



## ASX Release

29 April 2015

### Company Details

ASX Code:	STB
Share Price	\$0.30
Market Cap	\$45M
Shares on issue	150M
Company options	27M
Cash at Bank	\$5.1M

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## High Purity SOP Samples from Colluli Pilot Plant Delivered to Support Marketing

### Summary

- High purity sulphate of potash (SOP) samples from Colluli salts delivered from Saskatchewan Research Council (SRC)
- Samples comprise standard powder and granular form SOP
- Approximately 20kg of samples generated to date
- Samples to be used for marketing

South Boulder Mines ("STB" or "the Company") is pleased to advise that following successful processing of raw material from the Colluli resource through a pilot test facility at the Saskatchewan Research Council, approximately 20kg of high purity potassium sulphate (SOP) samples have been delivered to STB's Perth office for marketing purposes. The samples are in both standard and granular form. Granular product was generated using laboratory plate compactors, and was separated into four size fractions.

Pilot plant tests conducted throughout March 2015 demonstrated high purity SOP, with average grades of 52.9% K<sub>2</sub>O (98% pure) in contrast with an industry average of approximately 51% (94% pure). Chloride levels were determined to be < 0.1%.

### About SOP

SOP is a chloride free potash type. Unlike the more common potassium chloride (MOP), economic resources for primary production of SOP are scarce. Consequently there are only three primary SOP producers of significance in the world, and their combined production represents less than 20% of global SOP production.

There are only two SOP projects globally with completed definitive feasibility studies, and three with completed prefeasibility studies including the Colluli project.

SOP is typically sold in powder for use in compound fertilisers (containing nitrogen, phosphate, potassium and sulphate), as a granular product (for direct application), or as a soluble product (for use in fertigation). SOP is priced at a premium to potassium chloride (MOP), and is utilised for sensitive, high value crops including many fruits, vegetables, nuts and coffee. In addition to potassium, SOP provides sulphur which is also an important nutrient to build up disease resistance and assist growth.

## The Colluli Resource

The Colluli resource is located in the Danakil region of Eritrea, East Africa. The Danakil region is an emerging potash province. Over 4 billion tonnes of potassium bearing salts have been identified in the region to date. Colluli has a JORC2012 compliant resource of 1.289 billion tonnes at 10.76% K<sub>2</sub>O. The resource comprises three key potassium bearing salts; sylvinite, carnallitite and kainitite. 97% of the resource is classified in the measured and indicated categories. The maiden reserve is expected to be complete in Q2 2015 (refer ASX announcement 25<sup>th</sup> February 2015).

## Production of SOP from Colluli

The composition of salts in the Danakil region is positively unique and highly favourable for low energy input, high potassium yield production of SOP. The commercially proven production process utilises simple mineral processing units including flotation columns, mixing tanks and centrifuges to separate sodium chloride (common salt) from the chloridic potassium bearing salts (sylvinite and carnallitite) and sulphatic salts (kainitite). The purified potassium salts are then combined and an ambient temperature reaction takes place resulting in the production of SOP.

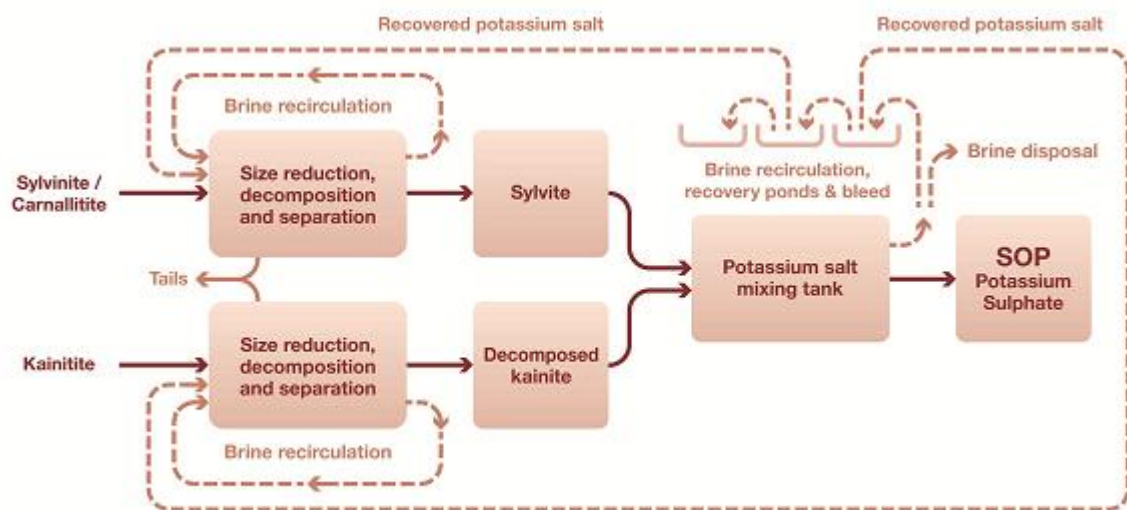


Figure 1: Overview of the Colluli Process for production of SOP

## Process Design Validated by Technical Review Committee

In February 2015, a technical review committee comprising engineering, solar pond, potash flotation and brine chemistry experts was formed to review the Colluli process design. The key findings of the review concluded that the process design for the production of SOP from the Colluli resource is functional, feasible, uses well proven processes and technologies, and is underpinned by testwork that confirms the validity of the process flow diagrams. The committee also made recommendations for process design optimisation, which was incorporated in the pilot testwork (refer ASX announcement 20<sup>th</sup> March 2015).

### Robust Process

The pilot test results for Colluli process design are shown in Table 1. The process consistently delivered K<sub>2</sub>O results greater than 52% (96% K<sub>2</sub>SO<sub>4</sub> purity level), and gave an overall average of 52.9% (98% K<sub>2</sub>SO<sub>4</sub> purity level), putting the Colluli SOP at the top of the quality spectrum. Importantly, the minor constituents of Calcium and Magnesium are also key plant micro-nutrients (refer ASX announcement 20<sup>th</sup> March 2015).

**Table 1: Pilot Test Results**

<b>Trial</b>	<b>wt % K<sub>2</sub>O</b>	<b>wt % K<sub>2</sub>SO<sub>4</sub></b>	<b>wt % Mg</b>	<b>wt % Ca</b>
<b>SOP2S-1</b>	53.0	98.06	0.09	0.57
<b>SOP2S-2</b>	52.5	97.13	0.10	0.47
<b>SOP2S-3</b>	52.9	97.87	0.11	0.50
<b>SOP2S-4</b>	53.2	98.43	0.12	0.49
<b>SOP2S-5</b>	53.0	98.06	0.12	0.50
<b>SOP2S-6</b>	53.0	98.06	0.13	0.51
<b>SOP2S-7</b>	52.4	96.95	0.14	0.51
<b>SOP2S-8</b>	53.1	98.24	0.13	0.47
<b>SOP2S-9</b>	53.0	98.06	0.13	0.46
<b>Average</b>	<b>52.9</b>	<b>97.87</b>	<b>0.12</b>	<b>0.50</b>

### High Purity SOP Samples

The Colluli resource contains low levels of insoluble, which in conjunction with the process design produce purity in the top quality quartile. Chlorine levels are <0.1%.

The high purity levels achieved make the Colluli SOP product suitable for use as soluble SOP. Soluble SOP is used in fertigation systems and achieves a price premium relative to the standard and granular SOP forms.

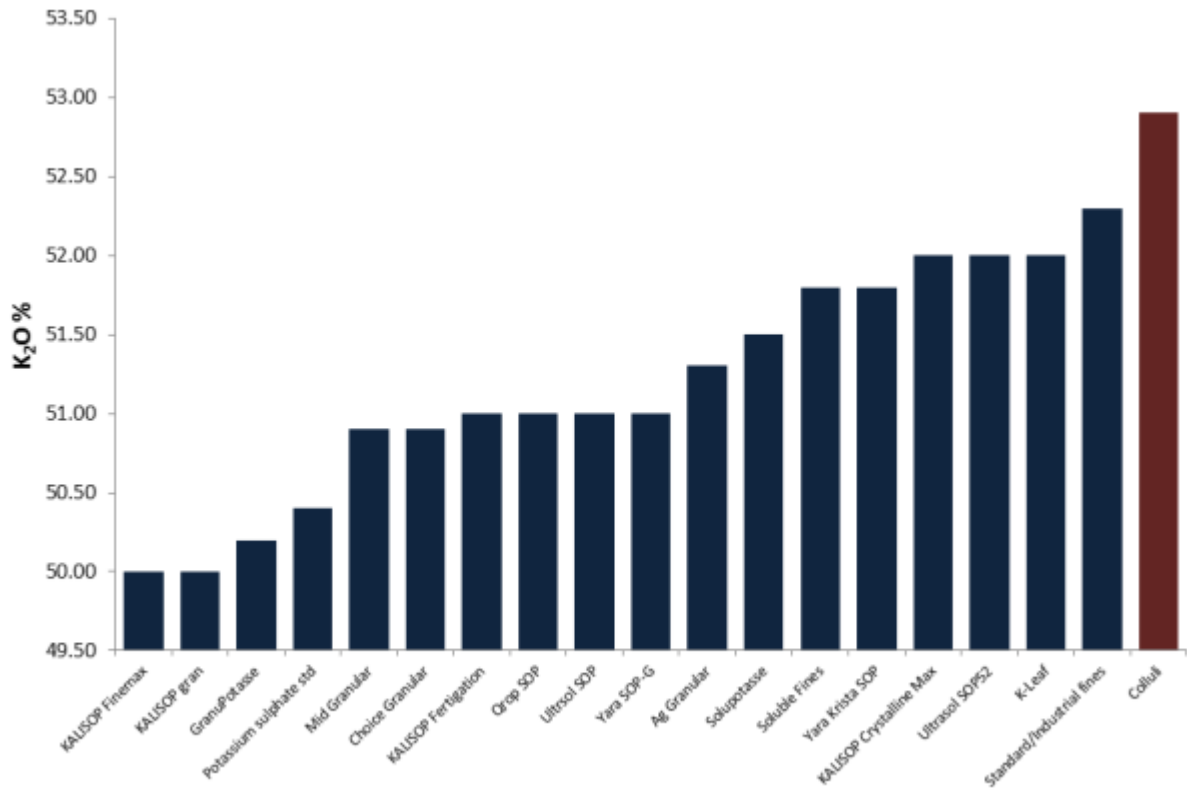


Figure 2: The SOP Quality spectrum: %K<sub>2</sub>O versus SOP product [Source: Company Websites]

Colluli SOP samples for marketing a shown in Photos 1 to 4.



Photo 1: Colluli Standard



Photo 2: Colluli Granular



Photo 3: Colluli Standard



Photo 4: Assorted Samples

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Paul Donaldson  
**MANAGING DIRECTOR**

Amy Just  
**COMPANY SECRETARY**

**About South Boulder Mines**

South Boulder Mines is an ASX listed company and 50% owner of the Colluli Potash Project in Eritrea, East Africa. The company is currently developing the Colluli Project in partnership with the Eritrean National Mining Company (ENAMCO).

The project is located in the Danakil Depression region of Eritrea, and is ~75km from the Red Sea coast, making it one of the most accessible potash deposits globally. Mineralisation within the Colluli resource commences at just 16m, making it the world's shallowest potash deposit. The resource is amendable to open pit mining, which allows higher overall resource recovery to be achieved, is generally safer than underground mining and is highly advantageous for modular growth.

The Colluli has a JORC 2012 compliant resource containing over 1 billion tonnes of potassium bearing salts suitable for the production of potash fertilisers. The resource is positively unique in its size, combination of salts, proximity to coast and shallow mineralisation. The combination of salts within the resource makes it suitable for high yield, low energy input production of potassium sulphate, which is also known as sulphate of potash or SOP. SOP is a specialty fertiliser that carries a substantial price premium relative to the more common potassium chloride, which is the most common potassium salt known as potash.

The company has completed a prefeasibility study for the production of potassium sulphate, otherwise known as SOP. SOP is a chloride free, specialty fertiliser which carries a substantial price premium relative to the more common potash type; potassium chloride. Economic resources for production of SOP are geologically scarce. The unique composition of the Colluli resource favours low energy input, high potassium yield conversion to SOP using commercially proven technology. One of the key advantages of the resource is that the salts are present in solid form (in contrast with production of SOP from brines) with which reduces infrastructure costs and substantially reduces the time required to achieve full production capacity.

The resource is favourably positioned to supply the world's fastest growing markets.

The JORC 2012 Compliant Mineral Resource Estimate for the Colluli Potash Project now stands at 1.289 billion tonnes @ 10.76% K<sub>2</sub>O for 260Mt of contained SOP. Substantial project upside exists in higher production capacity and market development for other contained products such as potassium magnesium sulphate, potassium chloride, rocksalt and magnesium chloride.

Our vision is to bring the Colluli project into production using the principles of risk management, resource utilisation and modularity, using the starting module as a growth platform to develop the resource to its full potential.

### **Competent Persons and Responsibility Statement**

Colluli has a JORC 2012 Compliant Measured, Indicated and Inferred Mineral Resource Estimate of 1,289Mt @ 10.76% K<sub>2</sub>O.

The resource contains 303Mt @ 10.98% K<sub>2</sub>O of Measured Resources, 951Mt @ 10.89% K<sub>2</sub>O of Indicated Resources and 35Mt @ 10.28% K<sub>2</sub>O of Inferred Resources.

The information in this report relating to the Colluli Mineral Resource was compiled by Mr. John Tyrell, under the supervision of Mr. Stephen Halabura M.Sc. P. Geo. Fellow of Engineers Canada (Hon), Fellow of Geoscientists Canada, and a geologist with over 25 years' experience in the potash mining industry.

Mr. Tyrell is a Member of the Australasian Institute of Mining and Metallurgy and a full time employee of AMC. Mr. Tyrell has more than 25 years' experience in the field of Mineral Resource estimation.

Mr. Halabura is a member of the Association of Professional Engineers and Geoscientists of Saskatchewan, a Recognised Professional Organisation (RPO) under the JORC Code and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code).

### **Quality Control and Quality Assurance**

South Boulder Exploration programs follow standard operating and quality assurance procedures to ensure that all sampling techniques and sample results meet international reporting standards. Drill holes are located using GPS coordinates using WGS84 Datum, all mineralisation intervals are downhole and are true width intervals.

The samples are derived from HQ diamond drill core, which in the case of carnallite ores, are sealed in heat sealed plastic tubing immediately as it is drilled to preserve the sample. Significant sample intervals are dry quarter cut using a diamond saw and then resealed and double bagged for transport to the laboratory.

Halite blanks and duplicate samples are submitted with each hole. Chemical analyses were conducted by Kali-UmwelttechnikGmbH Sondershausen, Germany utilising flame emission spectrometry, atomic absorption spectroscopy and ion chromatography. Kali-Umwelttechnik (KUTEC) Sondershausen have extensive experience in analysis of salt rock and brine samples and is certified according to DIN EN ISO/IEC 17025 by the Deutsche AkkreditierungssystemPrüfwesen GmbH (DAR). The laboratory follow standard procedures for the analysis of potash salt rocks chemical analysis (K<sup>+</sup>, Na<sup>+</sup>, Mg<sup>2+</sup>, Ca<sup>2+</sup>, Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, H<sub>2</sub>O) and X-ray diffraction (XRD) analysis of the same samples as for chemical analysis to determine a qualitative mineral composition, which combined with the chemical analysis gives a quantitative mineral composition.