

19 NOV 2018

## Fast Facts

ASX: JAL

Share Price Range (6mths)	\$0.10 - \$0.25
Shares on Issue	263,766,890
Market Capitalisation	~\$40M

## Major Shareholders (as at 16 NOV 2018)

AustralianSuper	11.8%
Hillboi Nominees	5.7%
Perth Investment Corporation	5.4%

## Directors & Management

Art Palm (Chairman & CEO)  
Steve van Barneveld (Non-Executive Director)  
Joel Nicholls (Non-Executive Director)

## Key Projects

**Crown Mountain Coking Coal Project**  
Elk Valley Coal Field, Canada  
**Dunlevy Coal Project**  
Peace River Coal Field, Canada

## Investment Highlights

- ✓ Positioned in world class metallurgical coalfields
- ✓ Significant development expertise on board with successful track record
- ✓ Modern rail and port facilities
- ✓ Strong financial position

## Newsflow / Catalysts

Crown PFS update	Complete
Complete Crown EA pre-app	Complete
Strategic Partner	Complete
Exploration Program	Complete
Coal quality lab analysis	In Progress
Crown Mtn EA Application	In Progress
Crown Mtn Design Engineering	ongoing

## Contact Details

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## Significant Success Reported on Crown Mountain Phase 2 Spoil Pile Design and Selenium Mitigation Study

### Highlights

- The second Phase of Laboratory evaluation of the Crown Mountain selenium mitigation strategy, conducted by Enviromin, has been completed successfully.
- The work evaluated Jameson's spoil/refuse disposal and selenium mitigation strategy as part of initial design engineering.
- In January 2018 the Phase 1 evaluation concluded there is potential for significant reductions in nitrate and selenium release using dumps constructed from the bottom up in lifts of waste rock and process rejects (aka the "layer cake" strategy) vs. conventional end dumping from top down. Phase 2 has confirmed the Phase 1 conclusions in a laboratory setting and shown the Phase 1 model assumptions to be conservative, as oxygen depletion is significantly faster as a result of microbial activity.
- Near-complete selenium and nitrate reduction were achieved under the test conditions as a result of the activity of naturally-occurring micro-organisms.
- SRK Consulting (Canada) ("SRK") will now proceed to use the findings from the Enviromin work to develop the water quality model for Crown Mountain, which is an important input into permitting and the BFS.

Jameson Resources ("Jameson", the "Company") is pleased to announce another significant milestone has been achieved with respect to advancing the Crown Mountain Coking Coal Project in British Columbia, Canada.

Further detailed laboratory evaluation and modeling shows the inclusion of layers of coal wash plant reject during construction of a spoil disposal facility contributes to accelerated and near total selenium and nitrate mitigation over time. This is a major advancement toward designing and permitting the Project.

Water quality modeling and spoil pile design will now proceed, both of which are major components of permitting and Feasibility.

On Behalf of the Board of Directors,



**Art Palm**

Chairman & Chief Executive Officer

## **Discussion**

Overburden (waste rock) in the Elk Valley (and at other western Canadian locations) contains certain regulated elements, such as selenium which have the potential to bioaccumulate and develop toxicity. Selenium hosted in the mineral pyrite is released during periods of rain and snow as the mineral is oxidized. As a result, selenium levels in the Elk River are elevated, and consequently any new mining operations in the area must demonstrate the ability to comply with water quality requirements. In parallel, nitrate from leaching of explosives residuals is closely linked to selenium management both for meeting quality targets and approaches for reducing selenium concentrations.

New methods of engineering spoil piles in the Elk Valley may provide ways to achieve compliance with water quality targets. Positive and long-term mitigation measures must be designed and incorporated into the permitting process. The Company, working closely with its consultants, established an initial 2-stage approach to proof-of-concept:

- Phase 1 which was completed successfully, consisted of two stages: (a) a research/review of all available pertinent information related to the issue of selenium and nitrate leaching in western Canadian mining operations, and (b) preliminary modelling of the properties of the spoil pile over time, including parameters such as pore size, oxygen content, water flow, etc.
- Phase 2 involved the collection and analysis of analogous spoil and wash plant reject samples to determine if the Phase 1 findings are correct, and to better understand behaviour over time and the inter-relations of critical parameters. Performance over time when exposed to several oxygen levels has been evaluated by periodically drawing samples from controlled vessels and analysing chemistry.

The Crown Mountain strategy incorporates these findings with a bottom-up dump design that consists of intentionally placed layers of alternating waste rock and compacted coal wash plant reject. This design makes available organic carbon and increases the residence time of waters in the dump resulting in regions with sub-oxic conditions. The placement of organic-rich coal wash plant rejects ensures the availability of sufficient carbon for oxygen, nitrate, and selenium reduction by naturally-occurring microbes already present in the waste materials.

The objective of the Environmin work was to evaluate the proposed spoil pile design in the laboratory through the use of flow-through columns. The studies were established to determine the capacity of these materials and their native biological component to reduce nitrate and selenium under controlled atmosphere conditions such as those expected in the spoil pile. A parallel study examined the biological reduction of oxygen by these materials and the impact that coal wash plant waste and temperature have on the rate of oxygen consumption.

Phase 2 column testing has shown that oxygen, nitrate, and selenium can be removed from ground water solutions in an unsaturated system consisting of coal reject material and run-of-mine waste rock. In this laboratory configuration, approximately 18 mg-N/L nitrate can be removed at flow rates simulating annualized meteoric input. When additional nitrate is added to the system (100 mg-N/L), nitrate reduction is incomplete but can be enhanced through the addition of a carbon source. No additional nutrient was required for complete denitrification over the time period tested. As

nitrate is a by-product of blasting, one consideration of designing the Project mine plan is to maximize alternatives to blasting, such as dozer ripping of overburden.

To date, Enviromin has:

- Tested nitrate and selenium reduction under unsaturated conditions at 3 gas conditions
  - Aerobic (21% Oxygen)
  - 5% Oxygen
  - Anaerobic
- Used a flow rate of 9.5 mL/day ground water amended with nitrate and selenate
  - Water flows first through coal plant reject then through ROM waste material
- Determined the above process achieved complete denitrification (10 mg/L) and selenium reduction (0.2 mg/L)
- Executed additional iterations to explore the sensitivities and/or limitations of the system:
  - Increased nitrate to 20 mg/L
    - 98-100% nitrate removal
    - 100% selenium removal
  - Increased nitrate to 100 mg/L to simulate potential field conditions
    - 91-96% nitrate removal
    - 98% selenium removal
  - Amended coal plant reject columns with methanol to increase available carbon
    - Returned to 98-100% nitrate removal
    - 99-100% selenium removal
    - No additional nutrient required to-date

As with most scientific experiments, it is both customary and desirable to conduct replicate experiments to confirm findings. A set of replicate columns is currently operating to validate findings from the first round of column studies and to directly measure nitrate and selenate reduction under an additional oxygen condition (10% oxygen conditions as this represents a potential condition in a portion of the proposed waste dump).

Early analyses from these replicate columns is consistent with those observed in the first round of column studies:

- 4 gas conditions
  - Aerobic (21% oxygen) X 2
  - 10% Oxygen
  - 5% Oxygen
  - Anaerobic

- Two-week time point shows complete denitrification in 5% and anaerobic column pairs and 97% denitrification in 10% and aerobic pairs.

In addition to the column work, microcosm respirometry studies were performed in order to refine the initial model of oxygen consumption in the proposed treatment facility.

Of great importance to the Project, these studies showed that high relative oxygen consumption rates are achieved. Oxygen consumption rates are dependent on temperature and carbon concentration from coal reject. These revised rate terms incorporate biological activity and will be used to refine the current conceptual model. Findings:

- Rate of oxygen consumption measured in unsaturated microcosms
  - Rate increases with increasing proportion of wash plant reject
  - Rate increases with temperature
- Rate of oxygen consumption is significantly higher than that included in the initial Phase 1 model
  - Model will be revised to reflect faster oxygen consumption rates

The next step in the process of designing the Project spoil pile is to revise the model, as discussed above, incorporating the results of the Enviromin and SRK studies. This is a key step in the design/engineering stage, as the model will scale up the laboratory results to predict conditions and performance in the as-built spoil pile at Crown Mountain.

The findings of the model, and subsequent iterations thereof, will drive the final engineering design.

As part of the process to design the most robust selenium mitigation strategy, the engineering team will also evaluate other methods, such as saturated fill which was recently shown to be successful in early field trials in the Elk Valley. The desired outcome is to pair a primary mitigation strategy (unsaturated fill) with one or more secondary strategies. Those secondary strategies may include recirculating drainage from the spoil pile to process water in the wash plant and/or using an alternate technology (saturated fill or other) as a “polishing” treatment for the spoil pile drainage.

A primary objective of our work is to eliminate the need to build a treatment plant by achieving in situ treatment which will allow naturally clean water to be kept clean. Our mission is to devise a methodology that is environmentally friendly and scientifically sound from the first day of operation into perpetuity.

The Company looks forward to working with its consultants and government regulators as we scale up the laboratory results into a final design.

## **About Jameson Resources Limited**

Jameson Resources Limited (ASX:JAL) is a junior resources company focused on the acquisition, exploration and development of strategic coal projects in western Canada. The Company has a 92% interest in NWP Coal Canada Limited, which holds a 90% interest in the Crown Mountain coal project, and a 100% direct interest in the Dunlevy coal project located in British Columbia. Jameson's tenement portfolio in British Columbia is positioned in coalfields responsible for the majority of Canada's metallurgical coal exports and are close to railways connecting to export facilities.

To learn more, please contact the Company at +61 89200 4473, or visit: [www.jamesonresources.com.au](http://www.jamesonresources.com.au)

## **Forward Looking Statements**

This announcement contains "forward-looking statements". Such forward-looking statements include, without limitation: estimates of future earnings, the sensitivity of earnings to commodity prices and foreign exchange rate movements; estimates of future production and sales; estimates of future cash flows, the sensitivity of cash flows to commodity prices and foreign exchange rate movements; statements regarding future debt repayments; estimates of future capital expenditures; estimates of resources and statements regarding future exploration results; and where the Company expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, forward looking statements are subject to risks, uncertainties and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks include, but are not limited to commodity price volatility, currency fluctuations, increased production costs and variances in resource or reserve rates from those assumed in the company's plans, as well as political and operational risks in the countries and states in which we operate or sell product to, and governmental regulation and judicial outcomes. For a more detailed discussion of such risks and other factors, see the Company's Annual Reports, as well as the Company's other filings. The Company does not undertake any obligation to release publicly any revisions to any "forward looking statement" to reflect events or circumstances after the date of this release, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.