GREENLAND
MINERALS AND ENERGY LTD

ASX: GGG

Company Announcement, September 5th, 2012

Metallurgical Developments Lead to Circuit Simplification, Improved Metal Recoveries, and Reduced Costs for Kvanefjeld

Greenland Minerals and Energy Ltd ("GMEL" or "the Company") is pleased to provide an update on improvements to the proposed hydrometallurgical treatment of high-grade mineral concentrates, which will be produced from the Company's Kvanefjeld multi-element project (heavy and light rare earth elements, uranium).

The Company recently provided an update on further improvements to the proposed beneficiation circuit to produce high-grade mineral concentrates from Kvanefjeld.

GMEL's technical team has now validated process enhancements in the *atmospheric leach* phase of the flowsheet, which serve to produce a cleaner separation between REEs and uranium.

Cleaner product separation has allowed for major circuit simplification thereby improving overall product recovery and reducing costs.

Increased Recoveries and Lower Costs

GMEL revealed a simple and elegant process for treating Kvanefjeld ore in the Company's PFS that was released in May 2012. Since then the Company has continued to devote considerable resources to further development of this flowsheet and can report the following improvements:

- **Increased rare earth recovery by 27%**
- **Increased uranium recovery by 4%.**
- **Reduced capital costs to USD1.3B**
- **Reduced rare earth oxide unit costs to USD $3/kg**

These results are supported by extensive laboratory test work and engineering trade off studies. Further details are provided in the following table.

Table 1: Impact of the improvements to the Kvanefjeld hydrometallurgical flowsheet*.

	Kvanefjeld PFS (May 2012)	Updated PFS metrics – (August 2012)	Change
Uranium Production (tpa U_3O_8)	1,185	1,230	**+4%**
Rare Earth Production (tpa REO)	40,780	51,900	**+27%**
Capex (US$M)	1,534	1,297	**-15%**
Unit cost (US$/kg REO after U Credit @ $70/lbs)[#]	$5.28	$3.07	**-42%**
Pre-Tax NPV (US$B)	4.63	6.59	**+20%**
IRR	32%	43%	**+20%**

*Based on pricing assumptions outlined in the Kvanefjeld PFS (May 2012).

[#] Unit cost per kilogram of rare earth oxide produced as a mixed rare earth intermediate product net of uranium by-product credits

Process Description

Atmospheric leaching is made possible for the Kvanefjeld deposit by virtue of the unusual nature of the REE and U-bearing minerals. The value minerals (ore minerals) were formed in a highly alkaline environment and are not completely stable when removed from such an environment. Importantly, these unique minerals have not been altered to more common, yet much more refractory REE and U-bearing minerals. When contacted with acidic solution the Kvanefjeld ore minerals disintegrate, liberating the rare earths and uranium into solution. This leads to high extractions of >85% for heavy rare earths and >90% for uranium within an atmospheric leach.

The conditions in the leach are carefully controlled in order to:

1. *Manage the precipitation of gangue elements such as silica,*
2. *Reduce acid consumption by 25% through a two-stage leach,*
3. *Effectively separate REEs from uranium by precipitating the REEs as sodium REE double sulphate salts, while uranium remains in solution,*
4. *Produces residues which settle and filter well*

Atmospheric leach conditions are managed to drive REEs into the leach residue as salts. This cleanly separates the REEs from uranium that remains stable in solution. The residue is treated with caustic soda, rendering it amenable to a mild re-leach, the re-leach producing a REE chloride solution. A single mixed REE product is then precipitated from this chloride solution. Because of the clean initial separation from the gangue elements, very low post leach losses are experienced.

Uranium is recovered from the atmospheric leach solution by means of a highly selective solvent extraction process. Solvent extraction has been successfully tested at bench scale and, as a proven technology for uranium extraction, is considered low risk and straight forward to engineer. A final uranium oxide product is produced at this stage.

Competitive Processing Advantages

GMEL has now established a simple and elegant metallurgical process for treating the high-grade mineral concentrates from Kvanefjeld.

The ability to achieve high extractions of valuable heavy REEs and uranium from a mineral concentrate in an atmospheric leach is highly favourable. Low cost atmospheric leaching is not suitable for most REE deposits that generally contain significant proportions of refractory minerals requiring aggressive chemical processes (high temperature acid bake or caustic cracking) in order to liberate REEs. These processes are complex, high cost and present a number of operational challenges.

A high quality mixed REO product can be produced which is suitable for rare earth separation refineries. The mixed REO product is low in radionuclides and contains significant quantities of heavy rare earth elements. GMEL is yet to finalise whether it will aim to produce a single mixed REO product, or conduct further separation to produce heavy and light RE concentrates; a step that is now well constrained from a technical and economic perspective. This decision is subject to ongoing discussions with potential refining partners and market risk analysis.

Conclusion

Combined, beneficiation and atmospheric leach provide a simple, cost-effective path to REE production with low technical risk. The relative ease of treating Kvanefjeld ore is a considerable competitive advantage.

Technical advances in the Kvanefjeld project continue to lower the cost of rare earth production. If uranium by-product revenues are taken into consideration, the cost of rare earth production at Kvanefjeld approximates that of Chinese rare earth producers. This emphasizes the fundamental advantage of REE production from a multi-element operation.

With continued increases in efficiency and overall product recovery, GMEL is conducting studies into the optimal start-up capacity for Kvanefjeld. The relative simplicity of the Kvanefjeld processing route results in a highly scalable development scenario. The company

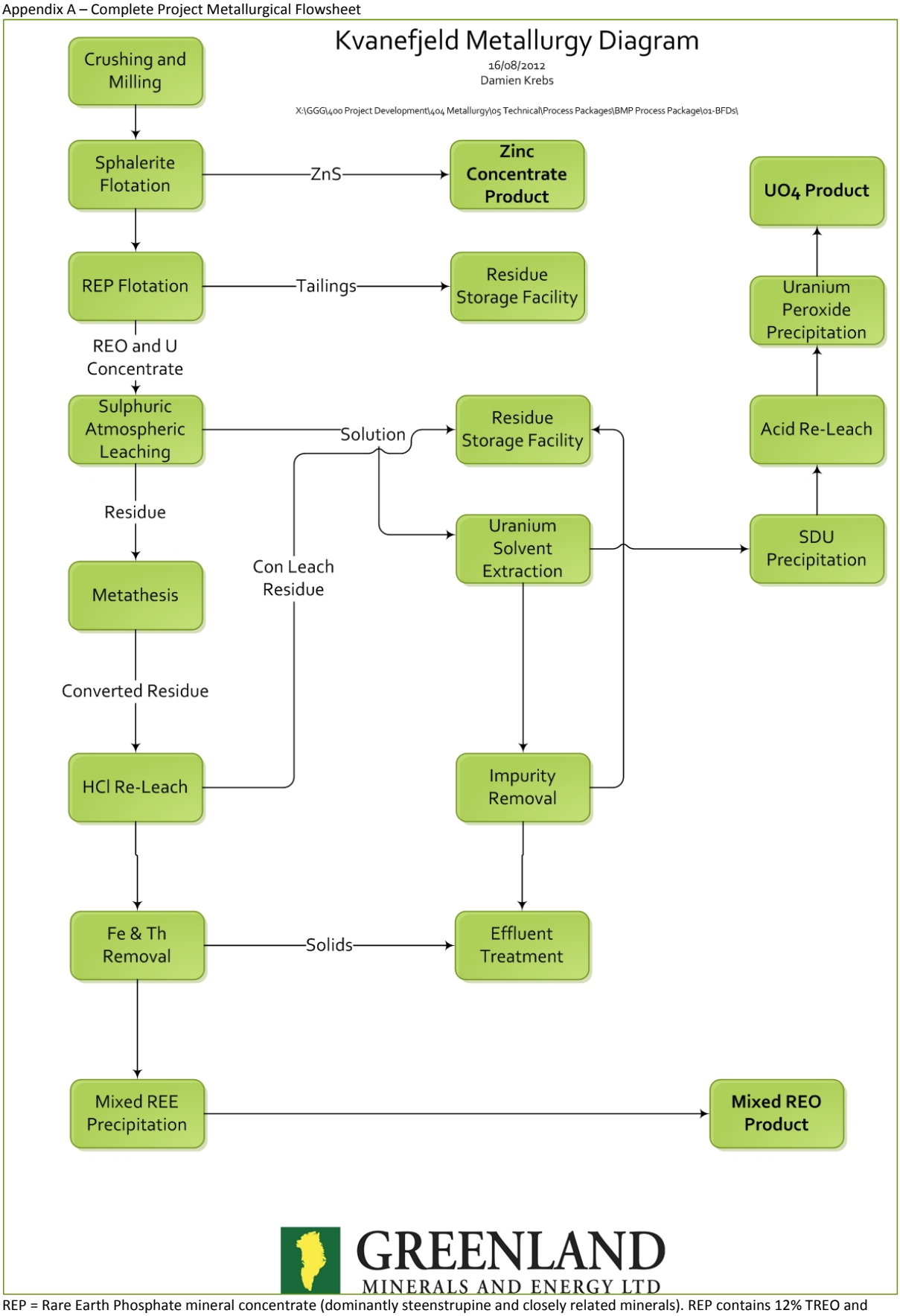
is continuing discussions with potential partners to aid in constraining the optimal start-up capacity for, and looks forward to updating the market in the coming months.

Yours faithfully,

Roderick McIllree

Managing Director
Greenland Minerals and Energy Ltd

Appendix A – Complete Project Metallurgical Flowsheet



REP = Rare Earth Phosphate mineral concentrate (dominantly steenstrupine and closely related minerals). REP contains 12% TREO and 0.2% U_3O_8.

Appendix B – Key Valuation Parameters

Considers a single mixed rare earth element concentrate.

GMEL is yet to finalise whether it will produce a single mixed concentrate, or conduct further steps to produce a heavy and light REE concentrate.

Initial Capital Cost = US$1.297B (does not include owners and financing costs)
Operating Cost = US$349M (includes plant sustaining expenditure)
Ore Treatment Rate = 7.2 Mtpa
Design REO Grade = 1.27%
Design Uranium Grade = 364 ppm U_3O_8
REO Distribution in Products

La =	26.4%
Ce =	44.1%
Pr =	4.3%
Nd =	13.2%
Sm =	1.4%
Eu =	0.12%
Gd =	1.0%
Tb =	0.14%
Dy =	0.99%
Ho =	0.17%
Er =	0.46%
Tm =	0.04%
Yb =	0.33%
Lu =	0.03%
Y =	7.33%

Overall REO Recovery to mixed intermediate product from ore = 56.8%
Overall U_3O_8 Recovery from ore to uranium oxide product = 46.8%
Mean Tailings Dam Sustaining Capital = US$5M/year