PETITION FOR RULEMAKING
PURSUANT TO THE ADMINISTRATIVE PROCEDURE ACT,
5 U.S.C. § 553(e)

TO:
THE U.S. BUREAU OF LAND MANAGEMENT, AN AGENCY OF THE U.S. DEPARTMENT OF THE INTERIOR; AND THE U.S. FOREST SERVICE, AN AGENCY OF THE U.S. DEPARTMENT OF AGRICULTURE

FOR:
THE PROMULGATION OF AMENDED REGULATIONS GOVERNING MINING ON FEDERAL PUBLIC LANDS IN ORDER TO ACHIEVE COMPLIANCE WITH GOVERNING LEGAL MANDATES AND BETTER PROTECT HUMAN HEALTH AND THE ENVIRONMENT

August 25, 2015

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Section 1. Executive summary

1.1. The problem

The Bureau of Land Management ("BLM") and the Forest Service (collectively, "the Agencies") face a problem. There are hundreds of uranium mines on public lands under the Agencies' management, and many of the mines are causing, or have the potential to cause, widespread human health and environmental harms. Especially problematic are so-called "zombie mines"—mines that are re-opened after long periods of non-operation (hereinafter "inoperative mines"). During these non-operational periods, environmental conditions change, often profoundly, and we gain new information about the ways in which the mines might be adversely affecting ecosystems, human health, and sensitive cultural and historic resources. Yet, under the Agencies' current interpretation of existing regulations, inoperative mines can and do re-start without a new approval process or updated environmental or historic resource review.

This permitting regime fails to avoid, minimize, and mitigate the deleterious effects of uranium mining on human health and the environment, consistent with the Agencies' legal mandates. Because inoperative mines are inadequately regulated, they:

- pollute surface and groundwater;
- contaminate soils and kill vegetation;
- adversely affect sensitive species and their habitat;
- adversely affect sensitive cultural and historic resources; and
- have the potential to profoundly affect human health.

By incorporating more robust self-executing mechanisms up front, the Agencies would be better able to prevent these and other adverse effects, consistent with the Agency's statutory mandates.

1.2. The solution

The Agencies have the opportunity to reduce better understand and reduce the adverse effects of inoperative mining operations, and indeed of all mining operations, **by amending their existing rules in four ways:**

- limit the duration of plans of operations;

- require new approvals and updated environmental and historic resource reviews after long periods of inactivity;

- during such periods, conduct regular inspections and require operators to regularly gather and disclose information about the status and conditions of their mines; and

- improve the reclamation process for closed or abandoned mines.

To be most effective, especially as to already-existing mining operations, the Agencies should make these changes retroactive.

1.3. Organization of this petition

This petition has six sections:

- **Section 1** consists of this introduction.
- **Section 2** explores the background on the history of uranium mining and traces the growing concern over uranium mining operations, especially those that are re-started after long periods of inactivity.
- **Section 3** lays out the legal background governing mining on BLM and National Forest System lands, with particular attention paid to how existing regulations regulate (or do not regulate) inoperative mines consistent with the Agencies' legal mandates.
- **Section 4** examines how environmental conditions and our understanding of uranium mining's effects change over time, as well as why, given how serious those effects can be, the Agencies' regulations need to better account for that change.
- **Section 5** contains our proposal—specific, straightforward changes the Agencies can make to their regulations to more effectively regulate inoperative mines and ameliorate their adverse effects. We explain that our proposed changes will not require substantial new resources or effect a taking of vested property rights, and that they find support in other legal regimes.
- **Section 6** concludes our petition.

1.4. Better regulation is within easy reach.

We appreciate that BLM and the Forest Service are tasked with satisfying myriad competing objectives with too few resources. We also appreciate that promulgating amended regulations is a challenging and lengthy process. We submit, however, that the manner in which the Agencies currently regulate inoperative mines simply is not working, and that a better regime can be achieved with relatively modest effort. Our proposed changes would build upon concepts and authority already present in the Agencies' regulations and impose little additional burden on regulated entities, all with an eye towards more responsibly managing our public lands. We hope that, after reading this petition, you will agree. We are committed to offering our complete support in bringing our proposed changes to fruition.

Section 2. Factual background

The Grand Canyon and the lands that surround it are an American icon. Their inimitable, almost haunting grace has inspired nearly 190 million people to visit the area since 1919, and captured the imaginations of many more through books like John Muir's "Our Grand Canyon," Edward Abbey's *The Monkey Wrench Gang*, Marc Reisner's *Cadillac Desert*.[1] The Department of the Interior recently explained why the Grand Canyon, and the larger Colorado Plateau of which it is part, are so special to so many:

> Crafted by the immense power of the Colorado River, the Grand Canyon and the greater ecosystem that surrounds it have long been recognized as one of the Nation's most treasured landscapes. This area is known as a home or sacred place of origin to many Native Americans including the Havasupai, Hualapai, Navajo, Hopi, Zuni, Southern Paiute, and others, and its cultural significance goes back thousands of years. Although first afforded federal protection in 1893 as a Forest Reserve and later as a National Monument, the Grand Canyon achieved National Park status in 1919, three years after the creation of the National Park Service (NPS). The Park is a world heritage site and an international icon. The Grand Canyon National Park is dominated by the Grand Canyon, a twisting, 1-mile deep, 277-mile-long gorge formed during some 6 million years of geological activity and erosion by the Colorado River on the upraised earth's crust.
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> The Grand Canyon and the greater ecosystem surrounding it is a cornerstone of the region's economy with hunting, fishing, tourism, and other outdoor recreation generating billions of dollars in economic activity in the area. Millions of people living in seven states in the U.S. and in Mexico depend upon the Colorado River for water for drinking, irrigation, and industrial use, as well as for hydropower. The National Forest System lands in the area . . . are set aside for public recreation and a habitat for birds and animals.[2]

For all their beauty, history, and ecological value, the Grand Canyon and its surrounding areas are valued for another resource: uranium. Although the first deposits in northern Arizona were discovered in the 1940s and 1950s, it was not until the 1970s, when the price of uranium rose, that mining companies began to explore the area in earnest. By the late 1980s and early 1990s, nearly a thousand exploration holes had been drilled and seven mines

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[1] Roughly 190 million people visited Grand Canyon National Park between 1919 and 2013, and annual visitor totals now consistently top 4.5 million. *See* National Park Service, Grand Canyon Annual Park Recreation Visitation (1904 - Last Calendar Year), *available at* http://www.nps.gov/grca/parkmgmt/upload/Grand%20Canyon%20Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year).pdf.

[2] BLM, Record of Decision and Approved Withdrawal Modification, Northern Arizona (Jan. 9, 2012), at 4-5, *available at* http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/withdraw/feis.Par.88586.File.dat/NorthernArizona-ROD-v20-1%2011%202012_wsignederrata.pdf (hereinafter "2012 Withdrawal ROD").

had begun operations. Six of those mines produced nearly 1.5 million tons of uranium ore during that period.[3]

As this early history suggests, the number of uranium mines that are opened and the extent to which they are developed depends largely on the market price of uranium.[4] Thus, when the price of uranium dropped in the late 1980s and early 1990s, interest waned and many operators put their mines into non-operation.[5] In 2004, uranium prices surged again, and "mining-related activities increased on BLM and USFS managed lands."[6] Operators located thousands of new mining claims on federal lands surrounding Grand Canyon National Park (10,000 as of 2009).[7] Although a recent drop in the price of uranium has once again cooled interest,[8] that dip is, almost inevitably, temporary.[9] America remains the eighth-largest producer of uranium, behind countries such as Canada and Australia.[10] Moreover, the lands surrounding the Grand Canyon "have a high potential for uranium with a high level of certainty," and the uranium deposits found there are "of higher grade than approximately 85% of the world's known uranium deposits."[11] Uranium mining therefore will continue and likely increase in the future on lands where it is permitted.

This constant cycle of boom and bust has brought to the surface an underlying public concern: "that uranium mining could adversely affect natural, cultural, and social resources in the Grand Canyon watershed, which includes resources in Grand Canyon National Park."[12] To guard against these adverse effects,[13] in 2008 legislation was introduced in Congress that would have permanently withdrawn over one million acres in the Grand Canyon watershed from mineral entry and location and other uses.[14] Congress did not pass the bill, but it did direct the Secretary of the Interior to consider whether to exercise his administrative authority to protect

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[3] *Id.* at 2-3, 5-6.

[4] *Id.* at 3.

[5] *Id.* at 2.

[6] *Id.* at 3. As of 2012, there were an estimated 221 uranium mining operations on federal lands, with 202 on BLM-managed lands, three on National Forest System lands, and 16 on Department of Energy lease tracts. Only seven of the 221 operations were actively extracting uranium as of 2012. *See* U.S. Government Accountability Office, *GAO-12-544 – Uranium Mining: Opportunity Exist to Improve Oversight of Financial Assurances; Report to the Ranking Member, Committee on Natural Resources, House of Representatives*, at 20 (May 2012), *available at* http://www.gao.gov/assets/600/590929.pdf (hereinafter "GAO-12-544").

[7] 2012 Withdrawal ROD at 3.

[8] *See, e.g.*, *id.* at 3; Rhiannon Hoyle, "Prices Pull Plug on Uranium's Power Play," *The Wall Street Journal* (Sept. 10, 2013) ("Uranium prices are at their lowest level in nearly eight years.").

[9] *See, e.g.*, Kate Galbraith, *The New York Times*, "Growth Prospects for Uranium Stir Concerns" (Apr. 14, 2012) (explaining that uranium "companies see a potential hike in demand for their product"), *available at* http://www.nytimes.com/2012/04/15/us/global-growth-prospects-for-uranium-stir-concerns.html.

[10] World Nuclear Association, "World Uranium Mining Production" (July 2013), *available at* http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Mining-of-Uranium/World-Uranium-Mining-Production/.

[11] BLM, Northern Arizona Proposed Withdrawal Final Environmental Impact Statement, ES-8 (Oct. 2011), *available at* http://www.blm.gov/az/st/en/info/nepa/environmental_library/eis/naz-withdraw.html (hereinafter "2011 Withdrawal FEIS").

[12] 2012 Withdrawal ROD at 3.

[13] *See* Section 4.2 (discussing adverse effects).

[14] Grand Canyon Watersheds Protection Act of 2008, H.R. 5583 (110th Cong., Mar. 11, 2008) (Rep. R. Grijalva, D-AZ); *see also* 2012 Withdrawal ROD at 3.

the area. Accordingly, in 2009 the Secretary of the Interior proposed, and in 2012 adopted, a 20-year administrative withdrawal ("2012 Withdrawal") "to protect the iconic Grand Canyon and its vital watershed from the potential adverse effects of additional uranium and other hardrock mining on over 1 million acres of federal land for the next 20 years."[15] As the basis for his decision, the Secretary reasoned that much more data needed to be gathered about "subsurface water movement, radionuclide migration, and biological toxicological pathways"; that while the probability of certain impacts might be "low," they would be "significant"; that "the potential impacts to tribal resources could not be mitigated"; and that "the set of circumstances and the unique resources located in this area support a cautious and careful approach."[16]

The resources the 2012 Withdrawal is designed to protect are special. The decision set aside three public land parcels "rich in natural and cultural resources and . . . intricately connected to the watershed of the Grand Canyon."[17] Those parcels (the "withdrawal area") are home to 23 plant and animal species protected under the federal Endangered Species Act;[18] 56 further species classified as "sensitive" by BLM, the Forest Service, and/or the National Park Service; and 10 other species of birds that the State of Arizona has identified as having the "greatest conservation need."[19] More than 300 plant species are found only in the Colorado Plateau.[20] The withdrawal area also contains 12 sites listed on the National Register of Historic Places; another 447 proposed for listing; and 1,880 sites that have not yet been evaluated.[21] Resources important to Native American tribes, including landscapes, rivers, and trails, are spread throughout the withdrawal area.[22] The area is also "internationally recognized for its diverse landscapes and scenic qualities" and offers outstanding recreational opportunities and opportunities for quiet and solitude.[23]

As much as the 2012 Withdrawal protects these precious resources, it does not stop uranium mining. Among other things, the 2012 Withdrawal made the prohibition against mineral entry and location subject to "valid existing rights," which the Department of the Interior interprets to mean any and all mining claims that pre-date the 2012 Withdrawal

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[15] U.S. Department of the Interior, Press Release, "Secretary Salazar Announces Decision to Withdraw Public Lands near Grand Canyon from New Mining Claims" (Jan. 9, 2012), *available at* http://www.doi.gov/news/pressreleases/Secretary-Salazar-Announces-Decision-to-Withdraw-Public-Lands-near-Grand-Canyon-from-New-Mining-Claims.cfm; *see also* Public Land Order No. 7787 (Jan. 21, 2012), *available at* http://www.blm.gov/az/st/en/info/nepa/environmental_library/eis/naz-withdraw.html; *Yount v. Salazar*, 933 F. Supp. 2d 1215 (D. Ariz. 2013) (upholding withdrawal against mining industry challenge). Administratively withdrawn lands are areas "with[held] . . . from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area . . . from one [government entity] to another." 43 U.S.C. § 1702(j).

[16] 2012 Withdrawal ROD at 11.

[17] 2011 Withdrawal FEIS at ES-1.

[18] 16 U.S.C. §§ 1531-1544.

[19] *Id.* at ES-10.

[20] *Id.* at ES-9.

[21] *Id.* at ES-10.

[22] *Id.* at ES-11.

[23] *Id.* at ES-10.

decision.[24] As of December 2011, 3,156 uranium mining claims fit this definition, and the Department of the Interior conservatively estimates that 11 of them could be fully developed during the 20 years the 2012 Withdrawal is in effect.[25]

How these pre-existing mines and mining claims are treated is critical to the future of Grand Canyon National Park, the Colorado Plateau, and federal lands throughout the country. When uranium prices rise, as they did in the early 2000s, mining operators do not just locate new mining claims, they also seek to re-open the inactive mines that had been inactive during price slumps. In many cases, years, even decades, pass between when a mining operation "temporarily" shuts down and when it re-starts. Nonetheless, BLM and the Forest Service, through their regulations and policies, do not require the operators of these intermittent mines to submit new or updated plans of operations; do not require supplemental environmental review; and do not require evaluation of whether the performance standards that made sense when operations first began are still sufficient to protect human health and the environment many years later. Mining operations re-start even though circumstances at the mine and in the surrounding environment—and our understanding of those conditions—may be vastly different.

Concern about these so-called "zombie mines," in the Grand Canyon area and around the nation, has given rise to extensive public debate. The *New York Times* has published several articles over the last few years describing the continuing contamination of tribal lands in Arizona, New Mexico, and Utah by uranium mines.[26] Another article specifically discussed the

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[24] The Secretary of the Interior's withdrawal authority derives from Section 204 of the Federal Land Policy Management Act ("FLPMA"), 43 U.S.C. § 1714. When it was passed in 1976, FLPMA provided that "[n]othing in this Act . . . shall be construed as terminating any valid lease, permit, patent, right-of-way, or other land use right or authorization existing on the date of approval of this Act," and that "[a]ll actions by the Secretary concerned under this Act shall be subject to valid existing rights." Pub. L. No. 94-579 (1976), § 701(a) & (h), 90 Stat. 2743, 2786-87, *reprinted in* 43 U.S.C.A. § 1701 historical note. That savings clause arguably was intended to protect property rights that existed at the time FLPMA was enacted in 1976, not rights that came into being after 1976 but before some subsequent administrative decision. *See, e.g.*, *Western Watersheds Project v. Matejko*, 468 F.3d 1099, 1104 (9th Cir. 2006); *Cnty. of Okanogan v. Nat'l Marine Fisheries Serv.*, 347 F.3d 1081, 1085 (9th Cir. 2003); *Colo. Envtl. Coal. v. BLM*, 932 F. Supp. 1247, 1249 (D. Colo. 1996) ("Section 701 of FLPMA preserved 'valid existing rights' to permit activity on mineral leases issued before the enactment of FLPMA in 1976."). In fact, BLM took that position shortly after FLPMA's passage. *See* BLM, Interim Management Policy and Guidelines for Land Under Wilderness Review, 44 Fed. Reg. 72,014, 72,017 (1979) ("The 'valid existing rights' provision of FLPMA (Section 701(h)) clearly applies only to valid rights outstanding on October 21, 1976."). Nonetheless, the Department of the Interior interpreted "valid existing rights" in the 2012 Withdrawal broadly, *i.e.*, as including any mining claim that existed at the time of the Withdrawal. *See* 2012 Withdrawal ROD at 6-7 ("As of December 11, 2011, the withdrawal area contains 3,156 mining claims that predate the publication of the Notice of Proposed Withdrawal on July 21, 2009. Withdrawals under section 204 of FLPMA must be made subject to valid existing rights, which means that new mineral exploration and development could still be authorized under the withdrawal on valid existing mining claims.").

[25] 2012 Withdrawal ROD at 6. These 11 mines include the Pinenut, Kanab, Canyon, and Arizona 1 Mines. *Id.* See Section 3.1.3.1. for a discussion of the legal requirements applicable to valid existing mines in withdrawn areas.

[26] *See, e.g.*, Leslie MacMillan, "Uranium Mines Dot Navajo Land, Neglected and Still Perilous," *The New York Times* (Mar. 31, 2012), *available at* http://www.nytimes.com/2012/04/01/us/uranium-mines-dot-navajo-land-neglected-and-still-perilous.html?emc=eta1; Dan Frosch, "Uranium Contamination Haunts Navajo

controversy surrounding resuscitating long-dormant uranium mines in Colorado.[27] Other articles have highlighted the disagreements and stakes involved in uranium mining in Texas, Virginia, and other places, including such mining's potential effects on human health and the environment.[28] Perhaps most telling, the Department of the Interior received a whopping 296,461 public comments on the Draft EIS for the 2012 Withdrawal, many of which came from organizations and individuals concerned about the adverse environmental effects of uranium mining.[29]

These public concerns have, in turn, given rise to extensive litigation. In 2011 a group of environmental organizations successfully sued to stop the Department of Energy's uranium leasing program in Colorado.[30] The federal judge in that case held that the Department had failed to adequately study site-specific impacts and to consult with the U.S. Fish & Wildlife Service.[31] More directly relevant here, a number of lawsuits have been filed challenging the manner in which BLM and the Forest Service regulate inoperative mines. In *Center for Biological Diversity v. Salazar*,[32] a collection of five environmental groups and Native American tribes challenged a plan to re-open the Arizona 1 Mine. That mine, located six miles north of Grand Canyon National Park, was proposed to be re-opened in 2007, 15 years after operations had ceased and nearly 20 years after BLM had approved the relevant plan of operations and prepared an environmental review. Similarly, at issue in *Grand Canyon Trust v. Williams*[33] is whether the Forest Service can allow operations to resume at the Canyon Mine after two decades of inactivity without requiring a new plan of operations or an updated environmental review. That mine is located six miles south of Grand Canyon National Park and 15 miles southeast of the Havasupai Reservation. Like the Arizona 1 mine, the Canyon Mine is in administratively withdrawn lands. The case against the Forest Service remains pending in federal appeals court.

These controversies reflect deep and continuing concern over uranium mining, especially over the effects and wisdom of resuscitating long-inoperative uranium mines without

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Country," *The New York Times* (July 26, 2009), *available at* http://www.nytimes.com/2009/07/27/us/27navajo.html?emc=eta1.

[27] Dan Frosch, "A Fight in Colorado Over Uranium Mines," *The New York Times* (Apr. 26, 2013), *available at* http://www.nytimes.com/2013/04/17/us/a-fight-in-colorado-over-uranium-mines.html?emc=eta1.

[28] *See, e.g.*, Errin Haines, "Senator withdraws Va. bill to lift ban on uranium mining," *The Washington Post* (Jan. 31, 2013), *available at* http://www.washingtonpost.com/local/va-politics/senator-withdraws-va-bill-to-lift-ban-on-uranium-mining/2013/01/31/7de1147a-6be0-11e2-ada0-5ca5fa7ebe79_story.html; Kate Galbraith, "Growth Prospects for Uranium Stir Concerns," *The New York Times* (Apr. 14, 2012), *available at* http://www.nytimes.com/2012/04/15/us/global-growth-prospects-for-uranium-stir-concerns.html?emc=eta1; Theo Emery, "A Big Uranium Deposit, and a Big Debate on Mining It," *The New York Times* (Dec. 1, 2011), *available at* http://www.nytimes.com/2011/12/02/business/energy-environment/coles-hill-uranium-mine-proposal-divides-virginia-residents.html?pagewanted=all.

[29] *See* 2011 Withdrawal FEIS at ES-8; *see generally id.* at 5-6 to 5-320.

[30] *Colorado Envtl. Coal. v. Office of Legacy Mgmt.*, No. 08-cv-01624-WJM-MJW (D. Colo.).

[31] *See Colorado Envtl. Coal. v. Office of Legacy Mgmt.*, 819 F. Supp. 2d 1193 (D. Colo. 2011).

[32] D. Ariz. No. 3:09-cv-08207; Ninth Cir. No. 11-17843. This case was resolved on appeal in *Center for Biological Diversity v. Salazar*, 706 F.3d 1085 (9th Cir. 2013).

[33] D. Ariz. No. 3:13-cv-08045; Ninth Cir. No. 13-16994. Both the district court and the appellate litigation are ongoing.

requiring new approvals and updated environmental reviews. This concern (and the risk of further litigation) is particularly acute with regard to uranium mining in the 2012 Withdrawal area, but it is by no means limited to that area or to uranium mining. Many mining operations on federal lands are approved by BLM or the Forest Service, enter into a long period of non-operation, and later re-start, without any new approval or environmental review.

This petition makes explicit a notion that underlies all this controversy: there must be a better way. Public lands and people deserve better protection, and litigation demands agency resources that would, at this point, be better devoted to crafting a front-end fix. In the following pages we explain the problems with the Agencies' current approach to inoperative mines and the straightforward steps they can and should take to improve it.[34]

Section 3. Legal background

In this petition we are asking the Agencies to amend certain rules to better regulate inoperative mines and mining operations generally. This section explains how the existing rules work and, more importantly, how they do not work. As will become clear, we are concerned that the existing rules (1) do not comply with the Agencies' governing statutory mandates and (2) do not require, or even allow, the Agencies to adequately address the problems we explore in Section 4. In Section 5 we propose specific changes to the rules to address those problems.

3.1. BLM's governing mandates and regulations

3.1.1. The 1872 Mining Law

The Mining Law of 1872[35] was enacted to "encourage mineral development on the public lands."[36] Toward that end, the law makes available federal lands for "locating" a mining claim and "discovering" a "valuable mineral deposit."[37] A mining claim is "a parcel of land containing precious metal in its soil [placer] or rock [lode]."[38]

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[34] The Agencies, as part of the 2012 Withdrawal, considered but rejected an alternative that would have amended their mining regulations. *See* 2012 Withdrawal ROD at 15-16. That decision has no bearing on this rulemaking petition. In the withdrawal process, the Agencies were concerned with whether regulatory changes were a suitable alternative, under NEPA, to administrative withdrawal. The Agencies answered this question "no" because "any new regulations would depend on the outcome of some future regulatory process yet to be initiated, and its ability to be implemented is speculative." *Id.* at 17. The Agencies face no similar NEPA-related strictures in deciding whether to grant or deny this petition. In any event, the regulatory changes we propose in this petition and the changes the Agencies considered as part of the withdrawal process are different.

[35] 30 U.S.C. §§ 21-54.

[36] *United States v. Bagwell*, 961 F.2d 1450, 1453 (9th Cir. 1992); *see also United States v. Locke*, 471 U.S. 84, 86-88 (1985).

[37] 30 U.S.C. § 22; *see also Cameron v. United States*, 252 U.S. 450, 460 (1920); *Independence Min. v. Babbitt*, 105 F.3d 502, 507 n.6 (9th Cir. 1997).

[38] *United States v. Shumway*, 199 F.3d 1093, 1099 (9th Cir. 1999).

A person who locates a mining claim on federal lands must follow certain steps to validate his or her claim.[39] Unless the claimaint "patents" a claim (this petition concerns only unpatented claims), he or she obtains rights to explore the claim but the United States retains fee title.[40] Any claim located after 1955 may be used only for "prospecting, mining or processing operations and uses reasonable incident thereto."[41] The United States retains the rights to "manage and dispose" of the surface of any claim.[42]

In 1920, Congress passed the Mineral Leasing Act.[43] That Act "withdrew oil shale and several other minerals from the general mining law and provided that thereafter these minerals would be subject to disposition only through leases."[44] Thus far, uranium mining remains subject to regulation under the original 1872 Mining Act, but there have been recent efforts to move it to a leasing scheme under the Mineral Leasing Act.[45] We would support such a move, since a leasing regime would provide stricter controls and more frequent environmental review. In the meantime the Agencies can and should adopt regulatory changes that move uranium mining into the modern age.

3.1.2. FLPMA: prevent "unnecessary or undue degradation"

By the 1960s, it was increasingly clear that the 1872 Mining Law's "laissez-faire regime had created virtual chaos with respect to the public lands."[46] Accordingly, as part of a "broader inquiry into the proper management of the public lands in the modern era," in 1976 Congress passed FLPMA.[47]

Among other things, FLPMA directs BLM to administer the public lands under its management according to "principles of multiple use and sustained yield."[48] In addition, "[i]n managing the public lands the Secretary shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands."[49] To meet this mandate, BLM must make "the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions."[50] BLM must also manage resources "without

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[39] *See* 30 U.S.C. § 28; *see also Cole v. Ralph*, 252 U.S. 286, 294–96 (1920).

[40] *Mineral Policy Ctr. v. Norton*, 292 F.Supp.2d 30, 47 (D.D.C. 2003)("While a claimant can explore for valuable mineral deposits before perfecting a valid mining claim, without such a claim, she has no property rights against the United States.")

[41] 30 U.S.C. § 612(a); *see also McMaster*, 731 F.3d at 886; *United States v. Backlund*, 689 F.3d 986, 991 (9th Cir. 2012); *Clouser v. Espy*, 42 F.3d 1522, 1525 n.2 (9th Cir. 1994);

[42] 30 U.S.C. § 612(b); *see also* 36 C.F.R. § 228 *et seq.*; *Shumway*, 199 F.3d at 1101; *United States v. Goldfield Deep Mines*, 644 F.2d 1307, 1309 (9th Cir. 1987) (upholding Forest Service's regulatory action on unpatented claims disturbing National Forest System land).

[43] 30 U.S.C. § 181 *et seq.*

[44] *Andrus v. Shell Oil Co.*, 446 U.S. 657, 659 (1980).

[45] *See, e.g.,* Uranium Resources Stewardship Act, H.R. 1452, 112th Cong. (2011).

[46] *Locke*, 471 U.S. at 86.

[47] *Id.* at 87; *see* 43 U.S.C. §§ 1701-1782.

[48] 43 U.S.C. § 1732(a) (2011).

[49] *Id.* § 1732(b).

[50] *Id.* § 1702(c).

permanent impairment of the productivity of the land and the quality of the environment."[51] And BLM must consider "the relative values of the resources and not necessarily . . . the combination of uses that will give the greatest economic return or the greatest unit output."[52]

3.1.3. BLM's mining regulations

BLM has promulgated regulations to manage mining operations under the 1872 Mining Law and FLPMA at 43 C.F.R. Part 3800 (2008).

3.1.3.1. Commencing operations on a mining claim

Under BLM's rules, a mine operator must obtain a permit to develop a mining claim on land that BLM administers and that is not under wilderness review. BLM typically issues two kinds of permits—notice-level permits and plan-level permits—depending on the level of activity to be conducted on the land.[53] Subpart 3809 of 43 C.F.R. governs the permitting process.

BLM issues notice-level permits for small operations—*i.e.*, where an operator will conduct exploratory operations to remove less than 1,000 tons of ore on five or fewer acres of land (and such land does not fall within one of the special categories listed in 43 C.F.R. § 3809.11(c)).[54] Notice-level permits are granted for two-year periods.[55] After the end of each two-year period, operators must either cease operations or obtain a renewed permit.[56]

For more significant operations, operators must prepare, and BLM must approve, a plan of operations. "More significant" operations refer to those that disturb more than five surface acres, surpass exploratory activities, remove more than 1,000 tons of ore, and/or operate on a special category of protected land.[57] Before approving a plan of operations, BLM must ensure that the proposed operations will not cause "unnecessary or undue degradation" of public lands.[58] BLM defines "unnecessary or undue degradation" as "conditions, activities, or practices" that: (1) "[f]ail to comply with . . . performance standards [discussed below]; (2) fail to comply with "other Federal and state laws related to environmental protection and protection of cultural resources"; (3) "[a]re not 'reasonably incident' to prospecting, mining, or processing operations"; or (4) "[f]ail to attain a stated level of protection or reclamation required by specific laws" in special status areas.[59] A plan of operations must contain "a level of detail sufficient for

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[51] *Id.* § 1732(c).

[52] *Id.* § 1702(c).

[53] *See* 43 C.F.R. § 3809.10. Permits are not required for "casual use" operations, which are defined as "activities ordinarily resulting in no or negligible disturbance," such as the use of handheld tools or "small portable" equipment, and activities that do not use "mechanized earth-moving equipment." *Id.* § 3809.5; *see also id.* § 3809.10(a).

[54] *Id.* §§ 3809.10(a), 3809.11, 3809.21.

[55] *Id.* § 3809.332.

[56] *Id.* §§ 3809.300, .335; *see generally id.* §§ 3809.300-.336.

[57] *Id.* § 3809.11.

[58] *Id.* § 3809.411(d)(3)(iii).

[59] *Id.* § 3809.5; *see also Center for Biological Diversity v. U.S. Dep't of Interior*, 623 F.3d 633, 644-45 (9th Cir. 2010) (discussing "unnecessary and undue degradation" requirements under BLM's regulations);

BLM to determine that the plan prevents unnecessary or undue degradation."[60] Specifically, a plan must include: (1) information that identifies the operator; (2) a description of equipment, devices, or practices to be used; (3) a reclamation plan; (4) a monitoring plan; and (5) an interim management plan.[61]

All plans of operations are subject to a set of enumerated performance standards.[62] These standards consist of broad criteria for protecting or handling air quality, water quality, solid wastes, fish and wildlife, cultural and paleontological resources, fire hazards and deleterious materials.[63] The performance standards call for planning to prospectively address scenarios that may lead to unnecessary or undue degradation; they do not mandate ongoing or periodic assessments during the course of operations to ensure that a plan of operations remains current.

BLM's review and approval of proposed plans of operations requires, and is aided by, compliance with the National Environmental Policy Act ("NEPA").[64] Under NEPA, BLM must prepare an environmental assessment or, where impacts may be significant, an environmental impact statement ("EIS"), for all plans of operations.[65] As part of this process, BLM "may" require the operator to submit "[o]perational and baseline environmental information for BLM to analyze potential environmental impacts as required by [NEPA] and to determine if [the] plan of operations will prevent unnecessary or undue degradation . . . ."[66] Furthermore, "BLM is available to advise [the operator] on the exact type of information and level of detail needed to meet these [NEPA] requirements."[67] However, operators whose plans of operations were approved before January 20, 2001, do not need to include this information.[68]

Concurrent with its NEPA review, BLM must also comply with the National Historic Preservation Act ("NHPA").[69] Section 106 of the NHPA requires BLM to evaluate the potential effects of an "undertaking," such as a decision to approve a mining plan of operations, on historic and cultural resources that are or may be eligible for listing on the National Register of Historic Places. The Section 106 process provides critical opportunities for review of, and consultation concerning, BLM's proposed actions by the Advisory Council on Historic Preservation, Tribes, and other interested parties.[70]

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[60] 43 C.F.R. § 3809.401(b).

[61] *Id.* § 3809.401.

[62] *Id.* §§ 3809.400(a), 3809.420. The § 3809.420 performance standards apply to plans of operations submitted after January 20, 2001; earlier plans of operations are subject to "the performance standards that were in effect immediately before that date." *Id.* § 3809.400(b).

[63] *See generally id.* § 3809.420.

[64] 42 U.S.C. §§ 4321-4347; 43 C.F.R. § 3809.411(d). Of course, "'[a] finding that there will not be significant impact [under NEPA] does not mean either that the project has been reviewed for unnecessary and undue degradation or that unnecessary or undue degradation will not occur." *Center for Biological Diversity*, 623 F.3d at 645 (quoting *Kendall's Concerned Area Residents*, 129 I.B.L.A. 130, 140 (1994)).

[65] *Center for Biological Diversity*, 623 F.3d at 644 (citing 42 U.S.C. § 4332(2)(C)).

[66] 43 C.F.R. § 3809.401(c)(1).

[67] *Id.*

[68] *Id.* § 3809.400.

[69] 16 U.S.C. § 470, *et seq.*

[70] *See generally id.* § 470f; 36 C.F.R. Pt. 800.

After assessing a proposed plan of operations and preparing a NEPA/NHPA review, BLM will approve the plan, approve the plan subject to conditions, or reject the plan.[71] Unlike a notice-level permit, which is valid for two years at a time, an approved plan of operations presumptively remains in effect in perpetuity, "as long as [the operator] is conducting operations," and "unless BLM suspends or revokes [the] plan of operations for failure to comply with [the permitting rules]."[72]

Mining claims in lands that have been administratively withdrawn, such as those subject to the 2012 Withdrawal, are subject to special approval procedures. Such claims usually cannot be developed unless they are "valid existing rights," where "valid" refers to proof of a "valuable" mineral deposit and satisfaction of posting, recording, and fee requirements.[73] BLM guidance clarifies a two-part test for determining if a deposit is "valuable": (1) whether a "prudent man" would invest "time and money" to develop a viable deposit, and (2) a "marketability test," showing that the deposit "could be mined, removed, and marketed at a profit."[74] BLM's current validity requirements mandate consideration of all costs and market conditions in determining whether each claim contains the requisite "discovery of a valuable mineral deposit," and thus ensuring claim validity.[75]

3.1.3.2. Maintaining an existing mine

An operator must adhere to its plan of operations.[76] BLM is required to regularly inspect mining operations only if the operator is using cyanide or other leachates.[77] The rules allow but do not require inspections for other types of operations, including those that are extremely hazardous or radioactive, and they set few criteria for BLM to use in deciding whether to suspend operations.[78] BLM can require an operator to modify a plan of operations to prevent undue degradation,[79] but BLM can revoke a plan of operations only if it gives the operator notice and an opportunity to cure violations, or if a pattern of violations exists.[80] If BLM finds that operations fail to comply with the plan of operations, violate the requirements of Subpart 3800, or jeopardize the public or environment, then BLM "may": (1) issue a

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[71] *Id.* § 3809.411(d).

[72] *Id.* § 3809.423.

[73] *See id.* § 3809.100; 30 U.S.C. § 22 (opening "all valuable mineral deposits" to exploration and purchase); *Mineral Policy Ctr. v. Norton*, 292 F. Supp. 2d 30, 46-48 & n.19 (D.D.C. 2003) (summarizing validity requirements).

[74] BLM, *Mining Claims and Sites on Federal Lands* 4-5 (Kathy Rohling ed., May 2011); *see also Castle v. Womble*, 19 L.D. 455 (D.O.I., 1894) (establishing the "prudent man" test); *United States v. Coleman*, 390 U.S. 599, 602-03 (1968) (endorsing the marketability requirement).

[75] *Great Basin Mine Watch*, 146 IBLA 248, 256 (1998) "Moreover, in determining whether a discovery exists, the costs of compliance with all applicable Federal and State laws (including environmental laws) are properly considered in determining whether or not the mineral deposit is presently marketable at a profit, i.e., whether the mineral deposit can be deemed to be a valuable mineral deposit within the meaning of the mining laws."

[76] 43 C.F.R. § 3809.415(a).

[77] *Id.* § 3809.600(b).

[78] *Id.* §§ 3809.600(a), 3809.601.

[79] *Id.* § 3809.431(b).

[80] *Id.* § 3809.602.

"noncompliance order" and give the operator an opportunity to cure the violation, or (2) order an immediate, temporary suspension of operations.[81]

The vague and discretionary nature of this compliance review process bears emphasis. BLM "may" inspect operations; failures to prevent unnecessary or undue degradation "may" subject an operator to BLM enforcement; BLM "may" issue enforcement orders if it finds that an operator has not complied with a plan of operations; and BLM "may" require modification to or revoke a plan of operations.[82] No regulation actually requires BLM to ensure that the initial standards in a plan of operations remain valid over time, or to regularly inspect ongoing mining operations once they begin. As a result, performance standards can become stale and operators can deviate from those standards without consequence. As we discuss below, these gaps can be especially consequential in the case of long-dormant mining operations that resume without renewed review.

The regulations impose other ongoing requirements on mining operators, such as the requirement to maintain adequate financial assurances (see below) payment of an annual fee.[83]

3.1.3.3. Inoperative periods

A plan of operations must include an interim management plan that anticipates periods of "temporary closure," including seasonal closures, and describes the management of a project area during closures so as to prevent unnecessary or undue degradation.[84] Interim management plans must contain: (1) measures to stabilize the site; (2) measures to isolate or control toxic or deleterious materials; (3) provisions for storing or removing equipment, supplies, and structures; (4) measures to maintain safe and clean conditions; (5) plans for monitoring conditions; and (6) a schedule of anticipated temporary closures.[85]

Because an interim management plan contemplates inoperative periods, an operator need adhere only to those measures that it proposed prospectively, at the time it prepared, and BLM approved, the plan of operations. If the circumstances of a particular inoperative period are not addressed in the original plan, the operator must submit a modification to the interim management plan to BLM within thirty days of the closure.[86] The regulations do not specify how far circumstances must deviate from those foreseen by the interim management plan in order to require a modified plan. Nor do the regulations define which unforeseen "circumstances" require a modified plan—*i.e.*, "circumstances" arising out of mining operations versus changes in the environment. Indeed, the regulations do not even specify who has the obligation to identify changed conditions (BLM or the operator or both).[87]

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[81] *Id.* § 3809.601.

[82] *Id.* §§ 3809.421, .431(b), .600-.602.

[83] *Id.* § 3834.11.

[84] BLM, *Voluntary – 3809 Plan of Operations Outline/Format*, 3-4 (2009), *available at* http://www.blm.gov/nv/st/en/prog/minerals/mining.print.html.

[85] 43 C.F.R. § 3809.401(b)(5); *see also id.* § 3809.420.

[86] *Id.* § 3809.424(a)(1).

[87] When BLM amended its rules to require interim management plans, it emphasized the fact that those plans could be modified to address unforeseen changes. *See* BLM, Mining Claims Under the General Mining Laws; Surface Management, 65 Fed. Reg. 69,998, 70,042 (Nov. 21, 2000). However, our experience is

During a temporary closure, an operator's approved performance standards require "adequate" provision of "maintenance, monitoring, security, and financial guarantee," but only for leaching and impoundment activities.[88] Otherwise, the requirement to maintain safe facilities applies only "during . . . operations."[89]

If operations are "inactive" for five consecutive years, "BLM will review your operations and determine whether BLM should terminate your plan of operations."[90] There is no other express point at which BLM must review inoperative mines. Moreover, the onus is on BLM, not the operator, to take any action in the event of long periods of inactivity. The regulations do not provide criteria to be considered in the case of a review, and they do not specify whether BLM will conduct a NEPA analysis. This differs from notice-level approvals, which automatically expire at the end of two years, and from initial plans of approval, which require specified information and NEPA review.[91]

Finally, before the final closure of a mine, an operator is required to modify its plan of operations "to address impacts from unanticipated events or conditions or newly discovered circumstances," including information related to toxic draining, water systems, and hazards to public safety.[92] No such modification is required for inoperative periods, no matter how prolonged they are.

3.1.3.4. Reclamation

An operator must provide a financial guarantee, such as a bond, before commencing operations.[93] BLM will periodically review the operator's financial guarantee and may require increased coverage.[94] When a financial guarantee is posted in increments, BLM will review the guarantee for each increment at least once per year.[95]

Mine operators must also provide reclamation plans that will allow them to meet applicable performance standards.[96] Operators must specify how they will: plug drill-holes; regrade, revegetate, and reshape the land; mitigate riparian and wildlife habitat; handle topsoil and toxic materials; remove or stabilize structures; reclaim the mine, "including information on the feasibility of pit backfilling that details economic, environmental, and safety factors; and manage the mine "post-closure."[97] When actually undertaking reclamation, an operator must

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that there is little such modification in practice, no doubt in part because of the uncertainties and gaps we identify above.

[88] 43 C.F.R. § 3809.420(b)(12)(vii).

[89] *Id.* § 3809.420(b)(13).

[90] *Id.* § 3809.424(a)(3).

[91] *See supra* pp. 10-11.

[92] 43 C.F.R. § 3809.431(c).

[93] *Id.* § 3809.503(c). BLM may require additional financial assurances where an operator modifies its plan of operations. *Id.* § 3809.580.

[94] *Id.* § 3809.552(b).

[95] *Id.* § 3809.553(b).

[96] 43 C.F.R. § 3809.401(b)(3) (referencing *id.* § 3809.420).

[97] *Id.* § 3809.401(b)(3)(i)-(x).

control erosion and water runoff; remove or control "toxic materials"; reshape and revegetate "where reasonably practicable"; and rehabilitate fisheries and wildlife habitat.[98] There is no requirement to restore water quality or engage in long-term monitoring.[99]

As for timing, "[a]t the earliest feasible time, the operator shall reclaim the area disturbed, except to the extent necessary to preserve evidence of mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands."[100] Although operators' "reclamation and post-closure obligations continue until satisfied,"[101] they need only complete reclamation at the "earliest economically and technically feasible time."[102]

3.2. The Forest Service's governing mandates and regulations

3.2.1. Forest Service Organic Administration Act of 1897

The Forest Service's authority to regulate mining operations is governed by the Organic Administration Act of 1897 ("Organic Act"), 16 U.S.C. § 551, which authorizes the agency to promulgate rules and regulations for the national forests in order "to regulate their occupancy and use and to preserve the forests thereon from destruction . . . ."[103] However, under the Organic Act, the agency may not categorically prohibit mining: "Nothing in section . . . 551 of this title shall be construed as prohibiting . . . any person from entering upon such national forests for all proper and lawful purposes, including that of prospecting, locating, and developing the mineral resources thereof."[104]

As the Ninth Circuit explained in *Clouser v. Espy*, a leading case on the Forest Service's authority over mining, the Organic Act "specifies that persons entering the national forests for the purpose of exploiting mineral resources 'must comply with the rules and regulations covering such national forests.'"[105] The Forest Service's Organic Act requires that the agency

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[98] *Id.* § 3809.420(b)(3)(ii)(A)-(E).

[99] BLM may require an operator to submit a modified plan of operations "[b]efore final closure, to address impacts from unanticipated events or conditions or newly discovered circumstances or information," including "[t]he need for long-term water treatment and site maintenance." *Id.* § 3809.431(c)(3). However, this demand is conditional—it is not included up front for all operations—and depends on BLM affirmatively identifying, before final closure, that long-term monitoring might be needed.

[100] *Id.* § .420(b)(3)(i); *see also id.* § .420(a)(5) ("Concurrent reclamation. You must initiate and complete reclamation at the earliest economically and technically feasible time on those portions of the disturbed area that you will not disturb further.").

[101] *Id.* § 3809.424(b).

[102] *Id.* § 3809.420(a)(5).

[103] 16 U.S.C. § 551 ("The Secretary of Agriculture shall make provisions for the protection against destruction by fire and depredations upon the public forests and national forests . . . and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction . . . .)

[104] 16 U.S.C. §478.

[105] *Clouser v. Espy*, 42 F.3d 1522, 1529, n.7 (9th Cir. 1994), *cert. denied*, 115 S. Ct. 2577 (1995), *and reh'g. denied*, 116 S. Ct. 18 (1995)

"*must* . . . ensure that its approval of a plan or project does not result in the 'destruction' and 'degradation' of the public forests."[106]

3.2.2. NFMA: no "substantial and permanent impairment"

In the same year that Congress made mining operations on BLM land subject to FLPMA's requirements, it similarly made mining operations on National Forest System lands subject to the requirements of the National Forest Management Act ("NFMA").[107] Specifically, NFMA authorizes the Forest Service to establish land use plans ("Forest Plans") to regulate resource development, including mining operations.[108] NFMA mandates that, "[i]n the development and maintenance of land management plans for use on units of the National Forest System, the Secretary shall use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences."[109] NFMA directs the Forest Service to "provide for multiple use and sustained yield" of the resources on the land it administers, "and, in particular [to] include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness."[110] NFMA also grants the Forest Service authority to promulgate regulations to guide the development of Forest Plans and "insure . . . (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land."[111]

3.2.3. The Forest Service's mining regulations

The Forest Service has promulgated regulations to manage mining operations under the 1872 Mining Law, and the Forest Service Organic Act at 36 C.F.R. Part 228 (2013).

3.2.3.1. Commencing operations on an existing mine

Like BLM's regulations, the Forest Service's regulations divide mining operations into categories. Minor mining operations (*e.g.*, "[p]rospecting and sampling which will not cause significant resource disturbance and will not involve removal of more than a reasonable amount of mineral deposit") do not require a permit.[112] For mining operations that "*might* cause significant disturbance of surface resources," an operator must submit a notice of intent to the

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[106] Clouser v. Madigan, 1992 WL 694368, at *4 (D. Or. 1992), *aff'd sub nom. Clouser v. Espy*, 42 F.3d 1522 (9th Cir. 1994).

[107] 16 U.S.C. §§ 1600-1687 (2011); *see also id.* § 478 (Forest Service Organic Act providing that persons may locate and develop mineral claims on Forest System lands, but "[s]uch persons must comply with the rules and regulations covering such national forests.").

[108] *Id.* § 1604.

[109] *Id.* § 1604(b).

[110] *Id.* § 1604(e)(1)).

[111] *Id.* § 1604(g)(3)(C)).

[112] *See* 36 C.F.R. § 228.4(a)(1)(ii). This requirement appears to be less stringent even than BLM's requirements for exploratory and preparatory work. *Cf. id.* § 3809.11 (requiring notice-level permits for any such work that exceeds "casual use," as defined by specific metrics).

Forest Service.[113] The notice of intent must identify the area to be mined, the nature of the operations, the route of access, and the method of transport.[114] However, the regulations do not require that a notice specify information about anticipated environmental impacts.

The most intensive operations—those that will "*likely* cause a significant disturbance of surface resources"—require, as under BLM's regulations, a plan of operations.[115] The plan of operations must include information about the operator; a map or sketch of the area; a description of proposed operations, "as foreseen for the entire operation for the full estimated period of activity"; and measures to protect the environment.[116]

The Forest Service reviews a proposed plan of operations to determine "the reasonableness of the requirements for surface resource protection."[117] The regulations direct the Forest Service to consider "the economics of the operation"[118] and, based on the information the operator provides, to establish environmental compliance standards related to air and water quality, solid waste disposal, aesthetic values, fish, and wildlife.[119] Adherence to these performance standards is mandatory. [120] Like BLM, the Forest Service will complete an "environmental analysis" under NEPA, which will either be an EIS or a shorter environmental assessment depending on the significance of the potential impacts.[121] The NEPA review process typically includes compliance with the NHPA, as well.[122]

Plans of operations are apparently valid in perpetuity, so long as the Forest Service does not require a modified plan of operations.[123] Indeed, even where an operator "fails to comply with the regulations or his approved plan of operations and the noncompliance is unnecessarily or unreasonably causing injury, loss or damage to surface resources," the Forest Service's only apparent remedy is to either require a modified plan of operations and/or "serve a notice of noncompliance" that "specif[ies] the action to comply."[124]

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[113] *Id.* § 228.4(a) (emphasis added).

[114] *Id.*

[115] *Id.* § 228.4(a)(3) (emphasis added).

[116] *Id.* §§ 228.4(c)-(d).

[117] *Id.* § 228.5(a); *see also id.* § 228.5(a)(3) (providing that the Forest Service may "[n]otify the operator of any changes in, or additions to, the plan of operations deemed necessary to meet the purpose of the regulations in this part").

[118] *Id.* § 228.5(a).

[119] *Id.* § 228.8(a)-(g). These compliance standards serve the same function as BLM's performance standards. Accordingly, for simplicity's sake, we use the term "performance standards" in the remainder of this petition.

[120] *Id.* § 228.8; *see also supra* p. 16 & n.111, *infra* section 3.2.2.2 (discussing § 228.8 performance requirements).

[121] 36 C.F.R. § 228.4(f).

[122] *See* 36 C.F.R. § 800.8; *Pres. Coal. of Erie Cnty. v. Fed. Transit Admin.*, 356 F.3d 444, 453 (2d Cir. 2004) (discussing integrated reviews under NEPA and NHPA).

[123] *See id.* § 228.4(e).

[124] *Id.* § 228.7(b). Neither section 228.7(b) nor any other rule appears to provide for termination of a plan of operation in the event of noncompliance.

3.2.3.2. Maintaining an existing mine

Mining operations must conform to an approved plan of operations and performance standards "so as, where feasible, to minimize adverse environmental impacts."[125] Under the performance standards, mining operations must comply with federal and state requirements, consider scenic values of the landscape "to the extent practicable," include "all practicable measures to maintain and protect fisheries and wildlife habitat," and "minimize or, where practicable, eliminate" the adverse impacts of roads on soil and water.[126] Finally, during operations, facilities must be maintained in a "safe" manner, and hazardous sites must be maintained in accordance with federal and state requirements.[127]

Unlike BLM's regulations, the Forest Service's regulations provide that the Forest Service "shall periodically inspect operations" to verify compliance with the regulations and with the plan of operations.[128] However, the rules do not specify how often this review should or must take place. Noncompliance is assessed against a vague standard of "unnecessarily or unreasonably causing injury, loss or damage to surface resources."[129]

After operations commence, if "unforeseen significant disturbances of surface resources" occur, the Forest Service "may" refer back to the plan of operations to assess how the plan addressed the environmental performance requirements.[130] In such cases, the Forest Service "may" elect to require a modified plan of operations. To make the decision, the agency may ask: (1) "[w]hether all reasonable measures were taken by the authorized officer to predict the environmental impacts of the proposed operations prior to approving the [original] operating plan"; (2) whether the disturbance is likely to require modification of the operating plan in order to meet the environmental performance requirements . . .; and (3) "[w]hether the disturbance can be minimized using reasonable means."[131] These concerns notwithstanding, "[o]perations may continue in accordance with the approved plan until a modified plan is approved," unless the Forest Service makes a determination that the operations will "unnecessarily or unreasonably caus[e] irreparable injury, loss or damage to surface resources."[132] If the Forest Service requires a modified plan, it will follow the same approval process as for an initial plan of operations.[133] As with the initial plan of operations, the Forest Service will conduct an environmental analysis under NEPA.[134]

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[125] *Id.* § 228.8.
[126] *Id.* §§ 228.8(a)-(f).
[127] *Id.* § 228.9.
[128] *Id.* § 228.7(a).
[129] *Id.* § 228.7(b).
[130] *Id.* § 228.4(e).
[131] *Id.*
[132] *Id.* § 228.4(e)(3).
[133] *Id.* § 228.5(c).
[134] *Id.* § 228.4(f).

3.2.2.3. Inoperative periods

The Forest Service's regulations contain very few requirements for inoperative mines. There are no special requirements for an operator who temporarily ceases operations for seasonal reasons.[135] For any other inoperative period, the requirements are minimal: once per year, the operator must file a statement with a "[v]erification of intent to maintain the structures, equipment and other facilities[;] . . . [t]he expected reopening date[;] and . . . [a]n estimate of extended duration of operations."[136] Additionally, during inoperative periods, operators must maintain the site "in a neat and safe condition."[137] There is no time limit on the duration of an inoperative period; no obligation to provide updated information on the mine, its impacts, or the surrounding environment; and no specific procedure by which the Forest Service must evaluate the continuing legitimacy of the plan of operations.

3.2.3.4. Reclamation

Before the Forest Service will approve a plan of operations, an operator must provide a financial guarantee in the form of a bond.[138] The Forest Service will adjust the bond, if necessary, for any modified plan of operations.[139]

"Upon exhaustion of the mineral deposit or at the earliest practicable time during operations, or within 1 year of the conclusion of operations, unless a longer time is allowed by the authorized officer," a mine operator "shall, where practicable, reclaim the surface disturbed in operations by taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources."[140] These measures include control of erosion and water runoff; removal or control of "toxic materials"; removal of "structures, equipment and other facilities"; revegetation "where reasonably practicable"; and "rehabilitation" of habitat.[141] There is no requirement to conduct long-term monitoring of surface water or groundwater quality. And other than the requirement to "remove within a reasonable time following cessation of operations all structures, equipment and other facilities,"[142] there is no deadline for operators' reclamation activities.

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[135] *Id.* § 228.10.
[136] *Id.*
[137] *Id.*
[138] *Id.* § 228.13(a).
[139] *Id.* § 228.13(c).
[140] *Id.* § 228.8(g).
[141] *Id.* § 228.8(g)(1)-(5); *see also id.* § 228.10 ("[O]perator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations.").
[142] *Id.* § 228.10.

Section 4. The Agencies' existing mining rules, especially as they pertain to inoperative mines, do not satisfy governing mandates and do not sufficiently protect human health, the environment, or sensitive cultural and historic resources.

4.1. The existing rules do not satisfy the Agencies' obligations under FLPMA and NFMA.

FLPMA obligates BLM to follow "principles of multiple use and sustained yield" and to prevent "unnecessary or undue degradation" in regulating mining on federal public lands. Similarly, BLM's regulations aim to "establish[ ] procedures and standards to ensure that operators and mining claimants" prevent "unnecessary or undue degradation of the land and reclaim disturbed areas."[143] As the discussion in the previous section makes clear, BLM's current rules do not meet that standard, especially when it comes to inoperative mines.

For such mines, prolonged, even indefinite periods of inactivity are permitted. Plans of operations are effectively valid in perpetuity; operators are not responsible for notifying BLM of changed conditions; and BLM's only obligation to evaluate whether an interim management plan is preventing undue degradation comes after five consecutive years of inactivity. Even if that five-year inspection occurs, there is no prescribed process for BLM to determine whether to require a modified plan or operations, and no obligation to conduct an updated environmental review. Moreover, BLM has no affirmative obligation to monitor changes in environmental conditions or to adjust performance standards to reflect them. The rules do not impose clear performance standards during non-operative periods for activities other than leaching and impoundment, even if the mineral being mined is radioactive uranium. The rules do not define "inactivity," do not include criteria to guide reviews when they do occur, and do not specify whether a NEPA or NHPA analysis should or must be conducted. No modifications to the plan of operation are expressly required prior to non-final closure, no matter how prolonged the period of inactivity.

These weak requirements for inoperative mines might be less troubling if the initial permitting process were more robust. General "performance standards" require operators to describe how they will protect the environment in their plan of operations. However, these practices lack precision; they do not apply to operations approved before 2001; and they lock in obligations that may become stale over time. Indeed, once BLM has approved a plan of operations, the plan can remain in effect indefinitely, so long as mining operations will continue. BLM conducts a NEPA/NHPA review when it initially evaluates a plan of operations, but, under the current rules, further environmental and historic review occurs very rarely, no matter how much time has passed since initial approval and no matter the extent to which conditions may have changed. Throughout the regulatory provisions, BLM reserves discretionary authority to intercede if an operator is causing "unnecessary or undue degradation," but the regulations do not establish clear obligations or criteria for BLM to identify hazards, respond to violations, and enforce corrective actions, or for operators to keep BLM informed.

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[143] 43 C.F.R. § 3809.1(a).

Finally, although BLM requires detailed reclamation plans, they do not require operators to identify and ameliorate subsurface impacts or engage in long-term surface water and groundwater monitoring. And while it is reasonable to require mine operators to begin reclamation at the "earliest economically and technically feasible time," applying the same standard for completing reclamation gives operators too much leeway. Many mines take years or decades to reclaim, during which time their harmful effects on the environment continue.

Similar deficiencies underlie the Forest Service's regulations. Like FLPMA, NFMA requires the Forest Service to regulate National Forest System lands under a principle of "multiple use and sustained yield," and to avoid "substantial and permanent impairment of the productivity of the land." Yet the Forest Service's mining regulations contain even weaker environmental protections than BLM's, especially for inoperative mines. At most, the regulations require operators to maintain sites "in a neat and safe condition" and file a bare-bones statement once a year to verify the operators' intent to resume operations in the future. Closures can be prolonged, even indefinite, with no new plan of operations or NEPA/NHPA review despite the passage of time and the likelihood of changed conditions.

And like BLM's regulations, the gaps in the Forest Service's regulations for inoperative mines are exacerbated by other, more general weaknesses in how mining operations are approved and managed. While the Forest Service requires a plan of operations for significant disturbances of surface resources, compliance with standards to protect the environment is mandatory only "where feasible."[144] As with operations on BLM-managed land, operations on National Forest System lands can continue indefinitely with little in the way of inspection, information-sharing, or environmental review and assessment, all of which are needed to decide whether an initial plan of operations remains adequate to protect the environment. Even if the Forest Service discovers that an operation is not complying with its plan of operations or the rules, the agency has no apparent authority to require a modified plan of operations or to tell how the operator how to comply.

Finally, the Forest Service imposes less stringent standards for reclamation than BLM.[145] Like BLM, however, the Forest Service does not require operators to reclaim subsurface resources or engage in long-term monitoring of surface water or groundwater quality, and does not impose a deadline for operators' reclamation activities (other than removing facilities and equipment, which must happen within a "reasonable time" after operations cease).

As we show in the next section, the gaps in the Agencies' existing rules have tangible consequences. Those gaps mean the Agencies are not required (and may not even be able) to take due account of changing conditions at mines and in the surrounding environment, or of advances in our understanding about how uranium mining harms the environment, sensitive cultural and historic resources, and human health. Because inoperative uranium mines are leading to such harm, BLM's rules, as written, do not prevent "unnecessary and undue degradation" and "permanent impairment of the productivity of the land and the quality of the environment," as FLPMA requires. Likewise, the Forest Service's rules, as written, do not allow

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[144] 36 C.F.R. § 228.8.

[145] *Compare* 36 C.F.R. §§ 228.8, .10 *with* 43 C.F.R. §§ 3809.401(b)(3), .420(a)(5), (b)(3), .424(b).

the agency to uphold NFMA's mandate to protect "multiple use[s]" from "substantial and permanent impairment."

4.2. The Agencies' existing rules do not take due account of changing conditions or the adverse effects of uranium mining.

4.2.1. Changing conditions

Uranium mines (and indeed all types of mines) do not operate in a static environment. Environmental conditions that exist when a mine is approved may be significantly different many years later, when the mine is still operating or has been idled. Surface waters, aquifers, or soils may have been more polluted than initially anticipated; animals or people may have moved in or out of the area; cleanup costs may be much higher than anticipated. Furthermore, our understanding of how and why a mining operation affects the people and environment around it may have changed over time. We might, for example, possess better data collection methods, or have more knowledge about exposure pathways and mitigation measures.

In fact, each one of these things has changed in the last two or three decades, *after* BLM and the Forest Service evaluated and approved many existing uranium mining operations. Many of these operations have entered long periods of non-operation and then re-started. During that time, we have acquired better technology for measuring and monitoring environmental conditions and changes. The advances include satellite imaging, remote sensing, and GIS systems. They also include a "SOARS" system that evaluates remediation progress by gathering groundwater monitoring and other data, and the U.S. Department of Energy's technical methodology, including kinetic modeling, for quantifying radiation doses.[146]

This new technology has yielded new studies and, with them, a better understanding of uranium mining's adverse effects. Many of these studies have been in the Four Corners region, where most American uranium mines are located.[147] Chief among the new studies is the 2011 Northern Arizona Withdrawal Final EIS, which combined pre-existing information with extensive new surveys and analyses.[148] Among other things, the EIS and other studies have shown that: (1) radon gas, a uranium decay product, delivers almost twice the radiation dose to humans as previously thought, meaning that previous dose estimates for miners need to be

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[146] *See* S. Morrison, et al., Overview of Science and Technology Improvements at Office of Legacy Management Sites, Waste Management Symposia, 2 (2007), *available at* http://www.wmsym.org/archives/2007/pdfs/7467.pdf; U.S. D.O.E., Office of Legacy Management Program Update, *Office of Legacy Management Receives Management Award*, 1 (Oct. – Dec. 2010), *available at* http://energy.gov/sites/prod/files/LMPU_qtr4_2010.pdf; U.S. D.O.E., A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota, DOE-STD-1153-2002 M1-8, -9 (July 2002), *available at* http://www.doeal.gov/SWEIS/DOEDocuments/027%20DOE%20STD-1153-2002.pdf; *see also* National Research Council, *Uranium Mining in Virginia*, at 208; U.S. DOE, Office of Legacy Management, *Geology and Groundwater Investigation: Many Devils Wash, Shiprock Site, New Mexico* (Apr. 2011), *available at* http://energy.gov/lm/downloads/geology-and-groundwater-investigation-many-devils-wash-shiprock-site.

[147] U.S. EPA, Radiation Protection: Uranium Mining Wastes, *available at* http://www.epa.gov/radiation/tenorm/uranium.html.

[148] *See generally* 2012 Withdrawal FEIS at Chapters 3-4; *see, e.g.*, *id.* at 3-41 to 3-42, 3-99 (describing updated hydrological studies and soil surveys).

doubled to accurately reflect lung cancer risk;[149] (2) "long term ingestion of uranium by humans may produce interference with kidney function at the elevated levels of uranium found in some groundwater supplies;"[150] (3) bone is a likely target of uranium toxicity in humans, and even low uranium concentrations in drinking water can cause toxic effects on the kidneys;[151] (4) chromosomal abnormalities in babies born within the vicinity of uranium mining operations;[152] (5) babies born from mothers who lived near a uranium tailings dump exhibited abnormally high rates of birth defects;[153] (6) a link between high rates of systemic lupus to living near a uranium processing facility;[154] (7) soil properties affect uranium mobility and uptake by plants and animals;[155] and (8) uranium decay products bioaccumulate.[156] Reflecting our better understanding of these and other adverse effects, EPA in 2000 set new (and more stringent) drinking water standards for uranium.[157]

There have been other relevant changes in the last two or three decades. First, more plant and animal species are now at risk of the adverse effects of uranium mining near the Grand Canyon. The federally endangered California condor was re-introduced in Arizona beginning in 1996. As of the end of 2013, there were 230 birds in the wild, 76 of which live in Arizona.[158] The National Park Service is re-introducing the federally endangered humpback chub from the Little Colorado River to its tributaries, including Havasu and Shinumo Creeks in Arizona.[159] Mines have become critical to conserving protected bats; new species in northern

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[149] R. Taubenfeld, et al., High Risk – Low Return: The Case Against Uranium Mining in Queensland, 12 (Mar. 2013), *available at* http://qnfa.files.wordpress.com/2013/03/180313highcost-lowreturn-uinqld.pdf.

[150] M. L. Zamora, et al, *Chronic Ingestion of Uranium in Drinking Water: A Study of Kidney Bioeffects in Humans*, 43 Toxicological Sciences, 68-77 (1998)

[151] P. Kurttio, et al., *Bone as a Possible Target of Chemical Toxicity of Natural Uranium in Drinking Water*, Environmental Health Perspectives, 72 (Jan. 2005), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1253712/; P. Kurttio, et al., *Renal Effects of Drinking Water in Uranium*, Environmental Health Perspectives, 337-42 (Apr. 2002), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240795/pdf/ehp0110-000337.pdf.

[152] W. Au, et al., *Biomarker Monitoring of a Population Residing near Uranium Mining Activities*, 103 *Environmental Health Perspectives*, 466-70 (May 1995), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1523284/pdf/envhper00354-0058.pdf.

[153] L. M. Shields, et al., *Navajo Birth Outcomes in the Shiprock Uranium Mining Area*, 63 *Health Physics* 542-51 (Nov. 1992), *available at* http://www.ncbi.nlm.nih.gov/pubmed/1399640.

[154] American College of Rheumatology, Uranium Exposure Linked to High Lupus Rates in Community Living Near a Former Refinery (Nov. 10, 2012), *ScienceDaily*, *available at* http://www.sciencedaily.com/releases/2012/11/121110155813.htm.

[155] Canadian Council of Ministers of the Environment, Canadian Soil Quality Guidelines for Uranium: Environmental and Human Health, 22-23, 25, 28 (2007), *available at* http://www.ccme.ca/assets/pdf/uranium_ssd_soil_1.2.pdf.

[156] National Research Council, *Uranium Mining in Virginia*, at 210 (citing C.I.E. Wiramanaden, et al., *Selenium distribution in a lake system receiving effluent from a metal mining and milling operation in Northern Saskatchewan, Canada*, 29 ENVTL TOXICOLOGY & CHEMISTRY 488, 606-616 (2010), *available at* http://onlinelibrary.wiley.com/doi/10.1002/etc.63/pdf).

[157] U.S. EPA, Basic Information about Radionuclides in Drinking Water, *available at* http://water.epa.gov/drink/contaminants/basicinformation/radionuclides.cfm.

[158] California Condor Recovery Program, Population Size and Distribution (Dec. 31, 2013), *available at* http://www.peregrinefund.org/docs/pdf/project-data/2013-12-31-condor-population.pdf.

[159] U.S. NPS, Humpback Chub Tributary Translocations, *available at* http://www.nps.gov/grca/naturescience/shinumotransloc.htm; U.S. NPS, Translocated Humpback Chub

Arizona have been listed as threatened or endangered, including the razorback sucker; and other species (peregrine falcon, bald eagle) have been de-listed or given less protection.[160]

Second, federal lands are replete with sensitive cultural and historic resources. As noted above, the area of the 2012 Withdrawal alone contains 12 sites listed on the National Register of Historic Places, another 447 proposed for listing, and 1,880 sites that have not yet been evaluated.[161] Resources important to Native American tribes, including landscapes, rivers, and trails, are spread throughout the withdrawal area.[162] More such resources are discovered, and their history and value better understood, every day.

Third, land use patterns around uranium mines have shifted. Arizona now has the largest number of national monuments (18), followed by New Mexico (14).[163] One recent addition, Grand Canyon Parashant National Monument, was designated in 2000.[164] New wilderness areas have been set aside, such as the Havasu Wilderness and Warm Springs Wilderness in 1990.[165] Critical habitat was designated for the humpback chub in 1994, the razorback sucker in 1994, the Mexican spotted owl in 2004, and the southwestern willow flycatcher in 2013.[166] Population growth has increased, and with it the demand for outdoor recreation and the risk of human exposure to uranium and its decay products.[167]

Finally, we have seen that uranium mines are often harder and costlier to clean up than anyone expected. A 2012 report issued by the U.S. Government Accountability Office ("GAO") found that BLM and the Forest Service "do not have reliable data on the number and location of abandoned uranium mine sites on federal land or a definitive cost for their cleanup."[168] The GAO separately identified a $60.6 million gap between the amount BLM estimated for financial

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Spawn in Havasu Creek, *available at* http://www.nps.gov/grca/parknews/translocated-humpback-chub-spawn-in-havasu-creek.htm.

[160] *See* Hinck, et al., at 289; California Department of Fish & Wildlife, State & Federally Listed Endangered & Threatened Animals of California (Mar. 2014), *available at* http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEAnimals.pdf; BLM, Bats & AML (undated), *available at* http://www.blm.gov/wo/st/en/prog/more/Abandoned_Mine_Lands/Environment_Water/bats___aml.print.html; *see also* John E. Burghardt, Bat-compatible Closures of Abandoned Underground Mines in the National Park System, Arid Southwest Lands Habitat Restoration Conference, 1-2 (Mar. 2003), *available at* http://www.nature.nps.gov/geology/aml/amlreports/batgate9102003_screen.pdf.

[161] 2011 Withdrawal FEIS at ES-10.

[162] *Id.* at ES-11.

[163] *See* National Parks Conservation Association, Factsheet – List of Proclaimed National Monuments (Mar. 21, 2014), *available at* http://www.npca.org/news/media-center/fact-sheets/2013-Antiquities-Act-monument-list-updated.pdf; NPS, Antiquities Act 1906-2006, Monuments List (last updated Feb. 26, 2015), *available at* http://www.nps.gov/archeology/sites/antiquities/MonumentsList.htm.

[164] Presidential Proclamation No. 7265 (Jan. 11, 2000).

[165] Arizona Desert Wilderness Act of 1990, Pub. L. No. 101-628, 104 Stat. 4469, §§ 101(a)(4), 301(a)(1) (Nov. 28, 1990).

[166] U.S. Fish & Wildlife Service, Critical Habitat Portal, *available at* http://ecos.fws.gov/crithab/.

[167] The 2000 U.S. Census, for example, shows that population growth was highest in Arizona, Nevada, Colorado and Utah between 1990 and 2000, a trend that was mostly repeated between 2000 and 2010. *See* U.S. Census Bureau, *Population Change and Distribution, 2000 to 2010* (Mar. 2011), *available at* http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf; U.S. Census Bureau, *Population Change and Distribution, 1990 to 2000* (Apr. 2001), *available at* http://www.census.gov/prod/2001pubs/c2kbr01-2.pdf.

[168] GAO-12-544 at 30.

assurance requirements and the actual value in place in plans of operations at abandoned hardrock mines.[169] A recent survey in New Mexico identified 259 abandoned mines, 139 of which had no record of reclamation.[170] A 1999 Energy Information Agency report indicated that DOE had spent $1.5 *billion* on remediation of uranium mill sites.[171] In August 2014, the Department of Energy issued a report to Congress regarding defense-related abandoned uranium mines that identified their location, impacts, and remediation feasibility and cost.[172]

These changes are not only vast, they are continuing. BLM and the Forest Service must be in the best possible position to decide whether their initial approvals for mines still make sense many years later, especially after prolonged periods of inactivity. The changes we propose in this petition—limiting the term of mining approvals, requiring new approvals and environmental and historic review after long periods of inactivity, mandating regular inspections and disclosures, and improving reclamation—are all oriented toward that purpose.

4.2.2. Adverse impacts of uranium mining

The need to stay on top of changing conditions and the latest science is especially important given how serious the impacts from uranium mining can be. Uranium mining operations can contaminate surface waters and groundwater, poison plants and animals, fragment and destroy important habitat, pollute soils, and harm human health. Mining operations that have been inoperative for long periods of time can have especially pernicious effects, both during their periods of inactivity and after they are re-opened. These adverse consequences can and do come about even when operations are conducted in accordance with their approvals. Changes in the way the Agencies approve and manage uranium mines are necessary to better account for and mitigate these effects, especially as environmental, operational, and other conditions change over time.

4.2.2.1. Surface water and groundwater

In the Final EIS for the 2012 Withdrawal, the Department of the Interior studied the use and contamination of surface waters and groundwater by uranium mining in the Colorado Plateau. In fact, the possibility of such contamination was one reason the Secretary of the Interior issued the 2012 Withdrawal.[173] Impacts to surface waters affect quality and function,

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[169] *Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land: Oversight Hearings on Hardrock Mining Before the S. Comm. on Energy and Natural Resources,* 110th Cong. 29 (2008) (statement of Robin M. Nazzaro, Director, Natural Resources and Environment, GAO).

[170] New Mexico Senate Joint Memorial 15, Urging Congress to Appropriate Funds for the Cleanup of Abandoned Uranium Mines Opened and Operated for the Benefit of the Federal Government (Mar. 17, 2009), *available at* http://www.nmlegis.gov/Sessions/09%20Regular/final/SJM015.pdf.

[171] U.S. EIA, *Remediation of UMTRCA Title I Uranium Mill Sites under the UMTRCA Project Summary Table: Uranium Ore Processed, Disposal Cell Material, and Cost for Remediation as of December 31, 1999* (1999), *available at* http://www.eia.gov/nuclear/umtra/.

[172] *See* U.S. DOE, Office of Legacy Management, Abandoned Uranium Mines Report to Congress (2014), *available at* http://www.lm.doe.gov/aum/.

[173] *See* 2012 Withdrawal ROD at 9-10. Other types of hardrock mining adversely impact surface water and groundwater, but we focus on uranium mining in part because of its unique potential for radioactive contamination.

while impacts to groundwater (both perched and deep aquifers) primarily affect quality and quantity. However, both waters are "part of a single resource," and "changes in the quantity and quality of one will affect the same parameters in the other."[174]

Active uranium mining operations can cause sediment loading in surface waters, and erosion and loss of vegetation and habitat along such waters.[175] However, both active and inactive operations can directly pollute surface waters with uranium, uranium decay products, chemicals, and metals.[176] For example, historic and new data suggest that water seeping into the abandoned Orphan uranium mine, located near the south rim of the Grand Canyon, is generating "elevated concentrations of uranium in water that has moved vertically downward" into an underlying aquifer.[177] Samples from Horn Springs Creek, which originates from that aquifer less than a mile from the Orphan Mine and flows into the Colorado River, and nearby Salt Creek show concentrations of dissolved uranium that are at or above the maximum contaminant levels set by the U.S. Environmental Protection Agency ("EPA").[178] Likewise, the inactive Midnite uranium mine in Washington state was the subject of a 1998 EPA study that showed elevated concentrations of site-related metals and radionuclides in surface water and sediments as far as three-and-one-half miles downstream of the mine.[179] Many samples exceeded surface water and groundwater standards,[180] and a 2010 public health assessment warned against drinking or bathing in surface waters or eating fish, plants, or animals from the local watershed.[181]

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[174] National Research Council, *Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia*, 180 (2012), *available at* http://nap.edu/catalog.php?record_id=13266 (hereinafter "National Research Council, *Uranium Mining in Virginia*").

[175] 2012 Withdrawal FEIS at 3-7, 4-67, 4-83 to 4-85, 4-87.

[176] National Research Council, *Uranium Mining in Virginia*, at 180; 2012 Withdrawal FEIS at 4-62.

[177] 2012 Withdrawal FEIS at 3-96.

[178] *Id.* at 3-96; Donald Bills, et al., Historical and 2009 Water Chemistry of Wells, Perennial and Intermittent Streams, and Springs in Northern Arizona, 156 (Chapter C of U.S. Department of the Interior & USGS, *Scientific Investigations Report No. 2010-5025: Hydrological, Geological, and Biological Site Characterization of Breccia Pipe Uranium Deposits in Northern Arizona* (2010)), *available at* http://pubs.usgs.gov/sir/2010/5025/pdf/sir2010-5025.pdf. The National Park Service warns visitors not to drink water from Horn Creek "unless death by thirst is the only other option." NPS, Grand Canyon Tonto Trail Description, *available at* http://www.nps.gov/grca/planyourvisit/upload/Tonto-Bright_Angel_to_Hermit.pdf. NPS is currently cleaning up the Orphan Mine under Superfund at an estimated cost of $15 million for just the surface area; subsurface and water remediation costs are unknown. *Sidebar: The Story of Orphan Uranium Mine*, *The Washington Independent* (July 22, 2008), http://washingtonindependent.com/481/sidebar-the-story-of-orphan-uranium-mine.

[179] U.S. Department of Health & Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, *Public Health Assessment for Midnite Mine Site, Wellpinit, Stevens County*, Washington, 10 (May 19, 2010), *available at* http://www.atsdr.cdc.gov/HAC/pha/MidniteMineSiteFinal/MM-FinalReasePHAFINAL05172010ATSDRwebsite.pdf (hereinafter "Midnite Mine Public Health Assessment").

[180] *Id.* at 10.

[181] *Id.* at 23; U.S. EPA, Midnite Mine Superfund Site Wellpinit, WA Community Involvement Plan, 23 (2012), *available at* http://www.epa.gov/region10/pdf/sites/midnite_mine/community_involvment_plan_032712.pdf. Other inactive or abandoned uranium mines, including the Hack Mine Complex in Arizona and the Monticello Mine in Utah, show impacts similar to those described above. *See* 2012 Withdrawal FEIS at 4-86; Brett T. Bunkall, Note, *The Uranium Mining and Milling Industry in Utah,* 26 J. Land Resources & Envtl. L. 375, 379 (2006).

Groundwater impacts can be just as severe, both in terms of quantity and quality. Uranium mining operations, both active and inactive, drain perched aquifers and/or draw water from deep aquifers, affecting the amount of water available for seeps, springs and other water resources. These resources are exceedingly rare in desert environments like the Colorado Plateau, and are critical for a variety of water-dependent species.[182]

Uranium mining can also affect groundwater quality, primarily by "alter[ing] conditions underground that could allow uranium mining and other minerals to be mobilized."[183] The result is that concentrations of uranium, its decay products, metals, and other contaminants are elevated in deep groundwater aquifers.[184] This process can "occur both during mining and after mine closure"; in fact, "[i]mpact to springs from old mines might be somewhat more likely because old mines, particularly those that have not been reclaimed, might provide a continual source of mine drainage."[185]

Consistent with these observations, regional aquifer groundwater wells near the Canyon, Pinenut, and Hermit uranium mines in Arizona—all of which have been or were non-operational for long periods of time—contain dissolved uranium concentrations in excess of EPA drinking water standards.[186] Drainage from the unreclaimed Orphan mine on the south rim of the Grand Canyon has yielded concentrations of dissolved uranium up to 400 parts per billion in the underlying deep aquifer, "after operations had ceased."[187] (The EPA drinking water limit is 30 parts per billion.[188]) And the New Mexico Environment Department advises people with private wells in the San Mateo Creek Basin, in northwestern New Mexico, that their water may be contaminated with uranium from former uranium mining and processing operations, above federal and state limits for drinking water.[189]

4.2.2.2. Soils and vegetation

Mining operations (uranium and otherwise) remove soil and adversely affect its physical, chemical, and biological properties. Specifically, operations compact soil, reducing pore space and altering soil structure; accelerate erosion; reduce permeability to water and air (thereby increasing runoff); decrease moisture for plant growth; and cause the loss of micro-organisms, earthworms, seed banks, organic matter and nitrogen.[190] These effects can last for hundreds of years; even "[r]eclaimed soils are fundamentally different from natural soils in

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[182] 2012 Withdrawal FEIS at 3-6, 3-129, 4-51 to 4-61, 4-136 to 4-137.

[183] *Id.* at 3-7.

[184] *Id.*; *see also id.* at 3-6, 4-51, 4-58, 4-88.

[185] *Id.* at 4-88.

[186] Bills, et al., at 158, 160-61; NPS, Grand Canyon National Park, Division of Science and Resource Management, Comments and Concerns Regarding the Proposed Wate Mine and Potentials for Expanded Arizona State Land Breccia Pipe Uranium Mining, 5 (May 9, 2013), *available at* http://www.grandcanyontrust.org/documents/gc_uranium_grcaCommentsProposedWateMine.pdf.

[187] 2012 Withdrawal FEIS at 4-63.

[188] *Id.* at 4-64.

[189] New Mexico Environment Department, Advisory Release (Jan. 8, 2009), *available at* http://www.nmenv.state.nm.us/OOTS/documents/PR-SanMateo-1-8-08--Final2.pdf.

[190] National Research Council, *Uranium Mining in Virginia*, at 201; 2012 Withdrawal FEIS at 3-7, 3-97.

their physical, chemical, and biological properties, and some of these differences can take as little as 20 years or more than a thousand years to recover."[191]

Uranium mining in particular contaminates soil, which has cascading effects for entire ecosystems. Uranium levels between 10 and 100 parts per million can profoundly affect vegetation by retarding root growth and causing chlorosis, a condition of low chlorophyll that induces leaves to die and fall too early. These effects inhibit plant growth and reproduction, which in turn affect the structure, health, and diversity of vegetative communities. And since vegetation is key to how surface water flows across the land, changes in how and where plants grow can decrease the quality and availability of water and habitat and increase erosion and the risk of wildfires.[192]

Uranium, its decay products, and metals are dispersed from mining operations through direct contact (leaching), wind and flooding.[193] In 2006, EPA discovered radium (a uranium decay product) above safe levels in soils at and around the Northeast Church Rock Mine, a reclaimed uranium mine in the Navajo Nation in New Mexico.[194] Similarly, in 2009, the U.S. Geological Survey ("USGS") investigated the impacts of historic uranium mining on soils and sediments in lands surrounding the Grand Canyon. The agency discovered concentrations of uranium and arsenic that were sometimes 10 times greater than background levels, as well as significant localized changes in soil conditions near former mining operations. Increased radiation exposure was found at all sampled sites.[195] Soil radiation levels around the Orphan Mine are significantly higher than background.[196]

Of particular note, USGS often found the *worst* contamination around inoperative mines: "[t]he area[s] outside mine sites at reclaimed mines are also generally less impacted (at present)

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[191] National Research Council, *Uranium Mining in Virginia*, at 201. "Stripping, stockpiling, and replacing the topsoil erases the natural soil horizons that develop over hundreds to thousands of years. Stockpiled topsoil deteriorates because of changes in the physical, chemical, and biological characteristics resulting from compaction, leaching, and degradation of the nutrients." *Id*.

[192] 2012 Withdrawal FEIS at 3-7, 3-124 to 3-130; Hinck, et al., at 270.

[193] 2012 Withdrawal FEIS at 3-112 to 3-114, 4-114 to 4-115.

[194] U.S. EPA, Region 9, Northeast Church Rock Mine (undated), *available at* http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/NNN000906132.

[195] 2012 Withdrawal FEIS at 3-108 to 3-112; James K. Otton, et al., *Effects of 1980s Uranium Mining in the Kanab Creek Area of Northern Arizona*, 50, 130 (2010).

[196] *See* John Beshears, Chief, Facility Management Division, Grand Canyon National Park, EE/CA Approval Memorandum – Orphan Mine Site Operable Unit 1, Grand Canyon National Park, to Steve Martin, National Park Service, Intermountain Region Director, 2-3 (Nov. 9, 2004) ("An investigation in 1996 revealed hazardous substance concentrations in . . . surface soils that greatly exceed naturally occurring background concentrations," including uranium 238 "more than 1900 times," and thorium 230 "more than 1200 times," above background. "These hazardous substances have migrated, and remain highly susceptible to continued migration, due to wind and water."); *see also* Chris Shuey, Statement before the Subcommittee on National Parks, Forests, and Public Lands, Natural Resources Committee, U.S. House of Representatives, 6 (Mar. 28, 2008), *available at* http://www.grandcanyontrust.org/documents/gc_uranium_shuey032808.pdf ("Tens of thousands of tourists walk by the mine site on the South Rim trail every year. Accordingly, excavation and removal of contaminated soils and wastes, especially from the upper mine next to the South Rim trail, would be prudent to protect the public health.").

than mine sites under very long-term interim management."[197] The reason? "Effects on soils at inactive mines, such as Kanab North, are likely to be at their greatest because continual wind dispersion of materials off-site would be expected to generate a cumulative effect on the chemistry of downwind surface soils (assuming the soils themselves have not been subject to significant erosion)."[198]

4.2.2.3. Sensitive species and their habitat

As we explained in Section 2, the one million acres covered by the 2012 Withdrawal is home to 23 plant and animal species protected under the federal Endangered Species Act; 56 other species classified as "sensitive" by BLM, the Forest Service, and/or the National Park Service; and 10 more species of birds that the State of Arizona has identified as having the "greatest conservation need."[199] More than 300 plant species are endemic to the Colorado Plateau.[200] These species range from the majestic California condor (73 call Arizona home) to the Colorado River's endemic humpback chub.[201]

Uranium mining presents a direct threat to these sensitive species and their habitats. Plants and animals may be exposed to uranium and its decay products through surface water, absorption through skin, ingestion of soil and food, and gamma radiation.[202] A recent USGS literature review concluded that EPA's drinking water standards for uranium and certain metals were insufficient to protect many plant and wildlife species from the toxic effects of uranium and its decay products.[203] Mining operations also eliminate and fragment habitat; degrade habitat value through noise, visual impacts, increased erosion, and the spread of invasive species; and reduce critical water supplies.[204] As the 2012 Withdrawal Final EIS explains,

> Riparian habitat in the Grand Canyon region, including within the North Parcel and adjacent to the South and East parcels, supports a diverse flora and fauna. These riparian areas have exceptional biodiversity and are critical for the plants and animals that live in the area. Many of the riparian areas are supported by springs that originate in water-bearing zones in the Redwall and

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[197] 2012 Withdrawal FEIS at 3-113.

[198] *Id.*

[199] *Id.* at ES-10.

[200] *Id.* at ES-9.

[201] *See* National Park Service, Condor Re-introduction & Recovery Program, *available at* http://www.nps.gov/grca/naturescience/condor-re-introduction.htm; U.S. NPS, Humpback Chub Tributary Translocations, *available at* http://www.nps.gov/grca/naturescience/shinumotransloc.htm.

[202] National Research Council, *Uranium Mining in Virginia*, at 180; 2012 Withdrawal FEIS at 4-130 to 4-131, 4-143, 4-154; Jo Ellen Hinck, et al., Biological Pathways of Exposure and Ecotoxicity Values for Uranium and Associated Radionuclides, 270, 287, 295 (Chapter D of U.S. Department of the Interior & USGS, *Scientific Investigations Report No. 2010-5025: Hydrological, Geological, and Biological Site Characterization of Breccia Pipe Uranium Deposits in Northern Arizona* (2010)), *available at* http://pubs.usgs.gov/sir/2010/5025/pdf/sir2010-5025.pdf.

[203] *Id.* at 295; *see also id.* at 288; 2012 Withdrawal FEIS at 4-142. Large data gaps on the effects of uranium and its decay products remain. Hinck, et al., at 306; National Research Council, *Uranium Mining in Virginia*, at 210.

[204] 2012 Withdrawal FEIS at 3-7 to 3-8, 3-126, 3-129, 3-133, 4-136 to 4-137, 4-154 to 4-156.

> Muav limestones and flow into canyons of the greater Grand Canyon area. These spring habitats support a species diversity that is 100 to 500 times greater than that of the surrounding landscape (Grand Canyon Wildlands Council 2004). Mining activity can result in changes to these habitats that may increase exposure of the biological resources to chemical elements, including uranium, radium, and other radioactive decay products. Uranium and other radionuclides can affect the survival, growth, and reproduction of plants and animals.[205]

Many species in the withdrawal area "have small home ranges and very narrow habitat requirements, which means that even small modifications to vegetation and soils could lead to pronounced effects."[206]

Finally, as we have discussed, active and inactive mining operations can have profound effects on surface waters and groundwaters. "Reductions in quality or quantity of water from springs and seeps within the Colorado River watershed has the potential to have moderate to major impacts on a species' density at a particular seep or spring and may have impacts to the overall distributional range of a species that rely on these rare surface waters within the proposed withdrawal area and adjacent lands."[207] All of these consequences of uranium mining can be equally devastating for the countless other sensitive species that live in areas outside the withdrawal area and near active or inoperative mines on federal lands.

4.2.2.4. Human health

People are exposed to uranium and its decay products through many sources. They can inhale contaminated dust (especially through occupational exposure) or ingest contaminated water, including surface waters that are exposed to mining operations. They can be directly irradiated. They can eat crops and animals in which uranium has bioaccumulated. These exposure pathways can be made more severe by floods, earthquakes, and other uncontrolled events.[208]

Uranium is toxic to humans. It is acutely poisonous to kidneys and often bioaccumulates in bone, liver, and possibly reproductive tissues, disrupting their normal functioning. Radon, one of uranium's decay products, causes lung cancer. Exposure to even low levels of uranium radiation may lead to other types of cancer, shorten lifespans, and reduce fertility.[209]

These harms are not hypothetical. EPA estimates that at least 4,000 mines, most of which are in the Four Corners region of the United States, have at some point produced

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[205] *Id.* at 4-153.
[206] *Id.* at 4-154.
[207] *Id.* at 4-136 to 4-137.
[208] National Research Council, *Uranium Mining in Virginia*, at 131, 140, 147, 176-77.
[209] *Id.* at 131, 176-77; *see also* L. Tomasek, et al., *Lung cancer in French and Czech uranium miners: radon-associated risk at low exposure rates and modifying effects of time since exposure and age at exposure*, 169 Radiation Research, 125-37 (Feb. 2008), *available at* http://www.bioone.org/doi/pdf/10.1667/RR0848.1.

uranium.[210] Overlying that region is the Navajo Nation, where the adverse effects of uranium mines have been most palpable. In 1979, the largest radioactive accident in U.S. history occurred when a tailings pond dam at the Church Rock uranium mill in New Mexico broke, spilling more than 1,000 tons of radioactive waste and 93 million gallons of effluent into the Puerco River. The Navajo who relied on that river for drinking water had already been exposed to chronic uranium contamination from the mill, and continue to be exposed today.[211]

More recently, in the late 1990s, EPA and the U.S. Army Corps of Engineers tested unregulated water sources on the Navajo Nation lands. The agencies found that 38 of 226 unregulated water sources (17 percent) showed uranium radionuclides at levels above maximum contaminant levels.[212] In 2006 and 2007, the Navajo Nation Environmental Protection Agency and U.S. Centers for Disease Control found that uranium levels in nine unregulated water sources used for drinking water exceeded the drinking water limit.[213] In 2008, EPA identified at least two wells with elevated uranium levels.[214] The reader might see these data as a sign that contamination is decreasing, but alas, they are not; in 2013, 29 of 240 unregulated water sources (12 percent) on the Navajo Nation were polluted by uranium-related contaminants in concentrations above drinking water standards.[215] Furthermore, a 2013 EPA report revealed that 226 mining claims had gamma radiation levels higher than 10 times background levels. Another 177 claims had levels two to 10 times higher. Many of these claims were within one-quarter-mile of a residence.[216]

To be sure, some of this contamination stemmed in part from the Tuba City Dump, a Superfund site where former uranium mining waste was landfilled.[217] But much of the

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[210] U.S. EPA, Radiation Protection: Uranium Mining Wastes, *available at* http://www.epa.gov/radiation/tenorm/uranium.html.

[211] Carrie Arnold, "Once Upon a Mine: The Legacy of Uranium on the Navajo Nation," 122 Envtl. Health Perspectives A44, A46 (Feb. 2014), *available at* http://www.sric.org/uranium/docs/2014_Feb_EHP_122-A44_Once_Upon_A_Mine.pdf; D. Brugge, et al., "The Sequoyah Corporation Fuels Release and the Church Rock Spill: Unpublicized Nuclear Releases in American Indian Communities," 97 Am. J. of Pub. Health 1595, 1595, 1598 (2007), *available at* http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2006.103044.

[212] U.S. EPA, Health and Environmental Impacts of Uranium Contamination in the Navajo Nation: Five-Year Plan, 17 (June 9, 2008), *available at* http://www.epa.gov/region9/superfund/navajo-nation/pdf/NN-5-Year-Plan-June-12.pdf (hereinafter "U.S. EPA, Navajo Nation: Five-Year Plan").

[213] U.S. EPA, Navajo Nation: Five-Year Plan at 18.

[214] *Id*.

[215] U.S. EPA, Federal Actions to Address Impacts of Uranium Contamination in the Navajo Nation: Five-Year Plan Summary Report, 14 (Jan. 2013), *available at* http://www.epa.gov/region9/superfund/navajo-nation/pdf/NavajoUraniumReport2013.pdf.

[216] U.S. EPA, Federal Actions to Address Impacts of Uranium Contamination in the Navajo Nation: Five-Year Plan Summary Report, 6-7 (Jan. 2013). For further information on uranium mining in Navajo country, *see, e.g.*, Leslie MacMillan, "Uranium Mines Dot Navajo Land, Neglected and Still Perilous," *The New York Times* (Mar. 31, 2012), *available at* http://www.nytimes.com/2012/04/01/us/uranium-mines-dot-navajo-land-neglected-and-still-perilous.html?emc=eta1; Dan Frosch, "Uranium Contamination Haunts Navajo Country," *The New York Times* (July 26, 2009), *available at* http://www.nytimes.com/2009/07/27/us/27navajo.html?emc=eta1.

[217] U.S. EPA, Health and Environmental Impacts of Uranium Contamination in the Navajo Nation: Five-Year Plan, 34 (June 9, 2008).

contamination came from uranium mines themselves,[218] a fact subsequent studies have underscored. In 2009, for example, USGS scientists surveyed and sampled several reclaimed or inactive breccia-pipe uranium mines on BLM lands north of Grand Canyon National Park. Surface soil, sediment, and mined waste-rock samples were collected at six different sites that represented various stages of mining (mined and reclaimed, partially mined and on standby, and mineralized and explored by drilling but not mined), and at an undisturbed area. Radioactivity surveys were also conducted to determine the levels of exposure to radioactivity at each site. Groundwater samples were collected from 24 sites in the study area to supplement the historical dataset and evaluate the impacts of legacy mining. Among other things, the USGS found that: (1) wind dispersion of uranium-rich dust was evident at three sites; (2) soil contamination was *greatest* adjacent to a mine on standby status, where ore and waste rock had been at the surface for about 20 years; (3) there was elevated but highly variable radioactivity at all mine sites; and (4) 15 springs and five wells contained concentrations of dissolved uranium in excess of EPA maximum contaminant levels for drinking water.[219]

We recognize that our understanding of how uranium contaminates the environment and affects human health is still imperfect. Ongoing studies seek to understand, for instance, the extent of uranium contamination and its impacts on the Navajo Nation and other groups.[220] We also recognize that our greatest fears stem from unusual disasters like Church Rock, which EPA is beginning to remediate.[221] Nonetheless, we know that the adverse effects of uranium mining on human health and the environment can be significant; that inoperative mining operations are a source of at least some of these risks (and in some cases may be the *most* significant source); and that risks can be magnified when we lack adequate and current information about their sources, extent, and means of mitigation.

4.2.3. Changing conditions and impacts of specific mines

Two case studies illustrate the points we have made above—*i.e.*, conditions at mines and in the surrounding environment change; our understanding of those conditions and of uranium mining's serious adverse effects also change; and the Agencies' existing rules do not take adequate account of those changes. Both the Arizona 1 Mine, which is on BLM land, and the Canyon Mine, which is on National Forest System land, were re-opened after long periods of inactivity, without a new approval or updated environmental review, to the detriment of the environment and public health.

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[218] *See* U.S. EPA, Federal Actions to Address Impacts of Uranium Contamination in the Navajo Nation: Five-Year Plan Summary Report, at 14 ("Water sources were prioritized for sampling based on proximity to abandoned uranium mines, existing information indicating potential contamination, or other known uses.").

[219] Bills, et al., at 141, 158, 166-76 (Table 7), 177-78 (Table 8), 194.

[220] *See, e.g.*, Leslie MacMillan, *Tainted Desert*, Tufts Magazine (Winter 2012), *available at* http://www.tufts.edu/alumni/magazine/winter2012/features/tainted.html (discussing Navajo Uranium Assessment and Kidney Health Project).

[221] EPA commenced cleanup operations at the Church Rock mill in 2011 by removing one million cubic yards of mine waste. EPA is slowly issuing cleanup plans for other abandoned mines on the Navajo Nation. *See* U.S. EPA, EPA Five-Year Plan Progress Report on Cleaning up Uranium Contamination, 30 (Jan. 2013), *available at* http://www.epa.gov/region09/superfund/navajo-nation/pdf/2013-01-navajo-5year-plan-progress.pdf.

4.2.3.1. The Canyon Mine

The Canyon Mine is in the Kaibab National Forest, about six miles south of the Grand Canyon National Park boundary. Uranium at the mine is found between 900 and 1400 feet deep, in a "breccia" formation, a cylindrical pipe that extends deep into the earth. In 1986, the Forest Service prepared an EIS and approved a plan of operations that allowed 17 acres of surface disturbance and onsite stockpiling of waste rock (in perpetuity), and required $100,000 in reclamation and mitigation and monitoring plans. However, when the price of uranium dropped in the early 1990s, the operator closed Canyon Mine without informing the Forest Service. The mineshaft had not been dug at the time of the closure. In 1997, a new operator acquired the mine and told the Forest Service that the mine was on "standby status."

Many things changed in the years after the Forest Service approved the plan of operations, during the "standby" period. In 1989, EPA promulgated new Clean Air Act regulations to regulate certain underground uranium mining operations.[222] Among other things, the regulations require operators to comply with specific standards for radon emissions and obtain a permit from EPA.[223] In 1996, the U.S. Fish & Wildlife Service reintroduced the endangered California condor to northern Arizona. The condor is attracted to mining structures and water pits that are typically part of mining operations like the Canyon Mine. Condors are known to visit the Canyon Mine and its surrounding area, and that site is within a newly-designated condor management area.[224]

In 2005, the USGS completed a study of the Redwall-Muav Aquifer ("R-Aquifer") underlying the Coconino Plateau, where the Canyon Mine is located.[225] Before the study, little was known about the regional ground-water flow systems of the study area. The study demonstrated that the R-aquifer is recharged by faults, fissures, fractures and other geologic formations in the subsurface, including via perched smaller aquifers that lie above the R-aquifer.[226] The study also showed elevated levels of uranium contamination—radioactive constituents and alpha particles—in creeks, seeps and springs near former mine sites.[227] In 2008, the Forest Service reviewed water resources on the Coconino Plateau, including groundwater.[228] The Forest Service determined that fractured bedrock provides conduits for

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[222] EPA, National Emission Standards for Hazardous Air Pollutants; Radionuclides, 54 Fed. Reg. 51,654 (Dec. 15, 1989), as amended, 65 Fed. Reg. 62,151 (Oct. 17, 2000) (codified at 40 C.F.R. Part 61).

[223] *See generally* 40 C.F.R. § 61, Subpts. A-B.

[224] Letter, Steven L. Spangle, Field Supervisor, Arizona Ecological Services Office, U.S. Fish & Wildlife Service, to Michael R. Williams, Forest Supervisor, Kaibab National Forest, 2-3 (Feb. 9, 2012); *Center for Biological Diversity v. Salazar*, No. 3:09-cv-08207-DGC, Docket No. 38, Ex. 24 at 1.

[225] USGS, *Scientific Investigations Report 2005-5222: Hydrogeology of the Coconino Plateau and Adjacent Areas, Coconino and Yavapai Counties, Arizona* (2005), *available at* http://pubs.usgs.gov/sir/2005/5222/sir2005-5222_text.pdf.

[226] *Id.* at 42-43.

[227] *Id.* at 51-52.

[228] U.S. Forest Service, Southwestern Region, Kaibab National Forest, Canyon Uranium Mine Review: Review of the Canyon Mine Plan of Operations and Associated Documentation in Anticipation of Resumption of Operations, 31 (June 25, 2012), *available at* https://fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5376042.pdf (hereinafter "Canyon Uranium Mine Review").

downward movement of water and groundwater recharge.[229] The agency's review also determined that local communities depend more on groundwater as their water sources than they did in the 1980s.[230] Finally, in 2010, the USGS published a study we mentioned briefly above,[231] in which the USGS reported that uranium and arsenic were consistently detected above background levels in the areas disturbed by uranium mining in northern Arizona. Samples from 15 springs and five wells in the region contained dissolved uranium concentrations greater than EPA's maximum allowed contaminants for drinking water.[232] Of particular note, there were elevated uranium concentrations within the Canyon Mine monitoring and water well.[233]

Also in 2010, the Forest Service determined that Red Butte, a mountain four miles south of the Canyon Mine, warranted designation as a Traditional Cultural Property.[234] Red Butte is one of the most important sites in the religious and cultural tradition of the Havasupai Tribe, and it holds major religious significance for the Hopi, Navajo, Zuni and Hualapai Tribes.[235] The Havasupai refer to Red Butte as "the Landmark," and it plays a central part in their origin story.[236] In addition, the Havasupai consider the meadow where the Canyon Mine is located to be sacred and spiritually tied to Red Butte.[237] Designation of Red Butte as a Traditional Cultural Property made it eligible for listing on the National Register of Historic Places.[238]

Meanwhile, between 2008 and 2012, Congress and the Department of the Interior were evaluating whether to withdraw the lands surrounding Grand Canyon National Park from mining and other uses. As we explained in Section 2, in response to Congress's direction, in 2009 the Department issued a proposed withdrawal of one million acres, including the land where the Canyon Mine is located, to "'ensure we are developing our nation's resources in a way that protects local communities, treasured landscapes, and our watersheds[.]'"[239] In October 2011, BLM issued the Final EIS for the 2012 Withdrawal, and, on January 9, 2012, the Secretary of the Interior issued the 2012 Withdrawal.[240] While the Secretary reasoned that

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[229] U.S. Forest Service Kaibab National Forest: Ecological Sustainability Report, 52 (Dec. 19, 2008), *available at* http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm91_050014.pdf.

[230] *Id.*

[231] *See* U.S. Department of the Interior & USGS, *Scientific Investigations Report No. 2010-5025: Hydrological, Geological, and Biological Site Characterization of Breccia Pipe Uranium Deposits in Northern Arizona* (2010)), *available at* http://pubs.usgs.gov/sir/2010/5025/pdf/sir2010-5025.pdf.

[232] *See generally id.* at 43-338.

[233] *Id.* at 118.

[234] U.S. Forest Service, Canyon Uranium Mine Review at 9-10.

[235] *Id.* at 10-15, 23.

[236] Stephen Hirst, *I Am the Grand Canyon: The Story of the Havasupai People*, 84 (2006); Christina Aanestad, "Havasupai Rally to Stop Uranium Mining at Grand Canyon, AZ," *Indy Bay*, 1 (Tues., Aug. 4, 2009), *available at* http://www.biologicaldiversity.org/news/media-archive/UraniumMining_IndyBay_8-4-09.pdf.

[237] U.S. Forest Service, Canyon Uranium Mine Review at 13-14.

[238] *Id.* at 9-10, 15.

[239] BLM, Notice of Proposed Withdrawal and Opportunity for Public Meeting; Arizona, 74 Fed. Reg. 35,887 (July 21, 2009); BLM, News Release, "Salazar Calls Two-Year 'Time-Out' from New Mining Claims on Arizona Strip Watershed near Grand Canyon National Park," (July 20, 2009), *available at* http://www.blm.gov/wo/st/en/info/newsroom/2009/july/NR_0720_2009.html (quoting Secretary of the Interior Kenneth Salazar).

[240] *See generally* 2012 Withdrawal ROD.

further investigation of the impacts of uranium mining on water and other resources was necessary, those impacts could be "significant." In addition, in April 2012, Forest Service issued a draft revised Forest Plan for the Kaibab National Forest, which contained various new guidelines to protect tribal resources, including Red Butte.[241]

Despite all this new information and change, in June 2012 the Forest Service allowed operations to resume at the Canyon Mine. This action was based on the plan of operations and EIS approved 26 years earlier, without detailed monitoring or inspections in the meantime. As part of the 2012 action, the Forest Service prepared a "Mine Review," as well as an assessment of the operators' "valid existing right" and a review under the Endangered Species Act. The Forest Service did not: allow the public to comment during the review process; adopt the conservation measures proposed by the U.S. Fish & Wildlife Service to protect the California condor; prepare a supplemental NEPA review; or *amend the 1984 plan of operations in any way*. The Forest Service also did not prepare an updated historical and cultural review under the National Historic Preservation Act, despite the designation of Red Butte as a Traditional Cultural Property and despite objections from the Advisory Council on Historic Preservation and the Arizona State Historic Preservation Officer. The result was that the mining operator could resume operations based on decades-old reviews and approvals.

4.2.3.2. The Arizona 1 Mine

The Arizona 1 Mine is on BLM land about 45 miles southwest of Fredonia, Arizona, and six miles north of Grand Canyon National Park. The mine consists of 10 uranium claims encompassing 207 acres. In 1984, BLM prepared an Environmental Assessment ("EA") under NEPA and approved a plan of operations for exploration. In 1988, BLM prepared a second EA and approved a second plan of operations for development occurring over seven to 10 years.[242] Before issuing its approval, BLM did not, among other things, evaluate the effects of radon or consider whether the mine might contaminate surface waters or groundwater.[243]

Development of the Arizona 1 Mine began in 1990. Operations stopped, however, when uranium prices fell shortly thereafter. When development ceased, the depth of the mining shaft was about 1,254 feet. For 15 years, the mine did not produce uranium ore, and the only activity that took place was the maintenance of "buildings, mine shafts, gates, fences, and signage."[244] During that time, many things changed: (1) the 1988 plan of operations expired; (2) mine ownership changed several times;[245] (3) radon became a "hazardous air pollutant" subject to regulation under the Clean Air Act; (4) condors were reintroduced near the Grand Canyon

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[241] *See* U.S. Forest Service, Draft Land and Resource Management Plan for the Kaibab National Forest; Coconino, Yavapai, and Mojave Counties, Arizona (April 2012), *available at* http://www.fs.usda.gov/detail/kaibab/landmanagement/planning/?cid=stelprdb5106605. The Forest Service issued a final revised plan in February 2014.

[242] *Ctr. for Biological Diversity v. Salazar*, 791 F. Supp. 2d 687, 690 (D. Ariz. 2011), *aff'd*, 706 F.3d 1085 (9th Cir. 2013); *see also id.*, No. 3:09-cv-08207-DGC, Docket No. 38, Exs. 1-3.

[243] *Id.* Docket No. 38, Ex. 3 at 19-31.

[244] *Center for Biological Diversity*, 706 F.3d at 1088; *see also* No. 3:09-cv-08207-DGC, Docket No. 126 at 2-3, 8-10.

[245] *Center for Biological Diversity*, 706 F.3d at 1088.

National Park;[246] (5) new information emerged about the hydrogeology of the Kanab Plateau that underlies the Arizona Strip;[247] (6) the regulatory scheme applicable to uranium mining on federal public lands changed; and (7) DOI issued its proposed withdrawal.

While all these changes were happening, BLM neither terminated the plan of operations nor required the operator to modify it. BLM conducted field inspections that "consisted mostly of perimeter inspections," and there is no evidence BLM reviewed the plan of operations at any point during the non-operational period.[248] Instead, in July 2009, BLM allowed the operator of the Arizona 1 Mine to resume operations, two decades after it had approved the plan of operations. BLM did not modify the plan of operations (other than requiring a higher reclamation bond) or prepare an updated NEPA review to evaluate and account for everything that had changed.[249] Mining operations resumed in December 2009.[250]

The Canyon and Arizona 1 Mines highlight the regulatory gaps at issue in this petition. That is, the mines reveal that many mining operations which re-start after long periods of inactivity are not regularly inspected or reviewed for possible termination. They show that operators and the Agencies do not regularly share information about changing conditions, and that the Agencies do not adequately review and account for those changes when they allow operations to begin anew. In short, the Canyon and Arizona 1 Mines show that inoperative mines, especially inoperative uranium mines, can and must be better regulated.

4.3. The existing rules do not account for or mitigate the adverse effects of inoperative mines.

We are aware that, over the years, the Agencies have issued successive iterations of their mining rules to improve how mining operations are regulated. BLM's current rules, for example, require the agency to enforce performance standards and intercede in operations that have been "inactive" for five consecutive years or are causing "unnecessary or undue degradation."[251] Similarly, the Forest Service regulations commit the agency to "periodically inspect operations."[252]

However, even these requirements do not sufficiently address the adverse effects of inoperative mines. Recent reports show that BLM and the Forest Service lack essential information about the status of mining operations, in part because the Agencies are not sufficiently monitoring them. Furthermore, if the Agencies were regularly conducting

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[246] *See, e.g.*, Letter, Steven L. Spangle, Field Supervisor, Arizona Ecological Services Office, U.S. Fish & Wildlife Service, to Michael R. Williams, Forest Supervisor, Kaibab National Forest, 2-3 (Feb. 9, 2012).

[247] *See, e.g.*, U.S. Forest Service, An Evaluation of Water Resource Characteristics, and their Contribution in Ecosystem Diversity and Ecological Sustainability (DRAFT Oct. 6, 2008), *available at* http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm91_050109.pdf.

[248] *Center for Biological Diversity*, 706 F.3d at 1088.

[249] Indeed, BLM wrote that "[e]ven though the NEPA documents for both mines dates to the 80s or early 90s there is no new information that would require updating." *Ctr. for Biological Diversity v. Salazar*, No. 3:09-cv-08207-DGC, Docket No. 38, Ex. 8 at 1.

[250] *Center for Biological Diversity*, 706 F.3d at 1089.

[251] *See* Section 3.1.3.3.

[252] *See* Section 3.2.2.3.

inspections and reviews, there is no rule requiring operators to gather and share information, and the Agencies do not interpret their regulations to require the preparation of new approvals and updated environmental reviews when inoperative mines are re-opened after long periods of inactivity.

The lack of sufficient information about the status of mining operations is pervasive. In a recent report, the GAO found that BLM and the Forest Service do not know where or how many uranium mines have been abandoned on the lands they manage, what the condition of those mines is, or how much it will cost to clean them up.[253] Specifically, the GAO found that the Agencies "do not have reliable data on the number and location of abandoned uranium mine sites on federal lands and the potential cleanup costs associated with these sites."[254] Nor are the Agencies conducting adequate field inspections; in one instance, the GAO found that "BLM staff did not know the status for 12 [out of 58 expired] operations [or 21 percent], in part because several of these operations had last been inspected in 2002."[255] Among a set of fifteen mines that were known to require reclamation, "several of these operations were last inspected about a decade ago."[256] Even when the Agencies do possess data on uranium mines, the data are "generally unreliable."[257] Specifically, "agency databases generally lack complete data and a common definition of an abandoned mine site, and contain information that has not been verified through field inspections."[258] The GAO also reported that "delays in entering information affect the ability of [the BLM database] to serve as an effective management tool to track operations."[259] When data were entered, there were "instances . . . where BLM staff had entered incorrect action codes into [the database]."[260]

The problem is not limited to inadequate information. The harms caused by inoperative mines (which we discussed in the prior section) are made worse by inadequate reclamation. According to the GAO, the BLM database lists a backlog of 1,189 abandoned uranium mines that need to be cleaned up.[261] That number is likely higher given the Agencies' failure to inspect some mining sites for a decade or more.[262] Inadequate financial guarantees are partly to blame for poor or non-existent reclamation. The GAO reported that BLM and the Forest Service "do not have information on the total cost of cleaning up abandoned uranium mines," particularly

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[253] We recognize that the GAO's report refers to "abandoned," not "inactive" or "inoperative," mines. ("Abandoned" mines are defined at 43 C.F.R. § 3809.336(a), and discussed further in § 3809.424(a)(4); there is no definition for "inactive" or "inoperative" mines). However, that distinction is unimportant, as the GAO's report emphasizes a key point: the Agencies do not possess adequate information about the mines they oversee, and they cannot acquire such adequate information in the absence of regular disclosures, inspections, and reviews. Moreover, the report's call for improved reclamation practices is well taken, and such improved practices are part of our request in this petition.

[254] GAO-12-544 at 30 (estimating that there are "likely thousands of abandoned uranium mines on federal land," but that exact numbers are unknown due to the lack of reliable data).

[255] *Id.* at 21.

[256] *Id.* at 27.

[257] *Id.* at 30.

[258] *Id.*

[259] *Id.* at 22.

[260] *Id.* at 26; *see also id.* at 22 ("[S]tatus levels in [the BLM database] were inaccurate.").

[261] *Id.* at 50. "It is not possible to determine from the [Forest Service] data how many sites remain to be cleaned up." *Id.* at 31.

[262] *Id.* at 21, 34.

where operations apply new mining techniques.[263] And cleanup costs can vary at individual sites by orders of magnitude, "rang[ing] from several thousand dollars to hundreds of millions of dollars."[264]

As for why there are such severe information, financial assurance, and other gaps with respective to abandoned uranium mines, the GAO report suggests two reasons. The first is insufficient agency resources:

> BLM and Forest Service officials told [the GAO] that they have not had sufficient funds to conduct field inspection verification on all their known abandoned mine sites on the lands they manage and that to do so would require more financial and staff resources. At current funding levels, according to a May 2011 draft feasibility study, it will take BLM 13 years and $39 million to finish inspecting all known abandoned mine sites on its land.[265]

We appreciate that both BLM and the Forest Service need more resources to better regulate inoperative uranium mines, and we pledge whatever assistance we can offer in securing them.

The second reason the status quo is not working is that the Agencies' rules simply are not up to the task of regulating abandoned or inoperative mines. And indeed this was what BLM and Forest Service staff told the GAO about abandoned mines: "their agencies do not have an accurate number of abandoned mine sites and their location because no laws or regulations require the agencies to track abandoned mines."[266] In fact, BLM officials described their personal actions to track mining operations as "voluntar[y]."[267]

To be sure, mines that are inoperative, rather than abandoned, are subject to *some* ongoing inspection and review. However, in our experience, that review does not happen with the vast majority of uranium mining operations that are idled for long periods of time, and, when such review does occur, it is cursory (i.e., consists of simply a visual inspection of fences). Even if more thorough reviews do sometimes occur, the Agencies have no coherent process to evaluate information about changing conditions and modify plans of operations accordingly. The Agencies can and must fix this legal vacuum. By incorporating more robust self-executing mechanisms up front—limiting plans of operations to 20 years; requiring new approvals and updated environmental and historic review after ten years of inactivity; and requiring operators to gather and disclose information about the status of their operations during inactive periods—the Agencies would be better able to prevent "unnecessary or undue degradation" or "substantial and permanent impairment." And by imposing deadlines for commencing and completing reclamation activities once a mining operation ceases, expanding reclamation to address subsurface impacts, and adding long-term monitoring requirements for surface water and groundwater quality, the Agencies could better curtail adverse effects on the tail end of

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[263] *Id.* at 35; *see also id.* at 29 ("[In-situ recovery] operators have had little experience with restoring groundwater at [in-situ recovery] wellfields to date in Wyoming.").

[264] *Id.* at 35.

[265] *Id.* at 34.

[266] *Id.*

[267] *Id.*

mining operations. Critically, none of these fixes would not require substantial new agency resources.

5. Clear, simple changes to the Agencies' regulations will better prevent and mitigate inoperative mines' adverse effects.

5.1. The proposed changes

We propose four sets of changes to BLM's Subpart 3809 regulations and the Forest Service's Part 228 regulations. All changes would be retroactive—they would apply to not only future mines, but to existing mines, some of which are among the most problematic from an environmental perspective. The Agencies should expressly indicate that the changes are retroactive. *See Landgraf v. USI Film Prods.*, 511 U.S. 244 (1994) (statutes are presumed to be prospective only in the absence of contrary language or intent); *Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988) ("[A]dministrative rules will not be construed to have retroactive effect unless their language requires this result."); *Combs v. Comm'r*, 459 F.3d 640, 658 n.1 (6th Cir. 2006) ("Although *Landgraf* addressed the retroactive application of *statutes*, courts have applied its reasoning to the issue of retroactivity of *regulations*.").

(1.) Limit the duration of approved plans of operations to 20 years, with the option to apply for 20-year renewals.

Current plans of operation remain in effect for as long as operations "continue." We propose limiting plans to 20 years, with the option to renew for additional 20-year terms. There would be no limit to the number of renewals an operator could seek, so long as the operator is in compliance with its plan of operations and all applicable laws and regulations. BLM and the Forest Service would consider whether to update performance standards at the time of renewal. Review under NEPA and the NHPA would be required for renewals, as would further consultation under the Endangered Species Act where renewal could result in the take of listed species or the modification of critical habitat. If a renewal is denied, the operator must reclaim the site.

The existing rules would change as follows:

BLM

Current language	New language
43 C.F.R. § 3809.423 – How long does my plan of operations remain in effect?	
Your plan of operations remains in effect as long as you are conducting operations, unless BLM suspends or revokes your plan of operations for failure to comply with this subpart.	*(a) Your plan of operations remains in effect for up to 20 years, so long as you are conducting operations and BLM does not suspend or revoke your plan of operations for failure to comply with this subpart.* *(b) You may apply to renew BLM's approval of your plan of operations for a new 20-year term at the end of the initial term, and for following 20-year*

Current language	New language
	periods, so long as you are conducting operations in compliance with this subpart. *(c) The decision whether to renew a current plan of operations is a major Federal action subject to review under the National Environmental Policy Act, is a Federal "undertaking" subject to review under the National Historic Preservation Act, and may be a discretionary action requiring consultation under the Endangered Species Act. Such review and consultation will take account of the extent to which mine, environmental, market, or other conditions have changed since your initial or renewed plan of operations was approved.* *(d) If BLM approves your application for renewal, BLM will set updated performance standards for your renewed operations under § 3809.420. If BLM denies your application for renewal, you must immediately begin reclamation consistent with the reclamation plan in your original plan of operations and § 3809.424.*
43 C.F.R. § 3809.425 – **How do I renew my plan of operations?**	
N/A [not in existence]	*(a) File an application at least 180 days before the approval term expires. No specific form is required. Send us 3 copies of your application together with the processing fee for lease renewal found in the fee schedule in § 3000.12 of this chapter and an advance rental payment of $1 per acre or fraction of an acre.* *(b) BLM will conduct review under the National Environmental Policy Act and the National Historic Preservation Act, and consultation under the Endangered Species Act, as necessary for your renewal application. Such review and consultation will take account of the extent to which mine, environmental, market, or other conditions have changed since your initial or previously renewed plan of operations was approved.* *(c) If BLM approves your application for renewal, BLM will set updated performance standards for your renewed operations under § 3809.420. If BLM denies your application for renewal, you must immediately begin reclamation consistent with the reclamation plan in your original plan of operations and § 3809.424.*

Forest Service

Current language	New language
36 C.F.R. § 228.4 – Plan of operations--notice of intent--requirements.	
(a) Except as provided in paragraph (a)(1) of this section	[Insert new paragraph (e), shift subsequent paragraphs down one paragraph, such that current (e) becomes (f), current (f) becomes (g), and current (g) becomes (h)] [New paragraph (e):] *(e) The term and renewal of plans of operations are as follows:* *(i) An approved plan of operations remains in effect for up to 20 years, so long as the operator is conducting operations and the Forest Service does not terminate the plan of operations for failure to comply with this subpart.* *(ii) An operator may apply to renew an approval of a plan of operations for a new 20-year term at the end of the initial term, and for following 20-year periods, so long as the operator is conducting operations in compliance with this subpart. An operator must submit an application for renewal at least 180 days before the operator's existing, approved plan of operations expires.* *(iii) The decision whether to renew a current plan of operations is a major Federal action subject to review under the National Environmental Policy Act, is a Federal "undertaking" subject to review under the National Historic Preservation Act, and may be a discretionary action requiring consultation under the Endangered Species Act. Such review and consultation will take account of the extent to which mine, environmental, market, or other conditions have changed since the initial or renewed plan of operations was approved.* *(iv) Consistent with §§ 228.5 and 228.8, the Forest Service shall update the compliance standards in any renewed plan of operations in order to minimize adverse environmental impacts on National Forest surface resources and ensure compliance with these regulations.*

Current language	New language
	(v) If the application for renewal is denied, the operator must immediately begin reclamation, consistent with the original plan of operations and § 228.10.
36 C.F.R. § 228.5 – Plan of operations--approval.	
(a) Operations shall be conducted in accordance with an approved plan of operations, except as provided in paragraph (b) of this section and in § 228.4 (a), (b), and (e)	*(a) Operations shall be conducted in accordance with an approved plan of operations, except as provided in paragraph (b) of this section and in § 228.4 (a), (b), (e) and (f) . . . .*

(2.) Require a new approval and new environmental and historic review for any mining operation that has been inoperative for 10 or more consecutive years.

Our biggest concern is with so-called "zombie mines"—mines that (1) are approved, (2) at some point enter into a long period of non-operation, and (3) are later re-opened, without any new approval or environmental or historic review. Allowing these inoperative mines to resume operations on the basis of outdated environmental analysis and performance/compliance standards is unnecessarily and adversely affecting human health, the environment, and sensitive cultural and historic resources.[268]

To remedy this problem, we propose modifying the Agencies' regulations to require a new approval and environmental and historic review under NEPA and the NHPA, and possibly renewed consultation under the Endangered Species Act, for any mining operation, existing or future, that has been or will be inoperative for 10 or more years. The approval process and review will be used to fashion new performance standards for each such mining operation. Agencies may tier to earlier environmental and historic evaluations if appropriate. If the Agencies determine that a new approval is not warranted (under the Agencies' existing authority to reject plans of operations), the mining operation must enter reclamation. Again, whether further consultation under the Endangered Species Act is required is governed by the factors set forth at 50 C.F.R. § 402.16.

The existing rules would change as follows:

[268] Equally problematic is allowing inoperative mines to resume operations without adequate financial assurances. BLM should adjust its formulae for calculating financial guarantees to better reflect the true costs of reclaiming uranium mines once they cease operations. *See* 43 C.F.R. §§ 3809.500, .580 (imposing financial assurance requirements); *supra* pp. 14-15, 18-20, 24, 37 (discussing inadequate reclamation for mines, including abandoned mines).

BLM

Current language	New language
43 C.F.R. § 3809.424 – **What are my obligations if I stop conducting operations?**	
(a) To see what you must do if you stop conducting operations, follow this table: . . . . ***If--*** *(3) Your operations are inactive for 5 consecutive years . . . .* ***Then--*** *BLM will review your operations and determine whether BLM should terminate your plan of operations and direct final reclamation and closure.* ***If--*** *(4) BLM determines that you abandoned your operations . . . .* ***Then--*** *BLM may initiate forfeiture under § 3809.595. If the amount of the financial guarantee is inadequate to cover the costs of reclamation, BLM may complete the reclamation, and the operator and all other responsible persons are liable for the costs of such reclamation. See § 3809.336(a) for indicators of abandonment.*	Insert new paragraph (a)(4) and shift current paragraph (a)(4) to (a)(5)][269] *(a) To see what you must do if you stop conducting operations, follow this table:* . . . . ***If--*** *(3) Your operations are inactive for 5 consecutive years . . . .* ***Then--*** *BLM will review your operations and determine whether BLM should terminate your plan of operations and direct final reclamation and closure.* ***If--*** *(4) Your operations are inactive for 10 or more consecutive years . . . .* ***Then--*** *You must submit to BLM a notice of intent to resume operations and a plan of operations applicable to resumed operations, which is subject to the requirements set forth in §§ 3809.401 through 3809.424.* ***If--*** *(5) BLM determines that you abandoned your operations . . . .* ***Then--*** *BLM may initiate forfeiture under § 3809.595. If the amount of the financial guarantee is inadequate to cover the costs of reclamation, BLM may complete the reclamation, and the operator and all other responsible persons are liable for the costs of such reclamation. See § 3809.336(a) for indicators of abandonment.*
43 C.F.R. § 3809.401 – **Where do I file my plan of operations and what information must I include with it?**	
(a) If you are required to file a plan of operations	[Insert new paragraph (b)(6)]

[269] We propose additional changes to § 3809.424(a) below. *See* pp. 47-48.

Current language	New language
	(b) Your plan of operations must contain the following information and describe the proposed operations at a level of detail sufficient for BLM to determine that the plan of operations prevents unnecessary or undue degradation: . . . . *(6) Plan of operations for resumed operations. In the case of a plan of operations under § 3809.424(a)(4), in addition to the information identified in paragraph (c) below, you must also submit information detailing whether and how conditions have changed at the mining operation site, in the surrounding environment, in the market for the mined material or in any other way that may be relevant to BLM's decision whether to approve the supplemental plan of operations under this subpart. If BLM approves a plan of operation for resumed operations, BLM will use the information described in this paragraph to set updated performance standards under § 3809.420. If BLM denies this plan of operations, you must immediately begin reclamation consistent with the reclamation plan in your original plan of operations and § 3809.424.*
43 C.F.R. § 3809.11 – **When do I have to submit a plan of operations?**	
(a) You must submit a plan of operations	[Insert new paragraph (d)] *(d) Consistent with § 3809.424(a)(4), you must submit a plan of operations applicable to resumed operations and obtain BLM's approval before resuming operations greater than casual use at any operation that has been inactive for 10 or more consecutive years.*

Forest Service

Current language	New language
36 C.F.R. § 228.10 – **Cessation of operations, removal of structures and equipment.**	
Unless otherwise agreed to by the authorized officer, operator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations. Other than	*(a) Unless otherwise agreed to by the authorized officer, operator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations.*

Current language	New language
seasonally, where operations have ceased temporarily, an operator shall file a statement with the District Ranger which includes: *(a) Verification of intent to maintain the structures, equipment and other facilities,* *(b) The expected reopening date, and* *(c) An estimate of extended duration of operations. A statement shall be filed every year in the event operations are not reactivated. Operator shall maintain the operating site, structures, equipment and other facilities in a neat and safe condition during nonoperating periods.*	*(b) Other than seasonal closures, where operations have otherwise ceased, an operator shall file a statement with the District Ranger which includes:* *(i) Verification of intent to maintain the structures, equipment and other facilities,* *(ii) The expected reopening date, and* *(iii)*[270] *(iv) An estimate of extended duration of operations. A statement shall be filed every year in the event operations are not reactivated. Operator shall maintain the operating site, structures, equipment and other facilities in a neat and safe condition during nonoperating periods.* *(c)*[271] *(d) In any circumstance in which mining operations have ceased for a period of 10 or more consecutive years, and where the operator wishes to resume operations, the following conditions shall apply:* *(i) The operator must submit a notice of intent to resume operations, as well as a plan of operations applicable to such resumed operations under § 228.4(d), to the authorizing officer. This plan of operations for resumed operations must satisfy, and is subject to, the requirements set forth in § 228.4(c)-(d), § 228.4(f), and § 228.5.* *(ii) Consistent with § 228.4(g), the decision whether to renew a current plan of operations is a major Federal action subject to review under the National Environmental Policy Act, is a Federal "undertaking" subject to review under the National Historic Preservation Act, and may be a discretionary action requiring consultation under the Endangered Species Act. Such review and consultation shall*

[270] On page 49, we propose adding a paragraph regarding the required content of these annual statements.

[271] On page 50, we propose adding a paragraph regarding required Forest Service inspections.

Current language	New language
	address, in addition to the factors set forth in 36 C.F.R. § 228.8, the extent to which conditions have changed at the mining operations, in the surrounding environment, in the market for the mined material or in any other way that may be relevant to determining whether to approve a plan of operations for renewed operations. The decision whether to approve a plan of operations for renewed operations, and the decision regarding what compliance standards to require, must ensure that the proposed operations do not unnecessarily or unreasonably cause irreparable injury, loss or damage to surface resources, and that they comply with §§ 228.8, 228.9, and 228.11. *(iii) Consistent with § 228.5(c), a plan of operations under this subsection shall be subject to approval by the authorized officer in the same manner as the initial plan of operations, except as provided in paragraph (c)(ii) above. If the plan of operations is denied, the operator must immediately begin reclamation, consistent with the original plan of operations and § 228.10.*

(3.) During non-operational periods, require the Agencies to regularly inspect mining operations and document these inspections, and mining operators to regularly gather and disclose information regarding the status and conditions of those operations.

The current regulations do not do enough to inform BLM and the Forest Service of the state of mining operations on the lands they manage. Operators on BLM lands are not required to affirmatively demonstrate that they are adhering to their approved plans of operations, and BLM has no obligation to regularly inspect most types of operations.[272] For inoperative mines, BLM's regulations do not: define what sort or degree of changed circumstances require modified interim management plans; require operators to submit regular reports to BLM on the status of non-operational mines; or provide a process whereby BLM and operators exchange information about mine and environmental conditions that change during periods of non-operation. Indeed, the regulations: often leave it to mine operators to determine whether a modified interim management plan is necessary; do not require operators to notify BLM when a mine has been inactive for long periods; and do not set forth the criteria BLM will use to determine whether to terminate the plan of operations for a mine that has been inactive for five or more consecutive years.

[272] Again, the rules require inspections only for operations using cyanide or other leachates; otherwise they provide only that, "[a]t any time, BLM may inspect your operations . . . ." 43 C.F.R. § 3809.600.

The same deficiencies exist in the Forest Service's regulations. Although the Forest Service is expected to "periodically inspect operations," there is no guide for how often inspections should occur and little guidance as to what to the agency should look for. The regulations say the Forest Service will require a modified plan of operations in certain circumstances, but they do not provide a process for identifying when those circumstances occur. Meanwhile, operators of non-operational mines must submit only insubstantial annual verification notices and keep their mines in "neat and safe" condition. Because the Forest Service apparently lacks any authority to suspend or terminate a plan of operations for noncompliance under the current rules, it is especially important for the agency to know what is happening at and around the mine, and whether conditions have changed, such that a modified plan of operations is necessary.

The lack of rules for assessing and managing mining operations after they are approved, especially during long periods of non-operation, puts undue pressure on the Agencies to do a perfect job during the initial approval process. As we have discussed, such perfection is impossible; the rules for approving plans of operations have their own deficiencies, and there are many circumstances in which neither the Agencies nor operators can, at the approval stage, anticipate how conditions may change during the long life of a mine.

Accordingly, in addition to limiting the duration of mining permits and requiring updated approvals and environmental review after 10 or more years of non-operation, the Agencies should amend their rules to require regular inspections, as well as regular submissions by operators, during long periods of non-operation.[273] While these changes would ask the Agencies to do some more work, most of the burden of gathering and disclosing information would fall on operators.

[273] We recognize that BLM considered and rejected regular inspections for *all* mining operations when it amended its rules in 2000, reasoning that they would be too burdensome and were unnecessary for many types of operations. *See* 65 Fed. Reg. at 70,058-59. However, requiring regular inspections for mining operations that have been inoperative for a year or longer would not be unduly burdensome, and would address the problems stemming from too *few* inspections of those operations.

The existing regulations would change as follows:

BLM

Current language	**New language**
43 C.F.R. § 3809.5 – **How does BLM define certain terms used in this subpart?**	
As used in this subpart, the term:	[Insert definition of "inactive or inactivity" between "Exploration" and "Minimize"] *An inactive mine is one where active or ongoing operations are no longer occurring.*
43 C.F.R. § 3809.401 – **Where do I file my plan of operations and what information must I include with it?**	
(b) Your plan of operations must contain the following information and describe the proposed operations at a level of detail sufficient for BLM to determine that the plan of operations prevents unnecessary or undue degradation: . . . . *(5) Interim management plan. A plan to manage the project area during periods of temporary closure (including periods of seasonal closure) to prevent unnecessary or undue degradation. The interim management plan must include, where applicable, the following: . . . .*	[Add "and inactivity" to require interim management plans during periods of inactivity] *(b) Your plan of operations must contain the following information and describe the proposed operations at a level of detail sufficient for BLM to determine that the plan of operations prevents unnecessary or undue degradation:* . . . . *(5) Interim management plan. A plan to manage the project area during periods of temporary closure (including periods of seasonal closure) and non-operation to prevent unnecessary or undue degradation. The interim management plan must include, where applicable, the following: . . . .*
43 C.F.R. § 3809.424 – **What are my obligations if I stop conducting operations?**	
(a) To see what you must do if you stop conducting operations, follow this table: . . . . *(b) Your reclamation and closure obligations continue until satisfied.*	[In addition to the changes to § 3809.424 proposed above (see page 43) and below (see page 56), insert new paragraph (a)(6) and new paragraph (c)] (a) *To see what you must do if you stop conducting operations, follow this table:* … ***If*** *(6) Your operations are inactive for a period to exceed 180 consecutive days…*

Current language	New language
	Then— *Within 120 days from the first day of inactivity, you must submit an application for approval of temporary cessation of operations. The application shall include the expected re-opening date, and verification that your operations comply with your Interim Management Plan or a modification to that Plan if required under 3809.424(a)(1)(ii). Prior to approval of the application, BLM will review the application for consistency with the operator's Interim Management Plan and the requirements set forth in 3809.424(a)(1), and provide an opportunity for public participation. The approval will be valid for a maximum of five years with an option for a five-year renewal.* *(c) If your operation is inactive for 365 or more consecutive days, BLM will conduct annual inspections pursuant to § 3809.600(c). In addition, during any period of non-operation lasting 365 or more consecutive days, you must submit to BLM an annual notice describing any changes in the status and/or condition of the operations and the surrounding environment, consistent with the types of information described in § 3809.401(c). Your duty to submit a notice begins on the 365th day your operations cease and continues annually thereafter, until your operations resume or is closed and reclaimed.*
43 C.F.R. § 3809.600 – **With what frequency will BLM inspect my operations?**	
(a) At any time, BLM may inspect your operations, including all structures, equipment, workings, and uses located on the public lands. The inspection may include verification that your operations comply with this subpart. See § 3715.7 of this title for special provisions governing inspection of the inside of structures used solely for residential purposes. *(b) At least 4 times each year, BLM will inspect your operations if you use cyanide or other leachate or where there is significant potential for acid drainage.*	[Insert new paragraph (c)] *(c) If operations at the mine site have not occurred for 365 or more consecutive days, BLM will conduct annual inspections to ensure that you are in compliance with your plan of operations, including your interim management plan, and to ensure the non-operational mine is not causing unnecessary or undue degradation.*

Forest Service

Current language	New language
36 C.F.R. § 228.10 – **Cessation of operations, removal of structures and equipment.**	
Unless otherwise agreed to by the authorized officer, operator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations. Other than seasonally, where operations have ceased temporarily, an operator shall file a statement with the District Ranger which includes: *(a) Verification of intent to maintain the structures, equipment and other facilities,* *(b) The expected reopening date, and* *(c) An estimate of extended duration of operations. A statement shall be filed every year in the event operations are not reactivated. Operator shall maintain the operating site, structures, equipment and other facilities in a neat and safe condition during nonoperating periods.*	[Add paragraphs (a), (d), and (e) and modify paragraphs (b) and (c). The new language below reflects proposed changes to § 228.10 from pages 44-45, but does not reflect proposed reclamation-related changes from page 55.] *(a) Unless otherwise agreed to by the authorized officer, operator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations.* *(b) Other than seasonally, where operations have ceased, an operator shall file a statement with the District Ranger which includes:* *(i) Verification of intent to maintain the structures, equipment and other facilities,* *(ii) The expected reopening date,* *(iii) Information describing any changes in the status and/or condition of operations and the surrounding environment, and* *(iv) An estimate of extended duration of operations. A statement shall be filed every year in the event operations are not reactivated. Operator shall maintain the operating site, structures, equipment and other facilities in a neat and safe condition during nonoperating periods.* *(c) Consistent with § 228.7, in any circumstance in which operations have ceased for a period of 365 or more consecutive days, the Forest Service will conduct annual inspections for as long as operations remain ceased to ensure compliance with the applicable plan of operations, and to ensure that operations are not unnecessarily or unreasonably causing injury, loss or damage to surface resources.* *(d) If operations are inactive for a period to exceed 180 consecutive days, then within 120 days from*

Current language	New language
	the first day of inactivity, an operator must submit an application for approval of temporary cessation of operations. The application shall include the expected re-opening date, and verification that the operations comply with the plan of operations as set forth in § 228.4. Prior to approval of the application, the Forest Service will review the application for consistency with the operator's plan of operation, and provide an opportunity for public participation. The approval will be valid for a maximum of five years with an option for a five-year renewal. *(e) In any circumstance in which operations have ceased temporarily for a period of 10 or more consecutive years, and where the operator wishes to resume operations, the following conditions shall apply:* *(i) The operator must submit a notice of intent to resume operations, as well as a plan of operations applicable to resumed operations under § 228.4(d), to the authorizing officer. This plan of operations applicable to resumed operations must satisfy, and is subject to, the requirements set forth in § 228.4(c)-(d), § 228.4(f), and § 228.5.* *(ii) Consistent with § 228.4(g), the decision whether to renew a current plan of operations is a major Federal action subject to review under the National Environmental Policy Act, is a Federal "undertaking" subject to review under the National Historic Preservation Act, and may be a discretionary action requiring consultation under the Endangered Species Act. Such review and consultation shall address, in addition to the factors set forth in 36 C.F.R. § 228.8, the extent to which conditions have changed at the mining operations, in the surrounding environment, in the market for the mined material or in any other way that may be relevant to determining whether to approve a plan of operations for renewed operations. The decision whether to approve a plan of operations for renewed operations, and the decision regarding what compliance standards to require, must ensure that the proposed operations do not unnecessarily or unreasonably cause*

Current language	New language
	irreparable injury, loss or damage to surface resources, and that they comply with §§ 228.8, 228.9, and 228.11. *(iii) Consistent with § 228.5(c), a supplemental plan of operations under this subsection shall be subject to approval by the authorized officer in the same manner as the initial plan of operations, except as provided in paragraph (c)(ii) above.*

(4.) Expand reclamation to require long-term monitoring of surface water and groundwater quality; and impose reasonable deadlines for completing reclamation activities.

The Agencies' regulations require operators to prepare and implement reasonably detailed reclamation plans. Unfortunately, operators rarely submit long-term surface water and groundwater monitoring, even though there is overwhelming evidence that uranium mines can have long-lasting, adverse impacts on water quality. Additionally, BLM requires operators to commence and complete reclamation at the "earliest economically and technically feasible time," while the Forest Service just requires operators to remove facilities and equipment with a "reasonable" time (there is no time limit for other reclamation activities). These loose standards give operators too much leeway; mines go unreclaimed for years or decades, despite their adverse effects, and, as the GAO reports, many mines are eventually abandoned.

To fix these problems, the Agencies should expand the list of impacts that operators must address during reclamation to require long-term (30-year), post-closure monitoring of surface water and groundwater quality; and impose firm deadlines for completing reclamation activities. A 30-year monitoring term is consistent with (and identical to) EPA's recent proposal for a 30-year monitoring term for uranium mill tailings under the Resource Conservation and Recovery Act ("RCRA").[274]

[274] *See* EPA, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, 80 Fed. Reg. 4156 (Jan. 26, 2015). EPA explains why, after reviewing many options, it settled on a 30-year term as being the most appropriate:

> The initial part of our proposal for long-term stability monitoring addresses the duration of monitoring. Specifically, we are proposing that a facility must demonstrate three consecutive years of stability monitoring and then maintain long-term stability monitoring for an additional period of 30 years; this timeframe can be shortened by demonstrating long-term geochemical stability through modeling, as described below. In determining the appropriate length of long-term stability monitoring to provide confidence that the restored wellfield conditions will remain stable over time, and considering our statutory direction for consistency with RCRA requirements, we find that some direction can indeed be found in the RCRA regulatory framework. For RCRA hazardous waste disposal facilities, a post-closure monitoring period of thirty years is required before permit termination can occur. Since an engineered RCRA disposal facility for the containment of chemically hazardous waste is similar in concept to relying upon a chemically treated [in-situ recovery ("ISR")] wellfield to contain the potential spread of contaminants, we believe it is reasonable to conclude that a

The existing regulations would change as follows:

BLM

Current language	New language
43 C.F.R. § 3809.5 – How does BLM define certain terms used in this subpart?	
Reclamation means taking measures required by this subpart following disturbance of public lands caused by operations to meet applicable performance standards and achieve conditions required by BLM at the conclusion of operations. For a definition of "reclamation" applicable to operations conducted under the mining laws on Stock Raising Homestead Act lands, see part 3810, subpart 3814 of this title. Components of reclamation include, where applicable: *(1) Isolation, control, or removal of acid-forming, toxic, or deleterious substances;* *(2) Regrading and reshaping to conform with adjacent landforms, facilitate revegetation, control drainage, and minimize erosion;* *(3) Rehabilitation of fisheries or wildlife habitat;* *(4) Placement of growth medium and establishment of self-sustaining revegetation;* *(5) Removal or stabilization of buildings, structures, or other support facilities;* *(6) Plugging of drill holes and closure of underground workings; and* *(7) Providing for post-mining monitoring, maintenance, or treatment.*	[Modify paragraph (7) to specifically mention surface water and groundwater quality.] *Reclamation means taking measures required by this subpart following disturbance of public lands caused by operations to meet applicable performance standards and achieve conditions required by BLM at the conclusion of operations. For a definition of "reclamation" applicable to operations conducted under the mining laws on Stock Raising Homestead Act lands, see part 3810, subpart 3814 of this title. Components of reclamation include, where applicable:* *(1) Isolation, control, or removal of acid-forming, toxic, or deleterious substances;* *(2) Regrading and reshaping to conform with adjacent landforms, facilitate revegetation, control drainage, and minimize erosion;* *(3) Rehabilitation of fisheries or wildlife habitat;* *(4) Placement of growth medium and establishment of self-sustaining revegetation;* *(5) Removal or stabilization of buildings, structures, or other support facilities;* *(6) Plugging of drill holes and closure of underground workings and;* *(7) Providing for post-mining monitoring, maintenance to ensure the protection of surface water and groundwater quality.*
43 C.F.R. § 3809.401 – Where do I file my plan of operations, and what information must I include with it?	
(b) Your plan of operations must contain the following information and describe the proposed	[Insert new subparagraphs (b)(3)(xi).]

thirty-year long-term stability monitoring period for ISR activities is a consistent application of RCRA requirements. We have examined various statistical techniques for determining the presence or absence of trends in monitoring data, under assumed levels of natural variability and extent of trending, and concluded that, under reasonable values for these variables, a thirty-year monitoring period is a reasonable length of time to detect upward trends in constituent concentrations.

Id. at 4176-77.

Current language	**New language**
operations at a level of detail sufficient for BLM to determine that the plan of operations prevents unnecessary or undue degradation: . . . . *(3) Reclamation Plan. A plan for reclamation to meet the standards in § 3809.420, with a description of the equipment, devices, or practices you propose to use including, where applicable, plans for –* *(i) Drill-hole plugging;* *(ii) Regrading and reshaping;* *(iii) Mine reclamation, including information on the feasibility of pit backfilling that details economic, environmental, and safety factors;* *(iv) Riparian mitigation;* *(v) Wildlife habitat rehabilitation;* *(vi) Topsoil handling;* *(vii) Revegetation;* *(viii) Isolation and control of acid-forming, toxic, or deleterious materials;* *(ix) Removal or stabilization of buildings, structures and support facilities; and* *(x) Post-closure management[.]*	*(b) Your plan of operations must contain the following information and describe the proposed operations at a level of detail sufficient for BLM to determine that the plan of operations prevents unnecessary or undue degradation:* . . . . *(3) Reclamation Plan. A plan for reclamation to meet the standards in § 3809.420, with a description of the equipment, devices, or practices you propose to use including, where applicable, plans for –* *(i) Drill-hole plugging;* *(ii) Regrading and reshaping;* *(iii) Mine reclamation, including information on the feasibility of pit backfilling that details economic, environmental, and safety factors;* *(iv) Riparian mitigation;* *(v) Wildlife habitat rehabilitation;* *(vi) Topsoil handling;* *(vii) Revegetation;* *(viii) Isolation and control of acid-forming, toxic, or deleterious materials;* *(ix) Removal or stabilization of buildings, structures and support facilities;* *(x) Post-closure management; and* *(xi) Post-closure, long-term monitoring and mitigation for a minimum of 30 years, or longer as necessary to ensure protection of surface water and groundwater quality.*
43 C.F.R. § 3809.420 – **What performance standards apply to my notice or plan of operations?**	
(a) General performance standards-- . . . . *(5) Concurrent reclamation. You must initiate and complete reclamation at the earliest economically and technically feasible time on those portions of the disturbed area that you will not disturb further.* . . . . *(b) Specific standards--* . . . . *(3) Reclamation.* *(i) At the earliest feasible time, the operator shall reclaim the area disturbed, except to the extent necessary to preserve evidence of*	[Modify the deadlines for completing reclamation activities in (a)(5) and (b)(3). Insert new subparagraphs (b)(3)(ii)(F).] *(a) General performance standards--* . . . . *(5) Concurrent reclamation. You must initiate and complete reclamation at the earliest economically and technically feasible time on those portions of the disturbed area that you will not disturb further. You must complete reclamation on such portions of the disturbed area within one year following the cessation of all operations on each such portion, or at the earliest economically and technically feasible time, whichever is earlier.*

Current language	New language
mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands. *(ii) Reclamation shall include, but shall not be limited to:* *(A) Saving of topsoil for final application after reshaping of disturbed areas have been completed;* *(B) Measures to control erosion, landslides, and water runoff;* *(C) Measures to isolate, remove, or control toxic materials;* *(D) Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable; and* *(E) Rehabilitation of fisheries and wildlife habitat.* *(iii) When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the authorized officer shall be notified so that an inspection of the area can be made.*	*These deadlines apply to all reclamation obligations except post-closure, long-term monitoring of surface water and groundwater quality, which must occur for 30 years post-closure.* . . . . *(b) Specific standards--* . . . . *(3) Reclamation.* *(i) Within one year following the cessation of all operations, or at the earliest feasible time, whichever is earlier, the operator shall reclaim the area disturbed, except to the extent necessary to preserve evidence of mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands. This deadline applies to all reclamation obligations except post-closure, long-term monitoring of surface water and groundwater quality, which must occur for 30 years post-closure.* *(ii) Reclamation shall include, but shall not be limited to:* *(A) Saving of topsoil for final application after reshaping of disturbed areas have been completed;* *(B) Measures to control erosion, landslides, and water runoff;* *(C) Measures to isolate, remove, or control toxic materials;* *(D) Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable;* *(E) Rehabilitation of fisheries and wildlife habitat; and* *(F) Measures to monitor the long-term quality of surface water and groundwater, and to mitigate contamination where appropriate.* *(iii) When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the authorized officer shall be notified so that an inspection of the area can be made.*

Current language	New language
43 C.F.R. § 3809.424 – **What are my obligations if I stop conducting operations?**	
(b) Your reclamation and closure obligations continue until satisfied.	[Modify (b) to clarify that reclamation and closure obligations are subject to the deadlines set forth in 43 C.F.R. § 3809.420.] *(b) Your reclamation and closure obligations continue until satisfied, but in any event must be completed within the time periods prescribed in § 3809.420.*

Forest Service

Current language	New language
36 C.F.R. § 228.8 – **Requirements for environmental protection.**	
(g) Reclamation. Upon exhaustion of the mineral deposit or at the earliest practicable time during operations, or within 1 year of the conclusion of operations, unless a longer time is allowed by the authorized officer, operator shall, where practicable, reclaim the surface disturbed in operations by taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources including: *(1) Control of erosion and landslides;* *(2) Control of water runoff;* *(3) Isolation, removal or control of toxic materials;* *(4) Reshaping and revegetation of disturbed areas, where reasonably practicable; and* *(5) Rehabilitation of fisheries and wildlife habitat.*	[Modify the deadline for reclamation, delete the "unless a longer time is allowed by the authorized officer" and "where practicable" exceptions, and add sub-paragraph (6).] *(g) Reclamation. Upon exhaustion of the mineral deposit or at the earliest practicable time during operations, or within 1 year of the conclusion of operations, whichever is earliest, operator shall, reclaim the surface disturbed in operations by taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources including:* *(1) Control of erosion and landslides;* *(2) Control of water runoff;* *(3) Isolation, removal or control of toxic materials;* *(4) Reshaping and revegetation of disturbed areas, where reasonably practicable;* *(5) Rehabilitation of fisheries and wildlife habitat;* *(6) Protection of surface water and groundwater quality at all times.*
36 C.F.R. § 228.10 – **Cessation of operations, removal of structures and equipment.**	
Unless otherwise agreed to by the authorized officer, operator shall remove within a reasonable time following cessation of operations all structures, equipment and other facilities and clean up the site of operations….	[Modify "reasonable time" deadline, add paragraph (a) consistent with proposed changes above.] *(a) Unless otherwise agreed to by the authorized*

Current language	New language
	officer, operator shall remove within one year following the cessation of operations, or at the earliest economically and technically feasible time, whichever is earlier, all structures, equipment and other facilities and clean up the site of operations….

5.2. The proposed changes would build upon concepts already present in the Agencies' rules, efficiently use existing agency resources, not take vested property rights, and appropriately borrow from the more protective rules of other jurisdictions.

5.2.1. BLM and the Forest Service already impose limitations on certain types and scopes of mining.

Features within BLM's and the Forest Service's existing regulations demonstrate that the Agencies have contemplated the need for tighter regulation under certain circumstances, and that they have been willing to implement such regulations. We have discussed above why re-opening inoperative uranium mines poses special human health and environmental concerns and burdens, and therefore deserves similarly special treatment under the Agencies' regulations.

BLM, for example, already recognizes that operations beyond initial prospecting or "casual use" are "notice-level" or "plan-level" operations that require stricter approval and management.[275] Though notice-level operations are restricted to activities that will not disturb more than five acres of land or remove more than 1,000 tons of ore, permits for such operations are granted for only two-year terms.[276] After two-years, the permit must be renewed (or changed) or operations must stop.[277] There is every reason to impose time limits on approvals for even more intensive plan-level operations.

Both Agencies also understand that plans or decisions may become stale over time. The Agencies' rules accordingly require updates, modified plans, adjusted reclamation securities, and inspections in certain circumstances. Broadening this principle to better capture changed conditions, through more regular disclosures and inspections, is not a great leap and makes sense. Similarly, the Agencies' existing rules recognize that, apart from NEPA's requirements, environmental review leads to better decisionmaking when mining operations are proposed. That observation is equally true when there are significant changes to mining operations or following a long period of inactivity, such that changes at the mine or in the surrounding environment warrant changes in how mining operations are conducted. In short, our proposed changes are not radical. Rather, they stem from principles and requirements already present in the Agencies' regulations.

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[275] *Id.* §§ 3809.10(a), .11, .21, .332.
[276] *Id.* §§ 3809.300, .335.
[277] *Id.* § 3809.300.

5.2.2. The proposed changes would not require substantial new agency resources.

BLM and the Forest Service may be concerned that the regulatory changes we propose in this petition will require substantial new resource commitments, including for permit processing, environmental and historic reviews, studies, and the like. To be sure, requiring renewed permit applications, preparing new reviews, conducting annual inspections, and reviewing expanded reclamation reports will increase the Agencies' workload. Additional staff time will be required to promulgate the proposed regulatory changes and to implement them once they are in effect.

However, we believe this additional workload, and the additional resources required to handle it, are minimal. Under our proposal, the burdens to apply for permit renewals, and to provide better and more timely information regarding temporary closures and re-openings, would fall on operators. While the Agencies would have to prepare updated environmental reviews for re-opened mines and conduct annual inspections in certain circumstances, the costs of doing so, like the costs of processing permit renewals, could be passed on to operators through cost recovery agreements.[278] The same is true for the costs of reviewing expanded reclamation reports. Cost recovery agreements would leave the Agencies with little in the way of uncovered additional expenses.

Mining operators may object to bearing more costs to mine on public lands. We have six responses to this concern. First, FLPMA and NFMA contemplate, and the Agencies through their existing regulations agree, that mining operators must obtain a permit and perform some sort of environmental review. That is, there is a common understanding that the benefits of requiring operators to obtain a permit to mine outweigh the burdens. Our proposed changes are consistent with that fundamental principle. Second, most of the additional costs associated with our proposed changes would be modest. The cost of gathering information, filing disclosures, preparing updated applications and environmental reviews, and reimbursing the agencies for the costs of annual inspections are relatively small compared to other expenditures associated with uranium mining.[279] Third, these additional costs would be associated with actions designed to *prevent* adverse effects, and prevention is invariably cheaper than cleanup (especially since in many cases the costs of full cleanup are borne by the Agencies, and hence the public). Fourth, operators may pass on any or all of these additional costs to their customers.

Fifth, the Agencies, in prior amendments to their regulations, have explained that operators should not be too concerned about increasing costs from additional requirements. For example, in 2000, BLM explained that the costs of gathering information for environmental

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[278] BLM has defended its authority to use cost recovery agreements in prior amendments to its mining regulations. *See, e.g.*, BLM, Oil and Gas Leasing; Geothermal Resources Leasing; Coal Management; Management of Solid Minerals Other Than Coal; Mineral Materials Disposal; and Mining Claims Under the General Mining Laws, 70 Fed. Reg. 58,854, 58,860 (Oct. 7, 2005).

[279] *See, e.g.*, 36 C.F.R. § 228.4(g) (discussing public reporting burden associated with preparing a notice of intent or plan of operations).

reviews were likely lower than operators feared, as "much of the information is already being collected by . . . operator[s]; therefore we don't agree that [requiring the disclosure of such information] constitutes a substantial additional burden for the operators of large mines."[280] Moreover, some in the mining industry itself explained that, "as a practical matter, mining plans of operations are amended relatively frequently to reflect changing economic and geologic conditions."[281] In 2005, BLM explained that higher application fees might lead the agency to "reassess the fixed fees if our processing costs change significantly, . . . as technology and automation improve, our document processing costs may decrease, which will be reflected in reduced case-by-case fees."[282]

We realize that elements of our fourth set of proposed changes—expanding reclamation to address subsurface impacts, and requiring long-term monitoring of surface water and groundwater quality—could lead to measurably higher costs for mining operators. That brings us to our sixth response. As much as we sympathize with concerns about resource constraints, those concerns are not legitimate grounds for refusing to take actions to bring the Agencies' mining programs into compliance with FLPMA and NFMA. Under the current rules, members of the public are bearing, directly or indirectly, too many of the costs associated with poorly managed inoperative, abandoned, and closed uranium mines. There is now substantial evidence that inoperative uranium mines present significant hazards or threat to human health and the environment, and that the Agencies consistently underestimate the impacts of reclaiming shuttered mines. It is time for the Agencies to adopt regulatory changes that will better protect against these hazards and gaps. The changes we propose in this petition will accomplish that purpose without imposing undue burdens on the Agencies or mining operators.

[280] 65 Fed. Reg. at 70,042.

[281] *Id.* at 70,058.

[282] 70 Fed. Reg. at 58,858. Other reasons why added costs associated with rule changes are often not significant are (1) those costs "could be overwhelmed by other market forces—such as commodity prices—that might play a relatively more important role in miners' production decisions," and (2) regulations are not "implemented in a static environment. Both miners and BLM would probably become more efficient in meeting the requirements of the regulations over time. In the long run, the regulations might even create incentives for firms to seek new lower cost approaches to mining and reclamation." 65 Fed. Reg. at 70,107.

5.2.3. The proposed changes would not result in the unconstitutional taking of any vested property rights.

The changes we propose in this petition, even written to apply retroactively, will not result in the taking of a vested property right in violation of the Fifth Amendment to the United States Constitution. That clause provides that "private property [shall not] be taken for public use, without just compensation."[283] All of the changes we propose simply involve more specific standards for how the Agencies exercise their existing regulatory authority, which includes the authority to:

- Approve, condition, or reject proposed plans of operations;
- Require modified plans of operations;
- Suspend (or, in BLM's case, revoke) plans of operations where undue environmental harm is occurring;
- Require plans to govern periods of inactivity, and require modified plans where appropriate;
- Suspend or revoke plans of operations for certain inoperative mines;
- Conduct periodic inspections of mines, including inoperative mines;
- Require and adjust financial assurances for reclamation;
- Require reclamation plans and specific reclamation activities;
- Specify when operators must commence and complete reclamation; and
- Require operators to submit information on their proposed operations and their active operations.

Consider our specific proposals. First, limiting the duration of approved plans of operations to 20 years with the option to renew (for an unlimited number of renewals) would not interfere with a mining operator's use of its existing mines. True, BLM or the Forest Service could impose new performance standards in a renewed plan, or deny a renewal application for failure to comply with existing performance standards aimed at preventing undue degradation, but BLM already has that authority, and the Forest Service most of that authority, under their existing regulations.[284] The proposed 20-year limit would simply institutionalize what is currently a vague and ad hoc review process.

The same observations apply to our second proposed change—requiring supplemental environmental review and a new approval for any mining operation that has been inoperative for 10 or more consecutive years. Operators could avoid this requirement by limiting non-operational periods to less than 10 years, or they could satisfy the requirement by supplying updated information and complying with any updated requirements in a new approval. Our proposed change would, in essence, call out a specific circumstance in which the Agencies

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[283] U.S. Const., amend. V.

[284] *See supra* sections 3.1.3.1-.2, 3.2.2.1-.2 (citing 43 C.F.R. §§ 3809.423, .601-.602; 36 C.F.R. §§ 228.5(a), .7(b)); *see also United States v. Locke*, 471 U.S. 84, 86, 89-90, 104-107 (1985) (because the United States owns the "underlying fee title to the public domain" on which the plaintiff located its mining claims, the government retains "broad powers over the terms and conditions upon which the public lands can be used, leased, and acquired").

would exercise their existing authority to require environmental information and revisit plans of operations.[285]

Our third proposed change—requiring regular inspections, as well as regular submissions by operators, during long periods of non-operation—would merely impose regular recordkeeping requirements, none of which would interfere with operators' use of their existing mines. Finally, our fourth proposed change—expanding reclamation activities to address subsurface impacts and provide for long-term surface water and groundwater quality monitoring, and imposing a reasonable completion schedule—plainly draws upon the Agencies' authority to prescribe the substance of reclamation plans and the conditions of their performance.

In short, our proposed changes fit squarely within the Agencies' existing authorities, and provide more specific direction for how the Agencies and operators act in different circumstances. The changes would not, if adopted, constitute a "per se" or partial regulatory taking under the case law.[286]

We realize that our proposed changes, as written, would apply to all types of existing mines, not just uranium mines. However, we think that the points we have made above—regarding why those proposed changes would not result in an unconstitutional taking of private property under the Fifth Amendment—also apply to all types of existing mining. If the Agencies or operators have takings-related concerns we have not addressed, we would be eager to discuss ways to tailor our proposed changes to satisfy those concerns.[287]

5.2.4. The proposed changes would borrow from, and improve upon, the more protective mining rules of other jurisdictions.

Other legal regimes already regulate uranium and inoperative mines more in line with the changes proposed in this petition. We say *more* in line because, as the discussion below makes clear, many of these regimes are not as effective as they could be. Our proposed changes borrow from and build upon the better parts of these regimes.

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[285] *See supra* sections 3.1.3.1, 3.2.2.2 (citing 43 C.F.R. § 3809.411(d); 36 C.F.R. § 228.4(e)-(f)).

[286] *See Penn Central Transportation Co. v. New York City*, 438 U.S. 104 (1978); *see also United States v. Locke*, 471 U.S. 84, 86, 89-90, 104-107 (1985) (because the United States owns the "underlying fee title to the public domain" on which the plaintiff located its mining claims, the government retains "broad powers over the terms and conditions upon which the public lands can be used, leased, and acquired").

[287] There can be no argument that the 2012 Withdrawal's exception for "valid existing rights" *itself* (or similar exceptions in other land management decisions) prohibits BLM and the Forest Service from adopting the regulatory changes we propose in this petition. Valid existing rights are a right to mine a claim subject to reasonable regulation; BLM's and the Forest Service's rules authorize the Agencies to accept a plan of operations as proposed, deny that plan, or modify it with proposed changes or regulatory conditions. 43 C.F.R. § 3809.411(d); 36 C.F.R. § 228.5(a); *see also Locke*, 471 U.S. at 86.

5.2.4.1. Colorado

Two States—Colorado and New Mexico—have set relatively strict standards for uranium mining, some of which are reflected in our proposed changes to the BLM and Forest Service rules.

The Colorado Division of Reclamation, Mining, and Safety ("DRMS") regulates all exploration and mining activity in Colorado under the authority of the Colorado Mined Land Reclamation Act.[288] For in-situ recovery facilities, DRMS coordinates with the Colorado Department of Public Health and Environment, which regulates radioactive materials under the Colorado Radiation Control Act.[289] The Water Quality Control Division, the Air Quality Control Division, and other state departments also provide regulatory oversight and impose additional permitting requirements on mining operations.

The regulations that implement Colorado's Mined Land Reclamation Act ("Mineral Rules" or "Rules")[290] require mining applicants and operators to prepare for and comply with environmental standards during each stage of exploration, mining, and reclamation. The Rules prescribe detailed standards for the contents of an operating plan, including that sufficient soil must be salvaged to meet the vegetation establishment criteria laid out in the Rules; the quantity of waste rock to be removed must be specified; descriptions of how the mining will affect quantity and quality of the surface and groundwater and the specific methods to be used to minimize disturbance must be provided; and dimensions of existing and proposed roads or improvements must be provided along with sufficient information on associated drainage and runoff conveyances in order to evaluate structure sizing.[291] In this way Colorado's Rules are more demanding than BLM's, which simply require that an operator describe proposed "equipment, devices, or practices" and water management, quality assurance, and spill

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[288] Colo. Rev. Stat. § 34-43-101 *et seq.* DRMS is the primary regulator of mining activities on all lands in the state. See Memorandum of Understanding Between the Bureau of Land Management and the Division of Minerals and Geology, 2 (Dec. 24, 2002) ("DMG shall assume responsibility for the administration, review, and permitting of Notices of Intent (NOI) for prospecting and/or drilling and all other mining operations subject to 43 CFR 3809 regulations which otherwise fall under the jurisdiction of the DMG.").

[289] *See* Colorado Department of Public Health and Environment, Radiation Management Unit, "Regulation of In Situ Uranium Recovery in Colorado," 1 (undated), *available at* http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline%3B+filename%3D%22Summary+of+Requirements+for+In+Situ+Uranium+Recovery.pdf%22&blobheadervalue2=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251831069258&ssbinary=true; Colo. Rev. Stat. § 25-11-101, *et seq.*; Colo. Code Regs. § 1007-1 *et seq.* The Nuclear Regulatory Commission has agreed to delegate its authority to regulate uranium "source materials and byproduct materials" and licensing and monitoring to the State. *See* NRC, Directory of Agreement State and Non-Agreement State Directors and State Liaison Officers (last updated Feb. 27, 2015), *available at* http://nrc-stp.ornl.gov/asdirectory.html.

[290] *See* Office of Mined Land Reclamation, Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for Hard Rock, Metal and Designated Mining Operations (Sept. 30, 2010), *available at* http://mining.state.co.us/SiteCollectionDocuments/HardRockRulesAdoptedAug122010actcites12032010correction.pdf.

[291] Mineral Rule § 6.3.3(b), (c), (g), (i) (Exhibit C).

contingency plans "at a level of detail sufficient for BLM to determine that the plan of operations prevents unnecessary or undue degradation."[292]

Colorado places more stringent demands on uranium mining in particular. While BLM and the Forest Service treat conventional uranium mining identically to other hard rock mining, Colorado identifies any activity that extracts uranium—whether conventional or in-situ—as a "designated mining operation."[293] This distinction subjects uranium mining operations to special application and permitting requirements. For example, all uranium operations are required to submit an Environmental Protection Plan that imposes myriad requirements and that DRMS must approve before mining can begin.[294] Among other things, the Environmental Protection Plan must describe any chemicals the proposed mine will use and identify their potential impact on the environment and human health.[295] The Plan must address and present analyses of the geology, hydrology, and vegetation composition at the site.[296] And the Plan must identify how the operation will protect wildlife from coming into contact with uranium or other toxic or radioactive substances, and it must include mitigation measures that will ensure "no overall net loss of critical or important wildlife habitat."[297] Operators must work with the Colorado Division of Wildlife in crafting these provisions.[298]

Colorado's requirements do not stop there. All in-situ recovery operators are required to conduct a "scientifically defensible groundwater, surface water, and environmental baseline characterization" and develop plans for ongoing monitoring of their proposed activities.[299] These efforts are "designed to thoroughly characterize pre-mining conditions; detect any subsurface excursions of ground water containing chemicals used in or mobilized by such operation; and evaluate the effectiveness of post-mining reclamation and ground water reclamation."[300] The monitoring plans, operation, and results are a matter of public record.[301] Furthermore, if DRMS has to obtain an independent expert to oversee or verify the baseline or monitoring data collected, the applicant must bear the cost.[302] In-situ operators must confer with, and secure approval from, DRMS prior to conducting any baseline site characterizations.[303]

By contrast, BLM's regulations impose far weaker requirements up front, even for uranium operations that do not involve in-situ recovery. The regulations suggest only that an operator "may" be required to provide "operational and baseline environmental information," and that BLM is available to "advise" on the "the exact type of information and level of detail

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[292] 43 C.F.R. § 3809.401(b).
[293] Mineral Rule 1.1(14)(d).
[294] Colo. Rev. Stat. §§ 34-32-103(3.5)(a)(III), 34-32-112.5.
[295] Mineral Rule 6.4.21(5) (Exhibit U).
[296] Mineral Rule 6.4.21(8)-(12), (17)-(18).
[297] Mineral Rule 6.4.21(18).
[298] Mineral Rule 6.4.8.
[299] Colo. Rev. Stat. § 34-32-112.5(5)(a)-(d); Mineral Rules 1.4.3(1)(a), 6.4.21(7), 6.4.23 (Exhibit W).
[300] Mineral Rule 6.4.21(12); *see also* Colo. Rev. Stat. § 34-32-112.5(5)(a)-(d); Mineral Rules 1.4.3(1)(a), 6.4.21(7), 6.4.23 (Exhibit W).
[301] Colo. Rev. Stat. § 34-32-112.5(5)(c).
[302] *Id.* § 34-32-112.5(5)(a).
[303] Mineral Rule 6.4.23(1)(a).

needed to meet these requirements."[304] BLM's regulations contemplate monitoring plans but do not really describe their purpose or particulars, requiring little more than compliance with an approved plan of operations and state and Federal law, and "such action as may be needed to prevent adverse impacts to threatened or endangered species[ ] and their habitat."[305] These bare standards do not ensure that mining operations, once they begin, will adequately protect the environment. As we have explained, that problem is especially acute for uranium mines, which can have greater adverse effects than other mines, and for inoperative mines, which are re-opened based on outdated environmental reviews and performance standards. Colorado's regulations appropriately recognize that the more stringent an initial plan, the more effective it will be over the long term.

Colorado's Rules also ensure more effective monitoring of mining operations after they begin. For example, if groundwater contamination is discovered after operations start, remediation must begin immediately.[306] In situ mining operations must eventually restore groundwater quality to at least pre-mining conditions or consistent with stringent state standards.[307]

Most important for purposes of this petition, Colorado's Rules establish a better process for regulating inoperative mines. As we discussed in Section 2, BLM's regulations (and to a much lesser extent, the Forest Service's) require an interim management plan for periods of inactivity, but they do not clearly define "inactivity" or require regular updates to interim plans.[308] Colorado's Rules, on the other hand, set out conditions for applying for and receiving temporary cessation permits, and they provide clear examples of what temporary cessation means.[309] The Rules provide that any operator who plans to (or actually ceases) production for 180 days or more must notify DRMS in writing.[310] The notice must include a plan to resume mining and a plan for reclamation or maintenance during the interim.[311] In-situ recovery facilities must also provide a description of a groundwater monitoring and pumping regime that will be maintained during the inactive period, as well as a monitoring reporting schedule.[312] These requirements place the burden of providing notice on the operator, ensure that regulators have current data about operations, and provide for some measure of protection during and following periods of non-operation. Most critical, although mining operations under Colorado's rules may be inactive for up to five years, they may not remain inactive indefinitely.[313] A five-year period of temporary cessation may be extended for an additional

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[304] 43 C.F.R. § 3809.401(c).

[305] *Id.* §§ 3809.401(b)(4), 3809.420(b)(7).

[306] *See* Colo. Rev. Stat. § 34-32-112.5(5)(d)(I)(A).

[307] *Id.* § 34-32-115(5)(b); Mineral Rule 3.1.7(1)(e).

[308] 43 C.F.R. § 3809.401(b)(5); 36 C.F.R. § 228.10(c).

[309] Colo. Rev. Stat. § 34-32- 103(6)(a)(II). Temporary cessation may be indicated by either the absence of personnel on the site for 180 days or the presence of personnel engaged in only maintenance work or other activities that do not move the site toward completion. Mineral Rule 1.13.2.

[310] Mineral Rule 1.13.5(1).

[311] Mineral Rule 1.13.5(2)-(3).

[312] Mineral Rule 1.13.5(2)(f); Colo. Rev. Stat. § 34-32-112.5(5)(d)(II).

[313] Mineral Rule 1.13.5, 1.13.8, 1.13.9.

five years, but DRMS must conduct a site visit before considering a request for extension.[314] Under no circumstances will a mining operation be allowed to remain inactive for more than ten years without reclamation.[315]

In short, Colorado's Rules require greater environmental review and protection upfront, during and after mining operations, and during periods of inactivity, than do BLM's or the Forest Service's regulations. Our proposed changes reflect some of these sensible features.

5.2.4.2. New Mexico

The Mining Commission and the Mining and Minerals Division ("MMD") of the New Mexico Energy, Minerals and Natural Resources Department regulate mining under New Mexico's Mining Act.[316] The Mining Commission develops regulations to implement the Act, while MMD licenses operations and enforces those regulations.[317] The Mining Commission consists of appointed officials and members of different government agencies.[318] The Mining and Environmental Compliance Section of the New Mexico Environment Department also helps implement the Mining Act by reviewing and commenting on permits and reclamation plans and coordinating environmental requirements with MMD.[319]

Like BLM and the Forest Service, MMD regulates mining operations differently depending on their predicted level of disturbance. However, New Mexico's mining regulations are more detailed and comprehensive than their federal counterparts', even for operations determined to have a "minimal impact on the environment."[320] For example, applicants for all types of mining in New Mexico are required to identify the locations of all perennial, intermittent and ephemeral streams, springs, riparian areas, and wetlands near proposed mines, as well as describe how operations will meet water quality performance standards set forth in the regulations.[321] MMD must submit copies of a completed application to a series of agencies for their feedback.[322] Regardless of the impact level of a proposed operation, MMD cannot approve a permit until the Secretary of the Environment Division "has provided a written

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[314] Mineral Rule 1.13.5(4). While BLM's regulations provide for review to "determine whether BLM should terminate your plan of operations and direct final reclamation and closure" after five years of inactivity, 43 C.F.R. § 3809.424(a)(3), we are not aware of any uranium mines in which BLM has exercised this authority. The Forest Service's regulations do not appear to provide for terminating non-compliant plans of operation, whether or not operations are inactive. *See* 36 C.F.R. §§ 228.7, 228.10.

[315] Mineral Rule 1.13.9. There has been controversy over whether Colorado's Rules are adequate to prevent adverse effects from inoperative mines, but most of the disputes have centered around enforcement. *See* Frosch, "A Fight in Colorado Over Uranium Mines," *The New York Times* (Apr. 16, 2013). Our proposed changes would be an improvement over Colorado's Rules, but even those Rules would be better than BLM's and the Forest Service's existing regulations.

[316] N.M. Stat. Ann. § 69-36-1, *et seq.*

[317] *See generally* N.M. Stat. Ann. §§ 69-36-6 to -9; N.M. Code R. §§ 19.10.1-.14.

[318] N.M. Stat. Ann. § 69-36-6.

[319] New Mexico Environment Department, Ground Water Quality Bureau, Mining Environmental Compliance Section, *available at* http://www.nmenv.state.nm.us/gwb/NMED-GWQB-MiningEnvironmentalComplianceSe.htm.

[320] N.M. Code R. § 19.10.1.7.

[321] *Id.* § 19.10.3.302(D).

[322] *Id.* § 19.10.3.302(G).

determination stating that the permit applicant has demonstrated that the activities to be permitted or authorized will be expected to achieve compliance with all applicable [environmental] standards."[323]

New mining applications to MMD must be very specific, and the applicant must collect at least twelve months of environmental baseline data on a proposed mining site before beginning any mining operation.[324] The data must include an inventory of any sensitive, threatened or endangered species, and MMD may require studies of longer than 12 months to address unique factors. The regulations detail the types of data and level of detail to be collected. For baseline wildlife data, for example, the data should include species presence or absence, distribution by season and habitat type, and relative abundance, and should identify important habitat components like nesting, foraging, and wintering grounds.[325] The regulations also require an applicant to submit a sampling and analysis plan to MMD before collecting the baseline data. Among other things, the plan includes proposed sampling locations and frequency in addition to laboratory and field quality assurance plans.[326] MMD must distribute the sampling plan to other agencies, including the Environment Department.[327] Like Colorado's Rules, New Mexico's regulations also provide for the possibility that MMD may enlist qualified experts to review the adequacy of the baseline data, make recommendations regarding the quality of the data or methodology, review the permit application, or even prepare an environmental evaluation of the application.[328] The applicant bears the cost of this independent review.[329] BLM's and the Forest Service's regulations do not so explicitly mandate baseline data collection, nor do they contemplate the high level of detail, early consultation, or agency coordination found in New Mexico's regulations.

In addition, MMD cannot issue a mining permit unless it determines that the reclamation plan for a proposed operation will achieve "a self-sustaining ecosystem appropriate for the life zone of the surrounding areas," and that all environmental requirements can be met "without perpetual care."[330] The regulations also encourage incremental reclamation; "[c]ontemporaneous reclamation is required to the maximum extent practicable and in a manner that is consistent with the approved reclamation plan."[331] The release of financial assurances is contingent on meeting high standards for vegetative cover and productivity, as well as additional requirements if wildlife habitat is part of the post-mining land use.[332]

An operation permit has a maximum term of 20 years with the possibility of 10-year renewal periods.[333] At least once every five years, MMD must review for compliance with the Mining Act and implementing regulations all permits that were issued for terms of more than

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[323] *Id.* §§ 19.10.3.303(K), 19.10.3.304(J).
[324] *Id.* § 19.10.6.602(D)(13).
[325] *Id.* § 19.10.5.602(D)(13)(d).
[326] *Id.* § 19.10.6.602(D)(12)(a).
[327] *Id.* § 19.10.6.602(D)(12)(b).
[328] *Id.* § 19.10.6.602(D)(14).
[329] *Id.* § 19.10.6.602(D)(14).
[330] *Id.* § 19.10.6.606(B).
[331] *Id.* § 19.10.6.603(B).
[332] *See generally id.* § 19.10.6.603(C-(H).
[333] *Id.* § 19.10.6.607(B).

five years.[334] MMD must also periodically review the financial assurances filed by the operators, and may require updates or modifications to the amounts.[335] MMD requires mining operators (including small-scale ones) to submit annual reports providing updates on their operations' status, any reclamation performed, and any new economic information.[336] In contrast to BLM's and the Forest Service's vague and optional enforcement and monitoring policies, MMD requires on-site visits and provides an inspection schedule in its regulations.[337] In fact, MMD requires at least two on-site inspections per year "at each active existing and new mining operation"; "at least one per year at each inactive existing and new mining operation"; "at least one per year following completion of all significant reclamation activities, but prior to release of financial assurance"; and "at least one within the initial permit year" for a minimal impact mining operation or exploration operation.[338] If MMD finds that an operation is "conducting significant reclamation, the inspection must be on an irregular basis averaging not less than one inspection per month."[339] The inspections must be conducted without prior notice to the operator.[340] This regime is more environmentally protective than the Agencies' regulations, under which inspections are rarely mandatory, almost always infrequent, and typically superficial.

MMD may issue standby permits to mine operators who temporarily cease operation.[341] MMD's procedures permit a level of cooperation among regulators, and between regulators and mine operators, and of monitoring and enforcement not currently required under BLM's or the Forest Service's current regulations. Specifically, the stand-by permits allow mines to remain temporarily inactive without having to immediately perform reclamation. Operators must affirmatively file a standby permit application, identifying the period of the standby status and describing how the mine will comply with state and federal regulations during that period.[342] MMD must provide notice of the standby application to all major state resource departments and agencies.[343] A standby permit will not be issued until certain public participation requirements are met, a closeout plan is approved, and adequate financial assurances are provided.[344] Standby status ends after an operator, once again, affirmatively applies for a permit revision or the standby permit expires.[345] Standby permits are granted for terms of five years and may be renewed for no more than three additional five-year terms.[346]

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[334] *Id.* § 19.10.6.607(C).
[335] *Id.* § 19.10.6.607(E).
[336] *Id.* § 19.10.6.610.
[337] *Id.* § 19.10.11.1101(A).
[338] *Id*.
[339] *Id.* § 19.10.11.1101(B).
[340] *Id.* § 19.10.11.1101(C).
[341] *Id.* § 19.10.7.701.
[342] *Id.* § 19.10.7.701(B).
[343] *Id.* § 19.10.7.701(E).
[344] *Id.* § 19.10.7.701(G).
[345] *Id.* § 19.10.7.701(H).
[346] *Id.* § 19.10.7.701(I).

5.2.4.3. Nuclear Regulatory Commission

Uranium mines using conventional mining techniques are regulated under general federal and state mining regulations. However, the Nuclear Regulatory Commission ("NRC") regulates all aspects of mining at sites that use in-situ recovery, including licensing and permitting.[347] The NRC's regulations[348] are much more protective than BLM's or the Forest Service's. To be sure, those heightened requirements are warranted in part because in-situ recovery can present greater health and environmental risks than other types of uranium recovery operations. However, some of the NRC's heightened requirements could improve the manner in which traditional uranium mining is regulated on lands managed by BLM and the Forest Service.

The NRC's regulations are better designed in many ways. The NRC conducts extensive safety and environmental reviews for every new application for a uranium recovery mine.[349] The NRC issues uranium recovery licenses for discrete 10-year terms that may be renewed for additional 10-year periods.[350] The NRC continuously oversees in-situ recovery operations by regularly reviewing licenses, inspecting operations, and conducting site assessments.[351] Indeed, the NRC inspects operational in-situ recovery facilities several times a year, and inspects those facilities that are in standby mode or have been decommissioned every two years.[352] Inspections focus on a range of issues, including environmental compliance, and the inspectors publish the results of the inspection on the agency's website.[353]

The NRC, like Colorado and New Mexico, recognizes that thorough baseline data are critical to effectively monitoring and mitigating environmental effects. Before it issues a license, the NRC requires an operator to have implemented a monitoring program at least one year prior to any major site construction.[354] The program must provide complete baseline data on the milling site and the surrounding environment.[355] A separate monitoring program must be followed throughout construction and operations and include detection monitoring to "set the site-specific ground-water protection standards."[356]

The NRC also requires operators to submit updated environmental reports or supplements with each new stage of operation.[357] For instance, at the operating license stage, an

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[347] NRC, Uranium Recovery – What we Regulate, *available at* http://www.nrc.gov/materials/uranium-recovery.html. The NRC's authority over uranium mining derives from the Atomic Energy Act of 1954, 42 U.S.C. § 2011 *et seq.*, and the Uranium Mill Tailings Radiation Control Act of 1978, 42 U.S.C. § 7901 *et seq.*

[348] *See generally* 10 C.F.R. Parts 20, 40 & 40 App. A.

[349] *See generally* 10 C.F.R. 51 Subpart A; *see also* 10 C.F.R. §§ 40.31(f), 40.32(e), 40.41(e).

[350] NRC, Backgrounder – Uranium Recovery, at 3-4 (Aug. 2013), *available at* http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/uranium-recovery-bg.pdf.

[351] NRC, Fact Sheet on Uranium Recovery (Sept. 2011), *available at* http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-uranium-recovery.html.

[352] *Id.*

[353] *Id.*

[354] 10 C.F.R. § 40 App. A (Criterion 7).

[355] *Id.*

[356] *Id.* § 40 App. A (Criteria 7, 7A).

[357] *Id.* § 51.53.

operator must submit a new document updating the environmental report for the construction license stage "to reflect any new information or significant environmental change" associated with the operator's proposed next steps.[358] BLM and the Forest Service do not, but should, demand updated environmental reports from operators to account for changed circumstances.

The NRC sets criteria for triggering immediate corrective action, and mandates that if those "criteri[a] are exceeded at a licensed site, a corrective action program must be put into operation as soon as is practicable, and in no event later than eighteen (18) months after the Commission finds that the standards have been exceeded."[359] The operator bears responsibility for developing a corrective action program which must be approved by the Commission before it can be enacted.[360] The operator must continue the corrective actions until the Commission is satisfied that the issue has been resolved.[361]

Finally, the NRC requires operators to decommission sites when operations are over, and makes decommissioning subject to the NRC's approval.[362] If no activity has occurred under the license for 24 months, the operator must, within 60 days, notify the NRC of the period of inactivity. Within 12 months, the operator must either begin decommissioning the site or submit a decommissioning plan to the NRC.[363] These regulations both impose strict time limits and identify who has the burden of notification. Again, by incorporating similar provisions into their own regulations, BLM and the Forest Service could vastly improve oversight of mines, especially inoperative mines.

5.2.4.4. Canada

Canada is the world's second largest producer of uranium and, simultaneously, is recognized as having some of the world's most protective uranium mining regulations and best practices.[364] The Canadian federal government has developed a comprehensive regulatory and licensing process for preparing, constructing, and operating a uranium mine.[365] The regulations govern environmental quality, including groundwater protection, and support a system of ongoing oversight and monitoring. The government issues operating licenses for limited time periods, publishes annual reports, conducts regular inspections of mines, holds public hearings,

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[358] *Id.* § 51.53(d).

[359] *Id.* § 40 App. A (Criterion 5D).

[360] *Id*.

[361] *Id*.

[362] NRC, Backgrounder – Uranium Recovery, at 3-4 (Aug. 2013), *available at* http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/uranium-recovery-bg.pdf.

[363] 10 C.F.R. § 40.42(d)(3).

[364] A recent study highlighted several modern operations in Canada as examples for how to safely mine and mill uranium. *See* National Research Council, *Uranium Mining in Virginia*, at 184, 224, 256.

[365] Most mines in Canada are also ISO-14001 certified. This certification is based on a voluntary international set of standards for maintaining effective environmental management systems and entails regular independent audits and re-certification every three years. *See generally* World Nuclear Association, Environmental Aspects of Uranium Mining (March 2014), *available at* http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Mining-of-Uranium/Environmental-Aspects-of-Uranium-Mining/; International Accreditation Forum, Inc., IAF Guidance on the Application of ISO/IEC Guide 62:1996 General Requirements for Bodies Operating Assessment and Certification/registration of Quality Systems (Nov. 1, 2003), *available at* http://elsmar.com/pdf_files/IAF-GD2-2003_Guide_62_Issue_3_Pub.pdf.

and regularly communicates monitoring results or new plans to the public. As Canada balances regulation of mining at the federal and provincial or territorial levels, its regulatory framework provides a useful comparison point for regulation of mining operations in the United States.

Regulatory framework. Uranium exploration is regulated at the provincial or territorial level in much the same way as traditional mineral exploration.[366] Uranium mine development and operation, however, are regulated at the federal level by the Canadian Nuclear Safety Commission ("CNSC"), with varying degrees of involvement by additional federal agencies.[367] Canada's Nuclear Safety and Control Act requires the CNSC to regulate site preparation, construction, operation, decommissioning, and abandonment of uranium mines.[368] The CNSC's Commission Tribunal is an independent, "quasi-judicial administrative tribunal" that makes regulations and renders decisions on mining applications.[369] Unlike the split regulatory framework of BLM/Forest Service and NRC, the CNSC provides more centralized oversight and regulation of both conventional and in-situ uranium mining.

Regulations, particularly the General Nuclear Safety and Control Regulations and the Uranium Mines and Mills Regulations, set out the information all applicants must provide to develop uranium mines.[370] The CNSC reviews the applications, makes recommendations, and enforces compliance with federal law, implementing regulations, and license conditions.

All uranium mines currently operating in Canada are located in northern Saskatchewan.[371] Saskatchewan imposes an additional regulatory requirement on uranium mines called a "Surface Lease Agreement." The Surface Lease Agreements require partnership and coordination between industry, government, and local communities, including tribes.

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[366] Various provincial government departments are responsible for granting uranium mining exploration permits and mining leases. Mining lease terms vary between the provinces; in Saskatchewan, the term is 10 years with 10-year renewal periods. *See* Canadian Nuclear Safety Commission, *Licensing Process for New Uranium Mines and Mills in Canada*, 1 (Aug. 2010), *available at* http://www.cnsc.gc.ca/pubs_catalogue/uploads/Licensing_Process_for_New_Uranium_Mines_and_Mills_in_Canada_INFO_0759_Revision_1_e.pdf; Gregory Ho Yuen & Chuck Higgins, Uranium Mine Approval Process: Achieving Regulatory Compliance, 3-4 (2008), *available at* http://www.fasken.com/files/Publication/fda7002a-a54b-45e1-bc4d-09bdc344deac/Presentation/PublicationAttachment/34f7799d-277a-4303-a272-19a606ad5e3e/Uranium%20Mine%20Approval%20Process%20-%20Article%20-%20GHoYuen%20-%20Apr%2008.pdf.

[367] The Major Projects Management Office is responsible for coordinating the work of all the federal departments and agencies involved in the regulatory process for major resource projects. *See* Major Projects Management Office, *MPMO Mandate*, *available at* http://mpmo.gc.ca/8.

[368] Nuclear Safety & Control Act, S.C. 1997, c. 9. (Can.).

[369] Canadian Nuclear Safety Commission, *Licensing Process for New Uranium Mines and Mills in Canada*, 2 (2010).

[370] *Id*. at 5.

[371] Uranium Advisory Group, *Independent Review of Uranium Mining Regulation* 26 (2012); *see also* Gregory Ho Yuen & Chuck Higgins, Uranium Mine Approval Process: Achieving Regulatory Compliance, 8 (2008), *available at* http://www.fasken.com/files/Publication/fda7002a-a54b-45e1-bc4d-09bdc344deac/Presentation/PublicationAttachment/34f7799d-277a-4303-a272-19a606ad5e3e/Uranium%20Mine%20Approval%20Process%20-%20Article%20-%20GHoYuen%20-%20Apr%2008.pdf.

These agreements may set limitations on land uses and can require considerable time to negotiate.[372]

Licensing. The licensing process for a new uranium mine follows the stages laid out in the mining regulations, and the CNSC issues separate licenses for site preparation and construction, operation, decommissioning, and abandonment.[373] Operating licenses are issued for terms of five to 10 years and may be renewed for similar time frames. Like an application for a new license, renewal of existing licenses requires the approval of the Commission Tribunal.[374] Again, in contrast to BLM and the Forest Service, the CNSC limits the initial and renewal terms of licenses.

To obtain a license to mine uranium, an applicant must provide significant information and analysis concerning exploration and assessment activities, ore handling, milling, and waste management in order to demonstrate that the uranium can be extracted safely and economically, and that necessary measures will be taken to limit the operation's impacts on the environment. Examinations of site geology, ore and waste rock mineralogy, and groundwater movement are also usually required.[375]

The CNSC reviews the information submitted by applicants in coordination with other federal and provincial government departments and agencies.[376] After considering all applicable regulatory criteria, the CNSC produces an assessment report with recommendations for the Commission Tribunal and a recommended compliance and mitigation plan for the license. In making its decision, the Tribunal considers the recommendations from the CNSC, as well as information provided by intervenors, during public hearings on the license application.[377]

Environmental review. The Canadian Environmental Assessment Act requires that an environmental assessment be completed to identify whether a project is likely to cause significant adverse environmental effects.[378] Significantly, more than one assessment may be required over the life of a mine. An assessment can take up to 36 months to complete depending on the time required by the applicant to prepare the necessary documentation.

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[372] Uranium Advisory Group, *Independent Review of Uranium Mining Regulation*, 26 (2012); *see also* Gregory Ho Yuen & Chuck Higgins, Uranium Mine Approval Process: Achieving Regulatory Compliance, 8-9 (2008), *available at* http://www.fasken.com/files/Publication/fda7002a-a54b-45e1-bc4d-09bdc344deac/Presentation/PublicationAttachment/34f7799d-277a-4303-a272-19a606ad5e3e/Uranium%20Mine%20Approval%20Process%20-%20Article%20-%20GHoYuen%20-%20Apr%2008.pdf.

[373] Canadian Nuclear Safety Commission, *Licensing Process for New Uranium Mines and Mills in Canada*, 7 (2010); *see also* Canadian Nuclear Safety Commission, Uranium Mines and Mills in Canada – Licensing Process (last updated Aug. 8, 2014), *available at* http://nuclearsafety.gc.ca/eng/uranium/mines-and-mills/index.cfm.

[374] *Id*.

[375] Canadian Nuclear Safety Commission, *Licensing Process for New Uranium Mines and Mills in Canada*, 8-9 (2010).

[376] *Id*. at 10.

[377] *Id*. at 10-11.

[378] Canadian Environmental Assessment Act, S.C. 2012, c. 19, s. 52 (Can.). All new mine applications and significant amendments to existing licenses require an environmental assessment. *Id*. s. 52 §§ 13, 15(a).

When an assessment is required, the CNSC may not issue a license, grant an approval, or take any other action to support development of a uranium mine until the assessment process is complete and a positive decision has been issued.[379]

Oversight and enforcement. The CNSC also serves as the enforcement agency once a license has been issued and the CNSC verifies compliance with federal law, regulations, and any other conditions the Tribunal imposes on the applicant.[380] The CNSC issues regulatory guidance documents to assist applicants in compliance, inspects operating and decommissioned facilities (in conjunction with other regulatory agencies and departments), reviews operator reports, and conducts radiation and environmental analyses.[381] Additionally, the CNSC publishes discussion papers on mining related issues and invites public comment.[382] For example, the CNSC recently published a paper proposing to clarify regulations for groundwater protection, and plans to release new draft regulations in 2014.[383] BLM also publishes guidance documents to aid in understanding its regulations, but they often are not sufficiently detailed to satisfy that purpose. The CNSC also ensures each licensee has sufficient financial guarantees in place to cover the cost of the mine during its operation and decommissioning.[384]

In short, other countries like Canada have legal regimes that regulate uranium mining more effectively than do BLM and the Forest Service. Canada's regime incorporates measures—robust initial environmental review, firm limits on how long permits last, and so on—that BLM and the Forest Service could adopt to improve how uranium mines, and especially inoperative uranium mines, are managed in the United States.

Section 6. Conclusion

BLM and the Forest Service are entrusted with managing public lands so that they are not impaired for future generations. That mandate is not being met under the Agencies' current regulations. Uranium mines, particularly those that are re-started after long periods of inactivity, are polluting surface waters and groundwater, contaminating soil, adversely impacting sensitive species and their habitat, risking harm to sensitive cultural and historic resources, and imperiling human health. These effects are not only unacceptable, they are unnecessary; relatively simple changes to the Agencies' mining regulations would go a long way towards avoiding these impacts before they occur.

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[379] Canadian Nuclear Safety Commission, *Licensing Process for New Uranium Mines and Mills in Canada*, 6 (2010).

[380] *Id*. at 11.

[381] Canadian Nuclear Safety Commission, CNSC Compliance Activities (last updated Aug. 8, 2014), *available at* http://nuclearsafety.gc.ca/eng/uranium/mines-and-mills/index.cfm#CNSCComplianceActivities.

[382] Canadian Nuclear Safety Commission, The CNSC's Regulatory Framework Plan (last updated Aug. 21, 2014), *available at* http://nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-framework/regulatory-framework-plan.cfm#sec2.

[383] Canadian Nuclear Safety Commission, Discussion Paper for Public Discussion: Protection of Groundwater at Nuclear Facilities in Canada (June 30, 2012), *available at* http://www.nuclearsafety.gc.ca/eng/acts-and-regulations/consultation/comment/d-12-01.cfm.

[384] Canadian Nuclear Safety Commission, Uranium Mines and Mills in Canada – Licensing Process (last updated Aug. 8, 2014), *available at* http://nuclearsafety.gc.ca/eng/uranium/mines-and-mills/index.cfm.

We know that the Agencies must allow multiple uses of the lands they manage. We also know that the Agencies have too few resources to fulfill that task. Our proposed changes—limiting the duration of mining approvals, requiring new approvals and updated environmental and historic reviews for long-inoperative mines, requiring more regular inspections and disclosures, and improving reclamation practices—would respect these constraints while improving human health and the environment.

We appreciate your consideration of our request, and look forward to your timely response.

About the Grand Canyon Trust

http://www.grandcanyontrust.org/

Our Mission and Vision

The Grand Canyon Trust seeks to protect and restore the Colorado Plateau—its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude.

We work toward creating a region where generations of people and all of nature can thrive in harmony. Our vision for the Colorado Plateau 100 years from now has three key facets:

- The region is still characterized by vast open spaces with restored, healthy natural areas and habitat for all native plants and animals.
- Human communities enjoy a sustaining relationship with the natural environment.
- People who live and visit here are willing, enthusiastic stewards of the region's natural resources and beauty.

History

The Trust was established in 1985 by Arizona Governor Bruce Babbitt and other leading conservationists as a national trust for projects in the Grand Canyon. Soon after, Trustee Stewart Udall made an impassioned plea that issues do not stop at the boundaries of the Park, and the Trust should be an advocate for both the Grand Canyon and the surrounding Colorado Plateau. The suggestion was adopted and Grand Canyon Trust emerged as a leading regional conservation organization, with offices across the Plateau and extensive connections among policymakers, land managers, scientists, and community leaders.

Today, we employ a professional staff of 25, encompassing a wide range of skills from biology and forestry to economics and law. We have 25 committed Trustees, a national membership of more than 4,000, and an active seasonal volunteer workforce of more than 450 people who assist with restoration projects. Our main office is in Flagstaff, Arizona, with satellite offices in Moab, Utah, and Denver, Colorado; we also have a lobbyist in Washington, D.C.

Our Work

We focus on the 130,000-square-mile Colorado Plateau that features 29 national parks and monuments and 26 wilderness areas—America's densest concentration of celebrated landscapes. The region is also home to 15 Native American tribes, each with a distinctive and ancient culture. An ongoing strategic planning process helps us choose the most critical projects from among myriad natural resource and Native American issues. We give priority to projects that have broad implications for public lands policy and offer practical, demonstrable outcomes. We are intentionally collaborative and positive in approach, seeking solutions wherever possible, though we can be very strong in defense of the land when necessary. The Trust is widely respected for getting the facts right and for seeking solutions that will endure.