COMPANY BUSINESS PLAN

***UPDATED:* December 14, 2018**

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American Manganese Inc.

A Critical Metals Company Focused on Recycling Electric Vehicle Lithium-ion Batteries

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2. EXECUTIVE SUMMARY

American Manganese Inc. (“AMY” or the “Company”) is a critical metal company with a recently received notice of allowance from the U.S. Patent Office, for their patent application on a process that recycles lithium-ion batteries with 100% recovery of metals such as cobalt, lithium, nickel, manganese, and aluminum. By using a novel combination of reagents and unit operations to provide high extraction, high purity, and minimum use of water, AMY’s lithium-ion battery recycling process is robust, sustainable, and environmentally friendly.

AMY is focused on the recovery of metals from lithium-ion batteries as their value is estimated to be as high as US$340 million for every 100,000 electric vehicle battery packs. In addition, there is an increasing global demand for lithium-ion batteries with a projected forecast to increase 18% annually to US$46 billion in 2022.

AMY has successfully raised approximately US$2.3 million for the Pilot Plant project, for which Kemetco Research Inc. has been contracted to develop and construct to replicate real world closed-circuit conditions in a continuous operation and simulate and de-risk commercial production. The Pilot Plant testing is planned to be completed by May 2019. Once Pilot Plant testing is complete. AMY will look to raise US$10 million to immediately construct a Commercial Plant with a processing capacity of 1,100 tonnes per year of pre-production cathode scrap. At the planned processing capacity, the Commercial Plant would have an estimated annual revenue of US$17.88 million and would pay back the initial capital investment of US$10 million in approximately 14 months.

American Manganese Inc. has also signed a Memorandum of Understand with Battery Safety Solutions B.V. for the purpose of forming a partnership to create and commercialize a complete closed-loop solution for collecting, discharging, dismantling, and recycling lithium-ion batteries. The Memorandum of Understanding aims to commercialize the best complete solution for customers by late 2019, using unique industry-leading expertise and capabilities from each party.

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3. BUSINESS OVERVIEW

Headquartered in Vancouver, Canada, American Manganese Inc. ("AMY" or the "Company") is led by CEO and President, Larry Reaugh. AMY was incorporated under the laws of British Columbia on July 8, 1987 and is a publicly traded company with its shares listed on the TSX Venture Exchange.

Capitalizing on the exponential growth of the EV battery opportunity. AMY is a critical metal company with a focus on recycling electric vehicle (EV) lithium-ion batteries (LIB). Due to the rapid development and commercialization of EVs, the LIB market is growing exponentially along with the metals used in the batteries, such as lithium, cobalt, manganese, nickel, and aluminum. The recoverable value for these metals is estimated to be as high as US$75.8M per GWh of LCO batteries. In terms of EVs, the recoverable metal value from 100,000 EV battery packs (100KWH) with NMC-111 cathode is worth an estimated US$340M.

Table 1 - Battery Metal Value Per KWh (June 28, 2018) (Fessler, 2018)

Cathode Chemistry	kg/kWh				Battery Size (kWh)	Total Value (USD)	USD/kWh
	Lithium	Cobalt	Nickel	Manganese			
LCO	0.113	0.959	0.000	0.000		**$ 75.8 M**	**$76**
NCA	0.112	0.143	0.759	0.000		**$ 22.5 M**	**$22**
NMC-111	0.139	0.394	0.392	0.367	1,000,000 (1 GWh)	**$ 37.6 M**	**$38**
NMC-622	0.126	0.214	0.641	0.200		**$ 26.7 M**	**$27**
NMC-811	0.111	0.094	0.750	0.088		**$ 18.6 M**	**$19**

Note: LCO = Lithium-Cobalt-Oxide, NCA = Nickel-Cobalt-Aluminum, NMC = Nickel-Manganese-Cobalt

Battery metals are currently sourced from mines that are limited by social and environmental barriers in their operating countries. In addition, the existing methods for recycling spent LIBs are inefficient and cannot capture the whole value of the battery. However, recycling of spent batteries is a certainty thanks to increasing recycling legislation around the world that will hold EV and LIB manufacturers accountable for the collection and recycling of their spent batteries.

Using Intellectual Property (IP) to reclaim critical battery metals economically, efficiently, cleanly, and responsibly. AMY's lithium-ion process originated from the development of the company's Artillery Peak manganese property in Arizona. The Company had contracted Kemetco Research Inc. to develop a process that can recover electrolytic manganese metal (EMM) economically from a low-grade (2% - 3%) manganese deposit. Kemetco was successful in this endeavor, but additionally, it was able to successfully produce working lithium-ion battery prototypes utilizing the chemical manganese dioxide (CMD) from Artillery Peak. This research gave momentum to continue developing the hydrometallurgical Pilot Plant, seen in Figure 1. The process has since been patented under US Patent No. 8460681, Canada Patent No. 2808627, Chinese Patent No. 201180050306.7, and Republic of South Africa Patent No. 2013/01364.

Figure 1 - Electrolytic Manganese Dioxide Recovery Pilot Plant for Low Grade Manganese Ores

Recognizing manganese processing patents to recycle lithium-ion batteries. In April 2016, the Company contracted Kemetco Research Inc. to extend their existing intellectual property on manganese to recycling cathode materials in lithium-ion batteries. By November 2017, Kemetco had successfully recovered 100% of the cathode materials using the novel process. AMY has since then filed the Co-operative Treaty Patent application and Non-Provisional Patent application for their hydrometallurgical process in November 2017. This patent was published May 17, 2018 and shortly after a Notice of Allowance was received from the United States Patent and Trade Mark Office on December 14, 2018 (Patent Information).

The Notice of Allowance is formal notification indicating that the examination of the invention has been completed by the US Patent and Trademark Office and allowed for issuance as a patent. The Company's attorney will be completing documentation and submitting fees for formal issuance of the US Patent.

Key aspects described in the patent application are:

- Treatment of several cathode chemistries such as lithium cobalt oxide (LCO), lithium nickel manganese cobalt oxide (NMC) and lithium nickel cobalt aluminum oxide (NCA).
- Methods for achieving 100% recoveries of cobalt, nickel, manganese, aluminum for all cathode chemistries tested.
- Method for achieving 100% lithium recovery by a novel locked cycle process.

The U.S. Patent examiner deemed AMY's technology is "novel" and "inventive" as it enables the recycling of valuable cathode metals (namely cobalt, nickel, manganese, aluminum and lithium) while converting these materials back to fresh cathode materials for manufacture of new lithium-ion batteries.

4. CATHODE SCRAP COMMERCIAL PLANT FINANCIAL MODEL

Creating value from pre-production cathode scrap. The Company plans to build a Commercial Plant with a processing capacity of 1,100 tonnes per year (TPY). The Commercial Plant's capital investment is estimated to be US$10 million. Estimates have been reviewed by Kemetco who has extensive experience designing and building similar sized plants.

4.1. NET PRESENT VALUE (NMC-622)

Using an interest rate of 10%, the 3-year net present value of the Commercial Plant is estimated to be US$10.93 million with an IRR of 66% from recycling pre-production NMC-622 cathode scrap material.

Table 2 – NMC-622 Commercial Plant Cashflow (December 3, 2018)

Period	Cashflow	Balance
Year 0	$ (10.0)M	$ (10.0)M
Year 1	$ 8.4 M	$ (1.6)M
Year 2	$ 8.4 M	$ 6.8 M
Year 3	$ 8.4 M	$ 15.2 M

4.2. ESTIMATED ANNUAL OPERATING PROFIT

The following estimates refer to the recycling of NMC-622 battery cathode chemistry as it is expected to be the most dominant chemistry manufactured and used in EVs. Financial models were completed for each of the popular battery chemistries that AMY can process. Tables and Figures for LCO, NMC-111, NMC-811, and NCA can be found in APPENDIX A – FINANCIAL MODELS.

The total estimated revenues in Table 2 were derived by multiplying the raw metal commodity prices, as of December 3, 2018, by the expected metal recovery mass from the processed cathode material. Available contract prices of each commodity were used – although AMY's process produces a battery grade product in chemical form that could be valued at a premium price.

1,100 tonnes of NMC-622 cathode material contains US$17.88M of recoverable cathode metal and is estimated to achieve 47% operating profit margin using AMY's process, as seen in Table 3.

Table 3 – Estimated Profits for NMC-622 Commercial Plant (December 3, 2018)

Cathode Processing Rate (Tonnes/Year)	**1,100**
Estimated Annual Revenue (USD)	**$17.88 M**
Lithium Carbonate	$5.87 M
Cobalt	$7.36 M
Nickel	$4.4 M
Manganese	$0.25 M
Aluminium	$0 M
Estimated Annual Operating Expenses (US	**$9.46 M**
Feed Material	$4.47 M
Reagents	$1.08 M
Labour and G&A	$3.26 M
Utilities	$0.13 M
Maintenance	$0.53 M
Estimated Annual Operating Profit (USD)	**$8.41 M**
Operating Profit Margin	47%

4.3. OPERATING EXPENSES

The following foreseeable Commercial Plant operating expenses are estimated with the following data and assumptions.

4.3.1. FEED MATERIAL

The cost of delivered cathode scrap feedstock is assumed to cost 25% of the total intrinsic value of the cathode material.

4.3.2. REAGENTS

Reagents are the primary direct cost in AMY's process. The cost was derived from the quantity and cost of each reagent required to treat the cathode feedstock material. The similar combination of reagents is used for all battery chemistries. Recent developments to the finalized flowsheet have resulted in less reagent consumption, which is not expressed in the current operating expense calculations.

4.3.3. LABOUR AND MAINTENANCE

The Commercial Plant will operate 24 hours/day and will require three shifts of four plant operators working 8-hour shifts at a rate of US$ 45/hour. Additional staff -- such as an office administrator, an accountant, shipping and receiving, an assistant manager, and a manager -- have each been accounted for in the 8-hour shift at the same of rate of US$ 45/hour. The total labour cost per day is estimated to be US$ 5,760, plus an additional US$ 3,168 per day for General & Administrative expenses. Maintenance includes three 8-hour shifts of one maintenance personnel at a rate of US$ 60/hr.

4.3.4. UTILITIES

Utility costs are scaled up from current rates used in lab testing. Estimates may change slightly as more data is collected from Pilot Plant testing but overall the process does not have high energy demands.

4.4. INVESTMENT PAYBACK PERIOD

Figure 2 outlines the payback periods estimated for processing each of the popular battery chemistries at a capacity of 1,100 TPY. Cobalt content within the cathode chemistry has a large impact on the potential payback period.

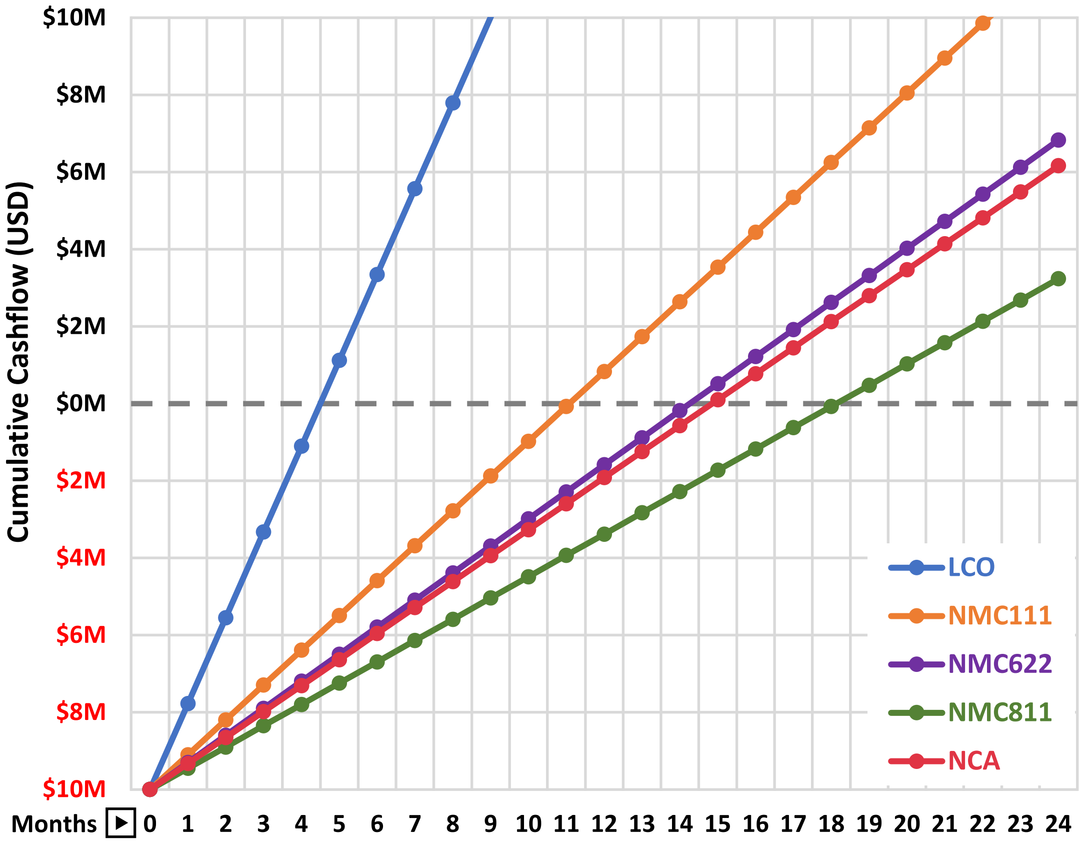

Figure 2 - Estimated Commercial Plant Payback Period (December 3, 2018)

5. STRATEGY

AMY's strategy is to recycle valuable pre-production scrap cathode and spent/damaged whole lithium-ion batteries at the highest recovery and purity of battery grade lithium, cobalt, manganese, nickel, and aluminium. Using AMY's process to make recovery clean, sustainable, efficient and robust. AMY is also working on bringing together unique industry-leading expertise and capabilities to create and commercialize the best closed-loop circular economy solution for the upcycling of lithium-ion battery cathode materials.

As EV sales increase, meeting battery metal demand from primary mining will become increasingly difficult. For environmental as well as economic reasons, the recycling of spent batteries is a certainty thanks to increasing regulations around the world. Therefore, AMY believes EV manufacturers, battery manufacturers, and waste collection enterprises are closely analysing recycling processes such as AMY's. Market signals already validate AMY's assumptions. For instance, Tesla announced that, "ultimately what we want is a closed loop at the Gigafactories that reuses recycled materials" (CleanTechnica, 2018). In addition, Northvolt's goal is to build the world's greenest batteries, with a cradle-to-grave approach that would incorporate a recycling facility (Wired, 2017).

5.1. PRE-PRODUCTION CATHODE SCRAP MATERIAL

AMY is looking to demonstrate the commercial viability of the recycling process. To this end, AMY has received a one metric tonne supply of pre-production scrap cathode material, as seen in Figure 3. The material is to be tested at the Company's Pilot Plant with a planned processing rate of 1 kg/hr. The Pilot Plant test work is to ensure continuous operating efficiency in closed-circuit conditions.

The feedstock source for cathode material is supplied by an American recycling company that collects pre-production scrap cathode material from battery manufacturers. It is estimated that

4-5% of battery manufacturing does not pass strict quality assurance standards and is therefore scrapped. The scrap cathode can't be used in batteries but the metal value can be recovered with AMY's process.

Capitalizing on pre-production cathode scrap material. After the Pilot Plant phase, AMY's strategy is to process the pre-production scrap cathode material in a Commercial Plant with a processing capacity of 1,100 TPY. A capital investment of $10 million is estimated for the Commercial Plant

Figure 3 – Preproduction Scrap Cathode Material

5.2. DISCHARGED AND DISASSEMBLED BATTERY MATERIAL

The Company is also combining its efforts through a signed Memorandum of Understanding ("MOU") with Battery Safety Solutions B.V. ("BSS") to create and commercialize a closed-loop circular economy solution for the upcycling of spent and damaged whole lithium-ion batteries.

BSS brings their unique industry-leading expertise and capabilities in collection, discharging, and dismantling of lithium-ion batteries.

Feedstock from spent or damaged lithium-ion batteries are collected, discharged, and disassembled. The unique process from BSS completely discharges a lithium-ion battery in a fraction of the time needed by conventional methods, and then stores 100% of the discharged energy. The battery can then be safely disassembled and the various components can be sorted. Due diligence on the BSS technology was completed and after several weeks of bench scale testing sample material, Kemetco reported positive yield results. BSS will continue to send sample material, from disassembled lithium-ion batteries, for testing. Each party will continue to develop and optimize the combined process with a goal to be commercially ready by late 2019.

5.3. BLOCKCHAIN INITIATIVE

Mapping the lithium-ion battery supply chain. The Company has entered into a collaborative agreement with Circulor Ltd, out of London, to develop a blockchain technology that can track battery metals to help ensure ethical and sustainable sourcing. AMY and Circulor will be mapping the lifecycle of an EV battery to better understand the value flow through the production process and lifecycle, and to provide a road map for AMY to source spent lithium-ion batteries.

OEMs could secure a sustainable supply chain and identify to their customers the provenance of materials used in their EVs. Blockchain technology can validate that materials have been recovered and recycled as efficiently as possible, and to exclude materials that are not ethically or sustainably sourced.

AMY hopes to create a circular economy solution for the lithium-ion battery supply chain and to create collaborative efforts with like-minded EV and LIB manufacturers.

5.4. COMPLETED AND FUTURE MILESTONES

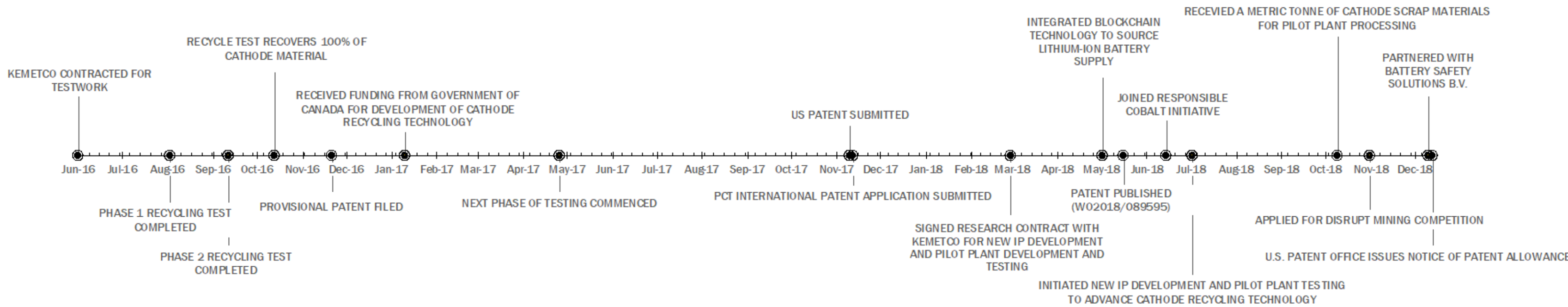

Figure 4 - Completed Milestones

Future Milestones:

Complete Pilot Plant Testing – May 2019

Construct Commercial Plant for Spent/Damaged Batteries with Battery Safety Solutions B.V. – Late 2019

Construct 1,100 TPY Pre-Production Cathode Scrap Commercial Plant – 2020

6. OPERATING PLAN

The Company's simplified flow sheet is illustrated in Figure 5, with no proprietary information being shown.

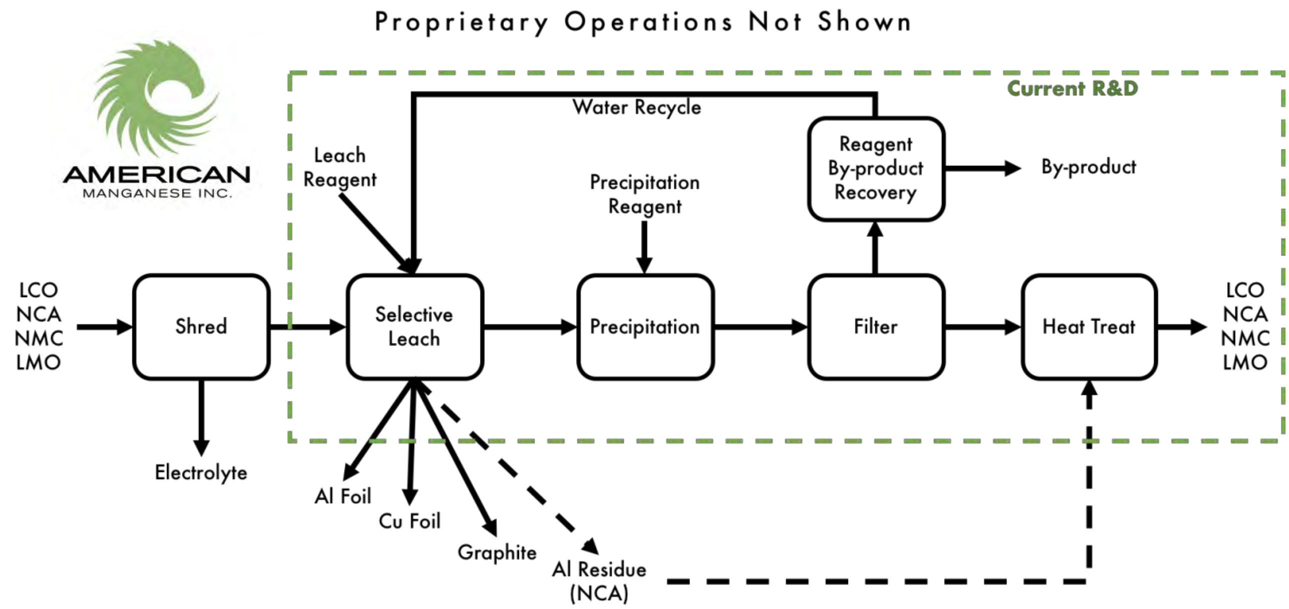

Figure 5 - American Manganese Inc. Battery Recycling Flow Sheet

The process treats cathode material containing a combination of lithium, cobalt, nickel, manganese, and aluminium. The cathode materials are treated with a novel combination of reagents and unit operations to provide high extraction, high purity, and minimum use of water. A base metal oxide is recovered separately from lithium carbonate. The base metal oxide and lithium carbonate are recovered at a battery grade purity and can be used directly back into re-manufacturing new battery cathode. An itemization of the products during the process can be seen in Figure 6.

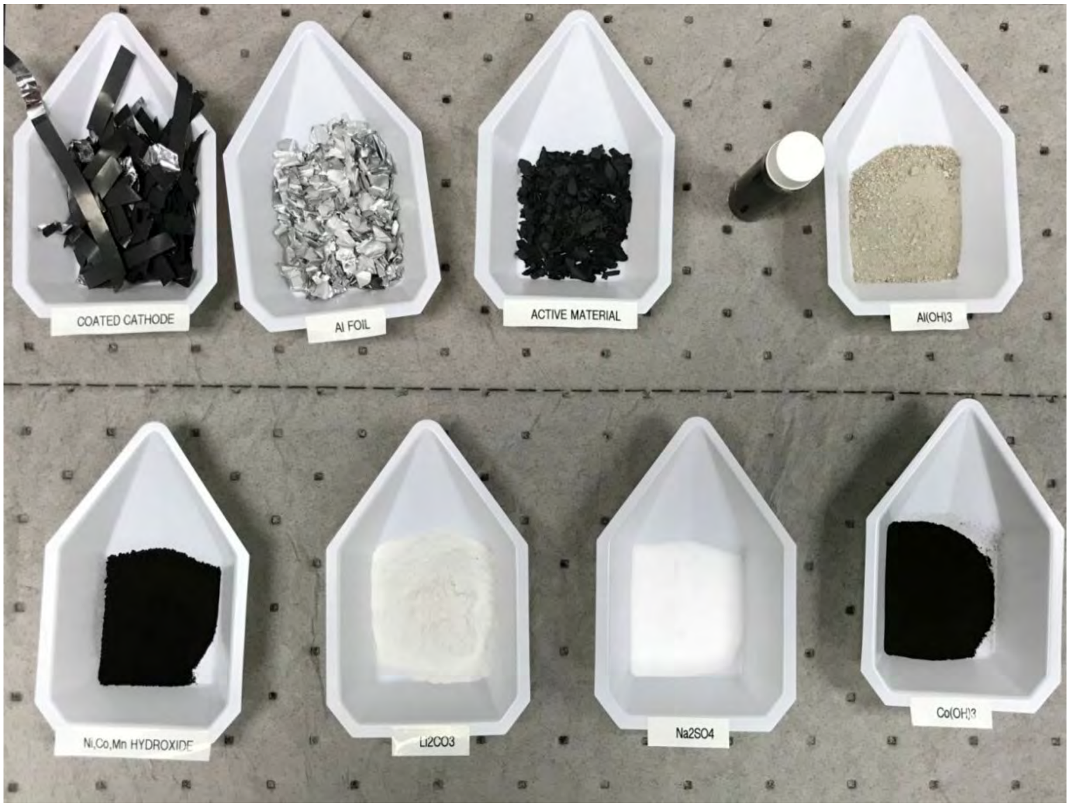

Figure 6 - Itemization from Cathode Scrap Recycling Tests

Proven cathode metal recovery process. Reports from Kemetco confirm that the AMY process is able to recover 100% of the cathode metals. Kemetco has developed the hydrometallurgical process in their well-equipped extractive metallurgy laboratory. With their experienced staff, Kemetco has contributed their expertise on scientific aspects, engineering aspects, and plant design. Kemetco is capable of carrying out testing, plant design and construction of both the Pilot Plant and Commercial Plant. Kemetco's labs are in close proximity to AMY's office and a strong communications line is maintained between the two companies.

6.1. PILOT PLANT

AMY signed a research contract with Kemetco on February 16th, 2018 to continue work on new IP development and patents, as well as the engineering, design, construction, commissioning, installation and testing of the Pilot Plant. The total budget approved by the Company is

$2,277,000, including contingencies. The Pilot Plant utilizes some specialized equipment at the Kemetco labs, as seen in Figure 7.

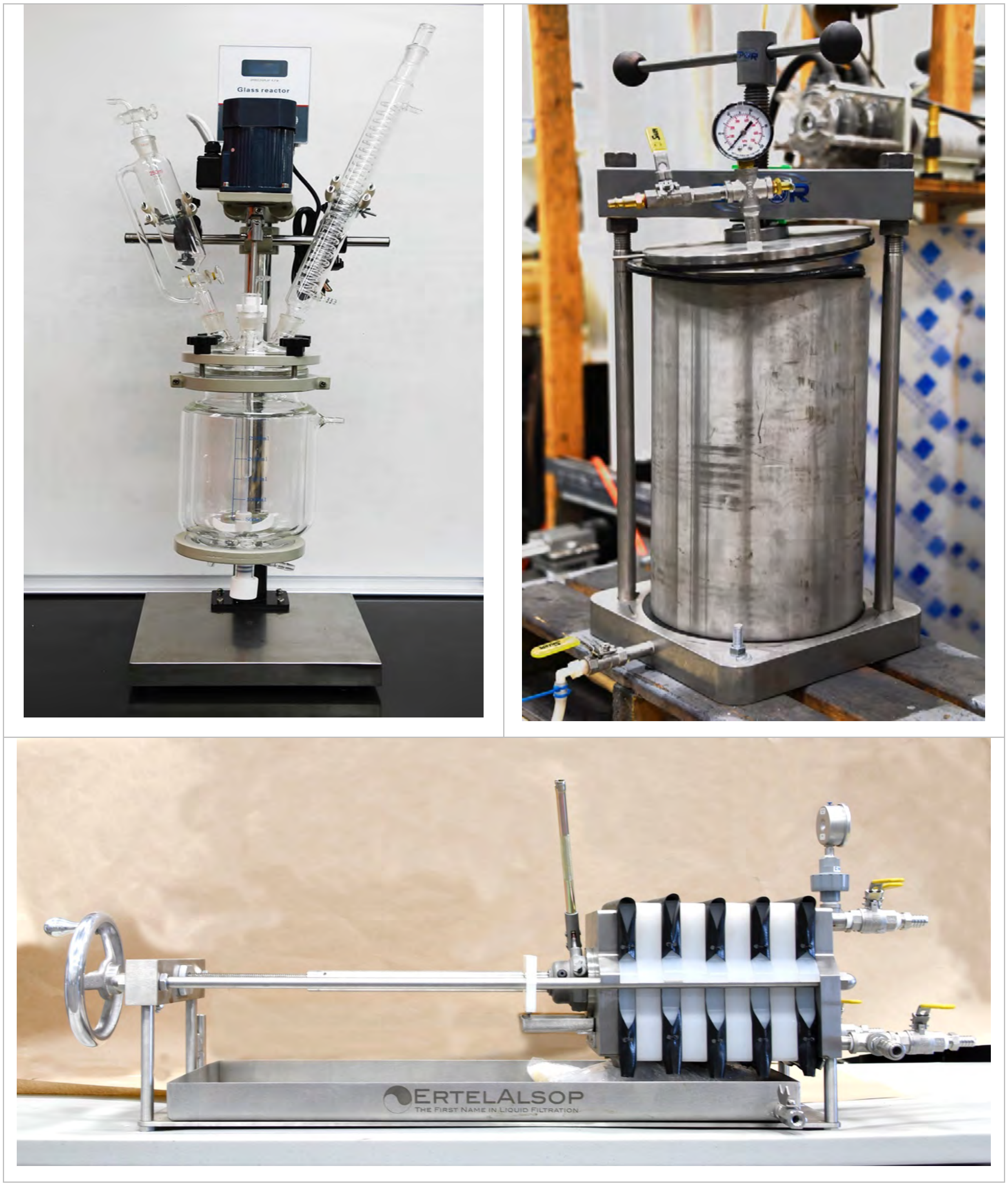

Figure 7 - Pilot Plant Equipment

The Pilot Plant construction and testing is projected to conclude by May 2019. The Pilot Plant will replicate real world closed-circuit conditions in a continuous operation to simulate and de-risk production of the Commercial Plant in the next phase of operation. Commercial Plant construction will start once the Pilot Plant testing is concluded.

6.2. COMMERCIAL PLANT

The Commercial Plant's planned processing capacity would be 1,100 TPY of scrap cathode material. With reference to Kemetco's extensive experience in plant design and construction, the Commercial Plant's capital cost is estimated to be $10 million. The estimated revenue generated during the operation of the Commercial Plant, highlighted in the Financial Plan, would pay back the initial capital investment in a little over a year.

The location of the Commercial Plant could potentially be co-located near a recycling facility or battery manufacturing facility for efficient access to scrap material.

7. MARKET ANALYSIS AND COMPETITION

Due to the decrease in lithium-ion battery costs, the demand for electric vehicles is on the rise and global demand for lithium-ion batteries is forecast to increase 18% annually to US$46 billion in 2022 (Freedonia, 2018). Morgan Stanley predicts that EVs will outpace gasoline-powered vehicles in two decades. (Lambert, 2017) Recycling companies are preparing for the electric vehicle revolution by honing their processes to extract metals from spent lithium-ion batteries more affordably and efficiently in order to capitalize on an expected shortfall in metals such as cobalt when sales of electric vehicles take off (Reuters, 2017). In addition to the expected shortfalls, the United States Government has issued an Executive Order to ensure secure and reliable supplies of critical minerals and metals (such as the ones used in battery technology) as a strategy to reduce foreign dependence. Cobalt, lithium, manganese and aluminium – four of the five materials recovered by the AMY process -- are on the U.S. Government Critical Mineral List.

7.1. COBALT MARKET

Cobalt, an essential battery metal, has been one of the best performing metals since 2016 and has nearly tripled in price in the last two years, mainly thanks to the emerging EV market and personal electronics driving up the demand. Currently, rechargeable batteries constitute 55% of the global cobalt demand (BMO, 2018) over a variety of battery applications, as seen in Figure 8. An increase in EV sales and a continued growth of personal electronics will continue to increase the demand in cobalt.

Figure 8 - Cobalt Use by Application (Seeking Alpha, 2018)

Coupled with the spike in demand, supply insecurity for cobalt is exacerbated by the fact that 97% of cobalt is mined as a by-product of copper and nickel mines, making cobalt vulnerable to copper and nickel market fluctuations. In addition, 60% of the global production of cobalt is contributed by the Democratic Republic of Congo, where political violence, increased government royalties, and child labour are making cobalt production uncertain for the growing cobalt supply chain.

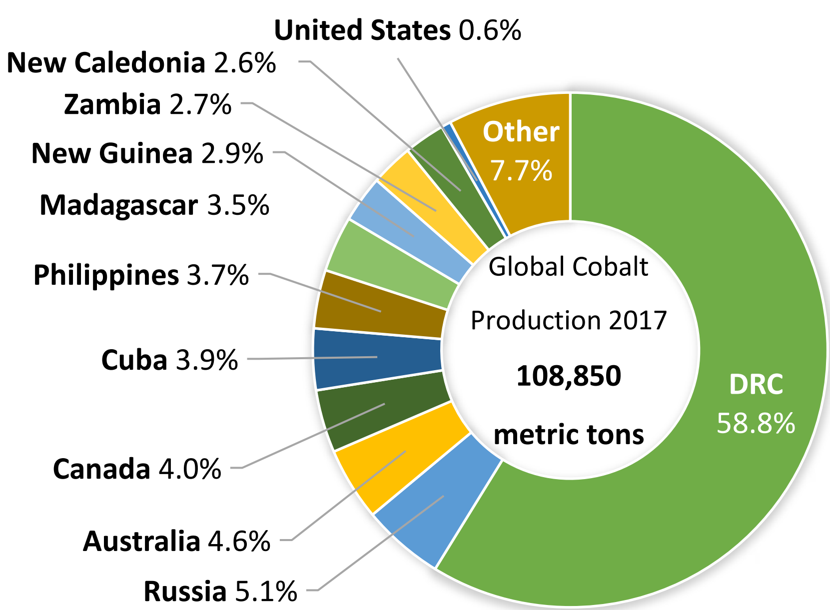

Figure 9 - Global Cobalt Production 2017 (USGS, 2017)

Major auto manufacturers have heavily invested into a new range of electric vehicle models and are looking to secure long term supplies of cobalt to use in their electric vehicle lithium-ion batteries (MINING, 2017). Despite the rise in demand from EVs, the cobalt market is already being squeezed by electronics manufacturing giants, such as Apple, who have been seeking to secure long-term supplies of cobalt directly from mining companies. With over 300 million iPhones, iPads, and MacBooks sold annually, Apple is estimated to need 4,500 tonnes of cobalt each year (Small Caps, 2018). That is just short of all the cobalt produced in Russia in 2017.

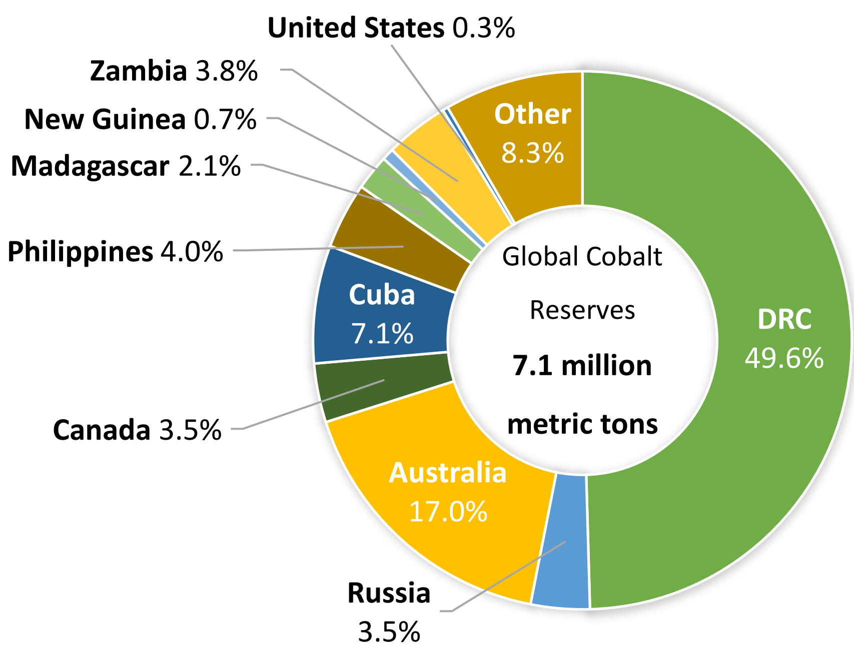

Figure 10 - Global Cobalt Reserves (USGS, 2017)

7.2. LITHIUM MARKET

Global demand of Lithium Carbonate Equivalent (LCE) was 184kt in 2015 and expected to reach 534kt by 2025, with more than a third of the demand credited to EVs as seen in Figure 11. Currently Argentina, Bolivia, and Chile – known as the “Lithium Triangle” -- account for 54% of the global lithium resources (Investing News, 2017). LCE is produced from capital-intensive brine or hard rock mineral deposits, which will need to develop and increase production quickly in order to respond to market demands. An additional delay is the processing of the material into a high purity battery grade LCE. Recycling spent LIBs would reduce mining impact, foreign dependence, and secure a quality supply of LCE.

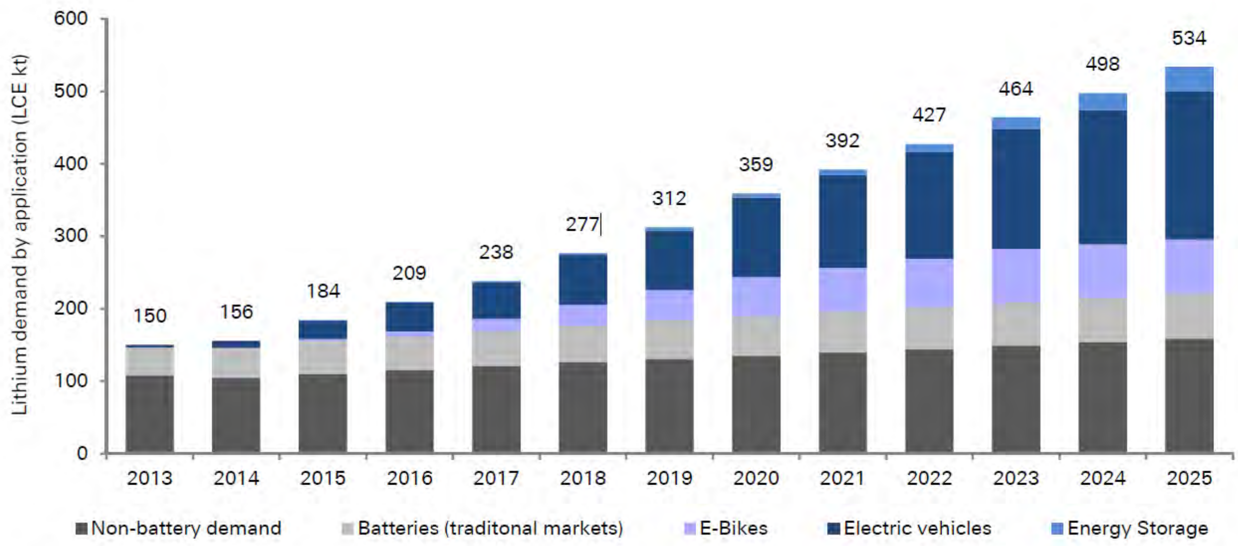

Figure 11 - Forecasted Lithium Demand by Application (Metals Tech, 2017)

7.3. BATTERY TECHNOLOGY

There is no standard lithium-ion battery used in EVs and each comes with a trade-off in specific energy, specific power, safety, cost and performance. Lithium and cobalt are required in many of the popular battery cathodes, as seen in Figure 12. While Lithium-Iron-Phosphate (LFP) and Lithium-Manganese-Oxide (LMO) configurations do not require cobalt, they are also not popular cathodes for EV batteries due to their low energy density. Existing EV battery packs either use a Nickel-Cobalt-Aluminum (NCA) or Nickel-Manganese-Cobalt (NMC) cathode. The NCA cathode is the preferred chemistry for Tesla, while manufacturers such as BMW, Nissan, Daimler and Chevrolet incorporate the NMC battery.

China is by far the largest market for EVs, representing 30% of global sales (BMO, 2018), and their top EV and LIB manufacturers, such as BYD, BAIC, and CATL have been utilizing the LFP battery chemistry. However, China has introduced national subsidies that favor battery cathodes with increased energy density, which has encouraged these Chinese manufacturers to make the switch to the NMC battery (BMO, 2018).

The Lithium-Cobalt-Oxide (LCO) battery remains popular in personal electronic devices such as mobile phones and laptops due to its excellent energy density.

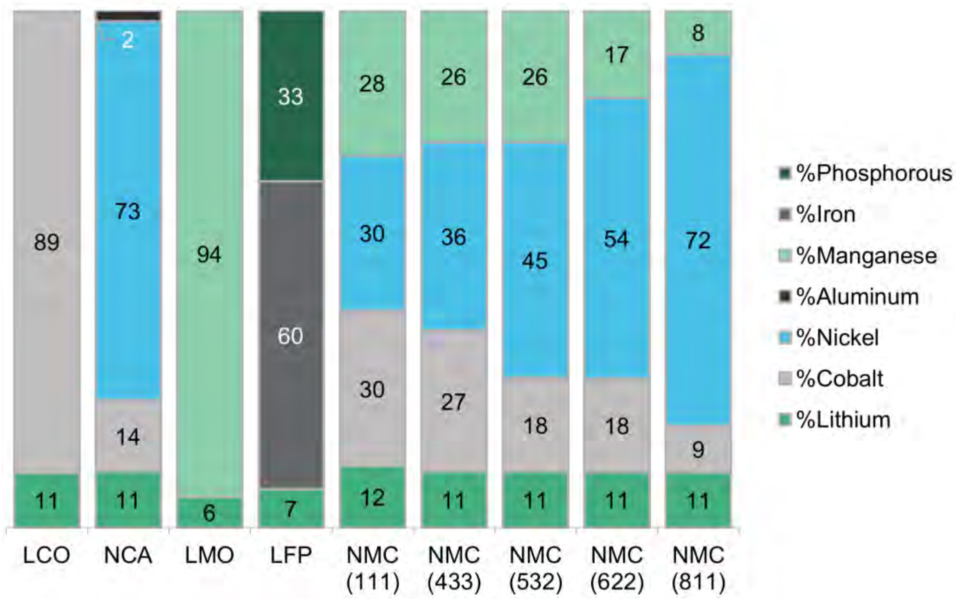

Figure 12 - Metal Composition in Popular Battery Chemistries (Bloomberg, 2017)

The battery industry is largely focused on changing the internal electrochemistry of existing LIBs, such as improving the electrodes and the electrolyte, in order to bring costs down and improve performance. Due to cobalt supply constraints, battery manufacturers are investigating opportunities to reduce cobalt content in the cathode, but not to entirely remove it because cobalt stabilizes the battery. For example, the NMC-111 is one-part nickel, one-part manganese, and one-part cobalt. By switching to an NMC-811, which is 80% nickel, 10% manganese, and 10% cobalt, manufacturers face the consequences of lower thermal stability and longevity as seen in Figure 13.

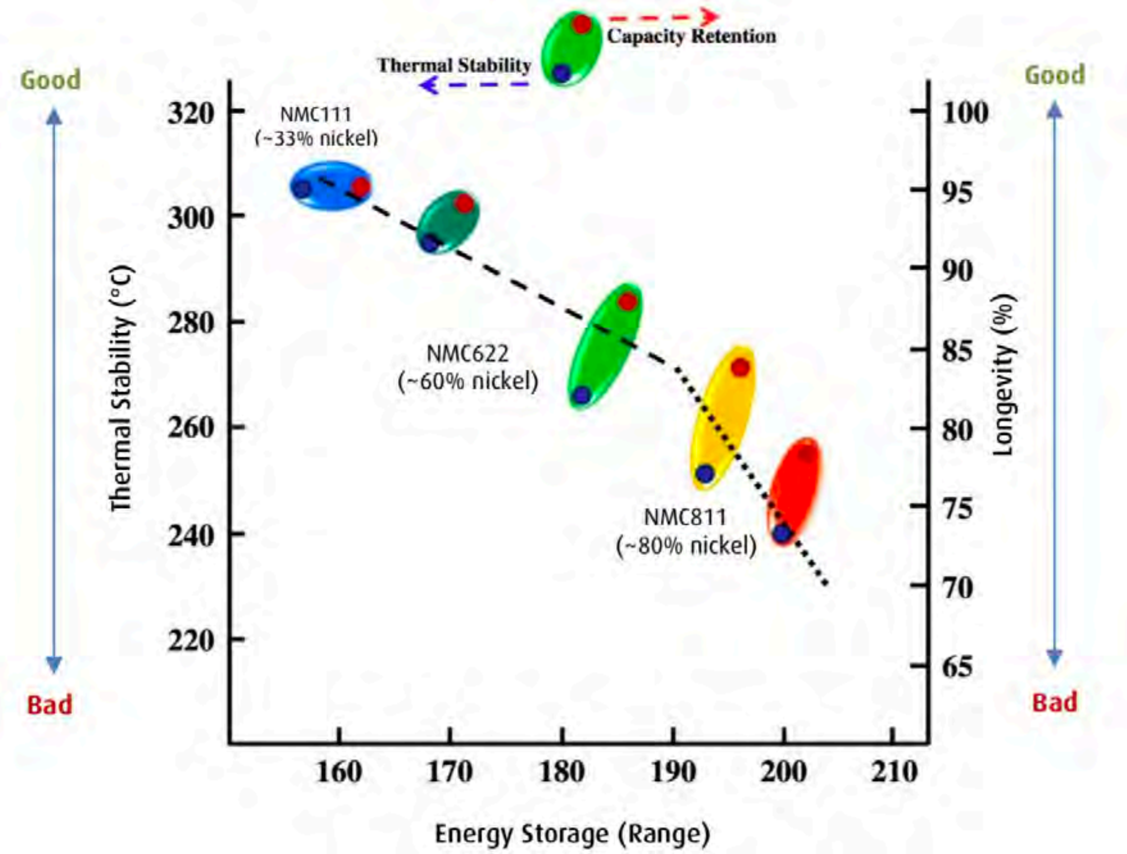

Figure 13 - Varying NMC Metal Composition (BMO, 2018)

In regards to solid state batteries, the innovation is in the anode and electrolyte. Therefore, the cathode chemistry does not change. These LIB innovations create more functionality and demand for the batteries, but it is not expected to affect the cathode recycling technology that AMY has developed.

The global capital expenditure trends are focused towards NMC and NCA battery infrastructure in order to improve on affordability and performance for the mass market. Therefore, LIB manufacturing costs are forecasted to come down to $100/kWh by 2025, compared to $1,000/kWh back in 2010 (Clean Technica, 2017). As more battery mega-factories are built, battery costs will decrease the further improve the commercial potential of EVs compared to the internal combustion engine vehicle market.

7.4. SPENT LITHIUM-ION BATTERIES AND LEGISLATION

The EV industry battery lifecycle benchmark is 1,000 full charge-and-discharge cycles. Depending on driving habits, the projected lifespan of an EV battery is expected to be 6-8 years. Therefore, the number of spent EV LIBs would follow the projected growth curve of EVs but be offset by 6-8 years. EV sale projections vary by source, but the underlying trend is that EV sales will increase at a similar rate to Figure 14, where sales are projected to reach 60 million EVs by 2040.

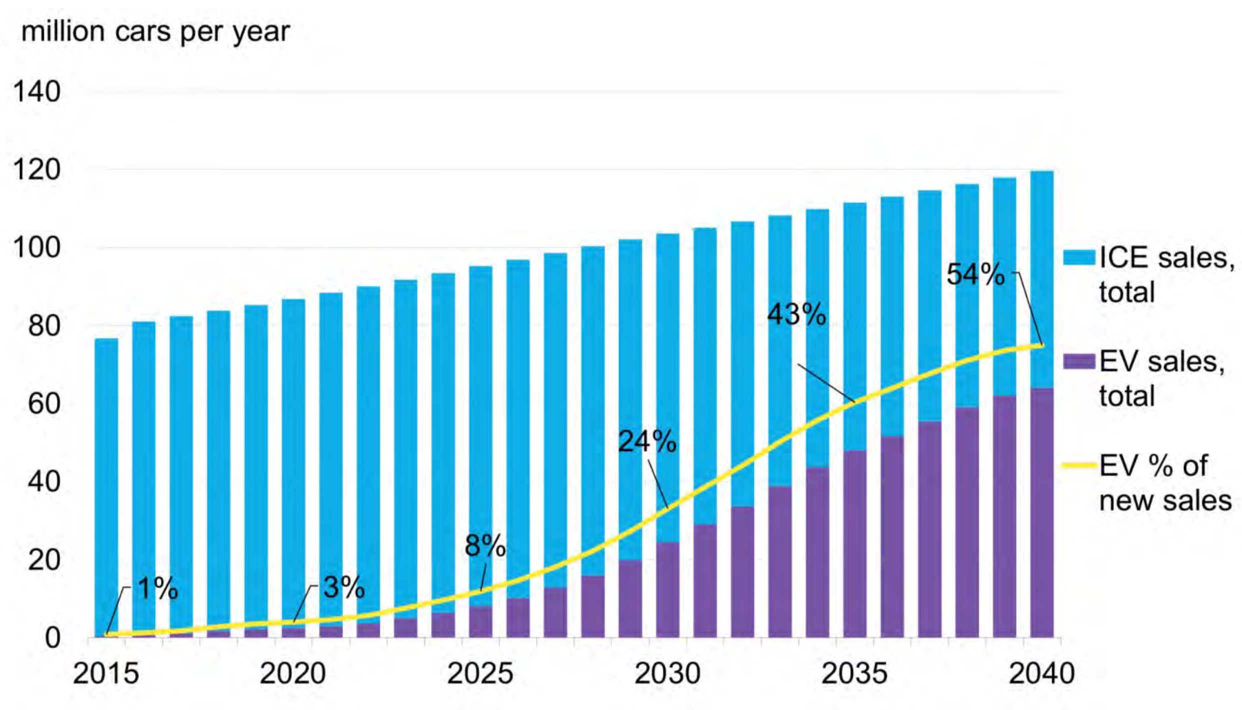

Figure 14 - Projected Electric Vehicle Sales (Bloomberg, 2017)

Recycling of spent LIBs is a certainty, thanks to ever-increasing regulations around the world. In China, legislation has been passed dictating that all Chinese EV manufacturers and importers must recycle used EV batteries. In Europe, the European Union has an EV battery recycling initiative called the European Union Battery Directive and the Canadian provinces of British Columbia, Quebec, and Manitoba all have mandatory recycling programs. Legislation in other parts of the world will continue to grow, and as the International Energy Agency (IEA) concludes in their 2017 EV Forecast report, battery material recycling will become increasingly important and policies will need to be in place to deal with issues relating to battery ownership, transport, and recycling requirements (IEA, 2017). In addition, large enterprises are collaborating to identify and address ethical, environmental, human and labor rights issues in raw materials sourcing with organizations such as *Drive Sustainability* and the *Responsible Cobalt Initiative*.

7.5. COMPETITORS

Recycling competitors, such as Umicore, presently utilize a high cost pyrometallurgical technology to separate subject metals from spent batteries with high heat. Once the battery is melted down, what little metal is left gets recovered and sold for primary metal production but the low-quality slag would not be adequate purity for cathode manufacturers. Although melting the battery is the current commercial option, it is not sustainable for the growing lithium-ion battery market.

Many enterprises have recognized the opportunity in improving the lithium-ion battery recycling process and while there are competitors researching hydrometallurgical recovery methods, AMY believes it has been the most transparent by publicly disseminating its research results. The U.S. Patent and Trade Mark Office has also issued a Notice of Allowance for AMY’s patent application and the U.S. Patent examiner deemed AMY’s technology is “novel” and “inventive” as it enables the recycling of valuable cathode metals.

AMERICAN MANGANESE INC. RECYCLING COMPETITORS

	PROOF OF CONCEPT	PATENTS	RECOVERIES: COBALT	RECOVERIES: LITHIUM	*RECOVERY METHOD
AMERICAN MANGANESE INC. SURREY, B.C. CANADA	**Completed**	**Notice of Allowance Issued:** December 14, 2018	**100%**	**100%**	**Hydro Metallurgy**
RETRIEVE TECHNOLOGIES	Completed	Not Found	Small Amount Not Recovered	Not Recovered	Hydro Metallurgy
WORCESTER POLYTECHNIC INSTITUTE (BATTERY RESOURCES)	Completed	US Patent Application Applied for: November 22, 2016	Not Reported	Not Reported	Hydro Metallurgy
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA	Completed	Not Found	< 25%	< 50%	Hydro Metallurgy Plus High Cost Calcining
NEOMETALS LTD.	Completed	Patent Pending	99.2%	Not Reported	Hydro Metallurgy
UNIVERSITY OF CALIFORNIA SAN DIEGO	Completed	Not found	Not Reported	Not Reported	Heat Treating
UMICORE	Current Method of Disposal of Most Batteries	Not Patentable	40 - 70% Not Reusable in Batteries	Nil	High Cost of Smelting 'Not Environmentally Responsible'

Figure 15 - Recycling Competitors

Research for lithium-ion battery recycling is ongoing worldwide, and the first group to successfully commercialize its recycling technology will set the standard for the emerging market. American Manganese continues to move forward in developing their process and reporting progress on a regular basis as the company advances from the Pilot Plant to the Commercial Plant.

7.6. SECOND LIFE BATTERIES

Second life batteries are the repurposing of EV batteries that may no longer be effective in an EV, but may have purpose for another application. The most likely use of EV second life batteries at the moment is in home energy storage. The problem with this business model is that the used batteries are less energy dense and cannot hold as much energy as they used to. You would need more batteries to store as much energy, taking up more physical space and raising costs.

Manufacturers are also unable to guarantee their performance as easily as with a new battery (chinadialogue, 2018).

A representative of Mercedes-Benz Energy said there is no benefit to basing home energy storage systems on automotive batteries, in the medium or long term. It was also added that the highly complex automotive battery system far exceeds the value required for the home storage market (Energy Storage, 2018). Second life batteries are not eliminating the need for battery recycling. Instead it is tying up the supply of critical metals needed for new EV batteries.

8. OWNERSHIP AND MANAGEMENT

American Manganese Inc. is listed on the TSX Venture Exchange in Canada under the ticker symbol "AMY"; on the Frankfurt Stock Exchange under "2AM"; and on the OTC US under "AMYZF". Currently, the Company has approximately 165 million issued and outstanding shares, as well as 37.3 million warrants and options shares. As of July 11, 2018, the Company's market capitalization is $27 million. Regulatory filings for the Company can be found under its profile at www.sedar.com. The Company's shares are widely held.

The Company's board of directors and officers are:

Larry W. Reaugh - President & CEO, Director

Larry Reaugh has 55+ years' experience in the mining industry and for the past forty years he has been the CEO and President of several exploration, development and production companies including 12 years in internet and technology breakthroughs listed on the TSX, TSX Venture and NASDAQ exchanges. Several of his companies have made significant discoveries, three of which (gold/silver) went on to be producing mines. Mr. Reaugh founded American Manganese Inc. in 1998 and has served as its President and CEO since that time. Through his career, Mr. Reaugh has raised in excess of $300 million.

Zarko Meseldzija – Chief Technical Officer

Zarko brings a range of industry experience, acquired by working with one of Canada's largest energy companies and an innovation driven process systems company. Zarko has deep insight into project management of multi-million-dollar projects as well as technical knowledge of hydrometallurgical process development projects, particularly in the field of e-waste and lithium-ion battery recycling.

Zarko Meseldzija's early introduction into the Urban Mining sector inspired him to build his career on emerging technologies and open an independent consulting firm focused on lithium ion battery supply chain management and the recycling of battery metals such as cobalt, lithium, nickel and manganese. He holds a Bachelor's in Mining Engineering from the University of Alberta and is a registered engineer with the Engineers and Geoscientists of British Columbia.

Shaheem Ali - BBA, Chief Financial Officer

Shaheem Ali is a finance and business management professional with 10 years' experience in operations management, full cycle accounting, systems development and people management. Proven record of implementing financial and operational processes reducing operations costs and improved internal controls with Alderwoods Group Inc. where his experience includes governance and regulatory fund compliance with various states.

Teresa Piorun - Senior Corporate Officer

Teresa Piorun has been with the Reaugh group of companies for thirty-three years. Ms. Piorun is a senior corporate officer with wide-ranging responsibilities, serving as a focal point for communication with the board of directors, senior management and the company's shareholders, and occupies a key role in the administration of critical corporate matters. She is the confidant and advisor to the CEO and other members of senior management, particularly on corporate governance affairs

Norman L. Tribe - B.A.Sc., P.Eng., Director

Norman Tribe is the president and principal of N. Tribe & Associates Ltd a geological contractor serving the mining industry for fifty-eight years. Mr. Tribe has a total of 58 years' experience in most phases of mining and reporting to the various government entities and stock exchanges.

Andris Kikauka - P.Geo, Director

Andris Kikauka is a graduate of Brock University, St. Catharines, Ont., with an Honours Bachelor of Science Degree in Geological Sciences, 1980. He is a member of the Geological Association of Canada. He is registered in the Province of British Columbia as a Professional Geoscientist.

Jan Eigenhuis - Director

Jan Eigenhuis is a former senior executive at Manganese Metal Company of South Africa (MMC). He currently acts as a consultant to the electrolytic manganese industry worldwide. It is notable that he counts MMC as well as the Chinese manganese producers as clients. Mr. Eigenhuis is a graduate of the University of Pretoria; B.Sc. (Chem. & Math.) and the University of South Africa; MBL (Master Business Leadership). He has 30 years of business experience in mineral beneficiation and in the electrolytic manganese metal industry.

Ed Skoda - Director

Edward Skoda obtained a Diploma in Mining Engineering Technology from the Haileybury School of Mines in Ontario in 1971 and a Diploma in Business Management from the British Columbia Institute of Technology in 1979. Mr. Skoda has over 30 years of experience in the mining industry in which time he has worked on many national and international projects.

Kurt Lageschulte - Director

Kurt Lageschulte is a Partner and Senior Analyst at Broadbill Investment Partners, LLC in New York. Broadbill Partners is an investment firm with offices in New York, Florida and California and currently has $130 million of assets under management across four managed funds. Kurt is a founding partner at Broadbill, and was previously employed as a Senior Analyst with Aspen Advisors from 2002 to 2010. Kurt has worked as an advisor and active member of a number of committees. Most recently, he has advised the

Special Committee of the Penn Treaty American Company board in a complex negotiation with industry regulators. Kurt's experience in the energy, renewable and mining industries, coupled with significant expertise in the capital markets will enable Kurt and the Broadbill team to help American Manganese in the reaching of its goals in the coming years.

Shailesh Upreti - Advisory Board

Shailesh Upreti is a well-respected lithium-ion technology expert and inventor of multiple breakthrough technologies. An IIT Delhi graduate, Mr. Upreti has worked closely with Professor Stan Whittingham in the past and holds multiple US patents and their foreign equivalents in more than 30 countries. In addition to his technical degree he has a second masters in international business management in combination with extensive experience as an entrepreneur. Shailesh has successfully brought more than 5 different technologies to market including one in the material recycling space. His 16 years of extensive experience includes bringing new products to market, business development, lithium-ion supply chain & industry networking, downstream processing and investigating organizational performance gaps. He is well integrated into the global battery industry and serves on various advisory boards. Shailesh is particularly adept in defining corporate commercial objectives, business support programs and achieving organizational goals while bringing new technology to market.

David Langtry - Technical Advisor

David Langtry has been a businessman since 1964 when he joined Langtry Agencies, a company which expanded nationally to become Langtry Industries and was sold in 2011 to ITOCHU, a Japanese conglomerate specializing in commodities. Mr. Langtry currently owns and operates Raider Hansen Inc., an industrial supplies company having 10 locations throughout British Columbia, as well as GRE Manufacturing, a glass recycling company. He also holds 10 worldwide patents. Mr. Langtry has a life time of experience in technology and financial markets.

Daniel McGroarty - Strategic Advisor

Daniel McGroarty has consulted for nearly two decades to firms in the resource sector, with a focus on strategic and critical metals. He is principal of the non-profit American Resource Policy Network, a resource development think tank. He has served as a critical materials subject-matter expert for the U.S. GAO; testified before the energy and natural resource committees of the U.S. House and Senate; consulted to the Institutes for Defense Analyses, which provides research and analytical work to the U.S. Department of Defense for its National Defense Stockpile reports; and currently serves as Adjunct Professor at The George Washington University Graduate School of Political Management. Prior to establishing his consultancy, Dan served as Special Assistant to the President in the White House and as presidential appointee to two Secretaries of Defense.

James J. (Jim) Hahn - Advisory Board

Jim comes from a career of 40+ years in the Specialty Tool and Fastener Industry. He has held management positions in patented product development to include Powder Actuated Fasteners, Adhesives, and Coatings. Additionally, he has worked domestically and internationally in the development of Concrete Anchoring Systems leading to successful market introductions. These introductions were attained through independent product testing to meet strict industry codes and final evaluation agency approvals.

At Hilti, Inc. Jim achieved the highest level of sales locally, regionally and nationally. He was awarded multi-million-dollar sales club recognition for his work with a previously poor-performing territory and was recognized multiple times as a President Club's winner at national conventions, having set regional and national sales records annually. Jim received a special award from ITW Corporation for the development of a national training program for certain industrial products. He was a founding member of the Concrete Anchoring Manufacturing Association in 1996. Last but not least, Jim was a PGA professional golfer after he graduated from college where he earned an AA degree in Applied Marketing and a BA in Business Administration.

9. APPENDIX A – FINANCIAL MODELS

9.1. LCO BATTERY CHEMISTRY

9.1.1. ESTIMATED ANNUAL OPERATING PROFIT

Table 4 - Estimated Profits for LCO Commercial Plant (December 3, 2018)

Cathode Processing Rate (Tonnes/Year)	1,100
Estimated Annual Revenue (USD)	**$42.24 M**
Lithium Carbonate	$5.81 M
Cobalt	$36.43 M
Nickel	$0. M
Manganese	$0. M
Aluminium	$0. M
Estimated Annual Operating Expenses (USD)	**$15.55 M**
Feed Material	$10.56 M
Reagents	$1.08 M
Labour and G&A	$3.26 M
Utilities	$0.13 M
Maintenance	$0.53 M
Estimated Annual Operating Profit (USD)	**$26.69 M**
Operating Profit Margin	63%

9.1.2. NET PRESENT VALUE

Using an interest rate of 10%, the 3-year net present value of the Commercial Plant is estimated to be US$56.37 million with an IRR of 261% from recycling pre-production LCO cathode scrap material.

Table 5 - LCO Commercial Plant Cashflow (December 3, 2018)

Period	Cashflow	Balance
Year 0	$ (10.0)M	$ (10.0)M
Year 1	$ 26.7 M	$ 16.7 M
Year 2	$ 26.7 M	$ 43.4 M
Year 3	$ 26.7 M	$ 70.1 M

9.2. NMC-111 BATTERY CHEMISTRY

9.2.1. ESTIMATED ANNUAL OPERATING PROFIT

Table 6 - Estimated Profits for NMC-111 Commercial Plant (December 3, 2018)

Cathode Processing Rate (Tonnes/Year)	**1,100**
Estimated Annual Revenue (USD)	**$21.1 M**
Lithium Carbonate	$5.9 M
Cobalt	$12.32 M
Nickel	$2.45 M
Manganese	$0.42 M
Aluminium	$0 M
Estimated Annual Operating Expenses (USD)	**$10.27 M**
Feed Material	$5.27 M
Reagents	$1.08 M
Labour and G&A	$3.26 M
Utilities	$0.13 M
Maintenance	$0.53 M
Estimated Annual Operating Profit (USD)	**$10.83 M**
Operating Profit Margin	51%

9.2.2. NET PRESENT VALUE

Using an interest rate of 10%, the 3-year net present value of the Commercial Plant is estimated to be US$16.94 million with an IRR of 93% from recycling pre-production NMC-111 cathode scrap material.

Table 7 - NMC-111 Commercial Plant Cashflow (December 3, 2018)

Period	Cashflow	Balance
Year 0	$ (10.0)M	$ (10.0)M
Year 1	$ 10.8 M	$ 0.8 M
Year 2	$ 10.8 M	$ 11.7 M
Year 3	$ 10.8 M	$ 22.5 M

9.3. NMC-811 BATTERY CHEMISTRY

9.3.1. ESTIMATED ANNUAL OPERATING PROFIT

Table 8 - Estimated Profits for NMC-811 Commercial Plant (December 3, 2018)

Cathode Processing Rate (Tonnes/Year)	**1,100**
Estimated Annual Revenue (USD)	**$15.48 M**
Lithium Carbonate	$5.85 M
Cobalt	$3.67 M
Nickel	$5.84 M
Manganese	$0.13 M
Aluminium	$0 M
Estimated Annual Operating Expenses (USD)	**$8.86 M**
Feed Material	$3.87 M
Reagents	$1.08 M
Labour and G&A	$3.26 M
Utilities	$0.13 M
Maintenance	$0.53 M
Estimated Annual Operating Profit (USD)	**$6.62 M**
Operating Profit Margin	43%

9.3.2. NET PRESENT VALUE

Using an interest rate of 10%, the 3-year net present value of the Commercial Plant is estimated to be US$6.46 million with an IRR of 44% from recycling pre-production NMC-811 cathode scrap material.

Table 9 - NMC-811 Commercial Plant Cashflow (December 3, 2018)

Period	**Cashflow**	**Balance**
Year 0	$ (10.0)M	$ (10.0)M
Year 1	$ 6.6 M	$ (3.4)M
Year 2	$ 6.6 M	$ 3.2 M
Year 3	$ 6.6 M	$ 9.9 M

9.4. NCA BATTERY CHEMISTRY

9.4.1. ESTIMATED ANNUAL OPERATING PROFIT

Table 10 - Estimated Profits for NCA Commercial Plant (December 3, 2018)

Cathode Processing Rate (Tonnes/Year)	1,100
Estimated Annual Revenue (USD)	**$17.43 M**
Lithium Carbonate	$5.92 M
Cobalt	$5.57 M
Nickel	$5.91 M
Manganese	$0. M
Aluminium	$0.03 M
Estimated Annual Operating Expenses (USD)	**$9.35 M**
Feed Material	$4.36 M
Reagents	$1.08 M
Labour and G&A	$3.26 M
Utilities	$0.13 M
Maintenance	$0.53 M
Estimated Annual Operating Profit (USD)	**$8.08 M**
Operating Profit Margin	46%

9.4.2. NET PRESENT VALUE

Using an interest rate of 10%, the 3-year net present value of the Commercial Plant is estimated to be US$10.1 million with an IRR of 62% from recycling pre-production NCA cathode scrap material.

Table 11 - NCA Commercial Plant Cashflow (December 3, 2018)

Period	Cashflow	Balance
Year 0	$ (10.0)M	$ (10.0)M
Year 1	$ 8.1 M	$ (1.9)M
Year 2	$ 8.1 M	$ 6.2 M
Year 3	$ 8.1 M	$ 14.2 M

10. APPENDIX B – FINANCIAL STATEMENTS

AMERICAN MANGANESE INC.

Consolidated Statements of Financial Position
As at July 31, 2018 and July 31, 2017
(Expressed in Canadian dollars, unless specifically indicated otherwise)

		July 31, 2018		July 31, 2017
Assets				
Current				
Cash and cash equivalents	$	**1,166,786**	$	486,088
Amounts receivable (Note 6)		**42,243**		66,087
Marketable securities		**2,500**		-
Prepaid expenses and advances		**292,344**		233,541
		1,503,873		785,716
Non-current				
Reclamation deposits		**39,842**		38,772
Exploration and evaluation assets (Note 8)		**5,213,065**		5,021,687
Total assets	$	**6,756,780**	$	5,846,175
Liabilities				
Current				
Accounts payable and accrued liabilities (Note 6)	$	**209,170**	$	374,952
Payable to related parties (Note 7b)		**13,423**		7,093
Total liabilities		**222,593**		382,045
Equity				
Share capital (Note 9)		**27,549,194**		25,772,440
Share subscriptions receivable		**(24,500)**		-
Prepaid share subscriptions (Note 17)		**-**		5,500
Share-based payments reserve (Note 9)		**4,772,270**		4,102,225
Warrants reserve (Note 9)		**5,004,947**		4,126,613
Accumulated other comprehensive income		**2,368,057**		2,166,639
Deficit		**(33,135,781)**		(30,709,287)
Total equity		**6,534,187**		5,464,130
Total liabilities and equity	$	**6,756,780**	$	5,846,175

Nature and Continuance of Operations (Note 1)
Subsequent events (Note 15)

The accompanying notes are an integral part of these consolidated financial statements

Approved on behalf of the Board of Directors and authorized for issue on November 28, 2018

Larry W Reaugh Director *Norm Tribe* Director

AMERICAN MANGANESE INC.

Consolidated Statements of Comprehensive Loss
For the years ended July 31, 2018 and 2017
(Expressed in Canadian dollars, unless specifically indicated otherwise)

		2018		2017
Expenses				
Administration (Note 10)	$	2,424,562	$	2,003,919
Loss from operations		2,424,562		2,003,919
Finance income		(135)		(86)
Foreign exchange loss		67		3,101
Unrealized loss on marketable securities		2,000		-
Net loss for the year		**2,426,494**		**2,006,934**
Other comprehensive loss				
Foreign currency gain (loss) on translation of subsidiary		201,418		(217,358)
Other comprehensive gain (loss) for the year		**201,418**		**(217,358)**
Total comprehensive loss for the year		**2,225,076**		**2,224,292**
Basic and diluted loss per share	**$**	**(0.02)**	**$**	**(0.01)**
Weighted average shares outstanding (basic and diluted)		**155,647,553**		**138,141,848**

AMERICAN MANGANESE INC.

Consolidated Statements of Changes in Equity
For the years ended July 31, 2018 and 2017
(Expressed in Canadian dollars, unless specifically indicated otherwise)

	Number of shares	Share capital	Share subscriptions receivable	Prepaid share subscriptions	Share-based payments reserve	Warrants reserve	Deficit	Accumulated other comprehensive income (loss)	Total equity
	(Note 9)	(Note 9)			(Note 9)	(Note 9)	(Note 9)	(Note 9)	
Balance, July 31, 2016	**124,550,880**	**$ 23,933,531**	**$ -**	**$ -**	**$ 3,627,551**	**$ 3,182,502**	**$ (28,702,353)**	**$ 2,383,997**	**$ 4,425,228**
Share-based payments	-	-	-	-	582,032	-	-	-	582,032
Issued pursuant to private placements	15,290,316	2,349,505	-	-	-	-	-	-	2,349,505
Cost of share issuance	-	(156,843)	-	-	-	-	-	-	(156,843)
Warrants issued with private placement	-	(1,048,943)	-	-	-	1,048,943	-	-	-
Issued pursuant to options exercise	2,450,000	284,858	-	-	(107,358)	-	-	-	177,500
Issued pursuant to warrants exercise	5,509,999	410,332	-	-	-	(104,832)	-	-	305,500
Prepaid share subscriptions	-	-	-	5,500	-	-	-	-	5,500
Loss for the year	-	-	-	-	-	-	(2,006,934)	-	(2,006,934)
Other comprehensive loss for the year	-	-	-	-	-	-	-	(217,358)	(217,358)
Balance, July 31, 2017	**147,801,195**	**$ 25,772,440**	**$ -**	**$ 5,500**	**$ 4,102,225**	**$ 4,126,613**	**$ (30,709,287)**	**$ 2,166,639**	**$ 5,464,130**
Share-based payments	-	-	-	-	692,665	-	-	-	692,665
Issued pursuant to private placements	9,945,708	2,302,417	-	(5,500)	-	-	-	-	2,296,917
Cost of share issuance	-	(67,438)	-	-	-	4,864	-	-	(62,574)
Warrants issued with private placement	-	(996,743)	-	-	-	996,743	-	-	-
Issued pursuant to options exercise	1,160,000	80,620	-	-	(22,620)	-	-	-	58,000
Issued pursuant to warrants exercise	6,142,500	457,898	-	-	-	(123,273)	-	-	334,625
Share subcriptions receivable	-	-	(24,500)	-	-	-	-	-	(24,500)
Loss for the year	-	-	-	-	-	-	(2,426,494)	-	(2,426,494)
Other comprehensive income for the year	-	-	-	-	-	-	-	201,418	201,418
Balance July 31, 2018	**165,049,403**	**$ 27,549,194**	**$ (24,500)**	**$ -**	**$ 4,772,270**	**$ 5,004,947**	**$ (33,135,781)**	**$ 2,368,057**	**$ 6,534,187**

AMERICAN MANGANESE INC.

Consolidated Statements of Cash Flows
For the years ended July 31, 2018 and 2017
(Expressed in Canadian dollars, unless specifically indicated otherwise)

		2018		2017
Cash flows from (used in) operating activities				
Net loss for the year	$	(2,426,494)	$	(2,006,934)
Add items not affecting cash				
Share-based payments		692,665		582,032
Unrealized loss on marketable securities		2,000		-
Net changes in non-cash working capital items related to operations:				
Amounts receivable		23,844		(31,101)
Prepaid expenses		(58,803)		(199,493)
Accounts payable and accrued liabilities		(165,782)		(445,789)
Payable to related parties		6,330		(145,289)
Net cash used in operating activities		(1,926,240)		(2,246,574)
Cash flows from (used in) investing activities				
Exploration and evaluation expenditures		(20,329)		(24,030)
Property cost recoveries		24,139		-
Net cash from (used in) investing activities		3,810		(24,030)
Cash flows from financing activities				
Net proceeds from issuance of shares		2,602,468		2,675,662
Prepaid share subscriptions		-		5,500
Net cash from financing activities		2,602,468		2,681,162
Effect of foreign exchange rates on cash and cash equivalents		660		(2,904)
Increase in cash and cash equivalents		680,698		407,654
Cash and cash equivalents, beginning of year		486,088		78,434
Cash and cash equivalents, end of year	$	1,166,786	$	486,088

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