BALANCING ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN PUBLIC POLICY: GOLD MINING REFORM

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A member of the U.S. Congress and her legislative staff undertook the daunting task of reforming federal mining policy. They encountered the political pressures involved in balancing economic and environmental sustainability when formulating policy or drafting legislation to reform environmental policy. Mining reform was one of the perennial issues before Congress because, according to the EPA Toxic Release Inventory of 2004, mining produced more hazardous waste than any other industry. Further, after a mine's resources were depleted, mining firms often declared bankruptcy when faced with the significant expense of environmental remediation, leaving the cost to the federal government. This expense sometimes ran into the hundreds of millions of dollars, and many mines became unfunded Superfund sites. The General Mining Law of 1872 laid the groundwork for these problems; but, reform of this law would not resolve the federal risk exposure resulting from environmental mishaps on private land. Options were needed to help protect the federal government from this often overlooked risk from large-scale, hardrock mines operating in the Western states.

INTRODUCTION

It was a hot July day in 2011, and Congressional aides Bill Lambert and Christine Bracey asked themselves whether the task their boss, Alice Johnson, (not her real name) a freshman congresswoman from a Western state, had just assigned them was simply busywork to occupy them through the August congressional break or a real opportunity to influence and reform federal policy in the mining industry. The congresswoman had left the two aides with this guidance: "I don't want to completely stop mining since it provides good jobs in depressed areas and provides an internal source of important minerals for the country; but, we need a way that we can afford to clean up abandoned mines while also relieving federal taxpayers of future responsibility. Give me some background information and reform options I can use to draft legislation that will balance economic and environmental sustainability."

Their boss, a likeable former four-term state legislator from a college town, had a long-held dream of being inside the Beltway with greater ability to impact policy. She had been elected from a mostly well-off urban district in a Western state once dominated by the mining industry. In the rural part of her district, however, the politics were different. Income levels there were much lower, unemployment higher, and the area had several new mine proposals that were actively supported by local businesses. In effect, her district was split not only between urban and rural concerns, but also between long-term residents, often pro-mining, and more affluent newcomers who clearly were not.

The new congresswoman took office as a strong environmental advocate. She had been a board member of a national environmental association, and her campaign included the promise to make their efforts for reductions in air, land, and water pollution a key part of her legislative agenda. The race had been hard fought and resulted in a narrow victory; not everyone in her district agreed with all of her policy positions.

Bill and Christine had met in graduate school where they were both studying public policy. They had dated a brief while but decided they were better suited as friends. They were very interested in political issues and, shortly before graduation, had applied to be congressional aides. They were delighted to find they had both been hired by Congresswoman Johnson's office.

Bill and Christine were surprised when they received this assignment to prepare a policy white paper that could be used for drafting legislation to address environmental issues in mining. Junior aides seldom got such high profile projects. Mining reform was one of the perennial issues before Congress because, according to the EPA Toxic Release Inventory of 2004, mining produced more hazardous waste than any other industry. Further, after a mine's resources were depleted, mining firms often declared bankruptcy when faced with the significant expense of environmental remediation, leaving the cost to the federal government. This expense sometimes ran into the hundreds of millions of dollars, and many mines became unfunded Superfund sites. The General Mining Law of 1872 laid the groundwork for these problems; but, reform of this law would not resolve the federal risk exposure resulting from environmental mishaps on private land. However, options were needed to help protect the federal government from this often overlooked risk from large-scale, hardrock mines operating in Western states.

Bill and Christine began to research hardrock mining: principally gold and copper production. They decided to focus on the 30 major operating U.S. gold mines (mostly located in Nevada and Montana), one of which was located in their boss's district.

BACKGROUND INFORMATION

To prepare their report, the two aides organized the background information that they found into several categories: mining's environmental record, mining and land use policy, the General Mining Law of 1872, and policy inertia on mining law reform.

MINING'S ENVIRONMENTAL RECORD

Bill, in his research, discovered that mining affects the environment in different ways. He stated, "Hardrock mining not only mars the surface of the land, but the runoff of acids, silt, and toxic substances often pollutes nearby soil and surface and subsurface water. Mining is regarded as a significant ecosystem threat by many."

Christine responded, "This 2004 Yale School of Forestry and Environmental Studies report talks about the need for full financial disclosure of environmental problems In fact, the industry as a whole has earned an unenviable reputation. Listen to this:

> These environmental disclosure rules are particularly applicable to hardrock mining companies because their operations typically have significant environmental impacts and require extensive reclamation when concluded. In the past, mining companies have understated environmental risks and liabilities, such as closure and reclamation costs, and have declared bankruptcy when mining has ceased, leaving costly environmental clean-up operations to the public sector. (Repetto 2004, pg 4)

Christine continued, "Did you know that in 2004 there were more than 80 abandoned mine sites on the National Priorities List (NPL)? Many of these were categorized as Mega-NPL sites. These are the ones which were each expected to cost more than $50 million to cleanup, with the total approaching $8 billion. In addition, there were hundreds of thousands of much smaller abandoned mine sites where the estimated remediation costs ranged from $32 to $72 billion."

Bill also uncovered legal wrangling between environmental interest groups and mining proponents, and between state and federal agencies and mining companies that was often not resolved for decades, typically after multiple legal appeals. Three such court cases highlighted several legal challenges to hardrock mining in Montana – a key state in the development of environmental law and in setting legal trends for the mining industry: the Anaconda Mining Co., Pegasus Mining Co., and Canyon Resources Co. cases.

MINING AND LAND USE POLICY

"But it's not all that clear cut," Bill added. "Partly in reaction to the successes of earlier environmental efforts at halting development on public lands, a private sector, pro-development movement has begun in the Western states. By the mid-1980s, industry associations allied with mining, forestry, grazing, and irrigation interests became better organized and lobbied successfully to maintain the status quo in federal public lands policy. This intense and ongoing opposition, particularly strong in Western states like ours, made it difficult to pass legislation that in any way restricted use of public lands." Bill found the following description of this conflict over land use policy:

> Environmental issues in the West have sharpened the differences between the older extractive economy and the newer environmental economy. . . . Each legislative session and each state and federal agency is a battleground for continued conflict between the environmental and developmental forces, similar to that in other parts of the nation. Here, however, the conflicts are more sharply drawn. (Hays, 1998, Pg. 164)

Bill and Christine were clearly aware of the debate over public land use in the West because of the division of public opinion in the congresswoman's district. Bill said, "It's kind of a Catch-22. Gold mining employs comparatively few workers (approximately 7,500 nationally), but mining activity is often located in remote areas where jobs are scarce and where mining greatly contributes to the local tax base in these economically stagnant areas. Mining jobs are among the highest paying jobs; and when mining activity slows, the economies of many communities and states suffer. It's got limited economic importance, but still has significant political influence."

The trade-off, the aides found, was between having a few hundred local mining jobs in the short term and in the long term facing potentially significant federal environmental costs: some single site, federal cleanup costs (e.g., Butte-Anaconda) had already reached $1 billion (EPA, 2009)

Christine located a research article which estimated that while the average federal subsidy for environmental cleanups of gold mines was $16.9 million per mine, such a subsidy could easily run up to $100 million or more. She continued, "While there were more gold mines in this study, copper mines were much larger, and presumably had greater environmental impact per mine. In this research, although no federal damages were thought to occur 30 percent of the time, some 10 percent of estimated federal losses would likely exceed $50 million. That's a very high-level of risk exposure (Finnie, et al, 2009)!"

THE GENERAL MINING LAW OF 1872

Christine discovered that the Western Governors Association (WGA) had gone on record at their 2004 annual conference as supporting mining in the western states and, in particular, the federal General Mining Law of 1872. The 2004 WGA policy paper contained these provisions related to mining:

- Western Governors recognize that a vibrant minerals mining industry is in the best interests of the country. Reliable supplies of minerals play a critical role in meeting our economic security needs.

- The Mining Law of 1872, as amended, has played, and continues to play, an important role in developing this nation's wealth, providing an important source of state revenue, economic activity and employment.

Although Bill and Christine were not familiar with this law, they soon found that there was no lack of available information about the 1872 Mining Law and subsequent attempts to adjust or amend the original legislation. Bill exclaimed, "I've got 39,000 links searching for the 1872 Mining Law on Google." But, he soon realized that most of the information could justifiably be termed *rabidly* for or against the law.

<u>Provisions of the 1872 Law</u>**.** The two aides agreed that the first thing to do was to become conversant with the law's actual provisions. [See Exhibit 1, Mining Law Basics.] Christine cited Paragraph 22 of the act as the key justification:

> Except as otherwise provided, all valuable mineral deposits in lands belonging to the United States, both surveyed and

> unsurveyed, shall be free to exploration and purchase by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law (CMJ, 2006, p. 1).

History of the 1872 Law. "At last," Bill exclaimed, "Here's a relatively balanced summary of the law's history in this position paper published by the Public Lands Foundation (PLF), one of the many advocacy groups promoting reform of the law. According to this PLF White Paper, the Mining Law was one of several of public land laws passed after the Civil War to "encourage settlement, development and private ownership of the public domain lands in the western United States" (PLF, 2006, pg.1). Any U.S. citizen who discovered minerals on public lands had the exclusive right of possession and use of all the surface land and veins or lodes extending downward from the surface. After making improvements ($100 a year for five years), they could purchase the property from the federal government for $2.50 to $5 an acre – values that were never updated. The land was then theirs to do with what they wanted, including using it as a mine, for a summer cabin, or selling it to an international mining company.

By the late 1900's, most of those nineteenth century public land laws (including the Homestead Act and the Desert Land Law) had been repealed. But, the Mining Law of 1872 remained in effect as an economic development incentive. Then in 1994, by bipartisan agreement, Congress suspended the practice of 'patenting' new claims, but required an annual renewal of the temporary prohibition. Congress has annually renewed this moratorium without controversy or disagreement, so additional federal land "give-aways" have been resolved on a year-by-year basis. There also have been several attempts to permanently ban this patenting but they failed, leaving the law itself largely intact. And, debate continues as to whether such a stimulus for economic development is still necessary.

Criticisms of the 1872 Law. Typical of the criticisms of the law was the statement Bill saw in a report by the Washington D.C. environmental group *Earthworks*:

> The antiquated 1872 Mining Law allows private companies to take valuable minerals like gold, copper and silver from public lands without regard for other potential values or uses of the land, without operating standards to protect the environment, without paying a royalty to and without regard for mining's impact [on] clean water, wildlife, our western heritage and other values. As a result, many treasured places in the West are currently threatened by mining interests. Mining has also polluted 40 percent of the

> headwaters of Western watersheds, according to the Environmental Protection Agency (Earthworks, 2005, p. 1).

Bill also located a series of articles in the *Seattle Post-Intelligencer* which called attempts by mining industry critics in Congress to levy royalties on all minerals taken from public lands "just one more battle in a land-use war that has raged for generations (McClure & Schneider, 2001, pg. 2)."

"Here's another opinion," Christine countered. "Gordon and VanDoren of The Cato Institute, wrote from the other end of the opinion spectrum, and considered most criticisms of the Mining Law to be 'vastly overstated' because of the use of a simplistic estimation technique stressing gross mining value versus return on investment. They felt that a royalty on minerals taken from federal land would be counterproductive by making mineral extraction less profitable, thereby increasing the taxpayer burden if more mining companies were to go bankrupt. They take issue with environmentally based criticisms of the law, stating:

> Unfortunately, the debate over reform of the 1872 Mining Law pits largely defective attacks against generally incomplete defenses. . . . The environmental impacts of mining, moreover, are dramatically overstated (Gorden and Van Doren, 1998, pg. 2).

POLICY INERTIA: MINING LAW REFORM

The two aides learned that, with the strong support of Interior Secretary Bruce Babbitt, efforts to reform the 1872 Mining Law began in earnest during the last term of President Clinton (1996-2000). In addition to a variety of other legislation dealing with various mining issues, three joint Senate-House bills were introduced during the 104th Congress by Senator Dale Bumpers (D-AR) and Representative George Miller (D-CA), two of the law's strongest opponents. One bill was introduced as the *Hardrock Mining Royalty Act of 1997*, which sought to establish a 5 percent royalty on the value of minerals taken from government land, with the proceeds earmarked for the cleanup of abandoned mines. The second joint bill was the *Elimination of Double Subsidies for the Hard Rock Mining Industry Act of 1997,* which would have amended the tax code to eliminate the mining industry's depletion allowance – *double subsidies* referred to this tax shelter and the low cost of acquiring public lands for mining. The third joint bill, *The Abandoned Hardrock Mines Reclamation Act of 1997,* would have levied a reclamation fee on minerals extracted from either what were or had been public lands. All of the bills remained in committee, because collectively they would have significantly reduced mining profitability based on the value of gold at that time (1997 average of $330 per troy ounce). [See Exhibit 2, Historical Gold Prices.] Five years later, little had changed; amendments were introduced, but languished in committee. The same three key reform proposals were reintroduced in 2003, with one bill proposing an 8 percent royalty. Again, no action was taken.

Hardrock mining reform bills were introduced many more times in the following years, but died. For example, the Hardrock Mining and Reclamation Act of 2007 was passed in the U.S. House by a vote of 244-116; but, it was not acted upon by the Senate so it died in January 2009. The National Mining Association fought against the bill, and there was also concern that implementing further restrictions on the industry or imposing royalties would drive even more domestic mining companies to move their operations abroad, resulting in U.S. dependence on foreign countries for metals and uranium similar to U.S. dependence on foreign oil. Then, the Hardrock Mining and Reclamation Act of 2009 was introduced in the U.S. Senate, but did not even come to a vote. Although the proposed 2009 legislation was openly backed by the Obama administration and the Interior Secretary, Senate Majority leader Harry Reid (D-NV) announced that it would not be acted on before Congress adjourned, and the bill died in January 2011.

Christine came across a *New York Times* Editorial from 2009, entitled "137 Years Later," that read, "Republican and Democratic presidents alike have urged Congress to reform the [1872] law. Yet it survives, thanks largely to Congressional inertia and friends in high places. At the moment, that friend is Harry Reid, the Senate majority leader who resists reform because mining is big business in his home state of Nevada (http://www.nytimes.com/2009/07/21/opinion/21tues3.html)."

Christine said, "Bill, I also found that in 2007, 80% of U.S. gold production was in Nevada (http://en.wikipedia.org/wiki/Gold_Mining_in_Nevada). No wonder Reid didn't favor that proposal. Yet, that *Times* Editorial also contended that those proposed reforms did no more than place the mining industry under practices that oil and gas operators, coal miners and other intensive users of the public lands – even ski areas – have operated under without undue strain for decades."

The two aides were both quiet. They had begun to fully realize the enormity of the challenge facing their boss in her quest to reform federal mining policy and potentially to reform the General Mining Law of 1872. They now realized that any bill that threatened to revise the 1872 Law would have a hard time passing both Houses of Congress. They also knew that reforming it only concerned mining on federal land. While difficult enough, changing public land policy did not begin to resolve the federal environmental risk exposure on private land if major mishaps occurred; this was a broader issue, but one that likewise would need to be addressed.

Bill finally broke the silence," I think an extra-large loaded pizza would help at this point!"

CHANGING U.S. MINING POLICY

Bill and Christine headed to the local pizza restaurant, but after placing their order, they soon were back discussing what they had learned. "Christine, in order to effectively draft the white paper, I think we need to come up with the best way to frame any proposed adjustments to the 1872 Law and to reform federal mining policy," Bill suggested. "Based on what we've read, I think it's fair to state that for any proposal to pass Congress it has to:

1. Limit some of the law's perceived excesses, but could not entirely do away with the law;

2. Continue to make it possible for the economies of Western states to benefit from mining;

3. Make the economics of mining on public lands more equitable to other groups with an alternate interest in uses of public lands; and,

4. Most importantly, reduce potential federal cleanup costs (i.e., Superfund sites), including those mine sites on now private land."

"And don't forget," Christine added, "it must be palatable to a diverse array of stakeholders: from environmental groups and mining companies, to local citizens and federal taxpayers, to government agencies and administrators, to members of Congress and their staff, as well as the executive and judicial branches. Let's head back and see if we can't come up with something tonight."

By the early hours of the next morning, they had made a shortlist of three proposals that might achieve the greatest gain for most of the interested parties (see Figure 1) and had prepared a description of each to give their boss.

CATASTROPHIC INSURANCE

Bill prepared the first option: drafting a bill that would not materially change the 1872 Law, but would require mining companies operating on either public or private land to carry third-party (private) catastrophic insurance to shield the federal government from future risk. Politically, this represented "smart" policy: use a private sector solution to solve a growing private sector problem. Passage of such a private insurance proposal, though, would certainly face great difficulties, as evidenced by debate over the national health care insurance plan in 2009 and 2010.

Bill was aware that one recent study suggested increased insurance costs would reduce mining profits by over twenty percent – about $45 million per mine, assuming all 30 major mines were covered by one insurer (Finnie, et al, 2009). But, if as few as 10 of the mines were deemed to be insurable by the same insurance provider, premiums would triple and then mining operations might not be financially feasible. This would be especially true for those mines located in more environmentally sensitive areas, since each mine would have its own "risk package" for setting insurance premiums.

ROYALTY POOL

The second policy option was Christine's proposal. This one would mandate mining companies to pay royalties as a way to mitigate federal environmental liability. The rationale for this option was that establishing an earmarked federal royalty pool of all operating mines on both public and private land would help to limit any heavy penalty on mining companies caused by potentially high private insurance costs. The argument for royalties was based on the success of similar legislation (the *Mineral Leasing Act of 1920*), removing coal, oil, and natural gas from the 1872 Mining Law. This allowed the federal government to charge a fee for mineral extraction rather than offer patent claims for these products. The federal government, as a result, collected billions of dollars in payments on the production of those items removed from this law – which the aides knew could be an important consideration in view of the now rapidly escalating federal debt. Such federal royalties were further expanded with passage of *The Surface Mining Control and Reclamation Act of 1977* (SMCRA). This law regulated the environmental effects of coal mining and set royalties of from 8 to 12.5 percent of value for all coal mined on federal land; it also required mining operators to reclaim the land after removing the coal.

Consequently, it seemed that environmental groups preferred a straightforward royalty system based on a flat percentage rate. Christine knew that the complexity resulting from mines that were sized or engineered to various gold prices and ore grades made a fair royalty difficult to achieve because the flat rate would impact various mines in very different ways. Such a royalty option for hardrock mining would be particularly attractive when the price of gold is above $400 an ounce, since the relative economic impact would be much less. But, at lower gold prices, one of the main arguments against royalties would be that they would put marginal mining operations out of business and further intensify environmental risk.

It was suggested in one research study that Christine found that an environmental mitigation fee be imposed on both public and private land at 2.5 percent of market value – generating approximately $1 billion over a decade with the funds to be managed by the EPA (Finnie, et al, 2009). Mines would be somewhat less profitable. For example, on federal land the expected after-tax rate of return would fall from 25.3 percent to 22.9 percent at $375 an ounce gold (the historical average price). This level, however, would be more than adequate to compete in capital markets. And, thought Christine, it would perhaps be a strategic time to consider this option since gold was now selling at an exceptionally high price ($1,500 in June, 2011). [See Exhibit 2, for gold prices from the 1800s to 2011.]

However, Christine discovered that, like most commodity prices, gold's short-term highs would likely gravitate toward longer-term averages, if for no other reason than probable increases in production in regions of the world without environmental safeguards or royalty fees. Therefore, consideration of domestic royalty rates of 5 percent or higher should likely be avoided because bankruptcy rates soar as gold prices drop (Finnie, et al, 2009). High royalty rates, along with falling gold prices, would only increase environmental risk – especially if companies were to go bankrupt or leave the U.S. for other countries. Using royalty rates common in the coal or oil and gas industry would likewise be inappropriate since mining techniques and capital costs would not be comparable.

MINING LAW REVISION AND ROYALTY POOL

Before they left to sleep through what was left of the night, the two agreed to see if there was a way to meld the two options. They located a third more comprehensive option to adopt the royalty alternative, but also make substantial adjustments to the 1872 Mining Law. For example, one of the provisions in HR 3968, a reform bill introduced in 2005 by Representatives Nick Rahall (D-WV), Chris Shays (R-CT), and Jay Inslee (D-WA), would increase the amount of public land on which mining would be prohibited. Additionally, under this option, mining firms would be required to pay a percentage royalty on the value of mineral extraction, but only on public land. This option would also permanently forbid the practice of patenting public land. Companies would further be required to make regular payments to an abandoned mine fund.

"But, this third proposal didn't make it through Congress in 2005," Bill lamented. He continued, "Perhaps, though, it could be resurrected in a law somewhat like SMCRA – only adapted for hardrock mining. Such a program could permit mines, regulate environmental standards, set land restrictions for where mines would be allowed, and control the royalty pool set aside for mining cleanups on both public and private land. The royalty rate would have to be established such that the rate itself doesn't contribute to environmental mishaps and abandoned mines resulting from low profit margins. But, this option does require that many proposed changes be sent Congress at once. And, that would make reform even more challenging to get passed."

Christine sighed, "I think I've hit the wall. Let's see if we can do better in the morning – or, rather, later on today after a few hours' sleep."

POLICY ANALYSIS

Regrouping late morning over Starbuck's lattes, Bill and Christine sat down at their office's conference table to discuss what they ought to recommend to their boss. They knew that they must determine the economic impact of the proposed legislation before it could be introduced, or their attempt at mining reform would likely fail as had other legislative efforts. And, to develop a sustainable mining policy, it would be necessary to balance both environmental and economic sustainability along with various other stakeholder perspectives.

Christine started their discussion. "It seems to me that the boss really has several questions and issues to consider before selecting a plan of action. First of all, what role does Congress really have in determining public environmental policy? Although Congress plays the major role in developing public policy, implementation is the responsibility of agencies operating under the executive branch. This makes producing a sustainable mining policy problematic.

"Secondly, what strategic direction should the congresswoman follow? To pass Congress, any policy enacted must set a compromise path. The policy must strike a balance in several areas: (1) between an emphasis on environmental protection and national strategic and economic interests; (2) between reforming the most controversial elements of the General Mining Law and adding greater administrative oversight of mining on private lands; and (3). allowing continued exploration and extraction of natural resources in turn for acceptance of increased responsibility for their actions by the private sector

"Lastly, which policy option (see Figure 1) should be proposed for financing future mining-related Superfund sites:

- Private sector insurance for all mines;
- A federal royalty pool for all mining companies;

- A federal royalty pool w/ revision of the 1872 Mining Law;
- Some combination of these three options.

"I agree," said Bill, "that these are important; but, I wonder how to proceed when other reform efforts have so often failed. It seems that strong political forces resist change, continuing the legislative impasse on mining law reform." Bill mused, "The old cliché 'All politics is local' may help explain why most of the politicians from mining states vote essentially the same on economic issues, regardless of party affiliation. It seems that people in Western states often hold more favorable views about mining than does the rest of the country. I guess each set of stakeholders has rational incentives to follow their own self-interest, regardless of what the larger group wants. That's why implementing change through political decisions is so difficult."

"Bill," Christine said, "We learned a lot of things in graduate school and I think we're finally going to get a chance to put some of these theories to the test."

"I couldn't agree with you more, Christine. Where do you want to start?"

<u>EXHIBIT 1</u>
MINING LAW BASICS

JURISDICTION
The 1872 Mining Law governs hardrock mining on 270 million acres of public-domain lands – mostly in the Rocky Mountain West and Alaska. This constitutes almost one-fourth of all the land in the United States, or two-thirds of the lands the federal government holds in trust.

HARDROCK MINERALS
Hardrock minerals are mainly metals like gold, copper, and uranium. These metals constitute the vast majority of the value of mineral production governed by the 1872 Mining Law. When originally passed, the 1872 Mining Law governed all types of mining. Over the past 135 years, certain types of minerals have been removed from its jurisdiction – including common materials like limestone, and bedded fuel minerals such as coal, oil and natural gas.

PUBLIC DOMAIN LANDS
Public domain lands consist of lands ceded to the federal government by the thirteen original states, plus "acquisitions" from Native Americans and foreign powers, *and* that have remained continuously in federal control since acquisition. For example, the Louisiana Purchase was all public-domain lands at one time. Public domain lands do not include lands purchased by the federal government within the existing boundaries of the United States. For example, almost all National Forests east of the Mississippi River are not public domain lands, even though they are publicly owned lands.

ESTABLISHING THE RIGHT TO MINE – STAKING A CLAIM
Under the 1872 Mining Law, any U.S. citizen (including foreign companies with subsidiaries incorporated in the U.S.) can freely enter public domain lands to explore minerals. No permit is needed. A small subset of public domain lands is excluded (e.g., National Parks). According to the 1872 Mining Law, once you discover a valuable hardrock mineral, you can then establish your right to mine that mineral by staking a claim. In practice, the federal government rarely checks to see if you have actually made a valuable discovery.

"HIGHEST AND BEST USE"
Once a claim is staked, the federal government has historically treated the claim as equivalent to a right to mine. All other types of mine proposals (e.g., coal) on public lands must be weighed against other potential land uses before permittal. But in the modern era, federal land management agencies have consistently argued that

they cannot deny hardrock mining proposals because of the 1872 Mining Law. Federal land managers insist that, in the eyes of the 1872 Mining Law, mining is the highest and best use of public lands.

Source: EARTHWORKS at http://www.earthworksaction.org/1872.cfm. Accessed 6/28/11.

EXHIBIT 2
HISTORICAL GOLD PRICES

From 1830 to 1930 the price of gold was $21 per troy ounce with no annual variation. From the Depression Era through 1970, gold averaged $25 with very little annual variation. During the Nixon Administration investors were allowed to own gold bullion, whereas prior to that time, only jewelers and dentists were permitted to hold gold in raw form.

Gold prices rose dramatically in the mid 1970s and by 1981 had peaked at $613. As world output of gold doubled, the price fell to approximately $375 through the remainder of the 1990s. In 2001 the price reached a low of $271 and then steadily rose until June 2011 when it reached $1,500. Since 2000, the sharp increase in gold price has been the result of a constant world production level, rising energy costs, and investor concern over falling dollar values due to inflation worries. Also, during this timeframe, production in the developed nations (i.e., U.S. Canada, and Australia) declined 37.5% with offsetting increases in Russia, China, South America, and other developing countries.

The table below shows annual compound returns for gold since 1974 in comparison to the S&P 500 Stock Index. As can be seen, investment appreciation returns in gold have been much higher than stock since 2000. Prior to 2000 gold returns were much lower than common equity.

Holding Period	Gold		S&P 500	
	Average	**Std.**	**Average**	**Std.**
1 Yr.	8.60%	23.40%	12.20%	14.30%
5 Yr.	6.20%	11.30%	11.70%	7.70%
10 Yr.	3.40%	6.60%	12.20%	5.50%
20 Yr.	2.10%	3.10%	12.90%	3.10%
Overall	**4.30%**	**10.00%**	**12.20%**	**6.60%**
2000 >	**16.90%**	**9.80%**	**2.60%**	**15.90%**

Source: Table was developed by the case authors based on historical gold price information from: http://www.kitco.com/charts/historicalgold.html: accessed on 6/27/11.

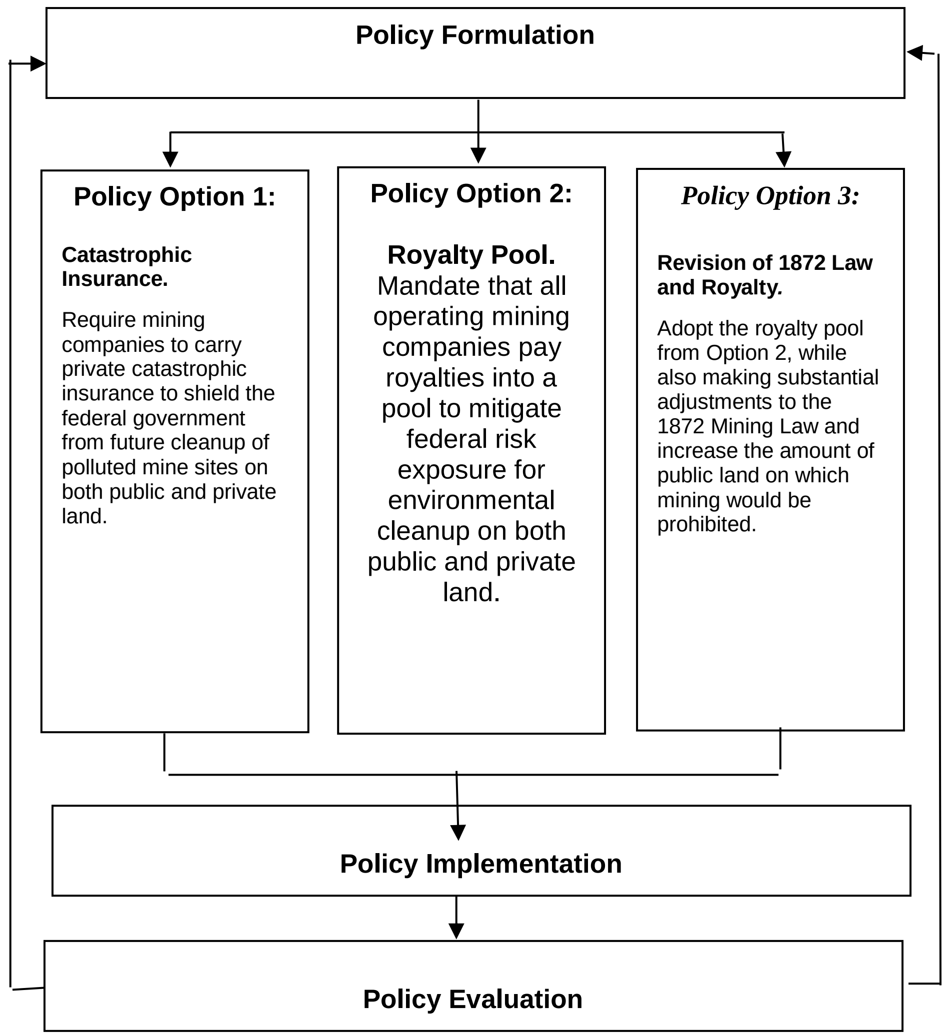
EXHIBIT 3
AGENCY ISSUES IN FEDERAL MINING REFORM

1. Policy makers from both mining and non-mining states, as well as representatives of mining companies and environmental groups, tend to retain inflexible positions because they see no personal gain through compromise. Thus, the agency problem may be at the center of the conflict – that is, there is no ownership of the consequences of specific actions. For example, while it is commonly acknowledged that companies pollute without economic consequence, it is likewise true that environmental groups bear no economic impact associated with halting mines – often located in areas with limited development potential. In this sense, both sides have a healthy regard for their own self-interest, but have no 'ante' or ownership in the 'costs' or outcomes.

2. This inflexibility to compromise may be due in part to the fact that 'negotiators' represent constituents with polar-extreme viewpoints: effectively, one side is paid to develop mines and the other to stop them. So, legislative policy gridlock can be expected.

3. Mining benefits and costs are not distributed equally. While the large employment and tax-related benefits of mining are concentrated locally, or where gold is found, the federal government is often left saddled with the environmental expense once mining ceases. This allows legislators from urban areas to vote their 'environmental' conscience without the political consequences of local job losses. Conversely, legislators from mining areas generally favor local jobs and can make subsequent 'economic' votes without locally bearing the cleanup cost. Again, an agency issue.

FIGURE 1.
POLICY OPTIONS TO REDUCE FEDERAL ENVIRONMENTAL RISK AND ASSURE GREATER FINANCIAL RESPONSIBILITY BY MINING COMPANIES



Source: Figure is based on information from Finnie, B., Stuart, J., Gibson, L. & Zabriskie, F. (2009). Balancing environmental and industry sustainability: A case study of the mining industry. *Journal of Environmental Management*, 90(12), 3690-3699.

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