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CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Unit	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee[3]
Common Stock, par value $0.001 per share	49,458,333[1]	$6.00	$296,749,998	$40,476.70
Common Stock, par value $0.001 per share	1,333,333	$7.45[2]	$9,933,331[2]	$1,354.91[2]

(1) Includes 5,625,000 shares of common stock that the underwriters have an option to purchase.

(2) Estimated solely for the purpose of computing the amount of the registration fee pursuant to Rule 457(c) under the Securities Act of 1933 based on the average of the high and low prices on January 24, 2013.

(3) This filing fee is calculated in accordance with Rule 457(r) and relates to the Registration Statement on Form S-3 (Registration No. 333-183336) filed by Molycorp, Inc. on August 16, 2012.

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PROSPECTUS SUPPLEMENT
To Prospectus dated August 16, 2012

45,166,666 Shares

Molycorp, Inc.

Common Stock

Up to 45,166,666 shares of common stock, par value $0.001 per share, of Molycorp, Inc. are being offered pursuant to this prospectus supplement, 37,500,000 of which are being offered and sold by us (which shares we refer to as the "primary shares") and up to 7,666,666 of which will be loaned by us to Morgan Stanley Capital Services LLC (which we refer to as the "share borrower"), an affiliate of Morgan Stanley & Co. LLC, one of the underwriters for this offering (which shares we refer to as the "borrowed shares"). We have granted the underwriters the right to purchase, exercisable within a 30-day period, up to an additional 5,625,000 of primary shares of our common stock.

We intend to use the proceeds from the sale of the primary shares as described under "Use of Proceeds" in this prospectus supplement. We will not receive any proceeds from the sale of the borrowed shares in this offering, but will receive a nominal loan fee from the share borrower for the use of the borrowed shares. The share borrower or its affiliates will receive all the proceeds from the sale of the borrowed shares. Constantine Karayannopoulos, our President and Chief Executive Officer, and Molibdenos y Metales S.A., one of our significant stockholders, are purchasing 15,016,667 shares of our common stock in the aggregate in this offering.

We have been advised by Morgan Stanley & Co. LLC, one of the underwriters for this offering that it, or its affiliates, intend to use the short position created by the share loan and the short sales of the borrowed shares to facilitate transactions by which investors in our 5.50% convertible senior notes due 2018, which we refer to as our "convertible notes" and that are being offered in a concurrent offering pursuant to a separate prospectus supplement and accompanying prospectus, may hedge their investments through short sales or privately negotiated derivatives transactions.

6,333,333 shares of our common stock are being offered by an affiliate of the share borrower by this prospectus supplement at a price of $6.00 per share concurrently with the offering of the convertible notes. The share borrower may from time to time during a permitted borrowing period borrow up to 1,333,333 additional shares from us for additional offerings that may be made on a delayed basis in transactions that may include block sales, sales in the over-the-counter market, sales pursuant to negotiated transactions or otherwise. The total number of shares that the share borrower can borrow under the share lending agreement is limited to a maximum of 6,666,666 borrowed shares, assuming no exercise of the over-allotment option in respect of the convertible notes offered in the concurrent offering (or up to an aggregate of 7,666,666 borrowed shares if the underwriters exercise their over-allotment option in respect of the concurrent offering of convertible notes in full). See "Share Lending Agreement; Concurrent Offering of Convertible Notes" and "Underwriting; Conflicts of Interest."

Concurrently with this offering, up to $150.0 million aggregate principal amount of convertible notes, assuming no exercise of the underwriters' over-allotment option (or up to $172.5 million aggregate principal amount of our convertible notes if the underwriters exercise their over-allotment option in full), are being offered pursuant to a separate prospectus supplement and accompanying prospectus. The offering of the borrowed shares pursuant to this prospectus supplement and the accompanying prospectus is contingent upon the closing of the convertible notes offering, and the concurrent offering of our convertible notes is contingent upon the closing of the offering of the borrowed shares hereunder. However, the offering of the primary shares pursuant to this prospectus supplement and the accompanying prospectus is not contingent upon the closing of either the convertible notes offering or the offering of the borrowed shares hereunder, and the offering of the borrowed shares hereunder and the concurrent offering of our convertible notes are not contingent upon the closing of the offering of the primary shares hereunder.

Our common stock is listed on The New York Stock Exchange under the symbol "MCP." The last reported sale price of our common stock on The New York Stock Exchange on January 24, 2013 was $7.07 per share.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page S-13 of this prospectus supplement.

	Per Primary Share	***Per Borrowed Share***	***Total***
Public offering price	*$6.00*	*$6.00*	*$262,999,998*
Underwriting discounts and commissions[(1)]	*$0.36*	*$0*	*$8,094,000*
Proceeds, before expenses, to us[(1)]	*$5.64*	*$0*	*$216,906,000*

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(1) *With respect to 15,016,667 primary shares being purchased by Constantine Karayannopoulos, Molycorp's President and Chief Executive Officer, and Molibdenos y Metales S.A., one of Molycorp's significant stockholders, the underwriting discounts and commissions will be $0.00 per share and the proceeds, before expenses, to us will be $6.00 per share.*

The Securities and Exchange Commission and state securities regulators have not approved or disapproved these securities, or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the primary shares and the borrowed shares sold on the date hereof to investors in book-entry form through The Depository Trust Company on or about January 30, 2013.

Joint Book-Running Managers

MORGAN STANLEY *J.P. Morgan* *Goldman, Sachs & Co.*

Co-Managers

Griffiths McBurney Corp. *HSBC*

January 24, 2013

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement, and the accompanying prospectus, is part of a registration statement that we filed with the SEC using a "shelf" registration process. Generally, when we refer to this prospectus, we are referring to both this prospectus supplement and the accompanying prospectus combined. As permitted under the rules of the SEC, this prospectus incorporates important business information about Molycorp, Inc. that is contained in documents that we file with the SEC, but that are not included in or delivered with this prospectus. You may obtain copies of these documents, without charge, from the website maintained by the SEC at www.sec.gov, as well as other sources. See "Where You Can Find More Information."

We and the underwriters have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should not assume that the information contained in this prospectus, any document incorporated by reference or any free writing prospectus is accurate as of any date, other than the date mentioned on the cover page of these documents. We and the underwriters are not making offers to sell the securities described in this prospectus supplement in any jurisdiction in which an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

References in this prospectus to the terms "we," "us," "our," "the Company" or "Molycorp" or other similar terms mean Molycorp, Inc. and its consolidated subsidiaries, unless we state otherwise or the context indicates otherwise.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, including the documents incorporated by reference, contains forward-looking statements that represent our beliefs, projections and predictions about future events or our future performance. You can identify forward-looking statements by terminology such as "may," "will," "would," "could," "should," "expect," "intend," "plan," "anticipate," "believe," "estimate," "predict," "potential," "continue" or the negative or plural of these terms or other similar expressions or phrases. These forward-looking statements are necessarily subjective and involve known and unknown risks, uncertainties and other important factors that could cause our actual results, performance or achievements or industry results to differ materially from any future results, performance or achievement described in or implied by such statements.

Risk factors and uncertainties that may cause actual results to differ materially from expected results include, among others:

- the potential need to secure additional capital to implement our business plans, and our ability to successfully secure any such capital;
- our ability to complete our planned capital projects, such as our modernization and expansion efforts, including the achievement of an annual run rate of 19,050 mt at our Mountain Pass, California rare earth mine and processing facility, or our Molycorp Mountain Pass facility, which we refer to as Project Phoenix Phase 1, and the second phase capacity expansion plan, which we refer to as Project Phoenix Phase 2, and reach full planned run rates for rare earth oxides, or REOs, and other planned downstream products, in each case within the projected time frame;
- the success of our cost mitigation efforts in connection with Project Phoenix Phase 1 and Project Phoenix Phase 2, which if unsuccessful, might cause our costs to exceed budget;

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- the final costs of our planned capital projects, such as Project Phoenix Phase 1 and Project Phoenix Phase 2, which may differ from estimated costs;
- market conditions, including prices and demand for our products;
- our ability to control our working capital needs;
- our ability to successfully integrate Molycorp Minerals Canada ULC (formerly Neo Material Technologies Inc., which we refer to now as Molycorp Canada), with our operations;
- our ability to achieve fully the strategic and financial objectives related to the acquisition of Molycorp Canada, including the acquisition's impact on our financial condition and results of operations;
- unexpected costs or liabilities that may arise from the acquisition, ownership or operation of Molycorp Canada;
- the rate of exchange of the U.S. dollar to the Canadian dollar, the Japanese yen, the Chinese Renminbi and the euro;
- new products pricing and the competitive environment for these new products;
- unexpected actions of domestic and foreign governments;
- various events that could disrupt operations, including natural events and other risks;
- uncertainties associated with our reserve estimates and non-reserve deposit information, including estimated mine life and annual production;
- uncertainties related to feasibility studies that provide estimates of expected or anticipated costs, expenditures and economic returns, REO prices, production costs and other expenses for operations, which are subject to fluctuation;
- uncertainties regarding global supply and demand for rare earths materials;
- uncertainties regarding the results of our exploratory drilling programs;

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- our ability to enter into additional definitive agreements with our customers and our ability to maintain customer relationships;
- our sintered neodymium-iron-boron, or NdFeB, rare earth magnet joint venture's ability to successfully manufacture magnets within its expected timeframe;
- our ability to successfully integrate other acquired businesses;
- our ability to maintain appropriate relations with unions and employees;
- our ability to successfully implement our vertical integration strategy;
- environmental laws, regulations and permits affecting our business, directly and indirectly, including, among others, those relating to mine reclamation and restoration, climate change, emissions to the air and water and human exposure to hazardous substances used, released or disposed of by us;
- uncertainties associated with unanticipated geological conditions related to mining; and
- the outcome of the stockholder class action litigation, derivative litigation and the SEC investigation, including any actions taken by government agencies in connection therewith.

See "Risk Factors" for a more complete discussion of these risks and uncertainties and for other risks and uncertainties. Any forward-looking statement you read in this prospectus supplement reflects our current views with respect to future events and is subject to these and other risks, uncertainties and

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assumptions relating to our operations, operating results, growth strategy and liquidity. You should not place undue reliance on these forward-looking statements because such statements speak only as to the date when made. We assume no obligation to publicly update or revise these forward-looking statements for any reason, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future, except as otherwise required by applicable law.

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SUMMARY

This summary highlights information contained elsewhere in this prospectus supplement and the accompanying prospectus and does not contain all of the information that you should consider before investing in our common stock. You should read this entire prospectus supplement carefully, including the section entitled "Risk Factors" and the documents incorporated by reference herein, including the financial statements and related notes. In this prospectus supplement, unless the context requires otherwise, references to "Molycorp," "we," "our" or "us" refer to Molycorp, LLC and its consolidated subsidiaries prior to the Corporate Reorganization (as described below) and Molycorp, Inc. and its consolidated subsidiaries after the Corporate Reorganization and after the Molycorp Canada Acquisition (as described below), includes Molycorp Canada. The term "Molycorp Canada" refers to Molycorp Minerals Canada ULC (formerly Neo Material Technologies Inc.) and its consolidated subsidiaries and the term "Molycorp Canada Acquisition" refers to the acquisition of Molycorp Canada by Molycorp. Pro forma statement of operations data incorporated by reference into this prospectus supplement gives effect to the Molycorp Canada Acquisition (including the related financing) as if it had been completed on January 1, 2011. As used in this prospectus supplement, the term "ton" means a ton (equal to 2,000 pounds), the term "mt" means a metric tonne (equal to 2,205 pounds) and the term "IMCOA" means the Industrial Minerals Company of Australia Pty Ltd, a rare-earth market consultant. For definitions of certain rare earth-related and mining terms, see "Glossary of Selected Mining Terms." IMCOA data is accurate to within 20% of the stated amounts. IMCOA data takes into account only legal exports of rare earths, and ignores illegal exports from China and usage thereof, which could be significant due to the difficulties with accurately collecting information with respect thereto.

Our Business

We are one of the world's leading global rare earth companies that operates a vertically integrated supply chain extending from the rare earth resource to the manufacture of custom engineered, advanced rare earth materials. We currently produce custom engineered materials from 13 different rare earths, plus yttrium, with purity levels of up to 6N (99.9999%), and from five other rare metals (niobium, tantalum, gallium, indium and rhenium) at purity levels of up to 8N (99.999999%).

Rare earth products are critical inputs in many existing and emerging applications including: clean energy technologies, such as hybrid and electric vehicles and wind power turbines; multiple high-tech uses, including mobile devices, fiber optics, lasers and hard disk drives; critical defense applications, such as guidance and control systems and global positioning systems; and advanced water treatment technology for use in industrial, military and outdoor recreation applications. Global demand for rare earth elements, or REEs, is projected by industry analysts to steadily increase both due to continuing growth in existing applications and increased innovation and development of new end uses. We have made significant investments, and expect to continue to invest, in developing technologically advanced applications and proprietary applications for individual REEs.

Our Molycorp Mountain Pass facility is the foundation for our vertical integration strategy and is the largest, most fully developed rare earth mine outside of China. It has been producing rare earth products for approximately 60 years. Upon reaching a planned annual run rate of 19,050 mt of REO under Project Phoenix Phase I and upon completion of the chloralkali plant (expected later in 2013), we expect our Molycorp Mountain Pass facility to have production cash costs lower than those publicly reported for China by government officials and those reported for other non-Chinese rare earth projects. Although the Molycorp Mountain Pass facility is designed to allow an expanded run rate of up to 40,000 mt of REO per year, we will not expand production beyond the initial planned run rate unless market demand, product pricing, capital availability and financial returns justify such production.

We also own several of the leading rare earth processing facilities in the world. Our Molycorp Silmet facility, located in Sillamäe, Estonia, is one of the largest REO and rare metals producers in Europe. Our Molycorp Metals & Alloys, or MMA, facility, located in Tolleson, Arizona, is the only commercial

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producer of neodymium and samarium magnet alloy and other specialty alloy products in the United States. We also have created a joint venture with Daido Steel Co., Ltd., or Daido, and Mitsubishi Corporation, or Mitsubishi, in the form of a private company, Intermetallics Japan, or IMJ, to manufacture sintered NdFeB permanent rare earth magnets.

As a result of the Molycorp Canada Acquisition in June 2012, we became a leading global producer, processor and developer of NdFeB magnetic powders, or Neo Powders, rare earths and zirconium-based engineered materials and applications and other rare metals and their compounds. These innovative products are essential in many of today's high-technology products.

Neo Powders are used in the production of high performance, bonded NdFeB permanent magnets, which are found in micro motors, precision motors, sensors and other applications requiring high levels of magnetic strength, flexibility, small size and reduced weight. Molycorp Canada is the only leading supplier of Neo Powders for bonded magnets manufactured or sold in the United States.

Molycorp Canada also manufactures a product line of oxides and salts of REEs, including cerium, lanthanum, neodymium, yttrium and yttrium-europium coprecipitates, dysprosium and terbium, among others, and zirconium-based engineered materials and salts, as well as a line of mixed rare earth/zirconium oxides. Rare earths and zirconium applications include catalytic converters, computers, television display panels, optical lenses, mobile phones and electronic chips. Additionally, Molycorp Canada produces, reclaims, refines and markets high value niche metals and their compounds, including gallium, indium and rhenium used in wireless, light emitting diode, or LED, flat panel display, turbine, solar and catalyst applications.

Molycorp Canada operates joint ventures and majority-owned manufacturing facilities in Jiangsu Province, China; Shandong Province, China; Stade, Germany; Sagard, Germany; and Quapaw, Oklahoma. Molycorp Canada also operates wholly-owned manufacturing facilities in Peterborough, Ontario; Napanee, Ontario; Blanding, Utah; the Hyeongok Industrial Zone in South Korea; Tianjin, China; and Korat, Thailand. Additionally, Molycorp Canada conducts ongoing research and product development through laboratories in Singapore and Abingdon, United Kingdom.

Our combined workforce of approximately 2,700 employees includes scientists, engineers, chemists, technologists and highly skilled workers in 27 locations across 11 countries.

Recent Developments

Modernization and Expansion of our Molycorp Mountain Pass Facility

All key production components of our Molycorp Mountain Pass facility are operational and now ramping up toward our initial planned run rate of 19,050 mt per year upon completion of Project Phoenix Phase 1, which we expect to be by mid-year 2013. Our completion of Project Phoenix Phase 2 will be influenced by customer demand and end-market conditions, among other factors.

Construction of our chloralkali plant at our Molycorp Mountain Pass facility continues. Our chloralkali plant will help us recycle water used in separation processes, as well as regenerate chemical reagents needed for separations, which is expected to dramatically reduce the amount of reagent supplies we must purchase. While the chloralkali plant is not required for rare earth production, it is expected to significantly drive down our unit production costs at our Molycorp Mountain Pass facility to a level below the levels reported by Chinese public officials once it comes online.

In addition to directly supplying customer demand, our Molycorp Mountain Pass facility also will provide rare earth feedstock for our downstream processing plants in Sillamäe, Estonia; Zibo, China; Jiangyin, China; and Tolleson, Arizona. Those facilities produce advanced materials that are custom engineered for a variety of global rare earth markets. We expect that upon reaching our initial planned run rate, our Molycorp Mountain Pass facility will have the capacity to produce rare earth feedstock in volumes

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greater than our initial planned run rates. We expect our Molycorp Mountain Pass facility to provide sufficient rare earth feedstock to meet the planned production of our Sillamäe and Zibo facilities in 2013.

Neodymium/praseodymium produced at our Molycorp Mountain Pass facility is expected to be sold directly to magnetic material customers, the IMJ joint venture and our downstream operations under the Molycorp Magnequench brand at our wholly-owned manufacturing facilities in Tianjin, China and Korat, Thailand. Toda Magnequench Magnetic Materials Co. Ltd., of which we acquired a 33% ownership interest in connection with the Molycorp Canada Acquisition, produces a wide variety of some of the world's leading magnetic powder materials for the manufacture of bonded NdFeB magnets for automotive and other markets under the Molycorp Magnequench brand.

Capital Needs

In August 2012, we determined that we would need additional capital to complete Project Phoenix and certain other capital projects at our Molycorp Mountain Pass facility, to fund our operations and to fund our working capital needs, and we raised an aggregate of approximately $528 million of net proceeds from a common stock offering and a convertible notes offering. We believed that the proceeds of such offerings would, together with anticipated cash flows from operations and potential proceeds from equipment and revolver financings, be sufficient to fund such operating and capital expenditure needs. Subsequent to August 2012, a number of developments have occurred that caused these expectations to be revised:

Our expected capital expenditures for Project Phoenix and certain other capital projects at our Molycorp Mountain Pass facility had totaled $1.2 billion, including the engineering, procurement and construction, or EPC, portion of Project Phoenix that were budgeted at $895 million. In response to cost pressures, we implemented mitigation efforts to maintain costs within our estimates. Since then, we have experienced additional cost pressures, and many of our mitigation efforts have not been successful. As a result, in November 2012, we disclosed the aggregate cost of Project Phoenix Phase 1 and Project Phoenix Phase 2 was estimated to be approximately $1.25 billion for EPC, preliminary engineering, insurance, permitting, legal, start-up, commissioning and other costs, and we expected $90 million of other capital expenditures at Mountain Pass, for total capital expenditures at Mountain Pass of $1.34 billion. We currently estimate that Project Phoenix will cost an additional $80 million to complete. As a result, our expected capital expenditures for Project Phoenix and certain other capital projects at our Molycorp Mountain Pass facility total approximately $1.42 billion. This updated projection includes an additional $80 million in capital expenditures overruns beyond those previously disclosed, though we view approximately $60 million of the estimate as discretionary and required only in a further ramp-up to Project Phoenix Phase 2 run rates.

Of the $1.42 billion projected capital expenditures for Project Phoenix and certain other capital projects at our Molycorp Mountain Pass facility, through December 31, 2012, total amount spent on a cash basis is approximately $1.04 billion, excluding capitalized interest. Remaining spend for the Mountain Pass plant modernization, including Project Phoenix Phase 1 and Phase 2 and certain other capital projects at Mountain Pass is expected to be approximately $380 million for 2013 on a cash basis.

We had expected that Project Phoenix Phase 1 would be operational during the fourth quarter of 2012, leading to an annualized run rate of 19,050 mt. Project Phoenix Phase 1 was not operational during 2012, though in January 2013, we announced that all key production components of the Molycorp Mountain Pass facility were operational and that the facility had begun an orderly ramp-up to its full scale Project Phoenix Phase 1 run rates. As a result, our production in the fourth quarter of 2012 and the first half of 2013 will be substantially lower than expected, leading to reduced revenues and cash flows, as well as higher costs for our other operations that must continue

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to purchase raw materials from third parties rather than accepting delivery of lower cost products from our Molycorp Mountain Pass facility. In addition, our chloralkali plant is not yet complete, which has not yet allowed us to realize lower production costs.

During the fourth quarter of 2012, our revenue and cash flow from operations were significantly less than originally expected. As noted above, our volumes from our Molycorp Mountain Pass facility did not reflect anticipated run rates, and we only sold approximately 700 mt of REOs produced at Mountain Pass during the quarter. In addition, the persistent global economic weakness combined with the anticipation of the falling prices of REEs (which generally results in a very conservative purchasing pattern by our customers) unfavorably impacted the volume of products we shipped from our facilities in the fourth quarter of 2012. Estimated sales volumes for our four reportable segments, Resources; Chemicals and Oxides; Magnetic Materials and Alloys; and Rare Metals, totaled approximately 3,200 to 3,400 mt as compared to our prior estimate of approximately 6,100 mt. We estimate that sales volumes, before intersegment eliminations, from Resources; Chemicals and Oxides; Magnetic Materials and Alloys; and Rare Metals were approximately 670-740 mt, 1,640-1,820 mt, 1,100-1,200 mt and 140-150 mt, respectively, during the fourth quarter of 2012, compared to volumes of 835 mt, 1,933 mt, 1,527 mt and 96 mt, respectively, during the third quarter of 2012. While we have not yet finalized our results, we estimate average selling prices were also lower during the fourth quarter of 2012, averaging approximately $18-$20, $32-$35, $44-$49 and $144-$159 per kilogram in each of our segments, respectively, compared to $25.02, $51.41, $48.98 and $269.23 per kilogram in the third quarter of 2012. To date, the REE market has continued to remain weak, and production volumes at our facilities remain comparable to the fourth quarter of 2012. We are anticipating an improvement beginning later in the first quarter of 2013 based on seasonality, but can provide no assurances.

While we continue to work on obtaining a revolving credit facility and equipment financings, we still do not have any firm commitments for any such facilities. Our credit ratings were downgraded during the fourth quarter of 2012, which has adversely affected our ability to obtain such facilities on acceptable terms.

As of December 31, 2012, we estimate we had approximately $200 million of cash and will need to spend approximately $380 million in cash to fund remaining capital expenditures for Project Phoenix and other capital expenditures at Mountain Pass, as well as $50 million on other maintenance and expansion capital expenditures in 2013 across all operating segments. Given the combination of ramping up toward our initial planned run rate of 19,050 mt per year at our Molycorp Mountain Pass facility and the current pricing environment of REEs, we are anticipating significantly lower than expected revenue and cash flow for the first half of 2013 and have therefore determined that we need to raise additional financing to ensure we have adequate funding for our needs. Based on our current estimated revenue and cash flow, we presently anticipate that we will have a cash shortfall for 2013 of approximately $250 million without giving effect to this offering and our concurrent offering of 5.50% convertible notes due 2018, which we refer to as the convertible notes, or any revolving credit facility or equipment financing.

We are conducting this offering and the concurrent offering of our convertible notes to raise at least $300 million of gross proceeds. The proceeds from this offering and the concurrent offering of our convertible notes are expected to be used to fund current capital needs. While the offerings will fund a substantial portion of these capital needs, the full funding of our planned capital expenditure plan continues to be dependent on (i) our cost estimates for capital expenditures being accurate, (ii) our ability to ramp up run rates at our Molycorp Mountain Pass facility pursuant to our expectations without delays, (iii) market conditions remaining the same as we are currently experiencing without deterioration (we estimate that a 15% drop in market prices for all REEs would reduce our cash flows by approximately $80 million and that a 15% drop in volumes would reduce our cash flows by approximately $60 million) and that we are able to sell all our production at such prices (we may not be able to obtain such prices, see "Risk Factors−We may be adversely affected by fluctuations in demand for, and prices of, rare earth

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products"), (iv) our anticipation that production at our facilities will improve beginning later in the first quarter of 2013 based on seasonality, (vi) our ability to sell our entire production of REOs and (vii) the absence of payments on current and future contingent liabilities. If these assumptions prove incorrect, or the other factors described in "Risk Factors" occur, our estimates could prove incorrect and we may need additional financing. We believe the offerings provide sufficient liquidity under our current business plan, but the offerings are not expected to provide a significant cushion of excess cash should our estimates change.

Rare Earth Industry

Pricing for REEs has experienced significant volatility over the past several years due to a number of factors: the recent global financial crisis; a severe contraction by China, beginning in 2010, of rare earths it allowed for export; China's continuing efforts to institute stronger environmental reforms across its rare earth industry, force industry consolidation, and constrict rare earth production; a build-up of stockpiles by rare earth consumers and government entities; and a general lack of certainty among rare earth customers regarding the reliability of the future supply of REEs. Current prices for all REEs remain significantly higher than historic (pre-2010) levels, although they have fallen from the peak levels seen in 2011.

Average FOB China $/Kg of most common REEs Oxide 99%

					2012			
	2008	2009	2010	2011	Q1	Q2	Q3	Q4
Lanthanum	$ 8	$ 6	$ 23	$ 101	$ 40	$ 25	$ 20	$ 13
Cerium	$ 4	$ 4	$ 21	$ 99	$ 35	$ 25	$ 20	$ 14
Praseodymium	$ 27	$ 15	$ 46	$ 195	$ 155	$ 115	$ 100	$ 85
Neodymium	$ 27	$ 15	$ 47	$ 230	$ 170	$ 115	$ 100	$ 85
Terbium	$ 650	$ 350	$ 530	$ 2,300	$ 2,600	$ 2,000	$ 2,000	$ 1,400
Dysprosium	$ 110	$ 100	$ 225	$ 1,450	$ 1,300	$ 1,100	$ 950	$ 675

Source: IMCOA, Metal-Pages. Prices have been rounded.

Regarding global rare earth demand forecasts, IMCOA is of the view that rare earth markets are poised for growth, and it recently increased its forecast demand for REO products. IMCOA now estimates global REO demand growth of 115,000 mt in 2012 to 162,500 mt in 2016, which represents approximately a 9% compound annual growth rate, or CAGR. IMCOA estimates that global REO demand will increase further in 2020 to 225,000 mt, which represents an 8.75% CAGR from 2012 to 2020.

On the supply side, China has dominated the global supply of REOs for the last sixteen years and, according to IMCOA, will continue to do so through at least 2016. IMCOA's estimate of global production of REOs for 2012 is approximately 110,000 mt, with China representing approximately 86% of that total. IMCOA forecasts that global rare earth supply will increase to 180,000 mt in 2016, with China producing approximately 65% of that total.

Concurrent Transaction

Concurrently with this offering of primary shares and borrowed shares, we are offering, by means of a separate prospectus supplement and accompanying prospectus, $150 million aggregate principal amount of our 5.50% convertible senior notes due 2018, which we refer to as the convertible notes, in an offering registered under the Securities Act. We also expect to grant a 30-day option to the underwriters of the convertible notes to purchase up to an additional 15% of the aggregate principal amount of the convertible notes, solely to cover the over-allotment.

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We intend to use the net proceeds of the offering of the convertible notes, along with the net proceeds from this offering of primary shares, to fund current capital needs for capital expenditures and any other cash requirements for 2013, including, without limitation, capital expenditures at our Molycorp Mountain Pass facility. We will not receive any proceeds from the sale of the borrowed shares offered hereunder, other than a nominal loan fee from the share borrower equal to $0.001 per borrowed share loaned to the share borrower. See "Share Lending Agreement; Concurrent Offering of Convertible Notes." We expect to use those proceeds for general corporate purposes.

This offering is being conducted in connection with the offering of our convertible notes. The offering of the borrowed shares pursuant to this prospectus supplement and the accompanying prospectus is contingent upon the closing of the convertible notes offering, and the concurrent offering of our convertible notes is contingent upon the closing of the offering of the borrowed shares hereunder. However, the offering of the primary shares pursuant to this prospectus supplement and the accompanying prospectus is not contingent upon the closing of either the convertible notes offering or the offering of the borrowed shares hereunder, and the offering of the borrowed shares hereunder and the concurrent offering of our convertible notes are not contingent upon the closing of the offering of the primary shares hereunder. This prospectus supplement is not an offer to sell any such convertible notes; any offer to sell such convertible notes will be made only by a separate prospectus supplement.

Our Corporate History and Structure

Molycorp Minerals, LLC, a Delaware limited liability company formerly known as Rare Earth Acquisitions LLC, was formed on June 12, 2008 to purchase the Mountain Pass, California rare earth deposit and associated assets from Chevron Mining Inc., a subsidiary of Chevron Corporation. Prior to the acquisition, the Mountain Pass, California rare earth mine and processing facility, which we refer to as our Molycorp Mountain Pass facility, was owned by Chevron Mining Inc. and, before 2005, by Unocal Corporation. Molycorp, LLC, which was the parent of Molycorp Minerals, LLC, was formed on September 9, 2009 as a Delaware limited liability company. Molycorp, Inc. was formed on March 4, 2010 as a new Delaware corporation and was not, prior to the date of the consummation of its initial public offering, conducting any material activities.

The members of Molycorp, LLC contributed either (a) all of their member interests in Molycorp, LLC or (b) all of their equity interests in entities that hold member interests in Molycorp, LLC (and no other assets or liabilities) to Molycorp, Inc. in exchange for shares of Molycorp, Inc. Class A common stock. Additionally, all of the holders of profits interests in Molycorp Minerals, LLC, which were represented by incentive shares, contributed all of their incentive shares to Molycorp, Inc. in exchange for shares of Molycorp, Inc. Class B common stock. Accordingly, Molycorp, LLC and Molycorp Minerals, LLC became subsidiaries of Molycorp, Inc., which we refer to as the Corporate Reorganization. Following the Corporate Reorganization, Molycorp, LLC was merged with and into Molycorp Minerals, LLC. Immediately prior to the consummation of Molycorp, Inc.'s initial public offering, all of the shares of Class A common stock and Class B common stock were converted into shares of common stock.

On April 1, 2011, we completed the acquisition of a 90.023% controlling stake in AS Silmet located in Sillamäe, Estonia, which is now known as Molycorp Silmet, one of only two rare earth processing facilities in Europe. On October 24, 2011, we acquired the remaining 9.977% ownership interest in Molycorp Silmet. This acquisition provides us with a European base of operations and significantly increases our annual capacity to produce REOs by approximately 3,000 mt. Molycorp Silmet sources rare earth feed stocks for production of its products primarily from our Molycorp Mountain Pass facility. The main focus of this acquired business is on the production of REOs and metals, including production of neodymium metal, a critical component in the manufacture of NdFeB permanent rare earth magnets.

On April 15, 2011, we acquired Santoku America, Inc., which is based in Tolleson, Arizona, and which is now known as MMA, the only producer of rare earth alloys in the United States. This acquisition

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provides us with access to certain intellectual property related to the development, processing and manufacturing of neodymium and samarium magnet alloy products.

On August 22, 2011, we opened an office in Tokyo, Japan to provide customer support as well as consulting and technical services to our customers in Japan.

On June 11, 2012, we completed the acquisition of all of the outstanding equity of Molycorp Canada.

In the third quarter of 2012, as a result of the Molycorp Canada Acquisition, we reorganized our operations into four new reportable segments to better reflect our primary activities as a global rare earths and magnetics producer: Resources; Chemicals and Oxides; Magnetic Materials and Alloys; and Rare Metals. The new composition of our reportable segments is based on a combination of product lines and technologies aligned with our vertical integration strategy.

Company Information

Our principal executive offices are located at: 5619 Denver Tech Center Parkway, Suite 1000, Greenwood Village, Colorado 80111, our telephone number is (303) 843-8040 and our web site is http://www.molycorp.com. We do not intend for information contained in our web site to be part of this prospectus, other than documents that we file with the SEC that are incorporated by reference in this prospectus supplement.

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The Offering

Issuer	Molycorp, Inc., a Delaware corporation.
Shares of common stock offered	Up to 37,500,000 primary shares, assuming no exercise of the option to purchase additional primary shares granted to the underwriters (or up to an aggregate of 43,125,000 primary shares if the underwriters exercise their option to purchase additional primary shares in full), and up to 7,666,666 borrowed shares.
Shares of common stock outstanding following this offering(1)	176,281,835 shares (including 37,500,000 primary shares offered hereby).
Use of proceeds	We estimate that the proceeds from this offering of the primary shares will be approximately $216.4 million (or $248.1 million if the underwriters exercise their option to purchase additional primary shares in full), after deducting the underwriters' discount and estimated fees and expenses payable by us. We intend to use the net proceeds from this offering of the primary shares, along with any net proceeds from the concurrent offering of convertible notes, to fund current capital needs for capital expenditures and other cash requirements for 2013, including, without limitation, capital expenditures at the Molycorp Mountain Pass facility. The borrowed shares offered hereby are shares that we have loaned to the share borrower pursuant to a share lending agreement dated as of January 24, 2013 (which we refer to as the "share lending agreement"). We have been advised by Morgan Stanley & Co. LLC, one of the underwriters for this offering that it, or its affiliates, intend to use the short position created by the share loan and the short sales of the borrowed shares to facilitate transactions by which investors in our convertible notes may hedge their investments through short sales or privately negotiated derivatives transactions. See "Share Lending Agreement; Concurrent Offering of Convertible Notes," "Underwriting" and "Use of Proceeds."
Risk factors	You should carefully consider the information set forth in the "Risk Factors" section of this prospectus supplement and accompanying prospectus as well as the other information included in or incorporated by reference in this prospectus supplement and the accompanying prospectus before deciding whether to invest in our common stock.

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Conflicts of interest	All of the proceeds from the sale of the borrowed shares in this offering will be paid to Morgan Stanley & Co. LLC, one of the underwriters for this offering, or an affiliate thereof. As a result, Morgan Stanley & Co. LLC, or an affiliate thereof, will receive more than 5% of the net proceeds of this offering. Thus, Morgan Stanley & Co. LLC has a "conflict of interest" as defined in Rule 5121 (Public Offerings of Securities with Conflicts of Interest) of the Financial Industry Regulatory Authority, Inc. Accordingly, this offering is being made in compliance with the requirements of Rule 5121. In accordance with Rule 5121, any underwriter that has a conflict of interest pursuant to Rule 5121 will not make sales to discretionary accounts without the prior written consent of the customer. The appointment of a "qualified independent underwriter" is not required in connection with this offering as a "bona fide public market," as defined in Rule 5121, exists for our common stock.
Exchange and trading symbol for our common stock	Our common stock is listed on The New York Stock Exchange under the symbol "MCP."

(1) As of December 31, 2012. Reflects 138,781,835 shares issued and outstanding at December 31, 2012 and excludes the following at December 31, 2012:

- 5,625,000 primary shares issuable upon exercise of the underwriters' option to purchase additional primary shares in this offering;

- 167,007 shares issuable upon exchange of the outstanding exchangeable shares of MCP Exchangeco Inc., a Canadian subsidiary of ours, at any time;

- 52,819 shares issuable upon exercise of outstanding options with a weighted average exercise price of $48.87, and 3.7 million shares reserved for future issuance under our stock incentive plans; and

- up to 4.1 million shares issuable upon conversion of our Series A mandatory convertible preferred stock, 3.2 million shares issuable upon conversion of our 3.25% convertible senior notes due 2016, 34.5 million shares issuable upon conversion of our 6.00% convertible senior notes due 2017, and 20.8 million shares issuable upon conversion of the convertible notes offered in the concurrent convertible notes offering (or 24.0 million shares issuable upon conversion of the convertible notes if the underwriters of the concurrent convertible notes offering exercise their over-allotment option in respect of the concurrent offering of convertible notes in full), in each case, subject to anti-dilution, make-whole and other adjustments; and

- up to 6,666,666 borrowed shares loaned to the share borrower pursuant to the share lending agreement, assuming no exercise of the underwriters' over-allotment option in respect of the concurrent offering of convertible notes (or up to an aggregate of 7,666,666 borrowed shares if the underwriters of the concurrent convertible notes offering exercise their over-allotment option in respect of the concurrent offering of convertible notes in full), including any shares that may be borrowed and sold from time to time after the date hereof.

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Summary Unaudited Pro Forma Condensed Consolidated Financial Data

The following table presents Molycorp's and Molycorp Canada's summary unaudited pro forma condensed consolidated financial data. The unaudited pro forma condensed consolidated financial data were derived from the unaudited pro forma condensed consolidated financial statements incorporated herein by reference. The unaudited pro forma condensed consolidated financial statements give effect to the Molycorp Canada Acquisition, including the related financing and other related transactions, as if it occurred as of January 1, 2011 for statement of operations purposes. The unaudited pro forma condensed consolidated financial statements do not give effect to this offering or the concurrent convertible notes offering. The summary unaudited pro forma financial data should be read in conjunction with the unaudited pro forma condensed consolidated financial statements and the notes thereto incorporated by reference into this prospectus supplement.

Statement of Operations Data	Nine Months Ended September 30, 2012	Year Ended December 31, 2011
(In thousands)		
Sales	$ 729,469	$ 1,196,876
Cost of goods sold[1]	(602,513)	(619,091)
Selling, general and administrative expense[2]	(131,550)	(145,945)
Depreciation, amortization and accretion expense	(34,998)	(52,480)
Operating (loss) income	(39,592)	379,360
Net (loss) income attributable to Molycorp stockholders	(82,382)	231,040
Interest expense, net	(42,316)	(78,922)

(1) Cost of goods sold is inclusive of depreciation expense and includes write-downs of inventory to estimated net realizable value of $41.1 million and $2.8 million for the nine months ended September 30, 2012 and year ended December 31, 2011, respectively. Cost of goods sold also includes $0 and $2.3 million of work-in-progress inventory impairments for the nine months ended September 30, 2012 and the year ended December 31, 2011, respectively.

(2) Includes stock-based compensation of $28.1 million and $11.7 million for the nine months ended September 30, 2012 and year ended December 31, 2011, respectively.

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Molycorp Summary Consolidated Financial Data

Upon the formation of Molycorp, LLC on September 9, 2009, all members of Molycorp Minerals, LLC contributed their member interests to Molycorp, LLC in exchange for member interests in Molycorp, LLC. That exchange was treated as a reorganization of entities under common control and Molycorp Minerals, LLC is the predecessor to Molycorp, LLC. Accordingly, all financial information of Molycorp, LLC for periods prior to its formation is the historical financial information of Molycorp Minerals, LLC. Molycorp Minerals, LLC acquired the Mountain Pass, California rare earth deposit and associated assets from Chevron Mining Inc., a subsidiary of Chevron Corporation, on September 30, 2008.

The summary consolidated financial data as of December 31, 2011 and 2010 and for the three years in the period ended December 31, 2011 have been derived from Molycorp, Inc.'s audited consolidated financial statements and the related notes incorporated by reference into this prospectus. The summary consolidated financial data as of December 31, 2009 have been derived from Molycorp, Inc.'s audited financial statements as of December 31, 2009 and 2008 and for the period from June 12, 2008 (Inception) through December 31, 2008. The summary consolidated financial data as of September 30, 2011 have been derived from Molycorp, Inc.'s unaudited consolidated financial statements as of and for the period ended September 30, 2011. The summary consolidated financial data as of September 30, 2012 and for the nine months ended September 30, 2012 and 2011 have been derived from the unaudited consolidated financial statements of Molycorp, Inc. incorporated by reference into this prospectus and include, in the opinion of management, all adjustments, consisting of normal and recurring adjustments, necessary for the fair presentation of the data for such periods and may not necessarily be indicative of the full-year results.

Molycorp, Inc. was formed on March 4, 2010 for the purpose of continuing the business of Molycorp, LLC in corporate form. On April 15, 2010, the members of Molycorp, LLC contributed either (a) all of their member interests in Molycorp, LLC or (b) all of their equity interests in entities that hold member interests in Molycorp, LLC (and no other assets or liabilities) to Molycorp, Inc. in exchange for shares of Molycorp, Inc., and, as a result, Molycorp, LLC became a whollyowned subsidiary of Molycorp, Inc. Accordingly, all financial information of Molycorp, Inc. for periods prior to the Corporate Reorganization is the historical financial information of Molycorp, LLC.

As a limited liability company, the taxable income and losses of Molycorp, LLC were reported on the income tax returns of its members. Molycorp, Inc. is subject to federal and state income taxes and will file consolidated income tax returns. If the Corporate Reorganization had been effective as of January 1, 2009, our net loss of $28.6 million for the year ended December 31, 2009 would have generated an unaudited pro forma deferred income tax benefit of $11.3 million for the year ended December 31, 2009 assuming a combined federal and state statutory income tax rate. However, as realization of such tax benefit would not have been assured, we would have also established a valuation allowance of $11.3 million to eliminate such pro forma tax benefit.

The financial data for all periods prior to April 15, 2010 give retroactive effect to the Corporate Reorganization as if it had occurred on June 12, 2008.

On April 1, 2011, we completed the acquisition of a 90.023% controlling stake in Molycorp Silmet located in Sillamäe, Estonia, one of only two rare earth processing facilities in Europe. On October 24, 2011, we acquired the remaining 9.977% ownership interest in Molycorp Silmet.

On April 15, 2011, we acquired MMA, which is based in Tolleson, Arizona, the only producer of rare earth alloys in the United States.

On June 11, 2012, we completed the acquisition of all of the outstanding equity of Molycorp Canada.

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The summary consolidated financial data set forth below should be read in conjunction with the financial statements and the notes thereto incorporated by reference into this prospectus supplement.

Statement of Operations Data	Nine Months Ended September 30, 2012	Nine Months Ended September 30, 2011	Year Ended December 31, 2011	Year Ended December 31, 2010	Year Ended December 31, 2009
(In thousands, except share and per share data)					
Sales	$ 394,651	$ 263,927	$ 396,831	$ 35,157	$ 7,093
Cost of goods sold[(1)]	(356,834)	(115,258)	(177,890)	(37,591)	(21,785)
Selling, general and administrative expense[(2)]	(78,721)	(31,465)	(50,161)	(45,175)	(11,163)
Corporate development	(19,379)	(3,889)	(5,912)	–	–
Depreciation, amortization and accretion expense	(12,361)	(1,384)	(1,688)	(1,231)	(1,197)
Research and development	(18,628)	(5,165)	(8,314)	(2,338)	(1,522)
Operating (loss) income	(91,272)	106,766	152,866	(51,178)	(28,574)
Net (loss) income attributable to Molycorp stockholders	$ (89,976)	$ 90,947	$ 117,526	$ (50,774)	$ (28,587)
Weighted average shares outstanding (common shares)[(3)]					
Basic	101,147,638	83,321,816	83,454,221	62,332,054	39,526,568
Diluted	101,147,638	84,596,676	85,220,017	62,332,054	39,526,568
Income (loss) per share of common stock:					
Basic	$ (0.97)	$ 1.01	$ 1.29	$ (0.81)	$ (0.72)
Diluted	$ (0.97)	$ 1.00	$ 1.27	$ (0.81)	$ (0.72)

Balance Sheet Data	September 30 2012	September 30 2011	December 31 2011	December 31 2010	December 31 2009
(In thousands)					
Cash and cash equivalents	$ 436,025	$ 561,955	$ 418,855	$ 316,430	$ 6,929
Total current assets	923,192	745,475	639,044	353,432	18,520
Total assets	3,387,326	1,190,551	1,255,125	479,560	97,666
Total non-current liabilities	1,408,870	209,709	231,272	12,335	13,528
Total liabilities	1,766,174	324,649	409,895	33,047	23,051
Stockholders' equity	1,621,152	865,902	845,230	446,513	74,615

(1) Cost of goods sold for the nine months ended September 30, 2012 and 2011, inclusive of depreciation expense and includes write-downs of work-in-process inventory of zero and \$2.3 million based on estimated REOs quantities, respectively, and \$41.1 million and \$0.6 million due to production costs in excess of net realizable value, respectively. Cost of goods sold is inclusive of depreciation expense and includes write-downs of inventory to estimated net realizable value of \$2.8 million, \$2.5 million and \$9.0 million for the years ended December 31, 2011, 2010 and 2009, respectively. Cost of goods sold for the years ended December 31, 2010 and 2011 also includes \$1.7 million and \$2.3 million includes write-downs of work-in-process inventory based on estimated REO quantities, respectively. Cost of goods sold for the year ended December 31, 2010 also includes a \$1.0 million write-down of bastnasite stockpile inventory based on estimated stockpile REO quantities.

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(2) Includes stock-based compensation of $2.9 million and $4.0 million for the nine months ended September 30, 2012 and 2011, respectively, and $4.5 million in 2011, $28.7 million in 2010 and $0.2 million in 2009.

(3) Weighted average shares outstanding gives retroactive effect to the Corporate Reorganization, the conversion of all of our Class A common stock and Class B common stock into shares of common stock and the consummation of our initial public offering, and the 38.23435373-for-one stock split completed by Molycorp, Inc. on July 9, 2010 as if such events had occurred on June 12, 2008.

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RISK FACTORS

An investment in our securities involves a high degree of risk. You should carefully consider the following risks regarding our common stock and this offering, as well as the risk factors described in "Item 1A. Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2011 and "Item 1A. Risk Factors" of our Quarterly Report on Form 10-Q for the quarter ended June 30, 2012, each of which was filed with the SEC and incorporated herein by reference in their entirety, including, without limitation, those risk factors relating to our liquidity, debt financing and current economic conditions, as well as other information in this prospectus supplement and in any other documents incorporated into this prospectus supplement by reference, before purchasing any of our securities. Each of the risks described in these sections and documents could adversely affect our business, financial condition and results of operations, and could result in a complete loss of your investment. This prospectus supplement and the incorporated documents also contain forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks mentioned above.

Risks Related to Our Business

The production of rare earth products is a capital-intensive business and our ongoing modernization and expansion efforts at our Molycorp Mountain Pass facility will require the commitment of substantial resources. Any unanticipated costs or delays associated with our ongoing modernization and expansion efforts at our Molycorp Mountain Pass facility could have a material adverse effect on our financial condition or results of operations.

Our ongoing modernization and expansion efforts at our Molycorp Mountain Pass facility require the commitment of substantial resources for operating expenses and capital expenditures. We currently expect to incur total capital expenditures of approximately $1.42 billion for Project Phoenix and other capital projects at our Molycorp Mountain Pass facility, including for EPC, preliminary engineering, insurance, permitting, legal, start-up, commissioning and other costs for Project Phoenix Phase 1 and Project Phoenix Phase 2. This estimate does not include capitalized interest.

We have encountered cost pressures on Project Phoenix Phase 1 and Project Phoenix Phase 2 that have led to significantly higher costs than previously expected. We are continuing to re-evaluate the impact of cost pressures on the budget, and we will incur additional costs if our mitigation measures are not successful. To date, our mitigation measures have not been successful in offsetting all additional costs. In addition, our estimated expenses may increase as consultants, personnel and equipment associated with advancing development and commercial production are added. The progress of our modernization and expansion efforts at our Molycorp Mountain Pass facility and the amounts and timing of expenditures will depend in part on the following:

- the replacement of a significant portion of the existing process, plant and equipment that consists of aging or outdated facilities and equipment, retooling and development and the preparation of the mine pit for renewed production of ore;
- maintaining required federal, state and local permits;
- the results of consultants' analysis and recommendations;
- negotiating contracts for equipment, earthwork, construction, equipment installation, labor and completing infrastructure and construction work;
- negotiating sales and off-take contracts for our planned production;
- the execution of any joint venture agreements or similar arrangements with strategic partners; and

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other factors, many of which are beyond our control.

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Most of these activities require significant lead times and must be advanced concurrently. In addition, we have experienced delays associated with our modernization and expansion efforts at our Molycorp Mountain Pass facility. We had expected that Project Phoenix Phase 1 would be operational during the fourth quarter of 2012, leading to annualized run rate of 19,050 mt beginning in 2013. However, our new management has determined to instead ramp up Project Phoenix Phase 1 in the beginning of 2013 and ramping up to full run rate by mid-year. As a result, our production in the first half of 2013 will be substantially lower than expected, leading to reduced revenues and cash flows, as well as higher costs for our other operations that must continue to purchase raw materials from third parties rather than accepting delivery of lower cost products from our Molycorp Mountain Pass facility. In addition, our chloralkali plant has not yet been completed and it is essential to allowing us to realize lower production costs. Any unanticipated costs or other delays associated with our ongoing modernization and expansion efforts at our Molycorp Mountain Pass facility could have a material adverse effect on our financial condition or results of operations and could require us to seek additional capital, which may not be available on commercially acceptable terms or at all.

We may be unsuccessful in generating, securing and raising the necessary capital to execute our current business plan.

Under our current business plan, we expect to incur total capital expenditures of approximately $1.42 billion for Project Phoenix and other capital projects at our Molycorp Mountain Pass facility, including for EPC, preliminary engineering, insurance, permitting, legal, start-up, commissioning and other costs for Project Phoenix Phase 1 and Project Phoenix Phase 2. This estimate does not include capitalized interest.

While we have initiated measures to mitigate certain adverse cost trends and are continuing to re-evaluate the impact of cost pressures on the budget, we will incur additional costs if our mitigation measures are not successful.

We expect to finance the remaining capital expenditures under Project Phoenix Phase 1, Project Phoenix Phase 2 and other capital expenditures related to operations at the Molycorp Mountain Pass facility and all other operating facilities, our selling, general and administrative expenses, as well as our working capital requirements with the net proceeds from this offering and any net proceeds from the concurrent convertible notes offering, cash on hand, anticipated cash flows from operations and potential proceeds from revolving credit facilities or certain equipment financing. We have no firm commitments for any revolving credit facilities or equipment financing and can provide no assurances that we will be able to obtain any commitments on acceptable terms or at all. Additionally, the full funding of our current business plan continues to be dependent on (i) our cost estimates for capital expenditures being accurate, (ii) our ability to ramp up run rates at our Molycorp Mountain Pass facility pursuant to our expectations without delays, (iii) market conditions remaining the same as we are currently experiencing without deterioration (we estimate that a 15% drop in market prices for all REEs would reduce our cash flows by approximately $80 million and that a 15% drop in volumes would reduce our cash flows by approximately $60 million) and that we are able to sell all our production at such prices (we may not be able to obtain such prices), (iv) our anticipation that production at our facilities will improve beginning later in the first quarter of 2013 based on seasonality, (vi) our ability to sell our entire production of REOs and (vii) the absence of payments on current and future contingent liabilities. If these assumptions prove incorrect, or the other factors described in this "Risk Factors" section occur, our estimates could prove incorrect and we may need additional financing. We believe the offerings provide sufficient liquidity under our current business plan, but the offerings are not expected to provide a significant cushion of excess cash should our estimates change.

In the event that we are unable to obtain additional financing or we are not successful in curtailing and/or deferring capital expenditures we would have a liquidity shortfall and would be unable to execute our current business plan.

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The actual amount of capital required for the expansion and modernization of our Molycorp Mountain Pass facility may vary materially from our current estimates, in which case we would need to raise additional funds, which may delay completion and have a material adverse effect on our business and financial condition.

The anticipated funding required to complete the expansion and modernization of our Molycorp Mountain Pass facility, including Project Phoenix Phase 2, is based on certain estimates and assumptions we have made about the additional facilities, equipment, labor, permits and other factors required to complete the project. If any of these estimates or assumptions change, the actual timing and amount of capital required to complete Project Phoenix Phase 1 and Project Phoenix Phase 2 may vary materially from what we anticipate. Additional funds may be required in the event of significant departures from our current expansion and modernization plan, unforeseen delays, cost overruns, engineering design changes or other unanticipated expenses. There can be no assurance that additional financing will be available to us, or, if available, that it can be obtained on a timely basis and on commercially acceptable terms.

There is no assurance that we will be able to successfully implement Project Phoenix Phase 1 and Project Phoenix Phase 2 within our current timetable, that the actual costs of the capacity expansion will not exceed our current estimated costs or that we will be able to secure off-take agreements for the incremental production capacity, and we cannot provide any assurance as to the actual operating costs once we have completed the capacity expansion.

Our Board approved Project Phoenix Phase 2 in January 2011. Our Molycorp Mountain Pass facility is the foundation for our vertical integration strategy and is the largest, most fully developed rare earth mine outside of China. It has been producing rare earth products for approximately 60 years. Upon reaching a planned annual run rate of 19,050 mt of REO under Project Phoenix Phase 1 and upon completion of our chloralkali plant (expected later in 2013), we expect our Molycorp Mountain Pass facility to have production cash costs lower than those publicly reported for China by government officials and those reported for other non-Chinese rare earth projects. Although the Molycorp Mountain Pass facility is designed to allow an expanded run rate of up to 40,000 mt of REO per year, we will not expand production beyond the initial planned run rate unless market demand, product pricing, capital availability and financial returns justify such production. We have commenced work on Project Phoenix Phase 2 as we are working on Project Phoenix Phase 1, and there is no assurance that our work on Project Phoenix Phase 2 will not interfere with our completion of Project Phoenix Phase 1. In certain cases, including separations and power, we will need to install additional capacity. Because we will have expenditures on Project Phoenix Phase 2 before completion of Project Phoenix Phase 1, any funding insufficiency for the capacity expansion could also impact completion of our initial plan.

We do not believe we will need to obtain additional permits for Project Phoenix Phase 1 or Project Phoenix Phase 2, other than air and certain building permits and the modification of existing permits after 2021 in connection with the expansion of the pit boundary at our Molycorp Mountain Pass facility. However there is no assurance that we will not in the future learn of permits that we will be required to obtain or existing permits that we will be required to modify.

We may not be able to realize the benefits of Project Phoenix or be able to produce at the costs we are expecting. Any failure to successfully implement Project Phoenix Phase 1 or Project Phoenix Phase 2 due to insufficient funding, delays or unanticipated costs, or to realize the anticipated benefits of Project Phoenix Phase 1 or Project Phoenix Phase 2, including securing off-take commitments for the incremental production, could have a material adverse effect on our business, financial condition and results of operations.

Our growth depends in large part on the modernization and expansion of our Molycorp Mountain Pass facility, which is our only rare earth mining facility.

Our only rare earth mining facility at this time is our Molycorp Mountain Pass facility. Our continued viability is based on successfully implementing our strategy, including completion of Project Phoenix

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Phase 1 and Project Phoenix Phase 2 in accordance with our expected timeframe. The deterioration or destruction of any part of our Molycorp Mountain Pass facility may significantly hinder our ability to reach or maintain full planned run rates within the expected time frame or at all. If we are unsuccessful in reaching and maintaining full planned run rates for REOs at our Molycorp Mountain Pass facility, within expected time frames or at all, we may not be able to build a sustainable or profitable business.

We may not successfully establish or maintain collaborative, joint venture and licensing arrangements, or establish new ones, which could adversely affect our ability to develop and commercialize our rare earth products.

A key element of our business strategy is to utilize vertical integration through further downstream processing of our REOs into rare earth metal alloys and finished magnets for clean-energy, high-technology and defense applications. Our acquisitions of Molycorp Silmet and MMA, our IMJ joint venture and the Molycorp Canada Acquisition reflect this strategy. To implement this vertical integration strategy successfully, we may need to form other joint ventures with existing magnet producers for the final production of finished rare earth magnets. In addition, other licenses that may be necessary for some of these downstream processing steps have not yet been obtained. Any failure to establish or maintain collaborative, joint venture or licensing arrangements for the production of downstream products on favorable terms could adversely affect our business prospects, financial condition or ability to develop and commercialize downstream rare earth products.

We may not be able to enter into binding contracts with customers for the sale of REO products, or meet the conditions necessary for customers to commence purchasing under existing contracts, which may have a material adverse effect on our financial position and results of operations.

We are working to establish stable revenue streams for the rare earth minerals and products we manufacture at our Molycorp Mountain Pass facility, or Resources segment, Chemicals and Oxides segment and Magnetic Materials and Alloys segment. The last two segments include facilities acquired as part of the Molycorp Canada Acquisition. As of December 31, 2012, we have allocated 48% of our expected Project Phoenix Phase 1 production to existing contracts with customers, 8% to support our Molycorp Magnequench subsidiary and 23% for potential SorbX™ sales, for a total of 79% of the 19,050 mt of REOs that we intend to produce annually under Project Phoenix Phase 1 at our Molycorp Mountain Pass facility. The market for SorbX™ is not yet fully developed. We still need to find buyers for the remaining production. A substantial portion of the remaining production (plus amounts if SorbX™ does not become accepted) is cerium, which is in surplus and prices of which have significantly declined since 2011. We intend to enter into other short-term sales contracts and into long-term sales contracts with existing and new customers for amounts not in excess of our actual planned production under Project Phoenix Phase 1 and Project Phoenix Phase 2, respectively. As a result of the acquisition of Molycorp Silmet and Molycorp Canada, we now have the ability to allocate a portion of our Project Phoenix Phase 1 and Project Phoenix Phase 2 production to our downstream fully vertically integrated subsidiaries around the world. We currently estimate that this portion is between 4,000 mt and 7,000 mt per year.

The failure to enter into binding contracts, or the failure to meet the conditions necessary for customers to commence purchasing under existing agreements, or failure to allocate production to our downstream subsidiaries, may have a material adverse effect on our financial position and results of operations.

We may be adversely affected by fluctuations in demand for, and prices of, rare earth products.

Because our sole source of revenue is the sale of rare earth minerals and products, changes in demand for, and the market price of, rare earth minerals and products could significantly affect our profitability. The value and price of our common and preferred stock and our financial results may be adversely affected by declines in the prices of rare earth minerals and products. Rare earth minerals and product prices fluctuate and are affected by numerous factors beyond our control such as interest rates, exchange rates,

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inflation or deflation, fluctuation in the relative value of the U.S. dollar against foreign currencies on the world market, global and regional supply and demand for rare earth minerals and products, and the political and economic conditions of countries that produce rare earth minerals and products.

As a result of the global economic crisis, rare earth product prices declined by approximately 50% between 2008 and the end of the third quarter of 2009. Similarly, there can be no assurance that the increases in market prices, as seen during 2010 and most of 2011, will occur again or be sustained in future periods. For example, pricing for REEs has experienced significant volatility over the past several years due to a number of factors: the recent global financial crisis; a severe contraction by China, beginning in 2010, of rare earths it allowed for export; China's continuing efforts to institute stronger environmental reforms across its rare earth industry, force industry consolidation, and constrict rare earth production; a build-up of stockpiles by rare earth consumers and government entities; and a general lack of certainty among rare earth customers regarding the reliability of the future supply of REEs. Although current prices for all REEs remain significantly higher than historic (pre-2010) levels, sales prices for REEs, as well as demand for REEs, began to weaken in the second quarter of 2012 and continued to decline through the end of the year. For example, average prices for lanthanum oxide and cerium oxide have decreased significantly from their peak in July 2011 due, in part, to a reduction in reported speculative buying of rare earth materials in China, flooding in Thailand leading to slower production in Asia and a global economic slowdown. We believe the persistent global economic weakness combined with the anticipation of the falling prices of REEs (which generally results in a very conservative purchasing pattern by our customers) unfavorably impacted the volume of products we shipped at our Molycorp Mountain Pass, Molycorp Canada and Silmet facilities in the fourth quarter of 2012 and negatively affected our revenue and cash flows from operations. Protracted periods of low prices and demand for rare earth minerals and products such that we saw in 2012 could significantly reduce revenues and the availability of required development funds in the future. This could cause substantial reductions to, or a suspension of, REOs production operations, impair asset values and reduce our proven and probable rare earth ore reserves.

Demand for our products may be impacted by demand for downstream products incorporating rare earths, including hybrid and electric vehicles, wind power equipment and other clean technology products, as well as demand in the general automotive and electronic industries. Lack of growth in these markets may adversely affect the demand for our products, which would have a material adverse effect on our business and results of operations.

In contrast, extended periods of high commodity prices may create economic dislocations that may be destabilizing to rare earth minerals supply and demand and ultimately to the broader markets. Periods of high rare earth mineral market prices generally are beneficial to our financial performance. However, strong rare earth mineral prices, as well as real or perceived disruptions in the supply of rare earth minerals, also create economic pressure to identify or create alternate technologies that ultimately could depress future long-term demand for rare earth minerals and products, and at the same time may incentivize development of otherwise marginal mining properties. We believe this occurred recently, when rising prices in 2011 and the first half of 2012 prompted such industrial substitution. For example, automobile manufacturers have recently announced plans to develop motors for electric and hybrid cars that do not require rare earth metals due to concerns about the available supply of rare earths. If the automobile industry or other industries reduce their reliance on rare earth products, the resulting change in demand could have a material adverse effect on our business.

Conditions in the rare earth industry have been, and may continue to be, extremely volatile, which could have a material impact on our company.

Conditions in the rare earth industry have been extremely volatile, and prices, as well as supply and demand, have been significantly impacted by a number of factors, principally changes in economic conditions and demand for rare earth materials and changes, or perceived changes, in Chinese quotas for export of rare earth materials. As a result of the global economic crisis, rare earth product prices declined

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by approximately 50% between 2008 and the end of the third quarter of 2009. According to Metal-Pages, from the beginning of the fourth quarter of 2009 through the end of 2011, average prices for rare earths rose by approximately 1,100%. Furthermore, over the same period, average prices for some of the most common rare earths (cerium oxide, lanthanum oxide, neodymium oxide, and praseodymium oxide) rose by more than 1,000%. Average prices for lanthanum oxide and cerium oxide decreased by approximately 50% during the second half of 2011 due, in part, to a reduction in reported speculative buying of rare earth materials in China, flooding in Thailand leading to slower production in Asia and a global economic slowdown. Prices remain at lower levels to date in 2013. If conditions in our industry remain volatile, our stock price may continue to exhibit volatility as well. In particular, if prices or demand for rare earths were to decline, our stock price would likely decline, and this could also impair our ability to find purchasers for our products at prices acceptable to us.

We face a variety of risks associated with acquiring and integrating new business operations that could have a significant negative impact on our business, financial condition and results of operations.

In 2011, we acquired Molycorp Silmet in order to increase our production capacity for REOs and rare earth metals, and acquired MMA in order to provide us with the capability to immediately begin manufacturing and selling rare earth alloys for the production of NdFeB and samarium cobalt, or SmCo, magnets, as well as a variety of other specialty alloys and products. We may in the future pursue other strategic acquisitions that we believe would expand our product offerings and capabilities or complement our business. We have limited experience making such acquisitions. Any acquisition that we make will be accompanied by the risks commonly encountered in acquisitions of businesses. The process of integrating acquired businesses, products or technologies may create unforeseen operating difficulties and expenditures. We may have difficulty integrating and assimilating the operations and personnel of any acquired companies, realizing anticipated synergies and maximizing the financial and strategic position of the combined enterprise. We may incur costs necessary to reorganize, expand or otherwise modify existing operations to meet future production needs, and we may also incur closure, demolition and carrying costs for portions of properties, for which we have no operational uses. We may also have difficulty maintaining uniform standards, policies and controls across the organization. The process of integrating acquired businesses may also result in a diversion of management's attention and cause an interruption of, or loss of momentum in, our activities. Additionally, any acquisition that we make may result in the assumption of material liabilities. Businesses and properties we acquire may be in an unexpected condition and may subject us to increased costs and liabilities, including environmental liabilities. The costs and liabilities associated with known risks may be greater than expected, and we may assume unknown liabilities, either of which could have a material adverse effect on our business, financial condition and results of operations. Foreign acquisitions involve risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, currency risks and the particular economic, political and regulatory risks associated with specific countries. As a result of these risks, the anticipated benefits of these acquisitions may not be fully realized, if at all, and the acquisitions could have a material adverse effect on our business, financial condition and results of operations.

Our business will be adversely affected if we do not successfully implement new processing technologies and capabilities.

Our processing technologies and capabilities are key components of our competitive strengths and are expected to contribute to low operating costs and increasing the life of the ore body at our Molycorp Mountain Pass facility. In the second quarter of 2010, we began to process bastnasite concentrate from our stockpiles in an effort to significantly improve these technologies and capabilities and optimize recovery rates. Although this effort has been successful at pilot-scale level with over 95% recovery, we may not be able to scale the new technology and recovery rates to commercial levels, or may not be able to do so as planned. We are also working to optimize other steps in our production process. Any failure may affect our

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ability to achieve the expected benefits of the new technologies and may have a material adverse effect on our financial condition or results of operations.

Markets for Molycorp Canada's rare earths, zirconium or other minor metal-based products are highly competitive and characterized by rapid technological change. Molycorp Canada's future successes depend upon its ability to continue to provide products that achieve market acceptance. As technologies develop, substitutes may be developed for Molycorp Canada's products that may have an adverse impact on the marketability of Molycorp Canada's products. Since Molycorp Canada specializes in a limited number of products, there is a risk that their replacement by other products may have a material adverse impact on Molycorp Canada's sales.

We operate in a highly competitive industry.

The rare earths mining and processing markets are capital intensive and competitive. Our Chinese competitors may have greater financial resources, as well as other strategic advantages to maintain, improve and possibly expand their facilities. Additionally, the Chinese producers have historically been able to produce at relatively low costs due to domestic economic factors. Even upon successful implementation of the new processing technologies and capabilities at our Molycorp Mountain Pass facility, if we are not able to achieve anticipated costs of production, then any strategic advantages that our competitors may have over us, such as lower labor costs, could have a material adverse effect on our business.

The success of our business will depend, in part, on the establishment of new uses and markets for rare earth products.

The success of our business will depend, in part, on the establishment of new markets by us or third parties for certain rare earth products that may be in low demand. For example, cerium is, and is expected to remain, in global surplus. Although we have developed SorbX™, a proprietary product and process, primarily consisting of cerium, that removes arsenic and other heavy metals from industrial processing streams and will allow our customers to more safely sequester arsenic and increase their production, SorbX™ has not yet been sold and has yet to be fully commercialized. In addition, although we are developing rare earth products for use in NdFeB magnets, which are used in critical existing and emerging technologies, such as hybrid and electric vehicles, wind power turbines and compact fluorescent lighting, the success of our business depends on creating new markets and successfully commercializing rare earth products in existing and emerging markets. Any unexpected costs or delays in the commercialization of any of the foregoing products and applications could have a material adverse effect on our financial condition or results of operations.

An increase in the global supply of rare earth products, dumping and predatory pricing by our competitors may materially adversely affect our profitability.

The pricing and demand for our products is affected by a number of factors beyond our control, including growth of economic development and the global supply and demand for REO products. According to IMCOA, it is estimated that China accounted for approximately 94% of global REO production in 2011. China also dominates the manufacture of metals and NdFeB magnets from rare earths, a capacity that is not currently found in the United States. Once we reach full planned run rates for REOs and other planned downstream products, the increased competition may lead our competitors to engage in predatory pricing behavior. Any increase in the amount of rare earth products exported from other nations and increased competition may result in price reductions, reduced margins and loss of potential market share, any of which could materially adversely affect our profitability. As a result of these factors, we may not be able to compete effectively against current and future competitors.

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Changes in China's export policy may adversely affect our financial condition and results of operations.

In 1999, the government of China introduced an export quota system for the rare earth industry. The Chinese government heightened international supply concerns beginning in August 2009 when China's Interior Ministry first signaled that it would further restrict exports of Chinese rare earth resources. Citing the importance of REE availability to internal industries and the desire to conserve resources, the Chinese government has announced export quotas, increased export tariffs and introduced a "mining quotas policy" that, in addition to imposing export quotas and export tariffs, also imposes production quotas and limits the issuance of new licenses for rare earth exploration. According to IMCOA, China's export quotas decreased from approximately 65,000 mt of rare earth products in 2005 to approximately 30,184 mt of rare earth products in 2011. The Chinese Ministry of Foreign Commerce, or MOFCOM, increased China's export quota slightly in 2012, up to 30,996 mt of rare earth products, or approximately 3% from 2011. In 2008, China imposed export taxes on various rare earths, including up to 25% on selected REOs (primarily heavy REOs) and up to 15% for all other REOs (primarily light REOs).

On March 13, 2012, the United States, the European Union and Japan filed a complaint with the World Trade Organization over the Chinese export policy on REOs. If this challenge to the Chinese export policy is successful, there could be increased supply in the world market for REOs, which could cause the price of REOs to decrease. If the price of REOs decreases, our financial condition and results of operations could be adversely affected.

Molycorp Canada has operations in China and its ability to export is subject to certain quotas based on its export history and export value. Historically, Molycorp Canada has been able to secure sufficient quotas to meet its demands. Recent policy changes by MOFCOM, have resulted in the total award of export grants being less than the international demand for REEs. This shortfall has created market uncertainty and while export prices have risen dramatically, there are no guarantees that the current pricing environment will continue or that MOFCOM will not change its current policy. Any further changes to the quota grants or policy could have a material impact on the results of Molycorp Canada.

Changes in China's policy on REO production or the import of rare earth feedstock may adversely affect our financial condition and results of operations.

Our ability to capture the expected cost reductions in the production of REOs at Molycorp Canada's operations in China depends on our ability to import REEs into China produced from our Molycorp Mountain Pass facility. Restrictions by China on the production of REOs in China or the import of REEs into China for the production of REOs would adversely affect Molycorp Canada's ability to process REEs produced from our Molycorp Mountain Pass facility in its operations in China, and have an adverse impact on the results of Molycorp Canada.

Power shortages at our Molycorp Mountain Pass facility may temporarily delay mining and processing operations and increase costs, which may materially adversely impact our business.

Due to its position on the regional electric grid, our Molycorp Mountain Pass facility faces occasional power shortages during peak periods. Instability in electrical supply in past years has caused sporadic outages and brownouts and higher costs. Such outages and brownouts have had a negative impact on production. We are currently installing a natural gas powered co-generation power plant as part of our modernization and expansion of our Molycorp Mountain Pass facility to reduce energy costs at our Molycorp Mountain Pass facility as well as minimize or eliminate our reliance on the regional electric power grid. If the installation of the co-generation power plant is significantly delayed, we will remain subject to the effects of occasional power outages and brownouts and could experience temporary interruptions of mining and processing operations. We then may be unable to fill customer orders in a timely manner and may be subject to higher power costs at our Molycorp Mountain Pass facility. As a result, our revenue could be adversely impacted and our relationships with our customers could suffer,

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adversely impacting our ability to generate future revenue. In addition, if power to our Molycorp Mountain Pass facility is disrupted during certain phases of our REOs extraction process, we may incur significant expenses that may adversely affect our business.

Increasing costs or limited access to raw materials may adversely affect our profitability.

We use significant amounts of hydrochloric acid and sodium hydroxide as chemicals to process REOs. We ultimately intend to produce our own hydrochloric acid and sodium hydroxide at our Molycorp Mountain Pass facility. The technology we are developing to internally produce hydrochloric acid and sodium hydroxide has not yet been implemented at our Molycorp Mountain Pass facility. Accordingly, we purchase hydrochloric acid and sodium hydroxide in the open market and, as a result, we could be subject to significant volatility in the cost or availability of these chemicals. We may not be able to pass increased prices for these chemicals through to our customers in the form of price increases. A significant increase in the price, or decrease in the availability, of these chemicals before we produce them on site could materially increase our operating costs and adversely affect our profit margins from quarter to quarter.

Molycorp Canada is vulnerable to any volatility in the prices of raw materials because it does not currently have long-term supply contracts. The Chinese government is aggressively monitoring and regulating rare earth mining operations. In some cases, it is shutting down or curtailing illegal or environmentally damaging mining activities. This could have an adverse impact on rare earth raw material supply. Although we believe there is an adequate supply of rare earth feedstock for Molycorp Canada's processing facilities, there is no assurance that the prices of such rare earth feedstock will not rise dramatically, in which case the increased cost of production may have a material adverse effect on the profit margins of Molycorp Canada. Such rises in the prices of rare earth feedstock may be offset by increasing the prices of Molycorp Canada's rare earth related products; however, there is no assurance that the market will bear such price increases and even if the market will bear such increases, the Molycorp Magnequench business will have an increased cost of production since rare earths are a primary raw material. In addition, if market prices for Performance Materials' rare earth and zirconium products decline, there is no assurance that raw material prices will decline sufficiently or in tandem to offset the decline in selling prices. The above could have a material effect on Molycorp Canada's profit margins. Molycorp Canada is also dependent on being able to secure an adequate supply of gallium, indium or rhenium bearing scrap at economic prices, to maintain and grow its recycling business.

Fluctuations in transportation costs or disruptions in transportation services could increase competition or impair our ability to supply rare earth minerals or products to our customers, which could adversely affect our results of operations.

We transport cerium, lanthanum, neodymium, praseodymium and didymium oxide products from our Molycorp Mountain Pass facility to our Molycorp Silmet and MMA facilities, and to some of our Molycorp Canada facilities around the world. Finding affordable and dependable transportation is important because it allows us to supply customers, third parties under tolling agreements and our operating facilities around the world. Labor disputes, derailments, adverse weather conditions or other environmental events and changes to rail or ocean freight systems could interrupt or limit available transport services, which could result in customer dissatisfaction and loss of sales potential and could materially adversely affect our results of operations.

We must process REOs to exacting specifications in order to provide customers with a consistently high quality product. An inability to perfect the mineral extraction process to meet individual customer specifications may have a material adverse effect on our financial condition or results of operations.

We process REOs to meet customer needs and specifications and to provide customers with a consistently high quality product and a purity higher than previously achieved in prior mining operations at our Molycorp Mountain Pass facility. An inability to perfect the mineral extraction process to meet

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individual customer specifications may have a material adverse effect on our financial condition or results of operations. In addition, customer needs and specifications may change with time. Any delay or failure in developing processes to meet changing customer needs and specifications may have a material adverse effect on our financial condition or results of operations.

Diminished access to water may adversely affect our operations.

Processing of REOs at our Molycorp Mountain Pass facility requires significant amounts of water. The technology we are developing at our Molycorp Mountain Pass facility to significantly reduce our need for fresh water, including the proprietary production of our own hydrochloric acid and sodium hydroxide from waste water at our own chloralkali plant, has not yet been constructed. Any decrease or disruption in our available water supply until this technology is successfully developed may have a material adverse effect on our operations and our financial condition or results of operations.

Inaccuracies in our estimates of REO reserves and resource deposits could result in lower than expected revenues and higher than expected costs.

We base our REO reserve and resource estimates on engineering, economic and geological data assembled and analyzed by outside firms, which are reviewed by our engineers and geologists. Ore reserve estimates, however, are necessarily imprecise and depend to some extent on statistical inferences drawn from available drilling data, which may prove unreliable. There are numerous uncertainties inherent in estimating quantities and qualities of REO reserves and non-reserve REO deposits and costs to mine recoverable reserves, including many factors beyond our control. Estimates of economically recoverable REO reserves necessarily depend upon a number of variable factors and assumptions, all of which may vary considerably from actual results, such as:

- geological and mining conditions and/or effects from prior mining that may not be fully identified by available data or that may differ from experience;
- assumptions concerning future prices of rare earth products, operating costs, mining technology improvements, development costs and reclamation costs; and
- assumptions concerning future effects of regulation, including the issuance of required permits and taxes by governmental agencies.

In April 2012, we revised our reserve estimate. While our probable reserves increased, our proven reserves decreased significantly. Any inaccuracy in our estimates related to our REO reserves and non-reserve REO deposits could result in lower than expected revenues and higher than expected costs or a shortened estimated life for the mine at our Molycorp Mountain Pass facility.

Period-to-period conversion of probable rare earth ore reserves to proven ore reserves may result in increases or decreases to the total reported amount of ore reserves. Conversion, an indicator of the success in upgrading probable ore reserves to proven ore reserves, is evaluated annually. Conversion rates are affected by a number of factors, including geological variability, applicable mining methods and changes in safe mining practices, economic considerations and new regulatory requirements.

Work stoppages or similar difficulties could significantly disrupt our operations, reduce our revenues and materially adversely affect our results of operations.

As of September 30, 2012, 226 employees at our Molycorp Mountain Pass facility were covered by a collective bargaining agreement with the United Steelworkers of America that expires in March 2015. Also as of September 30, 2012, 172 employees at our Molycorp Silmet facility were unionized employees. A work stoppage at either or both our Molycorp Mountain Pass or Molycorp Silmet facilities could significantly disrupt our operations, reduce our revenues and materially adversely affect our results of operations.

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A shortage of skilled technicians and engineers may further increase operating costs, which may materially adversely affect our results of operations.

Efficient production of rare earth products using modern techniques and equipment requires skilled technicians and engineers. In addition, our expansion efforts will significantly increase the number of skilled technicians and engineers required to successfully operate our business. In the event that we are unable to hire and train the necessary number of skilled technicians and engineers, there could be an adverse impact on our labor costs and our ability to reach full planned production levels in a timely manner, which could have a material adverse effect on our results of operations.

We depend on key personnel for the success of our business.

We depend on the services of our senior management team and other key personnel. The loss of the services of any member of senior management or a key employee could have an adverse effect on our business. We may not be able to locate, attract or employ on acceptable terms qualified replacements for senior management or other key employees if their services are no longer available.

Because of the dangers involved in the mining of minerals and the manufacture of mineral products, there is a risk that we may incur liability or damages as we conduct our business.

The mining of minerals and the manufacture of mineral products involves numerous hazards, including:

- unusual and unexpected rock formations affecting ore or wall rock characteristics;
- ground or slope failures;
- environmental hazards;
- industrial accidents;
- processing problems;
- periodic interruptions due to inclement or hazardous weather conditions or other acts of God; and
- mechanical equipment failure and facility performance problems.

Although we maintain insurance to address certain risks involved in our business, such as coverage for pollution liability, property damage, business interruption and workers' compensation, there can be no assurance that we will be able to maintain insurance to cover these risks at economically feasible premiums. Additionally, we cannot be certain that all claims we may make under our insurance policies will be deemed to be within the scope of, or fully covered by, our policies. Furthermore, we do not maintain coverage for losses resulting from acts of terrorism. We might also become subject to liability for environmental damage or other hazards that may be uninsurable or for which we may elect not to insure because of premium costs or commercial impracticality. These policies contain limits of coverage and exclusions that are typical of such policies generally. For example, our pollution liability policy for our Molycorp Mountain Pass facility has $20.0 million aggregate and per incident limits and excludes, among other things, costs associated with closure, post-closure and reclamation. The payment of such premiums, or the assumption of such liabilities, may have a material adverse effect on our financial position and results of operations.

We are currently subject to litigation, including stockholder class action litigation and derivative litigation, and an SEC investigation, the unfavorable outcome of which might have a material adverse effect on our financial condition, operating results and cash flow.

From time to time, we may become subject to various legal and regulatory proceedings relating to our business.

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In February 2012, a purported class action lawsuit was filed in the U.S. District Court for the District of Colorado against us and certain of our current executive officers alleging violations of the federal securities laws. The Consolidated Class Action Complaint filed on July 31, 2012 also names most of our Board members and some of our stockholders as defendants, along with other persons and entities. That Complaint alleges 18 claims for relief arising out of alleged: (1) securities fraud in violation of the Securities Exchange Act of 1934 during the proposed class period from February 11, 2011 through November 10, 2011; and (2) materially untrue or misleading statements in registration statements and prospectuses for our public offering of preferred stock in February 2011 and of common stock in June 2011, in violation of the Securities Act. Our motion to dismiss that Complaint was filed in October 2012 and is pending. We believe that this lawsuit is without merit, and we intend to vigorously defend ourselves against these claims.

In addition, as of November 21, 2012, a consolidated stockholder derivative lawsuit filed purportedly on our behalf against us (as a nominal defendant) and certain of our directors, executive officers and stockholders is pending in the Delaware Court of Chancery. In August 2012, a consolidated amended shareholder derivative complaint was filed, asserting causes of action for alleged: (1) breach of fiduciary duty, including the duties of loyalty and due care; (2) breach of fiduciary duty not to trade on or misuse material non-public information; (3) unjust enrichment; and (4)aiding and abetting a breach of fiduciary duty. On our behalf, the plaintiffs in the consolidated derivative action seek, among other things, monetary damages, restitution, and an accounting. The defendants filed motions to dismiss and motions to stay that action in October 2012, which are pending. Two additional stockholder derivative lawsuits that were filed in the U.S. District Court in Colorado have been dismissed, but the plaintiffs in those cases are pursuing an appeal of that ruling in the U.S. Court of Appeals for the Tenth Circuit.

In August 2012, the staff of the SEC notified us that a formal order of investigation had been issued regarding, among other things, the accuracy of our public disclosures. We are cooperating with the staff of the SEC in connection with the investigation.

During the year ended December 31, 2003, Molycorp Magnequench determined that because some of the magnets it made were used in military applications, it should (i) be registered with the U.S. Department of State's Office of Defense Trade Controls, or State Department, and the U. S. Department of Treasury's Bureau of Alcohol, Tobacco and Firearms and (ii) obtain licenses for imports and exports of magnets and technical data used in certain military applications. Molycorp Magnequench appointed a compliance officer, implemented a compliance program, filed the appropriate registration forms and fees and submitted voluntary disclosure letters disclosing various past transactions that should have been licensed by those agencies. Molycorp Magnequench has received letters from the State Department with respect to all the disclosures made during the year ended December 31, 2003 stating that no enforcement actions would be taken at that time. The State Department retains the right to reopen those matters in the future. In early 2004, Molycorp Magnequench discovered some additional exports that had been made to Canada without the appropriate licenses. Molycorp Magnequench voluntary made disclosures with respect to these shipments. To Molycorp Magnequench's knowledge, no response from the State Department has been received with respect to these disclosures. Molycorp Canada sold its magnet production facilities in 2004.

Due to the inherent uncertainties of litigation and regulatory proceedings, including the current purported class action lawsuit and derivative lawsuits and the SEC investigation, we cannot determine with certainty the ultimate outcome of any such litigation or proceedings. If the final resolution of any such litigation or proceedings is unfavorable, our financial condition, operating results and cash flows could be materially affected.

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We conduct our sales and distribution operations on a worldwide basis and are subject to the risks associated with doing business outside the United States.

We sell to customers outside of the United States from our United States and international operations. The consummation of the Molycorp Canada Acquisition will expand our manufacturing presence and geographic reach in Asian markets. We anticipate that international shipments will account for a significant portion of our sales following the consummation of the Molycorp Canada Acquisition.

There are a number of additional risks associated with international business activities, including:

- burdens to comply with multiple and potentially conflicting foreign laws and regulations, including export requirements, tariffs and other barriers, environmental health and safety requirements and unexpected changes in any of these factors;
- requirements for maintaining export licenses granted by the Chinese government for certain Molycorp Canada production;
- to the extent cash is held outside of the United States, our repatriation of such cash is subject to the approval of foreign governments and to the potentially adverse impact of foreign and domestic tax laws;
- political and economic instability and disruptions, including terrorist attacks;
- disadvantages of competing against companies from countries that are not subject to U.S. laws and regulations, including the Foreign Corrupt Practices Act, or FCPA;
- potentially adverse tax consequences due to overlapping or differing tax structures; and
- fluctuations in currency exchange rates.

Any of these risks could have an adverse effect on our international operations by reducing the demand for our products or reducing the prices at which we can sell our products, which could result in an adverse effect on our business, financial position, results of operations or cash flows.

In addition, we could be adversely affected by violations of the FCPA and similar worldwide anti-bribery laws. The FCPA and similar anti-bribery laws in other jurisdictions generally prohibit companies and their intermediaries from making improper payments to non-U.S. officials for the purpose of obtaining or retaining business. Our policies mandate compliance with these anti-bribery laws. We operate in many parts of the world that have experienced governmental corruption to some degree and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. We cannot assure you that our internal controls and procedures always will protect us from the reckless or criminal acts committed by our employees or agents. If we are found to be liable for FCPA violations, we could suffer from criminal or civil penalties or other sanctions, which could have a material adverse effect on our business.

Molycorp Canada's international operations in China and Thailand are subject to a number of special risks including trade barriers, exchange controls and restrictions on currency conversion, political risks and risks of increased duties, taxes, tariffs and governmental royalties, as well as changes in laws and policies governing operations of foreign-based companies such as embargos. A change in policies by the Chinese or Thai governments could adversely affect Molycorp Canada's investment in its production facilities by, among other

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factors, changes in laws or regulations or changes in the interpretation thereof. Despite the activity and progress in developing their legal systems, neither China nor Thailand has a system of laws as comprehensive as in Canada or the United States.

Molycorp Canada's financial results are reported in U.S. dollars, which is subject to fluctuations in respect of the currencies of the countries in which Molycorp Canada operates. We expect Molycorp Canada's revenues to be earned in a number of different currencies. Accordingly, fluctuations in the

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exchange rates of world currencies could have a positive or negative effect on Molycorp Canada's reported results on a consolidated basis. Given the constantly changing currency exposures and the substantial volatility of currency exchange rates, we cannot predict the effect of exchange rate fluctuations upon Molycorp Canada's future operating results. There can be no assurance that Molycorp Canada will not experience currency losses in the future, which could have a material adverse effect on Molycorp Canada's business, revenues, operating results and financial condition. In the event of a change in the value of the Chinese Renminbi relative to the U.S. dollar, there is no assurance, due to competitive pressure, of a corresponding change in selling prices of Molycorp Canada's products. Molycorp Canada exports a significant portion of its products produced in China. These exports are invoiced and paid for primarily in U.S. dollars.

At September 30, 2012, Molycorp Canada held cash, net of bank advances in China and Japan, of $224.8 million in the aggregate. Molycorp Canada does not hedge the impact of revaluation of the Renminbi.

Risks Related to the Molycorp Canada Acquisition

Failure to successfully and efficiently integrate Molycorp Canada into our operations may adversely affect our operations and financial condition.

The integration of Molycorp Canada into our operations is a significant undertaking and requires significant attention from our management team. The Molycorp Canada Acquisition involves the integration of two companies that previously operated independently and the unique business cultures of the two companies may prove to be incompatible. This integration is a complex, costly and time-consuming process, and we cannot assure you that this process will be successful. In addition, the integration of Molycorp Canada into our operations will require significant one-time costs for tasks such as site visits and audits and may be difficult to execute, and we cannot guaranty or accurately estimate these costs at this time. Additional integration challenges include, among other things:

- managing a larger company than before completion of this acquisition;
- retaining existing employees;
- the possibility of faulty assumptions underlying our expectations for the integration process;
- incorporating new facilities into our business operations;
- coordinating sales and delivery functions;
- integrating logistics, information, communication and other systems;
- maintaining our standards, controls, procedures and policies;
- unforeseen expenses, liabilities or delays associated with the Molycorp Canada Acquisition; and
- foreign currency fluctuations and foreign income repatriation.

We may not achieve the benefits we expect from the acquisition if we are unable to successfully overcome these integration challenges.

We may not realize the growth opportunities and cost synergies that are anticipated from the Molycorp Canada Acquisition.

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The benefits we expect to achieve as a result of the Molycorp Canada Acquisition will depend, in part, on our ability to realize anticipated growth opportunities and cost synergies. Our success in realizing these growth opportunities and cost synergies, and the timing of this realization, depends on the successful integration of Molycorp Canada's business and operations with our business and operations. Even if we are able to integrate our business with Molycorp Canada's business successfully, this integration may not result

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in the realization of the full benefits of the growth opportunities and cost synergies we currently expect from this integration within the anticipated time frame or at all. For example, we may be unable to eliminate duplicative costs. Moreover, we anticipate that we will incur substantial expenses in connection with the integration of our business with Molycorp Canada's business. While we anticipate that certain expenses will be incurred, such expenses are difficult to estimate accurately, and may exceed current estimates. Accordingly, the benefits from the acquisition may be offset by costs incurred or delays in integrating the companies, which could cause our financial assumptions to be inaccurate.

Our historical and pro forma condensed consolidated financial information may not be representative of our results as a combined company.

The pro forma condensed consolidated financial information incorporated by reference in this prospectus supplement is constructed from the separate financial statements of us and Molycorp Canada and may not represent the financial information that would result from operations of the combined companies. In addition, the pro forma condensed consolidated financial information incorporated by reference in this prospectus supplement is based in part on certain assumptions that we believe are reasonable. We cannot assure you that our assumptions will prove to be accurate over time. Accordingly, the historical and pro forma condensed consolidated financial information incorporated by reference in this prospectus supplement may not reflect what our results of operations and financial condition would have been had we been a combined entity during the periods presented, or what our results of operations and financial condition will be in the future. The challenge of integrating previously independent businesses makes evaluating our business and our future financial prospects difficult. Our potential for future business success and operating profitability must be considered in light of the risks, uncertainties, expenses and difficulties typically encountered by recently combined companies.

Risks Related to Our Debt

Our substantial debt could adversely affect our financial health and prevent us from fulfilling our obligations under the notes.

We have substantial debt and we will incur additional debt upon consummation of the concurrent offering of our convertible notes and, as a result, we have significant debt service obligations. As of September 30, 2012, after giving effect to the issuance of the convertible notes in the concurrent convertible notes offering (assuming no exercise of the underwriters' option to purchase additional convertible notes) and the use of the proceeds therefrom, on a pro forma basis, we would have had outstanding total consolidated indebtedness of approximately $1,483.9 million (excluding capital lease obligations of $15.6 million and without giving effect to the equity component of convertible debt or any debt discount). Our substantial debt could have important consequences to you. For example, it could:

- make it more difficult for us to satisfy our financial obligations under the convertible notes, our other indebtedness and our contractual and commercial commitments and increase the risk that we may default on our debt obligations;

- prevent us from raising the funds necessary to repurchase notes tendered to us if there is a change of control, which would constitute a default under the indenture governing the notes;

- require us to use a substantial portion of our cash flow from operations to pay interest and principal on the notes and other debt, which would reduce the funds available for working capital, capital expenditures and other general corporate purposes;

- limit our ability to obtain additional financing for working capital, capital expenditures, acquisitions and other investments, or general corporate purposes, which may limit the ability to execute our business strategy;

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- heighten our vulnerability to downturns in our business, our industry or in the general economy and restrict us from exploiting business opportunities or making acquisitions;
- place us at a competitive disadvantage compared to those of our competitors that may have less debt;
- limit management's discretion in operating our business;
- limit our flexibility in planning for, or reacting to, changes in our business, the industry in which we operate or the general economy; and
- result in higher interest expense if interest rates increase and we have outstanding floating rate borrowings.

We and our subsidiaries may be able to incur substantial additional debt in the future. If new debt or other liabilities are added to our current debt levels, the related risks that we and our subsidiaries now face could intensify.

We may not be able to generate sufficient cash to service all of our debt and may be forced to take other actions to satisfy our obligations under our debt, which may not be successful.

Our ability to make scheduled payments on or to refinance our debt obligations and to fund planned capital expenditures and expansion efforts and any strategic alliances or acquisitions we may make in the future depends on our ability to generate cash in the future and our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business and other factors beyond our control. We cannot assure you that we will maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our debt.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay investments and capital expenditures, or to sell assets, seek additional capital or restructure or refinance our debt. These alternative measures may not be successful and may not permit us to meet our scheduled debt service obligations. If our operating results and available cash are insufficient to meet our debt service obligations, we could face substantial liquidity problems and might be required to dispose of material assets or operations to meet our debt service and other obligations. We may not be able to consummate those dispositions or to obtain the proceeds that we could realize from them, and these proceeds may not be adequate to meet any debt service obligations then due. Further, we may need to refinance all or a portion of our debt on or before maturity, and we cannot assure you that we will be able to refinance any of our debt on commercially reasonable terms or at all.

Restrictive covenants in the senior secured indenture governing our senior secured notes and the agreements governing our other indebtedness will restrict our ability to operate our business.

The senior secured indenture governing our senior secured notes contains, and agreements governing indebtedness we may incur in the future may contain, covenants that restrict our ability to, among other things, incur additional debt, pay dividends, make investments, enter into transactions with affiliates, merge or consolidate with other entities or sell all or substantially all of our assets. Additionally, any asset-based credit facility may require us to maintain certain financial ratios. A breach of any of these covenants could result in a default thereunder, which could allow the lenders to declare all amounts outstanding under the applicable debt immediately due and payable. We may also be prevented from taking advantage of business opportunities that arise because of the limitations imposed on us by the restrictive covenants under our indebtedness.

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Risks Related to Intellectual Property

We may not be able to adequately protect our intellectual property rights. If we fail to adequately enforce or defend our intellectual property rights, our business may be harmed.

Much of the technology used in the markets in which we compete is protected by patents and trade secrets, and our commercial success will depend in significant part on our ability to obtain and maintain patent and trade secret protection for our products and methods. To compete in these markets, we rely on a combination of trade secret protection, nondisclosure and licensing agreements, patents and trademarks to establish and protect our proprietary intellectual property rights, including our proprietary rare earth production processes that are not patented. We also have a proven technology and product development group and as of September 30, 2012, held 71 issued and pending U.S. patents and patent applications, and 221 issued and pending international and foreign patents and patent applications. We intend to rely on patented products, such as SorbX™, and related licensing agreements to establish proprietary markets for low demand REEs. In addition, as of March 31, 2012, Molycorp Canada held 25 U.S. patents, four U.S. patent applications, approximately 69 foreign patents and approximately 39 foreign patent applications.

These intellectual property rights may be challenged or infringed upon by third parties or we may be unable to maintain, renew or enter into new license agreements with third-party owners of intellectual property on reasonable terms. Identifying unauthorized use of our intellectual property may be difficult, and proceedings to enforce or defend our intellectual property rights could result in substantial costs. The enforcement of intellectual property rights is subject to considerable uncertainty, and patent reform laws, including the recently-enacted America Invents Act, and court decisions interpreting such laws, may create additional uncertainty around our ability to obtain and enforce patent protection for our technologies. If we seek to enforce our rights, we may also be subject to claims that our intellectual property rights are invalid or otherwise unenforceable. In addition, our intellectual property may be subject to infringement or other unauthorized use outside of the United States. In such case, our ability to protect our intellectual property rights by legal recourse or otherwise may be limited, particularly in countries where laws or enforcement practices are undeveloped or do not recognize or protect intellectual property rights to the same extent as the United States. Unauthorized use of our intellectual property rights or our inability to preserve existing intellectual property rights could therefore adversely impact our competitive position and results of operations. The loss of our patents could also reduce the value of the related products. In addition, the cost to litigate infringements of our intellectual property, or the cost to defend ourselves against intellectual property infringement actions by others, could be substantial.

Proprietary trade secrets and unpatented know-how are also very important to our business. We rely on trade secrets to protect certain aspects of our technology, especially where we do not believe that patent protection is appropriate or obtainable. However, trade secrets are difficult to protect. Our employees, consultants, contractors, outside scientific collaborators and other advisors may unintentionally or willfully disclose our confidential information to competitors, and confidentiality agreements may not provide an adequate remedy in the event of unauthorized disclosure of confidential or proprietary information. Enforcing a claim that a third party illegally obtained and is using our trade secrets is expensive and time consuming, and the outcome is unpredictable. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how. Failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

In addition, Molycorp Canada's current intellectual property position is dependent primarily on the essential nature of certain fundamental patents covering bonded magnets made with NdFeB powder and Molycorp Canada's manufacturing process for NdFeB powder. These patents expire between 2012 and 2014. While Molycorp Canada holds a wide range of additional patents and patent applications whose expiration dates extend (and in the case of patent applications, will extend, if issued) beyond 2014, none are of an equally essential nature as Molycorp Canada's fundamental patents and exclusive rights, and therefore Molycorp Canada's competitive position after the expiration of the fundamental patents is likely

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to be diminished as a result of the expiration of such patents. Molycorp Canada may therefore be unable to defend against new competitors entering the marketplace or maintain its existing pricing power.

We may not be able to obtain additional patents and the legal protection afforded by any additional patents may not adequately protect our rights or permit us to gain or keep any competitive advantage.

Our ability to obtain additional patents is uncertain and the legal protection afforded by these patents is limited and may not adequately protect our rights or permit us to gain or keep any competitive advantage. In addition, the scope and enforceability of patent claims is highly uncertain due to the complex nature of the relevant legal, scientific and factual issues. Changes in either patent laws or interpretations of patent laws in the United States or elsewhere (including the recently enacted America Invents Act) may diminish the value of our intellectual property or narrow the scope of our patent protection. Even if patents are issued relating to our products and processes, our competitors may challenge the validity of those patents. Patents also will not protect our products and processes if competitors devise ways of making products without infringing our patents.

If we infringe, or are accused of infringing, the intellectual property rights of third parties, it may increase our costs or prevent us from being able to sell our existing products or commercialize new products.

There is a risk that we may infringe, or may be accused of infringing, the proprietary rights of third parties, including rights under patents and pending patent applications belonging to third parties that may exist in the United States and elsewhere in the world. Because the patent application process can take several years to complete, and patent applications may remain unpublished for 18 months or more, there may be currently pending applications, including applications of which we are currently unaware, that may later result in issued patents that cover our products and processes. In addition, our products and processes may infringe existing patents.

Defending ourselves against third-party claims, including litigation in particular, would be costly and time consuming and would divert management's attention from our business, which could lead to delays in our expansion and modernization efforts. If third parties are successful in their claims, we might have to pay substantial damages or take other actions that are adverse to our business. As a result of intellectual property infringement claims, or to avoid potential claims, we might:

- be prohibited from, or delayed in, selling or licensing some of our products or using some of our processes unless the intellectual property holder licenses the applicable intellectual property to us, which it is not required to do;

- be required to pay substantial royalties or grant a cross license to our intellectual property to another intellectual property holder; or

- be required to redesign a product or process so it does not infringe a third party's intellectual property, which may not be possible or could require substantial funds and time and ultimately result in an inferior product or process.

In addition, we could be subject to claims that our employees, or we, have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of third parties.

If we are unable to resolve claims that may be brought against us by third parties related to their intellectual property rights on terms acceptable to us, in addition to paying substantial damages and royalties, we may lose valuable intellectual property rights and be precluded from offering some of our products or using some of our processes.

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Risks Related to Environmental Regulation

Our operations are subject to extensive and costly environmental requirements; and current and future laws, regulations and permits will impose significant costs, liabilities or obligations or could limit or prevent our ability to continue our current operations or to undertake new operations.

We are subject to numerous and detailed international, national, federal, state and local environmental laws, regulations and permits, including those pertaining to employee health and safety, environmental permitting and licensing, air quality standards, greenhouse gas, or GHG, emissions, water usage and disposal, pollution, waste management, plant and wildlife protection, including the protection of endangered species, handling and disposal of radioactive substances, remediation of soil and groundwater contamination, land use, reclamation and restoration of properties, the discharge of materials into the environment and groundwater quality and availability. As a result of our acquisition of Molycorp Silmet, our operations in Estonia are subject to the environmental laws and regulations of that country, including those applicable to European Union member countries. These requirements may result in significant costs, liabilities and obligations, impose conditions that are difficult to achieve or otherwise delay, limit or prohibit current or planned operations. Consequently, the modernization and expansion of our Molycorp Mountain Pass facility may be delayed, limited or prevented and current operations may be curtailed. Failure to comply with these laws, regulations and permits may result in the assessment of administrative, civil and criminal penalties, the issuance of injunctions to limit or cease operations, the suspension or revocation of permits and other sanctions. Pursuant to such requirements, we may also be subject to third-party claims, including for damages to property or injury to persons arising from our operations. Moreover, these environmental requirements, and the interpretation and enforcement thereof, change frequently and have tended to become more stringent over time. For example, GHG emission regulation is becoming more rigorous. As a result of our planned expansion at our Molycorp Mountain Pass facility, we expect to be required to report annual GHG emissions from our operations, and additional GHG emission related requirements are in various stages of development. The U.S. Congress has considered various legislative proposals to address climate change and may consider additional proposals in the future. In addition, the U.S. Environmental Protection Agency, or EPA, has issued regulations, including the "Tailoring Rule," that subject GHG emissions from certain stationary sources to the Prevention of Significant Deterioration and Title V provisions of the federal Clean Air Act. California is also implementing regulations pursuant to its Global Warming Solutions Act that establish a state-wide cap-and trade program for GHG emissions. Any such regulations could require us to modify existing permits or obtain new permits, implement additional pollution control technology, curtail operations or increase significantly our operating costs, any of which could adversely affect our business, financial condition, reputation, operating performance and product demand. Any future changes in these laws, regulations or permits (or the interpretation or enforcement thereof) or any sanctions, damages, costs, obligations or liabilities in respect of these matters could have a material adverse effect on our business, results of operations and financial condition.

Molycorp Canada is subject to numerous and increasingly rigorous international, national, federal, state and local laws, regulations and permits affecting the mineral processing industry, including those pertaining to employee health and safety, environmental permitting and licensing, air quality standards, GHG emissions, water usage and disposal, pollution, waste management, plant and wildlife protection, handling and disposal of radioactive substances, remediation of soil and groundwater contamination, and the discharge of materials into the environment. Pursuant to certain environmental laws, regulations and permits, Molycorp Canada may be subject to claims for toxic torts, natural resource damages and other liabilities, as well as for the investigation and remediation of soil, surface water, groundwater and other environmental media. Molycorp Canada's failure to comply with these laws and regulations, or changes in such laws and regulations or the interpretation or enforcement thereof, and to obtain such permits could have a material adverse effect on Molycorp Canada's business, financial condition and results of operations. Specifically, Molycorp Canada is subject both to Chinese national and local environmental protection regulations that currently impose a graduated schedule of fees for the discharge of waste

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substances, require the payment of fines for discharges exceeding the standards, and provide for the closure of any facility which fails to comply with orders requiring it to cease or remedy certain activities causing environmental damage.

We are subject to the Occupational Safety and Health Act of 1970, the Federal Mine Safety and Health Act of 1977, the California Labor Code and regulations adopted pursuant thereto, and various regulations applicable in Estonia, which impose stringent health and safety standards on numerous aspects of our operations.

Our operations at our Molycorp Mountain Pass facility are subject to the Federal Mine Safety and Health Act of 1977, as amended by the Mine Improvement and New Emergency Response Act of 2006, and the regulations adopted by the California Occupational Safety and Health Administration, which impose stringent health and safety standards on numerous aspects of mineral extraction and processing operations, including the training of personnel, operating procedures, operating equipment and other matters.

Our operations at our U.S. facilities are also subject to the Occupational Safety and Health Act of 1970.

Our operations at the Molycorp Silmet facility are subject to the Estonian Health and Safety Act of 1999, and the health and safety requirements for handling hazardous chemicals and materials containing hazardous chemicals under Estonian law.

Our failure to comply with these or other applicable safety and health standards, or changes in such standards or the interpretation or enforcement thereof, could have a material adverse effect on our business, financial condition or otherwise impose significant restrictions on our ability to conduct mineral extraction and processing operations.

Our operations may affect the environment or cause exposure to hazardous substances, any of which could result in material costs, obligations or liabilities.

Our operations currently use, and in the past have used, hazardous materials and generate, and in the past have generated, hazardous and naturally occurring radioactive wastes. Our Molycorp Silmet facility in Estonia has a long history of industrial use, including uranium ore and alum shale processing, as a result of which its operations may have impacted the environment. In addition, our Estonian operations require the management and disposal of radioactive wastes. Our Molycorp Mountain Pass facility has been used for mining and related purposes since 1952, and contamination is known to exist around the facility. We may be subject to claims under environmental laws, regulations and permits for toxic torts, natural resource damages and other liabilities, as well as for the investigation and remediation of soil, surface water, groundwater and other environmental media. Our Molycorp Mountain Pass facility is currently subject to an order issued by the Lahontan Regional Water Quality Control Board pursuant to which we have conducted various investigatory and remedial actions, primarily related to certain onsite impoundments, including groundwater monitoring, extraction and treatment and soil remediation. We are still in the process of delineating the extent of groundwater contamination at and around the facility and cannot assure you that we will not incur material costs relating to the remediation of such contamination. Also, prior to our acquisition of our Molycorp Mountain Pass facility, leaks in a wastewater pipeline from our Molycorp Mountain Pass facility to offsite evaporation ponds on the Ivanpah dry lake bed caused contamination. However, that contamination is being remediated by Chevron Mining Inc., who retained ownership of the ponds and the pipeline. In addition to claims arising out of our current or former properties, such claims may arise in connection with contaminated third-party sites at which we have disposed of waste. As a matter of law, and despite any contractual indemnity or allocation arrangements or acquisition agreements to the contrary, our liability for these claims may be joint and several, so that we may be held responsible for more than our share of any contamination, or even for the entire share. These and similar unforeseen impacts that our operations may have on the environment, as well as human

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exposure to hazardous or radioactive materials or wastes associated with our operations, could have a material adverse effect on our business, reputation, results of operation and financial condition.

We may be unable to obtain, maintain or renew permits necessary for the development or operation of our facilities, which could have a material adverse effect on our business, results of operations and financial condition.

We must obtain, for all our operations, a number of permits that impose strict conditions, requirements and obligations relating to various environmental and health and safety matters in connection with our current and future operations, including the modernization and expansion of our Molycorp Mountain Pass facility. To obtain, maintain and renew certain permits, we may be required to conduct environmental studies and collect and present data to governmental authorities pertaining to the potential impact of our current and future operations upon the environment, including the potential impact on endangered species, and to take steps to avoid or mitigate those impacts. The permitting rules, and interpretation thereof, are complex and have tended to become more stringent over time. In some cases, the public (including environmental interest groups) has rights to comment upon and submit objections to permit applications and environmental analysis prepared in connection therewith, and otherwise participate in the permitting process, including challenging the issuance of permits, validity of environmental analyses and determinations and performance of permitted activities. Accordingly, permits required for our operations, including the modernization and expansion of our Molycorp Mountain Pass facility, may not be issued, maintained or renewed in a timely fashion or at all, may be issued or renewed with conditions that restrict our ability to conduct our operations economically, or may be subsequently revoked. Any such failure to obtain, maintain or renew permits, or other permitting delays or conditions, including in connection with any environmental impact analyses, could have a material adverse effect on our business, results of operations and financial condition.

Our inability to acquire, maintain or renew financial assurances related to the reclamation and restoration of mining property could have a material adverse effect on our business and results of operations.

We are generally obligated to restore property after it has been mined in accordance with regulatory standards and our approved reclamation plan at our Molycorp Mountain Pass facility. We are required under federal, state and local laws to maintain financial assurances, such as surety bonds, to secure such obligations. The failure to acquire, maintain or renew such assurances, as required by federal, state and local laws, could subject us to fines and penalties as well as the revocation of our operating permits. Such failure could result from a variety of factors, including:

- the lack of availability, higher expense or unreasonable terms of such financial assurances;
- the ability of current and future financial assurance counterparties to increase required collateral; and
- the exercise by third-party financial assurance counterparties of any rights to refuse to renew the financial assurance instruments.

Our inability to acquire or failure to maintain or renew such financial assurances could have a material adverse effect on our business, financial condition and results of operations.

If the assumptions underlying our reclamation plan and mine closure obligations are inaccurate, we could be required to expend materially greater amounts than anticipated to reclaim mined property, which could materially and adversely affect our business, results of operations and financial condition.

Federal, state and local laws and regulations establish reclamation and closure standards applicable to our surface mining and other operations as well. Estimates of our total reclamation and mine closure liabilities are based upon our closure and reclamation plans, third-party expert reports, current applicable laws and regulations, certain permit terms and our engineering expertise related to these requirements.

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Any change in the underlying assumptions or other variation between the estimated liabilities and actual costs could materially and adversely affect our business, results of operations and financial condition.

Risks Related to the Offering

The effect of the issuance and sale of the borrowed shares in this offering, which issuance is being made to facilitate transactions by which investors in our convertible notes may hedge their investments, along with outstanding loaned shares pursuant to our existing share lending agreement, may be to lower the market price of our common stock.

Morgan Stanley & Co. LLC, one of the underwriters for this offering, has informed us that it, or its affiliates, may short sell up to 7,666,666 borrowed shares concurrently with the offering of our convertible notes and, to the extent that fewer than that number of shares are sold concurrently with the offering of the convertible notes, the share borrower may from time to time during a permitted borrowing period borrow additional shares from us for additional offerings. The borrowed shares are being borrowed by the share borrower under the share lending agreement. We will not receive any proceeds from the borrowed shares, but we will receive a nominal lending fee from the share borrower for the use of those borrowed shares. All borrowed shares (or identical shares or, in certain circumstances, the cash value thereof) must be returned to us on or about the maturity date of the convertible notes, or, if earlier, on or about the date as of which all of the convertible notes cease to be outstanding as a result of redemption, repurchase, conversion or other acquisition for value (or earlier in certain other circumstances). See "Share Lending Agreement; Concurrent Offering of Convertible Notes."

We have been further advised by Morgan Stanley & Co. LLC that it, or its affiliates, intend to use the short position created by the share loan and the short sales of the borrowed shares to facilitate transactions by which investors in our convertible notes may hedge their investments through short sales or privately negotiated derivatives transactions. The existence of the share lending agreement, the short sales of our common stock effected in connection with the sale of our convertible notes, and the related derivatives transactions, or any unwind of such short sales or derivatives transactions, could cause the market price of our common stock to be lower over the term of the share lending agreement than it would have been had we not entered into that agreement, due to the effect of the increase in the number of outstanding shares of our common stock or otherwise. For example, in connection with any cash settlement of any such derivative transaction, Morgan Stanley & Co. LLC or its affiliates may purchase shares of our common stock and the convertible note investors may sell shares of our common stock, which could temporarily increase, temporarily delay a decline in, or temporarily decrease, the market price of our common stock. The market price of our common stock could be further negatively affected by these or other short sales of our common stock, including other sales by the purchasers of the convertible notes hedging their investment therein.

In addition, the existence of our share lending agreement previously entered into with Morgan Stanley Capital Services LLC in connection with the issuance and sale of our existing convertible notes, along with the unwind of any short sales or derivative transactions related thereto, could cause the market price of our common stock to be lower over the term of the share lending agreement than it would have been had we not entered into our existing share lending agreement, due to the effect of the increase in the number of outstanding shares of our common stock or otherwise.

Adjustments by convertible note investors of their hedging positions in our common stock and the expectation thereof may have a negative effect on the market price of our common stock.

The borrowed shares that may be offered in connection with the share lending agreement are expected to be used by investors in the convertible notes to establish hedged positions with respect to our common stock through short sale transactions or privately negotiated derivative transactions. The number of borrowed shares offered hereby may be more or less than the number of shares that will be needed in such hedging transactions. Any buying or selling of shares of our common stock by investors in the

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convertible notes to adjust their hedging positions in connection with this offering or the offering of the convertible notes or in the future may affect the market price of our common stock.

In addition, the existence of the convertible notes may also encourage short selling by market participants because the conversion of the convertible notes could depress our common stock price. The price of our common stock could be affected by possible sales of our common stock by investors who view the convertible notes as a more attractive means of equity participation in us and by hedging or arbitrage trading activity which we expect to occur involving our common stock. This hedging or arbitrage trading activity could, in turn, affect the market price of the convertible notes.

Changes in the accounting guidelines relating to the borrowed shares could decrease our reported earnings per share and potentially our common stock price.

Because the borrowed shares that are being offered (or identical shares) must be returned to us when the share lending agreement terminates pursuant to its terms (or earlier in certain circumstances), we believe that under U.S. GAAP, as presently in effect, the borrowed shares will not be considered outstanding for the purpose of computing and reporting our earnings per share. If accounting guidelines were to change in the future, we may be required to treat the borrowed shares as outstanding for purposes of computing earnings per share, our reported earnings per share would be reduced and our common stock price could decrease, possibly significantly.

Risks Related to Ownership of Our Common Stock

A trading market that will provide our stockholders with adequate liquidity may not be sustained. Our common stock has only been publicly traded since July 2010, and the price of our common stock may fluctuate significantly. Accordingly, stockholders could lose all or part of their investment.

Our shares of common stock began trading on the New York Stock Exchange, or NYSE, in July 2010. An active trading market for our common stock may not be sustained, which could depress the market price of our common stock and could affect holders' ability to sell their shares of common stock. Limited trading volumes and liquidity may result in wide bid-ask spreads, contribute to significant fluctuations in the market price of our common stock and limit the number of investors who are able to buy our common stock.

The market price of our common stock has been, and is likely to continue to be, highly volatile and may be influenced by many factors, some of which are beyond our control, including:

- the extremely volatile rare earth industry;
- our quarterly or annual earnings or those of other companies in our industry;
- loss of a large customer;
- changes in accounting standards, policies, guidance, interpretations or principles;
- general economic conditions;
- the failure of securities analysts to cover our stock or changes in financial estimates by analysts;
- future sales of our common stock; and
- other factors described in this "Risk Factors" section.

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Our common stock price has been particularly affected by the volatility in the rare earths industry, as the high and the low sales price of our common stock in the period since we went public in July 2010 has ranged from a low of $5.75 to a high of $79.16. If conditions in our industry remain volatile, our common stock price may continue to exhibit volatility as well. In particular, if prices or demand for rare earth were to decline, our stock price would likely decline.

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Reports published by securities or industry analysts, including projections in those reports that exceed our actual results, could adversely affect our stock price and trading volume.

Research analysts publish their own quarterly projections regarding our operating results. These projections may vary widely from one another and may not accurately predict the results we actually achieve. Our stock price may decline if we fail to meet securities research analysts' projections. Similarly, if one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price could decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, our stock price or trading volume could decline.

Future sales, or availability for sale, of shares of common stock by stockholders could depress the market price of our common stock.

Sales of a substantial number of shares of our common stock in the public market, or the perception that large sales could occur, the exchange into shares of our common stock of the exchangeable shares issued by MCP Exchangeco Inc., a Canadian subsidiary of ours, or the conversion into shares of our common stock of shares of our mandatory convertible preferred stock, our 3.25% Convertible Senior Notes due 2016, our 6.00% Convertible Senior Notes due 2017, which we refer to together as the "existing convertible notes," or the convertible notes or the perception that any such exchange or conversion could occur, could depress the market price of our common stock. As of December 31, 2012, we had 138,781,835 shares of our common stock outstanding. All of these shares are freely tradable, except for any shares held by our "affiliates" as defined in Rule 144 under the Securities Act. Additionally, as of December 31, 2012, up to 4,140,000 and 37,721,274 shares of our common stock, subject, in each case, to anti-dilution, make-whole and other adjustments, will be issuable upon conversion of shares of the mandatory convertible preferred stock and the conversion of the existing convertible notes, respectively, and up to 167,007 shares of our common stock will be issuable upon exchange of the exchangeable shares (which are exchangeable for shares of our common stock on a one-for-one basis). Also, up to 20,833,335 shares of common stock (or up to 23,958,336 shares if the underwriters exercise their over-allotment option), subject to anti-dilution, make-whole and other adjustments, will be issuable upon conversion of the convertible notes. The common stock issuable upon conversion of the mandatory preferred stock, the existing convertible notes or the convertible notes will be freely tradeable.

Our executive officers and directors and certain of our significant stockholders have signed lock-up agreements under which they have agreed, subject to certain exceptions, not to sell, transfer or dispose of, directly or indirectly, any shares of our common stock or any securities into or exercisable or exchangeable for shares of our common stock without the prior written consent of Morgan Stanley & Co. LLC for a period of 90 days after the date of this prospectus supplement. Morgan Stanley & Co. LLC may, in its sole discretion, permit the sale of these shares prior to the expiration of the lock-up agreements. After the expiration of the lock-up period, these shares may be sold in the public market, subject to prior registration or qualification for an exemption from registration, including, in the case of shares held by affiliates, compliance with the volume restrictions of Rule 144. To the extent that any of these stockholders sell, or indicate an intent to sell, substantial amounts of our common stock in the public market after the contractual lock-ups and other legal restrictions on resale discussed in this prospectus supplement lapse, the trading price of our common stock could decline significantly.

Certain holders of shares of common stock are entitled to rights with respect to the registration under the Securities Act of such shares of common stock. These registration rights are contained in a registration rights agreement entered into with the former members of Molycorp, LLC in connection with our Corporate Reorganization. Additionally, we are obligated to file a registration statement registering the sale from time to time of the 12,500,000 shares of common stock issued to Molymet, in connection with a securities purchase agreement, dated January 31, 2012, by and between Molycorp and Molymet.

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In addition, the 3,651,956 shares reserved for future issuance under our Molycorp, Inc. 2010 Equity and Performance Incentive Plan, as of December 31, 2012, will become eligible for sale in the public market in the future, subject to certain legal and contractual limitations. If these additional shares are sold, or if it is perceived that they will be sold, in the public market, the price of our common stock could decline substantially.

The availability of shares of our common stock for sale in the future could reduce the market price of our common stock.

In the future, we may issue additional securities to raise capital. We may also acquire interests in other companies by using a combination of cash and our common stock or just our common stock. We may also issue securities convertible into our common stock in addition to our mandatory convertible preferred stock, our existing convertible notes and the convertible notes. Any of these events may dilute your ownership interest in our company and have an adverse impact on the price of our common stock. In addition, sales of a substantial amount of our common stock in the public market, or the perception that these sales may occur, could reduce the market price of our common stock. This could also impair our ability to raise additional capital through the sale of our securities.

We do not intend to pay dividends on our common stock, in the foreseeable future.

For the foreseeable future, we intend to retain any earnings, after considering any dividends on our preferred stock, to finance the development of our business, and we do not anticipate paying any cash dividends on our common stock. Any future determination to pay dividends will be at the discretion of our board of directors and will be dependent upon then-existing conditions, including our operating results and financial condition, capital requirements, contractual restrictions, business prospects and other factors that our board of directors considers relevant. So long as any share of our mandatory convertible preferred stock remains outstanding, no dividend or distribution may be declared or paid on our common stock unless all accumulated and unpaid dividends have been paid on our mandatory convertible preferred stock, subject to exceptions, such as dividends on our common stock payable solely in shares of our common stock. Accordingly, holders of our common stock must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize a return on their shares of common stock.

Our ability to use our net operating loss carryforwards may be subject to limitation due to significant changes in the ownership of our common stock.

As of September 30, 2012, we did not have a net operating loss carryforward as we intend to carryback a $70.8 million net operating loss. Under Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, if a corporation undergoes an "ownership change," the corporation's ability to use its pre-change net operating loss carryforwards and other tax attributes to offset its post-change income may be limited and may result in a partial or full writedown of the related deferred tax assets. An ownership change is defined generally for these purposes as a greater than 50% change in ownership over a three-year period, taking into account shareholders that own 5% or more by value of our common stock. It is possible that this offering, in combination with past and future transactions involving our common stock, will cause an ownership change to occur that would limit our ability to use any net operating loss carryforwards that may arise in 2013 and subsequent years.

Anti-takeover provisions contained in our certificate of incorporation and bylaws after the corporate reorganization, as well as provisions of Delaware law, could impair a takeover attempt.

Our certificate of incorporation and bylaws provisions may have the effect of delaying, deferring or discouraging a prospective acquiror from making a tender offer for our shares or otherwise attempting to obtain control of us. To the extent that these provisions discourage takeover attempts, they could deprive stockholders of opportunities to realize takeover premiums for their shares. Moreover, these provisions

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could discourage accumulations of large blocks of common stock, thus depriving stockholders of any advantages which large accumulations of stock might provide.

As a Delaware corporation, we are also subject to provisions of Delaware law, including Section 203 of the General Corporation Law of the State of Delaware. Section 203 prevents some stockholders holding more than 15% of our outstanding common stock from engaging in certain business combinations unless the business combination was approved in advance by our board of directors, results in the stockholder holding more than 85% of our outstanding common stock or is approved by the holders of at least $66^{2}/_{3}$% of our outstanding common stock not held by the stockholder engaging in the transaction.

Any provision of our certificate of incorporation or our bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could also affect the price that some investors are willing to pay for our common stock.

Our board of directors can issue, without stockholder approval, preferred stock with voting and conversion rights and convertible debt that could adversely affect the voting power of the holders of common stock.

Our board of directors can issue, without stockholder approval, preferred stock with voting and conversion rights and convertible debt that could adversely affect the voting power of the holders of common stock and reduce the likelihood that such holders will receive dividend payments or payments upon liquidation, including shares of our mandatory convertible preferred stock, our existing convertible notes and the convertible notes. Such issuance could have the effect of decreasing the market price of the common stock. The issuance of preferred stock and/or convertible debt or even the ability to issue preferred stock and/or convertible debt could also have the effect of delaying, deterring or preventing a change of control or other corporate action.

Our mandatory convertible preferred stock, our existing convertible notes and the convertible notes may adversely affect the market price of our common stock.

The market price of our common stock is likely to be influenced by our mandatory convertible preferred stock, our existing convertible notes and the convertible notes. For example, the market price of our common stock could become more volatile and could be depressed by:

- investors' anticipation of the potential resale in the market of a substantial number of additional shares of our common stock received upon conversion of our mandatory convertible preferred stock, our existing convertible notes and the convertible notes;

- possible sales of our common stock by investors who view our mandatory convertible preferred stock, our existing convertible notes and/or the convertible notes as a more attractive means of equity participation in us than owning shares of our common stock; and

- hedging or arbitrage trading activity that may develop involving our mandatory convertible preferred stock, our existing convertible notes and our common stock and the convertible notes.

Our board of directors and management have broad discretion over the use of our cash reserves and might not apply this cash in ways that increase the value of your investment.

We presently intend to use the net proceeds from this offering, along with any net proceeds from the concurrent offering of convertible notes, to fund current capital needs for capital expenditures and other cash requirements for 2013, including, without limitation, capital expenditures at the Molycorp Mountain Pass facility. Our board of directors and management have broad discretion to use our cash reserves, and you will be relying on their judgment regarding the application of this cash. Our board of directors and management might not apply the cash in ways that increase the value of your investment. Until we use the cash, we plan to invest it, and these investments may not yield a favorable rate of return. If we do not invest or apply the cash in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

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USE OF PROCEEDS

We estimate that the proceeds from the offering of the primary shares will be approximately $216.4 million (or $248.1 million if the underwriters exercise their option to purchase additional shares in full), after deducting the underwriters' discount and estimated fees and expenses payable by us.

We intend to use the net proceeds from this offering, along with the net proceeds from the concurrent offering of convertible notes, to fund current capital needs for capital expenditures and other cash requirements for 2013, including, without limitation, capital expenditures at the Molycorp Mountain Pass facility.

Pending the use of the net proceeds from this offering, along with any net proceeds from the concurrent offering of our convertible notes, as described above, we plan to invest the proceeds in a variety of capital preservation investments, including short-term interest-bearing obligations, investment-grade instruments, certificates of deposit and direct guaranteed obligations of the United States.

We will not receive any proceeds from the sale of the borrowed shares offered hereunder, other than a nominal loan fee from the share borrower equal to $0.001 per borrowed share loaned to the share borrower. See "Share Lending Agreement; Concurrent Offering of Convertible Notes." We expect to use those proceeds for general corporate purposes.

The offering of the borrowed shares is being conducted in connection with the offering of our convertible notes. The offering of the borrowed shares pursuant to this prospectus supplement and the accompanying prospectus is contingent upon the closing of the convertible notes offering, and the concurrent offering of our convertible notes is contingent upon the closing of the offering of the borrowed shares hereunder. However, the offering of the primary shares pursuant to this prospectus supplement and the accompanying prospectus is not contingent upon the closing of either the convertible notes offering or the offering of the borrowed shares hereunder, and the offering of the borrowed shares hereunder and the concurrent offering of our convertible notes are not contingent upon the closing of the offering of the primary shares hereunder.

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CAPITALIZATION

The following table sets forth our consolidated cash and cash equivalents and our capitalization as of September 30, 2012:

- on an actual basis; and

- on an as adjusted basis to give effect to this offering and the concurrent issuance and sale by us of $150.0 million aggregate principal amount of convertible notes in the concurrent offering and the receipt of the net proceeds by us from such offerings, after deducting the underwriters' discount and estimated offering fees and expenses payable by us.

The information in this table should be read in conjunction with the financial statements and the notes thereto incorporated by reference into this prospectus supplement.

	September 30, 2012	
	Actual	As Adjusted
	(In thousands)	
Cash and cash equivalents[1]	$ 436,025	$ 795,937
Capitalization:		
Short-term debt	32,693	32,693
Long-term debt[2]	1,168,204	1,293,240
Total debt	1,200,897	1,325,933
Preferred Stock	2	2
Common Stock[3]	138	182
Additional paid-in capital	1,686,226	1,921,502
Accumulated other comprehensive loss	(9,646)	(9,646)
Deficit	(74,898)	(75,048)
Total Molycorp stockholders' equity	1,601,822	1,836,992
Noncontrolling interests	19,330	19,330
Total stockholders' equity	1,621,152	1,856,322
Total capitalization	$ 2,822,049	$ 3,182,255

(1) As of December 31, 2012, we had approximately $200.0 million of cash and cash equivalents. The decrease in our cash and cash equivalents from September 30, 2012 primarily reflects payments on accrued payables owed at September 30, 2012 relating to Project Phoenix and lower than anticipated cash flows from operations and continued capital expenditures in connection with Project Phoenix.

(2) In accordance with ASC 470-20, convertible debt that may be wholly or partially settled in cash is required to be separated into a liability and an equity component, such that interest expense reflects the issuer's non-convertible debt interest rate. Upon issuance, a debt discount is recognized as a decrease in debt and an increase in equity. The debt component will accrete up to the principal amount ($150.0 million for the 5.50% Convertible Senior Notes due 2018, $414.0 million for the 6.00% Convertible Senior Notes due 2017, and $230.0 million for the 3.25% Convertible Senior Notes due 2016) over the expected term of the debt. ASC 470-20 does not affect the actual amount that we are required to repay, and such amounts reflect the approximate liability component net of the discount recognized in equity, excluding any tax effect.

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(3) The information in the table above assumes no exercise of the underwriters' option to purchase additional shares of common stock.

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DIVIDEND POLICY

Since our inception, we have not paid any cash dividends on our common stock. For the foreseeable future, we intend to retain any earnings, after considering any dividends on our preferred stock, to finance the development of our business. We do not anticipate paying any cash dividends on our common stock. Any future determination to pay dividends, including on our mandatory convertible preferred stock, will be at the discretion of our board of directors and will depend upon then-existing conditions, including our operating results and our financial condition, capital requirements, contractual restrictions, business prospects and other factors that our board of directors may deem relevant. So long as any share of our mandatory convertible preferred stock remains outstanding, no dividend or distribution may be declared or paid on our common stock unless all accrued and unpaid dividends have been paid on our mandatory convertible preferred stock, subject to exceptions, such as dividends on our common stock payable solely in shares of our common stock.

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COMMON STOCK PRICE RANGE

Our common stock is listed on The New York Stock Exchange under the symbol "MCP." Our initial public offering was priced at $14.00 per share on July 29, 2010. The following table sets forth, for the periods indicated, the high and low sales prices for our common stock as reported on The New York Stock Exchange.

	Low	High
Year ending December 31, 2013		
First Quarter (through January 24, 2013)	$ 7.03	$ 11.81
Year ending December 31, 2012		
Fourth Quarter	$ 5.75	$ 11.89
Third Quarter	$ 9.40	$ 23.20
Second Quarter	$ 19.11	$ 35.79
First Quarter	$ 24.20	$ 35.20
Year ending December 31, 2011		
Fourth Quarter	$ 23.05	$ 42.90
Third Quarter	$ 31.41	$ 66.62
Second Quarter	$ 46.40	$ 79.16
First Quarter	$ 40.25	$ 62.80

The last reported sales price for our common stock on January 24, 2013 is set forth on the cover page of this prospectus. As of December 31, 2012, there were approximately 323 holders of record of our common stock.

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SHARE LENDING AGREEMENT; CONCURRENT OFFERING OF CONVERTIBLE NOTES

Concurrently with this offering, we are offering, by means of a separate prospectus supplement and accompanying prospectus, $150.0 million aggregate principal amount of our 5.50% convertible senior notes due 2018 in an offering registered under the Securities Act. We also expect to grant a 30-day option to the underwriters of the convertible notes to purchase up to an additional 15% of the aggregate principal amount of the convertible notes solely to cover over-allotments in respect of the convertible senior notes.

We intend to use the net proceeds from the offering of the convertible notes to fund current capital needs for capital expenditures and any other cash requirements for 2013, including without limitation, capital expenditures at our Mountain Pass facility. See "Summary−Recent Developments−Capital Needs."

To facilitate transactions by which investors in our convertible notes may hedge their investments, we have entered into a share lending agreement, dated as of the pricing of this offering, with the share borrower, under which we have agreed to loan to the share borrower up to 6,666,666 borrowed shares, assuming no exercise of the underwriters' over-allotment option in respect of the concurrent offering of convertible notes (or up to an aggregate of 7,666,666 borrowed shares if the underwriters exercise their over-allotment option in respect of the concurrent offering of convertible notes in full) for a period beginning on the date of the share lending agreement and ending on or about the maturity date of the convertible notes or, if earlier, on or about the date as of which all of the convertible notes cease to be outstanding as a result of redemption, repurchase, conversion or other acquisition for value (or earlier in certain circumstances). We refer to this period as the "loan availability period."

We will not receive any proceeds from the borrowed shares being offered and sold by the share borrower using this prospectus supplement and the accompanying prospectus, which are being loaned to the share borrower pursuant to the share lending agreement, but the share borrower will pay us a nominal lending fee of $0.001 per share for the use of those shares.

The offering of the borrowed shares pursuant to this prospectus supplement and the accompanying prospectus is contingent upon the closing of the convertible notes offering, and the concurrent offering of our convertible notes is contingent upon the closing of the offering of the borrowed shares hereunder. However, the offering of the primary shares pursuant to this prospectus supplement and the accompanying prospectus is not contingent upon the closing of either the convertible notes offering or the offering of the borrowed shares hereunder, and the offering of the borrowed shares hereunder and the concurrent offering of our convertible notes are not contingent upon the closing of the offering of the primary shares hereunder.

Share loans under the share lending agreement will terminate and the borrowed shares must be returned to us if the concurrent offering of the convertible notes is not consummated or upon the termination of the loan availability period, as well as under the following circumstances:

- the share borrower may terminate all or any portion of a loan at any time;
- on a proportionate basis when the convertible notes are redeemed, repurchased, converted or otherwise acquired for value; and
- we or the share borrower may terminate any or all of the outstanding loans upon a default by the other party under the share lending agreement, including certain breaches by the share borrower of its representations and warranties, covenants or agreements under the share lending agreement, or the bankruptcy of us or the share borrower.

Any shares that we loan to the share borrower will be issued and outstanding for corporate law purposes and, accordingly, the holders of the borrowed shares will have all of the rights of a holder of our outstanding shares, including the right to vote the shares on all matters submitted to a vote of our shareholders and the right to receive any dividends or other distributions that we may pay or make on our

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outstanding shares of common stock. However, under the share lending agreement, the share borrower has agreed:

to pay to us an amount equal to cash dividends, if any, that we pay on the borrowed shares;

to pay or deliver, as the case may be, to us any other distribution, other than in a liquidation or a reorganization in bankruptcy, that we make on the borrowed shares; and

not to vote on the borrowed shares on any matter submitted to a vote of our stockholders.

In view of the contractual undertakings of the share borrower in the share lending agreement, which have the effect of substantially eliminating the economic dilution that otherwise would result from the issuance of the borrowed shares, we believe that under U.S. generally accepted accounting principles currently in effect, the borrowed shares will not be considered outstanding for the purpose of computing and reporting our earnings per share.

Morgan Stanley & Co. LLC (together with the share borrower, referred to herein collectively as "Morgan Stanley"), one of the underwriters in this offering, has informed us that it, or its affiliates, intend to use the short position created by the share loan and the short sales of the borrowed shares to facilitate transactions by which investors in the convertible notes may hedge their respective investments through short sales or privately negotiated derivative transactions. Morgan Stanley has informed us that it may short sell up to 7,666,666 borrowed shares concurrently with the concurrent offering of the convertible notes and, to the extent that fewer than that number of borrowed shares are sold concurrently with the offering of the convertible notes, the share borrower may from time to time borrow during a permitted borrowing period additional shares from us for additional offerings. We refer to the latter shares as the "supplemental borrowed shares." The total number of shares that the share borrower can borrow under the share lending agreement is limited to a maximum of 6,666,666 borrowed shares, assuming no exercise of the over-allotment option in respect of the convertible notes offered in the concurrent offering (or up to an aggregate of 7,666,666 borrowed shares if the underwriters exercise their over-allotment option in respect of the concurrent offering of convertible notes in full). In connection with the sale of these supplemental borrowed shares, Morgan Stanley and/or its affiliates may effect such transactions by selling the borrowed shares at various prices from time to time to or through dealers, and these dealers may receive compensation in the form of discounts, concessions or commissions from the share borrower and/or from purchasers of borrowed shares for whom the dealers may act as agents or to whom they may sell as principals. Over the same period that Morgan Stanley and/or its affiliates sell these supplemental borrowed shares, it and/or its affiliates may, in their discretion, purchase at least an equal number of shares of our common stock on the open market. Morgan Stanley and/or its affiliates may from time to time purchase shares of our common stock in the market and use such shares, including shares purchased in connection with the sale of the supplemental borrowed shares, to facilitate transactions by which investors in our convertible notes may hedge their investments.

The existence of the share lending agreement and the short sales of our common stock effected in connection with the sale of our convertible notes being offered concurrently herewith could cause the market price of our common stock to be lower over the term of the share lending agreement than it would have been had we not entered into that agreement. See "Risk Factors−Risks Related to the Offering−The effect of the issuance and sale of the borrowed shares pursuant to the share lending agreement, which issuance is being made to facilitate transactions by which investors in our convertible notes may hedge their investments, may be to lower the market price of our common stock." However, we have determined that the entry into the share lending agreement is in our best interests as a means to facilitate the offer and sale of our convertible notes pursuant to the related prospectus supplement and accompanying prospectus on terms more favorable to us than we could have otherwise obtained.

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CERTAIN U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS

General

The following is a general discussion of the U.S. federal income tax considerations related to the acquisition, ownership, and disposition of our common stock by a non-U.S. holder, as defined below, that acquires our common stock pursuant to this offering. This discussion assumes that a non-U.S. holder will hold our common stock issued pursuant to this offering as a capital asset within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended, or the Code. This discussion does not address all aspects of U.S. federal income taxation that may be relevant to a particular investor in light of the investor's individual circumstances. In addition, this discussion does not address (i) U.S. federal non-income tax laws, such as gift or estate tax laws, (ii) state, local or non-U.S. tax considerations, (iii) the special tax rules that may apply to certain investors, including, without limitation, banks, insurance companies, financial institutions, controlled foreign corporations, passive foreign investment companies, broker-dealers, grantor trusts, personal holding companies, taxpayers who have elected mark-to-market accounting, tax-exempt entities, entities or arrangements classified as partnerships for U.S. federal income tax purposes or other pass-through entities, or an investor in such entities or arrangements, or U.S. expatriates or former long-term residents of the United States, (iv) the special tax rules that may apply to an investor that acquires, holds, or disposes of our common stock as part of a straddle, hedge, constructive sale, conversion or other integrated transaction, or (v) the impact, if any, of the alternative minimum tax or Medicare contribution tax.

This discussion is based on current provisions of the Code, applicable U.S. Treasury Regulations promulgated thereunder, judicial opinions, and published rulings of the Internal Revenue Service, or the IRS, all as in effect on the date of this prospectus supplement and all of which are subject to change or differing interpretations, possibly with retroactive effect. We have not sought, and will not seek, any ruling from the IRS or any opinion of counsel with respect to the tax considerations discussed herein, and there can be no assurance that the IRS will not take a position contrary to the tax considerations discussed below or that any position taken by the IRS would not be sustained.

As used in this discussion, the term "U.S. person" means a person that is, for U.S. federal income tax purposes, (i) a citizen or individual resident of the United States, (ii) a corporation (or other entity taxed as a corporation) created or organized (or treated as created or organized) in the United States or under the laws of the United States, any state thereof or the District of Columbia, (iii) an estate the income of which is subject to U.S. federal income taxation regardless of its source, or (iv) a trust if (A) a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust, or (B) it has in effect a valid election under applicable U.S. Treasury Regulations to be treated as a U.S. person. As used in this discussion, the term "non-U.S. holder" means a beneficial owner of our common stock that is an individual, corporation, estate or trust and that is not a U.S. person.

The tax treatment of an entity or arrangement treated as a partnership for U.S. federal income tax purposes and each partner thereof will generally depend upon the status and activities of the partnership and such partner. A holder that is treated as a partnership for U.S. federal income tax purposes or a partner in such partnership should consult its own tax advisor regarding the U.S. federal income tax considerations applicable to it and its partners of the acquisition, ownership and disposition of our common stock.

EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS OWN TAX ADVISOR WITH RESPECT TO THE PARTICULAR TAX CONSIDERATIONS RELATED TO THE ACQUISITION, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK, INCLUDING THE APPLICABILITY AND EFFECT OF ANY STATE, LOCAL, AND NON-U.S. TAX LAWS, AS WELL AS U.S. FEDERAL ESTATE AND GIFT TAX LAWS, AND ANY APPLICABLE TAX TREATY.

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Distributions on Common Stock

As discussed under "Dividend Policy," we do not anticipate paying dividends. If we pay cash or distribute property to holders of shares of our common stock, such distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Distributions in excess of current and accumulated earnings and profits will constitute a return of capital that will be applied against and reduce (but not below zero) the holder's adjusted tax basis in our common stock. Any remaining excess will be treated as gain from the sale or exchange of the common stock and will be treated as described under "−Gain or Loss on Sale, Exchange or Other Taxable Disposition of Common Stock" below.

Dividends paid to a non-U.S. holder that are not effectively connected with the non-U.S. holder's conduct of a trade or business in the United States generally will be subject to withholding of U.S. federal income tax at a rate of 30% or such lower rate as may be specified by an applicable income tax treaty. A non-U.S. holder that wishes to claim the benefit of a reduced withholding rate under an applicable income tax treaty generally will be required to (i) complete IRS Form W-8BEN (or other applicable form) and certify under penalties of perjury that such holder is not a U.S. person and is eligible for the benefits of the applicable tax treaty or (ii) if our common stock is held through certain foreign intermediaries, satisfy the relevant certification requirements of applicable U.S. Treasury Regulations. These forms may need to be periodically updated.

A non-U.S. holder eligible for a reduced rate of withholding of U.S. federal income tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. holders should consult their own tax advisors regarding their entitlement to benefits under an applicable income tax treaty and the manner of claiming the benefits of such treaty (including, without limitation, the need to obtain a U.S. taxpayer identification number).

Dividends that are effectively connected with a non-U.S. holder's conduct of a trade or business in the United States, and, if required by an applicable income tax treaty, attributable to a permanent establishment or fixed base maintained by the non-U.S. holder in the United States, are subject to U.S. federal income tax on a net income basis at the U.S. federal income tax rates generally applicable to a U.S. person and are not subject to withholding of U.S. federal income tax, provided that the non-U.S. holder establishes an exemption from such withholding by complying with certain certification and disclosure requirements. Any such dividends received by a non-U.S. holder that is treated as a foreign corporation for U.S. federal income tax purposes may be subject to an additional branch profits tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty.

Gain or Loss on Sale, Exchange or Other Taxable Disposition of Common Stock

Any gain recognized by a non-U.S. holder on a sale, exchange or other taxable disposition of our common stock generally will not be subject to U.S. federal income tax, unless: (i) the gain is effectively connected with the conduct of a trade or business of the non-U.S. holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment or fixed base in the United States of the non-U.S. holder), (ii) the non-U.S. holder is an individual who is present in the United States for 183 days or more in the taxable year of that disposition, and certain other conditions are met, or (iii) we are or have been a "United States real property holding corporation," or USRPHC, for U.S. federal income tax purposes and the non-U.S. holder is not eligible for an exemption under an applicable income tax treaty. However, the non-U.S. holder generally will not be subject to U.S. federal income tax due to us being a USRPHC if (i) our common shares are regularly traded on an established securities market and (ii) the non-U.S. holder held, directly or constructively, during the shorter of the five-year period ending on the date of disposition or the period that the non-U.S. holder held the common shares 5% or less of our common shares. A corporation generally is a USRPHC if the fair market value of

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its U.S. real property interests equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. We believe that we currently are a USRPHC, and we expect to remain a USRPHC. Our common stock is currently listed on the NYSE and we believe that, for as long as our common stock continues to be so listed, shares of our common stock will be treated as "regularly traded" on an established market.

Any gain recognized by a non-U.S. holder that is described in clause (i) or (iii) of the preceding paragraph generally will be subject to tax at the U.S. federal income tax rates generally applicable to a U.S. person, and such non-U.S. holder will be required to file a U.S. tax return. Such non-U.S. holders are urged to consult their tax advisors regarding the possible application of these rules. Any gain of a corporate non-U.S. holder that is described in clause (i) above may also be subject to an additional branch profits tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty. An individual non-U.S. holder that is described in clause (ii) of the preceding paragraph generally will be subject to a flat 30% tax (or a lower applicable tax treaty rate) on the U.S.-source capital gain derived from the disposition, which may be offset by U.S. source capital losses during the taxable year of the disposition.

Information Reporting and Backup Withholding

We generally must report annually to the IRS and to each non-U.S. holder of our common stock the amount of dividends paid to such holder on our common stock and the tax, if any, withheld with respect to those dividends. Copies of the information returns reporting those dividends and withholding may also be made available to the tax authorities in the country in which the non-U.S. holder is a resident under the provisions of an applicable income tax treaty or agreement. Information reporting also is generally required with respect to the proceeds from sales and other dispositions of our common stock to or through the U.S. office (and in certain cases, the foreign office) of a broker, unless the non-U.S. holder establishes that it is not a U.S. person.

Under some circumstances, U.S. Treasury Regulations require backup withholding of U.S. federal income tax, currently at a rate of 28%, on reportable payments with respect to our common stock. A non-U.S. holder generally may eliminate the requirement for information reporting (other than in respect to dividends, as described above) and backup withholding by providing certification of its foreign status, under penalties of perjury, on a duly executed applicable IRS Form W-8 or by otherwise establishing an exemption. Notwithstanding the foregoing, backup withholding and information reporting may apply if either we or our paying agent has actual knowledge, or reason to know, that a holder is a U.S. person. Backup withholding is not an additional tax. Rather, the amount of any backup withholding will be allowed as a credit against a non-U.S. holder's U.S. federal income tax liability, if any, and may entitle such non-U.S. holder to a refund, provided that certain required information is timely furnished to the IRS. Non-U.S. holders are urged to consult their own tax advisors regarding the application of backup withholding and the availability of and procedure for obtaining an exemption from backup withholding in their particular circumstances.

Additional FATCA Withholding for Certain Payments to Non-U.S. Entities

The Foreign Account Tax Compliance Act provisions of the Hiring Incentives to Restore Employment Act (generally referred to as "FATCA"), when applicable, will impose a U.S. federal withholding tax of 30% on certain payments to "foreign financial institutions" (which are broadly defined for this purpose and generally include investment vehicles) and certain non-financial foreign entities unless various U.S. information reporting and due diligence requirements (generally relating to ownership by U.S. persons of certain interests in or accounts with those entities) have been satisfied. Under recently issued final Treasury Regulations, these rules generally apply to dividends in respect of securities (such as our common shares) paid on or after January 1, 2014, and to gross proceeds from the sale or other disposition of securities (such as our common shares) paid on or after January 1, 2017. Prospective non-U.S. holders should consult their own tax advisors regarding the implications of FATCA and the recently issued Treasury Regulations on their investment in our common stock.

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UNDERWRITING; CONFLICTS OF INTEREST

Under the terms and subject to the conditions in an underwriting agreement dated the date of this prospectus supplement, the underwriters named below have agreed to purchase, and we have agreed to sell to the underwriters, shares of our common stock (the "primary shares") listed below. In addition, under the terms and subject to the conditions in the underwriting agreement and the share lending agreement, we have agreed to loan to the share borrower the shares of our common stock (the "borrowed shares") listed below.

Name	Number of Primary Shares	Maximum Number of Borrowed Shares
Morgan Stanley & Co. LLC	18,750,000	7,666,666[(1)]
J.P. Morgan Securities LLC	7,500,000	–
Goldman, Sachs & Co.	4,500,000	–
GMP Securities L.P.	3,750,000	–
HSBC Securities (USA) Inc.	3,000,000	–
Total	37,500,000	7,666,666

(1) The total number of shares that the share borrower can borrow under the share lending agreement is limited to a maximum of 6,666,666 borrowed shares, assuming no exercise of the over-allotment option in respect of the convertible notes offered in the concurrent offering (or up to an aggregate of 7,666,666 borrowed shares if the underwriters exercise their over-allotment option in respect of the concurrent offering of convertible notes in full). See "Share Lending Agreement; Concurrent Offering of Convertible Notes."

The underwriters are offering the primary shares, and Morgan Stanley & Co. LLC is offering the borrowed shares, subject to their acceptance of the primary shares and borrowed shares, as the case may be, and subject to prior sale. The obligation of the underwriters to make any payment for and accept delivery of the shares offered by this prospectus supplement and the accompanying prospectus is subject to the approval of certain legal matters by its counsel and to certain other customary conditions, as well as additional conditions relating to the borrowed shares. The underwriting agreement provides for a firm commitment underwriting with respect to the primary shares, and the underwriters are obligated to take and pay for all of the primary shares offered by this prospectus supplement and the accompanying prospectus if any such primary shares are taken. However, the underwriters are not required to take or pay for the primary shares covered by the underwriters' option to purchase additional primary shares described below.

The shares may be offered for sale in transactions, including block sales, on The New York Stock Exchange, in the over-the-counter market, in negotiated transactions or otherwise. The underwriters initially propose to offer the primary shares, and Morgan Stanley & Co. LLC initially proposed to offer the borrowed shares initially borrowed by the share borrower, directly to the public at the offering price listed on the cover page of this prospectus supplement or to certain dealers at a price that represents a concession not in excess of $0.216 per share under the public offering price. After the initial offering, the offering price and other selling terms may from time to time be varied by the underwriters. The offering of the shares by the underwriters is subject to receipt and acceptance and subject to the underwriters' right to reject any order in whole or in part. Any supplemental borrowed shares will subsequently be sold at prevailing market prices at the time of sale or at negotiated prices.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase up to an additional 5,625,000 primary shares at the public offering price listed on the cover page of this prospectus supplement, less underwriting discounts and commissions.

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To the extent this option is exercised, the underwriters will become obligated, subject to certain conditions, to purchase the additional primary shares.

The following table shows the per share and total public offering price, underwriting discounts and commissions, and proceeds before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to an additional 5,625,000 primary shares.

	Per Primary Share	Per Borrowed Share	No Exercise	Full Exercise
Public offering price	$ 6.00	$ 6.00	$262,999,998.00	$304,749,996.01
Underwriting discounts and commissions to be paid by us[(1)]	$ 0.36	$ 0.00	$ 8,093,999.88	$ 10,118,999.88
Proceeds, before expenses, to us	$ 5.64	$ 0.00	$216,906,000.12	$248,631,000.12

(1) With respect to the 15,016,667 primary shares being purchased by certain of our directors, officers and other related parties, the underwriting discounts and commissions will be $0.00 and the proceeds, before expenses, to us will be $6.00 per share.

We and the several underwriters have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act.

Our shares of common stock are listed on The New York Stock Exchange under the symbol "MCP."

We cannot assure you that prices at which shares of our common stock sell in the public market after this offering of the primary shares and borrowed shares will not be lower than the offering price.

The expenses of this offering that are payable by us are estimated to be $500,000 (excluding underwriting discounts and commissions).

The relevant underwriters have informed us that they do not intend sales to discretionary accounts to exceed 5% of the total number of primary shares or borrowed shares offered by them.

In order to facilitate this offering of the primary shares and of the borrowed shares initially borrowed by the share borrower, the relevant underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of our common stock. Specifically, such underwriters may sell more primary shares or borrowed shares, as the case may be, than they are obligated to purchase under the underwriting agreement, creating a short position. In the case of the primary shares, a short sale is covered if the short position is no greater than the number of primary shares available for purchase by the underwriters under their option to purchase additional primary shares. The relevant underwriters can close out a covered short sale, in the case of a short position relating to primary shares, by exercising their option to purchase additional primary shares or, in the case of a short position relating to primary shares or borrowed shares, by purchasing shares of our common stock in the open market. In determining the source of shares to close out a covered short sale relating to the primary shares, the underwriters will consider, among other things, the open market price of shares compared to the price available under its option to purchase additional primary shares. The underwriters may also sell shares of our common stock in excess of their option to purchase additional primary shares, creating a naked short position. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market after pricing that could adversely affect investors who purchase in the offering of the primary shares and borrowed shares. As an additional means of facilitating the offering of the primary shares and borrowed shares, the relevant underwriters may bid for, and purchase, shares of our common stock in the open market to stabilize the price of the common stock. These activities may raise or maintain the market price of the our common stock above independent market levels or prevent or retard a decline in the market price of our common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time. The underwriters may also impose a penalty

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bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Share Lending Agreement

The borrowed shares offered by this prospectus supplement and the accompanying prospectus are shares that we have agreed to loan to the share borrower pursuant to the share lending agreement.

Morgan Stanley & Co. LLC has informed us that it, or its affiliates, intend to use the short position created by the share loan and the concurrent short sale of the borrowed shares to facilitate transactions by which investors in our convertible notes may hedge their investments through short sales or privately negotiated derivatives transactions. See "Share Lending Agreement; Concurrent Offering of Convertible Notes." Morgan Stanley & Co. LLC will determine the offering price of up to 7,666,666 borrowed shares offered pursuant to this prospectus supplement and the accompanying prospectus by initially soliciting indications of interest from potential purchasers of our common stock and conducting customary negotiations with those potential purchasers during the offering period. The price at which investors in our convertible notes establish their short positions through Morgan Stanley & Co. LLC will be the offering price of the borrowed shares offered hereby. During the offering period, Morgan Stanley & Co. LLC will negotiate a purchase price with purchasers of our common stock and will solicit indications of interest, based on the purchase price being negotiated with those potential purchasers, from convertible note investors seeking to establish a short position in our common stock. Morgan Stanley & Co. LLC will establish a "clearing price" for a number of borrowed shares at which both purchasers of our common stock are willing to purchase borrowed shares offered hereby and investors in our convertible notes are willing to establish short positions. The clearing price will be the offering price hereunder and may be at a discount to the market price of our common stock at the time the offering is commenced.

In addition, in connection with facilitating such transactions, Morgan Stanley & Co. LLC expects to receive customary negotiated fees from investors in our convertible notes, which may be deemed to be underwriter's compensation. Morgan Stanley & Co. LLC may engage in such transactions at any time and from time to time during the term of the share lending agreement.

To the extent that fewer than 7,666,666 borrowed shares are sold concurrently with the offering of the convertible notes, the share borrower may from time to time during a permitted borrowing period borrow additional shares from us for additional offerings. We refer to these shares as the "supplemental borrowed shares." The total number of shares that the share borrower can borrow under the share lending agreement is limited to a maximum of 6,666,666 borrowed shares, assuming no exercise of the over-allotment option in respect of the convertible notes offered in the concurrent offering (or up to an aggregate of 7,666,666 borrowed shares of our common stock if the underwriters exercise their over-allotment option in respect of the concurrent offering of convertible notes in full). Following the initial sale of borrowed shares of our common stock pursuant to this offering, the share borrower, or its affiliates, will sell, from time to time, the supplemental borrowed shares in transactions, including block sales, on The New York Stock Exchange, in the over-the-counter market, in negotiated transactions or otherwise. These supplemental borrowed shares will be sold at market prices prevailing at the time of sale or at negotiated prices. In connection with the sale of these supplemental borrowed shares, the share borrower, or its affiliates, may effect such transactions by selling the shares to or through dealers, and these dealers may receive compensation in the form of discounts, concessions or commissions from the share borrower and/or from purchasers of shares for whom the dealers may act as agents or to whom they may sell as principals. Over the same period that the share borrower, or its affiliates, sells these supplemental borrowed shares, it or its affiliates may, in its discretion, purchase an equal number of shares of our common stock on the open market. See "Share Lending Agreement; Concurrent Offering of Convertible Notes" above.

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We will not receive any proceeds from the sale of borrowed shares of our common stock pursuant to this prospectus supplement and accompanying prospectus, but we will receive a nominal lending fee of $0.001 per share for their use from the share borrower.

Other Relationships

From time to time, the underwriters and their affiliates have provided and continue to provide investment banking and other services to us, and may do so in the future. The share borrower, an affiliate of Morgan Stanley & Co. LLC, has entered into a share lending agreement with us as described above under "Share Lending Agreement; Concurrent Offering of Convertible Notes."

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. Certain of the underwriters and their respective affiliates have provided, and may in the future provide, a variety of these services to the issuer and to persons and entities with relationships with the issuer, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and their respective affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the issuer (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the issuer. The underwriters and their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

No Sales of Similar Securities

In connection with this offering, we, our directors and officers and certain other stockholders have agreed with the underwriters that, subject to certain exceptions, without the prior written consent of the underwriters, we and they will not, for the period ending 90 days after the date of this prospectus supplement (the "restricted period"):

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any other securities convertible into or exercisable or exchangeable for common stock;

- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of our common stock.

whether any such transaction is to be settled by delivery of common stock or such other securities, in cash or otherwise. In addition, we have agreed that, during the restricted period, we will not file any registration statement with the SEC relating to the offering of, any shares of our common stock or any securities convertible into or exercisable or exchangeable for common stock, and our directors and officers and any such other stockholders have agreed that, during the restricted period, they will not make any demand for or exercise any right with respect to, the registration of, any shares of our common stock or any securities convertible into or exercisable or exchangeable for common stock. The underwriters may, in their sole discretion, permit the sale of these shares of common stock or any other securities convertible into or

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exercisable or exchangeable for common stock during the restricted period in whole or in part and at any time, with or without notice.

The restrictions described in the immediately preceding paragraph do not apply to the sale of shares of common stock to be sold hereunder (including, without limitation, any supplemental borrowed shares) or the sale of our convertible notes.

With respect to us, the restrictions described above do not apply to:

- issuances of shares of our common stock, options, warrants or other equity awards relating to our common stock pursuant to our stock incentive plan, *provided* that such shares, options, warrants or other equity awards are restricted through the restricted period;

- the entry into, and transactions pursuant to, the share lending agreement;

- issuances of shares of common stock upon conversion of, or in connection with a dividend on, the convertible notes, our outstanding 6.00% convertible senior notes due 2017 (the "existing 2017 convertible notes"), our outstanding 3.25% convertible senior notes due 2016 (the "existing 2016 convertible notes"), shares of our Series A mandatory convertible preferred stock (the "mandatory convertible preferred stock") or the exchangeable shares of MCP Exchangeco Inc. (the "exchangeable shares");

- in the case of any existing warrant or option to purchase, or other equity award for, shares of our common stock that is disclosed in this prospectus supplement, the related prospectus or the registration statement, the issuance by us of shares of common stock upon the exercise or vesting of such warrant, option or equity award, as the case may be;

- issuances of shares of common stock pursuant to the Molycorp, Inc. 2012 Employee Stock Purchase Plan;

- the filing of a registration statement on Form S-8 or other appropriate forms as required by the Securities Act, and any amendments thereto, relating to our common stock or other equity-based securities issuable pursuant to our stock incentive plan;

- the filing of a registration statement on Form S-4 or other appropriate forms as required by the Securities Act, and any amendments to such forms, related to our common stock or other of our equity securities issuable in connection with any merger, acquisition or other business combination, *provided* that three days' advance notice of such filing is provided to Morgan Stanley & Co. LLC;

- any offer or entry into a contract to sell any shares of our common stock, options, warrants or other convertible securities relating to our common stock in connection with any bona fide merger, acquisition, business combination, joint venture or strategic or commercial relationship, to a third party or group of third parties (each an "M&A transaction"), and any public announcement relating to any such offer or entry into a contract, *provided* that three days' advance notice of such announcement is provided to Morgan Stanley & Co. LLC; and

- any issuance of shares of our common stock, options, warrants or other convertible securities relating to our common stock, in connection with any M&A transaction of which Morgan Stanley & Co. LLC has been advised three days in

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advance, *provided* that the recipient of such shares of common stock shall agree to be bound by the restrictions described above until the expiration of the restricted period, and *provided* that the amount of shares of our common stock, options, warrants or other convertible securities relating to our common stock issued in each such M&A transaction does not exceed an amount greater than 15% of our common stock outstanding on the date of such M&A transaction.

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With respect to our directors, officers and certain other holders of our outstanding common stock who agree to the restrictions above, such restrictions do not apply to:

- the exercise of a warrant or an option to purchase, or the settlement of any other equity award for, shares of our common stock (*provided* that any shares of common stock received pursuant to such exercise are subject to the same restrictions as those described above);

- in the case of an option to purchase shares of our common stock expiring during or restricted shares of our common stock vesting during the restricted period, the sale or transfer of shares of our common stock to satisfy any payment or withholding obligations in connection with the exercise of an option to purchase, or other equity award for, shares of our common stock, or in connection with any cashless exercise of a warrant to purchase shares of our common stock;

- the conversion of the convertible notes, the existing convertible notes, shares of the mandatory convertible preferred stock or the exchangeable shares or other equity interests of ours into shares of our common stock;

- transactions relating to shares of our common stock or other securities convertible into or exercisable or exchangeable for common stock acquired in open market transactions after the completion of this offering and the concurrent convertible notes offering (*provided* that no filing under Section 16(a) of the Exchange Act shall be required or shall be voluntarily made in connection with subsequent sales of our common stock or such other securities acquired in such open market transactions);

- transfers of shares of our common stock or any other security convertible into or exercisable or exchangeable for common stock (a) as a bona fide gift or charitable contributions, (b) to any affiliate of such director, officer or other stockholder, (c) to any trust for the direct or indirect benefit of such director, officer or other stockholder or an immediate family member of such director, officer or other stockholder or (d) to any immediate family member of such director, officer or other stockholder (in each case, *provided* that (x) each transferee shall sign and deliver a lock-up letter substantially in the form of the lock-up letter signed by such director, officer or other stockholder and (y) no filing under Section 16(a) of the Exchange Act, reporting a reduction in beneficial ownership of shares of our common stock or such other securities shall be required or shall be voluntarily made during the restricted period);

- transfers of shares of our common stock or any other security convertible into or exercisable or exchangeable for common stock pursuant to the laws of descent or distribution (*provided* that (x) each transferee shall sign and deliver a lock-up letter substantially in the form of the lock-up letter signed by such director, officer or other stockholder and (y) no filing under Section 16(a) of the Exchange Act, reporting a reduction in beneficial ownership of shares of our common stock or such other securities shall be required or shall be voluntarily made during the restricted period); or

- the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of our common stock or any other security convertible into or exercisable or exchangeable for common stock (*provided* that such plan does not provide for the transfer of shares of our common stock or such other securities during the restricted period and no public announcement or filing under the Exchange Act regarding the establishment of such plan shall be required of or voluntarily made by or on behalf of the director of officer or us during the restricted period).

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Conflicts of Interest

All of the proceeds from the sale of the borrowed shares in this offering will be paid to Morgan Stanley & Co. LLC, or an affiliate thereof. As a result, Morgan Stanley & Co. LLC, or an affiliate thereof, will receive more than 5% of the net proceeds of this offering. Thus, Morgan Stanley & Co. LLC has a

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"conflict of interest" as defined in Rule 5121 (Public Offerings of Securities with Conflicts of Interest) of the Financial Industry Regulatory Authority, Inc. Accordingly, this offering is being made in compliance with the requirements of Rule 5121. In accordance with Rule 5121, any underwriter that has a conflict of interest pursuant to Rule 5121 will not make sales to discretionary accounts without the prior written consent of the customer. The appointment of a "qualified independent underwriter" is not required in connection with this offering as a "bona fide public market," as defined in Rule 5121, exists for our common stock.

Selling Restrictions

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Member State"), the underwriters have represented and agreed that with effect from and including the date on which the Prospectus Directive is implemented in that Member State (the Relevant Implementation Date) they have not made and will not make an offer of the shares being offered hereby to the public in that Member State, other than:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(b) to fewer than 100 or, if the Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the underwriters; or

(c) in any other circumstances falling within Article 3 of the Prospectus Directive,

provided that no such offer of shares shall require us or the underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer of the shares to the public" in relation to any shares in any Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the shares to be offered so as to enable an investor to decide to purchase or subscribe the shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Member State), and includes any relevant implementing measure in that Member State, and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

The underwriters have represented and agreed as follows:

(a) they have only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of section 21 of Financial Services and Markets Act 2000 ("FSMA")) received by them in connection with the issue or sale of any shares being offered hereby in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(b) they have complied with, and will comply with all applicable provisions of FSMA with respect to anything done by them in relation to the shares in, from or otherwise involving the United Kingdom.

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Hong Kong

This prospectus supplement has not been approved by or registered with the Securities and Futures Commission of Hong Kong or the Registrar of Companies of Hong Kong. No person may offer or sell in Hong Kong, by means of any document, any shares being offered hereby other than (i) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance, or (ii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer or invitation to the public within the meaning of the Companies Ordinance. No advertisement, invitation or document relating to the shares being offered hereby will be issued or will be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere) which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong except if permitted under the securities laws of Hong Kong, other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance and any rules made thereunder.

Japan

This offering has not been and will not be registered under the Financial Instruments and Exchange Law (Law No. 25 of 1948 of Japan, as amended, or the FIEL). The underwriters have represented and agreed that the shares being offered hereby which they purchase will be purchased by them as principal and that they will not, directly or indirectly, offer or sell any shares in Japan or to, or for the benefit of, any Japanese Person or to others for reoffer or resale, directly or indirectly, in Japan or to, or for the benefit of, any Japanese Person, except pursuant to an exemption from the registration requirements under the FIEL and otherwise in compliance with such law and any other applicable laws, regulations and ministerial guidelines of Japan. For the purposes of this paragraph, "Japanese Person" shall mean any "Person Resident in Japan" (kyojusha) as defined in Section 6, Paragraph 1, Item 5 of the Foreign Exchange and Foreign Trade Law of Japan (Law No. 228 of 1949, as amended), including any corporation or other entity organized under the laws of Japan.

Singapore

This prospectus supplement has not been registered as a prospectus with the Monetary Authority of Singapore under the Securities and Futures Act, Chapter 289 of Singapore, or the SFA. Accordingly, no person may offer or sell the shares being offered hereby or cause such shares to be made the subject of an invitation for subscription or purchase, or circulate or distribute, this prospectus supplement or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of such shares, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the SFA, (ii) to a relevant person pursuant to Section 275(1), or (iii) to any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA, or otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares being offered hereby are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

- a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

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securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

(1) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

(2) where no consideration is or will be given for the transfer;

(3) where the transfer is by operation of law; or

(4) as specified in Section 276(7) of the SFA.

Dubai International Financial Centre

This prospectus supplement relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority ("DFSA"). This prospectus supplement is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus supplement nor taken steps to verify the information set forth herein and has no responsibility for the prospectus supplement. The shares to which this prospectus supplement relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus supplement you should consult an authorized financial advisor.

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LEGAL MATTERS

The validity of the issuance of our securities offered by this prospectus will be passed upon for us by Jones Day. Certain legal matters relating to this offering will be passed on for the underwriters by Davis Polk & Wardwell LLP, New York, New York.

EXPERTS

The consolidated financial statements incorporated in this prospectus by reference to Molycorp, Inc.'s Current Report on Form 8-K dated November 21, 2012 and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Annual Report on Form 10-K of Molycorp, Inc. for the year ended December 31, 2011 have been so incorporated in reliance on the report, which contains an explanatory paragraph on the effectiveness of internal control over financial reporting due to the exclusion of certain elements of the internal control over financial reporting of Molycorp Sillamäe and Molycorp Tolleson (businesses acquired by Molycorp, Inc. during 2011), an explanatory paragraph on Note 3 "Capital Requirements and Liquidity" and a reference to Note 11 "Segment Information" and Note 17 "Subsidiary Guarantor Financial Information" of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Neo Material Technologies Inc. (now Molycorp Canada) as of December 31, 2011, December 31, 2010 and January 1, 2010, and for each of the years in the two-year period ended December 31, 2011, and the consolidated financial statements of Neo Material Technologies Inc. (now Molycorp Canada) as of December 31, 2010 and December 31, 2009 and for each of the years in the two-year period ended December 31, 2010, have been incorporated by reference herein in reliance upon the reports of KPMG LLP, independent chartered accountants, appearing elsewhere herein, and upon the authority of said firm as experts in accounting and auditing.

The information incorporated in this prospectus concerning estimates of our proven and probable REO reserves and non-reserve REO deposits for our Molycorp Mountain Pass facility was derived from the report of SRK Consulting (U.S.), Inc., independent mining consultants, and has been incorporated herein upon the authority of SRK Consulting as experts with respect to the matters covered by such report and in giving such report.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational reporting requirements of the Securities Exchange Act of 1934, or Exchange Act. We file reports, proxy statements and other information with the SEC. Our SEC filings are available over the Internet at the SEC's web site at http://www.sec.gov. You may read and copy any reports, statements and other information filed by us at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call 1-800-SEC-0330 for further information on the Public Reference Room. You may also inspect our SEC reports and other information at our web site at http://www.molycorp.com. We do not intend for information contained in our web site to be part of this prospectus, other than documents that we file with the SEC that are incorporated by reference in this prospectus.

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INFORMATION WE INCORPORATE BY REFERENCE

The SEC allows us to incorporate by reference the information we file with them, which means:

- incorporated documents are considered part of this prospectus;
- we can disclose important information to you by referring you to those documents; and
- information that we file with the SEC after the date of this prospectus will automatically update and supersede the information contained in this prospectus and incorporated filings.

We incorporate by reference the documents listed below that we filed with the SEC under the Exchange Act:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2011;
- our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2012, June 30, 2012 and September 30, 2012;
- our Current Reports on Form 8-K filed on February 2, 2012, February 8, 2012, March 5, 2012, March 9, 2012, March 14, 2012, May 14, 2012 (Film No. 12836519), May 18, 2012, May 30, 2012, June 6, 2012, June 7, 2012, June 11, 2012, June 12, 2012, June 15, 2012, August 7, 2012, August 16, 2012, August 22, 2012, November 23, 2012, December 14, 2012 and December 28, 2012; and
- the description of our common stock contained in the Current Report on Form 8-K/A filed on July 21, 2010, including any subsequently filed amendments and reports updating such description.

Our Current Report on Form 8-K filed on August 16, 2012 updates and supersedes Items 6, 7, 8 and 15 of our Annual Report on Form 10-K for the year ended December 31, 2011. Our Current Report on Form 8-K filed on November 23, 2012 updates and supersedes Items 7 and 8 of our Annual Report on Form 10-K for the year ended December 31, 2011 and Item 1 of our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2012.

We also incorporate by reference each of the documents that we file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus and prior to the termination of the offerings under this prospectus and any prospectus supplement. We will not, however, incorporate by reference in this prospectus any documents or portions thereof that are not deemed "filed" with the SEC, including any information furnished pursuant to Item 2.02 or Item 7.01 of our Current Reports on Form 8-K after the date of this prospectus unless, and except to the extent, specified in such Current Reports.

We will provide you with a copy of any of these filings (other than an exhibit to these filings, unless the exhibit is specifically incorporated by reference into the filing requested) at no cost, if you submit a request to us by writing or telephoning us at the following address and telephone number:

Molycorp, Inc.
5619 Denver Tech Center Parkway
Suite 1000
Greenwood Village, Colorado 80111
Telephone Number: (303) 843-8040

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GLOSSARY OF SELECTED MINING TERMS

The following is a glossary of selected mining terms used in this prospectus supplement that may be technical in nature:

Term	Definition
Bastnasite	Bastnasite is a mixed-lanthanide fluoro-carbonate mineral (Ln F CO3) that currently provides the bulk of the world's supply of the light REEs. Bastnasite and monazite are the two most common sources of cerium and other REEs. Bastnasite is found in carbonatites, igneous carbonate rocks that melt at unusually low temperatures.
Bonded magnet	Bonded neodymium-magnets are prepared by melt spinning a thin ribbon of the Nd-Fe-B alloy. The ribbon contains randomly oriented Nd2Fe14B nano-scale grains. This ribbon is then pulverized into particles, mixed with a polymer and either compression or injection molded into bonded magnets. Bonded magnets offer less flux than sintered magnets, but can be net-shape formed into intricately shaped parts and do not suffer significant eddy current losses.
Cerium	Cerium (Ce) is a soft, silvery, ductile metal which easily oxidizes in air. Cerium is the most abundant of the REEs, and is found in a number of minerals, including monazite and bastnasite. Cerium has two relatively stable oxidation states, enabling both the storage of oxygen and its widespread use in catalytic converters. Cerium is also widely used in glass polish.
Concentrate	A mineral processing product that generally describes the material that is produced after crushing and grinding ore, effecting significant separation of gangue (waste) minerals from the desired metal and/or metal minerals, and discarding the waste minerals. The resulting "concentrate" of minerals typically has an order of magnitude higher content of minerals than the beginning ore material.
Didymium	Didymium is a natural and unseparated combination of neodymium and praseodymium, which is approximately 75% neodymium and 25% praseodymium, depending on the ore.
Dysprosium	A few percent of Dysprosium (Dy) is often added to high power neodymium iron boron magnets to increase their resistance to demagnetization. A minor use of dysprosium is in the magnetostrictive alloy, based on DyTbFe called terfenol-D.
Europium	Europium (Eu) is desirable due to its photon emission. Excitation of the europium atom, by absorption of electrons or by UV radiation, results in changes in energy levels that create a visible emission. Almost all practical uses of europium utilize this luminescent behavior.
Gallium	Elemental gallium is not found in nature, but it is easily obtained by smelting. Very pure gallium metal has a brilliant silvery color and its solid metal fractures conchoidally like glass. Almost all gallium is used for microelectronics.
Grade	The average REE content, as determined by assay of a metric ton of ore.
Indium	A rare, very soft, malleable and easily fusible post-transition metal that is chemically similar to gallium and thallium, and shows intermediate properties between these two. Indium's current primary application is to form transparent electrodes from indium tin oxide (ITO) in liquid crystal displays and touchscreens, and this use largely determines its global mining production. It is widely used in thin-films to form lubricated layers. It is also used for making particularly low melting point alloys, and is a component in some lead-free solders.

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Lanthanum	Lanthanum (La) is the first member of the Lanthanide series. Lanthanum is a strategically important rare earth element due to its use in fluid bed cracking catalysts, FCCs, which are used in the production of transportation and aircraft fuel. Lanthanum is also used in fuel cells and batteries.
Monazite	Monazite is a reddish-brown phosphate mineral. Monazite minerals are typically accompanied by concentrations of uranium and thorium. This has historically limited the processing of monazite, however this mineral is becoming more attractive because it typically has elevated concentrations of mid-to heavy rare earths.
Niobium	Niobium is a rare, soft, grey, ductile transition metal found in the minerals pyrochlore, the main commercial source for niobium, and columbite. Niobium is used mostly in alloys, the largest part in special steel such as that used in gas pipelines. Although alloys contain only a maximum of 0.1%, that small percentage of niobium improves the strength of the steel. The temperature stability of niobium-containing superalloys is important for its use in jet and rocket engines. Niobium is used in various superconducting materials.
Neodymium	Neodymium (Nd) has two major uses. It is key constituent of NdFeB permanent magnets and it is an additive to capacitor dielectrics. NdFeB magnets maximize the power/weight ratio, and are found in a large variety of motors, generators, sensors and hard disk drives. Capacitors containing neodymium are found in cellular telephones, computers and nearly all other electronic devices. A minor application of neodymium is in lasers.
Ore	That part of a mineral deposit which could be economically and legally extracted or produced at the time of reserve determination.
Praseodymium	Praseodymium (Pr) comprises about 4% of the lanthanide content of bastnasite and has a few specific applications, based mainly on its optical properties. It is a common coloring pigment, and is used in photographic filters, airport signal lenses, and welder's glasses. Because it chemically and magnetically is so similar to its neighbors neodymium and lanthanum, it is typically found in small amounts in applications where neodymium and lanthanum are popular, such as NdFeB magnets and catalysts. These latter applications are actually the largest uses for praseodymium because the magnet and catalyst markets are so large. Thus praseodymium plays an important role, in extending the availability of the more popular neodymium and lanthanum.
Probable reserves	Reserves for which quantity and grade and/or quality are computed from information similar to that used for proven reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven reserves, is high enough to assume continuity between points of observation.
Proven reserves	Reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade and/or quality are computed from the results of detailed sampling; and (b) the sites for inspection, sampling and measurement are spaced so closely and the geologic character is so well defined that size, shape, depth and mineral content of reserves are well established.
Recovery	The percentage of contained metal actually extracted from ore in the course of processing such ore.

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Reserves	That part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination. Same definition as 'ore'
Rhenium	It is a silvery-white, heavy, third-row transition metal. With an estimated average concentration of 1 part per billion (ppb), rhenium is one of the rarest elements in the Earth's crust. The free element has the third-highest melting point and highest boiling point of any element. Rhenium resembles manganese chemically and is obtained as a by-product of molybdenum and copper ore's extraction and refinement. Nickel-based superalloys of rhenium are used in the combustion chambers, turbine blades, and exhaust nozzles of jet engines. These alloys contain up to 6% rhenium, making jet engine construction the largest single use for the element, with the chemical industry's catalytic uses being next-most important.
Samarium	Samarium (Sm) is predominantly used to produce samarium cobalt magnets. Although these magnets are slightly less powerful than NdFeB magnets at room temperature, samarium cobalt magnets can be used over a wider range of temperatures and are less susceptible to corrosion.
Sintered magnet	Sintered neodymium-magnets are prepared by the raw materials being melted in a furnace, cast into a mold and cooled to form ingots. The ingots are pulverized and milled to tiny particles. This undergoes a process of liquid-phase sintering whereby the powder is magnetically aligned into dense blocks which are then heat-treated, cut to shape, surface treated and magnetized.
Tantalum	Tantalum is a rare, hard, blue-gray, lustrous transition metal that is highly corrosion resistant. It is part of the refractory metals group, which are widely used as minor component in alloys. The chemical inertness of tantalum makes it a valuable substance for laboratory equipment and a substitute for platinum, but its main use today is in tantalum capacitors in electronic equipment such as mobile phones, DVD players, video game systems and computers.
Terbium	Terbium (Tb) is used primarily as a phosphor, either in fluorescent lamps or x-ray screens. It can replace dysprosium in NdFeB magnets but usually does not because of its cost. A minor use of terbium is in the magnetostrictive alloy, based on DyTbFe called terfenol-D.
Yttrium	Yttrium (Y), although not a lanthanide series element, is often considered to be a rare earth element and its behavior is similar to heavy rare earth elements. It is predominantly utilized in lighting applications and ceramics. Other uses include resonators, lasers, microwave communication devices and other electronic devices.
Zirconium oxide	A white amorphous powder that is insoluble in water and highly refractory, used as a pigment for paints, a catalyst, and an abrasive.

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PROSPECTUS

Molycorp, Inc.

Common Stock
Preferred Stock
Depositary Shares
Warrants
Subscription Rights
Senior Debt Securities
Subordinated Debt Securities
Units

We may offer and sell from time to time our common stock, preferred stock, depositary shares, warrants, subscription rights, senior debt securities and subordinated debt securities, as well as units that include any of these securities.

We will provide the specific terms of the securities to be offered in one or more supplements to this prospectus. You should read this prospectus and the applicable prospectus supplement carefully before you invest in our securities. This prospectus may not be used to offer and sell our securities unless accompanied by a prospectus supplement describing the method and terms of the offering of those offered securities.

We may sell the securities directly or to or through underwriters or dealers, and also to other purchasers or through agents. The names of any underwriters or agents that are included in a sale of securities to you, and any applicable commissions or discounts, will be stated in an accompanying prospectus supplement. In addition, the underwriters, if any, may over-allot a portion of the securities.

Our common stock is listed on the New York Stock Exchange, or NYSE, under the symbol "MCP." Our 5.50% Series A Mandatory Convertible Preferred Stock is listed on the NYSE under the symbol "MCP-PA." None of the other securities that we may offer under this prospectus are currently publicly traded.

Investing in any of our securities involves risk. Please read carefully the section entitled " ***Risk Factors*** **" on page 5 of this prospectus and the information included and incorporated by reference in this prospectus.**

Neither the Securities and Exchange Commission, nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is August 16, 2012

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the SEC using a "shelf" registration process. As permitted under the rules of the SEC, this prospectus incorporates important business information about Molycorp, Inc. that is contained in documents that we file with the SEC, but that are not included in or delivered with this prospectus. You may obtain copies of these documents, without charge, from the website maintained by the SEC at www.sec.gov, as well as other sources. See "Where You Can Find More Information."

We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus, any prospectus supplement or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should not assume that the information contained in this prospectus, any prospectus supplement, any document incorporated by reference or any free writing prospectus is accurate as of any date, other than the date mentioned on the cover page of these documents. We are not making offers to sell the securities described in this prospectus in any jurisdiction in which an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

References in this prospectus to the terms "we," "us," "our," "the Company" or "Molycorp" or other similar terms mean Molycorp, Inc. and its consolidated subsidiaries, unless we state otherwise or the context indicates otherwise.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference, contains forward-looking statements that represent our beliefs, projections and predictions about future events or our future performance. You can identify forward-looking statements by terminology such as "may," "will," "would," "could," "should," "expect," "intend," "plan," "anticipate," "believe," "estimate," "predict," "potential," "continue" or the negative or plural of these terms or other similar expressions or phrases. These forward-looking statements are necessarily subjective and involve known and unknown risks, uncertainties and other important factors that could cause our actual results, performance or achievements or industry results to differ materially from any future results, performance or achievement described in or implied by such statements.

Risk factors and uncertainties that may cause actual results to differ materially from expected results include, among others:

- the amount of additional capital we need to secure to implement our business plans, and our ability to successfully secure any such capital;
- our ability to complete our planned capital projects, such as our modernization and expansion efforts, including achieving an annual production capacity of 19,050 mt at our Mountain Pass, California rare earth mine and processing facility, or the Molycorp Mountain Pass facility, which we refer to as "Project Phoenix Phase 1," and our second phase capacity expansion plan, which we refer to as "Project Phoenix Phase 2," and reach full planned production rates for rare earth oxides, or REO, and other planned downstream products, in each case within the projected time frame;
- the success of our cost mitigation efforts in connection with Project Phoenix, which if unsuccessful, might cause our costs to exceed budget;
- the final costs of our planned capital projects, such as Project Phoenix Phase 1 and Project Phoenix Phase 2, which may differ from estimated costs;

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our ability to successfully integrate Molycorp Minerals Canada ULC (formerly Neo Material Technologies Inc. (which we refer to as "Molycorp Canada")), with our operations;

our ability to achieve fully the strategic and financial objectives related to the acquisition of Molycorp Canada, including the acquisition's impact on our financial condition and results of operations;

unexpected costs or liabilities that may arise from the acquisition, ownership or operation of Molycorp Canada;

the rate of exchange of the U.S. dollar to the Canadian dollar, the Japanese yen, and the Chinese Renminbi;

new products pricing and the competitive environment for these new products;

unexpected actions of domestic and foreign governments;

various events which could disrupt operations, including natural events and other risks;

uncertainties associated with our reserve estimates and non-reserve deposit information, including estimated mine life and annual production;

uncertainties related to feasibility studies that provide estimates of expected or anticipated costs, expenditures and economic returns, REO prices, production costs and other expenses for operations, which are subject to fluctuation;

uncertainties regarding global supply and demand for rare earths materials;

uncertainties regarding the results of our exploratory drilling programs;

our ability to enter into additional definitive agreements with our customers and our ability to maintain customer relationships;

our sintered neodymium-iron-boron, or NdFeB, rare earth magnet joint venture's ability to successfully manufacture magnets within its expected timeframe;

our ability to successfully integrate other acquired businesses;

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- our ability to maintain appropriate relations with unions and employees;
- our ability to successfully implement our "mine-to-magnets" strategy;
- environmental laws, regulations and permits affecting our business, directly and indirectly, including, among others, those relating to mine reclamation and restoration, climate change, emissions to the air and water and human exposure to hazardous substances used, released or disposed of by us; and
- uncertainties associated with unanticipated geological conditions related to mining.

See "Risk Factors" for a more complete discussion of these risks and uncertainties and for other risks and uncertainties. Any forward-looking statement you read in this prospectus reflects our current views with respect to future events and is subject to these and other risks, uncertainties and assumptions relating to our operations, operating results, growth strategy and liquidity. You should not place undue reliance on these forward-looking statements because such statements speak only as to the date when made. We assume no obligation to publicly update or revise these forward-looking statements for any reason, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future, except as otherwise required by applicable law.

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OUR BUSINESS

We are one of the world's leading rare earth products and rare metals companies that combines a world-class rare earth resource at Mountain Pass, California, with world-leading ultra-high-purity rare earth and rare metal materials processing capabilities. We are vertically integrated across the global rare earth mine-to-magnetics supply chain and we currently produce custom engineered materials from 15 different rare earths, with purity levels of up to 5N (99.999%), and from five other metals (niobium, tantalum, gallium, indium and rhenium) at purity levels of up to 8N (99.999999%).

Rare earth products are critical inputs in many existing and emerging applications including: clean energy technologies, such as hybrid and electric vehicles and wind power turbines; multiple high-tech uses, including mobile devices, fiber optics, lasers and hard disk drives; critical defense applications, such as guidance and control systems and global positioning systems; and advanced water treatment technology for use in industrial, military and outdoor recreation applications. Global demand for rare earth elements, or REEs, is projected by industry analysts to steadily increase both due to continuing growth in existing applications and increased innovation and development of new end uses. We have made significant investments, and expect to continue to invest, in developing technologically advanced applications and proprietary applications for individual REEs.

The foundation for our "mine-to-magnets" strategy is our Molycorp Mountain Pass facility. Our Molycorp Mountain Pass facility is the largest, most fully developed rare earth mine outside of China and has been producing rare earth products for approximately 60 years. Upon completion of Project Phoenix Phase 1, which we anticipate to occur in the fourth quarter of 2012, we expect our Molycorp Mountain Pass facility to have production cash costs lower than those publicly reported for China by government officials and those reported for other non-Chinese rare earth projects. We are targeting a full planned production rate of approximately 19,050 mt of REO per year by the fourth quarter of 2012, an annual production capacity of 40,000 mt of REO by the end of 2012 and, if customer demand and end-market conditions warrant, a full planned production rate of 40,000 mt of REO per year as early as mid-2013 is possible.

We also own several of the leading rare earth processing facilities in the world. Our Molycorp Silmet facility, located in Sillamäe, Estonia, is one of the largest REO and rare metals producers in Europe. Our Molycorp Metals & Alloys facility, located in Tolleson, Arizona, is the only producer of neodymium and samarium magnet alloy and other specialty alloy products in the United States. We also have created a joint venture with Daido Steel Co., Ltd. and Mitsubishi Corporation in the form of a private company, Intermetallics Japan, to manufacture sintered NdFeB permanent rare earth magnets.

As a result of the Molycorp Canada acquisition in June 2012, we became a leading global producer, processor and developer of NdFeB magnetic powders, or Neo Powders, rare earths and zirconium based engineered materials and applications and other rare metals and their compounds. These innovative products are essential in many of today's high-technology products.

Neo Powders are used in the production of high performance, bonded NdFeB permanent magnets, which are found in micro motors, precision motors, sensors and other applications requiring high levels of magnetic strength, flexibility, small size and reduced weight. Molycorp Canada is the only legal supplier of Neo Powders for bonded magnets manufactured or sold in the United States.

Our Molycorp Canada segment also manufactures a product line of oxides and salts of REEs, including cerium, lanthanum, neodymium, yttrium and yttrium europium coprecipitates, dysprosium and terbium, among others, and zirconium based engineered materials and salts, as well as a line of mixed rare earth/zirconium oxides. Rare earths and zirconium applications include catalytic converters, computers, television display panels, optical lenses, mobile phones and electronic chips. Additionally, Molycorp Canada produces, reclaims, refines and markets high value niche metals and their compounds

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including gallium, indium and rhenium used in wireless, light emitting diode flat panel display, turbine, solar and catalyst applications.

Our Molycorp Canada segment operates joint ventures and majority owned manufacturing facilities in Jiangsu Province, China; Shandong Province, China; Stade, Germany; Sagard, Germany; and Quapaw, Oklahoma. Molycorp Canada also operates wholly owned manufacturing facilities in Peterborough, Ontario; Napanee, Ontario; Blanding, Utah; the Hyeongok Industrial Zone in South Korea; Tianjin, China; and Korat, Thailand. Additionally, Molycorp Canada conducts ongoing research and product development through laboratories in Singapore and Abingdon, United Kingdom.

Our combined workforce of approximately 2,650 employees includes scientists, engineers, chemists, technologists and highly skilled workers in 27 locations across 11 countries.

Our principal executive offices are located at: 5619 Denver Tech Center Parkway, Suite 1000, Greenwood Village, Colorado 80111, our telephone number is (303) 843-8040 and our web site is http://www.molycorp.com. We do not intend for information contained in our web site to be part of this prospectus, other than documents that we file with the SEC that are incorporated by reference in this prospectus.

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RISK FACTORS

Investing in our securities involves risk. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading "Risk Factors" in our most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q, which are incorporated herein by reference and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future and by any prospectus supplement. The risks and uncertainties we have described are not the only risks we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. If any of these risks actually occurs, our business, results of operations and financial condition could suffer. In that case, the trading price of our securities could decline, and you could lose part of your investment.

USE OF PROCEEDS

Unless otherwise specified in any prospectus supplement, we intend to use the net proceeds from the sale of our securities offered under this prospectus for working capital and general corporate purposes including, but not limited to, capital expenditures, working capital, acquisitions and other business opportunities.

Pending any specific application, we may initially invest funds in short-term marketable securities or apply them to the reduction of short-term indebtedness.

RATIO OF EARNINGS TO FIXED CHARGES AND RATIO OF EARNINGS TO COMBINED FIXED CHARGES AND PREFERRED SHARE DIVIDENDS

	June 12, 2008 (Inception) through December 31, 2008 2008	Year Ended December 31, 2009	2010	2011	Six Months Ended June 30, 2012
Ratio of earnings to fixed charges	–	–	–	17.1x	–
Ratios of earnings to combined fixed charges and preferred stock dividends	–	–	–	5.9x	–

Fixed charges are equal to interest expense, plus the portion of rent expense estimated to represent interest. Total earnings for the period from June 12, 2008 (Inception) through December 31, 2008, for the years ended December 31, 2009 and December 31, 2010 and for the six months ended June 30, 2012 were insufficient to cover fixed charges by $14.1 million, $28.6 million, $50.8 million and $99.4 million, respectively. Total earnings for the period from June 12, 2008 (Inception) through December 31, 2008, for the years ended December 31, 2009 and December 31, 2010 and for the six months ended June 30, 2012 were insufficient to cover fixed charges, included preferred stock dividends, by $14.1 million, $28.6 million, $50.8 million and $99.4 million, respectively. The insufficient earnings were primarily due to our net operating losses for each of the periods presented. Accordingly, such ratios are not presented.

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DESCRIPTION OF CAPITAL STOCK

General

The following is a summary of the rights of our capital stock, certain provisions of our certificate of incorporation and our bylaws, and certain provisions of applicable law. For more detailed information, please see our certificate of incorporation and bylaws, which are filed as exhibits to the registration statement of which this prospectus is a part.

Authorized Capitalization

Our authorized capital stock consists of shares, with a par value of $0.001 per share, of which:

350,000,000 shares are designated as common stock; and

5,000,000 shares are designated as preferred stock.

Common Stock

Each outstanding share of common stock is entitled to one vote on all matters submitted to a vote of stockholders. Pursuant to our certificate of incorporation, holders of our common stock do not have the right to cumulate votes in elections of directors. Subject to preferences that may be applicable to any outstanding shares of preferred stock, holders of our common stock are entitled to receive ratably such dividends as may be declared from time to time by our board of directors out of legally available funds. In the event of our liquidation, dissolution or winding up, holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities and any amounts due to the holders of preferred stock. Holders of our common stock have no preemptive, conversion or subscription rights. No redemption or sinking fund provisions apply to our common stock. All of our outstanding shares of common stock are fully paid and non-assessable.

Preferred Stock

Our certificate of incorporation authorizes our board of directors, without stockholder approval, to designate and issue up to 5,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions granted to or imposed upon each such series of preferred stock, including voting rights, dividend rights, conversion rights, terms of redemption, liquidation preference, sinking fund terms, subscription rights and the number of shares constituting any series or the designation of a series. Our board of directors can issue, without stockholder approval, preferred stock with voting and conversion rights that could adversely affect the voting power of the holders of common stock and reduce the likelihood that such holders will receive dividend payments or payments upon liquidation. Such issuance could have the effect of decreasing the market price of the common stock. The issuance of preferred stock or even the ability to issue preferred stock could also have the effect of delaying, deterring or preventing a change of control or other corporate action.

As of June 30, 2012, we had outstanding 2,070,000 shares of preferred stock designated as the Series A Mandatory Convertible Preferred Stock, and one share of preferred stock designated as the Special Voting Preferred Stock, which is held by the trustee of the exchangeable shares, which we refer to as the "Exchangeable Shares," issued by MCP Exchangeco Inc., a Canadian subsidiary of ours. The Exchangeable Shares are exchangeable for shares of our common stock on a one for one basis.

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Series A Mandatory Convertible Preferred Stock

Ranking

The Series A Mandatory Convertible Preferred Stock, with respect to dividend rights and rights upon our liquidation, winding-up or dissolution, ranks:

senior to (i) our common stock and (ii) each other class of capital stock and series of preferred stock established after the first original issue date of the Series A Mandatory Convertible Preferred Stock (which we refer to as the "initial issue date") the terms of which do not expressly provide that such class or series ranks senior to or on a parity with the Series A Mandatory Convertible Preferred Stock as to dividend rights and rights upon our liquidation, winding-up or dissolution (which we refer to collectively as "junior stock");

on parity with any class of capital stock or series of preferred stock established after the initial issue date the terms of which expressly provide that such class or series will rank on a parity with the Series A Mandatory Convertible Preferred Stock as to dividend rights and rights upon our liquidation, winding-up or dissolution (which we refer to collectively as "parity stock");

junior to each class of capital stock or series of preferred stock established after the initial issue date the terms of which expressly provide that such class or series will rank senior to the Series A Mandatory Convertible Preferred Stock as to dividend rights and rights upon our liquidation, winding-up or dissolution (which we refer to collectively as "senior stock"); and

junior to our existing and future indebtedness.

In addition, the Series A Mandatory Convertible Preferred Stock, with respect to dividend rights and rights upon our liquidation, winding-up or dissolution, is structurally subordinated to existing and future indebtedness of our subsidiaries as well as the capital stock of our subsidiaries held by third parties.

Dividends

Subject to the rights of holders of any class of capital stock ranking senior to the Series A Mandatory Convertible Preferred Stock with respect to dividends, holders of shares of Series A Mandatory Convertible Preferred Stock will receive, when, as and if declared by our board of directors, out of funds legally available for payment, cumulative dividends at the rate per annum of 5.50% on the liquidation preference of $100.00 per share of Series A Mandatory Convertible Preferred Stock (equivalent to $5.50 per annum per share), payable in cash, by delivery of shares of our common stock or through any combination of cash and shares of our common stock, as determined by us in our sole discretion (subject to certain limitations). Any shares delivered in the payment of dividends will be valued for such purpose at the average volume weighted average price per share of our common stock over the five consecutive trading day period ending on the second trading day immediately preceding the applicable dividend payment date, or the "five day average price," multiplied by 97%. Declared dividends on the Series A Mandatory Convertible Preferred Stock will be payable quarterly on March 1, June 1, September 1 and December 1 of each year to and including the mandatory conversion date (as defined below), commencing June 1, 2011 (each of which we refer to as a "dividend payment date"), at such annual rate, and dividends shall accumulate from the most recent date as to which dividends shall have been paid or, if no dividends have been paid, from the initial issue date of the Series A Mandatory Convertible Preferred Stock, whether or not in any dividend period or periods there have been funds legally available for the payment of such dividends.

Declared dividends will be payable on the relevant dividend payment date to holders of record as they appear on our stock register at 5:00 p.m., New York City time, on the immediately preceding February 15, May 15, August 15 and November 15 (each, a "record date"), whether or not such holders convert their shares, or such shares are automatically converted, after a record date and on or prior to the immediately succeeding dividend payment date. These record dates will apply regardless of whether

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a particular record date is a business day. A "business day" means any day other than a Saturday or Sunday or other day on which commercial banks in New York City are authorized or required by law or executive order to close. If a dividend payment date is not a business day, payment will be made on the next succeeding business day, without any interest or other payment in lieu of interest accruing with respect to this delay.

So long as any shares of our Series A Mandatory Convertible Preferred Stock remain outstanding, no dividend or distribution may be declared or paid on our common stock unless all accumulated and unpaid dividends have been paid on our Series A Mandatory Convertible Preferred Stock, subject to certain exceptions, such as dividends paid on our common stock in shares of our common stock.

Our ability to declare and pay cash dividends and make other distributions with respect to our capital stock, including the Series A Mandatory Convertible Preferred Stock, may be limited by the terms of any existing and future indebtedness. In addition, our ability to declare and pay dividends may be limited by applicable Delaware law.

Redemption

The Series A Mandatory Convertible Preferred Stock is not redeemable.

Liquidation Preference

In the event of our voluntary or involuntary liquidation, winding-up or dissolution, each holder of Series A Mandatory Convertible Preferred Stock will receive a liquidation preference in the amount of $100.00 per share of the Series A Mandatory Convertible Preferred Stock (the "liquidation preference"), plus an amount equal to accumulated and unpaid dividends on the shares to (but excluding) the date fixed for liquidation, winding-up or dissolution to be paid out of our assets available for distribution to our stockholders, after satisfaction of liabilities to our creditors and holders of any senior stock and before any payment or distribution is made to holders of junior stock (including our common stock). If, upon our voluntary or involuntary liquidation, winding-up or dissolution, the amounts payable with respect to the liquidation preference plus an amount equal to accumulated and unpaid dividends of the Series A Mandatory Convertible Preferred Stock and all parity stock are not paid in full, the holders of the Series A Mandatory Convertible Preferred Stock and any parity stock will share equally and ratably in any distribution of our assets in proportion to the respective liquidation preferences and amounts equal to accumulated and unpaid dividends to which they are entitled. After payment of the full amount of the liquidation preference and an amount equal to accumulated and unpaid dividends to which they are entitled, the holders of the Series A Mandatory Convertible Preferred Stock will have no right or claim to any of our remaining assets.

Voting Rights

The holders of the Series A Mandatory Convertible Preferred Stock do not have voting rights other than those described below, except as specifically required by Delaware law.

Whenever dividends on any shares of Series A Mandatory Convertible Preferred Stock have not been declared and paid for the equivalent of six or more dividend periods, whether or not for consecutive dividend periods, the holders of such shares of Series A Mandatory Convertible Preferred Stock, voting together as a single class with holders of any and all other series of parity stock with similar voting rights then outstanding, will be entitled at our next special or annual meeting of stockholders to vote for the election of a total of two additional members of our board of directors, subject to certain limitations.

So long as any shares of Series A Mandatory Convertible Preferred Stock remain outstanding, we will not, without the affirmative vote or consent of the holders of at least two-thirds of the outstanding shares of Series A Mandatory Convertible Preferred Stock and all other series of voting preferred stock

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entitled to vote thereon, voting together as a single class, given in person or by proxy, either in writing or at a meeting:

amend or alter the provisions of our certificate of incorporation or the certificate of designations for the shares of Series A Mandatory Convertible Preferred Stock so as to authorize or create, or increase the authorized amount of, any specific class or series of stock ranking senior to the Series A Mandatory Convertible Preferred Stock with respect to payment of dividends or the distribution of our assets upon our liquidation, dissolution or winding up; or

amend, alter or repeal the provisions of our certificate of incorporation or the certificate of designations for the shares of Series A Mandatory Convertible Preferred Stock so as to adversely affect the special rights, preferences, privileges or voting powers of the shares of Series A Mandatory Convertible Preferred Stock; or

consummate a binding share exchange or reclassification involving the shares of Series A Mandatory Convertible Preferred Stock or a merger or consolidation of us with another entity, unless in each case: (i) shares of Series A Mandatory Convertible Preferred Stock remain outstanding and are not amended in any respect or, in the case of any such merger or consolidation with respect to which we are not the surviving or resulting entity, are converted into or exchanged for preference securities of the surviving or resulting entity or its ultimate parent; and (ii) such shares of Series A Mandatory Convertible Preferred Stock remaining outstanding or such preference securities, as the case may be, have such rights, preferences, privileges and voting powers, taken as a whole, as are not materially less favorable to the holders thereof than the rights, preferences, privileges and voting powers of the Series A Mandatory Convertible Preferred Stock immediately prior to such consummation, taken as a whole.

Mandatory Conversion

Each share of the Series A Mandatory Convertible Preferred Stock, unless previously converted, will automatically convert on March 1, 2014 (the "mandatory conversion date"), into a number of shares of common stock equal to the conversion rate described below. If we declare a dividend for the dividend period ending on the mandatory conversion date, we will pay such dividend to the holders of record on the applicable record date, as described above under "− Dividends." If on or prior to the record date immediately preceding the mandatory conversion date we have not declared all or any portion of the accumulated and unpaid dividends on the Series A Mandatory Convertible Preferred Stock, the conversion rate will be adjusted so that holders receive an additional number of shares of common stock equal to the amount of accumulated and unpaid dividends that have not been declared (the "additional conversion amount") divided by the greater of the floor price and 97% of the five day average price. To the extent that the additional conversion amount exceeds the product of the number of additional shares and 97% of the five-day average price, we will, if we are legally able to do so, declare and pay such excess amount in cash pro rata to the holders of the Series A Mandatory Convertible Preferred Stock.

The conversion rate, which is the number of shares of common stock issuable upon conversion of each share of Series A Mandatory Convertible Preferred Stock on the mandatory conversion date, will, subject to adjustment as described in the section of this prospectus entitled "− Anti-dilution Adjustments" below and the preceding paragraph, be as follows:

if the applicable market value of our common stock is greater than $60.00, which we call the "threshold appreciation price," then the conversion rate will be 1.6667 shares of common stock per share of Series A Mandatory Convertible Preferred Stock (the "minimum conversion rate"), which is equal to $100 divided by the threshold appreciation price;

if the applicable market value of our common stock is less than or equal to the threshold appreciation price but equal to or greater than $50.00 (the "initial price"), then the conversion

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rate will be equal to $100 divided by the applicable market value of our common stock, which will be between 1.6667 and 2.0000 shares of common stock per share of Series A Mandatory Convertible Preferred Stock; or

if the applicable market value of our common stock is less than the initial price, then the conversion rate will be 2.0000 shares of common stock per share of Series A Mandatory Convertible Preferred Stock (the "maximum conversion rate"), which is equal to $100 divided by the initial price.

"Applicable market value" means the average volume-weighted average price per share of our common stock over the 20 consecutive trading day period ending on, and including, the third trading day immediately preceding the mandatory conversion date.

Conversion at the Option of the Holder

Holders of the Series A Mandatory Convertible Preferred Stock have the right to convert their shares of Series A Mandatory Convertible Preferred Stock, in whole or in part (but in no event less than one share of Series A Mandatory Convertible Preferred Stock), at any time prior to the mandatory conversion date, into shares of our common stock at the minimum conversion rate of 1.6667 shares of common stock per share of Series A Mandatory Convertible Preferred Stock, subject to certain anti-dilution and other adjustments.

Conversion at the Option of the Holder upon Fundamental Change; Fundamental Change Dividend Make-whole Amount

If certain fundamental changes occur, on or prior to the mandatory conversion date, holders of the Series A Mandatory Convertible Preferred Stock will have the right to: (i) convert their shares of Series A Mandatory Convertible Preferred Stock, in whole or in part (but in no event less than one share of Series A Mandatory Convertible Preferred Stock), into shares of common stock at the fundamental change conversion rate, which will be based on the effective date of the fundamental change and the price paid (or deemed paid) per share of our common stock in the fundamental change; (ii) with respect to such converted shares, receive an amount equal to the present value, calculated using a discount rate of 5.50% per annum, of all dividend payments on such shares for all the remaining dividend periods (excluding any accumulated and unpaid dividends as of the effective date of the fundamental change) from such effective date to but excluding the mandatory conversion date; and (iii) with respect to such converted shares receive the amount of any accumulated and unpaid dividends as of the effective date, subject to certain exceptions.

Anti-Dilution Adjustments

The formula for determining the conversion rate on the mandatory conversion date and the number of shares of our common stock to be delivered upon an early conversion event may be adjusted if certain events occur, including if:

We issue common stock to all or substantially all holders of our common stock as a dividend or other distribution.

We issue to all or substantially all holders of our common stock rights or warrants (other than rights or warrants issued pursuant to a dividend reinvestment plan or share purchase plan or other similar plans) entitling them, for a period of up to 45 calendar days from the date of issuance of such rights or warrants, to subscribe for or purchase our shares of common stock at less than the current market price of our common stock.

We subdivide or combine our common stock.

We distribute to all or substantially all holders of our common stock evidences of our indebtedness, shares of capital stock, securities, rights to acquire our capital stock, cash or other

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assets, excluding any dividend, distribution, rights or warrants referred to in the bullets above and any dividend, distribution or spin-off referred to in the bullets below.

We make a distribution consisting exclusively of cash to all or substantially all holders of our common stock, subject to limited exceptions.

We or any of our subsidiaries successfully complete a tender or exchange offer pursuant to a Schedule TO or registration statement on Form S-4 for our common stock (excluding any securities convertible or exchangeable for our common stock), where the cash and the value of any other consideration included in the payment per share of our common stock exceeds the current market price of our common stock.

Special Voting Preferred Stock

The Special Voting Preferred Stock entitles the trustee of the Exchangeable Shares to vote on matters in which holders of our common stock are entitled to vote. The Special Voting Preferred Stock is entitled to a number of votes equal to the number of Exchangeable Shares outstanding on the record date for determining holders of our common stock entitled to vote and for which the trustee has received voting instructions from the holders of such Exchangeable Shares.

The Special Voting Preferred Stock is not entitled to receive any dividends or other distributions or assets, nor is the Special Voting Preferred Stock convertible into, or exchangeable for, shares of any other series or class of our capital stock.

Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaw Provisions

Our certificate of incorporation and bylaws contain several provisions that may make it more difficult to acquire us by means of a tender offer, open market purchase, proxy fight or otherwise. These provisions and certain provisions of Delaware law are expected to discourage coercive takeover practices and inadequate takeover bids.

These provisions of our certificate of incorporation and bylaws are designed to encourage persons seeking to acquire control of us to negotiate with our board of directors. We believe that, as a general rule, our interests and the interests of our stockholders would be served best if any change in control results from negotiations with our board of directors based upon careful consideration of the proposed terms, such as the price to be paid to stockholders, the form of consideration to be paid and the anticipated tax effects of the transaction.

Our certificate of incorporation and bylaws provisions could, however, have the effect of delaying, deferring or discouraging a prospective acquiror from making a tender offer for our shares or otherwise attempting to obtain control of us. To the extent that these provisions discourage takeover attempts, they could deprive stockholders of opportunities to realize takeover premiums for their shares. Moreover, these provisions could discourage accumulations of large blocks of common stock, thus depriving stockholders of any advantages which large accumulations of stock might provide.

Set forth below is a summary of the relevant provisions of our certificate of incorporation and bylaws and certain applicable sections of the General Corporation Law of the State of Delaware. For additional information we refer you to the provisions of our certificate of incorporation, our bylaws and the sections of the General Corporation Law of the State of Delaware.

Delaware Anti-Takeover Statute

We are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware regulating corporate takeovers. In general, Section 203, subject to certain exceptions, prohibits a publicly-held Delaware corporation from engaging in any business combination with any

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interested stockholder for a period of three years following the date that such person or entity became an interested stockholder, unless:

- prior to such date, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding specified shares; or

- at or subsequent to such date of the transaction that resulted in a person or entity becoming an interested stockholder, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least $66^2/3$% of the outstanding voting stock that is not owned by the interested stockholder.

The application of Section 203 may limit the ability of stockholders to approve a transaction that they may deem to be in their best interests. In addition, Section 203 makes it more difficult for an interested stockholder to effect various business combinations with a corporation for a three-year period, although the stockholders may, by adopting an amendment to our certificate of incorporation or bylaws, elect not to be governed by this section, effective 12 months after adoption.

In general, Section 203 defines "business combination" as:

- any merger or consolidation involving the corporation and the interested stockholder;

- any sale, lease, exchange, mortgage, pledge, transfer or other disposition of 10% or more of the assets of the corporation to or with the interested stockholder;

- subject to certain exceptions, any transaction which results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or

- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an "interested stockholder" as any person that is:

- the owner of 15% or more of the outstanding voting stock of the corporation;

- an affiliate or associate of the corporation and was the owner of 15% or more of the outstanding voting stock of the corporation at any time within three years immediately prior to the relevant date; or

- an affiliate or associate of the above.

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Our certificate of incorporation and bylaws do not exclude us from the restrictions imposed under Section 203. We anticipate that the provisions of Section 203 may encourage companies interested in acquiring us to negotiate in advance with our board of directors because the stockholder approval requirement would be avoided if a majority of the directors then in office approve either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder.

Classified Board of Directors

Our certificate of incorporation provides for our board of directors to be divided into three classes of directors, as nearly equal in number as possible, serving staggered terms. Approximately one-third of our board of directors are elected each year. Under Section 141 of the General Corporation Law of

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the State of Delaware, unless the certificate of incorporation provides otherwise, directors serving on a classified board can only be removed for cause. Accordingly, our directors may only be removed for cause. The provision for our classified board of directors may be amended, altered or repealed only upon the affirmative vote of the holders of 66 2/3% of our outstanding voting stock.

The provision for a classified board of directors could prevent a party that acquires control of a majority of the outstanding voting stock from obtaining control of our board of directors until the second annual stockholders meeting following the date the acquiror obtains the controlling stock interest. The classified board of directors provision could have the effect of discouraging a potential acquiror from making a tender offer for shares of common stock or otherwise attempting to obtain control of us and could increase the likelihood that our incumbent directors will retain their positions.

We believe that a classified board of directors helps to assure the continuity and stability of our board and our business strategies and policies as determined by our board of directors because a majority of the directors at any given time will have prior experience on our board. The classified board of directors provision should also help to ensure that our board of directors, if confronted with an unsolicited proposal from a third party that has acquired a block of our voting stock, will have sufficient time to review the proposal and appropriate alternatives and to seek the best available result for all stockholders.

Number of Directors; Removal; Vacancies

Our certificate of incorporation and bylaws provide that the number of directors shall be fixed by the affirmative vote of our board of directors or by the affirmative vote of holders of at least 66 2/3% of our outstanding voting stock. The size of our board of directors is currently fixed at eight directors.

Pursuant to our certificate of incorporation, each director will serve until his or her successor is duly elected and qualified, unless he or she resigns, dies, becomes disqualified or is removed. Our certificate of incorporation also provides that, subject to the rights of the holders of any series of preferred stock, directors may be removed, but only for cause.

Our certificate of incorporation further provides that generally, vacancies or newly created directorships in our board may only be filled by a resolution approved by a majority of our board of directors and any director so chosen will hold office until the next election of the class for which such director was chosen.

Stockholder Action; Special Meetings

Our certificate of incorporation provides that stockholder action can be taken only at an annual or special meeting of stockholders and cannot be taken by written consent in lieu of a meeting. Our certificate of incorporation and bylaws provide that, except as otherwise required by law, special meetings of the stockholders can only be called by the Chairman of our board of directors, our Chief Executive Officer or our Secretary at the written request of a majority of the number of directors that we would have if there were no vacancies on our board of directors. Unless our board of directors determines otherwise, the Chairman or another designated officer has sole discretion to determine the order of business and procedure at annual and special meetings of stockholders. In addition, stockholders are not permitted to call a special meeting or to require our board of directors to call a special meeting. Stockholders also may not bring business before a special meeting of stockholders.

Stockholder Proposals and Nominations

Our bylaws provide that stockholders seeking to bring business before an annual meeting of stockholders or to nominate candidates for election as directors at an annual meeting of stockholders must provide timely notice of such proposed business in writing. To be timely, a stockholder's notice generally must be delivered to or mailed and received at our principal executive office not less than 90 days or more than 120 days prior to the first anniversary of the preceding year's annual meeting.

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Our bylaws also provide certain requirements as to the form and content of a stockholder's notice. These provisions may preclude stockholders from bringing matters before an annual meeting of stockholders or from making nominations for directors at an annual meeting of stockholders. A stockholder's notice must set forth, among other things, as to each business matter or nomination the stockholder proposes to bring before the meeting:

- the name and address of the stockholder and the beneficial owner, if any, on whose behalf the proposal or nomination is made;

- the class and number of shares that are owned of record and beneficially by the stockholder proposing the business or nominating the nominee;

- a representation that the stockholder giving the notice is a holder of record of shares of our voting stock entitled to vote at such annual meeting and intends to appear in person or by proxy at the annual meeting to propose the business or nominate the person or persons specified in the notice, as applicable; and

- whether such stockholder or beneficial owner intends to deliver a proxy statement and forms of proxy to holders of at least the percentage of shares of our voting stock required to approve such proposal or nominate such nominee or nominees.

If the stockholder is nominating a candidate for director, the stockholder's notice must also include the name, age, business address, residence address and occupation of the nominee proposed by the stockholder and the signed consent of the nominee to serve as a director on our board of directors if so elected. The candidate may also be required to present certain information and make certain representations and agreements at our request.

In addition, a stockholder must also comply with all applicable requirements of the Exchange Act and the rules and regulations under the Exchange Act with respect to matters relating to nomination of candidates for directors.

Amendment of Certificate of Incorporation

Except as otherwise provided by law or our certificate of incorporation, our certificate of incorporation may be amended, altered or repealed at a meeting of the stockholders provided that such amendment has been described or referred to in the notice of such meeting or a meeting of our board of directors.

Amendment of Bylaws

Except as otherwise provided by law, our certificate of incorporation or our bylaws, our bylaws may be amended, altered or repealed at a meeting of the stockholders provided that such amendment has been described or referred to in the notice of such meeting or a meeting of our board of directors, provided that no amendment adopted by the board of directors may vary or conflict with any amendment adopted by the stockholders in accordance with our certificate of incorporation or bylaws.

Transfer Agent and Registrar

Computershare Shareowner Services, LLC is the transfer agent and registrar for our common stock and preferred stock.

Listing

Our common stock is listed on the NYSE under the symbol "MCP." Our Series A Mandatory Convertible Preferred Stock is listed on the NYSE under the symbol "MCP-PA."

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DESCRIPTION OF DEPOSITARY SHARES

General

We may offer depositary shares representing fractional shares of our preferred stock of any series. The following description sets forth certain general terms and provisions of the depositary shares that we may offer pursuant to this prospectus. The particular terms of the depositary shares, including the fraction of a preferred share that such depositary share will represent, and the extent, if any, to which the general terms and provisions may apply to the depositary shares so offered will be described in the applicable prospectus supplement.

The shares of preferred stock represented by depositary shares will be deposited under a depositary agreement between us and a bank or trust company that meets certain requirements and is selected by us, which we refer to as the bank depositary. Each owner of a depositary share will be entitled to all the rights and preferences of the shares of preferred stock represented by the depositary share. The depositary shares will be evidenced by depositary receipts issued pursuant to the depositary agreement. Depositary receipts will be distributed to those persons purchasing the fractional shares of preferred stock in accordance with the terms of the offering. The deposit agreement will also contain provisions relating to the manner in which any subscription or similar rights we offer to holders of the preferred stock will be made available to the holders of depositary shares.

The following description is a general summary of some common provisions of a depositary agreement and the related depositary receipts. The description below and in any prospectus supplement does not include all of the terms of the depositary agreement and the related depositary receipts. Copies of the form of depositary agreement and the depositary receipts relating to any particular issue of depositary shares will be filed with the SEC each time we issue depositary shares, and you should read those documents for provisions that may be important to you. For more information on how you can obtain copies of the forms of the depositary agreement and the related depositary receipts, see "Where You Can Find More Information."

Dividends and Other Distributions

If we pay a cash distribution or dividend on a series of preferred stock represented by depositary shares, the bank depositary will distribute these dividends to the record holders of these depositary shares. If the distributions are in property other than cash, the bank depositary will distribute the property to the record holders of the depositary shares. However, if the bank depositary determines that it is not feasible to make the distribution of property, the bank depositary may, with our approval, sell this property and distribute the net proceeds from this sale to the record holders of the depositary shares.

Redemption of Depositary Shares

If we redeem a series of preferred stock represented by depositary shares, the bank depositary will redeem the depositary shares from the proceeds received by the bank depositary in connection with the redemption. The redemption price per depositary share will equal the applicable fraction of the redemption price per share of the preferred stock. If fewer than all the depositary shares are redeemed, the depositary shares to be redeemed will be selected by lot or pro rata as the bank depositary may determine.

Voting the Preferred Stock

Upon receipt of notice of any meeting at which the holders of the preferred stock represented by depositary shares are entitled to vote, the bank depositary will mail the notice to the record holders of the depositary shares relating to the preferred stock. Each record holder of these depositary shares on

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the record date (which will be the same date as the record date for the preferred stock) may instruct the bank depositary as to how to vote the preferred stock represented by this holder's depositary shares. The bank depositary will endeavor, insofar as practicable, to vote the amount of the preferred stock represented by such depositary shares in accordance with these instructions, and we will take all action which the bank depositary deems necessary in order to enable the bank depositary to do so. The bank depositary will abstain from voting shares of the preferred stock to the extent it does not receive specific instructions from the holders of depositary shares representing this preferred stock.

Amendment and Termination of the Depositary Agreement

The form of depositary receipt evidencing the depositary shares and any provision of the depositary agreement may be amended by agreement between the bank depositary and us. However, any amendment that materially and adversely alters the rights of the holders of depositary shares will not be effective unless this amendment has been approved by the holders of at least a majority of the depositary shares then outstanding. The depositary agreement may be terminated by the bank depositary or us only if:

- all outstanding depositary shares have been redeemed; or

- there has been a final distribution in respect of the preferred stock in connection with any liquidation, dissolution or winding up of the Company and this distribution has been distributed to the holders of depositary receipts.

Charges of Bank Depositary

We will pay all transfer and other taxes and governmental charges arising solely from the existence of the depositary arrangements. We will pay charges of the bank depositary in connection with the initial deposit of the preferred stock and any redemption of the preferred stock. Holders of depositary receipts will pay other transfer and other taxes and governmental charges and any other charges, including a fee for the withdrawal of shares of preferred stock upon surrender of depositary receipts, as are expressly provided in the depositary agreement to be for their accounts.

Withdrawal of Preferred Stock

Except as may be provided otherwise in the applicable prospectus supplement, upon surrender of depositary receipts at the principal office of the bank depositary, subject to the terms of the depositary agreement, the owner of the depositary shares may demand delivery of the number of whole shares of preferred stock and all money and other property, if any, represented by those depositary shares. Fractional shares of preferred stock will not be issued. If the depositary receipts delivered by the holder evidence a number of depositary shares in excess of the number of depositary shares representing the number of whole shares of preferred stock to be withdrawn, the bank depositary will deliver to this holder at the same time a new depositary receipt evidencing the excess number of depositary shares. Holders of preferred stock thus withdrawn may not thereafter deposit those shares under the depositary agreement or receive depositary receipts evidencing depositary shares therefor.

Miscellaneous

The bank depositary will forward to holders of depositary receipts all reports and communications from us that are delivered to the bank depositary and that we are required to furnish to the holders of preferred stock.

Neither the bank depositary nor we will be liable if we are prevented or delayed by law or any circumstance beyond our control in performing our obligations under the depositary agreement. The obligations of the bank depositary and us under the depositary agreement will be limited to

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performance in good faith of our duties thereunder, and we will not be obligated to prosecute or defend any legal proceeding in respect of any depositary shares or shares of preferred stock unless satisfactory indemnity is furnished. We may rely upon written advice of counsel or accountants, or upon information provided by persons presenting shares of preferred stock for deposit, holders of depositary receipts or other persons believed to be competent and on documents believed to be genuine.

Resignation and Removal of Bank Depositary

The bank depositary may resign at any time by delivering to us notice of its election to do so, and we may at any time remove the bank depositary. Any such resignation or removal will take effect upon the appointment of a successor bank depositary and the successor's acceptance of this appointment. The successor bank depositary must be appointed within 60 days after delivery of the notice of resignation or removal and must be a bank or trust company meeting the requirements of the depositary agreement.

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DESCRIPTION OF WARRANTS

General

We may issue warrants for the purchase of common stock, preferred stock, depositary shares or debt securities. The following description sets forth certain general terms and provisions of the warrants that we may offer pursuant to this prospectus. The particular terms of the warrants and the extent, if any, to which the general terms and provisions may apply to the warrants so offered will be described in the applicable prospectus supplement.

Warrants may be issued independently or together with other securities and may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a bank or trust company, as warrant agent. The warrant agent will act solely as our agent in connection with the warrants and will not have any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants.

A copy of the forms of the warrant agreement and the warrant certificate relating to any particular issue of warrants will be filed with the SEC each time we issue warrants, and you should read those documents for provisions that may be important to you. For more information on how you can obtain copies of the forms of the warrant agreement and the related warrant certificate, see "Where You Can Find More Information."

Debt Warrants

The prospectus supplement relating to a particular issue of warrants to issue debt securities will describe the terms of those warrants, including the following:

- the title of the warrants;
- the offering price for the warrants, if any;
- the aggregate number of the warrants;
- the designation and terms of the debt securities purchasable upon exercise of the warrants;
- if applicable, the designation and terms of the debt securities that the warrants are issued with and the number of warrants issued with each debt security;
- if applicable, the date from and after which the warrants and any debt securities issued with them will be separately transferable;
- the principal amount of debt securities that may be purchased upon exercise of a warrant and the price at which the debt securities may be purchased upon exercise;
- the dates on which the right to exercise the warrants will commence and expire;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;

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whether the warrants represented by the warrant certificates or debt securities that may be issued upon exercise of the warrants will be issued in registered or bearer form;

information relating to book-entry procedures, if any;

the currency or currency units in which the offering price, if any, and the exercise price are payable;

if applicable, a discussion of material United States federal income tax considerations;

anti-dilution provisions of the warrants, if any;

redemption or call provisions, if any, applicable to the warrants;

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any additional terms of the warrants, including terms, procedures and limitations relating to the exchange and exercise of the warrants; and

any other information we think is important about the warrants.

Stock Warrants

The prospectus supplement relating to a particular issue of warrants to issue common stock, preferred stock or depositary shares will describe the terms of the common stock warrants, preferred stock warrants and depositary share warrants, including the following:

the title of the warrants;

the offering price for the warrants, if any;

the aggregate number of the warrants;

the designation and terms of the common stock, preferred stock or depositary shares that may be purchased upon exercise of the warrants;

if applicable, the designation and terms of the securities that the warrants are issued with and the number of warrants issued with each security;

if applicable, the date from and after which the warrants and any securities issued with the warrants will be separately transferable;

the number of shares of common stock or preferred stock or depositary shares that may be purchased upon exercise of a warrant and the price at which the shares may be purchased upon exercise;

the dates on which the right to exercise the warrants commence and expire;

if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;

the currency or currency units in which the offering price, if any, and the exercise price are payable;

if applicable, a discussion of material United States federal income tax considerations;

anti-dilution provisions of the warrants, if any;

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- redemption or call provisions, if any, applicable to the warrants;

- any additional terms of the warrants, including terms, procedures and limitations relating to the exchange and exercise of the warrants; and

- any other information we think is important about the warrants.

Exercise of Warrants

Each warrant will entitle the holder of the warrant to purchase at the exercise price set forth in the applicable prospectus supplement the number of shares of common stock, preferred stock or depositary shares or the principal amount of debt securities being offered. Holders may exercise warrants at any time up to the close of business on the expiration date set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants are void. Holders may exercise warrants as set forth in the prospectus supplement relating to the warrants being offered.

Until a holder exercises the warrants to purchase our common stock, preferred stock, depositary shares or debt securities, the holder will not have any rights as a holder of our common stock, preferred stock, depositary shares or debt securities, as the case may be, by virtue of ownership of warrants.

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DESCRIPTION OF SUBSCRIPTION RIGHTS

We may issue to our stockholders subscription rights to purchase our common stock, preferred stock, depositary shares or debt securities. The following description sets forth certain general terms and provisions of the subscription rights that we may offer pursuant to this prospectus. The particular terms of the subscription rights and the extent, if any, to which the general terms and provisions may apply to the subscription rights so offered will be described in the applicable prospectus supplement.

Subscription rights may be issued independently or together with any other security offered by this prospectus and may or may not be transferable by the stockholder receiving the rights in the rights offering. In connection with any rights offering, we may enter into a standby underwriting agreement with one or more underwriters pursuant to which the underwriter will purchase any securities that remain unsubscribed for upon completion of the rights offering, or offer these securities to other parties who are not our stockholders. A copy of the form of subscription rights certificate will be filed with the SEC each time we issue subscription rights, and you should read that document for provisions that may be important to you. For more information on how you can obtain a copy of any subscription rights certificate, see "Where You Can Find More Information."

The applicable prospectus supplement relating to any subscription rights will describe the terms of the offered subscription rights, including, where applicable, the following:

- the exercise price for the subscription rights;
- the number of subscription rights issued to each stockholder;
- the extent to which the subscription rights are transferable;
- any other terms of the subscription rights, including terms, procedures and limitations relating to the exchange and exercise of the subscription rights;
- the date on which the right to exercise the subscription rights will commence and the date on which the right will expire;
- the extent to which the subscription rights include an over-subscription privilege with respect to unsubscribed securities; and
- the material terms of any standby underwriting arrangement entered into by us in connection with the subscription rights offering.

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DESCRIPTION OF DEBT SECURITIES

This prospectus describes certain general terms and provisions of the debt securities. We will issue debt securities that will be senior debt under the senior debt indenture between us and Wells Fargo Bank, National Association, as senior debt trustee. We will issue debt securities that will be subordinated debt under the subordinated debt indenture between us and Wells Fargo Bank, National Association, as subordinated debt trustee. This prospectus refers to the senior debt indenture and the subordinated debt indenture individually as the indenture and collectively as the indentures. This prospectus refers to the senior debt trustee and the subordinated debt trustee individually as the trustee and collectively as the trustees. When we offer to sell a particular series of debt securities, we will describe the specific terms for the securities in a supplement to this prospectus. The prospectus supplement will also indicate whether the general terms and provisions described in this prospectus apply to a particular series of debt securities.

We have summarized certain terms and provisions of the indentures. The summary is not complete. The indentures have been filed as an exhibit to the registration statement for these securities that we have filed with the SEC. You should read the indentures for the provisions which may be important to you. The indentures are subject to and governed by the Trust Indenture Act of 1939, as amended. The indentures are substantially identical, except for the provisions relating to subordination. See "− Subordinated Debt."

Capitalized terms used in this section and not defined herein have the meanings specified in the indentures. When we refer to "Molycorp," "we," "our" and "us" in this section, we mean Molycorp, Inc. excluding, unless the context otherwise requires or as otherwise expressly stated, its subsidiaries.

Neither indenture will limit the amount of debt securities which we may issue. We may issue debt securities up to an aggregate principal amount as we may authorize from time to time. The prospectus supplement will describe the terms of any debt securities being offered, including:

- classification as senior or subordinated debt securities;
- ranking of the specific series of debt securities relative to other outstanding indebtedness, including subsidiaries' debt;
- if the debt securities are subordinated, the aggregate amount of outstanding indebtedness, as of a recent date, that is senior to the subordinated securities, and any limitation on the issuance of additional senior indebtedness;
- the designation, aggregate principal amount and authorized denominations;
- the maturity date;
- the interest rate, if any, and the method for calculating the interest rate;
- the interest payment dates and the record dates for the interest payments;
- any mandatory or optional redemption terms or prepayment, conversion, sinking fund or exchangeability or convertibility provisions;
- the place where we will pay principal and interest;

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if other than denominations of $1,000 or multiples of $1,000, the denominations the debt securities will be issued in;

whether the debt securities will be issued in the form of global securities or certificates;

additional provisions, if any, relating to the defeasance of the debt securities;

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- the currency or currencies, if other than the currency of the United States, in which principal and interest will be paid;
- any United States federal income tax consequences;
- the dates on which premium, if any, will be paid;
- our right, if any, to defer payment of interest and the maximum length of this deferral period;
- any listing on a securities exchange;
- the initial public offering price; and
- other specific terms, including any additional events of default or covenants.

Senior Debt

We will issue under the senior debt indenture the debt securities that will constitute part of our senior debt. These senior debt securities will rank equally and pari passu with all other unsecured and unsubordinated debt of Molycorp.

Subordinated Debt

We will issue under the subordinated debt indenture the debt securities that will constitute part of our subordinated debt. These subordinated debt securities will be subordinate and junior in right of payment, to the extent and in the manner set forth in the subordinated debt indenture, to all "senior indebtedness" of Molycorp. The subordinated debt indenture defines "senior indebtedness" the principal of (and premium, if any) and interest on all debt of Molycorp whether created, incurred or assumed before, on or after the date of the subordinated debt indenture. "Senior indebtedness" does not include nonrecourse obligations, the subordinated debt securities, redeemable stock or any other obligations specifically designated as being subordinate in right of payment to senior indebtedness.

In general, the holders of all senior indebtedness are first entitled to receive payment of the full amount unpaid on senior indebtedness before the holders of any of the subordinated debt securities or coupons are entitled to receive a payment on account of the principal or interest on the indebtedness evidenced by the subordinated debt securities in certain events. These events include:

- any insolvency or bankruptcy proceedings, or any receivership, liquidation, reorganization or other similar proceedings which concern Molycorp or a substantial part of its property;
- a default having occurred for the payment of principal, premium, if any, or interest on or other monetary amounts due and payable on any senior indebtedness or any other default having occurred concerning any senior indebtedness, which permits the holder or holders of any senior indebtedness to accelerate the maturity of any senior indebtedness with notice or lapse of time, or both. Such an event of default must have continued beyond the period of grace, if any, provided for such event of default, and such an event of default shall not have been cured or waived or shall not have ceased to exist; or

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the principal of, and accrued interest on, any series of the subordinated debt securities having been declared due and payable upon an event of default pursuant to section 6.01 of the subordinated debt indenture. This declaration must not have been rescinded and annulled as provided in the subordinated debt indenture.

If this prospectus is being delivered in connection with a series of subordinated debt securities, the accompanying prospectus supplement or the information incorporated in this prospectus by reference will set forth the approximate amount of senior indebtedness outstanding as of the end of the most recent fiscal quarter.

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Events of Default

Unless otherwise specified in the applicable prospectus supplement, when we use the term "Event of Default" in the indentures with respect to the debt securities of any series, here are some examples of what we mean:

(1) default in the payment of the principal of any debt security of such series when the same becomes due and payable at maturity, upon acceleration, redemption or mandatory repurchase, including as a sinking fund installment, or otherwise;

(2) default in the payment of interest on any debt security of such series when the same becomes due and payable, and such default continues for a period of 30 days;

(3) default in the performance of or breaches of any other covenant or agreement of Molycorp in either indenture with respect to any debt security of such series or in the debt security of such series and such default or breach continues for a period of 60 consecutive days or more after written notice to Molycorp by the trustee or to Molycorp and the trustee by the holders of 25% or more in aggregate principal amount of the debt securities of all series affected thereby specifying such default or breach and requiring it to be remedied and stating that such notice is a "Notice of Default" under the indenture;

(4) certain events of bankruptcy, insolvency, reorganization, administration or similar proceedings with respect to Molycorp or any material subsidiary;

(5) any other Events of Default set forth in the prospectus supplement.

If an Event of Default (other than an Event of Default specified in clause (4) with respect to Molycorp) under each indenture occurs with respect to the debt securities of any series and is continuing, then the trustee or the holders of at least 25% in principal amount of the outstanding debt securities of that series may, by written notice to us and also to the trustee if given by holders, require us to repay immediately the entire principal amount of the outstanding debt securities of that series (or such lesser amount as may be provided in the terms of the securities), together with all accrued and unpaid interest and premium, if any.

If an Event of Default under the indenture specified in clause (4) with respect to Molycorp occurs and is continuing, then the entire principal amount of the outstanding debt securities (or such lesser amount as may be provided in the terms of the securities) will automatically become due immediately and payable without any declaration or other act on the part of the trustee or any holder.

After a declaration of acceleration or any automatic acceleration under clause (4) described above, the holders of a majority in principal amount of outstanding debt securities of any series may rescind this accelerated payment requirement if all existing Events of Default, except for nonpayment of the principal and interest on the debt securities of that series that has become due solely as a result of the accelerated payment requirement, have been cured or waived and if the rescission of acceleration would not conflict with any judgment or decree. The holders of a majority in principal amount of the outstanding debt securities of any series also have the right to waive past defaults, except a default in paying principal or interest on any outstanding debt security, or in respect of a covenant or a provision that cannot be modified or amended without the consent of all holders of the debt securities of that series.

Holders of at least 25% in principal amount of the outstanding debt securities of a series may seek to institute a proceeding only after they have made written request, and offered indemnity satisfactory to the trustee to the trustee to institute a proceeding and the trustee has failed to do so within 60 days after it received this notice and offer of indemnity. In addition, within this 60-day period the trustee must not have received directions inconsistent with this written request by holders of a majority in principal amount of the outstanding debt securities of that series. These limitations do not apply,

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however, to a suit instituted by a holder of a debt security for the enforcement of the payment of principal, interest or any premium on or after the due dates for such payment.

During the existence of an Event of Default, the trustee is required to exercise the rights and powers vested in it under the indenture and use the same degree of care and skill in its exercise as a prudent person would under the circumstances in the conduct of that person's own affairs. The trustee is not under any obligation to exercise any of its rights or powers at the request or direction of any of the holders unless the holders have offered to the trustee security or indemnity satisfactory to it. Subject to certain provisions, the holders of a majority in principal amount of the outstanding debt securities of any series have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, or exercising any trust, or power conferred on the trustee.

The trustee will, within 90 days after any default occurs that is known to the trustee, give notice of the default to the holders of the debt securities of that series, unless the default was already cured or waived. Unless there is a default in paying principal, interest or any premium when due, the trustee can withhold giving notice to the holders if it determines in good faith that the withholding of notice is in the interest of the holders.

We are required to furnish to each trustee an annual statement as to compliance with all conditions and covenants under the indenture.

Modification and Waiver

Each indenture may be supplemented, or modified without the consent of any holder of debt securities in order to:

- cure ambiguities, defects or inconsistencies;
- provide for the assumption of our obligations in the case of a merger or consolidation;
- establish the form or forms of debt securities of any series;
- maintain the qualification of the indenture under the Trust Indenture Act;
- evidence and provide for the acceptance of appointment under the indenture with respect to the debt securities of any or all series by a successor trustee and to add to or change any of the provisions of each indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one trustee;
- provide for uncertificated or unregistered debt securities; and
- make any change that does not materially and adversely affect the rights of any holder.

Other amendments and modifications of each indenture or the debt securities issued may be made with the consent of the holders of not less than a majority of the aggregate principal amount of the outstanding debt securities of each series affected by the amendment or modification. However, no modification or amendment may, without the consent of the holder of each outstanding debt security affected:

- change the stated maturity of the principal of, or any sinking fund obligation or any installment of interest on, such holder's debt security,
- reduce the principal amount thereof or the rate of interest thereon;

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reduce the above stated percentage of outstanding debt securities the consent of whose holders is necessary to modify or amend the indenture with respect to the debt securities of the relevant series; and

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reduce the percentage in principal amount of outstanding debt securities of the relevant series the consent of whose holders is required for any supplemental indenture or for any waiver of compliance with certain provisions of the indenture or certain defaults and their consequences provided for in the indenture.

Covenants

Consolidation, Merger or Sale of Assets

Unless otherwise specified in the applicable prospectus supplement, we will not consolidate or combine with or merge with or into or, directly or indirectly, sell, assign, convey, lease, transfer or otherwise dispose of all or substantially all of our properties and assets to any person or persons in a single transaction or through a series of transactions, unless:

we shall be the continuing person or, if we are not the continuing person, the resulting, surviving or transferee person (the "surviving entity") is a company organized and existing under the laws of the United States or any State or territory;

the surviving entity will expressly assume all of our obligations under the debt securities and each indenture, and will, if required by law to effectuate the assumption, execute supplemental indentures which will be delivered to the trustees and will be in form and substance reasonably satisfactory to the trustees;

immediately after giving effect to such transaction or series of transactions on a pro forma basis, no default has occurred and is continuing; and

we or the surviving entity will have delivered to the trustee an officers' certificate and opinion of counsel stating that the transaction or series of transactions and a supplemental indenture, if any, complies with this covenant and that all conditions precedent in the indenture relating to the transaction or series of transactions have been satisfied.

If any consolidation or merger or any sale, assignment, conveyance, lease, transfer or other disposition of all or substantially all of our assets occurs in accordance with the indentures, the successor corporation will succeed to, and be substituted for, and may exercise every right and power of Molycorp under the indentures with the same effect as if such successor corporation had been named as Molycorp. Except for (1) any lease or (2) any sale, assignment, conveyance, transfer, lease or other disposition to certain subsidiaries of Molycorp, we will be discharged from all obligations and covenants under the indentures and the debt securities.

Satisfaction, Discharge and Covenant Defeasance

Unless otherwise specified in the applicable prospectus supplement, we may terminate our obligations under each indenture, when:

either:

all debt securities of any series issued that have been authenticated and delivered have been delivered to the trustee for cancellation; or

all the debt securities of any series issued that have not been delivered to the trustee for cancellation will become due and payable within one year (a "Discharge") and we have made irrevocable arrangements satisfactory to the trustee for the giving of notice of redemption by such trustee in our name, and at our expense and we have irrevocably deposited or caused to be deposited with the trustee sufficient funds to pay and discharge the entire indebtedness on the series of debt securities to pay principal, interest and any premium;

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- we have paid or caused to be paid all other sums then due and payable under such indenture; and
- we have delivered to the trustee an officers' certificate and an opinion of counsel, each stating that all conditions precedent under such indenture relating to the satisfaction and discharge of such indenture have been complied with.

Unless otherwise specified in the applicable prospectus supplement, we may elect to have our obligations under each indenture discharged with respect to the outstanding debt securities of any series ("legal defeasance"). Legal defeasance means that we will be deemed to have paid and discharged the entire indebtedness represented by the outstanding debt securities of such series under such indenture, except for:

- the rights of holders of the debt securities to receive principal, interest and any premium when due;
- our obligations with respect to the debt securities concerning issuing temporary debt securities, registration of transfer of debt securities, Molycorp's right of optional redemption, mutilated, defaced, destroyed, lost or stolen debt securities and the maintenance of an office or agency for payment for security payments held in trust;
- the rights, obligations and immunities of the trustee; and
- the defeasance provisions of the indenture.

In addition, unless otherwise specified in the applicable prospectus supplement, we may elect to have our obligations released with respect to certain covenants in each indenture ("covenant defeasance"). Any omission to comply with these obligations will not constitute a default or an event of default with respect to the debt securities of any series. In the event covenant defeasance occurs, certain events, not including non-payment, bankruptcy and insolvency events, described under "Events of Default" will no longer constitute an event of default for that series.

In order to exercise either legal defeasance or covenant defeasance with respect to outstanding debt securities of any series:

- we must irrevocably have deposited or caused to be deposited with the trustee as trust funds for the purpose of making the following payments, specifically pledged as security for, and dedicated solely to the benefits of the holders of the debt securities of a series:
  - money in an amount;
  - U.S. Government Obligations; or
  - a combination of money and U.S. Government Obligations,

  in each case sufficient without reinvestment, in the written opinion of an internationally recognized firm of independent public accountants delivered to the trustee, to pay and discharge, and which shall be applied by the trustee to pay and discharge, all of the principal, interest and any premium at due date or maturity or if we have made irrevocable arrangements satisfactory to the trustee for the giving of notice of redemption by the trustee in our name and at our expense, the redemption date;
- in the case of legal defeasance, we have delivered to the trustee an opinion of counsel stating that, under then applicable Federal income tax law, the holders of the debt securities of that series will not recognize gain or loss for federal income

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tax purposes as a result of the deposit, defeasance and discharge to be effected and will be subject to the same federal income tax as would be the case if the deposit, defeasance and discharge did not occur;

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in the case of covenant defeasance, we have delivered to the trustee an opinion of counsel to the effect that the holders of the debt securities of that series will not recognize gain or loss for U.S. federal income tax purposes as a result of the deposit and covenant defeasance to be effected and will be subject to the same federal income tax as would be the case if the deposit and covenant defeasance did not occur;

no default with respect to the outstanding debt securities of that series has occurred and is continuing at the time of such deposit after giving effect to the deposit or, in the case of legal defeasance, no default relating to bankruptcy or insolvency has occurred and is continuing at any time on or before the 123rd day after the date of such deposit, it being understood that this condition is not deemed satisfied until after the 123rd day;

we must have delivered to the trustee an opinion of counsel to the effect that

(1) the creation of the defeasance trust does not violate the Investment Company Act of 1940 and
(2) after the 123rd day following the deposit, the trust funds will not be subject to the effect of any applicable bankruptcy, insolvency, reorganization or similar laws affecting creditors' rights generally;

if at such time the debt securities of such series are listed on a national securities exchange, Molycorp has delivered to the trustee an opinion of counsel to the effect that the debt securities of such series will not be delisted as a result of such deposit, defeasance and discharge;

we have delivered to the trustee an officers' certificate and an opinion of counsel stating that all conditions precedent with respect to the defeasance or covenant defeasance have been complied with; and

if the debt securities of such series are to be redeemed prior to the final maturity thereof (other than from mandatory sinking fund payments or analogous payments), notice of such redemption shall have been duly given pursuant to the indenture or provision therefor satisfactory to the trustee shall have been made.

Concerning our Relationship with the Trustee

We and our subsidiaries maintain ordinary banking relationships with Wells Fargo Bank, National Association. Wells Fargo Bank, National Association also serves as trustee under certain of our other indentures.

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DESCRIPTION OF UNITS

We may issue units comprising one or more securities described in this prospectus in any combination. The following description sets forth certain general terms and provisions of the units that we may offer pursuant to this prospectus. The particular terms of the units and the extent, if any, to which the general terms and provisions may apply to the units so offered will be described in the applicable prospectus supplement.

Each unit will be issued so that the holder of the unit also is the holder of each security included in the unit. Thus, the unit will have the rights and obligations of a holder of each included security. Units will be issued pursuant to the terms of a unit agreement, which may provide that the securities included in the unit may not be held or transferred separately at any time or at any time before a specified date. A copy of the forms of the unit agreement and the unit certificate relating to any particular issue of units will be filed with the SEC each time we issue units, and you should read those documents for provisions that may be important to you. For more information on how you can obtain copies of the forms of the unit agreement and the related unit certificate, see "Where You Can Find More Information."

The prospectus supplement relating to any particular issuance of units will describe the terms of those units, including, to the extent applicable, the following:

- the designation and terms of the units and the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;

- any provision for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units; and

- whether the units will be issued in fully registered or global form.

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PLAN OF DISTRIBUTION

We may sell the offered securities in and outside the United States:

- through underwriters or dealers;
- directly to purchasers;
- in a rights offering;
- in "at the market" offerings, within the meaning of Rule 415(a)(4) of the Securities Act, to or through a market maker or into an existing trading market on an exchange or otherwise;
- through agents; or
- through a combination of any of these methods.

The prospectus supplement will include the following information:

- the terms of the offering;
- the names of any underwriters or agents;
- the name or names of any managing underwriter or underwriters;
- the purchase price or initial public offering price of the securities;
- the net proceeds from the sale of the securities;
- any delayed delivery arrangements;
- any underwriting discounts, commissions and other items constituting underwriters' compensation;
- any discounts or concessions allowed or reallowed or paid to dealers; and
- any commissions paid to agents.

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Sale through Underwriters or Dealers

If underwriters are used in the sale, the underwriters will acquire the securities for their own account. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless we inform you otherwise in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any initial public offering price and any discounts or concessions allowed or reallowed or paid to dealers.

If we offer securities in a subscription rights offering to our existing security holders, we may enter into a standby underwriting agreement with dealers, acting as standby underwriters. We may pay the standby underwriters a commitment fee for the securities they commit to purchase on a standby basis. If we do not enter into a standby underwriting agreement, we may retain a dealer-manager to manage a subscription rights offering for us.

During and after an offering through underwriters, the underwriters may purchase and sell the securities in the open market. These transactions may include overallotment and stabilizing transactions and purchases to cover syndicate short positions created in connection with the offering. The underwriters may also impose a penalty bid, which means that selling concessions allowed to syndicate

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members or other broker-dealers for the offered securities sold for their account may be reclaimed by the syndicate if the offered securities are repurchased by the syndicate in stabilizing or covering transactions. These activities may stabilize, maintain or otherwise affect the market price of the offered securities, which may be higher than the price that might otherwise prevail in the open market. If commenced, the underwriters may discontinue these activities at any time.

Underwriters may be entitled under agreements entered into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, or to contribution with respect to payments which the underwriters may be required to make. Underwriters may be customers of, engage in transactions with, or perform services for us and our affiliates in the ordinary course of business.

Some or all of the securities that we offer though this prospectus may be new issues of securities with no established trading market. Any underwriters to whom we sell our securities for public offering and sale may make a market in those securities, but they will not be obligated to do so and they may discontinue any market making at any time without notice. Accordingly, we cannot assure you of the liquidity of, or continued trading markets for, any securities that we offer.

If dealers are used in the sale of securities, we will sell the securities to them as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. We will include in the prospectus supplement the names of the dealers and the terms of the transaction.

Direct Sales and Sales through Agents

We may sell the securities directly. In this case, no underwriters or agents would be involved. We may also sell the securities through agents designated from time to time at fixed prices or at varying prices determined at the time of sale. In the prospectus supplement, we will name any agent involved in the offer or sale of the offered securities, and we will describe any commissions payable to the agent. Unless we inform you otherwise in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any sale of those securities. We will describe the terms of any sales of these securities in the prospectus supplement.

Remarketing Arrangements

Offered securities may also be offered and sold, if so indicated in the applicable prospectus supplement, in connection with a remarketing upon their purchase, in accordance with a redemption or repayment pursuant to their terms, or otherwise, by one or more remarketing firms, acting as principals for their own accounts or as agents for us. Any remarketing firm will be identified and the terms of its agreements, if any, with us and its compensation will be described in the applicable prospectus supplement.

Delayed Delivery Contracts

If we so indicate in the prospectus supplement, we may authorize agents, underwriters or dealers to solicit offers from certain types of institutions to purchase securities from us at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. The contracts would be subject only to those conditions described in the prospectus supplement. The prospectus supplement will describe the commission payable for solicitation of those contracts.

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General Information

We may have agreements with the agents, dealers, underwriters and remarketing firms to indemnify them against certain civil liabilities, including liabilities under the Securities Act, or to contribute with respect to payments that the agents, dealers, underwriters or remarketing firms may be required to make. Agents, dealers, underwriters and remarketing firms may be customers of, engage in transactions with or perform services for us in the ordinary course of their businesses.

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LEGAL MATTERS

Jones Day will pass upon the validity of the securities being offered hereby.

EXPERTS

The consolidated financial statements incorporated in this prospectus by reference to Molycorp, Inc.'s Current Report on Form 8-K dated August 16, 2012 and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Annual Report on Form 10-K of Molycorp, Inc. for the year ended December 31, 2011 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP which contains an explanatory paragraph on the effectiveness of internal control over financial reporting due to the exclusion of certain elements of the internal control over financial reporting of Molycorp Sillamäe and Molycorp Tolleson (businesses acquired by Molycorp, Inc. during 2011), an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Neo Material Technologies Inc. (now Molycorp Minerals Canada ULC) as of December 31, 2011, December 31, 2010 and January 1, 2010, and for each of the years in the two-year period ended December 31, 2011, and the consolidated financial statements of Neo Material Technologies Inc. (now Molycorp Minerals Canada ULC) as of December 31, 2010 and December 31, 2009 and for each of the years in the two-year period ended December 31, 2010, have been incorporated by reference herein in reliance upon the reports of KPMG LLP, independent chartered accountants, appearing elsewhere herein, and upon the authority of said firm as experts in accounting and auditing.

The information incorporated in this prospectus concerning estimates of our proven and probable REO reserves and non-reserve REO deposits for our Molycorp Mountain Pass facility was derived from the report of SRK Consulting (U.S.), Inc., independent mining consultants, and has been incorporated herein upon the authority of SRK Consulting as experts with respect to the matters covered by such report and in giving such report.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational reporting requirements of the Securities Exchange Act of 1934, or Exchange Act. We file reports, proxy statements and other information with the SEC. Our SEC filings are available over the Internet at the SEC's web site at http://www.sec.gov. You may read and copy any reports, statements and other information filed by us at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call 1-800-SEC-0330 for further information on the Public Reference Room. You may also inspect our SEC reports and other information at our web site at http://www.molycorp.com. We do not intend for information contained in our web site to be part of this prospectus, other than documents that we file with the SEC that are incorporated by reference in this prospectus.

INFORMATION WE INCORPORATE BY REFERENCE

The SEC allows us to incorporate by reference the information we file with them, which means:

- incorporated documents are considered part of this prospectus;
- we can disclose important information to you by referring you to those documents; and
- information that we file with the SEC after the date of this prospectus will automatically update and supersede the information contained in this prospectus and incorporated filings.

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We incorporate by reference the documents listed below that we filed with the SEC under the Exchange Act:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2011;

- our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2012 and June 30, 2012;

- our Current Reports on Form 8-K filed on February 2, 2012, February 8, 2012, March 5, 2012, March 9, 2012, March 14, 2012, May 14, 2012 (Film No. 12836519), May 18, 2012, May 30, 2012, June 6, 2012, June 7, 2012, June 11, 2012, June 12, 2012, June 15, 2012, August 7, 2012 and August 16, 2012 ; and

- the description of our common stock contained in the Current Report on Form 8-K/A filed on July 21, 2010, including any subsequently filed amendments and reports updating such description.

Our Current Report on Form 8-K filed on August 16, 2012 updates and supersedes Items 6, 7, 8 and 15 of our Annual Report on Form 10-K for the year ended December 31, 2011.

We also incorporate by reference each of the documents that we file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus and prior to the termination of the offerings under this prospectus and any prospectus supplement. We will not, however, incorporate by reference in this prospectus any documents or portions thereof that are not deemed "filed" with the SEC, including any information furnished pursuant to Item 2.02 or Item 7.01 of our Current Reports on Form 8-K after the date of this prospectus unless, and except to the extent, specified in such Current Reports.

We will provide you with a copy of any of these filings (other than an exhibit to these filings, unless the exhibit is specifically incorporated by reference into the filing requested) at no cost, if you submit a request to us by writing or telephoning us at the following address and telephone number:

Molycorp, Inc.
5619 Denver Tech Center Parkway
Suite 1000
Greenwood Village, Colorado 80111
Telephone Number: (303) 843-8040

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45,166,666 Shares

Molycorp, Inc.

Common Stock

Prospectus Supplement

Joint Book-Running Managers

MORGAN STANLEY	*J.P. Morgan*	*Goldman, Sachs & Co.*

Co-Managers

Griffiths McBurney Corp.	*HSBC*

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