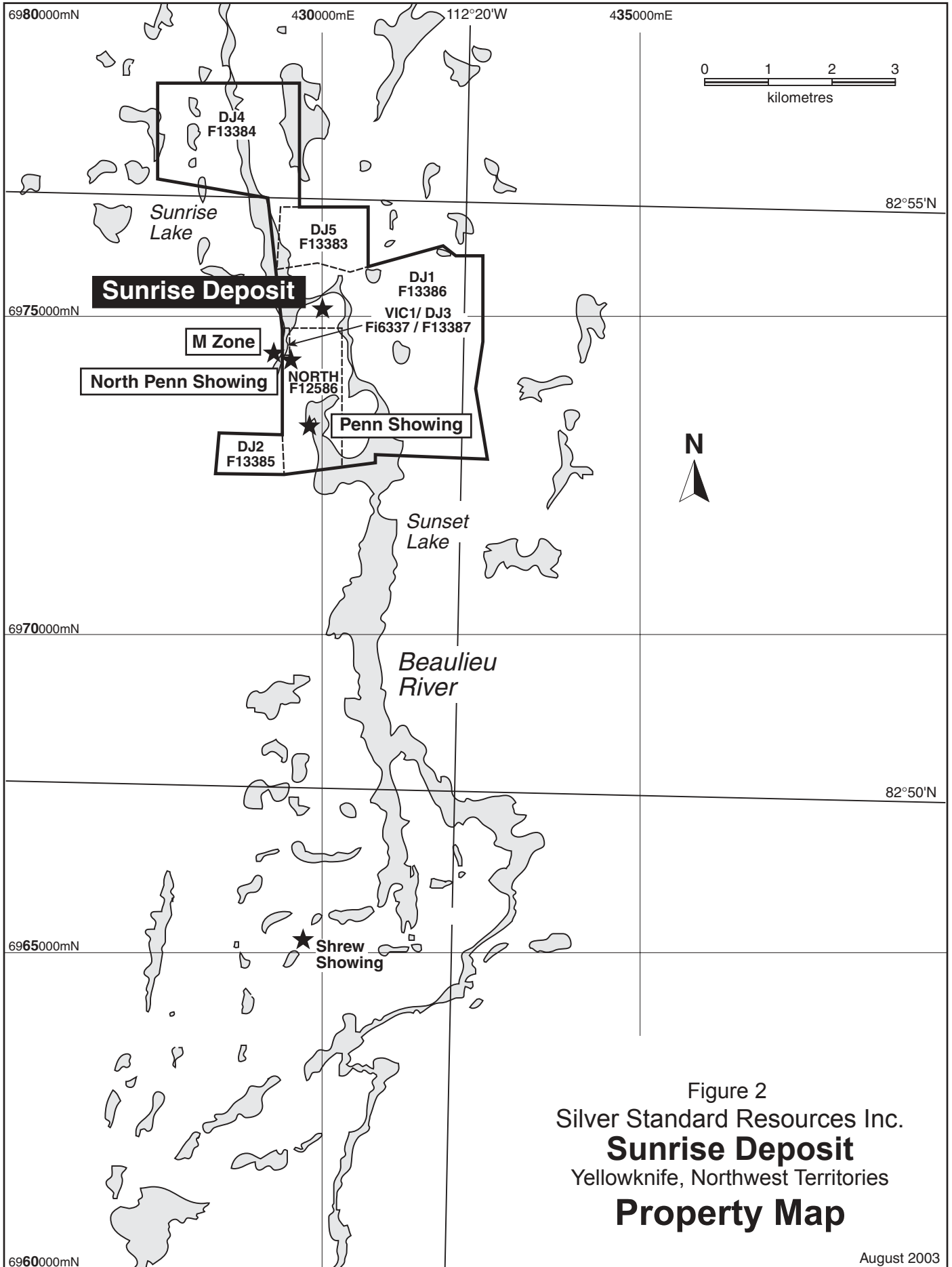


Figure 2  
Silver Standard Resources Inc.  
**Sunrise Deposit**  
Yellowknife, Northwest Territories  
**Property Map**

Claim information and status are set out in Table 1 below

**TABLE 1 PROPERTY HOLDINGS**  
**Silver Standard Resources Inc. Sunrise Property**

| <b>Claim / Lease</b> | <b>Tag Number</b> | <b>Anniversary</b> | <b>Area (Ha)</b> | <b>Status</b> |
|----------------------|-------------------|--------------------|------------------|---------------|
| DJ1 (3627)           | F13386            | 17/12/2017         | 808              | Lease         |
| DJ2 (3618)           | F13385            | 24/02/2018         | 52               | Lease         |
| VIC1/DJ3 (3626)      | F16337/13387      | 17/12/2017         | 7                | Lease         |
| DJ4 (3619)           | F13384            | 24/02/2018         | 403              | Lease         |
| DJ5 (3620)           | F13383            | 24/02/2018         | 154              | Lease         |
| NORTH(3634)          | F12586            | 25/10/2017         | 197              | Lease         |
| <b>Total</b>         |                   |                    | <b>1621</b>      |               |

## **ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

Access to the property is typically by ski- or float-equipped aircraft. Operations during freeze-up and break-up are helicopter supported. The right of way for the Ingraham Trail extension is surveyed and is cut to within 8 km of Sunrise Lake. A separate winter road reaches the property via Victory, Detour and Turnback Lakes and then northward to Sunset and Sunrise Lakes.

The climate is typical of the Northwest Territories with the mean monthly temperature ranging from  $-27^{\circ}$  C to  $17^{\circ}$  C. Precipitation averages 269 mm with 33 % falling as snow during the months of October through April. There are no permanent structures on the property and Yellowknife is the nearest source of supplies and personnel.

The property is lightly forested with small spruce and open bogs. Low rolling hills rise from the Beaujeu River that flows north-south through the property. Elevations

range from 330 m above sea level at the river bank to 380 m on the hilltops. Up to 20 m of sand and boulders overlying the bedrock surface has been encountered in the drill holes.

## **HISTORY**

Prior to the work by Hemisphere and Aber, there are no records of detailed work in the vicinity of the Sunrise deposit.

The inactive Sunset Yellowknife Mines Ltd. (Sunset Yellowknife) Property (also known as the Lucky or Alice Property) is located about 5 km south of the Sunrise deposit. Work on this prospect commenced in 1938 under Thompson Prospecting Syndicate. In 1945, Sunset Yellowknife acquired the property and discovered gold in diamond drill holes. A total of 990 m of diamond drilling was completed at about 76 m below the surface in 1947.

In 1971, Shield Resources Ltd. completed an airborne Questor Input and magnetometer survey in the central part of the Beaulieu greenstone belt. A number of promising anomalies were defined on the ground, and several of these were drill tested without any success.

Prior to the Hemisphere-Aber discovery in 1998, a number of companies had staked claims around the Northern Hemisphere-Aber claims. These included Noranda Exploration Company, Limited (Noranda) and a joint venture between Silver Hart Mines Ltd. (Silver Hart) and Ark La Tex Industries Ltd. (Ark La Tex).

In 1985 Silver Hart acquired its Sunset Property, adjacent to the west of the Sunrise Property. In 1986 or early 1987, the Sunset Property was optioned to Ark La Tex which earned a 60% interest by expending \$700,000 on exploration. In 1988, Silver Hart carried out geological mapping, prospecting, geochemical sampling, an IP survey and completed some 2,198 m of diamond drilling. Drilling results identified the M Zone, a

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lens of polymetallic mineralization. Atkinson (1990) reported that the M Zone had been tested by 29 holes aggregating 4,889 m. The zone was reported to be about 3 m thick and to contain some 753,000 tonnes grading 5.5% Zn, 2.1% Pb, 218 g/t Ag and 0.8 g/t Au. In 1991, Silver Hart was delisted from the VSE and ASE. Ark La Tex subsequently changed its name to Landstar Properties Ltd.

Hemisphere and Aber discovered the Sunrise deposit in October 1987. The two companies had commenced gold exploration in the Beaulieu greenstone belt in 1986, and in 1987 located anomalous gold values. The initial diamond drill hole designed to test a geophysical anomaly intersected gold values and low-grade zinc-lead mineralization. A second hole about 120 m further along the conductor intersected 5.8 m of sulphide mineralization grading 17.7 % combined zinc and lead, together with 946 g/t Ag. The drilling completed at that time was carried out in two phases and totalled 18,951 m in 65 diamond drill holes on the Sunrise deposit and 1,280 m in 12 holes on peripheral targets.

In 1988 RPA completed a grade and tonnage estimate indicating 1.87 mt grading 0.98 g/t au, 403 g/t Ag, 0.1% Cu, 4.2% Pb, and 8.9% Zn. This calculation included only the upper massive sulphide lens. This estimate does not comply with NI -43-101 and is presented for historical purposes only.

Noranda acquired some claims south of the Sunrise area in 1986 and carried out diamond drilling in the area south of the Sunrise deposit and on the North claim in 1987 and 1988. A number of mineralized showings (Penn, North Penn and Shrew) were identified and further diamond drill testing was done on these showings. Drill results indicated that the M Zone on the adjacent Sunset Property of Silver Hart and Ark La Tex may extend onto the Noranda property and some drilling was completed to test this possibility.

In 1989-90 Noranda, Hemisphere and Aber and formed a joint venture to explore their respective properties. Subsequently, this joint venture was terminated and Hemisphere and Aber acquired title to the Noranda property. Noranda has no residual interest in any of the property. Little exploration work appears to have been completed by the joint venture. No new work was reported after 1990 until the summer of 1998,

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when Aber and Hemisphere contracted CBA carry out summer field programs. This work included: the completion of 7 diamond drill holes aggregating 1,543 m, and a down-hole EM survey of the holes drilled in the vicinity of the main mineralization. The down-hole survey did not indicate any strong conductive responses associated with the known mineralization.

In conjunction with this program CBA estimated a new resource of 1,083,000 t at 7.15% Zn, 2.78% Pb, 0.08% Cu, 335 g/t Ag and 0.70 g/t Au in the Indicated category and 3,790,000 t at 4.37% Zn, 1.73% Pb, 0.08% Cu, 125 g/t Ag and 0.49 g/t Au in the Inferred category. This estimate does not comply with NI 43-101 and is presented for historical purposes only.

Early in 1999, Watts, Griffis and McOuat Ltd. (WGM) completed a scoping study on the Sunrise deposit. The study included a new resource estimate of 773,000 t at 8.5% Zn, 3.2% Pb, 0.10% Cu, 377 g/t Ag and 0.90 g/t Au at a \$50 Net Smelter Return (NSR) cut-off in the Indicated category and 463 t at 9.9% Zn, 4.7% Pb, 0.07% Cu, 484 g/t Ag and 0.90 g/t Au at a \$50 NSR cut-off in the Inferred category. This estimate may not meet the requirements of NI 43-101 and is presented for historical purposes only. The study was completed prior to the implementation of NI 43-101 and should be termed a “Preliminary Assessment”. The study demonstrated that there was insufficient tonnage within the presently outlined deposit to carry the capital costs of either an underground or open pit mine and generate a satisfactory rate of return at the then stated metal prices. (US\$0.50 /lb for Zn, US\$0.30/lb for Pb, US\$300/oz for Au, US\$6.00 for Ag).

In 2000, RPA presented a reclassified resource estimate based on the 1988 estimate of 1,162,000 t at 8.35% Zn, 4.05% Pb, 0.09% Cu, 357 g/t Ag and 0.99 g/t Au in the Indicated Resource category and 463,000 t at 9.9% Zn, 4.7% Pb, 0.07% Cu, 484 g/t Ag and 0.90 g/t Au at a \$50 NSR cut-off in the Inferred Resource category. This estimate used a \$100 cut-off insitu metal value based on 1988 prices. This resource estimate may not be compliant with NI 43-101 and is presented for historical purposes only.

## **GEOLOGICAL SETTING**

### **REGIONAL GEOLOGY**

The Sunrise Property lies within the Slave Lithostructural Province, one of the major divisions of the North American craton (Figure 3). The Slave Province is of Archean age (2.7 to 2.5 Ga) and comprises plutonic-metamorphic terrane with older gneissic inliers. It is characterized by tightly folded metasedimentary rocks, mostly turbidites of plutonic and felsic volcanic provenance, intruded by plutons ranging in composition from gabbro to granite. Subordinate volcanic sequences occur as folded complexes, either overlain by turbidites or as inward-facing homoclines bordering turbidite belts.

The property covers part of an Archean volcanic complex, the Beaulieu Group, which extends for a distance of about 120 km north from Sunset Lake (Figure 3). The complex is broadly linear and oriented north-south, with Sunset Lake lying at its southern end. The Beaulieu Group is part of the Yellowknife Supergroup.

The Beaulieu Group rocks lie, in part, on a basement belonging to the Sleepy Dragon Gneissic Complex. The base of the Beaulieu Group is a thick sequence of basaltic rocks with some chemical and fine-grained clastic sedimentary rocks and narrow units of conglomerate of the Sunset Lake Formation. The mafic units are overlain by,



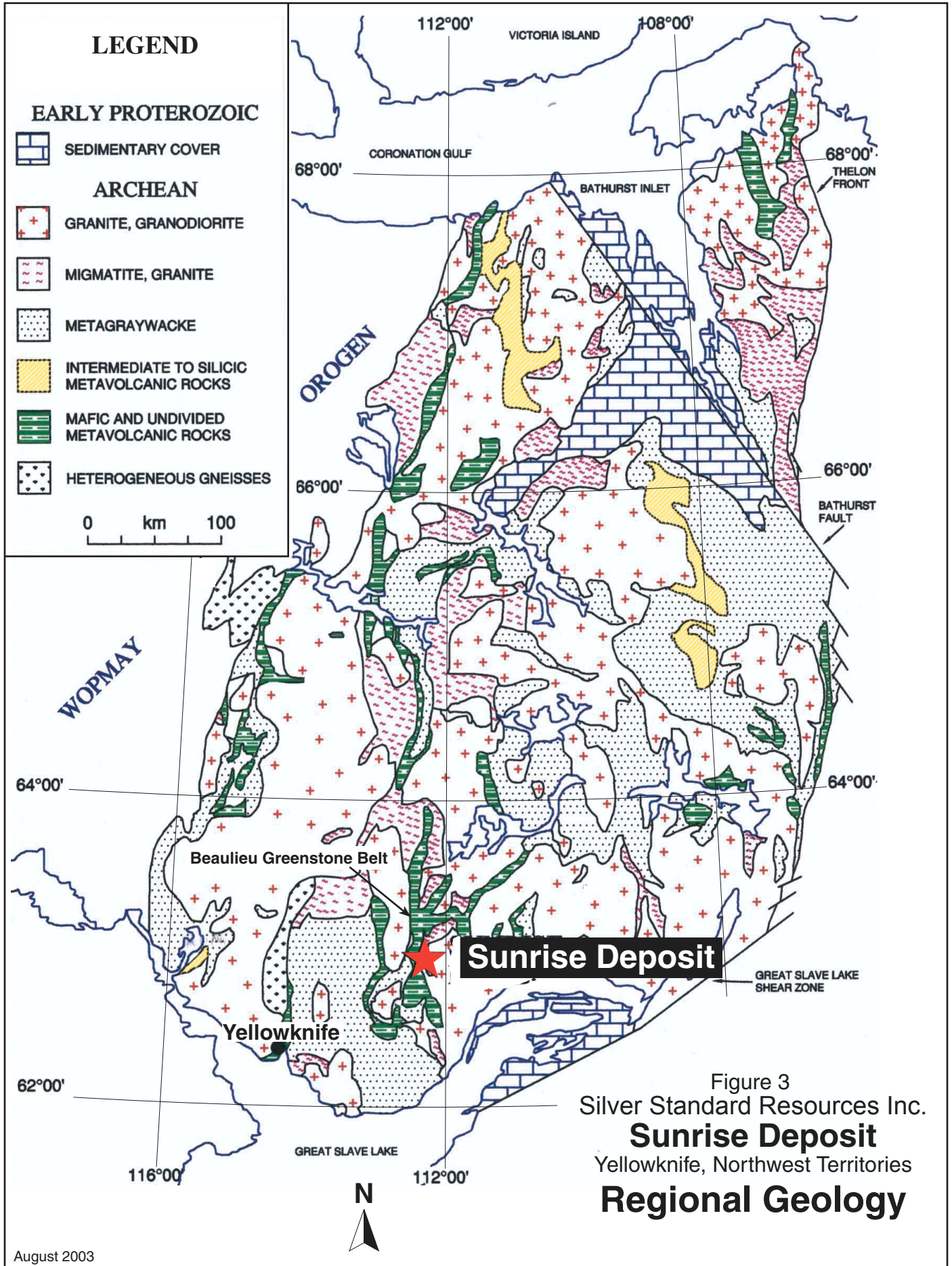


Figure 3  
Silver Standard Resources Inc.  
**Sunrise Deposit**  
Yellowknife, Northwest Territories  
**Regional Geology**

and interfinger with, the overlying Alice Formation, which consists of a lower andesite member and an upper dacite member. The Alice Formation rocks are typically volcanic or volcanoclastic. Overlying these rocks are a number of local felsic volcanic centres, including the volcanic rocks at Sunset Lake that are up to 1,100 m thick.

Henderson (1985) reports that the metamorphic grade of the Beaulieu Group is typically amphibolite facies, but in the Sunset Lake area, the metamorphic grade is lower greenschist facies.

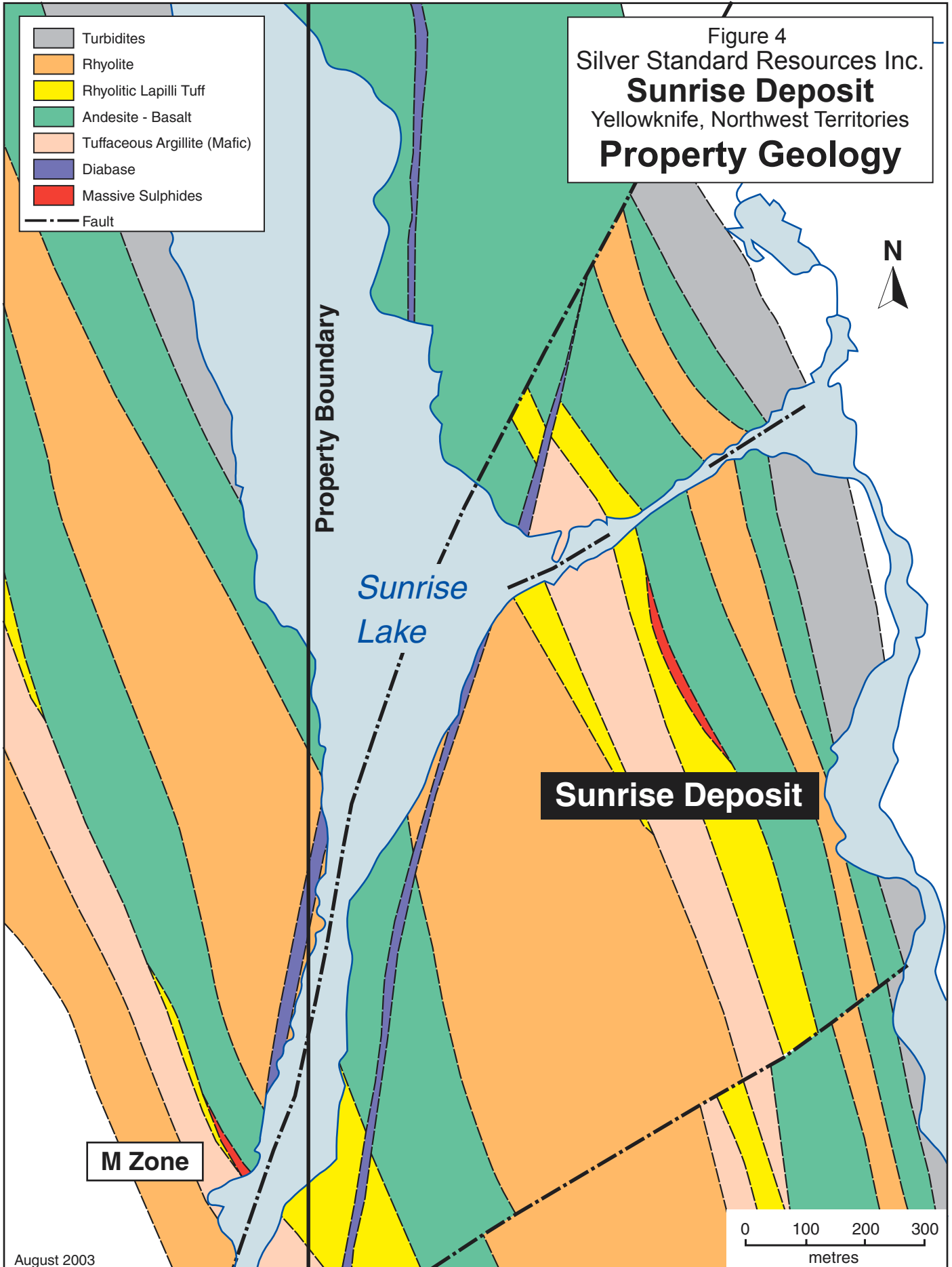
## **LOCAL AND PROPERTY GEOLOGY**

The main area of mineralization is located in an area bounded on the west by Sunrise Lake, on the east by Sunset Lake and on the north by Beaulieu River. Within this area, units strike at about 340° and dip at about 65° to the northeast. Bedrock exposure is poor but the attitude of the lithologic units close to the deposit is well known from diamond drilling.

Near the Sunrise deposit, the stratigraphy has been described by Vivian and Covello (1998) as being divisible into seven informal, discrete lithological suites. From bottom to top, these are: the Western Rhyolite, the Footwall Sediments, the Ore Zone, the Hanging Wall Mafic Suite, the Hanging Wall Felsic Suite, the Charlie Zone Sediments and the Eastern Cycle consisting of intermediate volcanic rocks. The results of mapping near the Sunrise deposit are shown on Figure 4.

The Western Rhyolite is considered to be a felsic dome by Vivian and Covello (1998) and may be related to the formation of the Sunrise deposit. After the formation of the dome, there was a period of relative quiescence while the argillites and felsic tuffs of the Footwall Unit were deposited. This was followed by deposition of rhyolitic crystal and felsic tuffs that host at least one and possibly two massive zones.

Figure 4  
Silver Standard Resources Inc.  
**Sunrise Deposit**  
Yellowknife, Northwest Territories  
**Property Geology**



A sequence of mafic volcanic rocks, the Hanging Wall Mafic Suite consists of mafic to intermediate flows and lapilli tuffs, and overlies the sulphides. These rocks have been intensely carbonated altered and somewhat brecciated. The Hanging Wall Felsic Suite consists of rhyolitic, quartz eye crystal tuff, an argillite unit and more intermediate to felsic volcanic rocks, and overlies the Hanging Wall Mafic Suite. The lower felsic tuff unit is sericitized, altered and intensely mylonitized.

The unit known as Charlie Zone Sediments is predominately a thick turbidite sequence with some narrower graphitic argillite layers. The lower part of the Charlie Zone Sediments is a carbonate-rich exhalite. The Eastern Cycle of intermediate flows and minor tuff units with interbedded chert and sulphide exhalites, overlie the Charlie Zone Sediments.

Two important structures were noted in the mapping. The Beaulieu Fault lies under the Beaulieu River immediately north of the Sunrise deposit. This dips south and cuts the massive sulphide lens as shown on the drill sections. The Campsite Fault strikes northeast-southwest and cuts the M Zone mineralization. The M Zone on the Sunset Property is considered to be the faulted equivalent of the Sunrise deposit. The connection between the M Zone and the Sunrise deposit, however, is unclear at this time. The metamorphic grade around the deposit area is lower greenschist facies.

## **DEPOSIT TYPES**

The Sunrise deposit is considered to be a typical volcanogenic massive sulphide deposit. (VMS). Typically these base metal-rich deposits occur at the top of a rhyolite volcanic sequence and are associated with fine tuffs, sediments or chert and overlain by a sequence of mafic volcanic rocks. They are thought to have been deposited as the result of the discharge of metal-rich brines from vents on the sea floor with the sulphides precipitating on the floor as a bed of sulphides due to temperature and chemical changes.

## **MINERALIZATION**

The Sunrise deposit consists of a lens of polymetallic massive sulphides on top of a complex zone of low-grade mineralization. The massive sulphide lens is 3 m to 4 m thick and has a strike length of about 120 m at the surface. At depth it is up to 190 m long. The deposit remains open down plunge, since significant intersections have been encountered 750 m below surface. The lens dips 60° to 65° at the east. Figure 5 is a longitudinal section of the deposit and Figures 6 and 7 are two typical cross sections.

The Sunrise deposit is considered to be a volcanogenic massive sulphide (VMS) deposit. The mineralization is typically pyrite-rich and banded. McLeod (1998) completed some mineralogical studies that have been partly confirmed by work completed by Lakefield Research Limited (1989). The mineral assemblage of the Sunrise deposit is presented in Table 2 below.

**TABLE 2 MINERALOGY**  
**Silver Standard Resources Inc Sunrise Property**

| <b>Major</b> | <b>Minor</b> | <b>Trace</b>  |
|--------------|--------------|---------------|
| Pyrite       | Chalcopyrite | Pyrargyrite   |
| Sphalerite   | Tetrahedrite | Stannite      |
| Galena       | Arsenopyrite | Gudmundite    |
|              | Pyrrhotite   | Native gold   |
|              |              | Native silver |

A zone of low-grade discontinuous mineralization partially underlies the massive lens and extends south for some 320 m and varies in thickness up to about 50 m. The intersection in one of the deepest holes (DDH R-61-88) is correlated with this lower grade mineralization. While assay values of 6% Zn to 8% Zn and 1% Pb to 2% Pb over 1 m occur in this zone, typical mineralized intersections over 1 m are generally in the range of 1% Zn to 3% Zn and 0.5% Pb to 2% Pb.

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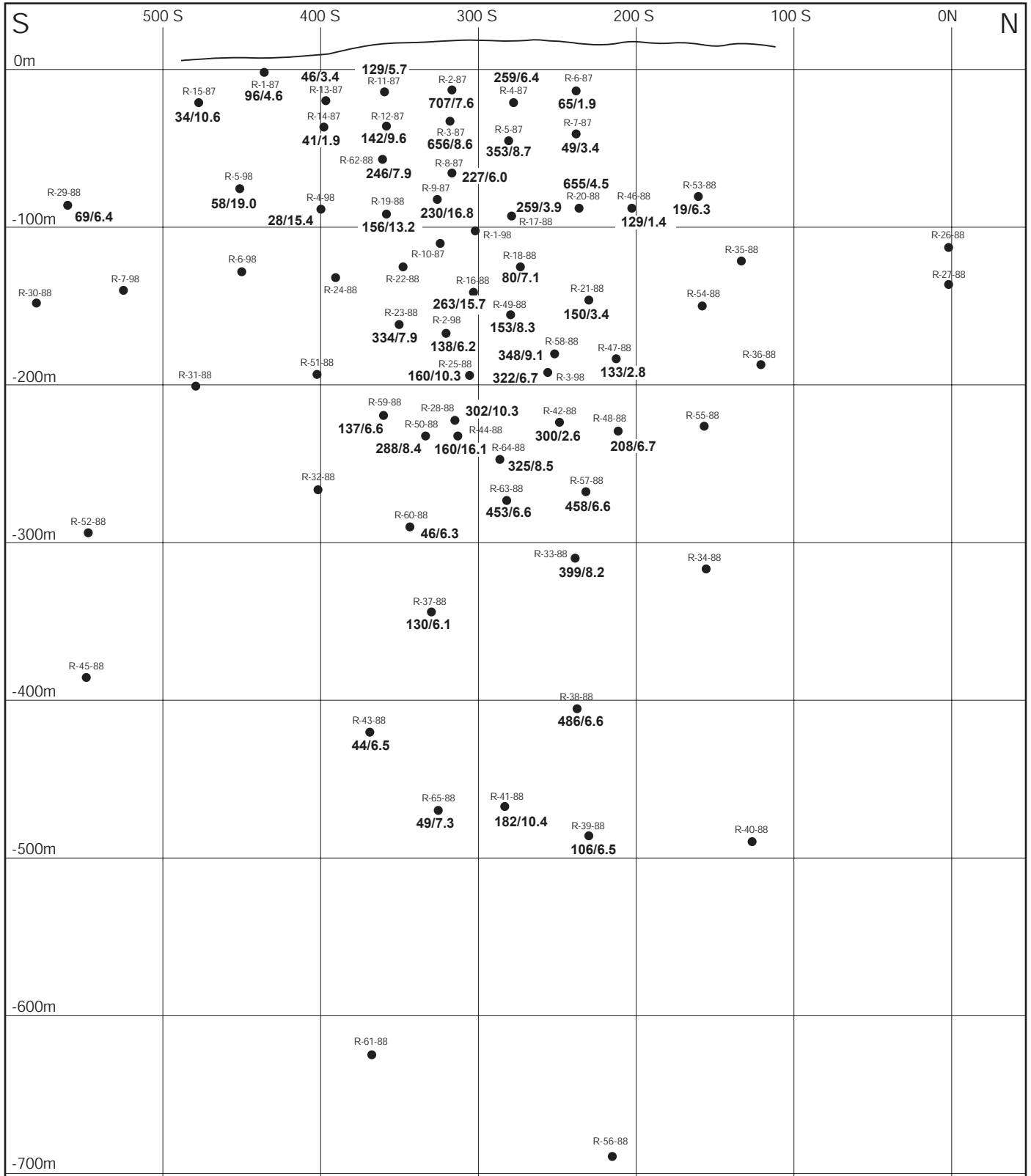


Figure 5  
 Silver Standard Resources Inc.  
**Sunrise Deposit**  
 Yellowknife, Northwest Territories

**LEGEND**

● R-41-88 Drill Hole ID  
 10.4/6.3 Pierce Point  
 g/t Silver / width (m)

0 25 50 75 100  
 metres

**Vertical Longitudinal Section**

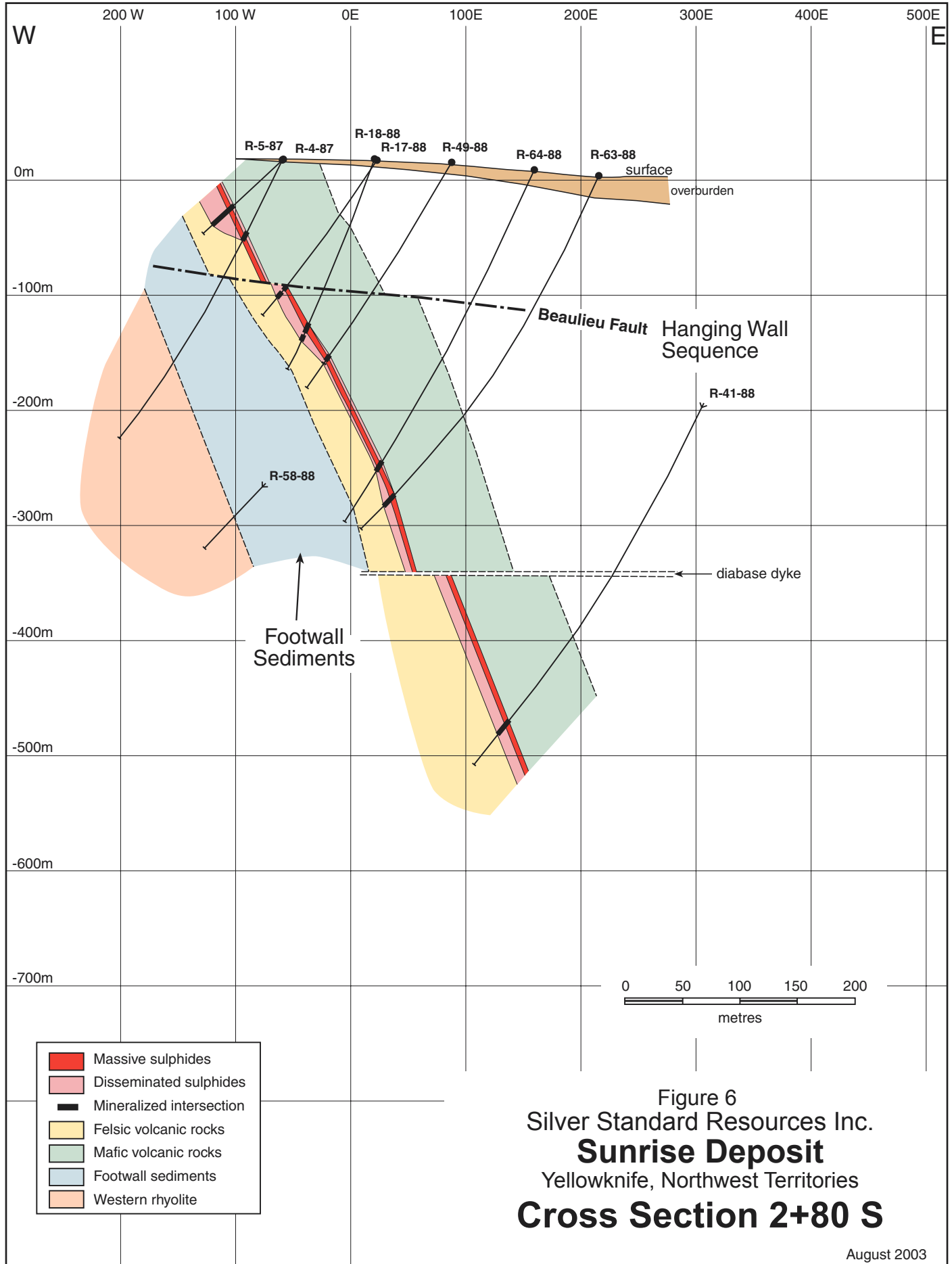


Figure 6  
 Silver Standard Resources Inc.  
**Sunrise Deposit**  
 Yellowknife, Northwest Territories  
**Cross Section 2+80 S**

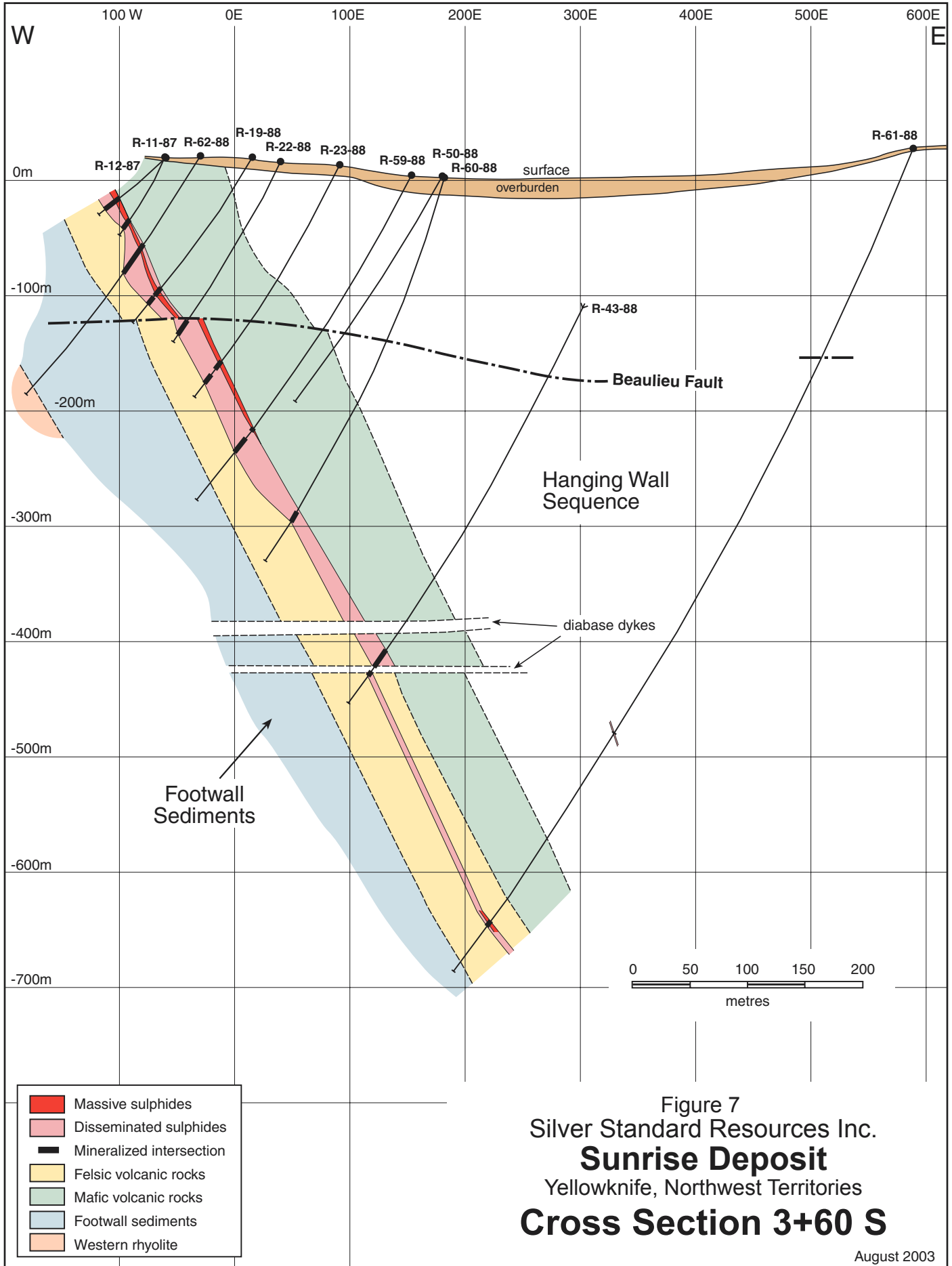


Figure 7  
 Silver Standard Resources Inc.  
**Sunrise Deposit**  
 Yellowknife, Northwest Territories  
**Cross Section 3+60 S**



## **EXPLORATION**

SSR has not carried out any exploration on the property since the acquisition. Previous exploration has been discussed in the section on History.

## **DRILLING**

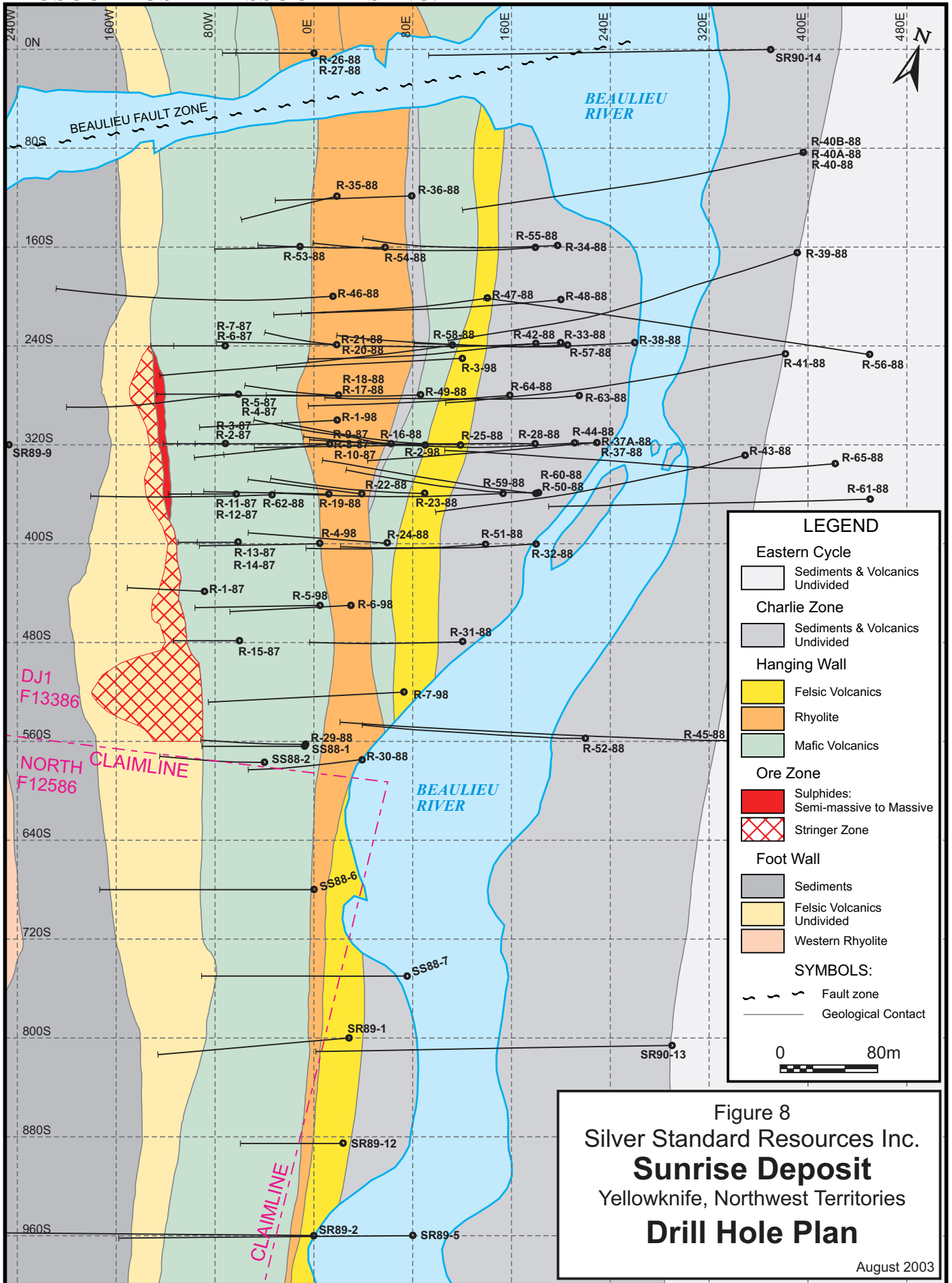
SSR has not carried out and drilling on the property since acquisition. The initial drilling was carried out in 1987 and 1988 by either Connors Drilling or Midwest Drilling under the supervision of geologists considered to be “Qualified Persons”.

During the 1987 and 1988 diamond drilling programs, the Sunrise deposit was outlined by some 65 NQ-sized holes in 18,951 m diamond drilling (Figure 8). Some 1,280 m of drilling was also completed in testing peripheral targets. During the 1998 diamond drilling campaign, a further 7 NQ-sized holes were completed. Of these, 3 holes tested the massive sulphide lens with 744 m of drilling and 4 holes, totalling 799 m of drilling, tested the footwall disseminated mineralization south of the main lens.

Acid test were used to measure the down-hole dip variation in the shallow holes while the Gyro-Log system was used to measure the dip and azimuth of the deeper holes at 30 m intervals down hole.

## **SAMPLING METHOD AND APPROACH**

After logging by the geologist, the core was split on site using a mechanical splitter and samples of split core were sent for assay. The remaining core is stored on the



property. Sample length was selected by the geologist based on geology and mineralization. The average sample length varied from 0.5 m in the main mineralized zone containing visible economic mineralization to 1.0 or 1.5 m in the stringer and weakly mineralized footwall zones.

## **SAMPLE PREPARATION, ANALYSES AND SECURITY**

Samples from the early 1987-1988 drilling campaign were sent to the Barringer Magenta Ltd. (Barringer) laboratory located in Yellowknife, N.W.T. for sample prep. Barringer completed internal checks on a regular basis and some samples were sent to a Barringer laboratory in Calgary and to Loring Laboratories Ltd. (Loring) in Calgary for external checking. It is reported (Tanaka pers. comm.) that there were problems with the silver assays when checks were run by Loring Laboratories in Calgary and as a result Barringer re-assayed most of the holes from 1-87 to 15-87. The samples from hole 16-88 to 65-88 were all sent to Loring. Some checks were carried out at Hecla Silver Mines in Coeur d'Alene Idaho but the full extent of the QA/QC program is not documented.

Samples from the 1998 drilling campaign were sent to Eco-Tech Laboratories (Eco-Tech) located in Kamloops, B.C. Some checks were carried out by Acme Lbs in Vancouver but the extent of the check program is unknown. Eco-Tech completed internal checks on a regular basis.

Detailed sample prep and assaying procedures used for the Barringer assays are not noted in the reports but standard procedures are assumed to have been used. Loring used Atomic Absorption (AA) to determine Cu, Pb, and Zn values with those values greater than 5% Pb and 5% Zn were rerun using wet chemical methods, while Au and Ag were determined by standard 1/2 assay ton fire assay method.

EcoTech used an aqua regia digestion and analysed the solutions by AA for the various elements except for gold which was fire assay with an AA finish. Over limit

values for copper, lead, zinc and silver were analysed by similar wet chemical methods with larger samples followed by AA analyses while the gold values were determined by standard fire assay methods.

Security procedures are not documented but are the samples are reported to have been shipped by charter aircraft to Yellowknife and shipped by air from there to the labs for preparation and assaying.

## **DATA VERIFICATION**

RPA has not taken independent samples from the property but as the drill core sampling was carried out by Qualified Persons known to RPA, RPA has no reason to believe that the assay results incorporated herein are not representative of the mineralization found on the property.

During a check of the database RPA noted that the assays used in holes 1-87 to 15-87 were either Loring check assays or Barringer re-assays for holes 1-87 to 15-87. The reasons for this substitution were discussed previously.

RPA compared the original drill logs and the original assay sheets for 13 randomly selected drill holes (346 samples representing 12.7% of the database), and found 4 typographical errors. These were corrected in the SSR database. RPA also checked five randomly selected holes from the database used by SSR and compared them to the drill logs and found no errors.

## **ADJACENT PROPERTIES**

There are no significant adjacent properties as defined by NI 43-101.

## **METALLURGICAL TESTING**

Preliminary metallurgical testing completed in 1988 by the Technical Research Section of Cominco Ltd. (Cominco) showed that, while separate lead, zinc and mixed concentrates could be produced from the mineralization, there were significant lead losses into the zinc concentrates, and significant lead and precious metal losses into tailings. Cominco recommended further metallurgical work at the time. Lakefield also completed some metallurgical testing in 1989 that indicated the best lead concentrate graded 50% Pb with 74% recovery of lead and 65% recovery of silver while the best zinc concentrate yielded a 54% Zn concentrate with 79% recovery.

## **MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

The current resource estimate (Table 3) was carried out by SSR using a classical polygonal method. Drill hole intercepts were taken directly from the drill logs (CBA 1998). Polygons were created within AutoCAD and AutoCAD calculated the areas. Horizontal widths were calculated using the ratio of core length to the width used by CBA in their 1998 estimate. Intercepts not used by CBA were measured on the cross sections. The intercepts were composited primarily using a geological cut-off based on the sulphide content and a nominal 30 g/t Ag grade. Internal values below 30 g/t were included for geological continuity if the composite remained above cut-off. Stringer mineralization was included where silver grades were above 30 g/t and occasionally lower if base metal grades were high. It is assumed the upper 100 m could be mined by open pit methods and the stringer mineralization would have to be removed to access the massive sulphides. The classification of the mineralization is based on the number of drill holes on a section and the continuity of the mineralization. The main massive sulphide horizon has been drilled on sections spaced 40 m apart, and above the -280 m elevation, the down dip continuity of the horizon has been tested with holes 25 to 30 m apart down dip. All mineralization in the massive sulphide horizon above 280 m is considered an Indicated Resource while the near surface stringer mineralization and the

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massive sulphides below 280 m are considered to be Inferred Resources. Forty holes define the massive sulphide Indicated Resource horizon.

Density determinations are reported to have been carried out using core samples on the property during the 1987-88 diamond drilling campaign, by weighing samples in air and water. Details of this work are not available to RPA. McLeod (1988) included the results of 8 density determinations as part of his mineralogical examination. These ranged from a 3.33 tonnes per cubic metre ( $t/m^3$ ) to  $4.44 t/m^3$  and the average of the 8 readings was  $4.03 t/m^3$ . The sample that reported the lowest value was estimated to contain only about 50% sulphides. In its resource estimate, SSR used on average density of  $4 t/m^3$  for the Sunrise deposit. RPA, however, considers that this value is somewhat low for massive sulphides, although it may be appropriate for the stringer mineralization.

SSR has estimated an Indicated and Inferred Resource for the massive sulphide zone and an Inferred Resource for the footwall stringer zone resource as stated in Table 3 below.

**TABLE 3 RESOURCE ESTIMATE (UNCUT)**  
**Silver Standard Resources Inc. Sunrise Property**

| <b>Resource Category</b> | <b>Tonnes</b> | <b>% Pb</b> | <b>% Zn</b> | <b>% Cu</b> | <b>Ag g/t</b> | <b>Au g/t</b> |
|--------------------------|---------------|-------------|-------------|-------------|---------------|---------------|
| Indicated                | 1,522,000     | 2.39        | 5.99        | 0.08        | 262           | 0.67          |
| Inferred                 | 2,555,000     | 1.92        | 4.42        | 0.07        | 169           | 0.51          |

To validate the resource estimate RPA approximated a NSR using typical smelter contracts, assumed metallurgical recoveries based on the limited metallurgical testing and on the following price assumptions:

- Silver US\$5.50 per ounce
- Gold US\$400 per ounce
- Zinc US\$0.45 per pound
- Lead US\$0.25 per pound

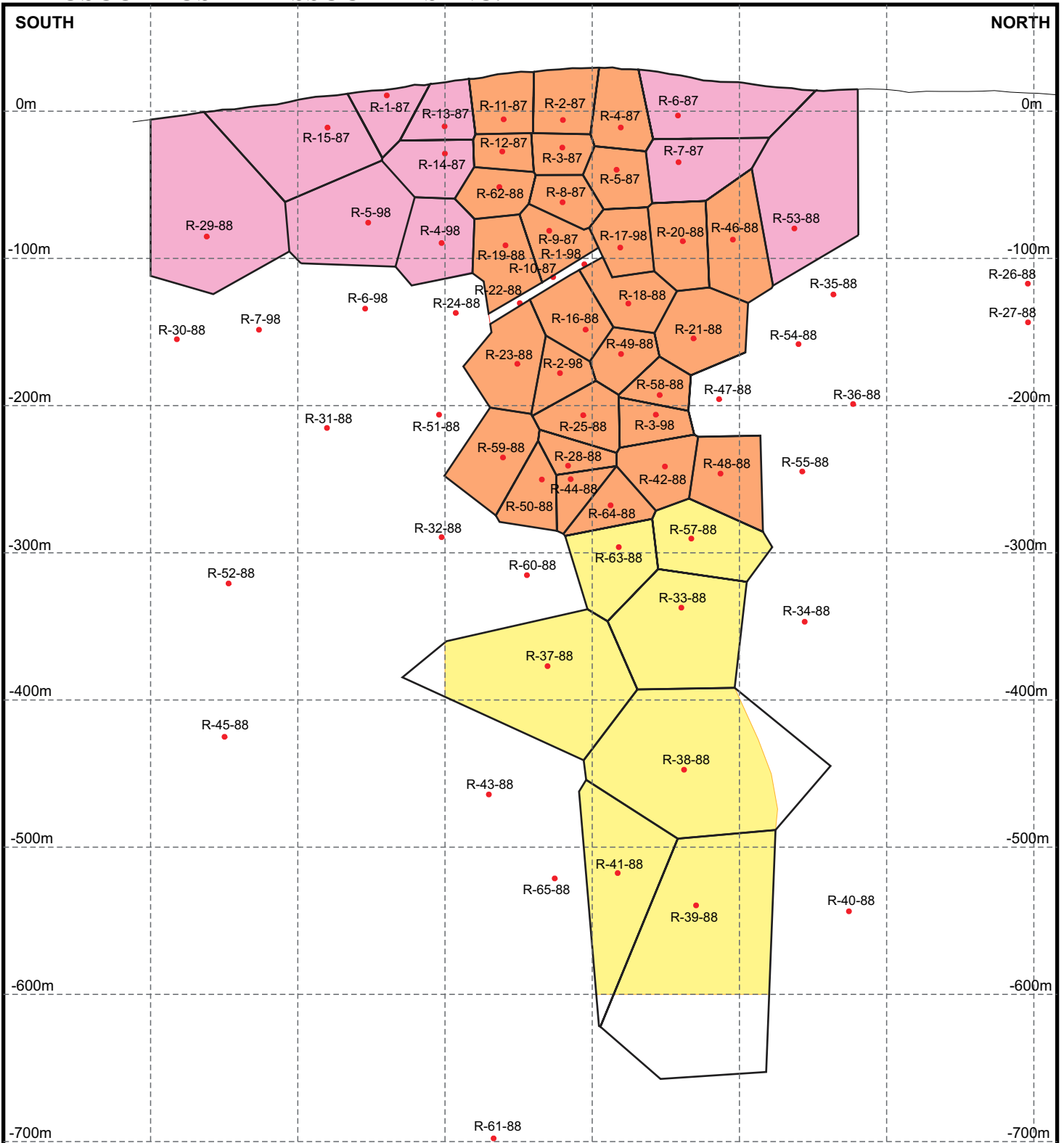
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- Copper US\$0.80 per pound
- US\$75 transportation cost
- CDN\$1.45:US\$1.00

Using this NSR approximation, RPA established that five polygons that are included within the resources to preserve continuity are marginally below either a \$15 NSR cut-off for the near surface stringer mineralization or a \$50 NSR cut-off for the massive sulphide lens. RPA also looked at the impact of higher metal prices and higher metal prices (\$6.50/oz. Ag and 0.55% Zn) would raise the NSR above the cutoff for all but one polygon. RPA considers that the above results are reasonable and substantiate the use of the 30g/t Ag cut-off used by SSR.

RPA recommends that a NSR cut-off be used in future resource estimations as it is considered more appropriate for polymetallic base metal deposits.



**LEGEND**

- STRINGER MINERALIZATION ( INFERRED OPEN PITTABLE )
- ( INDICATED ) MASSIVE SULPHIDE AND ADJACENT STRINGER MINERALIZATION
- ( INFERRED ) MASSIVE SULPHIDE AND ADJACENT STRINGER MINERALIZATION



August 2003

Figure 9  
 Silver Standard Resources Inc.  
**Sunrise Deposit**  
 Yellowknife, Northwest Territories  
**Longitudinal Section**  
**Showing Resource Polygons**



## **ENVIRONMENTAL CONSIDERATIONS**

There are no significant environmental liabilities relating to the property. An inspection by Indian and Northern Affairs Canada in August 2002, noted that some general clean up of the campsite was required and full fuel drums had to be labeled or removed. SSR has indicated that the cleanup has been scheduled for this summer.

## **INTERPRETATION AND CONCLUSIONS**

The Sunrise deposit contains an Indicated Resource of 1.52 mt containing 12.8 million ounces of silver and an additional Inferred Resource of 2.56 mt containing 13.9 ounces of silver.

RPA has reviewed the reported methodology used to estimate the resources and agrees that it is generally appropriate for the style of mineralization and that the work has been as thorough and accurate as possible given the available database. RPA is of the opinion that the classification of Indicated and Inferred Resources as reported meets the definitions as stated by NI 43-101 and defined by the CIM Standards on Mineral Resources and Reserves definitions and guidelines as adopted by the CIM Council on August 20, 2002.

RPA considers that mining the Sunrise deposit is uneconomic at this time. The economic parameters of any mining venture would be enhanced by an increase in the resources, either by extending the existing deposit, or discovering other deposits close to the present deposit to share infrastructure. In RPA's opinion, there is good potential for additional tonnage of similar grade mineralization in the area of the Sunrise deposit.

## RECOMMENDATIONS

SSR has determined that no further work is warranted at the present time. Should metal prices improve, further work would be warranted. Any new program should include data compilation and re-assessment, to identify remaining exploration targets in the vicinity of the Sunrise deposit and on the rest of the property. The proposed work should include reviews of the airborne and ground geophysical survey results, together with the geological setting of the deposit, with emphasis on structural geology and lithogeochemistry.

The work program should include deep penetration EM surveys to investigate the potential of the favourable horizon at depth along strike. Further drilling is contingent on the results of the surveys.

Table 4 outlines the proposed budget for the above program.

**TABLE 4 PROPOSED PROGRAM**  
**Silver Standard Resources Inc. Sunrise Property**

| <b>Proposed Work</b>               | <b>\$</b>        |
|------------------------------------|------------------|
| Data compilation and re-assessment |                  |
| Geophysics, Geology, Geochemistry  | 100,000          |
| Ground Geophysics 50 km @ 500      | 25,000           |
| Contingency and Overhead           | 15,000           |
| <b>Total</b>                       | <b>\$140,000</b> |

RPA has reviewed the work program and budget and is of the opinion that the property is of sufficient merit to warrant the work program and budget as proposed.

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## **SIGNATURE PAGE**

This report titled “Technical Report on the Sunrise Property”, dated September 3, 2003 was prepared by and signed by the following authors:

Dated at Vancouver BC  
September 3, 2003

“C. Stewart Wallis”  
C. Stewart Wallis P.Geol.  
Consulting Geologist

Dated at Toronto, Ontario  
September 3, 2003

“William E. Roscoe”  
William E. Roscoe, Ph.D., P. Eng.  
Principal

## **CERTIFICATE OF QUALIFICATIONS**

I, C. Stewart Wallis P.Geo. do hereby certify that:

1. I am an independent consulting geologist retained by:  
Roscoe Postle Associates Inc.  
Suite 2000, 1066 West Hastings Street  
Vancouver, British Columbia, Canada  
V6C 3X2.
2. I graduated with a BSc. degree in Geology from the McMaster University in 1967.
3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and Saskatchewan, a Professional Geologist registered in the State of Wyoming, a Fellow of the Geological Association of Canada, a member of the CIM, a Certified Professional Geologist as recognized by the American Institute of Professional Geologists.
4. I have worked as a geologist for a total of 36 years since my graduation from university.
5. 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 -10 1.
6. I am responsible for the overall preparation of the report titled "Technical Report on the Sunrise Property, NWT" (the "Technical Report") and dated September 3, 2003. I have not visited the property.
7. I have not had prior involvement with the property that is the subject of the Technical Report
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101FI, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this Third Day of September, 2003

“C. Stewart Wallis”

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C. Stewart Wallis P.Geo.

## **CERTIFICATE OF QUALIFICATIONS**

### **WILLIAM ROSCOE**

As one of the authors of the **TECHNICAL REPORT ON THE SUNRISE PROPERTY, NWT FOR SILVER STANDARD RESOURCES INC.** (the Issuer) dated September 3, 2003, I hereby make the following statements:

1. My name is William E. Roscoe and I am a Consulting Geologist employed by Roscoe Postle Associates Inc. My office address is Suite 501, 55 University Avenue, Toronto, ON, M5J 2H7.
2. I am a Qualified Person for the purposes of National Instrument 43-101 of the Canadian Securities Administrators. I have received the following degrees in Geological Sciences:
  - B.Sc. (Eng.) 1966 - Queen's University, Kingston, Ontario
  - M.Sc. 1969 - McGill University, Montreal, Quebec
  - Ph.D. 1973 - McGill University, Montreal, Quebec.

I am registered as a Professional Engineer and designated as a Consulting Engineer in the Province of Ontario. I am a Member of the Canadian Institute of Mining, Metallurgy and Petroleum, and a Fellow of the Geological Association of Canada.

The Technical Report is based on my previous involvement with resource estimates, preparation of reports and my site visit. I have been practising as a professional geologist for over 35 years. My relevant experience for the purpose of the Technical Report is:

- Resource and reserve audits and estimates on numerous gold and base metal deposits
  - Resource and reserve audits and estimates and supervision of some of many volcanogenic massive base metal sulphide deposits, including the Sunrise deposit, Laronde Mine, Tambo Grande deposit, Louvicourt mine, Hanson Lake deposit, Restigouche deposit, Caribou mine, Heath Steele deposit, CNE deposit, Lara deposit, and Izok Lake deposit.
3. I visited the Sunrise project site in 1988 when drilling was in progress, in connection with another assignment.
  4. I am responsible for the supervision and review of the Mineral Resource and Mineral Reserve section of the Technical Report.

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5. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
6. I am independent of the Issuer applying the tests set out in section 1.5 of National Instrument 43-101.
7. I have had no prior involvement with the property that is the subject of the Technical Report, other than previous assignments as an independent consultant for previous operators of the property.
8. I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

Dated at Toronto, Ontario  
September 3, 2003

“William E. Roscoe”  
William E. Roscoe, Ph.D., P.Eng.  
Principal



# APPENDIX 1

## MINERALIZED INTERCEPTS

### Silver Standard Resources Inc. Sunrise Property

| Hole  | Length m | Width m | Ag g/t | Au g/t | %Pb  | %Zn   | %Cu  |
|-------|----------|---------|--------|--------|------|-------|------|
| 1-87  | 4.7      | 4.65    | 96.4   | 0.36   | 0.68 | 2.43  | 0.04 |
| 2-87  | 7.85     | 7.55    | 707.38 | 1.18   | 3.47 | 10.31 | 0.10 |
| 3-87  | 10.15    | 8.55    | 655.56 | 0.90   | 3.53 | 8.96  | 0.07 |
| 4-87  | 8.0      | 6.45    | 258.6  | 0.35   | 0.76 | 5.79  | 0.05 |
| 5-87  | 10.64    | 8.73    | 352.6  | 0.69   | 1.18 | 6.83  | 0.10 |
| 6-87  | 2.0      | 1.92    | 65.44  | 0.19   | 0.10 | 1.57  | 0.04 |
| 7-87  | 3.75     | 3.45    | 49.07  | 0.11   | 0.10 | 0.55  | 0.05 |
| 8-87  | 6.1      | 5.96    | 226.85 | 0.76   | 0.86 | 2.64  | 0.04 |
| 9-87  | 17.8     | 16.81   | 230.0  | 0.73   | 1.99 | 4.95  | 0.10 |
| 11-87 | 5.85     | 5.74    | 128.52 | 1.36   | 2.41 | 5.52  | 0.36 |
| 12-87 | 10.7     | 9.62    | 142.11 | 1.17   | 1.30 | 3.92  | 0.13 |
| 13-87 | 3.5      | 3.44    | 45.59  | 0.56   | 1.00 | 2.74  | 0.05 |
| 14-87 | 1.92     | 1.89    | 41.26  | 0.47   | 0.10 | 1.89  | 0.02 |
| 15-87 | 11.14    | 10.55   | 34.45  | 0.16   | 0.78 | 2.02  | 0.09 |
| 16-88 | 17.78    | 15.7    | 262.9  | 0.68   | 4.63 | 10.07 | 0.08 |
| 17-88 | 4.22     | 3.89    | 258.96 | 0.76   | 3.45 | 9.68  | 0.05 |
| 18-88 | 9.0      | 7.11    | 80.06  | 0.25   | 1.31 | 4.42  | 0.02 |
| 19-88 | 14.13    | 13.17   | 156.36 | 0.42   | 1.09 | 3.54  | 0.09 |
| 20-88 | 4.75     | 4.48    | 654.72 | 0.57   | 6.28 | 12.40 | 0.09 |
| 21-88 | 4.51     | 3.45    | 150.41 | 0.51   | 1.34 | 3.25  | 0.04 |
| 23-88 | 8.69     | 7.9     | 334.27 | 0.61   | 1.81 | 4.61  | 0.04 |
| 25-88 | 11.3     | 10.3    | 159.79 | 0.51   | 1.88 | 5.05  | 0.04 |
| 28-88 | 10.87    | 10.33   | 302    | 0.92   | 3.57 | 8.48  | 0.06 |
| 29-88 | 6.87     | 6.44    | 68.71  | 0.18   | 0.67 | 1.67  | 0.01 |
| 33-88 | 9.47     | 8.18    | 398.56 | 0.58   | 3.18 | 6.99  | 0.06 |
| 37-88 | 7.15     | 6.10    | 130.42 | 0.39   | 1.43 | 3.03  | 0.08 |
| 38-88 | 7.91     | 6.64    | 486.19 | 0.34   | 3.80 | 7.64  | 0.08 |
| 39-88 | 7.10     | 6.50    | 106.32 | 0.68   | 1.56 | 3.90  | 0.14 |
| 41-88 | 11.18    | 10.35   | 182.43 | 0.99   | 3.06 | 7.14  | 0.15 |
| 42-88 | 2.68     | 2.57    | 299.92 | 0.48   | 3.12 | 6.31  | 0.06 |
| 43-88 | 7.26     | 6.52    | 43.74  | 0.07   | 1.01 | 1.88  | 0.03 |
| 44-88 | 16.67    | 16.11   | 160.36 | 0.37   | 2.70 | 5.77  | 0.07 |
| 46-88 | 1.5      | 1.4     | 129.18 | 0.15   | 1.67 | 4.28  | 0.03 |
| 47-88 | 2.85     | 2.79    | 133.19 | 0.25   | 1.00 | 2.08  | 0.03 |
| 48-88 | 7.0      | 6.69    | 207.75 | 0.33   | 1.75 | 3.22  | 0.0  |
| 49-88 | 9.27     | 8.29    | 153.25 | 0.62   | 1.94 | 4.86  | 0.12 |
| 50-88 | 9.21     | 8.40    | 288.14 | 0.97   | 1.93 | 4.83  | 0.06 |
| 53-88 | 7.2      | 6.28    | 18.89  | 1.09   | 1.42 | 3.91  | 0.00 |
| 57-88 | 7.38     | 6.62    | 457.6  | 0.92   | 2.93 | 5.85  | 0.05 |

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| Hole  | Length m | Width m | Ag g/t | Au g/t | %Pb  | %Zn   | %Cu  |
|-------|----------|---------|--------|--------|------|-------|------|
| 58-88 | 10.02    | 9.09    | 347.5  | 0.63   | 4.63 | 7.15  | 0.07 |
| 59-88 | 7.38     | 6.65    | 136.81 | 0.67   | 1.47 | 4.06  | 0.18 |
| 60-88 | 6.93     | 6.28    | 45.97  | 0.48   | 1.63 | 3.23  | 0.18 |
| 62-88 | 9.0      | 7.93    | 245.59 | 0.89   | 1.50 | 5.10  | 0.07 |
| 63-88 | 7.0      | 6.65    | 452.51 | 0.65   | 5.92 | 11.67 | 0.09 |
| 64-88 | 9.75     | 8.5     | 325.1  | 1.03   | 4.07 | 8.60  | 0.07 |
| 65-88 | 7.93     | 7.28    | 48.96  | 0.42   | 1.21 | 3.12  | 0.05 |
| 2-98  | 7.99     | 6.2     | 137.93 | 0.56   | 1.65 | 4.07  | 0.02 |
| 3-98  | 7.73     | 6.69    | 322.47 | 0.84   | 3.30 | 6.92  | 0.03 |
| 4-98  | 17.0     | 15.45   | 28.06  | 0.34   | 1.08 | 2.74  | 0.07 |
| 5-98  | 20.4     | 19.03   | 57.75  | 0.39   | 1.21 | 3.41  | 0.06 |