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## THE TROUBLES WITH MILL SITES: RESOLVING LEGAL AND PRACTICAL BARRIERS TO MINING ON FEDERAL LANDS

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### Abstract

*This Note examines legislative, administrative, and judicial solutions to the problem of properly planning for, classifying, and siting mine waste storage facilities on federal lands. Mill sites, which provide private parties surface access and occupancy rights to federal land for activities ancillary to mining, pose significant practical and legal issues discouraging their use for mine waste storage planning. The first is the occupation issue, characterized at two points: a chicken-and-egg problem in the exploration stages of a mine's life, wherein a valid mill site must be occupied, even though the federal lands comprising the site cannot be occupied for mining purposes prior to the completion of the Mine Plan of Operations (MPO) review process; then, at the end of the mine life, a mill site featuring waste rock or tailings storage may be a permanent occupation of federal lands, causing both initial regulatory approval and future closure issues. Second, the number of mill sites that a miner may locate in connection with its claims has varied historically, with stricter interpretations resulting in little available real estate for waste disposal. Finally, mill sites must be located on non-mineral land, a status without a clear definition that could vary with time depending on economic conditions.*

*Given the legal and practical issues posed by mill sites—largely dismissed or ignored by the Ninth Circuit—mine planners, government agencies, and the public would benefit from a streamlined solution to mine waste planning. Rising populations and an increasingly technological society make mining just as important today as ever, and interference with the industry's ability to procure necessary resources is more harmful than helpful to society. Ideally, a waste storage solution would serve to make mine feasibility studies and permitting more efficient,*

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*predictable, and reliable while simultaneously upholding American economic and environmental values.*

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## Introduction

The Rosemont Copper project, located in the Santa Rita Mountains south of Tucson, Arizona, experienced a major setback to commencing operation in 2019.<sup>1</sup> Judge James A. Soto of the Federal District Court in Arizona struck down the United States Forest Service’s (USFS) approval of Rosemont’s Mine Plan of Operations (MPO), based in part on the invalidity of Rosemont’s lode claims for waste rock and tailings disposal on non-mineral lands.<sup>2</sup> The decision, *Center for Biological Diversity v. United States Fish & Wildlife Services*,<sup>3</sup> was appealed by the defendants, including USFS, United States Department of Agriculture (USDA), and Hudbay, the

<sup>1</sup> See *Ctr. for Biological Diversity v. United States Fish & Wildlife Serv.*, 409 F. Supp. 3d 738, 742–43, 748, 766 (D. Ariz. 2019).

<sup>2</sup> *Id.*; “Throughout the administrative process, the Forest Service improperly evaluated and misapplied: 1) Rosemont’s right to surface use; 2) the regulatory framework in which the Forest Service needed to analyze those surface rights; and 3) to what extent the Forest Service could regulate activities upon Forest Service land in association with those surface rights. These defects pervaded throughout the FEIS and ROD and led to an inherently flawed analysis from the inception of the proposed Rosemont Mine.” *Id.* at 766.

<sup>3</sup> *Id.*

owner/operator of the Rosemont project.<sup>4</sup> In May of 2022, a panel for the Ninth Circuit upheld the decision, suggesting that mill sites, rather than lode claims, are the appropriate means for acquiring surface rights to store waste rock and tailings.<sup>5</sup> Mill sites provide private access and occupation rights on federal lands and may be located for performing “reasonably incident” activities in support of mining operations.<sup>6</sup> Lode claims, by contrast, provide their locator with surface and mineral rights to valid discoveries on federal lands.<sup>7</sup>

On a practical and legal level, mill sites provide a poor system for reserving surface occupancy rights on federal lands.<sup>8</sup> First is the occupation issue, which exists at two junctures. To start, a mill site must be occupied in connection with mining activities.<sup>9</sup> However, this is not possible at the time the site is located because surface occupancy of federal lands is restricted prior to approval of an MPO, which includes an environmental review in compliance with the National Environmental Policy Act (NEPA).<sup>10</sup> Later, a mill site containing waste rock and tailings may be an unauthorized permanent occupation of federal lands,<sup>11</sup> which could cause permitting issues early in the project’s life or closure issues near the end. Second, differing policy objectives across presidential administrations have led to varying interpretations of the number of mill sites that may be located per lode claim,<sup>12</sup> which may contribute to some uncertainty about long-term mill site validity. Third, mill sites must be located on non-mineralized land,<sup>13</sup> which, depending on the appropriate interpretation of “non-mineral,” could be a fluid condition varying with time and the economy.

As the Ninth Circuit indicated, “the Mining Law itself leaves many ambiguities, including where mining waste can be deposited.”<sup>14</sup> Raw materials such as copper remain an important staple of modern industrial society; the future of the United States economy depends on reliable, environmentally-conscientious metal production. But seemingly simple issues such as finding the proper method of reserving federal lands for a waste site stand in the way of predictable and efficient mine permitting. There are several judicial, legislative, and administrative solutions available to mine planners and land management agencies to provide relief for one or more of the ambiguities surrounding mill sites.

An appeal to the United States Supreme Court might have offered a straightforward judicial solution, at least for Rosemont and other mine planners operating on USFS lands. Since the USFS

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<sup>4</sup> *Ctr. for Biological Diversity v. United States Fish & Wildlife Serv.*, 33 F.4th 1202, 1213–14 (9th Cir. 2022).

<sup>5</sup> *See id.* at 1217, 1222–24.

<sup>6</sup> 43 C.F.R. §§ 3832.31–34.

<sup>7</sup> *Id.* § 3832.21–22; *Ctr. for Biological Diversity*, 33 F.4th at 1209–10.

<sup>8</sup> For an earlier examination of some of these issues, *see* Richard W. Harris & Richard K. Thompson, *Millsites: Current Law and Unanswered Questions*, 38 ROCKY MTN. MIN. L. INST. 12, §§ 12.03[3], [6], 12.05[1], [4], [5], 12.06 (1992).

<sup>9</sup> 43 C.F.R. § 3832.32–33.

<sup>10</sup> 36 C.F.R. §§ 228.4–5, 228.8; 43 C.F.R. §§ 3809.401, 3809.411, 3715.6; 42 U.S.C. §§ 4321–4370–12.

<sup>11</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1220–21.

<sup>12</sup> Locating, Recording, or Maintaining Mining Claims or Sites, 68 Fed. Reg. 61046 (Oct. 24, 2003) (to be codified at 43 C.F.R. pt. 3832) [hereinafter “LOCATING SITES, FED REG”].

<sup>13</sup> 43 C.F.R. § 3832.31.

<sup>14</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1236 (Forrest, J., dissenting) (referencing the General Mining Act of 1872, codified at 30 U.S.C. §§ 22–54).

failed to take action prior to the November 2022 appellate deadline,<sup>15</sup> a judicial approach is less likely to resolve the issues in the absence of a novel lawsuit. Legislative or administrative approaches might offer solutions reaching a wider industry audience beyond Rosemont and Hudbay. Some of the most promising solutions include reinstating land patents, revising mill site size and character requirements (such as occupancy and non-mineralization), and a formal federal land exchange program.

Part II of this Note will begin with a background discussion of the statutory framework and key terminology on lode claims and mill sites under the Mining Law of 1872. Next, it will discuss the particulars of the Rosemont project and the *Center for Biological Diversity* decisions, which highlight the importance of mine waste issues and their relevance to Arizona. A review of the technical terminology important to mine waste conversations will follow, and the background discussion will close with a word about the importance of mining in the United States and Arizona and the major economic and environmental considerations that play into policy decisions with respect to mining.

Following this background information, Part III of this Note will explore each of the three mill site issues in turn: occupation, number, and non-mineral character, examining the practical quandaries and legal ambiguities within. After exploring the issues, Part IV will then turn to potential solutions: first judicial, then legislative, and finally regulatory. Part V will provide an assessment of the relative merits and pitfalls of the options explored and propose the best solutions to the issues posed by mill sites.

## **Part I: Background on the Mining Law and the Rosemont Litigation**

Mining, like many industries, seems to involve a language of its own. This section will provide some background for interpreting the issues with mill sites. It begins with a discussion of the legal framework for federal property rights in mining, then turns to the background and litigation surrounding a recent Ninth Circuit case illustrating the issues and their relevance on the federal and Arizona stage. Next, this section discusses applicable technical terminology in mining that is helpful for understanding issues and proposals and finishes with a few thoughts on the environmental impacts and economic importance of mining.

### **A. The Mining Law of 1872**

The General Mining Act of 1872 (the Law), codified in Title 30 of the United States Code,<sup>16</sup> remains the controlling federal statute on metal mining on federal lands. Under the Law, a locator may stake a discovery of locatable minerals in a lode or vein form as a maximum 1500' (strike) x 600' (width) claim.<sup>17</sup> Locatable minerals under the Law include “gold, silver, cinnabar, lead, tin, copper, or other valuable deposits.”<sup>18</sup> Staking a claim grants the locator “exclusive right of possession and enjoyment of all the surface included within the lines . . . and of all veins, lodes,

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<sup>15</sup> Save the Scenic Santa Ritas, *Hudbay, Forest Service won't appeal ruling blocking Rosemont Mine*, <https://www.scenicsantaritas.org/impacts/wildlife-and-habitat/> [<https://web.archive.org/web/20221223160013/https://www.scenicsantaritas.org/impacts/wildlife-and-habitat/>] (last visited Dec. 27, 2022) [hereinafter “Won't Appeal”].

<sup>16</sup> 30 U.S.C. §§ 22–54.

<sup>17</sup> *Id.* § 23.

<sup>18</sup> *Id.*

and ledges . . .”<sup>19</sup> subject to the right of the federal government to manage the surface resources, the right of the public to use the land (in either case so long as neither interferes with mining activity), and compliance with other federal laws and regulations.<sup>20</sup> Federal regulations have further developed the classification and location system for claims. The various locatable entries are lode claims, placer claims, mill sites, and tunnel sites.<sup>21</sup> Lode claims are often simply referred to as *claims* and are intended for in-place lodes and veins.<sup>22</sup> Placer claims are used to stake areas containing weathered and transported minerals, particularly riverbeds and other active or former waterways.<sup>23</sup> Mill sites are designed for “activities reasonably incident to mineral development.”<sup>24</sup> They are limited to five acres each, may not be located on mineralized land, and must be occupied on each half of the site.<sup>25</sup> Tunnel sites are used to temporarily explore unknown veins in a vicinity.<sup>26</sup>

Given its age, the Law is no stranger to legislative attack and practical criticism.<sup>27</sup> Criticism of the Law often revolves around the relatively low cost of claim staking and annual maintenance fees (paid by private parties to the federal government) compared to the potential revenue returns mines may generate if successful.<sup>28</sup> The “pay-your-fair-share” argument, especially with respect to tax revenues, is commonly encountered,<sup>29</sup> with public interest likely heightened when the price of metals reaches a cyclical high. The Bureau of Land Management (BLM) currently charges \$165 per year to maintain an existing claim or site, which works out to approximately \$8 per acre for claims and \$33 per acre for mill or tunnel sites.<sup>30</sup> Other opponents decry the environmental implications of a system that allows any citizen to stake a claim nearly anywhere on BLM or USFS lands, conditioned on a valid discovery.<sup>31</sup> Congress frequently sees proposals for change, but the Law persists largely in its original form.<sup>32</sup>

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<sup>19</sup> *Id.* § 26.

<sup>20</sup> 30 U.S.C. § 612; *United States v. Backlund*, 689 F.3d 986, 991–92 (9th Cir. 2012).

<sup>21</sup> 43 C.F.R. §§ 3832.12(b)–(c), 3832.31, 3832.41.

<sup>22</sup> *Id.* § 3832.21(a).

<sup>23</sup> *Id.* § 3832.21(b).

<sup>24</sup> *Id.* § 3832.31.

<sup>25</sup> *Id.* §§ 3832.31–33.

<sup>26</sup> *Id.* §§ 3832.41–43.

<sup>27</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1224.

<sup>28</sup> David Gerard, *The Mining Law of 1872: Digging A Little Deeper*, PERC POLICY SERIES 1–2 (Dec. 1, 1997), <https://www.perc.org/1997/12/01/the-mining-law-of-1872-digging-a-little-deeper/> [https://perma.cc/7QRN-HLU9].

<sup>29</sup> *See, e.g.*, Frank X. Mullen, *Mining’s ‘fair share’*, RENO NEWS & REV. (May 9, 2021), <https://renonr.com/2021/05/09/minings-fair-share/> [https://perma.cc/JSY3-5X3H].

<sup>30</sup> Bureau of Land Management, *Mining Claim Fees*, <https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals/locatable-minerals/mining-claims/fees> [https://perma.cc/Y2AW-N3VK] (last visited Nov. 6, 2023).

<sup>31</sup> Gerard, *supra* note 28, at 3.

<sup>32</sup> *Ctr. for Biological Diversity*, 33 F. 4th at 1224; *see also* U.S. DEP’T OF THE INTERIOR ET AL. RECOMMENDATIONS TO IMPROVE MINING ON PUBLIC LANDS 38 (Sept. 2023), <https://www.doi.gov/sites/doi.gov/files/mriwg-report-final-508.pdf> [https://perma.cc/C4JV-2ET3] (“[We are] not making regulatory or policy recommendations on mill sites or ancillary uses . . . . Congressional action on these questions would be helpful”).

## B. The Rosemont Project

The Rosemont Copper project is a planned open-pit copper mine in Pima County, Arizona.<sup>33</sup> The project is located approximately 30 miles southeast of Tucson, Arizona, on the east slope of the Santa Rita Mountains, partially within the Coronado National Forest.<sup>34</sup> Hudbay Minerals Inc., a Toronto-based mining company, holds the mineral and surface rights to the mining claims at the Rosemont site.<sup>35</sup>

The Helvetia-Rosemont mining district of the Santa Rita range, within which the proposed mine is situated, has been the target of exploration and mining activities since the mid-to-late 1800s.<sup>36</sup> The original claims to the modern Rosemont area were obtained in the 1950s by Banner Mining Company, which conducted the initial exploratory drilling that led to the discovery of the Rosemont copper/molybdenum deposit.<sup>37</sup> Hudbay acquired the Rosemont claims via its purchase of Augusta Resources in 2014.<sup>38</sup>

The proposed open pit<sup>39</sup> copper mine at Rosemont, should it achieve production, would be one of the highest-producing copper operations in the United States, trailing only Freeport-McMoRan's Morenci (Greenlee County, Arizona) and in a close race with Rio Tinto's Bingham Canyon (Salt Lake County, Utah).<sup>40</sup> The expected annual production rate at Rosemont is nearly 33 million ore tons at an average copper grade of 0.45 percent (expressed as a percentage of copper metal mass to the overall ore mass).<sup>41</sup> For comparison purposes, the Morenci operation, approximately 110 miles northeast of Tucson, has an average grade (in its overall mineral reserve) of 0.24 percent.<sup>42</sup> Over its expected 19-year life, the Rosemont pit would produce approximately five billion pounds of copper, 140 million pounds of molybdenum, and five million pounds of silver.<sup>43</sup> At its ultimate limit, the pit diameter would span just over one mile, with maximum depths of up to about 2,000 feet below the existing surface grade.<sup>44</sup>

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<sup>33</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1207, 1211, 1217; CASHEL MEAGHER ET AL., HUDBAY, ROSEMONT PROJECT NI 43-101 TECHNICAL REPORT 1-2 (3d ed. 2017) [on file with author].

<sup>34</sup> MEAGHER, *supra* note 33, at 1-2.

<sup>35</sup> *See id.* at 1-4, 1-5, 2-4; Hudbay Minerals Inc., *Hudbay Reaches Agreement to Purchase Rosemont's Minority Joint Venture Interest* (Mar. 13, 2019), <https://hudbayminerals.com/investors/press-releases/press-release-details/2019/Hudbay-Reaches-Agreement-To-Purchase-Rosemonts-Minority-Joint-Venture-Interest/default.aspx> [<https://perma.cc/G2K8-GP4Q>].

<sup>36</sup> MEAGHER, *supra* note 33, at 1-4, 1-6.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.* at 1-5.

<sup>39</sup> "Open pit mining is the process of mining any near-surface deposit by means of a surface pit excavated using one or more horizontal benches." HOWARD L. HARTMAN & JAN M. MUTMANSKY, *INTRODUCTORY MINING ENGINEERING* 182 (2nd ed. 2002).

<sup>40</sup> *See* Mining Technology, *Five largest copper mines in US in 2020*, <https://www.mining-technology.com/marketdata/five-largest-copper-mines-the-us-2020/> [<https://perma.cc/KRQ3-7GVM>] (last visited Nov. 6, 2023); MEAGHER, *supra* note 33, at 16-11-12.

<sup>41</sup> MEAGHER, *supra* note 33, at 16-11-12.

<sup>42</sup> *See* JAMES YOUNG, ET AL., *FREEMPORT-MCMORAN TECHNICAL REPORT SUMMARY OF MINERAL RESERVES AND MINERAL RESOURCES FOR MORENCI MINE 7*, 16 (2022), <https://www.fcx.com/sites/fcx/files/documents/operations/TRS-morenci.pdf> [<https://perma.cc/8R4H-XXWU>].

<sup>43</sup> MEAGHER, *supra* note 33, at 1-18-19.

<sup>44</sup> *Id.* at 16-1, 16-10.

### C. Rosemont Project Litigation

After ten years of feasibility studies, environmental impact studies, and administrative reviews, the USFS issued Hudbay its 2017 Record of Decision (ROD) in response to the 2013 Final Environmental Impact Statement (FEIS).<sup>45</sup> Local and national organizations and tribes opposed to the mine, including Save the Scenic Santa Ritas, the Center for Biological Diversity, the Sierra Club, the Tohono O'odham Nation, and the Pascua Yaqui Tribe, sued several federal agencies, including USFS and the U.S. Fish and Wildlife Service, regarding the approval.<sup>46</sup> Arizona District Judge James A. Soto decided in 2019 that the USFS had inappropriately approved Rosemont's MPO under the procedures of NEPA, in part by failing to review the validity of Rosemont's mine claims.<sup>47</sup> A Ninth Circuit panel upheld this finding in May 2022, agreeing that Hudbay's intent to store waste rock and tailings on unpatented lode claims of undemonstrated validity was not an allowable surface use of federal land under the Law and 30 U.S.C. § 612.<sup>48</sup> The *Center for Biological Diversity* panel decision suggested instead that mill sites are the appropriate route for mine operators to gain initial surface access and occupancy rights to federal lands for the purpose of waste disposal without further treatment of the issues presented by mill sites.<sup>49</sup> Based on this determination, the panel found the lode claims to be invalid given their lack of demonstrable mineral-bearing character.<sup>50</sup>

Prepared for the worst, Hudbay altered its approach and rebranded the operation as Copper World.<sup>51</sup> Copper World plans to mine the new complex in phases beginning with other mineralized areas on patented claims northwest of Rosemont, placing its waste on recently acquired private lands on the western slopes of the Santa Ritas.<sup>52</sup> The discovery of viable copper resources on lands adjacent to Rosemont buys Hudbay time to explore alternatives and may prove a fortuitous outcome for the company if it can afford to postpone excavation of the Rosemont deposit proper. Nevertheless, Hudbay or its successors will need to identify future solutions to ensure waste storage capacity should they wish to commence operation at Rosemont proper.

### D. Mine Waste Planning

Naturally, not every ton of earth removed from the pit will meet economic ore grade, and not every ounce of ore will be saleable copper, molybdenum, or silver. Mined material that does

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<sup>45</sup> U.S. DEP'T OF AGRIC., RECORD OF DECISION: ROSEMONT COPPER PROJECT AND AMENDMENT OF THE CORONADO LAND AND RESOURCE MANAGEMENT PLAN (June 2017), <https://media.azpm.org/master/document/2017/6/7/pdf/rosemont-feis-final-rod.pdf> [<https://perma.cc/AV9V-29J3>].

<sup>46</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1213–14.

<sup>47</sup> *Ctr. for Biological Diversity*, 409 F. Supp. 3d at 757–58, 766.

<sup>48</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1222–24. The federal government transfers fee simple ownership to a private landowner when a lode claim is patented. *See* 30 U.S.C. § 22; 43 C.F.R. § 3860.

<sup>49</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1202, 1217.

<sup>50</sup> *Id.* at 1222–24.

<sup>51</sup> Hudbay, *Copper World Complex 2022 PEA Presentation* (June 16, 2022), [https://s23.q4cdn.com/405985100/files/doc\\_presentations/2022/06/Copper-World-Complex-PEA-Presentation\\_FINAL.pdf](https://s23.q4cdn.com/405985100/files/doc_presentations/2022/06/Copper-World-Complex-PEA-Presentation_FINAL.pdf) [<https://perma.cc/6BJJ-F34Y>].

<sup>52</sup> *Id.*

not meet the “ore grade,” which generally means that it could not profitably be processed for its metal content, is classified as “waste rock.”<sup>53</sup> For perspective, at Rosemont, only about one-third of all tons produced will be classified as “ore.”<sup>54</sup> In an open pit setting, waste rock is largely composed of overburden, or non-mineralized material above the deposit that must be removed to access the ore.<sup>55</sup> After waste is blasted with explosives, loaded into a truck (most commonly), and hauled out of the pit,<sup>56</sup> it is segregated from ore and undergoes no further physical or chemical processing. The waste rock size distribution, then, may contain everything from boulders to sand and silt.<sup>57</sup> Tailings, by contrast, are the byproducts of the mineral and metallurgical processing of ore-grade material.<sup>58</sup> After the ore is mined, it is generally crushed and ground to produce a finer sand-silt-clay<sup>59</sup> distribution prior to further density sorting, aqueous (e.g., chemical leaching) or thermal (e.g., smelting) chemical processing, and metallic refining.<sup>60</sup> Tailings storage facilities, as compared to waste rock storage facilities, pose a greater engineering challenge—along with public attention and concern—both because the fine particles may be susceptible to liquefaction (leading, in extreme cases, to dam failure and downstream tailings runoff) and because those same tailings often contain high concentrations of metals and acids.<sup>61</sup>

Hudbay planned to locate Rosemont’s waste rock in what it dubbed a Waste Rock Storage Area (WRSA).<sup>62</sup> The WRSA would effectively form a rock pile prism with an overall slope of 16° (or 29 percent).<sup>63</sup> Tailings would be stored in an impoundment known as a Dry Stack Tailings Facility (DSTF) after they are filter-pressed to remove virtually all moisture.<sup>64</sup> Waste rock would be used to form the buttresses for the DSTF that prevent the dry tailings from eroding into the watershed and polluting downstream areas in a heavy rain event.<sup>65</sup> The facilities would be large, reaching heights between 600 and 700 feet, with total capacity between the two storage areas at

<sup>53</sup> HARTMAN, *supra* note 39, at 3.

<sup>54</sup> MEAGHER, *supra* note 33, at 16-25.

<sup>55</sup> HARTMAN, *supra* note 39, at 3.

<sup>56</sup> *Id.* at 120.

<sup>57</sup> See F. Ouchterlony, WHAT DOES THE FRAGMENT SIZE DISTRIBUTION OF BLASTED ROCK LOOK LIKE?, in THIRD EFEE WORLD CONFERENCE ON EXPLOSIVES AND BLASTING 189, 190 (R. Holmberg et al., European Federation of Explosives Engineers, ed., 2005), <http://ltu.diva-portal.org/smash/get/diva2:1011151/FULLTEXT01> [<https://perma.cc/L9WY-D3BM>].

<sup>58</sup> Soc’y for Mining, Metallurgy & Exploration, *What are Tailings?*, <https://www.smenet.org/What-We-Do/Technical-Briefings/What-are-Tailings> [<https://perma.cc/E7EM-B938>] (Feb. 2021).

<sup>59</sup> Colorado School of Mines, *The Tailings Center*, <https://mining.mines.edu/research/tailingscenter/> [<https://perma.cc/ZY6B-MZN2>] (last visited Nov. 6, 2023).

<sup>60</sup> See, e.g., Madhu, *Difference Between Hydrometallurgy and Pyrometallurgy*, DIFFERENCEBETWEEN.COM (Feb. 16, 2020), <https://www.differencebetween.com/difference-between-hydrometallurgy-and-pyrometallurgy> [<https://perma.cc/5949-GXKE>]; L.D. Michaud, *Mineral Processing Flowsheets*, 911 METALLURGIST (Mar. 8, 2016), <https://www.911metallurgist.com/blog/mineral-processing-flowsheets> [<https://perma.cc/V3HV-89E7>].

<sup>61</sup> See, e.g., Edwin S. Smith, *Tailings Disposal and Liquefaction*, SOC’Y OF MINING ENGINEERS OF AIME (Sept. 6, 1967), <https://www.911metallurgist.com/tailings-disposal-liquefaction/> [<https://perma.cc/6YBP-8Z4K>]; David M. Chambers, *Long-term Risk of Tailings Dam Failure*, NATIONAL PARK SERVICE (June 15, 2015), <https://www.nps.gov/articles/aps-v13-i2-c8.htm> [<https://perma.cc/9XN2-LFGE>]. Liquefaction is the liquid-like behavior of water-saturated solids in response to vibrations such as earthquakes. U.S. Geological Surv., *What is Liquefaction*, <https://www.usgs.gov/faqs/what-liquefaction#:~:text=Liquefaction%20takes%20place%20when%20loosely,cause%20major%20damage%20during%20earthquakes> [<https://perma.cc/VCK5-26FU>] (last visited Nov. 6, 2023).

<sup>62</sup> MEAGHER, *supra* note 33, at 16-27.

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* at 13-18-19, 16-1.

<sup>65</sup> *Id.* at 16-27-28, 20-4.



1.8 billion tons of waste rock and tailings.<sup>66</sup> The WRSA and DSTF would be concurrently reclaimed during the mine’s life, which would include re-vegetation and re-grading of the outer buttress slopes.<sup>67</sup> The dam’s buttresses would also serve as visual “screens” between State Route 83 (to the east) and the pit itself (to the west of the DSTF and WRSA) in order to limit the aesthetic impacts of the pit to public passersby.<sup>68</sup> While Hudbay holds patented lode claims<sup>69</sup> covering the proposed pit, the area where the company planned to construct the WRSA and DSTF are on unpatented lode claims totaling 2,447 acres.<sup>70</sup>

### **E. Economic and Environmental Considerations**

Copper, the chief metal targeted at Rosemont, plays a critical role in the economic futures of Arizona and the United States. Fulfilling the initiatives that would transition the United States to more “green energy” sources will require large quantities of copper over the coming decades.<sup>71</sup> Copper is essential to electrical and electronic infrastructure as well as the manufacturing of renewable energy technologies including wind turbines and solar panels.<sup>72</sup> Copper is also crucial for potential consumers of clean energy, especially drivers of electric vehicles.<sup>73</sup> While world copper supply currently meets demand, a supply gap is expected to develop in the 2030s as existing resources are exhausted and deposit grades continue to decline.<sup>74</sup> Today, the average American will consume 1,018 pounds of copper during their lifetime<sup>75</sup> in the form of electrical transmission technology, electronics, and buildings (e.g., wiring, plumbing, HVAC units), as well as a variety of other products and machines.<sup>76</sup> But, given that renewable energy technologies require five times as much copper as carbon-fueled ones, and that copper grades in existing resources are declining, a 13 million-ton annual supply deficit is expected to develop by 2035.<sup>77</sup> That gap could continue to grow to a 2:1 demand-to-supply ratio by 2040.<sup>78</sup>

Even so, the Rosemont project has stirred considerable controversy in Arizona. Opponents of the mine point out the potential impacts upon the local ecosystem, including the adverse

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<sup>66</sup> *Id.* at 16-25–29. Broken down, that figure is 666 tons of waste rock in the WRSA plus 582 tons of waste rock in the DSTF buttresses. Total tailings in the DSTF are planned at 592 tons.

<sup>67</sup> *Id.* at 20-4-5.

<sup>68</sup> *Id.*

<sup>69</sup> Fee simple ownership of formerly federal lands. Bureau of Land Management, *Patents*, <https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals/locatable-minerals/patents> [<https://perma.cc/2ET5-YLKL>] (last visited Nov. 6, 2023).

<sup>70</sup> *Ctr. for Biological Diversity*, 409 F. Supp. 3d at 747.

<sup>71</sup> Jeff Desjardins, *Copper: Driving the Green Energy Revolution*, VISUAL CAPITALIST (May 15, 2018), <https://www.visualcapitalist.com/copper-driving-green-energy-revolution/> [<https://perma.cc/H69E-KMYL>].

<sup>72</sup> *Id.*

<sup>73</sup> *Id.*

<sup>74</sup> HUDBAY, *supra* note 51.

<sup>75</sup> SME Minerals Education Coalition, *MEC Mineral Baby 2023*, <https://mineralseducationcoalition.org/mining-minerals-information/mining-mineral-statistics/mec-mineral-baby-2022/> [<https://perma.cc/R47J-T99S>] (last visited Nov. 6, 2023).

<sup>76</sup> Desjardins, *supra* note 71.

<sup>77</sup> *Id.*; HUDBAY, *supra* note 51.

<sup>78</sup> HUDBAY, *supra* note 51.

consequences for nine listed species under the Endangered Species Act (most interestingly, perhaps, the jaguar);<sup>79</sup> effects on the La Cienega watershed, primarily due to groundwater drawdown resulting from the pit's cone of depression;<sup>80</sup> increases in local particulate air emissions;<sup>81</sup> devaluation of scenic and recreational attractions;<sup>82</sup> and cultural concerns, such as impacts to prehistoric sites and the effects on the “deep and significant cultural, spiritual, social, physical, and holy ties to the Santa Rita Mountains” held by many of the local tribes including the Tohono O’odham Nation.<sup>83</sup> Local tribes and organizations, most notably Save the Scenic Santa Ritas, the Tohono O’odham Nation, and the Pascua Yaqui Tribe, have been heavily involved in the litigation of several issues pertaining to the mine since at least 2016.<sup>84</sup>

In any event, the United States is the world’s fifth-largest producer of copper,<sup>85</sup> and Arizona is America’s premiere copper mining state, producing 71 percent of the nation’s 1.2-million-ton production in 2020.<sup>86</sup> Arizona independently produces 4 percent of the global supply of copper.<sup>87</sup> As major players in the world copper market, the United States and Arizona have an opportunity to be industry leaders that promote safe, environmentally- and socially-conscientious copper production. Sourcing copper domestically allows the United States more regulatory and social control over the practices employed in mining operations, which better promotes sound environmental and safety practices than, in many cases, those at mining districts abroad.<sup>88</sup> Indeed, Howard Hartman and Jan Mutmanky’s well-known introductory text on mining engineering sets forth the American school of thought as follows: “mining engineers have a responsibility to operate their mines with a minimum of negative impacts . . . [T]hey must be environmentalists to be good mining engineers.”<sup>89</sup> Meeting this high environmental bar while being world market leaders

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<sup>79</sup> Save the Scenic Santa Ritas, *Wildlife and Habitat*, <https://www.scenicsantaritas.org/impacts/wildlife-and-habitat/> [<https://web.archive.org/web/20220909235932/https://www.scenicsantaritas.org/impacts/wildlife-and-habitat/>] (last visited Sept. 12, 2022).

<sup>80</sup> Save the Scenic Santa Ritas, *Water and Hydrology*, <https://www.scenicsantaritas.org/impacts/water/> [<https://web.archive.org/web/20220910001144/https://www.scenicsantaritas.org/impacts/water/>] (last visited Sept. 12, 2022).

<sup>81</sup> Save the Scenic Santa Ritas, *Air Quality*, <https://www.scenicsantaritas.org/impacts/air/> [<https://web.archive.org/web/20220909235735/https://www.scenicsantaritas.org/impacts/air/>] (last visited Sept. 12, 2022).

<sup>82</sup> Save the Scenic Santa Ritas, *Recreation*, <https://www.scenicsantaritas.org/impacts/recreation/> [<https://web.archive.org/web/20220910000943/https://www.scenicsantaritas.org/impacts/recreation/>] (last visited Sept. 12, 2022); Save the Scenic Santa Ritas, *Scenic Views*, <https://www.scenicsantaritas.org/impacts/scenic-view/> [<https://web.archive.org/web/20220910000126/https://www.scenicsantaritas.org/impacts/scenic-view/>] (last visited Sep. 12, 2022) [hereinafter “SSSR Scenic-View”].

<sup>83</sup> Save the Scenic Santa Ritas, *Heritage*, <https://www.scenicsantaritas.org/impacts/heritage/> [<https://web.archive.org/web/20220910000426/https://www.scenicsantaritas.org/impacts/heritage/>] (last visited Sept. 12, 2022); U.S. DEP’T OF AGRIC., *supra* note 45, at 72.

<sup>84</sup> *Save the Scenic Santa Ritas v. Cabrera*, No. 1 CA-CV 15-0226, 2016 Ariz. App. Unpub. LEXIS 881, at \*1 (Ct. App. July 12, 2016); *Ctr. for Biological Diversity v. United States Fish & Wildlife Serv.*, 409 F. Supp. 3d 738 (D. Ariz. 2019).

<sup>85</sup> U.S. GEOLOGICAL SURV., MINERAL COMMODITY SUMMARIES (Jan. 31, 2022) at 54–55, <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022.pdf> [<https://perma.cc/TRE4-RG8M>] [hereinafter “USGS MCS”].

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

<sup>88</sup> See DELVE, 2020 STATE OF THE ARTISANAL MINING SECTOR 17–40, 68–90 (May 4, 2021), <https://delvedatabase.org/uploads/resources/Delve-2020-State-of-the-Sector-Report-0504.pdf> [<https://perma.cc/L5ZV-V54A>].

<sup>89</sup> HARTMAN, *supra* note 39, at 523.

begins with clear, easily applicable statutes and regulations for mine planners and administrative agencies that make mine planning, permitting, and operation efficient, predictable, and environmentally conscientious.

## **Part II: Legal and Practical Issues Affecting Mill Sites**

There are three principal practical and legal issues with using mill sites to reserve federal lands for future waste rock and tailings storage. The first is occupation: a valid mill site must be occupied, even though the federal lands cannot be occupied prior to MPO review. Further, if occupied by waste rock or tailings, courts and agencies might consider this a permanent legal occupation, shaping EIS considerations and possibly violating the Law. Second is number: how many mill sites may be located is a topic of some disagreement, even if the regulations allow as many as reasonably necessary. Third, non-mineral character: a mill site must not be on mineralized ground, but what exactly is needed to prove this condition is unclear and may be susceptible to change with economic and technical conditions.

### **A. Occupation**

The *Center for Biological Diversity* panel decision effectively suggested, without further treatment, that mill sites are the appropriate route for mine operators to gain initial surface access and occupancy rights to federal lands for the purpose of waste disposal.<sup>90</sup> While that may logically follow from the distinctions among the different claim types, the existing regulations and their interpretation under the Ninth Circuit’s opinion pose a practical problem for miners at the initial planning and startup stages as well as at the close of operations.

#### **i. Initial Occupation**

First, the “initial occupation” issue: validity of mill sites is based on their occupancy in connection with mining operations.<sup>91</sup> However, before a miner can enter and occupy federal lands, they must first complete the MPO and accompanying EIS approval process as administered by the relevant land management agency.<sup>92</sup> Applying for MPO approval without valid surface rights to the entire area risks losing the ability to mine even if the MPO is approved. To understand why,

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<sup>90</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1217.

<sup>91</sup> 43 C.F.R. § 3832.33. The occupancy is permitted under 43 C.F.R. § 3832.34 only for mill facilities, buildings, tailings, leach, and rock dumps, water treatment plants, and “other use[s] . . . reasonably incident to mine development and operation . . .” 43 C.F.R. § 3832.34. Occupancy is not a “casual use” exempted by § 3715.3 and § 3809.5. *Id.* §§ 3715.3, 3809.5. Further, § 3832.34 specifically requires “obtaining authorization” from the “surface managing agency.” *Id.* § 3832.34. “Notice,” as opposed to an MPO, applies only to surface disturbances of five acres or less. *Id.* § 3809.21. *But see* Harris, *supra* note 8, at § 1205[4] (distinguishing occupancy from use in that occupancy is prospective, although prospective occupancy still requires “outward and visible signs of the applicant’s good faith . . . by improvements or otherwise”)(quoting *Charles Lennig*, 5 Pub. Lands Dec. 190, 192 (1886)).

<sup>92</sup> 36 C.F.R. §§ 228.4–5; 43 C.F.R. §§ 3715, 3809.11; 42 U.S.C. §§ 4321–4370m-12; *United States v. Backlund*, 689 F.3d at 991–92 ; *Ctr. for Biological Diversity v. United States DOI*, 623 F.3d 633, 643–45 (9th Cir. 2010).

imagine that a miner submits an MPO with no protective claims over its planned waste dump sites. At the time of submission, there would be no guarantees that, following the multi-year review process, those lands would still be available. In the meantime, competitors and opponents may see an opportunity to interfere with the miner's surface rights during the review process, including by claim staking or requesting access for alternate uses. This is not to say that, in the reviewing discretion of the land management agencies, such interfering activities would necessarily succeed at the expense of the mine planner. But the miner is guaranteed nothing; the planned operation is susceptible to risk.

The Colorado Supreme Court recognized this issue 100 years ago in *Cleary v. Skiffich*.<sup>93</sup> The *Skiffich* court stated that, while a mill site patent applicant must have a "mill or reduction works on such premises," an unpatented mill site is protected against competing claims for a "reasonable time . . . within which to commence the erection of reduction works thereon."<sup>94</sup> Otherwise, mill site locations would be valid only at the time the locator "beg[an] construction of such works in good faith and prosecuted them with reasonable diligence."<sup>95</sup> Although the Ninth Circuit has held that federal courts have the power to evict mill site or lode claimants in cases of "bad faith" location (such as the use of the mill site for a residence), they have left the full determination of validity in "compliance with the statutory requirements" to "the expertise of the government agency."<sup>96</sup>

Further application of the *Center for Biological Diversity* panel's rationale demands that the land management agency's MPO review include an assessment of the validity of the miner's surface rights under the Law as opposed to a mere presumption of validity.<sup>97</sup> The permitting process requires a miner to secure—prior to administrative approval—some form of valid surface occupancy rights. The result is an irrational chicken-and-egg quandary, wherein a mill site is not valid until it is physically occupied by ancillary mining activities. This is true even though it is impermissible to occupy the mill site until after the mining operation is approved using, presumably, mill sites to demonstrate occupation rights. It is unclear under the present system how a miner is to use mill sites to reserve waste storage areas if it cannot, prior to MPO approval, acquire some color of title with which to exclude others<sup>98</sup> or even demonstrate to the land management agency during the MPO process that it has valid surface rights. And, "[b]efore an operator perfects her claim, because there are no rights under the Mining Law that must be respected, the BLM has wide discretion in deciding whether to approve or disapprove of a miner's proposed plan of operations."<sup>99</sup>

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<sup>93</sup> 28 Colo. 362, 370–71 (1901).

<sup>94</sup> *Id.* at 370.

<sup>95</sup> *Id.* at 370–71.

<sup>96</sup> *United States v. Nogueira*, 403 F.2d 816, 823–24 (9th Cir. 1968).

<sup>97</sup> *See Ctr. for Biological Diversity*, 33 F.4th at 1221.

<sup>98</sup> Mineral prospectors may rely on the theory of *pedis possessio* in excluding others from their unperfected lode claims. ". . . [U]pon the public domain a miner may hold that place in which he may be working against all others having no better right, and while he remains in possession, diligently working towards discovery, is entitled—at least for a reasonable time to be protected against forcible, fraudulent, and clandestine intrusions upon his possession." *Union Oil Co. v. Smith*, 249 U.S. 337, 346 (1919). But, "such possession may be maintained only by continued actual occupancy by a qualified locator or his representatives engaged in persistent and diligent prosecution of work looking to the discovery of mineral." *Geomet Expl. v. Lucky Mc Uranium Corp.*, 601 P.2d 1339, 1341 (1979) (quoting *Union Oil Co. v. Smith*, 249 U.S. 337, 346–48 (1919)). However, no part of the doctrine "preclude[s] any other good-faith prospector from peaceably going within those boundaries and himself making a discovery and location." *Hanson v. Craig*, 170 F. 62, 65 (9th Cir. 1909).

<sup>99</sup> *Mineral Policy Center v. Norton*, 292 F. Supp. 2d 30, 48 (D.D.C. 2003).

Perhaps in response to the conundrum, mine developers on federal lands have often skirted the initial “no-valid-occupancy-pre-MPO” conflict the same way Hudbay did—by blanket-staking lode claims to properties within the operation’s footprint regardless of whether the precise purpose of each acre is for mining or ancillary activities.<sup>100</sup> Some operators, after receiving MPO approvals, appear to not even bother to locate mill sites for their ancillary activities.<sup>101</sup> Others possess previously patented lode claims, patented mill sites, or other private property with full possessory rights, thereby avoiding the prior occupation quandary altogether.<sup>102</sup>

## ii. Permanent Occupation

Second, the “permanent occupation” issue arises anew at the mine’s closing stage. At the end of a mine’s life, the mine operator is expected to reclaim the site to minimize environmental injury.<sup>103</sup> Generally, this includes, among other requirements, “reshaping and revegetation,”<sup>104</sup> to “support wildlife habitat, recreation, and grazing.”<sup>105</sup> In the past, patenting procedures for claims and mill sites left these lands in private ownership after mining operations ceased. After the appellate decision in *Center for Biological Diversity*, however, it is unclear whether occupation of an unpatented mill site used for storing waste rock or tailings ever truly ends.

In *Center for Biological Diversity*, the Ninth Circuit stated that storage of waste rock on mining claims after operations cease constitutes a continuous and permanent occupation of the claim.<sup>106</sup> Occupation of federal lands under the Mining Law is only permissible, first, for exploration purposes, and, following a discovery, for mining.<sup>107</sup> But “[a] right of occupancy lasts only so long as there are ‘valuable’ minerals on the claim . . . only until the claim is ‘worked out,’ or until economic forces make it no longer profitable to continue mining.”<sup>108</sup> The court here was specifically analyzing the long-term occupation rights of Rosemont’s lode claims, which it found were invalid anyway.<sup>109</sup> As a result, one might argue that the reasoning is dicta, especially since the court left open the possibility that the Forest Service might find alternative statutory support

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<sup>100</sup> See, e.g., JUSTIN SMITH, ET.AL., SRK CONSULTING, NI 43-101 UPDATED TECHNICAL REPORT ON RESOURCES AND RESERVES, PAN GOLD PROJECT, WHITE PINE COUNTY, NEVADA 20–21, app. B (September 8, 2021), [https://fioregold.com/wp-content/uploads/2021/09/PanProject\\_NI43-101\\_FinalReport\\_562400.010\\_20210908\\_compressed.pdf](https://fioregold.com/wp-content/uploads/2021/09/PanProject_NI43-101_FinalReport_562400.010_20210908_compressed.pdf) [<https://perma.cc/N8BV-BKXW>]; THOMAS L. DYER, ET AL., MINE DEVELOPMENT ASSOCIATES, TECHNICAL REPORT AND PRELIMINARY FEASIBILITY STUDY FOR THE DELAMAR AND FLORIDA MOUNTAIN GOLD-SILVER PROJECT, OWYHEE COUNTY, IDAHO, USA 1–2, 26–27, 271, app. A (March 24, 2022), [https://integresources.com/site/assets/files/2572/pfs\\_ni43-101delamarfloridamtn2022.pdf](https://integresources.com/site/assets/files/2572/pfs_ni43-101delamarfloridamtn2022.pdf) [<https://perma.cc/2QT7-U96T>]. Entering these various claims into the BLM’s LR2000 system, located at: <https://reports.blm.gov/reports/MLRS> [<https://perma.cc/EC3K-ZXCS>], demonstrates that none of these claims are mill site, despite planned ancillary activities on federal lands.

<sup>101</sup> See, e.g., SMITH, *supra* note 100.

<sup>102</sup> See, e.g., DYER, *supra* note 100.

<sup>103</sup> See 43 C.F.R. §§ 3601.40–44; 36 C.F.R. § 228.8(g).

<sup>104</sup> 36 C.F.R. § 228.8(g)(4).

<sup>105</sup> *Ctr. For Biological Diversity*, 33 F.4th at 1228.

<sup>106</sup> *Id.* at 1220–21.

<sup>107</sup> *Id.* at 1220.

<sup>108</sup> *Id.*

<sup>109</sup> *Id.* at 1222.

for the occupancy.<sup>110</sup> Accordingly, since mill sites differ legally from lode claims, it is possible that the permanent occupation standards for mill sites differ from those of lode claims. As a Nevada district court judge more narrowly read the *Center for Biological Diversity* opinion, the only requirement is that the validity of claims be assessed “before authorizing a project proponent to occupy *non-mill site lands* outside a mine pit with waste dumps and tailings piles.”<sup>111</sup> This is because “[30 U.S.C.] Section 22 requires a discovery of a valuable mineral deposit . . . before that proponent may permanently occupy any land.”<sup>112</sup>

Ultimately, however, the Mining Law governs both lode claims and mill sites, under which claims may not be used “for any purposes other than prospecting, mining or processing operations and uses reasonably incident thereto.”<sup>113</sup> Specifically excluded “reasonably incident” uses of mill sites are those “exclusively supporting reclamation or mine closure.”<sup>114</sup> And while a waste rock or tailings mill site may not be exclusively for reclamation or closure considering the full life cycle of the mine, there is a perpetual post-mining period under the permanent occupancy theory wherein the only function of the reclaimed mill site is for closure. The Ninth Circuit’s analysis raises the serious question of whether the BLM even has the authority to allow an unpatented mill site (or other claim) that would leave reclaimed waste rock and tailings piles. By doing so, they would be granting a permanent occupation of federal lands, particularly one excluding the federal government and the public from using and managing the pre-mining surface and vegetation.<sup>115</sup> At a minimum, the approach of the land management agency, and the public commenter, to the EIS process may be significantly less favorable to a project that is treated as perpetual as a matter of law.

## B. Number

There is also room for debate regarding how much property a miner can or should be able to claim under a mill site.<sup>116</sup> While mill sites are nominally five acres each, and more than one site may be staked if “reasonably necessary . . . for efficient and reasonably compact mining and milling operations,”<sup>117</sup> it is unclear how to evaluate reasonable necessity. U.S. Solicitor General opinions across administrations have disagreed as to whether only one mill site may be claimed per lode claim, or whether a miner may claim as many mill sites as it needs.<sup>118</sup> Department of Interior (DOI) Solicitor John Leshy’s 1997 Opinion altered the BLM’s prior operating procedure by limiting the number of mill sites per lode claim to one.<sup>119</sup> A battle with Congress ensued; first in 1999 and later in 2000, Congress explicitly rejected Solicitor Leshy’s 1997 Opinion on the basis

<sup>110</sup> *Id.* at 1223.

<sup>111</sup> *Bartell Ranch LLC v. McCullough*, U.S. Dist. LEXIS 19280, \*13 (D. Nev. 2023) (emphasis added).

<sup>112</sup> *Id.*

<sup>113</sup> 30 U.S.C. § 612(a).

<sup>114</sup> 43 C.F.R. § 3832.34(a)(6).

<sup>115</sup> *See* 30 U.S.C. § 612(b); *Ctr. For Biological Diversity*, 33 F. 4th at 1221; *United States v. Curtis-Nevada Mines, Inc.*, 611 F.2d 1277, 1278–79, 1285 (9th Cir. 1980) (holding that 30 U.S.C. § 612(b) prevents an unpatented claimant from excluding the public from using their claim for recreational and access purposes that “do[] not interfere with mining activities.”)

<sup>116</sup> *See Ctr. For Biological Diversity*, 33 F. 4th at 1210.

<sup>117</sup> 43 C.F.R. § 3832.32.

<sup>118</sup> LOCATING SITES, FED REG, *supra* note 12.

<sup>119</sup> *Id.*; DEP’T OF THE INTERIOR, OFFICE OF THE SOLIC., OPINION M-36988, LIMITATIONS ON PATENTING MILLSITES UNDER THE MINING LAW OF 1872 2 (1997), <https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-36988.pdf> [<https://perma.cc/RL36-6UKZ>].

that the BLM had long accepted multiple mill sites per claim.<sup>120</sup> The question prompted the BLM to promulgate the existing regulation under 43 C.F.R. § 3832.32 in 2003, allowing for more than one mill site as reasonably necessary.<sup>121</sup>

However, a presidential administration less amenable to granting public land use rights for mining could potentially operate on a stricter interpretation of the statute, limiting the scope of the phrase “reasonably necessary,” and, in turn, limiting the allowable number of mill sites per claim. A stricter interpretation like the one Leshy promoted is unlikely to reoccur given congressional dictates on the matter. But, should it return, the restriction could place as much as a 1:4 constraint on surface use for waste storage purposes. Depending on the design and landholding status of the mining operation, significant land use limitations more nearly approximating Leshy’s one-mill-site-per-claim ratio could hamper mine feasibility. Such an interpretation, if formalized as a rule, would implicate the Administrative Procedures Act (APA),<sup>122</sup> and any such result would be subject to the “arbitrary and capricious” review standard.<sup>123</sup> But, because these more restrictive legal interpretations could resurface in the future, there is still no guarantee that mill sites located today will be valid for the life of the operation.

It may be that this fear is overwrought. After all, more than 20 years have passed since the Leshy standard was abandoned by Congress. In fact, in 2020, the D.C. District Court in *Earthworks v. United States Dept. of Interior* upheld the 2003 BLM rule (43 C.F.R. § 3832) against challenges that it misconstrued the Law, violated NEPA procedures by failing to conduct a proper Environmental Assessment, and violated the APA by not providing sufficient notice and public comment.<sup>124</sup> Additionally, there may be other engineering solutions around the one-mill-site interpretation, such as staking smaller claims in order to obtain more mill sites.<sup>125</sup> Even so, other district courts, including Arizona’s, have supported the Leshy interpretation in dicta.<sup>126</sup> Whether or not such an interpretation could resurface, or even strengthen to a true 1:4 acreage ratio independent of the lode claim size (as proposed by DOI in 1999),<sup>127</sup> depends largely on congressional approval. Breathing life into more restrictive theories would require: (a) a new Solicitor opinion; (b) promulgation of a rule under 43 C.F.R. § 3832; (c) an informal DOI policy;

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<sup>120</sup> LOCATING SITES, FED REG, *supra* note 12; Emergency Supplemental Appropriations Act of May. 21, 1999, Pub. L. No. 106–31, 113 Stat. 90–91; Dep’t of the Interior and Related Agencies Appropriations Act of Oct. 11, 2000, Pub. L. No. 106–291, 144 Stat. 922.

<sup>121</sup> LOCATING SITES, FED REG, *supra* note 12.

<sup>122</sup> 5 U.S.C. §§ 552(a), 553.

<sup>123</sup> *Id.* § 706(2)(A).

<sup>124</sup> *Earthworks v. United States Dep’t of the Interior*, 496 F. Supp. 3d 472, 494–500 (D.D.C. 2020) (holding, in part, that “[t]here is no language in the statute contradicting the BLM’s reading,” and thus deferring to BLM in accordance with *Chevron* Step II because BLM “thoroughly justified its interpretation as consistent with the statute by drawing on the statutory text, Supreme Court precedent, its view of the congressional policy behind the Mining Law, and longstanding BLM practice”).

<sup>125</sup> *See id.* at 497.

<sup>126</sup> *See Ctr. For Biological Diversity*, 409 F. Supp. 3d at 763, n. 13.; *Mineral Policy Center v. Norton*, 292 F. Supp. At 47.

<sup>127</sup> Locating, Recording, and Maintaining Mining Claims or Sites; and Extension of Currently Approved Information Collection, OMB Approval Number 1004-0114, 64 Fed. Reg. 47023, 47028 (proposed Aug. 27, 1999) (to be codified at 43 C.F.R. § 3832).

(d) congressional action; or (e) a reversal of the D.C. District Court's decision in *Earthworks* vacating the existing BLM rule.<sup>128</sup> Judicial and/or congressional review following any of these actions would likely pose a barrier to the interpretation's resurrection or advancement.

### C. Non-Mineral Character

The *Center for Biological Diversity* panel opinion further raises the issue of economic marketability as a prerequisite of a valid claim.<sup>129</sup> Valid lode claims are conditioned on proof of mineral character in the form of a marketable mineral discovery,<sup>130</sup> while mill site validity is tied to the location's non-mineral character.<sup>131</sup> Satisfactory proof that a property is non-mineral in character is demonstrated where the land does not "contain mineral[s] of such quality and quantity to render expenditures for [their] extraction reasonable and prudent."<sup>132</sup> The Interior Board of Land Appeals (IBLA) has suggested, in *State of California v. E.O. Rodeffer*, that proof of non-mineral character may be made by "geologic inference or by less conclusive evidence than" a mineral discovery, "if necessary."<sup>133</sup> Mineral character is determined "at the time of the grant or patent."<sup>134</sup>

The extent to which geologic inferences (based on less thorough data) are permissible or necessary to determine non-mineral character is unclear. In *Sunburst Minerals, L.L.C. v. Emerald Copper Corp.*,<sup>135</sup> the trial court denied a challenge to the validity of mill sites on the grounds that they were not mineral in character. The site holders backed their mill site with a certified report grounded in drill hole and cost data and with a 40-year-old affidavit by parties who had previously applied for a patent.<sup>136</sup> The court, however, did not reach the question of what evidence would be sufficient to show non-mineral character.<sup>137</sup> Rather, it decided that the plaintiffs' challenge failed because they could not point to any mineral discovery at the site.<sup>138</sup> Their affidavit describing a discovery of trace mineralization, paired with an expert's testimony that the mineralization rendered the ground mineral in character, was not sufficiently backed by evidence of mineral quantities or costs.<sup>139</sup> By contrast, in *United States v. Silver Chief Mining Co., Inc.*,<sup>140</sup> the IBLA upheld a mineral character determination based only upon: (1) testimony that an individual had mined a mere sixteen tons of ore at the site,<sup>141</sup> for total revenue of just \$806 for the first eight tons (and without assessing the profit margin or sustainability of that endeavor); (2) a mineral

<sup>128</sup> This last outcome depends on the D.C. circuit's reasoning for reversal. If the rule is found to violate the Law, then the one-mill-site-per-claim rule might be the first to take effect. Otherwise, if on NEPA or APA grounds, BLM could maintain the existing rule by promulgating the rule following proper procedures.

<sup>129</sup> *Ctr. For Biological Diversity*, 33 F.4th at 1209–10.

<sup>130</sup> *Id.*

<sup>131</sup> *Montana-Illinois Copper Mining Co.*, 42 Pub. Lands Dec. 434, 436–37 (1913).

<sup>132</sup> *United States v. Silver Chief Mining Co.*, 40 IBLA 244, 248 (1979) (citing to *State of California v. E.O. Rodeffer*, 75 I.D. 176, 181 (1968)).

<sup>133</sup> *State of California v. E.O. Rodeffer*, 75 Interior Dec. 176, 179 (1968).

<sup>134</sup> *Davis's Admr. v. Weibbold*, 139 U.S. 507, 521 (1891).

<sup>135</sup> *Sunburst Minerals, L.L.C. v. Emerald Copper Corp.*, 2017 WL 4268942 at \*6–9 (D. Ariz.).

<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

<sup>138</sup> *Id.*

<sup>139</sup> *Id.*

<sup>140</sup> 40 IBLA 244 (1979).

<sup>141</sup> For comparative purposes, Rosemont would produce up to 90,000 ore tons per day. MEAGHER, *supra* note 33, at 1-22.



examiner’s opinion that the lands were mineral in character; and (3) the historic presence of mining in the area.<sup>142</sup>

The regulations pertaining to mill site patent applications, as compared to those for unpatented mill sites, are slightly more specific in their description of the required showings. These regulations permit the testimony (as to the lack of mineralization) of two or more “capable” persons acquainted with the property, but only in cases where the mineral character is “unquestioned.”<sup>143</sup> But, even if this patented mill site standard were to apply to unpatented mill sites, the question of what constitutes a satisfactory showing of non-mineral character remains. The reason is that an MPO review might be considered a “questioning” of the validity of the site under any circumstances. On the other hand, if the mineral character definitions that apply to lode claims provide a model,<sup>144</sup> the requisite showing would pose a substantial burden to mining companies. An exploration program sufficient for mineral discovery is not required,<sup>145</sup> but some heightened degree of mineral character, if expected by the study process, could prove to be a costly and time-consuming exercise.

As for Rosemont, the validity of its claims should not have been the subject of the USFS’s review in the first instance. The U.S. Solicitor General opined in 2005 and again in 2020 that federal landholding agencies are not required to assess claims and mill site validity during their review of an MPO.<sup>146</sup> The discretionary power to review mineral rights and claims belongs to the DOI and not to the USFS (which is within the USDA).<sup>147</sup> In practice, though, the DOI very infrequently reviews the mineral validity of unpatented claims and mill sites.<sup>148</sup> By contrast to the patent application process, location of claims or mill sites does not require an outright showing of mineral/non-mineral character for recording but simply subjects the holder to the *possibility* of a mineral examination.<sup>149</sup> The Ninth Circuit’s holding in *Center for Biological Diversity* effectively requires the USFS to review unpatented claim validity—and likely mill site validity—prior to granting surface occupancy rights under the MPO process.<sup>150</sup> The absence of a clear “non-mineral character” standard for unpatented mill sites rears its head now that the MPO review process automatically triggers a claim validity examination.

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<sup>142</sup> 40 IBLA 244, 248 (1979); Harris, *supra* note 8, at § 12.03[6].

<sup>143</sup> 43 C.F.R. §§ 3864.1–4.

<sup>144</sup> See *State of California v. E.O. Rodeffer*, 75 Interior Dec. 176, 179 (1968).

<sup>145</sup> See *Silver Chief Mining Co., Inc.*, 40 IBLA at 248–49.

<sup>146</sup> U.S. DEP’T OF THE INTERIOR, OFFICE OF THE SOLIC., OPINION M-37012, LEGAL REQUIREMENTS FOR DETERMINING MINING CLAIM VALIDITY BEFORE APPROVING A MINING PLAN OF OPERATIONS 2–4 (Nov. 14, 2005), <https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-37012.pdf> [<https://perma.cc/7JYW-SA88>] [hereinafter “SOLICITOR 2005”]; U.S. DEP’T OF THE INTERIOR, OFFICE OF THE SOLIC., OPINION M-37057, AUTHORIZATION OF REASONABLY INCIDENT MINING USES ON LANDS OPEN TO THE OPERATION OF THE MINING LAW OF 1872 1–3 (Aug. 17, 2020), <https://www.doi.gov/sites/doi.gov/files/m-37057.pdf> [<https://perma.cc/8Z3S-2LC8>] [hereinafter “SOLICITOR 2020”].

<sup>147</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1221–22.

<sup>148</sup> See SOLICITOR 2005, *supra* note 146, at 4; *Earthworks v. United States DOI*, 496 F. Supp. 3d 472, 479–480 (D.D.C. 2020).

<sup>149</sup> See SOLICITOR 2005, *supra* note 146, at 3; *Earthworks*, 496 F. Supp. 3d at 480.

<sup>150</sup> *Ctr. For Biological Diversity*, 33 F.4th at 1221–24.

The regulations for patented mill sites suggest that a higher showing than the testimony of two individuals familiar with the site is required in contested situations.<sup>151</sup> At this point, the mineral character showings of *E.O. Rodeffer*<sup>152</sup> seem to fill that gap. A loose standard allowing for geologic inference and presumptions may be easier on mining companies seeking to prove non-mineral character. By the same token, the lighter burden may give the agency reviewing the mill site significant discretion to demand more proof of non-mineral character or even permit significant deference to agency inferences regarding the mineral character of the grounds. For example, DOI might require some amount of drilling, assaying, geological modeling, and economic calculations to properly show a property is “non-mineral.” Discretion to require further proof of non-mineral character could then be abused, particularly if the agency or court reviewing validity chooses to enforce a standard with a higher burden of proof like those applied to discovery using the “prudent man” test.

The “prudent man” and “marketability” tests set forth by *U.S. v. Coleman*<sup>153</sup> remain the relevant standards for lode claims. In *Coleman*, the U.S. Supreme Court held that valid mineral discoveries for a claim are those for which “a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine” (the “prudent man” test) and which could be “extracted and marketed at a profit” (the “marketability” test).<sup>154</sup> Rather than operating as distinct tests, the marketability query informs the prudent man test.<sup>155</sup> The marketability component was further refined by *In re Pac. Coast Molybdenum Co.*, which held that marketability for minerals “subject to great price volatility” means “presently marketable at a profit.”<sup>156</sup> To meet the standard, a miner “must show as a present fact, considering historic price and cost factors and assuming that they will continue, there is a “reasonable likelihood of success that a paying mine can be developed.”<sup>157</sup> Present marketability, then, varies depending on past, present, or even future prices of a mineral, the capital, operating, and marketing costs, and the size and grade of the deposit.<sup>158</sup>

Prior to MPO approval, proving a mill site property is non-mineral for purposes of validity could be quite costly depending on the expected standard of proof for non-mineral character. For exploration, design, and investment reporting purposes, mineral resources are proved through exploratory drilling (commonly diamond-bit core drilling), with increasing confidence in geologic data improved by the drilling density.<sup>159</sup> Exploration programs can cost millions of dollars and require years of drilling, geologic study, and economic analysis. Even applying outdated 1987 costs, Hudbay’s 2014–15 infill campaign comprising 168,286 feet<sup>160</sup> of diamond core would cost somewhere on the order of \$2.5 to \$6.7 million.<sup>161</sup> Perhaps this is a small price to pay for a project expecting a net present value (assuming an 8 percent annual discount rate) of \$769 million in life

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<sup>151</sup> 43 C.F.R. §§ 3864.1–4.

<sup>152</sup> *See* State of California v. E.O. Rodeffer, 75 Interior Dec. 176, 179 (1968).

<sup>153</sup> 390 U.S. 599, 602–03 (1968).

<sup>154</sup> *Id.* (quoting in part *Castle v. Womble*, 19 Pub. Lands Dec. 455, 457 (1894)).

<sup>155</sup> *Id.*

<sup>156</sup> *In Re Pac. Coast Molybdenum*, 75 IBLA 16, 28–29 (1983).

<sup>157</sup> *Id.* at 29.

<sup>158</sup> *See, e.g., id.* at 29–30; BUREAU OF LAND MANAGEMENT, HANDBOOK FOR MINERAL EXAMINERS, H-3890-1 V-1 (2006), <https://www.blm.gov/sites/blm.gov/files/H-3809-1.pdf> [<https://perma.cc/CSG6-TZ5D>] [on file with author].

<sup>159</sup> HARTMAN, *supra* note 39, at 64–67.

<sup>160</sup> MEAGHER, *supra* note 33, at 1-7.

<sup>161</sup> HARTMAN, *supra* note 39, at 66–68. In today’s dollars, this range is on the order of \$6.5 to \$17.5 million. Coin News Media Group LLC, U.S. Inflation Calculator, <https://www.usinflationcalculator.com/> [<https://perma.cc/639V-BYE8>] (last visited Dec. 14, 2022).

of mine after-tax free cash flow.<sup>162</sup> But, holistically considering the existing \$1.9 billion capital development cost and the approximately 13 percent internal rate of return/dollar in copper price sensitivity,<sup>163</sup> even moderate changes to price inputs could dramatically influence project viability. If evidence for rebutting mineral character as minor as 16 tons of ore sold (or simple history of mining in the area) were sufficient to prove mineral character (as in *Silver Chief Mining Co.*), a company would need to undertake further assessment to ensure it has enough evidence to demonstrate that the sites are safely non-mineral. While the reviewing agencies and courts likely would not require anything close to resource estimation-level proof for non-mineral character, any additional investment adds to the financial burden of simply acquiring surface rights for waste sites prior to permitting a mining operation.

Despite the investment, mill site validity could be subject to the fluidity of market conditions. While *Weibbold* declared that mineral character determinations are made as of the date of the “grant or patent,” the Court was specifically referring to the time of the fee simple sale of lands as under a mineral patent or land grant to a railroad.<sup>164</sup> When it comes to unpatented mill sites, the precise timing is not set. In *Cleary v. Skiffich*, the Colorado Supreme Court addressed the issue by proclaiming that “changed conditions” after claiming a site rendering it “min[able] at a profit . . . would not affect [the claimant’s] rights.”<sup>165</sup> This “time of application” standard for an unpatented mill site might carry weight as secondary authority in courts hearing the novel issue outside of Colorado. If, however, the “date of grant” theory does not apply in other jurisdictions—including Arizona—since no land is “granted,” the relevant time frame for assessing mineral character could be the date of the challenge, or it could be similar to the marketability timeframe for claims. The present marketability test focuses on historic prices and costs; thus, mining claims and mill sites are immune from market fluctuations which might render a claim invalid under something resembling a “real-time marketability” rule.<sup>166</sup>

The IBLA did suggest, however, that future costs and prices might warrant consideration under other reasonable circumstances, with special attention paid to “structural economic changes” and “technological breakthroughs.”<sup>167</sup> Structural economic changes include, for example, the “cessation of a Government stockpiling program.”<sup>168</sup> One concern with respect to mill sites is that favorable commodity market conditions in the future could cause previously “non-mineralized” areas to reach a marketable grade, rendering the mill site invalid. The hurdles facing structural economic changes and technological breakthroughs should, admittedly, rarely be met. But, should

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<sup>162</sup> MEAGHER, *supra* note 33, at 22-10.

<sup>163</sup> *Id.*

<sup>164</sup> See *Davis v. Weibbold*, 139 U.S. 507, 519–21 (1891).

<sup>165</sup> *Cleary*, 28 Colo. at 371.

<sup>166</sup> *In Re Pac. Coast Molybdenum*, 75 IBLA at 29–30. This appears to replace the previous standard under which “[a] discovery, once made, may be “lost” through the occurrence of any one of a number of events, including simply losing track of the situs of the deposit, exhaustion of the deposit, or loss of the market and, thus, the value of the deposit.” *United States v. Reynders*, 26 IBLA 131, 133 (1976).

<sup>167</sup> *In Re Pac. Coast Molybdenum*, 75 IBLA at 29–30. *But see* *United States v. Leroy H. Clouser & Sharon Clouser*, 144 IBLA 110, 130 (1998) (holding that speculative cost changes associated with selected mining methods, without further detail, are not enough to invalidate present marketability).

<sup>168</sup> *In Re Pac. Coast Molybdenum*, 75 IBLA at 30.

such a major economic or technological shift occur in the eyes of the DOI, miners would need to hastily abandon their mill sites and stake *lode claims* to the same properties. Fortunately, as the dissent in *Center for Biological Diversity* points out, the presence of waste rock overlying the mill sites adds to the cost equation and helps prevent the underlying ground from reaching a marketable grade.<sup>169</sup> Should a major economic event create marketable mineral conditions beneath the mill site, miners would almost certainly wish to stake claims anyway to obtain the minerals even if by other means (e.g., underground mining).

Finally, given the currently vague standards for non-mineral character, there may be areas of federal land with insufficient mineralization to meet the requirements of a valid discovery (and thus the staking of a lode claim) but that are also insufficiently “non-mineralized” to fit safely within the inferential bounds of a mill site’s character.<sup>170</sup> This gray area between the standards could contribute to unnecessarily extensive staking footprints as mine planners attempt to ensure their claims fall safely within one category or the other.

### **Part III: Solutions**

There are various approaches for assisting mining companies and federal agencies in navigating the mill site issues discussed above, and each presents its own tradeoffs. Some solutions offer indirect relief by targeting the broader structure of the Mining Law. More direct solutions could tackle the quandaries presented by mill sites more efficiently, i.e., without collateral influences on other parts of the law. This Part organizes some of the available solutions into judicial, legislative, and administrative approaches. While legislative approaches differ considerably in their mechanics from administrative ones, many of the solutions explored under one category could be approached from the other, depending upon which offers the greatest efficiency, effectiveness, and ease of implementation given the circumstances.

#### **A. Judicial Solutions**

The mill sites issues manifest themselves most clearly through the differing statutory and regulatory interpretations of USFS, the district of Arizona, and the Ninth Circuit. Judicial solutions to a recently litigated issue are a natural first stop when considering reform. But, since USFS did not appeal the Ninth Circuit decision,<sup>171</sup> a writ of certiorari on this issue is no longer a possibility. However, mill site issues may resurface in future lawsuits, and the dissenting opinion of Ninth Circuit Judge Danielle Forrest may provide a basis for future challenges to the USFS’s handling of mill sites for waste rock storage.

The majority in *Center for Biological Diversity* found that 36 C.F.R. § 228 (regulations on mineral uses of National Forest lands) did not automatically apply to surface access for waste rock dumps and that the regulation did not provide any additional mining-related land use rights not already granted under 30 U.S.C. § 22 *et seq.*<sup>172</sup> The holding, pending remand to USFS, effectively limits the options for waste rock storage to validly located claims—which require a mineral discovery—or to mill sites.<sup>173</sup> Clearly, valid mining claims are not an ideal location for waste rock

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<sup>169</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1235 (Forrest, J., dissenting).

<sup>170</sup> Sometimes referred to as “quasi-mineral” land. Harris, *supra* note 8, at § 12.05[1].

<sup>171</sup> “Won’t Appeal,” *supra* note 15.

<sup>172</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1217–18, 1222–24.

<sup>173</sup> *Id.*

dumps at surface mines because the presence of waste rock would interfere with the extraction of ore.<sup>174</sup>

In her dissent, Judge Forrest argued that the majority’s interpretation of 36 C.F.R. § 228.3(a) is contradictory to the language of the regulation, which applies *per se* because it specifically references incidental mining use of federal unclaimed lands.<sup>175</sup> Judge Forrest suggests the best way to understand 36 C.F.R. § 228.3(a) is as a standalone gap-filler that resolves the problem of a miner’s surface rights on USFS lands with respect to waste rock storage.<sup>176</sup> The regulation specifically defines the operations under its purview as those “reasonably incident” to mining “regardless of whether . . . on or off mining claims.”<sup>177</sup>

The majority appeared to be distracted by 36 C.F.R. § 228.1’s use of the phrase “authorized by the United States mining laws,” to the exclusion of the preceding phrase “in connection with operations,” in determining that surface rights must first be authorized by some other statutory source before the regulations would apply. Looking to the statutory bases for authorization cited by USFS, the majority first dismissed statutory support from 30 U.S.C. § 612 because the Law merely limits use of authorized unpatented mining claims, which Rosemont’s waste areas are not.<sup>178</sup> It also rejected reliance upon 30 U.S.C. § 22 *et seq.* based upon: 1) the government’s failure to rely upon that statute at trial, 2) the fact that USFS did not rely upon the law in its issuance of the MPO, 3) the statute’s language allowing “occupation” of “valuable mineral deposits” only, and 4) Supreme Court precedent under *Union Oil v. Smith*.<sup>179</sup> In August 2022, the Ninth Circuit voted not to rehear the case *en banc*, with Judge Forrest (who authored the panel’s dissent) representing the only vote out of 28 judges for a rehearing.<sup>180</sup>

The majority admitted that Rosemont possesses valid claims to the lands upon which it plans to mine the pit.<sup>181</sup> These claims must then be “authorized by the United States mining laws.” While the claims located over the waste sites may not be so “authorized,” they certainly qualify as existing “in connection with” Rosemont’s authorized mining claims, and surely fit within 36 C.F.R. § 228.3(a)’s scope as a use “reasonably incident” to mining, which are “off” the valid mining claims. No further statutory right should be necessary to support the *per se* application of 36 C.F.R. § 228 to Rosemont’s planned surface access for waste storage.

In any event, USFS review is meant to be limited to the environmental protection of its lands in connection with proposed surface uses and not to addressing the validity of mining

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<sup>174</sup> *Id.* at 1217.

<sup>175</sup> *Id.* at 1225 (Forrest, J., dissenting).

<sup>176</sup> *Id.* at 1224–25.

<sup>177</sup> *Id.* at 1232; 36 C.F.R. § 228.3(a). The district court’s application of 36 C.F.R. § 251 Subpart B appears to be inappropriate given that the regulation’s scope as described under § 251.50(a) is “special uses,” from which “minerals” are specifically excepted. *See* 36 C.F.R. § 251.50(a); *Ctr. for Biological Diversity*, 33 F.4th at 1227–28 (Forrest, J., dissenting).

<sup>178</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1218.

<sup>179</sup> 249 U.S. 337, 346 (1919) (finding that temporary exploratory occupation is permissible under 30 U.S.C. § 22, but no mineral rights are granted without discovery); *Ctr. for Biological Diversity*, 33 F.4th at 1218–21.

<sup>180</sup> Paul Ingram, *Appeals court refuses new hearing on block of Rosemont Copper Mine*, TUCSON SENTINEL, (September 9, 2022), [https://www.tucsonsentinel.com/local/report/090922\\_rosemont\\_decision/appeals-court-refuses-new-hearing-block-rosemont-copper-mine/](https://www.tucsonsentinel.com/local/report/090922_rosemont_decision/appeals-court-refuses-new-hearing-block-rosemont-copper-mine/) [https://perma.cc/PT9V-CRYV].

<sup>181</sup> *Ctr. v. Biological Diversity*, 33 F.4th at 1217.

claims.<sup>182</sup> It is not the role of the USFS to undertake a review of the validity of mining claims as part of its EIS review, as this role resides exclusively with the BLM.<sup>183</sup> On this basis alone, the Supreme Court on appeal could have remanded the case to the district court or agency level to complete its review within the proper bounds of the USFS's authority.

It is not likely that the Supreme Court would have granted certiorari should a petition have reached the Court because the district court and Ninth Circuit decided the issues similarly, and there neither appears to be extensive recent litigation nor a circuit split surrounding mine waste rock disposal cases. However, the current conservative majority on the Court might take an interest, pending future similar litigation, in limiting the discretion of the administrative state and resolving decades-old disputes surrounding the interpretation of mining laws and regulations.<sup>184</sup>

Thus, it is likely that legislative and executive or administrative solutions provide a more realistic solution in the wake of these recent developments. The following solutions may be all the more important in guiding the future of mining regulation and legislation.

## **B. Statutory and Regulatory Solutions**

Revisions to the law or federal land use regulations streamlining location and planning for waste storage sites would encourage responsible mining in the United States. The existing framework leaves the proper and most beneficial waste storage approach unclear. These regulations ultimately limit mine feasibility, despite the fact that the Law promotes mining.<sup>185</sup> Statutory or regulatory amendments related to mill sites could even lead to indirect improvements in environmental protection, although environmental law and regulation likely remain better suited to that task.<sup>186</sup>

### **i. Legislative Solutions**

Legislative solutions may struggle to find traction. Several articles and studies of the law suggest reforms have been published since the 1960s, and Congress often sees proposals for amendments to the Law.<sup>187</sup> But legislative solutions remain an important route, as “amendment of the Mining Law is a task for Congress, not for the [Forest] Service, and certainly not for [the judiciary].”<sup>188</sup>

#### **1. Reinstating federal land patents**

Federal land patents, once the gold standard for mine operators, allowed miners to purchase title to the properties constituting their lode claims or mill/tunnel sites for a fee.<sup>189</sup> However, Congress indefinitely suspended the patent process in 1994.<sup>190</sup> Resurrecting patents would allow

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<sup>182</sup> See, e.g., SOLICITOR 2020, *supra* note 146, at 9–10, 18; *Ctr. v. Biological Diversity*, 33 F.4th at 1227 (Forrest, J., dissenting); 36 C.F.R. § 228.1.

<sup>183</sup> See, e.g., *Ctr. v. Biological Diversity*, 33 F.4th at 1227 (Forrest, J., dissenting); 36 C.F.R. § 228.1.

<sup>184</sup> See generally *West Virginia v. EPA*, 142 S. Ct. 2587 (2022).

<sup>185</sup> See 30 U.S.C. § 21(a).

<sup>186</sup> Gerard, *supra* note 28, at 2.

<sup>187</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1224.

<sup>188</sup> *Id.*

<sup>189</sup> See, e.g., 30 U.S.C. § 22; 43 C.F.R. § 3860.1.

<sup>190</sup> Act of Sept. 30, 1994, Pub. L. No. 103-332, §§ 112, 108 Stat. 2499, 2519.

mining companies to patent their claims and sites and then use the surfaces for a variety of purposes, including mining, milling, and waste rock and tailings disposal. The private mining parties would own the patented land, making it easier for the government and other parties to identify and hold mine operators accountable for their environmental impacts as potentially responsible parties under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).<sup>191</sup> While these private parties are “operators” and “arrangers” under CERCLA and thus jointly and severally liable for environmental damage, they are susceptible to insolvency and may leave “orphan” sites which must be cleaned using funds from the Environmental Protection Agency’s (EPA) “Superfund” hazardous waste cleanup program.<sup>192</sup> Successive private ownership of the patent would maintain some current owner reachable by the courts.

Congress suspended patents due to growing concerns about their use for non-mining purposes, including homesteads, marijuana cultivation, scam investments, and illicit dumping.<sup>193</sup> Reinstating patents would again allow the proliferation of potentially non-mining uses of patented federal lands. However, a U.S. General Accounting Office (GAO) report in 1990 (just four years prior to the moratorium) estimated that only 0.24 percent of claims in Arizona, Nevada, and California were used for non-mining purposes.<sup>194</sup> The level of public concern over abuses is probably overwrought, although the potential remains. And because the patenting process transfers the fee simple rights to the private party patenting the claim or site, patenting permanently removes lands from federal protection in the future without any reversion to federal ownership.

Proper compensation poses another concern for patents. Under 30 U.S.C. §§ 29 and 42, the cost of patenting a mill site was just \$5 per acre,<sup>195</sup> surely an extraordinarily low sum today. Before lifting the patent moratorium, a greater price per acre would need to be set in the statutes, perhaps reflecting a price closer to the fair market value of the resources. Since “fair market value” invites litigation, it would be better for the BLM to set an objective price per acre.

Either way, mill site patents still must be of initial non-mineral character,<sup>196</sup> which would not resolve this issue for a party such as Rosemont. The company could patent its valid claims over the pit but not the WRSA or DSTF claims, a fact that prevents it from commencing mining in the first place.

To prevent patented lands from eventually becoming mountain homes, ski resorts, logging operations, or dumps, the patent process could incorporate covenants in land transactions.<sup>197</sup> These

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<sup>191</sup> 42 U.S.C. § 103.

<sup>192</sup> ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 347–51, 353, 363–64, 370–72, 382–83 (9th ed. 2022).

<sup>193</sup> Gerard, *supra* note 28, at 7, 16–17.

<sup>194</sup> U.S. GEN. ACCT. OFF., GAO/RCED-90-111, FEDERAL LAND MANAGEMENT: UNAUTHORIZED ACTIVITIES OCCURRING ON HARDROCK MINING CLAIMS 18 (Aug. 1990), <https://www.gao.gov/assets/rced-90-111.pdf> [<https://perma.cc/W4RJ-LQ6K>].

<sup>195</sup> 30 U.S.C. §§ 29, 42.

<sup>196</sup> 43 C.F.R. § 3864.1–4.

<sup>197</sup> See PUB. LAND L. REV. COMM’N, ONE THIRD OF THE NATION’S LAND 266–67 (June 1970) [hereinafter “PLLRC”]. Covenants are “a promise concerning the use of the land that binds not only the party making the promise, but also subsequent owners of the same real estate.” JESSE DUKEMINIER ET AL., PROPERTY 227 n.13 (9th ed. 2018).

covenants could restrict use of the property to mining, reasonably incident operations, and long-term mine waste storage. Environmental restrictions might also be placed on these land titles, binding the patented property owners and their successors to certain approved waste storage practices to better ensure proper management in perpetuity. Alternatively, EPI or DOI could keep a close eye on patented storage facilities by incorporating annual inspection and reporting into the covenants. Poor successor-owner practices, such as those leading to the recent disaster at Jagersfontein in South Africa, are reminders that proactive policies may be life- and ecosystem-sustaining.<sup>198</sup>

Of course, there is the opposing concern that patented sites, properly reclaimed, might be useful for non-mining purposes in the future. Restrictive covenants could impede non-mining use, effectively withdrawing these lands from such uses forever. The extent to which this approach would impact future land use and management would be an important study prior to implementing this solution.

Another option, proposed by the 1970 Public Land Law Review Commission (PLLRC), is to allow patenting of the mineral rights to the property only, severed from the surface estate to the same land.<sup>199</sup> To patent the surface, miners could be required to pay full market value; otherwise, they would have “only a right to use the surface necessary for the extraction and processing of the minerals to which patent has been granted.”<sup>200</sup> Such a system would prevent some transfers of surface title to private hands because better-capitalized miners would likely decide that outright surface ownership was worth the cost of paying market value for the land; however, full mineral-surface estate acquisitions might end up becoming the standard industry practice. In any event, severed mineral patents would not change the need for mill site reform.

## 2. Hardrock lands leasing

Under the 1872 Law, only certain minerals are “locatable” for claim-staking purposes.<sup>201</sup> Metals and most nonmetals fall within the definition of “valuable minerals” to which location applies under the Law.<sup>202</sup> Other resource-laden properties are not subject to staking but instead are leased from the federal government under the 1920 Mineral Leasing Act (MLA).<sup>203</sup> The BLM administers these leases for sites bearing known coal (and other bituminous materials), phosphates, potash, petroleum, and natural gas.<sup>204</sup> A public bidding system is used to enable the federal

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<sup>198</sup> Insufficient care for a former tailings dam in South Africa led to a disastrous failure. Tammy Petersen, *Free State dam disaster: Compensation for damage the responsibility of company that owns it - Mantashe*, NEWS24 (Sept. 12, 2022), <https://www.news24.com/news24/southafrica/news/free-state-dam-disaster-compensation-for-damage-the-responsibility-of-company-that-owns-it-mantashe-20220912> [<https://perma.cc/U9PS-N849>].

<sup>199</sup> PLLRC, *supra* note 197, at 128. The Commission further suggested that mineral estates lapse if production ends. This would ensure patented properties return fully to the federal government’s stewardship after mining and encourage active mining as opposed to “speculative holding.” *Id.*

<sup>200</sup> *Id.*

<sup>201</sup> BUREAU OF LAND MGMT., MINING CLAIMS AND SITES ON FEDERAL LANDS 3–4 (2021), [https://www.blm.gov/sites/blm.gov/files/PublicRoom\\_Mining\\_Claims\\_Brochure-2019.pdf](https://www.blm.gov/sites/blm.gov/files/PublicRoom_Mining_Claims_Brochure-2019.pdf) [<https://perma.cc/NS54-H76C>] [hereinafter “BLM CLAIMS”]; see generally BUREAU OF LAND MGMT., MINERAL LEASING ACT OF 1920 AS AMENDED (Aug. 9, 2007), <https://www.blm.gov/sites/blm.gov/files/MineralLeasingAct1920.pdf> [<https://perma.cc/3EZ6-B3NZ>].

<sup>202</sup> BLM CLAIMS, *supra* note 201, at 3–4.

<sup>203</sup> *Id.* at 4.

<sup>204</sup> *Id.*



government to select the highest bid and thus earn a competitive “market” compensation for the use of federal lands for private profit.<sup>205</sup>

Adapting a leasing and/or royalty system to locatable minerals mining is a proposal often supported by those who feel the relatively low expense of obtaining and maintaining mining claims is a poor financial deal for the public and desire greater government discretion over exploration and permitting.<sup>206</sup> Federal control of where and how much mining takes place under an administrative system modeled on the MLA could appease economic and environmental opponents by drawing greater receipts from private mining parties and furthering federal discretion. Rather than face concern over “valid” claims or mill sites, mining companies would simply submit a bid to the BLM at regulated intervals (generally ten or twenty years) for operation at designated sites.<sup>207</sup> Heavy royalties are charged for MLA leasing; both oil and gas and surface coal leases charge royalties of 12.5 percent of gross revenue.<sup>208</sup>

However, a leasing system would likely prove a significant deterrent to mineral production and significantly reduce the attractiveness of mining nationwide. “[D]e facto administrative withdrawals of the land, as well as delays in issuing and renewing permits,” are chief concerns miners raise against universal leasing.<sup>209</sup> Differing presidential administrations with varying opinions as to how much leasing to permit and at what rate to charge royalties could lead to major swings in mineral output unless Congress fixed the amount of royalties. The competitive bidding process could also push smaller miners out of the market if they cannot afford to compete with the offers made by larger mining companies.<sup>210</sup>

Additionally, the presence or absence of nonmetal deposits (e.g., coal seams) may be somewhat more geographically predictable than metal deposits (owing to their association with stratigraphy),<sup>211</sup> making potential nonmetal lands easier to catalog and administer under the leasing system than metal lands would be. Royalties are more appropriate for non-locatable mineral extraction where exploration risk plays a lesser role in mine development, as in the present system.<sup>212</sup>

Exploration requires a significant investment in time and resources and, in any event, may lead to a “no-go” feasibility study determination. In the leasing system, exploration is subject to two-year prospecting permits, at the conclusion of which the BLM has the authority to not extend the lease if no discovery is made (but, if made, the discovering party is entitled to the initial lease).<sup>213</sup> Incentives to invest in mineral exploration would decline under a leasing system. First,

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<sup>205</sup> HARTMAN, *supra* note 39, at 28–29.

<sup>206</sup> See, e.g., Gerard, *supra* note 28, at 9–10, 15–16; PLLRC, *supra* note 197, at 130–32; H.R. 2262, 110th Cong. (2007); H.R. 699, 111th Cong. (2009); H.R. 5060, 113th Cong. (2014); H.R. 963, 114th Cong. (2015); S. 2254, 114th Cong. (2015); S. 1833, 115th Cong. (2017).

<sup>207</sup> HARTMAN, *supra* note 39, at 28–29.

<sup>208</sup> *Id.*

<sup>209</sup> Gerard, *supra* note 28, at 10.

<sup>210</sup> PLLRC, *supra* note 197, at 132.

<sup>211</sup> See Va. Dep’t of Energy, *Coal Bed Stratigraphy*, <https://www.energy.virginia.gov/geology/stratcorrelation.shtml> [<https://perma.cc/SBL8-N64X>] (last visited Nov. 6, 2023).

<sup>212</sup> HARTMAN, *supra* note 39, at 28–29.

<sup>213</sup> See Gerard, *supra* note 28, at 9; HARTMAN, *supra* note 39, at 28–29.

the government would make its knowledge of existing mineral resources known for the purpose of a public bid, which encourages operators to bid on known sites rather than conduct their own financially risky exploration. Second, explorers would be limited not by their monetary and human resources but by a fixed timeframe within which they must make a discovery. Even after discovery, a production lease expires if a mine is not developed within ten years and is subject to expiration thereafter without continuous production.<sup>214</sup> Considering the development lead times required for financing, permitting, a NEPA review, and potential litigation, mine exploration and development become increasingly risky ventures. In Rosemont's case, exploration occurred for some 50 years, and the development process is now past its 15-year anniversary.<sup>215</sup> As David Gerard of the Property and Environment Research Center argues, "an important positive feature of the Mining Law is that it allows claimants to hold marginal sites in anticipation of changing market conditions, preserving an option to develop the site at some future time."<sup>216</sup>

### 3. Clarifying waste is not an "occupation" of federal lands

One of the major issues raised by mill sites and waste rock in *Center for Biological Diversity* was the court's decision that waste rock storage constitutes permanent occupation of federal lands.<sup>217</sup> While this may seem factually reasonable, it is problematic both for mine permitting and reclamation purposes.

If the government wishes to hold a miner accountable for the waste rock or tailings in perpetuity under the theory that the lands are permanently occupied, then it would make more sense to require land patents for outright, unquestionable ownership by the operator and their successors. If, however, the government wishes to regain control of the properties after mining concludes to protect them and manage future uses, it should allow the operator to relinquish exclusive management of the sites to the United States following full reclamation of the site according to the approved MPO. In any event, restricting claims or mill sites on the theory that waste rock and tailings occupation will be permanent would seriously interfere with long-standing mining practices in the United States and pose a clear conflict with the role of the mill site in allowing for such storage.

The entire MPO process, with its considerations of appropriate reclamation and environmental protection, change significantly if an approved operation is considered a permanent commitment of public lands. The inability to de-locate a mill site at the close of the mine life cycle is a serious disincentive to mining within the Ninth Circuit's jurisdiction. A statutory dictate, or even a regulation or court opinion, establishing a legal fiction that waste rock and tailings storage no longer constitute an "occupation" of federal lands if they comply with the environmental restoration terms of their administrative approvals would mitigate this obstacle.<sup>218</sup> This in no way limits the ability of the federal government to enforce strict compliance with the ROD, or the public's expectation that the ROD will approve an MPO alternative offering an acceptable degree of environmental protection and post-mining reclamation.

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<sup>214</sup> HARTMAN, *supra* note 39, at 29.

<sup>215</sup> MEAGHER, *supra* note 33 at 1-4-5, 28.

<sup>216</sup> Gerard, *supra* note 28, at 11.

<sup>217</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1221.

<sup>218</sup> This would be very similar to the way BLM and USFS treat reclamation pursuant to an MPO to begin with. Financial assurances are released after proper completion of reclamation in accordance with the agreed upon plan. 43 C.F.R. § 3809.590; 36 C.F.R. § 228.13(d).

For anti-mining interests, infinite occupation timelines are a powerful argument for no-action ROD alternatives or even for disapproval of an operation based on a lack of authority under the Law. While the altered topography of a waste rock pile might represent a continued occupation, so too might a pit lake, formed when the water table returns in an excavated pit. The reasoning could be extended even so far as to declare any infinitesimally minor change in ground elevation, slope, or vegetation from the original surface conditions at the site at the time of the ROD an “occupation” of public lands. Therefore, the permanent occupation theory is unreasonable and poses challenges in application. The surfaces of the earth are constantly changing due to the natural influences of erosion, plant and animal behavior, and human activity, including mining. There ought to be some point at which a mining project is considered complete, and the new surface topography that will exist for the foreseeable future is considered to be more or less the new “natural” condition, “earth mingled with earth”<sup>219</sup>—just as we might when, for instance, a river changes course. Meeting the ROD reclamation requirements seems to be the best dividing line.

#### **4. Clarifying agency authority over claim validity**

One simple solution to the mill site issues from Rosemont’s perspective would be an addition to 36 C.F.R. or 30 U.S.C. specifically removing the responsibility for reviewing the validity of mine claims from USFS in its MPO review process. Such a result would be consistent with the BLM’s jurisdiction in this area, the 2005 and 2020 Solicitor General Opinions that pre-MPO validity assessments are not required, and the recommendations of the PLLRC.<sup>220</sup> Of course, the power to invalidate claims would still reside with DOI; thus, the WRSA and DSTF claims possessed by Rosemont would not be immune from challenge.<sup>221</sup> If the *Center for Biological Diversity* appellate decision stands, then some other statutory occupancy right will still be required to support the application of 36 C.F.R. § 228 by the USFS to the sites.<sup>222</sup>

#### **5. Federal Land Exchange System**

The answer to mill sites problems may not lie in mill sites or the Law itself, but rather in private property alternatives such as patented claims, discussed previously, or outright fee simple acquisition. Article IV, § 3 of the U.S. Constitution grants Congress authority over the sale of federal property.<sup>223</sup> Undeveloped federal land can be purchased from the BLM through bidding, auction, or direct sale; it can alternatively be swapped for non-federal land with the BLM or USFS.<sup>224</sup> BLM exchanges and sales are governed by the Federal Land Policy and Management

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<sup>219</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1221 (quoting Rosemont’s argument).

<sup>220</sup> See SOLICITOR 2005, *supra* note 146, at 5; SOLICITOR 2020, *supra* note 146, at 3, 18; PLLRC, *supra* note 197, at 136.

<sup>221</sup> See *Ctr. for Biological Diversity*, 33 F.4th at 1210.

<sup>222</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1222–24.

<sup>223</sup> U.S. CONST. art. IV, § 3.

<sup>224</sup> Bureau of Land Mgmt., *Federal Land Sales Frequently Asked Questions*, <https://www.blm.gov/programs/lands-and-realty/sales-and-exchanges/federal-public-land-sales-faqs> [<https://perma.cc/9BDT-N6LK>] (last visited Nov. 6,

Act (FLPMA) of 1976, which requires a determination that the exchange is in the “public interest.”<sup>225</sup> USFS exchanges may be conducted under FLPMA pursuant to the General Exchange Act of 1922<sup>226</sup> (provided the lands obtained are principally useful for National Forest purposes and in exchange for federal lands non-mineral in character), or under the Weeks Law of 1911<sup>227</sup> (small tracts in southern and eastern states).<sup>228</sup> Resolution Copper, a central Arizona Rio-Tinto/BHP joint venture, provides an example of a federal land swap instead conducted by federal statute, achieved via the 2015 National Defense Authorization Act.<sup>229</sup> Far from a model of how such swaps might be practical options, however, the Resolution swap has been heavily litigated, and there have been congressional and executive efforts to block it.<sup>230</sup>

But based on a similar land-swap principle, Congress could delegate more authority to the multi-use federal landholding agencies (BLM and USFS) to implement a uniform federal land purchase and swap register with a strict focus on mineral land development. A robust one-stop-shop federal mineral land auction system could offer the benefit of allowing mine developers to request a listing of certain properties (pending an EIS, valuation, and “public interest” determination), or could permit a bid on unrequested parcels thought to be mineral in character (along with contiguous properties). One careful step Congress could take in creating a new mining purchase/exchange system would be to specifically shield it from the FLPMA requirements under 17 U.S.C. § 1701 *et seq.*, other than a public interest determination, in order to ensure that lands are not effectively withdrawn due to the difficulties of performing a public interest balancing to approve lands for sale or exchange. If Congress were to drop the non-mineral character requirements from 16 U.S.C. § 485, the USFS would be free to engage in sales of mineral (and

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2023); U.S. GEN. ACCT. OFF., GAO/RCED-87-9, FEDERAL LAND ACQUISITION: LAND EXCHANGE PROCESS WORKING BUT CAN BE IMPROVED 2, 16 (Feb. 1987), <https://www.gao.gov/assets/rced-87-9.pdf> [<https://perma.cc/3TWP-HAJW>] [hereinafter “GAO LAND EXCHANGE”].

<sup>225</sup> 43 U.S.C. §§ 1701–1785; GAO LAND EXCHANGE, *supra* note 224, at 16; This finding involves “full consideration to better Federal land management and the needs of State and local people . . . for the economy, community expansion, recreation areas, food, fiber, minerals, and fish and wildlife,” but also “that the values and the objectives which Federal lands or interests to be conveyed may serve if retained in Federal ownership are not more than the values of the non-Federal lands or interests and the public objectives they could serve if acquired.” 43 U.S.C. § 1716(a). Sales are treated similarly, but require a finding that: a) the lands are “difficult and uneconomic to manage,” b) the lands are “no longer required for . . . any [ ] Federal purpose,” or c) that the sale would “serve important public objectives,” such as “economic development” that could not be “feasibly” achieved elsewhere “and which outweigh [the] public objectives and values” of “maintaining such tract in Federal ownership.” *Id.* § 1713(a). Competitive bidding is required unless the Secretary of the Interior determines there are “equitable considerations or public policies” upon which to prefer specific users. *Id.* § 1713(f).

<sup>226</sup> 16 U.S.C. §§ 485–486.

<sup>227</sup> *Id.* §§ 516, 519.

<sup>228</sup> GAO LAND EXCHANGE, *supra* note 224, at 16–17.

<sup>229</sup> Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015, Act of Dec. 19, 2014, Pub. L. No. 113-291, § 3003, 128 Stat. 3292, 3732 (codified at 16 U.S.C. § 539p § 3003); Resol. Copper, *Project Overview*, <https://resolutioncopper.com/project-overview/> [<https://perma.cc/D8BS-X7SJ>] (last visited Nov. 6, 2023).

<sup>230</sup> See Annette McGivney, *Biden administration pauses transfer of holy Native American land to mining firm*, THE GUARDIAN (Mar. 2, 2021), <https://www.theguardian.com/environment/2021/mar/02/arizona-oak-flat-biden-administration-pauses-transfer-native-american-site-mining-resolution-copper> [<https://perma.cc/JZR8-YYBS>]; Ernest Scheyder, *U.S. appeals court hints at support for Rio’s Resolution copper mine*, REUTERS (Oct. 22, 2021), <https://www.reuters.com/legal/litigation/us-appeals-court-hints-support-rios-resolution-copper-mine-2021-10-22/> [<https://perma.cc/7TF9-C8PZ>]; Sahar Akbarzai, *Arizona Democrat reintroduces bill to protect sacred Apache site from planned copper mine*, CNN POLITICS (Mar. 18, 2021), <https://www.cnn.com/2021/03/18/politics/oak-flat-copper-mine-legislation/index.html> [<https://perma.cc/LAG5-W4K2>].

ancillary) parcels; otherwise, public interest determinations under FLPMA could be conducted prior to listing parcels on the register.

Private ownership would resolve the mill site issues but might contribute to the costs of acquiring federal land. The planned swap for Resolution Copper, for example, involved giving the government 5,344 acres in exchange for 2,422 acres, a trade ratio of more than two to one acres.<sup>231</sup> And given the strength of opposition and the investment made by Resolution in attempting to secure this deal so far,<sup>232</sup> any land swap process for other mineral properties could meet a similarly difficult battle.

Of further note is the problem of entrusting the regulatory state with more discretion, not to mention the introduction of more moving parts in the system. An exchange might invite further challenges from opponents and hamper rather than improve the experience of miners looking for title to federal property. If the entire approval process were integrated into one regulatory review and approval, including all permitting and the land transaction, then more satisfactory results might be realized from an industry perspective. With fewer opportunities to litigate, permit approval (or rejection) times might decrease, and miners would have a better assurance of settled results, pending appeal.

## 6. “Right to Occupy” federal lands

Another potential issue with mill sites, but more so with waste rock and tailings storage in general, is that the right of private individuals and organizations to occupy federal lands for waste rock and tailings storage is less than explicit under the Law. Control of federal land use belongs to the individual administrative agencies overseeing the respective public holdings<sup>233</sup> in compliance with the FLPMA,<sup>234</sup> Multiple Surface Use Act (MSUA),<sup>235</sup> and the Law. The opening section of the Law’s sequence, 30 U.S.C. § 22, provides that “all valuable mineral deposits” on federal lands “shall be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase.”<sup>236</sup> Further, the statute limits its application to conform with “regulations prescribed by law,” “local customs or rules of miners in the several mining districts,” and “the laws of the United States.”<sup>237</sup> To top it off, 30 U.S.C. § 22 leads with the catch-all “[e]xcept as otherwise provided.”<sup>238</sup> One such exception is provided in 30 U.S.C. § 612(b), which states that “[r]ights under any mining claim . . . shall be subject, prior to issuance of patent therefor, to the right of the United States to manage and dispose of the vegetative surface resources thereof

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<sup>231</sup> 16 U.S.C. § 539p(d)(1).

<sup>232</sup> See Akbarzai, *supra* note 230; Scheyder, *supra* note 230.

<sup>233</sup> See generally 36 C.F.R. § 228; 43 C.F.R. § 3832.

<sup>234</sup> 43 U.S.C. §§ 1701–87.

<sup>235</sup> 30 U.S.C. §§ 611–15; Bureau of Land Mgmt., *National Timeline*, <https://www.blm.gov/about/history/timeline> [<https://perma.cc/LD3R-ZLCX>] (last visited Nov. 8, 2023).

<sup>236</sup> 30 U.S.C. § 22.

<sup>237</sup> *Id.*

<sup>238</sup> *Id.*

and to manage other surface resources thereof” but shall not “endanger or materially interfere with prospecting, mining or processing operations or uses reasonably incident thereto.”<sup>239</sup>

Noticeably absent from § 22 is any express mention of ancillary-use adjacent property occupation. The statute, most literally interpreted, would appear to apply only to mineral deposits themselves and to the lands presumably directly overlying them, which would exclude non-mineralized lands for mills, waste storage areas, tailings facilities, ore stockpiles, equipment shops, administrative offices, core sheds, and various other necessary land uses that may far exceed the actual surface or underground workings. Later sections of the sequence, including §§ 28f, 28g, and 42, do make references to mill sites and to “nonmineral land not contiguous to the vein or lode . . . occupied . . . for mining or milling purposes,” providing that these “may” be included as part of a land patent.<sup>240</sup> With the existing patent moratorium, § 42 appears to instead provide the basis for 43 C.F.R. § 3232’s unpatented mill site procedures, limiting mill site patents (or, under the C.F.R., unpatented sites) to five acres.<sup>241</sup> But it is unclear whether 30 U.S.C. § 42 even applies to unpatented mineral claims.

Section 612(a) may provide for ancillary-use occupation in that it restricts the use of a “mining claim hereafter located under the mining laws of the United States . . . for any purposes other than prospecting, mining or processing operations and uses reasonably incident thereto.”<sup>242</sup> The provisions of 43 C.F.R. §§ 3715.0–5 contain the DOI’s interpretation of the definition of “reasonably incident” under that statute as including “actions . . . to prospect, explore, define, develop, mine, or beneficiate a valuable mineral deposit,” but stops short of expressly including waste or tailings storage.<sup>243</sup> Instead, it leaves the administrative agency with only an inference that waste rock or tailings storage falls under the final §§ 3715.0–5 catch-all of “reasonably related activities.” All this assumes that mill sites fall within 30 U.S.C. § 612(a) as a “mining claim” at all.<sup>244</sup> Alternatively, the 2020 Interior Solicitor Opinion argued that 30 U.S.C. § 22 presents an “independent, self-executing authorization” for “reasonably incident mining uses,” which may be limited by the FLPMA or SRMUA but are statutorily protected under the Law, independent of claim validity.<sup>245</sup>

From a pro-industry perspective, § 22 could be strengthened by making its application absolute. As currently written, it provides near-maximum flexibility to the administrative state, other congressional action, and even “local custom” to narrow or even override any implied statutory “right” to enter federal lands and engage in mining activities. More carefully limiting these exceptions, such that mineral entry is statutorily protected and less susceptible to administrative control (with its attendant swings in policy objectives), would help streamline mine exploration and development by improving industry confidence in mining rights. Better yet, the statutes could include language specifically permitting the full host of waste rock and tailings disposal land occupations in connection with authorized mining entries, rather than leaving them

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<sup>239</sup> *Id.* § 612(b).

<sup>240</sup> *Id.* §§ 28f–g, 42.

<sup>241</sup> 43 C.F.R. § 3832.32.

<sup>242</sup> 30 U.S.C. § 612(a).

<sup>243</sup> 43 C.F.R. §§ 3715.0–5. § 3832.34 does, of course, specifically enumerate “[t]ailings ponds and leach pads” and “[r]ock and soil dumps” as allowable uses for mill sites. 43 C.F.R. § 3832.34(a). So while the issue has not expressed itself in the regulations, a certain degree of interpretive risk exists.

<sup>244</sup> *Id.* §§ 3715.0–5. The Department of Agriculture treats 30 U.S.C. § 612 as applying to unpatented lode claims, placer claims, and mill sites. 36 C.F.R. §§ 228.41(b)(3), 228.42. Interior’s treatment of mill sites as “mining claims” under 30 U.S.C. § 612 is less clear. 43 C.F.R. §§ 3715.0–5.

<sup>245</sup> SOLICITOR 2020, *supra* note 146, at 3, 12–13, 21.

subject to the vagaries of regulation and judicial interpretations. An amended § 22 could incorporate some clear congressional authorizations to provide more limits on the appropriate extent of regulatory authority to deny federal land occupation for mining purposes.

Environmental groups and regulatory authorities are not likely to welcome a federal “right to occupy.” Administrative discretion and flexibility may be a useful tool in certain circumstances, particularly for situations that Congress fails to anticipate when drafting the statute. Given the longstanding history of the Law and the ever-increasing role of the administrative state<sup>246</sup> since the Law’s enactment 150 years ago, it is unlikely that Congress, the Executive Branch, or many political and environmental interests would feel comfortable offering blanket protection of mining rights without a significant degree of administrative oversight, input, and control.

## 7. Federal land withdrawals

An oft-encountered criticism of projects such as Rosemont is the natural, ecological, and scenic value of the countryside disturbed by the mining activity.<sup>247</sup> The theory brings forth an important inquiry: when is it appropriate to declare sites off-limits to mining where they are valuable to the public for environmental, ecological, aesthetic, recreational, cultural, or historical reasons?<sup>248</sup> Rather than invite litigation after a mining company has spent time and money studying, developing, and permitting a project, would it not be simpler to withdraw the area from locatable lands at the outset?<sup>249</sup> Both sides of the mining equation—operator and opponent—would at least appreciate the honesty of the approach. While land withdrawals would do nothing to solve the mill site issues, they might be an option for limiting mining in areas where there is broad consensus that the non-mineral public values substantially outweigh mining interests.

Congress (and the President, by virtue of congressional delegation) already has the power to withdraw certain lands from mining and has done so extensively.<sup>250</sup> Two such examples of withdrawal include the National Park System, a public land framework whereby properties of

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<sup>246</sup> See generally The Heritage Foundation, *The Birth of the Administrative State: Where It Came From and What It Means for Limited Government* (Nov. 20, 2007), <https://www.heritage.org/political-process/report/the-birth-the-administrative-state-where-it-came-and-what-it-means-limited> [<https://perma.cc/8SQK-E5Q5>].

<sup>247</sup> See, e.g., SSSR Scenic-View, *supra* note 82.

<sup>248</sup> The Santa Ritas and the Rosemont mine are simply used as an illustration of value-weighting here. This is by no means an endorsement of any particular land withdrawal.

<sup>249</sup> As an example, Pima County (an opponent to the Rosemont project), had an opportunity to purchase the property for conservation purposes in 2004, but declined to do so. Tim Stellar, *Asarco wants its former Rosemont Ranch property back*, ARIZONA DAILY STAR (Aug. 28, 2007), [https://tucson.com/business/asarco-wants-its-former-rosemont-ranch-property-back/article\\_39f1007d-fea1-57f0-9fed-6a51b3c1fda9.html](https://tucson.com/business/asarco-wants-its-former-rosemont-ranch-property-back/article_39f1007d-fea1-57f0-9fed-6a51b3c1fda9.html) [<https://perma.cc/HW27-M2VF>]; PIMA COUNTY BOARD OF SUPERVISORS, RESOLUTION OF THE PIMA COUNTY BOARD OF SUPERVISORS OPPOSING THE ROSEMONT MINE 2–3 (Jan. 2007), [https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/County%20Administrator/Memoranda-to-BOS/Rosemont%20Mine/2007/January%2007/2007-1-18-rg-mining-santa-rita-mountains-.pdf](https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/County%20Administrator/Memoranda-to-BOS/Rosemont%20Mine/2007/January%2007/2007-1-18-rg-mining-santa-rita-mountains-.pdf) [[https://web.archive.org/web/20210927065926/https://webcms.pima.gov/UserFiles/Servers/Server\\_6/File/Government/County%20Administrator/Memoranda-to-BOS/Rosemont%20Mine/2007/January%2007/2007-1-18-rg-mining-santa-rita-mountains-.pdf](https://web.archive.org/web/20210927065926/https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/County%20Administrator/Memoranda-to-BOS/Rosemont%20Mine/2007/January%2007/2007-1-18-rg-mining-santa-rita-mountains-.pdf)].

<sup>250</sup> 43 C.F.R. §§ 2300.0–3; BLM CLAIMS, *supra* note 201, at 12; 54 U.S.C. §§ 320301–320303; 16 U.S.C. § 1131–36.

“scen[ic], natural and historic [ ], and wild life” value are reserved from all natural resource exploitation, and those under the Wilderness Act of 1964, which protects designated wilderness areas from virtually any development and motorized vehicle use.<sup>251</sup> For example, anti-mining groups might support a withdrawal of all USFS lands on the theory that they generally possess more of the aforementioned natural values than general-purpose BLM lands do.<sup>252</sup> The 1970 PLLRC opined that “Congress should continue to exclude some classes of public lands from future mineral development,” specifically those with “unique public values.”<sup>253</sup> However, the Commission recommended that federal agencies undertake “mineral examinations” by way of geochemical and geophysical exploration methods to aid withdrawal decision-making and to locate “standby reserves” on protected lands for “national emergencies.”<sup>254</sup>

A major withdrawal spree that includes eliminating entry for mining, or even just surface mining, on USFS lands would have a devastating effect on the mining industry and produce disparate national impacts. While such a withdrawal would protect the Rosemont property from mining activity, it would simultaneously produce drastic limitations on other mining operations in the western United States, since some 30 percent of federal lands are USFS-managed.<sup>255</sup> States such as Idaho, Montana, and even Arizona, where USFS landholdings are extensive,<sup>256</sup> would experience sharp declines in available federal lands and reduce the production of certain important minerals like Arizona’s copper. By contrast, in states such as Nevada (with its major gold mining industry<sup>257</sup>) where BLM holdings are predominant,<sup>258</sup> there would be fewer impacts in the face of such a policy. Among the foreseeable issues of such a limited public lands mining system would be the temptation for federal agencies to transfer property management in order to prevent the commencement of mining operations to which they are opposed. Withdrawing significant public land holdings from mining activity might be an appealing solution for anti-mining groups, but it would spell disaster for mineral production in the western United States. A mineral examination of federal lands contemplated for withdrawal would at least ensure that the managing agency understands the potential mineral value of the lands being withdrawn, the public has an opportunity to raise objections to specific withdrawals based on the competing values of uses, and the geologic data exists for possible future use in case of national emergency.

## ii. Administrative Solutions

Regulatory solutions may be an attractive option for those seeking to sidestep a deadlocked Congress. But even rulemaking is not a straightforward process, involving the publication of proposals, a comment period, issuance of a final rule, and congressional review.<sup>259</sup> Further still,

<sup>251</sup> 54 U.S.C. § 100101(a); Wilderness Act of Sept. 3, 1964, Pub. L. No. 88-577, § 4(c), 78 Stat. 890, 894.

<sup>252</sup> *See, e.g.*, *Pathfinder Mines Corp. v. Clark*, 620 F. Supp. 336, 341 (D. Ariz. 1985) (suggesting that federal reservation of the Grand Canyon Game Preserve, later part of the North Kaibab National Forest, implicitly withdrew the lands from mineral entry as part of the purpose of the reservation).

<sup>253</sup> PLLRC, *supra* note 197, at 123.

<sup>254</sup> *Id.*

<sup>255</sup> CONGRESSIONAL RESEARCH SERVICE, R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 1 (Feb. 21, 2020), <https://crsreports.congress.gov/product/pdf/R/R42346> [<https://perma.cc/V78B-HR6G>] [hereinafter “CRS”].

<sup>256</sup> *Id.* at 9–10.

<sup>257</sup> USGS MCS, *supra* note 85, at 72.

<sup>258</sup> CRS, *supra* note 256, at 9–10.

<sup>259</sup> OFF. OF THE FED. REG., A GUIDE TO THE RULEMAKING PROCESS (Jan. 2011), [https://www.federalregister.gov/uploads/2011/01/the\\_rulemaking\\_process.pdf](https://www.federalregister.gov/uploads/2011/01/the_rulemaking_process.pdf) [<https://perma.cc/JGG5-2HBN>].



without congressional and constitutional authority, an agency’s rulemaking is unauthorized.<sup>260</sup> Many of these proposed solutions, then, while targeting regulation may still require some degree of organic congressional action or blessing.

## 1. Custom Site Sizes

A five-acre mill site suited the mining methods of the day when Congress enacted the Mining Law in 1872. Vast quantities of overburden storage could not have been contemplated at a time when relatively small quantities of waste rock were capable of easy disposal somewhere outside the portal. Large-scale, low-grade, open pit mining operations are more a product of 20<sup>th</sup>-century technological innovation and economies of scale.<sup>261</sup> Even though multiple mill sites per lode claim are permissible under current regulations and DOI Solicitor Opinions, limiting individual mill sites to five acres (43 C.F.R. § 3832.32) in the first place makes them unreasonably small and overly complicated to manage. In Rosemont’s situation, 2,447 acres<sup>262</sup> for the WRSA and DSTF alone represent almost 500 individual mill sites, which require an application, recordation, and assessment for each. Larger mill sites, perhaps matching the size of lode claims, could make the application and administration process much simpler for both the miner and the BLM. A larger mill site might also serve to clear up lingering doubts or fears about multiple mill site locations.

As mentioned above, 43 C.F.R. § 3832.32 restricts multiple mill sites to those “reasonably necessary to be used or occupied for efficient and reasonably compact mining or milling operations.”<sup>263</sup> Such an open-ended regulation hinging on reasonableness might be convenient for the BLM, but it provides very little guidance to the miner on the number of allowable mill sites. Worse, it is susceptible to arbitrary line-drawing by the BLM, which may decide to interpret “reasonably necessary” very differently than the mine operator seeking to locate those same sites. Fixing a definite number of mill sites per lode claim would help clear up existing confusion. However, care must be taken to ensure that the ratio of claims to sites provides sufficient room for unusual circumstances and engineering innovation. The “reasonably necessary” language does, at least, protect miners from a rigid rule. Case studies on the dimensions of waste and tailings storage facilities in comparison to the dimensions and strip ratios of the mines they serve would provide valuable insight to this analysis.

Lode claims are no less outdated. At just over 20 acres, their size provides a miner more space under which to operate than a mill site, but their dimensions are much less useful today than they once were. Title 30, Section 23 of the U.S. Code sets the maximum dimensions of lode claims

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<sup>260</sup> *Id.*

<sup>261</sup> See U.S. DEP’T OF THE INTERIOR, OFF. OF THE SOLIC., OPINION M-37004, USE OF MINING CLAIMS FOR PURPOSES ANCILLARY TO MINERAL EXTRACTION 5–6 (Jan. 2001), <https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-37004.pdf> [<https://perma.cc/7KV3-VMEH>] [hereinafter “SOLICITOR 2001”]; Encyclopedia Britannica, *Daniel Cowan Jackling*, <https://www.britannica.com/biography/Daniel-Cowan-Jackling> [<https://perma.cc/CF89-4E8X>] (last visited Nov. 6, 2023).

<sup>262</sup> *Ctr. for Biological Diversity*, 409 F. Supp. 3d at 747.

<sup>263</sup> 43 C.F.R. § 3832.32.

at 1,500 feet along a vein or lode strike and 600 feet perpendicular to the strike (centered on the vein/lode), which yields a 20.66-acre claim.<sup>264</sup> Regulations may set the perpendicular dimension of the claim to as little as fifty feet, which would form a mere 1.72-acre claim.<sup>265</sup> But 43 C.F.R. § 3832.22 adopts the larger of the allowable statutory dimensions.<sup>266</sup>

Allowing for larger lode claims under 43 C.F.R. § 3832.22 would offer similar administrative benefits to increasing mill site sizes but would first require changes to the statute codified at 30 U.S.C. § 23. One option, in which Congress and the BLM would work together to optimize efficient land use, is to allow locating claims and mill sites of any shape or size appropriate to the specific orebody in question and simply assess the fees for staking and maintenance based on the total acreage involved. Since 30 U.S.C. § 42's five-acre mill site limitation is specifically a limitation on *mill site* patents,<sup>267</sup> The BLM should have the leeway to expand unpatented mill site sizes without a statutory amendment. Additionally, Congress and BLM might use this as an opportunity to increase assessments based on the total tonnage of ore and waste extracted from the claim or by the maximum depth of the workings at the claim. If so, the BLM needs to establish fee assessment distinctions between underground and surface operations such that it would not unfairly discriminate between the different mining methods, especially where underground operations are likely to reach lower depths and surface operations to yield higher tonnages.

Congress could go even further and drop the distinctions between lode and placer claims, effectively collapsing their differences under 43 C.F.R. § 3832.12(c),<sup>268</sup> especially their size and shape requirements. And perhaps the U.S. Public Land Survey's township and range system would serve as a clean demarcation substitute to oddly shaped lode claims oriented with respect to non-linear natural features.

More efficient claiming and waste siting procedures might lead to more mining on federal lands, which would be of great benefit to the mining industry and the national and local economies. For those opposed to mining activities, however, this may not be a winning formula.

## 2. "Waste Site" designation

To achieve even greater efficiency than simply expanding the areal extents of mill sites, regulations could be amended to include a special location designation for "waste sites." Areas intended for waste rock storage, tailings facilities, and even ore stockpiles and leach pads could be handled in their own separate "waste site" provision of § 3832. Dimensions appropriate for these storage areas, as discussed previously, could be tailored under such a rule. Smaller "mill sites" would then apply more appropriately to processing facility footprints only rather than to the much vaster territorial extent of the waste rock and tailings storage areas.

The Law does not lay out the exact requirements for unpatented mill sites, which may provide the BLM some flexibility in fashioning this classification. However, the Law also fails to make any mention of "waste sites" or any other classification for non-mining use properties other

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<sup>264</sup> 30 U.S.C. § 23.

<sup>265</sup> *Id.*

<sup>266</sup> 43 C.F.R. § 3832.22.

<sup>267</sup> 30 U.S.C. § 42. *See also* Chevron Mining Inc. v. United States, 863 F.3d 1261, 1272 (10th Cir. 2017).

<sup>268</sup> Gerard, *supra* note 28, at 19–20; PLLRC, *supra* note 197, at 127.

than “mill sites” and “tunnel sites.”<sup>269</sup> As such, a congressional amendment making some mention of “waste sites” would be the best way to protect such BLM rulemaking from a challenge. An independent “waste site” classification would provide miners and regulators with a more predictable system for waste storage planning. For mine planners, a new classification offers a straightforward regulatory system pertaining to each of many traditional “mill site” land uses. For federal agencies, it reinforces their ability to enforce specific, approved uses of federal property rather than lumping each use together into one “mill site.” Greater flexibility in shape and size of waste areas is possible depending on the particulars of the regulations the BLM adopts. Any adopted regulations might even be paired with measures that supplement existing environmental provisions applying specifically to waste rock or tailings.

One problem with creating a special waste site class is that the designation would not apply to non-waste storage ancillary areas, such as the actual site of the mill, processing plant, or ore stockpiles. These places can be quite extensive themselves, and they might be lumped into the regulation for “waste site” even if not strictly waste material. So while miners would be able to bypass most of the legal issues associated with mill sites in acquiring surface rights for their waste dumps, they would still be unable to do so for their processing plants. Hence, some form of processing plant site designation would also be required. Admittedly, securing access to waste areas thousands of acres in size is likely of much greater concern to mine developers than the processing plant footprint of perhaps a few hundred acres.

The overlap between existing mill sites and new waste sites might create some confusion and add to the complexity of applying new regulations. Miners might even prefer the broader land use designations available for mill sites to a more narrowly tailored one. The reason is that mill sites cover ancillary uses and therefore offer an operator flexibility to alter designs without locating new sites of claims. The name “waste site” itself carries some negative connotations that might be opposed by the public, who may be inclined to believe that new hazardous or toxic waste rights were being introduced to the Law.

### **3. Abandoning non-mineral character and occupation**

Title 43, Section 3832.33(a) of the Code of Federal Regulations requires both that mill sites be located on non-mineral federal land and that each of the two halves of the site be occupied.<sup>270</sup> These requirements raise both the issues of economic mineralization and initial occupation prior to administrative approvals. Once again, the statutory authority on point, 30 U.S.C. § 42, describes mill sites as “nonmineral land” “used or occupied by the proprietor of such vein or lode for mining or milling purposes,” but specifically refers to patented rather than unpatented mill sites.<sup>271</sup> This may provide the BLM with the flexibility it needs to make these regulatory revisions.

As to the non-mineral character requirement, one straightforward solution would be to rewrite the federal regulations without such a requirement, mirroring more closely the language of

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<sup>269</sup> See 30 U.S.C. § 22–54.

<sup>270</sup> 43 C.F.R. § 3832.33(a).

<sup>271</sup> 30 U.S.C. § 42(a); see also *Chevron Mining Inc.*, 863 F.3d at 1272.

*Center for Biological Diversity* that “a mill site need not contain valuable minerals,”<sup>272</sup> rather than the outright prohibition of mineralization under 43 C.F.R. § 3832. This revision might provide more market insulation for miners than the existing ambiguous standard of “non-mineral character,” and it would also provide a great deal of surface use and mine design flexibility as well. Particularly for underground miners, locating a mill site sufficiently far away from mineralized grounds to avoid possible contiguity with a vein or lode, while simultaneously ensuring that the grounds are safely “non-mineral,” may be an inefficient use of federal lands. The existing requirements could be contributing to unnecessarily extensive surface disturbances and farther-reaching environmental impacts. Provided there are sound economic and geotechnical reasons for doing so, underground miners might benefit from the ability to “reign in” their overall surface extents by mining underneath, to some extent, stored wastes. Of course, commencing mining activities below a mill site would require a lode claim be staked first; nevertheless, having the ability to place mill sites in marginally mineralized areas on the fringes of a deposit, without fear that they will become invalid based on present marketability, would provide some environmental advantage.

Under-mining wastes is probably not ideal in most situations, especially when slurry tailings dams (as opposed to dry stack facilities) are involved, or in the case of block-cave operations likely to produce surface subsidence (e.g., like the proposed Resolution Copper project in central Arizona).<sup>273</sup> However, with proper geotechnical design to ensure minimal subsidence, and a generous crown pillar (unmined rock between the highest underground workings and the surface),<sup>274</sup> mining beneath a waste rock or dry stack tailings facility might be conducted safely, minimizing surface disturbances.

To be fair, *Center for Biological Diversity* does not preclude miners from placing waste rock on otherwise valid claims (as in the under-mining example above).<sup>275</sup> The Ninth Circuit suggested that, were Hudbay’s lode claims valid under the mineral character requirements, depositing waste rock upon them would be a legitimate surface use,<sup>276</sup> albeit perhaps self-defeating for an open pit surface mine.<sup>277</sup> In most cases, then, underground miners seeking to operate beneath waste rock facilities would be covered by the valid claims overlying their deposits. These facilities, however, might also need to extend outside the bounds of the claims for topographic or geotechnical reasons, and mill sites for these areas overlying potentially mineralized but not presently pursued deposits might add valuable flexibility. The lack of a non-mineral character requirement could be helpful in preventing mill site validity complications if, for instance, a rise in commodity prices renders the previously non-mineral underlying site “marketable” in the eyes of the reviewer, whether or not the miner pursues the “marketable” minerals.

The vague standard for establishing proof of non-mineral character in the face of a mandatory MPO mineral character review presents another challenge for miners wishing to use

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<sup>272</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1210.

<sup>273</sup> Resol. Copper, *Environmental Conservation*, <https://resolutioncopper.com/environmental-conservation/> [<https://perma.cc/U98W-4PBV>] (last visited Nov. 6, 2023).

<sup>274</sup> Law Insider, *Crown Pillar definition*, <https://www.lawinsider.com/dictionary/crown-pillar> [<https://perma.cc/RCY8-QJYV>] (last visited Nov. 6, 2023).

<sup>275</sup> See *Ctr. for Biological Diversity*, 33 F.4th at 1221.

<sup>276</sup> *Id.*

<sup>277</sup> See *id.* at 1235 (Forrest, J., dissenting). But see SOLICITOR 2001, *supra* note 261, at 14 (“If a proposed plan of operations would locate a large waste rock dump on a mining claim or a group of mining claims, that would be a fair indication that the operator does not plan to extract minerals from those claims . . . proposed use of these claims would raise serious questions regarding the validity of these claims”).

mill sites for waste storage. Eliminating the “non-mineral” character requirements from mill site regulations would avert these issues entirely. Rather than alter the existing lode claim discovery requirements or their newfound review under the MPO, the decoupling of mineral character from the regulatory requirements could be limited to unpatented mill sites only. That way, the BLM would still have regulatory authority under which to ensure that claimants do not stake for purposes apart from mining or for truly unfeasible deposits. But miners would not be required to subject their mill sites to exploration to prove a lack of mineralization associated with already valid unpatented claims.

Alternatively, the BLM could rewrite the regulations to clarify the standard of proof for non-mineral character, preferably adopting the patented mill site standard, less the ambiguous discretionary opportunities provided by the presence of “where the matter is unquestioned.”<sup>278</sup> The testimony or sworn affidavit of two individuals familiar with the site is a relaxed standard of proof and is likely much more consistent with a mining company’s actual knowledge about the mineralization beneath its planned waste sites. The operator could have two geologists, one interested and one disinterested, affirm the lack of mineralization based on the limited geologic exploration data that the organization more than likely acquired prior to selecting its waste site, in accordance with the disinterest requirements set forth in *Beau Hickory & Patricia L. Tinnell*.<sup>279</sup>

Of greater interest in most scenarios is the initial occupation quandary—what constitutes valid occupation, and how the existing timing even allows for mill site planning pre-approval. If a company such as Hudbay were to locate only lode claims upon its future pit and then proceed to the EIS and MPO process, it would be forced to base its waste planning on the assumption that mill sites would eventually be available for location in the intended positions. Such a major question mark with a large investment at stake is too risky for the modern miner. Without any valid occupation rights until the project’s administrative approval, the miner is at risk of other parties securing a better title to the planned waste sites by, for instance, staking claims or tunnel sites. Whether or not those competing claims are valid, ousting the claimant might involve ransom-like litigation costing the miner time and money. There is further risk that the BLM or USFS might block the project at the time of application based solely upon the miner’s lack of legal authority to occupy the properties where it intends to store waste.

Miners and investors, then, would appreciate some assurances. The most straightforward option to alleviate the problem would be to drop the initial occupation requirements under § 3832.33 altogether, such that the mill sites (just like the lode claims), could be valid without physical occupation during the approval process. Otherwise, the law could guarantee some minor future interest in nearby federal properties to the lode claimant. This option would be complex and fail to answer many of the same questions about reasonable waste storage size and extent that currently inhibit the industry. For example, one alternative would define a miner with a valid nearby discovery to be in proper “occupation” of any such mill sites staked, but this would beg the question of how much property is reasonably necessary to mine the claims. Any of these solutions would need to be paired with sufficient assurances that the post-mining topography would not also be a permanent occupation.

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<sup>278</sup> 43 C.F.R. §§ 3864.1–4.

<sup>279</sup> 160 IBLA 166, 179–80 (2003).

For those opposed to mining, dropping the initial occupation requirement would be a step backward. One argument that might be raised is that a mill site unoccupied before mining activity commences does not satisfy the requirement that the mill site serve a “reasonably incident”<sup>280</sup> function to associated mineral development. However, a natural-language understanding of “mineral development,”<sup>281</sup> if adopted by a court, seems to encompass in full the early stages of a mine’s life, including exploration, planning, and permitting of the mine site. Realistically, dropping the occupation requirement would do little more than preserve the pre-*Center for Biological Diversity* practice of allowing surface rights before MPO approval and would probably not result in more extensive mining, although it could lead to more extensive staking.

#### 4. USFS permission

The panel in *Center for Biological Diversity* remanded the case to the USFS for a decision on whether 36 C.F.R. § 228A actually supplies grounds for surface occupation in connection with mining activities irrespective of mill sites or some other clear statutory authorization.<sup>282</sup> If the USFS were to agree with the dissent on remand, then the issues as applied to Rosemont would be resolved and mining could commence, absent some novel legal or technical challenge. Mining operations on USFS lands elsewhere and in the future would rely upon the prior practice of having surface occupancy rights in connection to lode claims. However, this solution would not necessarily resolve the issue with respect to BLM lands. Mill sites would presumably still be required.

### Conclusions and Recommendations

Finding a solution that attends to each of the practical and legal issues interfering with the efficacy of mill sites while simultaneously minimizing negative consequences to the mining industry, regulatory agencies, and the public is not a straightforward task. Nor is the task made easier by the vital considerations of how practical the solutions are to implement. Change arguably becomes less realistic the further the solution moves from the existing legal scheme. With these caveats in mind, three of the solutions outlined above stand out as the most viable.

The first possible option would be to reinstate federal land patents, albeit with restrictive covenants preventing non-mining land uses. This route would effectively address the number of mill sites, permanent occupation, and the non-mineral character issues, but would not be an effective solution to the initial occupation issue. Because patented mill sites would no longer be federal lands, mine operators would not fear that those properties would lose valid surface occupancy rights should the federal government change its interpretation of the number of sites permitted per claim. Concern would also diminish over the site losing its non-mineral character due to major market adjustments. For existing mine sites, the ability to once again patent claims and sites would provide a huge stabilizing advantage for operations in the future. Environmentally, the patent process could be useful for maintaining a chain of patented land ownership when pursuing cleanup costs and would deter operators with patents from abandoning their sites in

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<sup>280</sup> 43 C.F.R. § 3832.31.

<sup>281</sup> See, e.g., *United States v. Osage Wind, LLC*, 871 F.3d 1078, 1091–92 (10th Cir. 2017) (holding that the meaning of “mineral development” under 25 C.F.R. § 211.3 is not limited to “removal of dirt,” but also covers “manipulation, commercialization, or offsite relocation” of the material).

<sup>282</sup> *Ctr. for Biological Diversity*, 33 F.4th at 1224.

Superfund conditions. Land management agencies might prefer severed mineral rights patents, hoping to limit private surface ownership. But, these would do little to solve the mill site issues and would probably result in surface patenting at fair market value anyway.

Of course, the mill site issues facing Rosemont and other mine developers, principally the initial occupation quandary, would not be resolved simply by reinstating patents. A patented mill site must first be a valid mill site. If a miner is unable to locate a mill site during the feasibility study stages of the mine life prior to the ROD, then patenting a valid mill site is of no consequence. Since ownership would be private, the permanent occupation issue would disappear. So while patents may offer significant benefits to brownfield (existing site) miners and the public, the issues facing greenfield (new site) development might see less improvement.

A second viable possibility is a dedicated federal land exchange system focused on mineral properties. Enabling private mining parties to purchase lands on a federal exchange rather than dealing with the locating and siting process would avoid the technicalities of the mill site regulations, satisfying all three issues. As with patent procedures, the federal government would relinquish ownership, giving miners flexibility and identifying an owner the public can hold accountable. But unlike mineral patents, an exchange would not require valid sites *at any time*, thus resolving the initial occupation quandary typically posed prior to the ROD. A robust system of the size and scope necessary to effectively minimize the mill site issues would be challenging to implement. Extensive congressional action in the face of strong opposition from environmental protection interests would be required and might be impossible to overcome.

A more direct third option is the special “waste site” regulatory framework, in tandem with several of the other proposed statutory and regulatory language revisions. Revising 43 C.F.R. § 3832 within the statutory bounds of 30 U.S.C. § 22 *et seq.* to fashion application-specific site types for waste rock storage would allow an open-ended opportunity to shape the law to the realities of modern mining practice. Under this special designation, Congress or the BLM would drop the initial occupation, non-mineral character, and size constraint requirements in favor of a customizable waste site justified by the reasonable needs of the anticipated operation. The initial occupation and non-mineral character requirements for standard (non-waste) mill sites could also be revised to resolve similar issues facing processing facilities. To top it off, unpatented mill sites should be granted assurances in 43 C.F.R., if not in 30 U.S.C., that the miner can properly abandon them at the close of the agreed-upon reclamation measures. This option offers the BLM a great deal of flexibility to shape the regulations based on comments received during the APA notice period as well as to bypass congressional deadlock within its reasonable discretion.

The third option, therefore, appears to be the best course of action. The BLM ought to develop regulations appropriate and specific to different types of ancillary uses and revise its rules to address the three principal mill site issues. Should the revised regulations fail to sufficiently address an issue or cause adverse effects not contemplated here, further revisions could be explored to address these deficiencies. Otherwise, private property approaches are the next best candidate because they bypass the principal issues of mill sites entirely.

In any event, statutory, regulatory, or judicial action ought to be taken to address these mine waste issues if the American West wishes to remain competitive on the world mining stage. The inability of new American mines to complete the permitting process based on small regulatory

technicalities is indefensible and disadvantageous to the American public. What our society requires today to meet the needs of the clean-energy future is a dependable, efficient mining legal framework that promotes planning and permitting of safe, environmentally conscientious greenfield mining operations right here in the United States.