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Examining Uranium Mining in the Canyon Mine

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PACE ENVIRONMENTAL LAW REVIEW**ARTICLE****Examining Uranium Mining in the Canyon Mine**

KASHA HALBLEIB*

ABSTRACT

In November 2020, Energy Fuels changed the name of one of its uranium mines from “Canyon Mine” to “Pinyon Plain Mine” in order to put distance between the mine and its historical controversies. However, changing the name does not change the potential harm the mine can cause. Canyon Mine sits fifteen miles from the rim of the Grand Canyon and is built on land sacred to the nearby Havasupai Tribe. The mine stands to not only destroy the health and well-being of the Havasupai people by contaminating their water supply with radioactive elements, but also to destroy the sacred ties the Havasupai Tribe holds to the land. The mine lies above the Redwall-Muav Aquifer, the same aquifer that feeds Havasu Creek – the Havasupai Tribe’s sole source of water. The Havasupai Tribe has opposed the mine since its first permit in 1978 and continues to do so. This article will examine Canyon Mine and its connection to the Havasupai people, the potential adverse effects of the mine on the Havasupai Tribe, and potential domestic legal solutions and actions that the Tribe could pursue in order to stop the mine from operating.

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* Graduate of University of Colorado Law School, practices health law and compliance. Article was written in conjunction with the University of Colorado Law School’s Seminar “The Law of the Colorado River,” which was led by Gregor MacGregor. The Havasupai Tribe was contacted multiple times for comment on the article but no comments were ever received.

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INTRODUCTION

The Grand Canyon is an expansive and monumental nearly 2,000 square-mile landmark in the Western United States. Its arid landscape could invite speculation that nobody lives near it. However, six tribes call the Grand Canyon home:¹

- The Havasupai,
- The Hualapai,
- The Hopi,
- The Colorado River Indian Tribes,
- The Pueblo of Zuni, and
- The Navajo Nation.

Due to the dry nature of the Grand Canyon, water is a scarce resource and access is limited.² Water is essential to life everywhere on the planet. A tribe’s water source provides “clean drinking water to millions of people living downstream, supports agricultural operations, sustains the local tourism economy through abundant options for outdoor recreation, and provides

1. John Seebach & Jackie Feinberg, *Bill to Protect Grand Canyon Area From Mining and Other Threats Gains Support*, PEW RESEARCH. CTR. (Dec. 6, 2021), <https://www.pewtrusts.org/en/research-and-analysis/articles/2021/12/06/bill-to-protect-grand-canyon-area-from-mining-and-other-threats-gains-support> [<https://perma.cc/R39A-6ZLW>].

2. *See id.*

habitat for endangered species, such as the California condor and humpback chub.”³

Just as tribal lands are periodically threatened by development and encroachment, so too are their limited water supplies. Water sources face the threat of decreased quantity and quality by outsiders and investors who seek to take water for development, running the risk of increasing pollution in streams through the commodification of the land.⁴ The limited water sources must be protected and maintained for the tribes and wildlife that rely on them.

This article will explore an ongoing threat to the Havasupai Tribe: uranium mining above their sole water source. Part I will describe the Havasupai Tribe’s water source, Havasu Creek, and the Canyon Mine threatening it. Part II will explore the entities that have jurisdiction over the lands and how the competing interests are influenced by this control. Part III will explore the potential consequences of uranium mining on the Havasupai Tribe’s lands, including the consequences on health, water quality, crops and livestock, and the sanctity of the land the mine disrupts. Finally, Part IV will explore legal solutions that have been attempted and potential solutions going forward in the executive, legislative, and judicial branches of the United States government.

Part I: The Havasupai Tribe and the Canyon Mine

The Havasupai Tribe has made its home in the Grand Canyon for more than 1,000 years.⁵ The Havasupai Tribe’s land includes 188,077 acres of canyon land and broken plateaus along the western edge of the Grand Canyon.⁶ The Havasupai Tribe is governed by an elected council composed of seven tribal members who make decisions and facilitate communication with United States agencies.⁷ The Havasupai Tribe relies on a single water source:

3. *Id.*

4. See *Grand Canyon Protected from Threat of Mega-Development*, NAT’L PARKS CONSERVATION ASS’N, <https://www.npca.org/advocacy/14-grand-canyon-protected-from-threat-of-mega-development>, [https://perma.cc/J3XW-SGK3]; see also Joanna Walters, *In the Grand Canyon, Uranium Mining Threatens a Tribe’s Survival*, THE GUARDIAN (July 17, 2017), <https://www.theguardian.com/environment/2017/jul/17/grand-canyon-uranium-mining-havasupai-tribe-water-source> [https://perma.cc/2JKC-8YDL].

5. *About*, THE HAVASUPAI TRIBE, <https://theofficialhavasupaitribe.com/About-Supai/about-supai.html> [https://perma.cc/F26X-EKXL].

6. *Id.*

7. *Government*, THE HAVASUPAI TRIBE, <https://theofficialhavasupaitribe.com/Havasupai-Government/havasupai->

Havasu Creek, which is fed by a limestone aquifer, the Redwall-Muav Aquifer.⁸

The Canyon Mine, now known as the Pinyon Plain Mine (“the Mine”), is less than fifteen miles from the Grand Canyon Park boundary, located within the Kaibab National Forest.⁹ The Mine was originally approved for operations in 1988 after a Final Environmental Impact Statement was completed in 1986 (“1986 FEIS”).¹⁰ The Mine shaft was completed in 2018, but Mine operations have not yet begun.¹¹ Energy Fuels owns the Mine, and the surface structure of the Mine is almost complete as of Spring 2022.¹² Once operational, the Mine is expected to produce a total of 2.43 million pounds of uranium and 11.94 million pounds of copper.¹³

The Mine shaft is 1,470 feet below the surface of the Earth, and has the potential to leak water into the Redwall-Muav Aquifer (“the Aquifer”), which feeds Havasu Creek.¹⁴ Although claims on the Mine have existed since 1978, the mine has not been developed to produce minerals due to low uranium prices over the past few decades.¹⁵ However, as of 2015 the development of the Mine has progressed following an increase in uranium prices.¹⁶ Prices reached a peak in 2007 but dropped the following year; however, prices are again following an upward trend and are higher than they were

government.html [<https://perma.cc/HK3C-LSUV>]; see CONST. AND BY-LAWS OF THE HAVASUPAI TRIBE OF THE HAVASUPAI RESERVATION art. V, §§ a, d.

8. Evangeline Kissoon, Opinion, *Congress Must Act to Save the Havasupai Tribe from Extinction*, NEWSWEEK (Dec. 3, 2021), <https://www.newsweek.com/congress-must-act-save-havasupai-tribe-extinction-opinion-1654939>

[<https://perma.cc/Z643-TLN5>]; see also See THE HAVASUPAI TRIBE, *supra* note 5; see also *Conservationists Back Havasupai Tribe’s Opposition to Grand Canyon Uranium Mine*, CTR. FOR BIOLOGICAL DIVERSITY (June 1, 2022), <https://biologicaldiversity.org/w/news/press-releases/conservationists-back-havasupai-tribes-opposition-to-grand-canyon-uranium-mine-2022-06-01/> [<https://perma.cc/3DDG-3HVV>].

9. Ophelia Watahomigie-Corliss, Opinion, *Uranium Mining Threatens Our Home, the Grand Canyon*, HIGH COUNTRY NEWS (Apr. 14, 2020), <https://www.hcn.org/articles/indigenous-affairs-mining-uranium-mining-threatens-our-home-the-grand-canyon> [<https://perma.cc/WZ8M-3XFQ>]; see also *Pinyon Plain Mine (formerly Canyon Uranium Mine)*, U.S. FOREST SERV., https://www.fs.usda.gov/detail/kaibab/home/?cid=FSM91_050263 [<https://perma.cc/A9SR-NMME>].

10. *Havasupai Tribe v. Provencio*, 906 F.3d 1155, 1159 (9th Cir. 2016).

11. U.S. FOREST SERV., *supra* note 9.

12. *Pinyon Plain Mine*, ENERGY FUELS, <https://www.energyfuels.com/pinyon-plain-mine> [<https://perma.cc/22LZ-2NHY>].

13. *Id.*

14. Watahomigie-Corliss, *supra* note 9.

15. See MARK B. MATHISEN ET AL., ENERGY FUELS RESOURCES (USA) INC. – TECHNICAL REPORT ON THE CANYON MINE, COCONINO COUNTY, ARIZONA, U.S.A. 5–2 (2017).

16. *Id.*

in the 1980s.¹⁷ Due to the ongoing increase in uranium prices, it is expected that Energy Fuels will continue to pursue commencement of the Canyon Mine.

Part II: Jurisdiction over the land and the Mine

Determining who has control over decisions concerning the Mine, its land, and nearby lands is a complicated and nuanced task. There are multiple laws that govern the control of public lands, forest lands, and Tribal lands.

First, the passage of the General Mining Law of 1872 authorized individuals to stake and submit claims to mine land on National Forest lands.¹⁸ Individuals were able to claim public lands that contained minerals and were able to mine that land subject to a Plan of Operations and the National Environmental Protection Act (“NEPA”).¹⁹ In 1897, the Organic Administration Act was passed, creating the National Forest System.²⁰ This Act continued to allow the exploration and development of mineral resources as long as the developer of the minerals complied with the rules and regulations of the land.²¹ The Mining and Minerals Policy Act of 1970 further clarified the United States’ goal of developing mineral resources, and those minerals included the development of uranium mining.²² Finally, the Federal Land Policy and Management Act (“FLPMA”) of 1976 declared the Bureau of Land Management (“BLM”) in charge of National Forest lands.²³

The property of Canyon Mine is located within Kaibab National Forest, a public forest managed by the U.S. Forest Service.²⁴ The U.S. Forest Service is housed under BLM. In 1978, Gulf Mineral Resources laid claim to the Mine.²⁵ Energy Fuels Resources (“Energy Fuels”) acquired a 100 percent ownership interest in the property and Mine in 2012.²⁶ There are nine total claims that make up the Mine.²⁷ These claims are unpatented and in good

17. *Uranium*, TRADING ECON., <https://tradingeconomics.com/commodity/uranium> [<https://perma.cc/R8LL-HZW4>].

18. General Mining Act of 1872, 30 U.S.C. § 22.

19. *See id.*

20. Organic Administration Act of 189, 16 U.S.C. § 473–475, 477–482, 551.

21. GENERAL LAND OFFICE, DEP’T OF INTERIOR, RULES AND REGULATIONS GOVERNING FOREST RESERVES (1897).

22. Mining and Minerals Policy Act of 1970, 30 U.S.C. § 21(a).

23. Federal Land Policy and Management Act of 1976 (FLPMA), 43 U.S.C. § 1731.

24. MARK B. MATHISEN ET AL., *supra* note 15, at 1–6 (2017).

25. *Id.*

26. *Id.*

27. *Id.*

standing.²⁸ An unpatented mining claim is a claim in which the ownership and management of the surface and surface resources remains with the U.S. but the claim owner has a right to the property “restricted to exploration, development and extraction of a mineral deposit at the site.”²⁹ The claim owner has the exclusive right to explore and extract minerals from the claimed property as long as the claim remains active, but the Forest Service can examine the claim at any time to determine if valid rights still exist.³⁰ If the Forest Service finds that valid rights do exist, it must allow the claim owner to continue exploration and development of minerals on the property.³¹

In 2012, the Forest Service withdrew over one million acres of land surrounding the Grand Canyon from new uranium mining claims (“2012 Uranium Mining Withdrawal” or “Withdrawal”).³² However, since Canyon Mine was already valid and existing at the time of the ban, the land the Mine is on is not subject to the Withdrawal.³³ Instead, the land underlying the Mine is segregated to allow for continued operations, while the land around the Mine is withdrawn. This is known as “grandfathering” in the Mine.³⁴

Since the Mine is on federal public land, the Mine operations and Energy Fuels need to comply with federal and state laws. This includes making an Environmental Impact Statement (“EIS”) under NEPA in addition to complying with the laws of the state of Arizona; according to FLPMA, the Secretary of the Interior shall notify states of lands being conveyed “in order to afford the appropriate body the opportunity to zone or otherwise regulate . . . the use of such lands prior to such conveyance.”³⁵

Under federal law, the Forest Service lays out multiple steps that must be completed by Energy Fuels before commencing mining. First, Energy Fuels must submit a Plan of Operations to be approved by the Forest Service, detailing the operations and activities Energy Fuels expects to commence.³⁶ Energy Fuels must also submit an EIS that details the potential

28. *Id.*

29. Bureau of Land Mgmt., *Buying a Mining Claim: Important Information You Should Know*, U.S. DEP’T OF THE INTERIOR, https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd789881.pdf [<https://perma.cc/4K69-ZUYB>].

30. *Id.*

31. *Id.*

32. *Kaibab National Forest: Mineral Validity Examination*, U.S. FOREST SERV., <https://www.fs.usda.gov/detail/kaibab/home/?cid=stelprdb5376026> [<https://perma.cc/PP6B-7DH9>] [hereinafter *Mineral Validity Examination*].

33. *Id.*

34. *Id.*

35. 43 U.S.C. § 1720 (1976).

36. See 36 C.F.R. § 228.4(a), (c) (2022).

impacts of the Mine to the environment.³⁷ The EIS process must include consultation with the Fish and Wildlife Service for approval.³⁸ In addition, Energy Fuels must consult affected Indian tribes under the American Indian Religious Freedom Act.³⁹ Finally, Energy Fuels must obtain a National Pollutant Discharge Elimination System permit and National Emission Standards for Hazardous Air Pollutants approval from the Environmental Protection Agency (“EPA”) since the Mine is constructing an underground uranium mine and uranium is hazardous.⁴⁰

Within Arizona State law, the National Historic Preservation Act decrees that Energy Fuels must consult the Arizona State Historic Preservation Office to ensure compliance with this law.⁴¹ Energy Fuels must also obtain permits from the Arizona Department of Environmental Quality (“ADEQ”).⁴² These permits include an Aquifer Protection Permit, an Air Quality Control Permit, an Ore Stockpile and Development Rock Stockpile permit and a Storm Water Multi-Sector General Permit.⁴³

Arizona has both general and individual permits. General permits are more lenient than individual permits. General permits contain voluntary conditions and are not subject to public comment.⁴⁴ Individual permits assume that the Mine can contaminate groundwater and is often accompanied by site-specific requirements that reduce the risk of contamination and involve continued monitoring.⁴⁵ In 1993, the Mine operators applied for individual permits, which were denied due to “deficiencies.”⁴⁶ The operators did not apply for another permit until 2008, when uranium prices were rising. This time the operators applied for a general permit.⁴⁷ The general permit was also denied, this time due to inadequacies with the impoundment

37. *Id.*

38. *Id.*

39. *Id.*

40. *Id.*; see also *Radioactive Waste from Uranium Mining and Milling*, U.S. ENV'T. PROT. AGENCY (July 29, 2022), <https://www.epa.gov/radtown/radioactive-waste-uranium-mining-and-milling#:~:text=Underground%20mines%20can%20present%20a,replacing%20it%20with%20fresh%20air> [<https://perma.cc/93GF-444F>] (indicating the hazards of underground uranium mines).

41. U.S. FOREST SERV., *supra* note 32.

42. MATHISEN ET AL., *supra* note 15, at 4–2.

43. *Id.*

44. Amber Reimondo, *Problems at Canyon Mine: A New Report*, GRAND CANYON TRUST (Apr. 28, 2020), <https://www.grandcanyontrust.org/blog/problems-canyon-mine-new-report>, [<https://perma.cc/QN8D-P5S8>].

45. *Id.*

46. *Id.*

47. *Id.*

lining.⁴⁸ Following the election of a new governor affiliated with a different political party, the operators applied once again for a general permit, which was granted.⁴⁹ With the general permit, the operators were able to continue developing the mine shaft. However, in 2020, the ADEQ reviewed the permit and declared that Energy Fuels needed an individual permit, not a general one.⁵⁰ Energy Fuels applied for an individual permit in November of 2020, and in April of 2022, ADEQ approved the individual permit application despite continued public objections.⁵¹

Finally, even though the Mine is on federal public lands, the federal government automatically reserves water rights for Indian tribes upon the creation of a reservation for the tribe.⁵² This reservation includes enough water to change the use of their land, such as use the land for agricultural purposes, and it applies to both surface and ground water.⁵³ For the Havasupai Tribe, this reserved water is Havasu Creek.⁵⁴ If the Mine has the potential to impact Havasu Creek, the Mine may conflict with Supreme Court decrees to reserve enough water for tribal lands, further complicating the jurisdictional issues of the Mine.

Part III: How the Canyon Mine could negatively impact the Havasupai Tribe

This section will explore four ways that uranium mining can affect the people of the Havasupai Tribe: by damaging their health, by contaminating their drinking water, by impairing their crops and cattle, and by disrupting their cultural and religious views and ceremonies.

Before exploring these, it is important to understand how uranium can contaminate the water supply of the Havasupai Tribe. Uranium is a

48. *Pinyon Plain Mine: Arizona Permitting*, ARIZ. DEP'T ENV'T QUALITY, (Apr. 28, 2022, 1:57 PM), <https://www.azdeq.gov/PinyonPlainMine> [<https://perma.cc/S95B-3LS3>].

49. Reimondo, *supra* note 44.

50. CANYON MINE INDIVIDUAL AQUIFER PROTECTION PERMIT (APP), ARIZ. DEP'T ENV'T QUALITY (Oct. 30, 2020), <http://www.cpwac.org/presentationfiles/canyon%20mine%2010%2030%2020.pdf> [<https://perma.cc/A3GR-Q9AE>].

51. *Id.*; ARIZ. DEP'T ENV'T QUALITY, EXECUTIVE SUMMARY: PINYON PLAIN MINE AQUIFER PROTECTION PROGRAM PERMIT No. P-100333 1 (2022), https://static.azdeq.gov/wqd/pinyonplain/2022_indpermit_es.pdf [<https://perma.cc/B4PX-U57>].

52. *See* *Winters v. United States*, 207 U.S. 564, 576 (1908).

53. *See id.* at 577; *see also* *Cappaert v. United States*, 426 U.S. 128, 143 (1976).

54. Complaint for Declaratory Judgment and Injunctive Relief at 12, *Havasupai Tribe v. Anasazi Water Co.*, No. 3:16-cv-08290-ESW (D. Ariz. Dec. 5, 2016).

radioactive element, usually found as an ore, or bonded to oxygen atoms.⁵⁵ Radioactive elements have atoms with unstable nuclei.⁵⁶ These elements give off radiation to constantly transform into a more stable version of themselves.⁵⁷ Uranium ore deposits are, therefore, fairly stable in their natural state underground when left untouched.⁵⁸ However, the addition of more oxygen to uranium ore deposits by sources such as air or water causes a reaction.⁵⁹ This reaction, called oxidation, can occur when air or water touches uranium ore that is deep underground, such as when a mine shaft is created or when a mine floods.

Once the element reacts with oxygen, the uranium becomes available to dissolve in water.⁶⁰ Once the uranium dissolves in the water, the water carries the contaminants with it wherever it goes; this is called leaching, which is the process of water carrying contaminants through layers of soil and rock until it mixes with groundwater resources, contaminating groundwater supplies.⁶¹ Groundwater then recharges aquifers.⁶² Therefore, if water comes into contact with uranium deposits, the uranium will dissolve in the water and be carried with the groundwater into an aquifer. Uranium atoms typically have very long half-lives of 4.5 billion years, meaning that it would take 4.5 billion years for half of the radioactive atoms of the uranium to decay.⁶³ Applied to Canyon Mine, if the uranium from the Mine comes into contact with water, it can be carried down through groundwater and contaminate the Redwall-Muav Aquifer.⁶⁴ This Aquifer directly feeds

55. *Radionuclide Basics: Uranium*, U.S. ENV'T PROT. AGENCY (July 5, 2022), <https://www.epa.gov/radiation/radionuclide-basics-uranium> [<https://perma.cc/8KPQ-N2LA>].

56. *Radiation Basics*, U.S. ENV'T PROT. AGENCY (June 24, 2022), <https://www.epa.gov/radiation/radiation-basics> [<https://perma.cc/GMR7-6Q62>].

57. *Radioactive Decay*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/radiation/radioactive-decay> [<https://perma.cc/YQC8-M2M2>].

58. Reimondo, *supra* note 44.

59. *Id.*

60. *See Uranium - U*, LENNTECH, <https://www.lenntech.com/periodic/elements/u.htm#:~:text=In%20water%20most%20of%20the,water%20are%20generally%20very%20low>, [<https://perma.cc/RQ4J-LUW5>].

61. Justin Richardson, *What is Leaching?*, NAT'L CRITICAL ZONE OBSERVATORIES (July 1, 2016), <https://czo-archive.criticalzone.org/national/blogs/post/what-is-leaching/>, [<https://perma.cc/Z7GV-97US>].

62. KATJA LUXEM, *MANAGED AQUIFER RECHARGE 1* (2017).

63. *What is Radiation? Properties of Radioactive Isotopes*, CTR. FOR DISEASE CONTROL, <https://www.cdc.gov/nceh/radiation/isotopes.html> [<https://perma.cc/J2BN-NL37>].

64. Amber Reimondo, *Why Is Grand Canyon Uranium Mining a Problem?*, GRAND CANYON TRUST (Oct. 20, 2021), <https://www.grandcanyontrust.org/blog/why-grand-canyon-uranium-mining-problem> [<https://perma.cc/6TVV-2FQX>].

Havasú Creek, the sole source of water for the Havasupai Tribe, and could stay in the water for billions of years.

With the potential for uranium to contaminate the Havasupai Tribe's sole water source, uranium mining can have many negative effects on its members.

A. How uranium mining can contaminate Havasú Creek, thereby contaminating the water of the Havasupai Tribe

The EPA sets the maximum contaminant level of uranium at thirty micrograms/liter ($\mu\text{g}/\text{L}$) for drinking water.⁶⁵ This means that any level of uranium above thirty $\mu\text{g}/\text{l}$ is considered unsafe to consume.⁶⁶ Havasú Creek is currently below that level,⁶⁷ but uranium mining has the potential to increase the amount of uranium in the water, thus pushing levels above that which is safe to drink. There are several examples of this scenario occurring.

Perhaps the most well-known example is that of Navajo Nation. Companies mined uranium on Navajo Nation land from 1944 to 1986.⁶⁸ Despite assurances that mines would be reclaimed, or restored, upon the closing of the mine, as of 2019, 305 mines have sat unreclaimed since they stopped producing uranium, allowing contaminants to seep into Navajo water supplies for more than forty years.⁶⁹ This is not uncommon: a study by the Center for Public Integrity revealed that mining companies exploit lenient laws to allow mines to sit unreclaimed, maintaining that they're waiting for prices to rise when in reality the mines never reopen.⁷⁰ In 2008, twenty-two years after mining halted, the EPA took thirty-eight water samples from across

65. 40 C.F.R. § 141.66(e) (2000).

66. See *Radionuclides Rule*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/dwreginfo/radionuclides-rule> [https://perma.cc/BAT8-DV9G].

67. See PLAN TO REDUCE HARM FROM HAZARDS TO HAVASU BAAJA, HAVASUPAI TRIBAL COUNCIL 105 (2022), <https://www.theofficialhavasupaitribe.com/files/Havasupai-Hazard-Mitigation-Plan-2022-Draft-Nov.-18-2022.pdf> [https://perma.cc/NMK9-ZHZA].

68. Letter from Jonathan Nez & Myron Lizer from the Navajo Nation to the House Committee on Natural Resources and Subcommittee on Energy and Mineral Resources on Uranium Mining (July 12, 2019), in CONTAMINATION AND CRITICALITY AND H.R. 3405, THE URANIUM CLASSIFICATION ACT OF 2019.

69. See NEZ & MYRON, *supra* note 68, at 1–2.

70. Mark Olalde & Joe Yerardi, *While 'Zombie' Mines Idle, Cleanup and Workers Suffer in Limbo*, THE CTR. FOR PUB. INTEGRITY (Sept. 4, 2019), <https://publicintegrity.org/environment/while-zombie-mines-idle-cleanup-and-workers-suffer-in-limbo/> [https://perma.cc/Q688-HEQM].

Navajo Nation.⁷¹ Eight of the thirty-seven samples, or about 21.6 percent, contained uranium levels above thirty $\mu\text{g}/\text{L}$, and six more of the samples, or about 16.2 percent, contained uranium levels between twenty and thirty $\mu\text{g}/\text{L}$.⁷² The highest recorded concentration was $260\mu\text{g}/\text{L}$.⁷³

In 2010, in response to protest about the 2012 Uranium Mining Withdrawal, the United States Geological Survey conducted a study (“USGS Study”) on Grand Canyon lands, examining 1,014 water samples from 428 sites.⁷⁴ The study found that seventy samples, or about 7 percent, “exceeded the primary or secondary maximum containment levels’ for certain ions and trace elements, including uranium and other heavy metals.”⁷⁵ In addition, soil samples from six sites were taken, including sites with reclaimed uranium mines, approved but suspended mines, and exploratory sites.⁷⁶ The study found that “consistently high concentrations of uranium and arsenic were discovered at these sites.”⁷⁷ The experience of Navajo Nation and other unreclaimed uranium mines show the risk is real and clear, and that Canyon Mine has the same potential to contaminate groundwater around the mine and infiltrate the Aquifer that feeds Havasu Creek, contaminating the only source of water the Havasupai Tribe has.

Radionuclides have already been found in Havasu Creek as of 2015.⁷⁸ Even though the reason for the high-than-average concentrations of radionuclides is unknown, an increase, an increase in radionuclides can be detrimental to Havasu Creek and push levels past safe limits, just as it did in Navajo Nation. If radionuclides are already being found in Havasu Creek, the creek should not be subject to any further potential contamination, which would harm the Havasupai Tribe.

The 1986 FEIS itself acknowledges the potential for groundwater contamination. First, the 1986 FEIS looks to past uranium mining, stating that “adverse environmental impacts [were] identified with past uranium mine activities in Northeastern Arizona and Northwestern New Mexico such as

71. U.S. ENV’T PROT. AGENCY, NAVAJO NATION DRINKING WATER SOURCE SAMPLING FEBRUARY – MARCH, 2008, TDD No. T05-09-07-11-0001 (Aug. 28, 2008).

72. *Id.*

73. *Id.*

74. Nat’l Mining Ass’n v. Zinke, 877 F.3d 845, 858 (9th Cir. 2017).

75. *Id.* (quoting, in part, the USGS Scientific Investigations Report 2010-5025).

76. *Id.*

77. *Id.*

78. *Water Quality of the Grand Canyon*, NAT. PARK SERVICE, <https://www.nps.gov/grca/learn/nature/waterquality.htm> [https://perma.cc/S7CT-VERV].

radionuclide contamination of surface and ground water.”⁷⁹ Therefore, those who approved the 1986 FEIS were aware that radionuclide contamination of groundwater and surface water was a consequence of uranium mining.

The 1986 FEIS attempts to minimize surface water contamination risk by stating that only in an extreme flood event could radionuclides contaminate the water around Canyon Mine: “An extreme flood event exceeding that to be expected once every 500 years, followed by a total loss of the mine site diversion structures, could release several Curies, or non-SI radioactive units, of radioactivity from the ore piles to the downstream wash.”⁸⁰ Several Curies may not seem like a lot, but put in perspective the EPA radium limit for drinking water is 5.0 picocuries, or five-trillionths of one Curie.⁸¹ In addition, a 500-year flood does not mean that a flood of that magnitude will only occur once every 500 years as the wording implies. It means that each year, there is a one-in-five-hundred chance of a flood of that magnitude occurring.⁸² Therefore, a 500-year flood could occur multiple years in a row. A one-in-500 chance seems relatively low; however climate change has made this metric unreliable. In the era of climate change, 500-year floods are happening more and more often with less and less predictability.⁸³ For example, Houston had a 500-year flood in 2015, 2016, and 2017.⁸⁴ In fact, the flows that 500-year floods are based on now occur about every 24.4 years.⁸⁵ Therefore, the event of a flood occurring that could release radioactivity to downstream wash now has a one in 24.4 chance of occurring every year, and as has been documented, could in fact occur much more frequently.

Turning to look at groundwater, the 1986 FEIS was built on the idea that the Mine would be a “dry” mine, meaning that the shaft of the Mine would not reach below the water table and thus would remain dry

79. U.S. FOREST SERV. & U.S. DEP’T OF AGRIC., FINAL ENVIRONMENTAL IMPACT STATEMENT CANYON URANIUM MINE (1986), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5346657.pdf [<https://perma.cc/F2SC-RCP4>].

80. *Id.*

81. *Radiation Terms and Units*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/radiation/radiation-terms-and-units> [<https://perma.cc/933P-C7ND>].

82. Chris D’Angelo, *Climate Change Has ‘Loaded The Dice’ On The Frequency Of 100-Year Floods*, THE HUFFINGTON POST (Aug. 30, 2017), https://www.huffpost.com/entry/100-year-flood-climate-change_n_59a6eaa3e4b084581a14ea14 [<https://perma.cc/KA8Q-EHMA>].

83. *Id.*

84. *Id.*

85. Andra J. Reed et al., *Increased Threat of Tropical Cyclones and Coastal Flooding to New York City During the Anthropogenic Era*, 41 PNAS 12610 (2015), <https://www.pnas.org/content/112/41/12610> [<https://perma.cc/PRT5-X92E>].

throughout the entire mining process.⁸⁶ However, in 2017 when the shaft reached its operational level of 1,470 feet, it experienced significant amounts of flooding which continue to this day.⁸⁷ In fact, the 1986 FEIS was founded on the assumption that flow of any water into the mine shaft would be less than 0.3 gallons per minute, but as of 2019 the flow was measured at 20.4 gallons per minute, which is nearly seventy-five times more than the original assumption.⁸⁸ As of 2020, Energy Fuels has had to pump out more than thirty million gallons of water – water that is contaminated with uranium and arsenic several times the EPA’s safe drinking water standards.⁸⁹ This water exceeds the federal toxicity limits for uranium by over 300 percent and the limits for arsenic by over 2,800 percent.⁹⁰ This water was pumped into a lined impoundment at first, minimizing the risk of groundwater contamination, but flooding became so severe that Energy Fuels resorted to spraying the contaminated water into the air for “enhanced evaporation” through four systems, which were approved for use by ADEQ.⁹¹ While the State of Arizona reviewed the impoundment and stated that the techniques were safe, that determination was based on the contaminated water being sprayed over lined land.⁹² However, wind can cause sprayed water to fall over unlined land, and Energy Fuels has admitted using contaminated water for “dust suppression” on unlined land.⁹³ Spraying contaminated water onto unlined land can leach into the groundwater, and thereby the Aquifer. Doing so violated multiple state laws, including Energy Fuels’ air quality permit, but in the individual permit approval, ADEQ approved the use of water for this dust suppression, adding that doing so was acceptable

86. Reimondo, *supra* note 44.

87. Reimondo, *supra* note 44.

88. AMBER REIMONDO, CANYON MINE: WHY NO URANIUM MINE IS “SAFE” FOR THE GRAND CANYON REGION, GRAND CANYON TRUST 21 (2020), https://www.grandcanyontrust.org/sites/default/files/resources/Canyon_Uranium_Mine_Report_April_2020.pdf [<https://perma.cc/E7CD-PDFC>].

89. *Id.*

90. Press Release, Ctr. for Biological Diversity, Arizona to Permit Grand Canyon Uranium Mine Despite Ongoing Flooding, Water Contamination (Jun. 24, 2021), <https://biologicaldiversity.org/w/news/press-releases/arizona-to-permit-grand-canyon-uranium-mine-despite-ongoing-flooding-water-contamination-2021-06-24/> [<https://perma.cc/2NM9-8HQ4>].

91. MATHISEN ET. AL., *supra* note 44, at 18; Reimondo, *supra* note 44; REIMONDO, *supra* note 88, at 18.

92. *Pinyon Plain Mine (formerly Canyon Mine) | FAQs (Updates in Progress): Page 3 of 7*, ARIZ. DEPT. OF ENV’T QUALITY <https://azdeq.gov/PinyonPlainMine/FAQ?page=0%2C2> [<https://perma.cc/ZFA6-TWUU>].

93. Reimondo, *supra* note 44.

if the water first passed through a water treatment system.⁹⁴ ADEQ only requires that Energy Fuels maintain monthly “records of water treatment system maintenance,” and any operational performance levels that ADEQ requires are left up to the permittee, Energy Fuels to investigate and rectify.⁹⁵ The potential to contaminate groundwater is much higher today than the 1986 FEIS concluded. For groundwater contamination to occur, the water would need to infiltrate the Aquifer to impact Havasu Creek.

The 1986 FEIS, the State of Arizona, and Energy Fuels all claim that even if uranium were to leach into the groundwater, the groundwater is “unlikely” to reach the Aquifer due to an assumed impermeable rock layer between the groundwater and the Aquifer.⁹⁶ However, the hydrogeology of the Grand Canyon is incredibly complex and not well-studied.⁹⁷ The 1986 FEIS acknowledges that “the existing data do not allow for an exact determination of the direction of groundwater flow in the Redwall-Muav aquifer at the mine site.”⁹⁸ Even ADEQ in its most recent permit approval admits that there are “uncertainties in regional structural geology and its effect on flow.”⁹⁹ This means that, in short, no one knows. Even if the aforementioned entities are right in optimistically assuming that the bedrock directly below the mine is impermeable, the groundwater may be flowing to another site where the bedrock *is* permeable. The 1986 FEIS also estimated that groundwater in the drainage area of the Mine *did* actually contribute to groundwater recharge, although it estimated a small amount.¹⁰⁰ However, given the little-studied geology of the area, this number could be much higher, and ADEQ admits that:

ADEQ recognizes that there are aquifers within the region, including the South Rim of the Grand Canyon, which may be susceptible to pollution from surface sources. Tracer testing of karst features north of the Grand Canyon . . . shows this concern is valid. ADEQ agrees with the need to continue

94. Reimondo, *supra* note 44; see also *Pinyon Plain Mine (formerly Canyon Mine) | FAQs (Updates in Progress): Page 4 of 7*, ARIZ. DEPT. OF ENV'T QUALITY, <https://www.azdeq.gov/PinyonPlainMine/FAQ?page=0%2C3> [<https://perma.cc/XS2B-9FQV>].

95. Arizona Department of Environmental Quality, State of Arizona Aquifer Protection Permit No. P-100333 Place ID 827, LTF 84446, New Individual APP, at 2.6.2.1, https://static.azdeq.gov/wqd/pinyonplain/2022_indpermit.pdf [<https://perma.cc/5BTv-8KZ7>].

96. U.S. FOREST SERV. & U.S. DEP'T OF AGRIC., *supra* note 79, at 586.

97. REIMONDO, *supra* note 88, at 11–13.

98. U.S. FOREST SERV. & U.S. DEP'T OF AGRIC., *supra* note 79, at 587.

99. ARIZONA DEP'T OF ENV'T QUALITY, SUMMARY AND RESPONSE TO PUBLIC COMMENTS: ENERGY FUELS RESOURCES (USA) INC. (EFRI) PINYON PLAIN MINE 10 (2022).

100. U.S. FOREST SERV. & U.S. DEP'T OF AGRIC., *supra* note 79, at § 3.36 – § 3.37 (estimating that 0.3 inches of water per year contributes to groundwater recharge).

research of the regional groundwater systems, and is therefore requiring controls, monitoring, and characterization of the site-specific conditions.¹⁰¹

The 2012 Uranium Mining Withdrawal was made, in part, over uncertainty on how groundwater may be impacted by uranium mining.¹⁰² The BLM admitted there was likely a low probability of groundwater contamination from mining, but it “ultimately concluded that the uncertainties, coupled with even a low potential for major adverse effects, warranted a level of precaution that justified the Withdrawal.”¹⁰³ The Withdrawal was upheld in court, in part, since “[t]he USGS Report, final EIS, and ROD [Record of Decision] all acknowledged substantial uncertainty regarding water quality and quantity in the area, [and] the possible impact of additional mining on perched and deep aquifers”¹⁰⁴

A comprehensive geological study was conducted in 2011 in an attempt to better understand the geology of the area, but the study indicated major gaps in knowledge of the Aquifer and concluded that groundwater flow is difficult to identify.¹⁰⁵ However, even as of the 1986 FEIS, the EPA knew that the soils around the Mine site consisted mostly of loams, which have less than 50 percent clay in their composition, making the soils more permeable and subject to drainage.¹⁰⁶ In addition, the USGS Study reported that “fractures, faults, sinkholes, and breccia pipes occurred throughout the region and were potential pathways for contaminants, including uranium and arsenic, to migrate through groundwater.”¹⁰⁷ Overall, the claims that the EPA, the State of Arizona, and Energy Fuels make are based on general assumptions from studies that have no exact conclusions and therefore should not be relied upon to assume any measure of safety. The USGS has also outright claimed that the geology of the region could contribute to groundwater contamination, directly contradicting the 1986 FEIS.¹⁰⁸ Finally,

101. ARIZONA DEP’T OF ENV’T QUALITY, *supra* note 99, at 13.

102. *Yount v. Salazar*, No. CV11-8171 PCT-DGC, 2014 U.S. Dist. LEXIS 128505, at *1, *50 (D. Ariz. Sept. 30, 2014) (stating that “Moreover, although it is true as Plaintiffs contend that the data was sparse and the uncertainties substantial in this investigation, BLM openly acknowledged uncertainty on how water resources might be impacted.”).

103. *Id.* (noting that despite BLM’s admission, “the Court does not find this arbitrary or capricious.”).

104. *Nat’l Mining Ass’n v. Zinke*, 877 F.3d 845, 859 (9th Cir. 2017).

105. D.R. POOL ET AL., REGIONAL GROUNDWATER-FLOW MODEL OF THE REDWALL-MUAV, COCONINO, AND ALLUVIAL BASIN AQUIFER SYSTEMS OF NORTHERN AND CENTRAL ARIZONA 1 (2011), <https://pubs.usgs.gov/sir/2010/5180/> [<https://perma.cc/P9KG-BYEF>].

106. U.S. FOREST SERV. & U.S. DEP’T OF AGRIC., *supra* note 79, at 555.

107. *Nat’l Mining Ass’n*, 877 F.3d at 858.

108. *Id.* at 867–68.

even if their assumptions were taken at face value and a water quality monitoring program was set up, the program would be retrospective and only detect contamination when it was too late to stop it.¹⁰⁹ Even the Arizona District Court acknowledged that by the time contamination occurred it would be too late to stop it, but stated that it was not “standard” to implement a reclamation system before contamination occurs.¹¹⁰ In addition, as shown by events at other uranium mines, it can take decades or more for any uranium to actually show up in the groundwater due to complex geology, meaning that even if current studies are showing no contamination, Canyon Mine could still be a threat to future members of the Havasupai Tribe.¹¹¹ There is not enough scientific evidence to show that Canyon Mine is not a threat to Havasu Creek.

B. How uranium mining can negatively affect the health of tribal members

In addition to uranium contaminating the drinking supply of the Havasupai Tribe, the radioactivity from uranium mining can directly impact health of tribal members. Looking once again to Navajo Nation, the Navajo Nation banned uranium mining in 2005, its President stating that “hundreds of Navajo uranium miners have died as a result of exposure to radioactivity and uranium, whether by mining, dust, contaminated water or contaminated livestock.”¹¹² The President continued “I don’t want to subject any more of my people to exposure, to uranium and the cancers that it causes.”¹¹³ More than 500 abandoned uranium mines remain on Navajo Nation alone, and over 25 percent of Navajo women and newborn babies have been found to have elevated levels of uranium in their bodies.¹¹⁴ Other

109. Reimondo, *supra* note 44.

110. *Havasupai Tribe v. United States*, 752 F. Supp. 1471, 1502 (D. Ariz. 1990), *aff’d*, 943 F.2d 32 (9th Cir. 1991).

111. Ryan Heinsius, *Report Shows Most Grand Canyon Groundwater Meets Federal Uranium Standards*, KANU NEWS TALK (Nov. 18, 2021), <https://www.knau.org/knau-and-arizona-news/2021-11-18/report-shows-most-grand-canyon-groundwater-meets-federal-uranium-standards> [https://perma.cc/Z3HF-9FES].

112. Press Release, Navajo Nation, Navajo Nation President Joe Shirley, Jr. Signs Diné Nat. Resources Prot. Act of 2005 (Apr. 30, 2005), <https://www.nrc.gov/docs/ML0721/ML072150169.pdf> [https://perma.cc/RWY6-SZCU].

113. *Id.*

114. *Navajo Nation: Cleaning Up Abandoned Uranium Mines*, ENV’T PROT. AGENCY, <https://www.epa.gov/navajo-nation-uranium-cleanup/abandoned-mines-cleanup> [https://perma.cc/55DH-H9FA]; *see also* REIMONDO, *supra* note 88, at 10.

Grand Canyon tribes have since banned uranium mining on their land, including the Havasupai Tribe, the Hopi Tribe, and the Hualapai Tribe.¹¹⁵

The 1986 FEIS for Canyon Mine itself acknowledges that there are adverse impacts associated with uranium mining. For example, it states that “adverse environmental impacts identified with past uranium mine activities in Northeastern Arizona and Northwestern New Mexico [include] . . . radon gas emissions affecting the health of mine workers and a general degradation of the environment.”¹¹⁶ Although the 1986 FEIS states that any transportation of the mined ore will not pose dangers to people along the routes, it admits that “a few accidents may occur during the life of the mine when ore spillage occurs.”¹¹⁷ It goes on to state that timely cleanup of any spills will not pose a health hazard from the ore, however, that is assuming that any spills are, actually, cleaned up thoroughly and quickly.¹¹⁸ However, in contradiction to the 1986 FEIS statement, the 2012 Uranium Mining Ban was, in part, upheld due to “substantial uncertainty regarding . . . the effect of radionuclide exposure on plants, animals, and humans.”¹¹⁹

Uranium mining won’t just affect people, it will also affect the wildlife, cattle, and crops that rely on Havasu Creek. The low availability of water in the area leads wildlife to consume water wherever they can find it.¹²⁰ This makes wildlife more likely to drink water from Havasu Creek, even if it becomes contaminated. It also makes wildlife more likely to use the highly contaminated water Energy Fuels is currently spraying over the land. Finally, the cattle and crops themselves can also be directly affected by radiation, and any contaminated water used by the Havasupai Tribe to grow crops and feed cattle would increase their exposure to contamination.

C. How uranium mining impacts the Havasupai’s cultural and religious ceremonies

Canyon Mine has the potential to damage the culture and religion of the Havasupai Tribe, despite protections such as the American Indian Religious Freedom Act, which was enacted to “protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Inuit, Aleut, and Native

115. *Four Arizona Tribes Ban Uranium on Their Lands*, INDIANZ.COM, (Sept. 17, 2009), https://www.indianz.com/News/2009/09/17/four_arizona_tribes_ban_uraniu.asp [<https://perma.cc/2BN7-7BE2>].

116. U.S. FOREST SERV., *supra* note 79, at 474.

117. *Id.* at 475.

118. *Id.*

119. Nat’l Mining Ass’n v. Zinke, 877 F.3d 845, 859 (9th Cir. 2017).

120. U.S. FOREST SERV., *supra* note 79, at 570.

Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.”¹²¹ In practice, all this means is that agencies must “consider” religious sites and how agency actions might interfere with Tribal religions; no part of the American Indian Religious Freedom Act mandates that agencies respect religious sites.

While agencies such as the EPA consult with tribes when approving projects, this consultation often results in little action. Tribes are often hesitant, or outright unwilling, to disclose any information about their sacred sites and practices due to a lack of protection of the information from the public, the possibility of destruction of sites, or inaccurate information getting out.¹²² Part of the culture of caution around religious practices for tribes stems from a history of forced religious assimilation in tribes.¹²³ Therefore, even if an agency does a proper consultation with a tribe, the agency is unlikely to get an accurate assessment of the importance of an area to a tribe.

The 1986 FEIS concluded that no religious or cultural sites would be disturbed and the Mine may only slightly reduce the amount of land available for religious practices.¹²⁴ The agency conducted “an archeological review of the site and consultation with affected Tribes,” stating that these efforts “have failed to identify any specific Hopi or Havasupai sites of sacred or religious significance near the proposed mine.”¹²⁵ However, as discussed above, tribes are often secretive about their religious sites and therefore unwilling to identify specific sites. In addition, the agency indicated it was looking for tribes to point out specific sites, when a tribe might have cultural or religious ties to a non-specific area.

For example, the Havasupai Tribe views the water from Havasu Creek itself to be sacred.¹²⁶ The water from Havasu Creek comes from all over the Grand Canyon region; it is not a specific site to point at to protect.¹²⁷

121. 42 U.S.C. § 1996.

122. UCLA SCHOOL OF LAW NATIVE NATIONS LAW & POLICY CENTER, THE NEED FOR CONFIDENTIALITY WITHIN TRIBAL CULTURAL RESOURCE PROTECTION 6 (2020), https://law.ucla.edu/sites/default/files/PDFs/Native_Nations/239747_UCLA_Law_publications_Confidentiality_R2_042021.pdf [<https://perma.cc/G9N8-2EX3>].

123. *Id.*

124. U.S. FOREST SERV., *supra* note 79, at 476.

125. *Id.* at 608.

126. Kissoon, *supra* note 8.

127. Press Release, Indigenous Action, Federal Judge OKs Uranium Mining Next to Grand Canyon National Park (Apr. 8, 2015), <https://www.indigenousaction.org/press-release-federal-judge-oks-uranium-mining-next-to-grand-canyon-national-park/> [<https://perma.cc/K58F-84Y8>] (explaining that “[g]roundwater

However, even specific sites were ignored by the agency. The Hopi Tribe expressed beliefs to the EPA that the land the Mine is on is sacred and should not be subject to commercial exploitation.¹²⁸ However, the EPA basically ignored this, stating that “it is acknowledged that commercial use of the Forest within the area of Hopi ancestral occupancy is inconsistent with these stated religious beliefs.”¹²⁹ EPA approved the commercial use of the land anyway.

The land underlying the Mine is sacred to the Havasupai Tribe as well – the Mine is on Red Butte, the sacred mountain of the Havasupai Tribe and the origin point of their creation story.¹³⁰ The Havasupai Tribe believes the land itself gives a place its sacredness – if the land is altered or destroyed in any way or amount, the spirituality the land holds is destroyed.¹³¹ Therefore, according to the Havasupai people, Canyon Mine “prevents our tribal members from visiting this sacred place to engage in many of our cultural traditions such as harvesting medicinal plants.”¹³² Many members of the public would likely be outraged if a mine was going to operate in the Vatican despite papal objections, and Red Butte holds no less importance to the Havasupai Tribe. Any alteration of the sacred land poses a threat to the religious and cultural practices of the Havasupai Tribe, and this threat should be given more weight than it was in the 1986 FEIS.

Canyon Mine has the potential to contaminate the drinking water of the Havasupai Tribe, adversely impact its members, and destroy important religious and cultural sites. These impacts were not properly considered in the 1986 FEIS despite voiced concerns by the Havasupai Tribe and advocacy groups.

Part IV: Federal legal solutions that have been attempted and potential solutions going forward to stop the continuation of Canyon Mine

This final part will examine the federal legal solutions that have been attempted and potential solutions moving forward. This article does not

threatened by the mine feeds municipal wells and seeps and springs in Grand Canyon, including Havasu Springs and Havasu Creek,” demonstrating the interconnected nature of the water systems in the Grand Canyon).

128. U.S. FOREST SERV., *supra* note 79, at 476.

129. *Id.*

130. Kissoon, *supra* note 8.

131. Debra Utacia Krol, *How Legal and Cultural Barriers Keep Indigenous People from Protecting Sacred Spaces Off Tribal Land*, USA TODAY NEWS (Aug. 17, 2021), <https://www.usatoday.com/in-depth/news/nation/2021/08/17/indigenous-people-legal-barriers-protect-sacred-spaces/8152992002/> [https://perma.cc/MW54-ZDZE].

132. Kissoon, *supra* note 8.

examine any international solutions that may be attempted, nor does it examine solutions that may be tried at the state or local level. First, this article will look at judicial solutions, including NEPA action, tort action, or a right to safe drinking water. Second, this article will explore legislative solutions, specifically the passage of new legislation. Finally, this article will examine executive solutions, such as designation of a historic or cultural property, passage of an executive order, or agency assistance.

A. Past and future judicial solutions

The Havasupai Tribe and its allies have tried two main proceedings through the judicial agency. In 1990, the Havasupai Tribe petitioned for review of the Forest Service's decision to approve a plan of operations for Canyon Mine.¹³³ In addition to other claims, the Havasupai Tribe argued that the Mine violated member's First Amendment right to free exercise of religion, that it violated their aboriginal right of access and their alleged right of access to the Mine site, and that the 1986 FEIS was deficient and failed to comply with NEPA.¹³⁴

First, the Arizona District Court looked at the Havasupai Tribe's aboriginal title, which is title to a site with Indian possessory interest, since they've inhabited that land indefinitely.¹³⁵ While the court acknowledged that "it is undisputed that plaintiff's aboriginal title once encompassed the area of the Canyon Mine site," the court followed the Indian Claims Commission's conclusion that aboriginal title was extinguished when the Havasupai Tribe was paid a settlement for the Canyon Mine site.¹³⁶ In addition, the court reviewed the Havasupai Tribe's alleged right of access to the Mine site. The Havasupai Tribe argued that the Grand Canyon National Park Enlargement Act of 1975 gave them the right of access to sacred religious places.¹³⁷ While the court found that Congress did enlarge the Havasupai Tribe's reservation, it found that this enlargement did not include the Mine site, and even so, that the language of the Grand Canyon National Park Enlargement Act of 1975 did not include an affirmative right of access.¹³⁸

Next, the court examined whether the Plan of Operations approved by the Forest Service violated the Havasupai Tribe's right to free exercise of

133. *Havasupai Tribe v. United States*, 752 F. Supp. 1471, 1475 (D. Ariz. 1990), *aff'd*, 943 F.2d 32 (9th Cir. 1991).

134. *Id.* at 1475–76.

135. *Id.* at 1477–78.

136. *Id.* at 1478–79.

137. *Id.* at 1482.

138. *Havasupai Tribe v. United States* 752 F.Supp. 1471, 1482 (D. Ariz. 1990).

religion. The court assumed that the Havasupai Tribe's assertions that the Mine would "interfere with their religious practices at and near the mine, will kill their deities, and destroy their religion or 'Way'" were true.¹³⁹ However, the court looked to the objectionable holding from *Lyng v. Northwest Indian Cemetery Protective Association*, which held that even though the logging operation at issue would "virtually destroy the Indians' [sic] ability to practice their religion," there was no constitutional support for upholding the Indians' first amendment claims.¹⁴⁰ Therefore, the court disposed of this claim.¹⁴¹

The Havasupai Tribe also argued that the Forest Service violated its fiduciary duty to them to protect the land, but the court agreed with the Forest Service, stating that the Mine is on National Forest lands and not Indian lands, so therefore there was no fiduciary duty.¹⁴² Finally, the Havasupai Tribe argued that the 1986 FEIS was inadequate and deficient and did not correctly follow NEPA. The court followed precedent in stating that "the adequacy of an EIS depends upon whether it was prepared in observance of the procedure required by law."¹⁴³ First, the Havasupai Tribe claimed that the 'no action' alternative, or not allowing Canyon Mine, in the 1986 FEIS was not properly considered.¹⁴⁴ The court concluded that the alternative was properly considered and that a reasonable plan of operations cannot be denied.¹⁴⁵ Next, the Havasupai Tribe argued that the 1986 FEIS failed to adequately consider their members' cultural and religious beliefs.¹⁴⁶ The court discussed the record, stating that notices were sent to tribal members, one response was received requesting consultation, and the Forest Service responded with a letter requesting a response within two weeks, and that Energy Fuels representatives traveled to Supai Village to discuss their plans.¹⁴⁷ Therefore, the court concluded that the Havasupai Tribe had opportunities to raise religious concerns during the NEPA process.¹⁴⁸ However, Supai Village is very remote and difficult to access, which slows down communication between the Havasupai Tribe and other entities; today, it's a 63-

139. *Id.* at 1484–85.

140. *Id.* at 1485 (quoting *Lyng v. Northwest Indian Cemetery Protective Ass'n*, 485 U.S. 439, 451 (1988)).

141. *Id.* at 1485.

142. *Id.* at 1486.

143. *Havasupai Tribe v. United States*, 752 F.Supp. 1471, 1490 (D. Ariz.1990).

144. *Id.* at 1491.

145. *Id.* at 1492.

146. *Id.* at 1493–94.

147. *Id.* at 1494–95.

148. *Havasupai Tribe v. United States*, 752 F.Supp 1471, 1495 (D. Ariz. 1990).

mile drive off of Route 66 and then an 8 mile hike to the Supai Village.¹⁴⁹ The courts discussed the delayed timing of Havasupai Tribe responses as though Supai Village was just another city, but the courts failed to take into account the difficulty and intensity of tribal communications with anywhere outside Supai Village.¹⁵⁰

The next argument was that the geology around the Mine was not well-known and so contamination would be difficult to detect.¹⁵¹ However, as discussed above, the court concluded that reclamation efforts would occur in response to any contamination, and that preventative measures are not “standard nor good practice.”¹⁵² The Havasupai Tribe also argued that the disposal of hazardous waste was not properly considered.¹⁵³ The court concluded that it was proper to not consider the disposal of nuclear waste due to being too far removed from the project, and that off-site disposal of ore was reasonable.¹⁵⁴ Finally, the court concluded that the Forest Service properly considered cumulative impacts of mining in the area.¹⁵⁵ Even though there are many flaws to the court’s arguments, as discussed above, the Ninth Circuit affirmed the decision in 1991, and writ of certiorari was denied.¹⁵⁶

Following this decision, operations for the Mine were put on hold until Energy Fuels declared intention to resume operations in 2012, pending regulatory approval.¹⁵⁷ Following this declaration, a related, long, and complicated proceeding began.¹⁵⁸ In 2013, a motion for a preliminary injunction was brought before the District Court of Arizona to halt the operations of Canyon Mine. While the court held that “[p]otential injuries to Plaintiffs are procedural, religious, and aesthetic,” it concluded that these concerns did

149. *Supai Maps, THE HAVASUPAI TRIBE*, <https://theofficialhavasupaitribe.com/Supai-Maps/supai-maps.html> [https://perma.cc/BMM8-YN5R].

150. See *Havasupai Tribe v. United States*, 752 F.Supp. 1471, 1494-96 (D. Ariz. 1990).

151. *Id.* at 1502.

152. *Id.*

153. *Id.* at 1503.

154. *Id.* at 1504.

155. *Id.* at 1505.

156. *Havasupai Tribe v. Robertson*, 943 F.2d 32, 34 (9th Cir. 1991), *cert. denied*, 503 U.S. 959 (1992).

157. *Energy Fuels Resources Inc. Forced to Close Uranium Mines Near Grand Canyon*, INDIGENOUS ACTION (Nov. 22, 2013), <https://www.indigenoussaction.org/energy-fuels-resources-inc-forced-to-close-uranium-mines-near-grand-canyon/> [https://perma.cc/2ZWC-BKEF]; *Grand Canyon Trust v. Williams*, No. CV13-8045-PCT-DGC, 2013 WL 4804484, at *2 (D. Ariz. Sept. 9, 2013).

158. See *Grand Canyon Trust v. Williams*, 2013 WL 4804484.

not outweigh the financial losses that could be borne by Energy Fuels, denying the Havasupai Tribe's motion for a preliminary injunction.¹⁵⁹ In addition, the court ruled that no final decision was made on the Valid Existing Rights Determination ("VERD") the Forest Service made in 2012 (which determined that Energy Fuels had existing rights to Canyon Mine so Canyon Mine was not subject to the Withdrawal), so the court could not speak on this matter.¹⁶⁰ The Havasupai Tribe filed a motion for an expedited ruling on another preliminary injunction in 2015, but this too was denied.¹⁶¹ In 2015, the case was brought before the Arizona District Court to rule on the merits. It was another blow to the Havasupai Tribe. The court ruled that a VERD wasn't required before Energy Fuels re-commenced operations since the Mine was approved during its original commencement.¹⁶² In addition, the court concluded that a new EIS was not necessary for re-commencement of the Mine since the VERD did not constitute a major federal action.¹⁶³ Next, the court ruled that the re-commencement of the Mine did not require NHPA review, as discussed further below.¹⁶⁴ The court finally ruled that the Havasupai Tribe did not have prudential standing to challenge the substance of the VERD.¹⁶⁵ These decisions in total amounted to a grant of summary judgment to Energy Fuels.¹⁶⁶ The opinion was then thrown through the procedural wringer, but other than one minor change to the decision in 2018, the decision for Energy Fuels and against the Havasupai Tribe remained.¹⁶⁷

As shown, many judicial arguments have been raised to prevent Canyon Mine from operating. However, if the Havasupai Tribe wishes to

159. *Id.* at *4, *11.

160. *Id.* at *7–8.

161. *Grand Canyon Trust v. Williams*, No. CV-13-08045-PCT-DGC, 2015 WL 3385456, at *1, *6 (D. Ariz. May 26, 2015).

162. *Grand Canyon Trust v. Williams*, 98 F. Supp. 3d 1044, 1054 (D. Ariz. 2015).

163. *Id.* at 1064–65.

164. *Id.* at 1070.

165. *Id.* at 1058.

166. *Id.* at 1074.

167. In 2017, the case was originally voluntarily dismissed, but the 9th Circuit took it up in 2017 and affirmed on all issues. See *Havasupai Tribe v. Williams*, No. 3:13-cv-08045-DGC, 2015 U.S. App. LEXIS 23513, at *2 (9th Cir. Apr. 13, 2015); *Havasupai Tribe v. Provencio*, 876 F.3d 1242, 1254 (9th Cir. 2017). In 2018, the 9th Circuit withdrew this opinion, and issued a new opinion later that year which affirmed the Arizona District Court on all counts except prudential standing. See *Havasupai Tribe v. Provencio*, 906 F.3d 1155, 1167 (9th Cir. 2018), *cert denied*, 139 S. Ct. 2621 (2019). The judgement was vacated and remanded on the prudential standing issue, but the Arizona District Court granted summary judgement to Energy Fuels on the merits. See *Grand Canyon Trust v. Provencio*, 467 F. Supp. 3d 797, 824 (D. Ariz. 2020). Summary judgement was affirmed by the 9th Circuit in February of 2022. See *Grand Canyon Trust v. Provencio*, 26 F.4th 815, 827 (9th Cir. 2022).

continue to pursue judicial solutions, there are a few arguments that have yet to be put forth. The first is another NEPA argument. The Havasupai Tribe originally argued that the 1986 FEIS was deficient and violated NEPA. The court struck down this argument and ruled that even though the EIS was made in 1986, thirty-six years ago, it was still valid, and no changes needed to be made.¹⁶⁸ In 2012, the Forest Service reviewed the Mine and declared no new Plan of Operations was needed and development could continue.¹⁶⁹

However, the 1986 FEIS was founded on the basis that Canyon Mine was dry, and would stay dry as the Mine was developed.¹⁷⁰ Instead, Energy Fuels is having to pump out millions of gallons of contaminated water, as discussed above.¹⁷¹ A supplement to an EIS is required when “there are significant new circumstances or information relevant to the environmental concerns that have bearing on the proposed action or its impacts.”¹⁷² As previously discussed, oxygen causes uranium minerals to dissolve and be carried with the water.¹⁷³ Water leaches down into the soil and can cause groundwater contamination.¹⁷⁴ Therefore, the more water that comes into contact with the oxygenized uranium, the greater chance there is of groundwater contamination.¹⁷⁵ The Havasupai Tribe could argue the increased chance of contamination from the wet mine requires a supplemental EIS.¹⁷⁶ The information that the Mine is wet was discovered in the last ten years, the problem has only worsened, groundwater contamination is an environmental concern, and this information has a bearing on the Mine in the sense that excessive water makes mining difficult, if not impossible to do, and the impacts of the Mine on the Aquifer are much higher.

The Havasupai Tribe could also argue a right to safe drinking water, such as is recognized by the United Nations.¹⁷⁷ However, no such right

168. See *Havasupai Tribe*, 906 F.3d at 1161, 1163.

169. MATHISEN ET AL., *supra* note 24, at 20–22.

170. Reimondo, *supra* note 44.

171. See discussion *infra* Part III(A); see also *id.* (explaining that previous mining projects caused the Canyon Mine to take on significant quantities of contaminated water).

172. *National Environmental Policy Act Review Process*, ENV’T PROT. AGENCY, <https://www.epa.gov/nepa/national-environmental-policy-act-review-process> [<https://perma.cc/7RPB-BQQR>].

173. REIMONDO, *supra* note 88, at 16.

174. *Id.* at 28.

175. See *id.* at 16.

176. See *Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 372-73 (1989) (explaining the need for a supplemental EIS if significant circumstances change).

177. G.A. Res. 64/292, ¶ 1 (Aug. 3, 2010).

currently exists in the United States at the federal level.¹⁷⁸ In addition, current laws and policies such as the Safe Drinking Water Act are applied retrospectively, or once damage is already done.¹⁷⁹

The Havasupai Tribe could also argue that there is a public trust responsibility by the United States to hold their rights in a condition that fulfills the purpose of the reservation. The United States holds the Havasupai's land and appurtenant rights in trust on behalf of the Havasupai Tribe, and this includes enough water to continuously make use of the land.¹⁸⁰ The Havasupai Tribe could argue that this use includes access to uncontaminated drinking water, and that allowing Canyon Mine to continue will further compromise this right. However, it should be noted that Havasupai Tribe efforts at regulating water use of the Redwall-Muav Aquifer outside of their reservation have been hampered before since the United States must join as a party, which it has not done.¹⁸¹ Although the United States would have to be a party,¹⁸² it is a route that can be pursued.

The Havasupai Tribe could also pursue a tort action through negligence. However, tort actions are typically to remediate damage that has already been done.¹⁸³ The elements of negligence include a duty owed to the plaintiff, a breach of that duty, a finding that the defendant caused the plaintiff's injury, and damages.¹⁸⁴ Future damages are available in some states such as Arizona, but it is usually tied to future damages for an act that already occurred, such as loss of future income from an injury.¹⁸⁵ However, that isn't to say a negligence action would necessarily fail. The Havasupai Tribe could argue, for example, that the United States owed a duty to them to protect their sole water source, the United States breached that duty by allowing uranium mining, the uranium mining is causing contaminated water to flow out of the Mine and is being sprayed onto the surrounding land,

178. Tamar Meshel, *Environmental Justice in the United States: The Human Right to Water*, 8 WASH. J. ENV'T L. & POL'Y 264, 286 (2018).

179. Margot J. Pollans, *Drinking Water Protection and Agricultural Exceptionalism*, 77 OHIO ST. L.J. 1195, 1216 (2016).

180. See *Winters v. United States*, 207 U.S. 564, 576 (1908).

181. See *Havasupai Tribe v. Anasazi Water Co. LLC*, 321 F.R.D. 351, 354 (D. Ariz. 2017).

182. *Id.*

183. MICHAEL H. MARTELLA, LAW 101: FUNDAMENTALS OF THE LAW 217 (2018), <https://milneopentextbooks.org/download/oer-2018-law-101-textbook-pdf/> [<https://perma.cc/5NA6-7AGL>].

184. *Sanders v. Alger*, 394 P.3d 1083, 1085 (Ariz. 2017).

185. See, e.g., ARIZ. REV. STAT. § 12-584 (noting that future damages can be awarded).

and that this causes the likelihood of groundwater contamination to increase.¹⁸⁶

Finally, the Havasupai Tribe could pursue a public nuisance claim. The members cannot pursue a private nuisance claim since they no longer have a possessory interest in the land around Canyon Mine, and even if they argued instead that the Mine was affecting the water, they still do not have a possessory right in their water.¹⁸⁷ In many states, including Arizona, a public nuisance claim involves proving that the defendant's conduct caused an unreasonable interference with a right to the general public, and that the interference can be remediated.¹⁸⁸ The Havasupai Tribe could argue that access to public lands and access to clean water in the Grand Canyon is a public right, open to the general public, that Canyon Mine is interfering with this right by mining uranium on the land and causing potential contamination to Grand Canyon waters, and that this interference can easily be remediated by stopping Mine operations.¹⁸⁹ However, it should be noted that the Arizona Supreme Court has ruled that "as a matter of law, environmental damage to public land with religious, cultural, or emotional significance to the plaintiff is not special injury for public nuisance purposes," limiting the arguments the Havasupai Tribe could pursue.¹⁹⁰

As a last resort, the Havasupai Tribe could sue for damages once damage has already been done. This could be accomplished through laws such as the Safe Drinking Water Act, CERCLA, RCRA, through a tort action, or through a settlement claim such as the one pursued by Navajo Nation for uranium mining.¹⁹¹ However, by then the damage is already done and the sole source of the Havasupai Tribe's water has been contaminated, leaving few options for them.

B. Past and future legislative solutions

The Havasupai Tribe can also pursue, and has pursued, legislative efforts to protect their land from Canyon Mine. In 2019, a bill was introduced

186. See *Hopi Tribe v. United States*, 113 Fed. Cl. 43, 48–49 (2013); see also *Hydro Res., Inc. v. EPA*, 608 F.3d 1131, 1184 (10th Cir. 2010)

187. See *Orange Cnty. Water Dist. v. Sabic Innovative Plastics US, LLC*, 222 Cal. Rptr. 3d 83, 146 (Cal. Ct. App. 2017).

188. *Hopi Tribe v. Ariz. Snowbowl Resort Ltd. P'ship*, 430 P.3d 362, 372 (Ariz. 2018).

189. See *Severa v. Solvay Specialty Polymers USA, LLC*, 524 F. Supp. 3d 381, 395 (D. N.J. 2021) (recognizing that National Park residents have a right to access water supplies uncontaminated by PFAs and that plaintiffs do not need to show special injury to seek enjoinder or abatement of a public nuisance as remedy).

190. *Hopi Tribe v. Ariz. Snowbowl Resort Ltd. P'ship*, 430 P.3d. at 364.

191. See *Navajo Nation*, *supra* note 112.

to protect the lands around the Grand Canyon from mining.¹⁹² This bill, commonly known as the Grand Canyon Protection Act, passed the House of Representatives but died on the Senate floor.¹⁹³ However, that did not stop advocates of the Grand Canyon. On February 15th, 2021, a new bill was introduced to the House of Representatives.¹⁹⁴ The bill would permanently withdraw 1,006,545 acres of federal land in Arizona from “(1) all forms of entry, appropriation, and disposal under the public land laws; (2) location, entry, and patent under the mining laws; and (3) operation of the mineral leasing and geothermal leasing laws and mineral material laws.”¹⁹⁵ The bill would also authorize a study on the current and projected uranium inventory to meet current and potential national security programs, easing any concerns about a potential shortage of uranium.¹⁹⁶ The caveat – this bill is also subject to existing mining claims, so like the 2012 Uranium Mining Withdrawal, it only applies to new claims.¹⁹⁷

The bill was also introduced in the Senate on February 23, 2021, where it was referred to the Committee on Energy and Natural Resources.¹⁹⁸ Even though the bill was supported by both representatives from Arizona, Kyrsten Sinema and Mark Kelly, the committee “failed to report favorably” and the bill died once again.¹⁹⁹ Even though the bill failed to make it out of committee, it is currently under an administration that supports protecting the Grand Canyon from uranium mining, so if the bill is re-introduced and passes, there is a high likelihood that President Biden will sign it into law.²⁰⁰ While many advocates of the Grand Canyon Protection Act had hoped to see it passed in 2022, one upside to the bill dying is that the next time the bill is introduced, it could be amended to include a ban on current mining, or at a minimum, uranium mining at Canyon Mine.

192. Amber Reimondo, *The Grand Canyon Protection Act: It's Time*, GRAND CANYON TRUST (Feb. 16, 2021), <https://www.grandcanyontrust.org/blog/grand-canyon-protection-act-its-time> [https://perma.cc/4E9C-GBJC].

193. *Id.*

194. H.R. 1052, 117th Cong. (1st Sess. 2021).

195. *Id.*

196. Ariel Gould, *Sustainable and Ethical Uranium Mining: Opportunities and Challenges*, GOOD ENERGY COLLECTIVE (Aug. 31, 2022), <https://www.goodenergycollective.org/policy/sustainable-and-ethical-uranium-mining-opportunities-and-challenges> [https://perma.cc/TE89-M28V].

197. H.R. 1052.

198. S. 387, 117th Cong. (1st Sess. 2021); *see also id.*

199. *Seebach & Feinberg, supra* note 1.

200. Matthew Brown, *Biden Halts Oil and Gas Leases, Permits on US Land and Water*, ASSOCIATED PRESS (Jan. 21, 2021), <https://apnews.com/article/joe-biden-billings-a3a37acf2fce55449b704b01badc1f67>, [https://perma.cc/6HL6-BS7B].

If the Grand Canyon Protection Act is ever passed without expanding the ban to current mining, the Havasupai Tribe could still lobby Congress to pass a bill banning existing mining claims or ban mining at Canyon Mine. As a last-ditch effort, the Havasupai Tribe could lobby Congress to rewrite existing mining laws that allow for and prioritize resource extraction from public lands. The advantage of pursuing legislation is that once passed, it is very hard to dramatically change without court involvement. Barring the courts overturning the legislation, its amendment, or new legislation being passed, the law is fairly permanent. The disadvantage of pursuing legislation is that it is difficult to get it passed in the first place. As shown through the attempts at passing legislation, most bills die at some point in the process. However, given the bipartisan support of the bill,²⁰¹ perhaps the Grand Canyon Protection Act will be re-introduced and passed in upcoming years, paving the way for additional protective measures.

C. Past and future executive solutions

Finally, there are executive agency solutions that have been pursued and can be pursued in the coming years. The first available route is the National Historic Preservation Act.²⁰² The 1986 FEIS reviewed the Red Butte area, the area where the Mine is located, for historic or cultural material.²⁰³ Material such as adobe, wooden posts, and artifacts were found from as early as 750 A.D. and the site was found eligible for inclusion on the National Register.²⁰⁴ However, after further consultation between the Forest Service, the Arizona State Historic Preservation Officer, and the Advisory Council on Historic Preservation (“ACHP”), it was decided that Canyon Mine could proceed if a data recovery program was carried out.²⁰⁵ Notably, the Havasupai Tribe was left out of this consultation.²⁰⁶ However, even if the consultation had included the Havasupai Tribe, it is likely that the process wouldn’t have amounted to more than a procedural check, since consultation only ensures that procedural processes are followed and lacks any specific or enforceable protections.²⁰⁷

Despite this, Red Butte became available for inclusion on the National Register in 2010, and the Havasupai Tribe promptly designated it as a

201. Reimondo, *supra* note 192.

202. National Historic Preservation Act of 1966, 16 U.S.C. § 470.

203. U.S. FOREST SERV., *supra* note 79 at 557.

204. *Id.* at 558.

205. *Id.*

206. *Id.*

207. See Final Directives on American Indian and Alaska Native Relations Forest, 81 Fed. Reg. 12447-01 (Mar. 9, 2016).

Traditional Cultural Property.²⁰⁸ However, the Arizona District Court held in 2013 that under the National Historical Preservation Act, the Red Butte Traditional Cultural Property did not require additional consultation during the re-commencement of Canyon Mine, even though the property was designated as such between the 1986 FEIS and the re-commencement of the Mine in 2012.²⁰⁹ Since the land is owned by the federal government, any changes to the property must be allowed comment by the ACHP.²¹⁰ However, as with many other consultation processes, this is only procedural – even though the Council is allowed comment, there is no requirement that the government follow its comments.²¹¹ Considering that the Havasupai Tribe has already designated the land,²¹² the courts have ruled that the Mine can continue,²¹³ and there is no enforcement mechanism for the consultation processes,²¹⁴ any solutions tied to the designation as a historic or cultural site have likely been exhausted. In addition, environmental remediation laws such as CERCLA and RCRA are retroactive and therefore do not apply to preventing contamination.²¹⁵

Designation of the land is not the only potential executive agency solution. The Havasupai Tribe may also try for support from executive agencies. As discussed earlier, in 2012 the Secretary of the Interior withdrew over one million acres of public lands around the Grand Canyon from new mining claims for a period of twenty years.²¹⁶ However, the Withdrawal did not include existing mining claims, putting Canyon Mine squarely outside the scope of the Withdrawal.²¹⁷ The Withdrawal was upheld in *National Mining*

208. Press Release, Indigenous Action, Federal Judge OKs Uranium Mining Next to Grand Canyon National Park, (Apr. 8, 2015), <https://www.indigenousaction.org/press-release-federal-judge-oks-uranium-mining-next-to-grand-canyon-national-park/> [<https://perma.cc/K58F-84Y8>].

209. *Grand Canyon Trust v. Williams*, No. CV13-8045-PCT-DGC, 2013 WL 4804484, at *11 (D. Ariz. Sept. 9, 2013).

210. See *National Register of Historic Places: FAQs*, NAT'L PARK SERV., <https://www.nps.gov/subjects/nationalregister/faqs.htm> [<https://perma.cc/9CYC-EVAT>].

211. 36 C.F.R. § 60.2(a).

212. See *Indigenous Action*, *supra* note 208.

213. See *id.*

214. See Final Directives on American Indian and Alaska Native Relations Forest, 81 Fed. Reg. 12447-01 (Mar. 9, 2016).

215. See *Revitalization-Ready Guide - Appendix B, Local Government Overview of CERCLA, RCRA, PCBs, and Asbestos Regulations*, ENV'T PROT. AGENCY <https://www.epa.gov/land-revitalization/revitalization-ready-guide-appendix-b-local-government-overview-cercla-rcra> [<https://perma.cc/6JNF-MDH8>].

216. See *id.*

217. DEP'T OF INTERIOR, RECORD OF DECISION NORTHERN ARIZONA WITHDRAWAL: MOHAVE & COCONINO COUNTIES, ARIZONA 7 (2012).

Association v. Zinke, but the Forest Service found that Energy Fuels had an existing right to mine before the Withdrawal, a finding upheld by the 9th Circuit in *Havasupai Tribe v. Provencio*.²¹⁸ The affirmation of the Withdrawal indicates that agencies do have the power to withdraw public lands from uranium mining, and it's possible the Withdrawal could be extended to existing mining claims with enough advocacy by tribes and their supporters. The Department of the Interior cited a multitude of reasons for the Withdrawal, including contaminated soils and waters from past uranium mines, the unknown geology of the area leading to uncertainty over how uranium mining will affect the hydrogeology of the area, the effects on cultural sites, and the unknown and possible dangerous effects of uranium mining on people and wildlife around it.²¹⁹ All of these concerns were upheld by the courts as valid concerns.²²⁰ All these effects are not only applicable to new mining claims, they are applicable to existing ones as well.²²¹ If the Department of the Interior was concerned enough to withdraw over a million acres of land from new claims, it is reasonable to assume those same concerns apply to existing mining claims, especially those situated near people and their resources. Since the land is still owned by the U.S., it's possible the U.S. could unilaterally withdraw existing mining claims, though it may have to fight eminent domain claims.²²²

The Biden-Harris Administration seems to be willing to give tribes a greater voice in public lands management, indicating that executive agency assistance may not be truly unrealistic.²²³ In addition, in 2016 the Department of Defense, Department of Agriculture, Department of Energy, Department of the Interior, and the ACHP extended a Memorandum of Understanding (“MOU”) until 2024 that promotes increased tribal participation in decisions.²²⁴ The MOU created the Interagency Coordination and Collaboration for the Protection of Indian Sacred Sites and calls for agencies to work towards “[d]eveloping guidance for the management and treatment of

218. *Nat'l Mining Ass'n v. Zinke*, 877 F.3d 845, 878 (9th Cir. 2017); *see also* *Havasupai Tribe v. Provencio*, 906 F.3d 1155, 1159 (9th Cir. 2018).

219. *Nat'l Mining Ass'n*, 877 F.3d at 866.

220. *Id.* at 870.

221. YELLOWSTONE GATEWAY MINERAL WITHDRAWAL FREQUENTLY ASKED QUESTIONS, YELLOWSTONE GATEWAY BUS. COAL., <https://www.dontmineyellowstone.com/media-kit/Withdrawal-FAQs.pdf> [<https://perma.cc/V2VS-CQX3>].

222. 30 U.S.C. §§ 1–16.

223. Krol, *supra* note 131 (noting that Deb Haaland met with journalists on her first day of office to declare a commitment to “give tribes a greater voice in public land management.”).

224. *See* U.S. DEP'T OF DEFENSE, ET. AL, MEMORANDUM OF UNDERSTANDING ON INTERAGENCY COORDINATION AND COLLABORATION FOR THE PROTECTION OF INDIAN SACRED SITES (2016).

sacred sites including best practices and sample tribal-agency agreements” and reviewing and updating confidentiality standards for sacred sites.²²⁵ With the increased effort to respect and protect sacred sites,²²⁶ perhaps the future holds the possibility of increased protection of these sites. In addition, increasing confidentiality of the sites may lead tribes in the future to feel more comfortable disclosing the location of sacred sites, prompting proactive protection by agencies instead of the reactive and ineffective efforts seen today, such as this case.

The President also has the power to issue Executive Orders (“E.O.’s”), stemming from an interpretation of constitutional power.²²⁷ In *Youngstown Sheet & Tube v. Sawyer*, Justice Robert H. Jackson declared that where Congress is silent on an issue, the President can act without a congressional grant or denial of authority, such as creating E.O.’s.²²⁸ There is a long history of presidents withdrawing public lands through E.O.s and engaging with public lands.²²⁹ Perhaps one of the earliest examples of this is when President Franklin D. Roosevelt issued E.O. 6,910 on the Withdrawal of Public Lands for Conservation, allowing the withdrawal of public lands for “vacant, unreserved, and unappropriated lands of the public domain.”²³⁰ This E.O. has since been amended eighty-four times, indicating the active engagement by presidents with our public lands.²³¹ However, most of the E.O.s withdrawing public lands to date seem subject to existing land rights.²³² However, it does seem possible that withdrawing existing claims and operations is possible through E.O.s.²³³

225. *Id.* at 2.

226. *See id.*

227. *Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579, 637 (1952) (clarifying that this power does not come straight from the Constitution and that the president has the power to issue executive orders under some circumstances, such as when Congress is silent on an issue).

228. *Id.* at 640.

229. Gerhard Peters & John Woolley, *Executive Order 6910 on Withdrawal of Public Lands for Conservation*, THE AM. PRESIDENCY PROJECT, <https://www.presidency.ucsb.edu/documents/executive-order-6910-withdrawal-public-lands-for-conservation> [<https://perma.cc/LC4F-5NB5>].

230. *See id.*

231. *See Codification of Presidential Proclamations and Executive Orders*, NATIONAL ARCHIVES OFF. OF THE FED. REG., <https://www.archives.gov/federal-register/codification/executive-orders-02.html> [<https://perma.cc/6DB8-YD4U>].

232. *Cnty. of Santa Clara v. Trump*, 250 F. Supp. 3d 497, 534 (N.D. Cal. 2017).

233. *Brown*, *supra* note 200.

However, there are some drawbacks of E.O.s. First, an E.O. can be withdrawn by the next president as easily as it was implemented.²³⁴ In addition, Congress can pass a law overriding an E.O., though any law passed by Congress must also be signed into law by the president.²³⁵ If the President does decide to veto any law that conflicts with their E.O., Congress could override the veto,²³⁶ but this rarely occurs.²³⁷ Therefore, the biggest risk to a solution through an E.O. would be that the next president would withdraw the E.O., which, in the current political climate, has a high likelihood. The Havasupai Tribe has been active in trying to stop Canyon Mine and has pursued multiple avenues to do so.²³⁸ Though its efforts have yet to be successful, the Havasupai Tribe has shown tenacious persistence and still has options to pursue to protect its people.

CONCLUSION

The aquifer that feeds Havasu Creek, the Havasupai Tribe's sole source of water, sits below Canyon Mine.²³⁹ Canyon Mine has the capability to produce millions of pounds of uranium and copper in its lifetime, which can contaminate the groundwater that feeds the Redwall-Muav Aquifer.²⁴⁰ Energy Fuels claims that the Mine is safe with no potential to impact the groundwater.²⁴¹ The reality is that little is known about how groundwater infiltrates the aquifer and therefore it can be reasonably assumed the Mine has the potential to contaminate Havasu Creek.²⁴² In addition, the assumption that the Mine is dry, which forms the basis of the 1986 FEIS, is blatantly false – the Mine has been flooding with millions of gallons of contaminated water for years.²⁴³

The Havasupai Tribe and its supporters have taken many actions to prevent the Mine from operating, but all efforts have so far been

234. *What Is an Executive Order?*, AM. BAR ASS'N (Jan. 25, 2021), https://www.americanbar.org/groups/public_education/publications/teaching-legal-docs/what-is-an-executive-order/ [https://perma.cc/4DTV-NVC7].

235. U.S. CONST. art. I, § 7.

236. *Id.*

237. *The Presidential Veto and Congressional Veto Override Process*, CTR. FOR LEGIS. ARCHIVES, <https://www.archives.gov/files/legislative/resources/education/veto/background.pdf> [https://perma.cc/3P72-279T].

238. See REIMONDO, *supra* note 88, at 13.

239. CTR. FOR BIOLOGICAL DIVERSITY, *supra* note 8.

240. Reimondo, *supra* note 64.

241. U.S. FOREST SERV., *supra* note 79, at 586.

242. Watahomigie-Corliss, *supra* note 9.

243. Reimondo, *supra* note 44.

unsuccessful.²⁴⁴ The members have sued Energy Fuels, designated Red Butte as a Traditional Cultural Property, and pursued legislation to protect the land.²⁴⁵ These efforts have been in vain. However, there are remaining efforts the Havasupai Tribe could pursue. It could try additional court actions under NEPA or bring a tort action or public nuisance claim.²⁴⁶ It could continue to pursue agency action to extend and expand the scope of the 2012 Uranium Mining Withdrawal and continue to raise support for the Grand Canyon Protection Act.²⁴⁷ Finally, the members could lobby President Biden to pass an E.O. banning any active or imminent mining on Grand Canyon lands.²⁴⁸

Canyon Mine is a lingering colonial remnant of a time when land was forcibly taken from Native American Tribes and exploited for private gain. The Mine jeopardizes the integrity of Havasu Creek and should not be allowed to operate. With the support of surrounding communities and the state of Arizona, the Havasupai Tribe stands a chance of stopping Canyon Mine and protecting the land and water of its members. The sole source of water for the Havasupai Tribe and its future should not be jeopardized for the profit of one company.

244. See *Havasupai Tribe v. United States*, 752 F. Supp. 1471, 1475 (D. Ariz. 1990); *Havasupai Tribe v. Robertson*, 943 F.2d 32 (9th Cir. 1991); *Grand Canyon Trust v. Williams*, No. CV13-8045-PCT-DGC, 2013 WL 4804484, at *1 (D. Ariz. Sept. 9, 2013); *Grand Canyon Trust v. Williams*, No. CV-13-08045-PCT-DGC, 2015 WL 3385456, at *1, *6 (D. Ariz. May 26, 2015); *Grand Canyon Trust v. Williams*, 98 F. Supp. 3d 1044, 1054 (D. Ariz. 2015).

245. See *Havasupai Tribe v. United States*, 752 F. Supp. at 1475; see *Indigenous Action*, *supra* note 208; *Reimondo*, *supra* note 192.

246. See *Havasupai Tribe v. Provencio*, 906 F.3d 1155, 1161 (9th Cir. 2016); *Marsh v. Or. Nat'l Res. Council*, 490 U.S. 360, 372–73 (1989); G.A. Res. 64/292, *supra* note 177, at ¶ 8; *Winters v. United States*, 207 U.S. 564, 576 (1908); *Hopi Tribe v. United States*, 113 Fed. Cl. 43, 48–49 (2013); *Severa v. Solvay Specialty Polymers USA, LLC*, 524 F. Supp. 3d 381, 395 (D. N.J. 2021); *Navajo Nation*, *supra* note 112.

247. See H.R. 1052, 117th Cong. (1st Sess. 2021).

248. See *Brown*, *supra* note 200.