Charging Ahead or Drying Up? Lithium Extraction vs Colorado River Stewardship

Josepi Scariano

This note explores conflicts between water allocations from the Colorado River and lithium mining in the Western United States. It focuses on how the Colorado River 2026 Plan and its proposed water allocation alternatives will disrupt environmental impact statements (EISs) and litigation around lithium mining in the Western United States. The note proposes that, not only is acknowledgment of the foreseeable changes to water management necessary to reduce litigation, but also that it is unlawfully arbitrary and capricious for the EISs to ignore, with no rationale, the environmental impacts lithium extraction projects will inflict under foreseeable water management changes. Alternatively, to avoid the litigation necessary to correct EISs, the Bureau of Reclamation should create and adopt an alternative plan that would protect the water rights of users, like lithium operations, who contribute to combatting the climate crisis.

I. INTRODUCTION

A stable and abundant supply of lithium is critical for the success of the energy transition.[1] Without access to lithium, both the construction of utility-scale batteries and the transition to electric vehicles become unfeasible. Further, without utility-scale batteries, intermittent generation capacities of solar or wind generators will struggle to replace carbon-emitting forms of energy generation.[2] The critical role lithium plays in the energy transition, the ability for lithium extractors to generate large profits, and domestic interests in reshoring supply chains have resulted in federal, state, and local policies that encourage both the identification of lithium deposits and the development of lithium extraction operations across the United States. For example, Executive Order 14017 encouraged nationwide surveys for lithium and other critical minerals.[3] Additionally, the United States' implementation of the Bipartisan Infrastructure Law and the Inflation Reduction Act provides generous subsidies for electric vehicles manufactured with domestically produced components, including lithium, and also provides funds for the operation of lithium extraction operations.[4] In line with these actions, the second Trump Administration is supporting lithium extraction processes throughout the country.[5] The Trump Administration has moved to acquire equity stakes in lithium extraction projects and worked to increase permitting speed for lithium projects through the Department of Energy.[6] The underlying goals of these

[1] KEVIN BRUNELLI ET AL., CTR. ON GLOBAL ENERGY POL'Y, LITHIUM IN THE ENERGY TRANSITION ROUNDTABLE REPORT, (2024), https://www.energypolicy.columbia.edu/publications/lithium-in-the-energy-transition-roundtable-report/ [https://perma.cc/X7SS-6VJU].

[2] INT'L RENEWABLE ENERGY AGENCY, UTILITY SCALE BATTERIES INNOVATION LANDSCAPE BRIEF (2019) https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Sep/IRENA_Utility-scale-batteries_2019.pdf [https://perma.cc/ZJ43-JXDZ].

[3] Exec. Order No. 14017, 86 Fed. Reg. 11849 (Mar. 3, 2021).

[4] James Broughel, *How the Inflation Reduction Act Could Cause a Lithium Crunch*, FORBES (Sep. 14, 2022) [On file with the Columbia Journal of Environmental Law].

[5] Haley Zaremba, *Lithium Has Become a National Security Priority for the United States*, OILPRICE.COM (Jan. 10, 2026), https://oilprice.com/Metals/Commodities/Lithium-Has-Become-a-National-Security-Priority-for-the-United-States.html. [https://perma.cc/85VL-467H].

[6] *White House advances stake in Nevada lithium mine*, ABC10 (Sept. 26, 2025), https://www.abc10.com/article/news/nation-world/trump-deal-equity-stake-nevada-lithium-mine/507-363b57fd-371a-47cc-a6aa-d380367e32b9 [https://perma.cc/77J4-555N]; *ICYMI: Trump Administration Adds Two DOE Lithium Processing Projects to Federal Permitting Dashboard*,

executive and congressional actions are to promote national security and boost domestic manufacturing.[7] This message of national interest and economic prosperity is what developers bring to communities across the United States when they hope to develop a lithium extraction facility.[8]

Despite the promise of economic boon coupled with the backing of the Federal—and often State—government, lithium operations have struggled against fierce local opposition and litigation. The lithium operation at Thacker Pass in Nevada is the most prominent example of these conflicts. In 2018, Western Lithium confirmed that Thacker Pass constituted the largest known deposit of lithium in the United States at the time, and that its development would be critical to meeting the growing demands of the electric vehicle and battery markets in the United States.[9] Despite the national interest in this area's development, several lawsuits challenging the approved Environmental Impact Statement (hereinafter "EIS") delayed the beginning of construction until March 2023.[10] Phase 1 of construction—in which production will actually be able to commence—is now not expected to be completed until 2027, a decade after Western Lithium confirmed the size of the deposit and began the process of obtaining approval for operation.[11] This is the paradox lithium operations find themselves in across the United States: national interest, the market for lithium, and state policy incentivizes domestic development, but local interest tied to environmental impacts results in serious and costly delays or even suspensions of developments.

This note will explore how EISs for lithium operations ignore the expected changes to river management in the Colorado River Plan 2026. Part I contextualizes the landscape of lithium operations in the United States through both a general survey and a case study of a recent deposit within the Colorado River Basin. This discussion illustrates that the distribution of lithium in the United States is concentrated in the Colorado

U.S. Dep't of Energy (June 3, 2025) https://www.energy.gov/articles/icymi-trump-administration-adds-two-doe-lithium-processing-projects-federal-permitting [https://perma.cc/4RLK-H72H].

[7] Zaremba, *supra* note 5.

[8] *See generally* CHRIS BENNER & MANUEL PASTOR, CHARGING FORWARD: LITHIUM VALLEY, ELECTRIC VEHICLES, AND A JUST FUTURE (2024).

[9] Rex Koenig, *The Thacker Pass Lithium Mine: National Interests vs. Local Impacts,* CONSILENCE: J. SUSTAINABLE DEV., May 9, 2023. https://journals.library.columbia.edu/index.php/consilience/blog/view/517 [https://perma.cc/X2ZX-JCKM].

[10] *Id*.

[11] Lithium Americas, *Lithium Americas Provides a Thacker Pass Construction Plan*, LITHIUMAMERICAS (Mar. 13, 2024). https://lithiumamericas.com/news/news-details/2024/Lithium-Americas-Provides-a-Thacker-Pass-Construction-Plan-Update/default.aspx#:~:text=Construction%20commenced%20in%20early%202023,full%20capacity%20production%20in%202028 [On File with the Columbia Journal of Environmental Law].

River Basin, making stewardship of the basin under the Colorado River Plan 2026 particularly important for the development of a domestic lithium supply. Part II explores the four alternatives proposed in the National Environmental Policy Act (hereinafter "NEPA") process for the Colorado River Plan 2026, highlighting how each alternative would affect water allocations available to lithium developers throughout the Colorado River Basin. Finally, Part III proposes that the Colorado River Plan 2026 take steps to shield critical industries, such as lithium operations, from disruptive changes in water allocations to prevent the filing of meritorious lawsuits challenging and delaying proposed lithium operations in the Western United States.[12] The note concludes that such shielding of the industry is necessary to effectively respond to climate change.

II. BACKGROUND

A. The Landscape of Domestic Lithium Production

The United States is far behind its global competitors not only in lithium production, despite lithium's critical role in batteries, but also the in energy transition and the manufacturing of other advanced technologies.[13] Fortunately for advocates of domestic supply chains and local manufacturing, the United States does not lack access to large and abundant lithium deposits within its borders and is increasingly discovering deposits, thanks to the Biden Administration's emphasis on geological surveys.[14] These deposits, however, are unevenly distributed: most identified lithium deposits are concentrated within the Western United States, particularly within the Colorado River Basin and especially in the lower basin states.[15] Therefore, the nation's nascent lithium industry is particularly reliant on access to the Colorado River Basin. The United States can only become a competitive global supplier of lithium if it is able

[12] This note will show that identified domestic deposits of lithium are heavily concentrated in the lower Colorado Basin and so the lithium industry is particularly impacted by changes to water allocations made under the Colorado River Plan 2026.

[13] Jack Conness, *2024 Could be the Year for American Lithium*, FORBES (Apr. 16, 2024), https://www.forbes.com/sites/energyinnovation/2024/04/14/2024-could-be-the-year-for-american-lithium/ [https://perma.cc/L76R-BY69].

[14] Maddie Stone, *A Government Program Hopes to Find Critical Minerals Right Beneath Our Feet*, GRIST, https://grist.org/science/usgs-earth-mri-a-government-program-hopes-to-find-critical-minerals-right-beneath-our-feet/ [https://perma.cc/YVX3-CJAT].

[15] *See* Alan Kennedy, *White Gold: Mapping U.S. Lithium Mines,* VISUAL CAPITALIST (Mar. 21, 2024), https://www.visualcapitalist.com/sp/us-lithium-mines-map/ [On File with the Columbia Journal of Environmental Law] (highlighting the concentration of known lithium deposits in the lower Colorado basin states).

to effectively encourage development and manage water allocation risks in this basin.

The concentration of lithium deposits within the Colorado River Basin offers both opportunities and risks. On one hand, it supports the development of a domestic supply of critical minerals and the growth of adjacent industries such as battery or electric vehicle manufacturing. On the other hand, it presents specific legal conflicts and risks. For decades, environmentalists, basin residents, legal scholars, and policy makers have contested the allocation of water within the Colorado River Basin, especially as climate change has deepened droughts and population growth has increased water demand.[16] The discovery of concentrated lithium deposits and high demand for the critical mineral introduces a new layer of competing interests that current legal frameworks for water management and development have yet to fully address.

The conflict between conservation-driven law and the development of critical minerals for the energy transition stems in part from the water-intensive nature of lithium extraction. While novel methods such as direct lithium extraction[17] do reduce water demands for some types of lithium deposits, they do not resolve the problem.[18] At the same time, the lithium extraction industry differs from other water-demanding industries: it offers a promise of fueling the energy transition and combatting climate change, the very force which is creating an increasingly drought-prone Colorado River Basin. Still, communities located near lithium deposits in the Colorado River Basin—whether their concerns arise from conflicts with native tribes, potential environmental degradation, distrust of large industrial investments, or fear of community disruption from development—are levying strong objections. Increasingly, these objections take the form of challenges to water allocation, threatening to disrupt or delay the construction and operation of lithium extraction projects throughout the Colorado River Basin.[19]

[16] Nina Raffio, *The Water Wars of the Future are Here Today*, USC TODAY (Feb. 28, 2023), https://today.usc.edu/the-water-wars-of-the-future-are-here-today/#:~:text=Once%20hailed%20as%20the%20%E2%80%9CAmerican,the%20effects%20of%20climate%20change.%E2%80%9D [https://perma.cc/Y8RD-RUZZ].

[17] María L. Vera et al., *Environmental Impact of Direct Lithium Extraction from Brine*, 4 NATURE REVS. EARTH & ENV'T 149, 150 (2023) (defining direct lithium extraction as "a wide variety of technologies, including, for example, thermal and electrochemical processes" and raising concern about the understated consumption of fresh water when direct lithium extraction is in use). https://doi.org/10.1038/s43017-022-00387-5 [On File with the Columbia Journal of Environmental Law].

[18] *Id.* at 149–165.

[19] Noel Lyn Smith & Pacey Smith-Garcia, *Tribes Face an Uphill Battle to Defend Their Sacred Land Against Lithium Mining*, TUCSON SENTINEL (Jan. 25, 2024), https://www.tucsonsentinel.com/nationworld/report/020524_native_lithium_liabilities/tribes-face-

The structure of the Colorado River Basin governance further complicates matters. The Basin is typically divided into two sets of states: the upper basin states of Colorado, New Mexico, Utah, and Wyoming, and the lower basin states of California, Nevada, and Arizona. In regards to the United States' nascent lithium industry, proposed developments are almost exclusively concentrated in the lower basin states.[20] The concentration of currently operable or soon-to-be developed lithium extraction sites in the lower basin states is significant to conversations about the stewardship of the Colorado River Basin because governing water allocation agreements often work to strike a balance between the interests of the upper and lower basin states.[21] Thus, the Colorado River Plan 2026, or any future water governance agreement which disparately provides greater benefits to one set of states over the other, will have a disproportionate impact on lithium development within the region.

B. Lithium Valley: A Case Study

Previously, legal scholars hoped that cooperative water use agreements between communities and lithium extraction developers, coupled with the deployment of Direct Lithium Extraction ("DLE")—a less water-intensive method for some types of lithium deposits—could mitigate conflicts and accelerate development.[22] At first, developments in California's Imperial County ("Imperial Valley") around the Salton Sea appeared to confirm this hope. However, such optimism overlooked the implications of the forthcoming changes to water management.[23] Since then, residents of the Imperial Valley have challenged EISs issued under

uphill-battle-defend-their-sacred-land-against-lithium-mining/https://cronkitenews.azpbs.org/howardcenter/lithium/stories/indigenous.html [On File with the Columbia Journal of Environmental Law] (providing an example of one of the listed conflicts with lithium developments).

[20] Kennedy, *supra* note 15.

[21] Camilo Salcedo, *Multiple Plans Proposed for Post-2026 Colorado River Operations*, WATER RES. RSCH. CTR. (Apr. 19, 2024), https://wrrc.arizona.edu/news/multiple-plans-proposed-post-2026-colorado-river-operations [https://perma.cc/M4Q3-TVVM].

[22] Isaac Bloch, *A Green Energy Watershed: Water Litigation, Electric Batteries, And Agency Oversight of Lithium* Mining, 27 U. DENV. WATER L. REV. 1. (2024)

[23] PATRICK DOBSON, ARAYA NAOD, BROUNCE MARYJO ET AL., CHARACTERIZING THE GEOTHERMAL LITHIUM RESOURCE AT THE SALTON SEA (UC Davis 2023) (comparing the fresh water demand expected from lithium production relative to already existing geothermal water consumption, relying on direct lithium extraction methods, but not addressing potential changes to the water allocation the region may receive in the post-2026 period).

state law on the ground that they fail to account for foreseeable changes to water management.[24]

Following the initial canal and irrigation projects designed to divert the Colorado River to Imperial County for agriculture, early irrigation infrastructure collapsed.[25] This failure resulted in the flooding of the Imperial Valley in the early 1900s, the filling of a dried seabed, and the creation of the Salton Sea.[26] Without a natural inlet of water, the Salton Sea has evaporated and dried up, re-exposing the seabed.[27] Moreover, since the 1930s, the Salton Sea has received large quantities of agricultural runoff and other chemical residue from the local agriculture industry, turning the seabed into a toxic dust known as playa.[28] As the seabed was exposed, heavy winds picked up the toxic playa and created dangerous and unhealthy air quality for residents.[29] As a result, the State of California, Imperial County, and the Imperial Irrigation District have worked together to allocate water to fill the Salton Sea to prevent it from further evaporating and exposing more playa into the environment.[30] These efforts, however, have proven largely ineffective.[31]

The Salton Sea is the location of the Hell's Kitchen Project, which seeks to extract lithium from one of the largest known deposits in the United States. Estimates suggest that the "deposits in and around the Salton Sea in California's Imperial Valley are estimated to hold as much as up to a third of the world's current lithium demand."[32] This creates a clear conflict of interest between water allocation towards the conservation of the Salton Sea and all other competing users—both agricultural and residential—in the region. In other words, if water allocation towards the Salton Sea is jeopardized to support the Hell's Kitchen Project, local pollution will soar

[24] Kori Suzuki, *Hearings Begin in Lawsuit Challenging First Lithium Project in the Imperial Valley*, KPBS (Nov. 7, 2024) https://www.kpbs.org/news/environment/2024/11/07/hearings-begin-in-lawsuit-challenging-first-lithium-project-in-the-imperial-valley [https://perma.cc/47BY-7ND7].

[25] Patrick Dobson et al., *Characterizing the Geothermal Lithium Resource at the Salton Sea*, UNIV. OF CAL. DAVIS 79–100 (2023).

[26] *Id.* at 2.

[27] *Id*.

[28] *Id*.

[29] Tracci Brynne Voyles, *Environmentalism in the Interstices: California's Salton Sea and the Borderlands of Nature and Culture*, 3 Resilience: J. ENV'T HUMANS. 211.

[30] *Improving Conditions at the Salton Sea*, SALTON SEA MGMT. PROGRAM, https://saltonsea.ca.gov/ [https://perma.cc/7PK3-5UWD] (last visited Jan., 2025).

[31] Mark Olalde, *Will California Finally Fulfill Its Promise to Fix the Salton Sea?*, HIGH COUNTRY NEWS (Dec. 21, 2020), https://www.hcn.org/issues/53-1/south-water-will-california-finally-fulfill-its-promise-to-fix-the-salton-sea/ [https://perma.cc/2KGT-49R3].

[32] Press Release, Steve Padilla, Senator, California State Senate, Senator Padilla Introduces Legislation to Stimulate Lithium Recovery Businesses and Bring Green Jobs to the Imperial Valley (Feb. 13, 2023), https://sd18.senate.ca.gov/news/senator-padilla-introduces-legislation-stimulate-lithium-recovery-businesses-and-bring-green [https://perma.cc/QS2W-DZ9D].

as a result of exposed playa.[33] On the other hand, if the Hell's Kitchen Project lacks sufficient or stable water allocations, lithium cannot be extracted, jeopardizing the development of a secure domestic mineral supply critical to the energy transition.[34] These disputes surrounding the Hell's Kitchen Project in the Imperial Valley highlight the oversights in existing legal scholarship that this note hopes to fill.

Residents of the Imperial Valley, concerned by the decades of inaction on the Salton Sea environmental crisis and skeptical that the Hell's Kitchen Project will yield local benefits, have identified this tradeoff between their health, environmental quality, and lithium extraction as central to their opposition.[35] As a result, local organizations Comité Civico del Valle and Earthworks have challenged the project's initial EIS, arguing it fails to adequately address the water allocation concerns that will result from the construction and operation of the Hell's Kitchen Project.[36] These concerns are further amplified by the Colorado River Plan 2026, which presents four possible alternatives that the Bureau of Reclamation will adopt or implement in the near future concerning management of the Colorado River Water Basin.[37] All these alternatives present a future in which water allocations will change in some capacity.[38] As a result, those producing EISs for lithium projects in the basin must either be prepared to defend their approvals in light of these impacts in court or anticipate and address the impacts of the Colorado River Plan 2026 in their initial EISs.

C. Dissecting the Colorado River Plan 2026

The Bureau of Reclamation is preparing for a multi-year NEPA process to replace several decisional documents and water management agreements governing water resources in the Colorado River Basin, which expire in 2026. These include the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines), the 2019 Drought Contingency

[33] EARTHWORKS & COMITÉ CIVICO DEL VALLE, ENVIRONMENTAL JUSTICE IN CALIFORNIA'S LITHIUM VALLEY 27 (2023).

[34] María L. Vera et al., *Environmental Impact of Direct Lithium Extraction From Brine*, 4 NATURE REV. EARTH & ENV'T 149, 150 (2023).

[35] Richard Montenegro Brown, *Lithium Valley Has Its Skeptics, Despite Looking Like a Sure Thing,* CALEXICO CHRON. (Jan. 25, 2024), https://calexicochronicle.com/2024/01/25/lithium-valley-has-its-skeptics-despite-looking-like-a-sure-thing/ [https://perma.cc/XNA3-T86W].

[36] *Id*.

[37] BUREAU OF RECLAMATION, POST-2026 COLORADO RIVER RESERVOIR OPERATIONAL STRATEGIES FOR LAKE POWELL AND LAKE MEAD NARRATIVE OF NATIONAL ENVIRONMENTAL POLICY ACT ALTERNATIVES (2024), https://www.doi.gov/sites/default/files/documents/2024-11/narrative-updated.pdf [https://perma.cc/VXP6-CG26].

[38] *Id*.

Plans, and international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty).[39] As a part of this process, the Bureau of Reclamation has outlined four proposed alternatives and one no-action alternative for water management in the Colorado River Basin following 2026.[40] While the Colorado River Plan 2026 will ultimately replace both domestic and international agreements, the proposed alternatives[41] only replace domestic intrastate agreements, and the Bureau of Reclamation has asserted it will not begin negotiations with Mexico to replace international treaties until the adoption of all domestic water governance agreements have been finalized.[42] Nevertheless, the Bureau has made clear the main competing interests it seeks to balance in the Colorado River Plan 2026 through its four proposed alternatives. Across all four alternatives, the Bureau identifies three core interests: conserving and preserving the Colorado River Basin, addressing overallocation of water to the lower basin states, and ensuring that the upper basin states will not share a fair burden of water allocation cuts.

To reflect the need to balance these divergent interests to achieve an agreeable governance structure in the Colorado River Plan 2026, the Bureau began the process by solicitating proposals from the lower basin states, upper basin states, and conservation groups. For example, the upper basin states argue that water is overallocated to the lower basin states because of previous leverage in water negotiations and prior appropriation of water rights.[43] This belief results in their position that future water governance agreements should allocate water shortages predominantly among the lower basin states.[44] On the other hand, environmentalists and conservationists, concerned about severe drought conditions and increased

[39] *See Colorado River Post 2026 Operations*, BUREAU OF RECLAMATION, https://www.usbr.gov/ColoradoRiverBasin/post2026/index.html [https://perma.cc/B7YU-8JCG] (last visited Jan., 2025).

[40] BUREAU OF RECLAMATION, POST-2026 COLORADO RIVER RESERVOIR OPERATIONAL STRATEGIES FOR LAKE POWELL AND LAKE MEAD NARRATIVE OF NATIONAL ENVIRONMENTAL POLICY ACT ALTERNATIVES (2024), https://www.doi.gov/sites/default/files/documents/2024-11/narrative-updated.pdf [https://perma.cc/VXP6-CG26].

[41] "Alternatives" is used in this note as it is used in communications from the Bureau of Reclamation and in the process followed by the Bureau in issue the Colorado River Plan 2026 under the National Environmental Act. In other words, "alternatives" describes proposed options for the Bureau to implement as the Colorado River guidance in the post 2026-period.

[42] Bureau of Reclamation, *supra* note 40.

[43] Nick Cahill, *Upper Colorado River States Add Muscle As Decisions Loom on the Shrinking River's Future*, WATER EDUC. FOUND. (Apr. 21, 2023), https://www.watereducation.org/western-water/upper-colorado-river-states-add-muscle-decisions-loom-shrinking-rivers-future [https://perma.cc/E7ET-R8JW].

[44] *Id*.

demand for water, emphasize the risks that portions of the Colorado River Basin may reach dead pool status[45] and pro-longed drought conditions may be deepened by overconsumption.[46] To balance these divergent interests, the Bureau of Reclamation first solicited proposals from each stakeholder.[47] Then, it presented four alternatives, each of which contained aspects of alternatives submitted by each party.[48] The Bureau proceeded in this way to maximize the opportunity for compromise between conservationist goals, the upper basin states, and the lower basin states because no single alternative would work to the exclusive benefit of any party.

The Bureau of Reclamation is required to submit a finalized plan for review by Spring 2025 in order to comply with the deadlines stipulated in previous agreements, such as the 2007 Colorado River Interim Agreement.[49] The election of Donald Trump in November 2024 raised concerns about the potential delay of this deadline, should the new administration attempt to discontinue the alternatives proposed under the Biden Administration.[50] For example, the 2019 Drought Contingency Plan was negotiated and implemented without disruption even when those negotiations began during the Obama Administration and concluded in the first Trump Administration.[51]

Risks to the timeline remain. Delays in political appointments could jeopardize the Bureau's ability to meet the springtime deadline for the Colorado River Plan 2026. Additionally, actions by the second Trump Administration to drastically reduce the size of the federal workforce may disrupt the Bureau of Reclamation's capacity to act.[52] While ongoing

[45] DAVID DUDLEY, *What Does "Dead Pool" Mean for the American West?* (Sierra 2023) (defining dead pool as "when the amount of water stored in a reservoir is so low, water can no longer flow downstream").

[46] Bureau of Reclamation, *supra* note 40.

[47] *Id*.

[48] Camilo Salcedo, *Multiple Plans Proposed for Post-2026 Colorado River Operations*, WATER RES. RSCH. CTR. (Apr. 19, 2024), https://wrrc.arizona.edu/news/multiple-plans-proposed-post-2026-colorado-river-operations [https://perma.cc/CRV4-372L].

[49] *Biden-Harris Administration Leaves Colorado River Basin on Path to Success, U.S. Dep't of the Interior* (Jan. 17, 2025), https://www.doi.gov/pressreleases/biden-harris-administration-leaves-colorado-river-basin-path-success (announcing draft EIS target in summer 2025 and on-time finalization); Shannon Mullane, *Officials Expect Steady Transition from Biden to Trump for Colorado River Negotiations*, COLO. SUN (Nov. 17, 2024), https://coloradosun.com/2024/11/17/water-colorado-donald-trump-presidency/ [https://perma.cc/V6DU-FP9N].

[50] Shannon Mullane, *Officials Expect Steady Transition from Biden to Trump for Colorado River Negotiations*, COLO. SUN (Nov. 17, 2024), https://coloradosun.com/2024/11/17/water-colorado-donald-trump-presidency/. [https://perma.cc/V6DU-FP9N]

[51] *Id.*

[52] Martha Bellisle, *Critics Warn Staff Cuts at Federal Agencies Overseeing US Dams Could put Public Safety at Risk*, ASSOCIATED PRESS (Mar. 15, 2025), https://apnews.com/article/dams-fired-

litigation will determine the scope of presidential authority to remove federal employees, it is unclear whether the current policy of laying-off hundreds of workers at the Bureau of Reclamation will impact the rollout of the Colorado River Plan 2026.[53]

III. BREAKING DOWN THE COLORADO RIVER PLAN 2026

A. Introduction

To further understand the impacts of the Colorado River Plan 2026 on the lithium industry and related EIS litigation, this note will explore in depth each of the Bureau of Reclamation's proposed alternatives and the impacts these changes in water management will have on lithium extractors in the Colorado River Basin.[54] While some alternatives may result in more dire risks[55] than other alternatives for lithium extraction operations, this section will demonstrate that all of the alternatives will result in greater risks relative to the current water governance structure. Therefore, EISs for lithium operations in the Colorado River Basin must anticipate and respond to concerns about water allocations if they hope to withstand or deter litigation over water demands.

The map below contextualizes key geographical references that appear in the discussion of all four alternatives.[56] Lake Mead, Lake Powell, and all other reservoirs referenced throughout are labeled. The physical boundaries of the Colorado River Basin are shaded in a light orange, while key water users in California are labeled: Imperial Irrigation District (IID), Coachella Valley Water District (CVWD), and Metropolitan Water District (MWD).[57] These users are prominent actors in the basin since they hold senior water rights, even if they are located outside of the

workers-electric-flood-control-irrigation-1369398af058b661d40ef6b68216c775 [https://perma.cc/9YK8-N9K7].

[53] *Id.*

[54] The conclusion of this section includes a chart breaking down the similarities and differences of all four alternatives for Colorado River stewardship by the Bureau of Reclamation.

[55] Risks throughout this section is operationalized as risks to the ability to supply sufficient water to extract lithium from deposits along the Colorado River Basin.

[56] Chris Harris, Illustration of Colorado River Basin, *in* GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM WIKI, gcdamp.com (2012), https://gcdamp.com/index.php/File:Colorado_River_Basin-_MAP-_CRBC-_Chris_Harris.jpg [https://perma.cc/HS2P-B48F].

[57] Press Release, Metro. Water Dist. of Southern California, California Water Agencies Submit Colorado River Modeling Framework to the Bureau of Reclamation (Jan. 31, 2023), https://www.mwdh2o.com/press-releases/california-water-agencies-submit-colorado-river-modeling-framework-to-bureau-of-reclamation/ [https://perma.cc/73JK-NYKQ].

geographical basin itself.[58] Finally, the Salton Sea, home to the Hell's Kitchen Project, sits between the labeled IID and CVWD.

While the Colorado River Plan 2026's proposed alternatives are distinct from one another, all four share two features which may negatively impact the lower basin states' water allocations and, by extension, the lithium industry concentrated there.[59] First, the Bureau affirms that additional water allocations to combat water shortages among the Colorado River Basin states will be required if Lake Mead, one of the basin's primary reservoirs, reaches dead pool status[60] as a result of drought or continued

[58] Stephen Benson, *Imperial Valley Takes its Colorado River Water Rights Seriously*, DESERT SUN (Feb. 26, 2023), https://www.desertsun.com/story/opinion/contributors/valley-voice/2023/02/26/imperial-valley-takes-its-colorado-river-senior-water-rights-seriously/69911379007/ [https://perma.cc/35FW-W6DQ].

[59] Bureau of Reclamation, *supra* note 40.

[60] *Id.*; Robyn White, *What Happens If Lake Mead Hits Dead Pool and Hoover Dam Stops Working?*, NEWSWEEK (Feb. 18, 2023), https://www.newsweek.com/lake-mead-dead-pool-hoover-dam-

overconsumption.[61] Although the risk of Lake Mead reaching dead pool status varies across alternatives, the risk persists under each, especially as climate change causes droughts and other hydrological conditions that accelerate the use of the Colorado River Basin's water.[62] Second, since negotiations with México pursuant to the 1944 United States-México Water Treaty will not begin until the Bureau adopts one of the alternatives in August 2026, there is no guarantee that these negotiations will not result in additional water shortages beyond those outlined in the proposed alternatives.[63] Together, these shared aspects paint a clear picture: management of the Colorado River Basin under the Colorado River Plan 2026 reflects growing concerns about increased water scarcity in the Western United States. As a result, each alternative envisions a future of water management in which water shortages will be distributed more frequently across basin users. While that distribution may not be concentrated equally across all parties, every user, including lithium extractors, will face some degree of shortage. As a result, lithium extractors planning to begin operations following the implementation of the Colorado River Plan 2026 must be aware of the expected changes in water management to both build an effective operation and protect themselves from litigation risks. Without a rule from a federal court that these concerns should not be considered by EISs, the Colorado River Plan 2026 allows for groups to continue to stall lithium operations by raising legitimate fears about near-term water allocation issues. Even if lithium operators ultimately succeed in defending their EISs, their operations may be stalled or disrupted by the water cuts that will persist as water management of the Colorado River Basin becomes increasingly difficult.

B. Alternative 1

The Bureau of Reclamation's Alternative 1 is designed to achieve successful and full implementation without requiring additional statutory authority by Congress or additional shareholder agreements between the lower basin and upper basin states.[64] This makes it an administratively

ramifications-1781704 [https://perma.cc/T7CG-XW57] (explaining the importance of preventing dead pool at lake mead which would result in the cessation of functions at the Hoover Dam, including both the generation of power and delivery of water to around forty million people).

[61] Bureau of Reclamation, *supra* 40; *Id.* at 1.

[62] *Id*.

[63] *Id*.

[64] U.S. Bureau of Reclamation, *Post-2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead: Narrative of National Environmental Policy Act Alternatives* (Nov. 2024), https://www.doi.gov/sites/default/files/documents/2024-11/narrative-updated.pdf [https://perma.cc/9XGV-QADH]

simple option but also one which may prove inflexible in responding to worsening conditions throughout the Colorado River Basin. Alternative 1 primarily prioritizes the Bureau of Reclamation's obligation to protect critical federal infrastructure, such as the Glen Canyon Dam.[65] Preservation of this infrastructure would be achieved through the continued use of the existing priority system to distribute water shortages, which eliminates water allocations to "surplus water users" first and protects the water allocations of the most senior water users.[66] Although this alternative offers the highest risk that critical hydrological features, such as Lake Mead, could reach dead pool status, it is also likely to result in minimal short-term changes to water allocations, since it is largely a continuation of current water management policies.[67]

Because Alternative 1 represents only minor changes to current water management policy, its impacts on the nascent lithium industry should be evaluated in both the short-term and long-term. In the short-term, especially relative to other alternatives which may result in the lower basin states receiving more distributions of water shortages, lithium operations and their planned water usage would likely face little disruption—so long as their water allocation rights flow through senior water right holders. For example, the Hell's Kitchen Project in California's Imperial Valley would be safeguarded under this plan since its water allocation would come from the Imperial Irrigation District, the most senior water right holder to the Colorado River Basin.[68] While many senior water rights holders are concentrated in the lower basin states (explaining their previously held leverage in water management negotiations), not all lithium operations in the lower basin states would benefit from this plan, especially when the Colorado River Basin reaches critical conditions. Operations that receive water allocations through less senior water rights holders or from surplus water supplies would be the first to experience water cuts once preservation of critical federal infrastructure becomes necessary.

[65] *Id*.

[66] Herb Dishlip Consulting, *A Guide to Colorado River Water Supplies and Entitlements Within the State of Arizona* 11-12, N. ARIZ. MUN. WATER USERS ASS'N (Nov. 16, 2007), https://www.azwater.gov/sites/default/files/2022-11/Namwua_Dishlip%20report1.pdf [On File with the Columbia Journal of Environmental Law]

[67] BUREAU OF RECLAMATION, POST-2026 COLORADO RIVER RESERVOIR OPERATIONAL STRATEGIES FOR LAKE POWELL AND LAKE MEAD: NARRATIVE OF NATIONAL ENVIRONMENTAL POLICY ACT ALTERNATIVES (2024), https://www.doi.gov/sites/default/files/documents/2024-11/narrative-updated.pdf [https://perma.cc/9XGV-QADH]

[68] Stephen Benson, *Imperial Valley Takes its Colorado River Senior Water Rights Seriously*, DESERT SUN (Feb. 26, 2023), https://www.desertsun.com/story/opinion/contributors/valley-voice/2023/02/26/imperial-valley-takes-its-colorado-river-senior-water-rights-seriously/69911379007/ [https://perma.cc/35FW-W6DQ]

Further risks emerge if Alternative 1's persistence of the status quo results in increased water shortages or if bodies like Lake Mead reach dead pool status. Under these circumstances, both lower basin states—where lithium operations are concentrated—and system-wide lithium operations will suffer. Past actions by the Bureau of Reclamation show that when Lake Mead's health is threatened, the lower basin states are often held responsible for necessary water shortage allocations to preserve the reservoir. For example, in 2023, the Bureau of Reclamation ordered additional water shortage allocations to be borne by the lower basin states to protect Lake Mead.[69] Such disparate geographic conservation efforts heighten the risks for additional actions disproportionately impacting industries concentrated in the lower basin states.

In conclusion, Alternative 1 represents the smallest departure from current practice, yet it does not erase the fact that management of the Colorado River following implementation of the Colorado River Plan 2026 will be marked by increased distribution of water shortages, sometimes in ways concentrated among the lower basin states where most lithium operations are concentrated. While preservation of senior water rights may offer protection to some lithium extractors, the reality that Lake Mead is threatened and that not all lithium operations will benefit from senior water rights will mean that even under Alternative 1, the operating landscape for water allocation will look very different from today.

C. Alternative 2

Alternative 2 introduces new methods of allocating water shortages throughout the Colorado River Basin and, as a result, introduces risks to users who do not anticipate changes to water allocation, such as lithium extractors whose EISs do not account for the Colorado River Plan 2026.[70] Like Alternative 1, Alternative 2 maintains the primary goal of preserving federal infrastructure, but works to achieve this goal through a system-wide water shortage distribution system to prevent either Lake Mead or Lake Powell from reaching dead pool status and to preserve operations of the Glen Canyon Dam.[71] Under this approach, contributions from the upper basin states would supplement the lower basin states' reservoirs, such as Lake Mead and Lake Powell. This shortage distribution system

[69] Ariz. Dep't of Water Res., *Lower Basin Proposal Adopted by Federal Government Stabilizes Colorado River System Through 2026*, ARIZ. WATER (May 10, 2024), https://www.azwater.gov/news/articles/2024-05-10 [On File with the Columbia Journal of Environmental Law]

[70] Bureau of Reclamation, *supra* note 40.

[71] *Id.* at 3.

differs from Alternative 1 and previous practices[72] that relied primarily on lower basin states to preserve Lake Mead.

Understanding Alternative 2 as a scenario where no change or only positive change occurs for lithium extractors operating in the lower basin states would be a misreading of Alternative 2's implications. The sharing of water cuts under Alternative 2 does not erase risk for lithium developers seeking approval for their projects today; rather it reshapes it in two ways. First, water cuts in the lower basin states would still occur. Although the depth of required cuts may be lessened relative to other alternatives, they will still be greater than what is accounted for under the current plan and in the process of approving lithium mines.[73] Second, by implementing a system-wide method of allocating water cuts, Alternative 2 will disrupt the currently operable priority system of distributing water shortages. In other words, these conservation efforts will be shared across priority groups, unlike some other alternatives.[74] Alternative 2 offers the assurance that the upper basin states may overall contribute more to preserve Lake Mead and Lake Powell, but that the contributions that are derived from the lower basin states will come from all users within those states, not simply the surplus users or the least senior water right holders. This would lessen the protections offered to lithium operations, which may be operating with water allocations from more senior water right holders who would be insulated under other alternatives.

To summarize, Alternative 2 poses significant litigation risks to lithium extractors in the Colorado River Basin. This is namely because, while it does not eradicate the priority-system currently in place, it seriously disrupts the protections that the system offers to senior water right holders. This disruption deepens the risk that extractors in the lower basin states who benefit from senior water rights will experience deeper cuts to their water allocations than would be expected under the current regime. This increased vulnerability greatly intensifies competition for water access among varying interests, such as conservationist goals around the Salton Sea and industrial goals for lithium in the same region. Because Alternative 2 increases the risk of local water disputes in a foreseeable way, its impacts should be accounted for in project EISs if developers aim to avoid challenges that could delay or derail approvals.

[72] Arizona Dep't of Water Res., *Lower Basin Proposal Adopted by Federal Government Stabilizes Colorado River System Through 2026*, ARIZ. WATER (May 10, 2024), https://www.azwater.gov/news/articles/2024-05-10 [On File with the Columbia Journal of Environmental Law]

[73] Bureau of Reclamation, *supra* note 40.

[74] *Id.* at 3.

D. Alternative 3

Alternative 3, inspired by the proposal submitted by the consortium of conservationist groups, would shift the burden of water shortages in notable ways. First, Lake Powell would be evaluated in the context of the hydrology and resources of the upper basin states rather than the context of the resources of lower basin states.[75] Second, once sufficient water elevations are reached, management of Lake Powell would return to a "run of the river model."[76] Third, conservation efforts will be shared across both the upper basin states and the lower basin states.[77] However, water allocation cuts in the lower basin states will be tied to evaluations of recent hydrology and combined levels of the Colorado River Basin's seven storage reservoirs, rather than only Lake Mead or Lake Powell.[78] Overall, this alternative emphasizes stewardship of the entire Colorado River Basin to minimize the risk of dead pools.

Alternative 3 will impact the United States' nascent lithium industry in three primary ways. First, while a system of allocating conservation efforts across the upper basin and lower basin states is preferable for industries concentrated in lower basin states, it still entails more water conservation efforts than are currently accounted for in EISs, as contemporary EISs do not anticipate the post-2026 water management regime. Thus, even though there may be fewer water cuts for lower basin states' water users, Alternative 3 still presents a future in which increased water conservation efforts are not being accounted for and leaves lithium operations' EISs open to legal challenges.

Second, tying lower basin states' water conservation efforts to the combined total value *may* lessen the frequency or depth of required water cuts, depending on the trigger point established. For example, a higher trigger point may result in less frequent or less deep-water cuts, while a lower trigger point would result in more frequent or deeper water cuts. The seven-reservoir trigger point was originally proposed by the lower basin states, who advanced it as a way to decrease their share of water cuts.[79] This seven-reservoir system is opposed to the use of Lake Mead (which

[75] Bureau of Reclamation, *supra* note 40.
[76] *Id.* at 3.
[77] *Id*.
[78] *Id*.
[79] Letter from Lower Basin State Representatives to Hon. Camille Touton, Bureau of Reclamation Commissioner (Mar. 6, 2024), https://www.snwa.com/assets/pdf/lower-basin-alternative-letter-march2024.pdf [On File with the Columbia Journal of Environmental Law].

has specific problems), Lake Powell, or both to determine water allocations from the lower basin states.[80]

Third, Alternative 3's goal of managing releases from some reservoirs under a "run of the river" model is an ambitious goal. If this goal helps determine the trigger points for introducing new conservation efforts, then it is likely that trigger points will be set much lower than alternative models. Thus, even though certain features of Alternative 3 may appear to offer relatively better conditions for lithium operations, water conservation efforts may be activated more easily, undermining perceived benefits to water access and the distribution of water allocations will occur in ways that are unaccounted for and wholly ignored by the current approval process of lithium operations.

E. Alternative 4

Alternative 4 hopes to breed cooperation between the lower and upper basin states by hybridizing requests made by both parties. First, it incorporates system-wide conservation efforts to share the burden of water shortages between the upper and lower basin states.[81] Second, it proposes a hybridized process for allocating conservation efforts.[82] This process would use both the water priority approach and the pro-rata approach,[83] although the exact mechanics of how this would play out are unclear. Finally, it bases the lower basin states' water allocations on the combined total storage of the Colorado River Basin's seven-reservoir system, rather than relying solely on Lake Mead and Lake Powell.[84]

The most distinctive feature of Alternative 4 is the hybridization of pro-rata and priority approaches. This feature will create a scenario in which, under certain circumstances, the resources of senior water rights holders are protected.[85] Such a system would protect projects like the Hell's Kitchen Project in California's Imperial Valley.[86] The Hell's Kitchen

[80] Camilo Salcedo, *Multiple Plans Proposed for Post-2026 Colorado River Operations*, WATER RESOURCE RESEARCH CENTER (Apr. 19, 2024), https://wrrc.arizona.edu/news/multiple-plans-proposed-post-2026-colorado-river-operations [https://perma.cc/EJH7-MRER].

[81] Bureau of Reclamation, *supra* note 40.

[82] *Id.* at 3.

84Mandatory Water Use Curtailment, LOWER COLO. RIVER AUTH., https://www.lcra.org/water/permits-contracts/water-supply-contracts/mandatory-water-use-curtailment/ [https://perma.cc/U9DC-ZEJP].

[84] *Id*.

[85] *Id*.

[86] *The Power of California's Lithium Valley*, C THERMAL (Feb. 20, 2023), https://www.cthermal.com/projects [https://perma.cc/WT99-PK6Q]; Stephen Benson, *Imperial Valley Takes its Colorado River Senior Water Rights Seriously*, DESERT SUN (Feb. 26, 2023). https://www.desertsun.com/story/opinion/contributors/valley-voice/2023/02/26/imperial-valley-

Project would benefit from a plan that protects senior water rights, since California's Imperial Valley holds senior water rights to the Colorado River.[87] At the same time, a pro-rata system would distribute water allocation based on usage, not rights of access. This would undoubtedly impact the water allocations made to some senior rights holders who are afforded more water than they use and may profit from selling excess water.[88] Theoretically, a pro-rata system would protect water actively used by lithium operations—at least until overall supply becomes insufficient to meet demand for water by parties with rights to the water. Some states don't expect the mismatch between supply and demand to be expected until 2050, but other groups note that total supply has long outpaced demand throughout the Colorado River Basin.[89] A system of sharing required conservation efforts across the upper basin and lower basin states is relatively the best-case scenario for lowering the impact of conservation efforts on lithium operations. Nonetheless, water allocations under Alternative 4 will be distributed in ways that are unaccounted for by the current approval process of lithium operations.

takes-its-colorado-river-senior-water-rights-seriously/69911379007/ [https://perma.cc/458V-NZFA].

[87] *Id*.

[88] Mackenzie Elmer, *San Diego Selling Back Some Pricey Colorado Water for Cheaper Met Water*, VOICE OF S. D. (Nov. 9, 2023), https://voiceofsandiego.org/2023/11/09/san-diego-selling-back-some-pricey-colorado-river-water-for-cheaper-met-water/ [https://perma.cc/VAK6-A2VM]

[89] Elise Schmelzer, *Colorado's Demand for Water is Slated to Surpass Supply by 2050*, DENV. POST (May 20, 2024), https://phys.org/news/2024-05-colorado-demand-slated-surpass-lawmakers.html [https://perma.cc/U7HD-M958]; Chris Kuzdas, *Bureau of Reclamation Confirms Deeper Colorado River Shortages in 2023*, ENV'T DEF. FUND (Aug. 16, 2022), https://www.edf.org/media/bureau-reclamation-confirms-deeper-colorado-river-shortages-2023-and-no-deal-yet-among-0.

F. Summary Chart

	Method of Distributing Water Shortages	Impacts on Lower Basin States[90]	Potential Impacts on Lithium Mining
Alternative 1[91]	Water shortages are distributed through pre-existing seniority water rights hierarchy.	Limited impact unless the plan is unable to prevent Lake Mead from reaching deadpool status.	Smallest potential impact on lithium mining, except through increased frequency and depth of water cuts. Intense water cuts if Lake Mead approaches deadpool status.
Alternative 2[92]	System-wide contributions to preserve Lake Mead and Lake Powell.	Contributions from the upper basin states will contribute to lower basin reservoirs, but senior water right holders in the lower basin states will be less insulated from contributions.	Removes insulation from lithium operators relying on senior water right holders but likely results in overall smaller cuts to lithium operators than other alternatives. Cuts will still be deeper and more frequent than current system.
Alternative 3[93]	Upper basin state hydrology is evaluated for the preservation of lake mead.	The upper basin states' hydrology is used to evaluate the water needed for Lake Mead, but this is done to prioritize conservation goals and a goal of returning the river to a "run of the river" model.	Conservationist goals, if used to set the trigger point for water cuts, may result in more serious water cuts to improve the long-term health of the river basin. This could seriously hamper water access to lithium developers.
Alternative 4[94]	Hybridizes a pro-rata and water priority system to determine the distribution of water cuts.	Since lower basin states will be evaluated on a seven-reservoir system instead of solely on the health of Lake Mead and Powell, it will likely improve the outlook for water access.	This would preserve the insulation, to some extent, of lithium mines relying on senior water rights and lower relative depth and frequency of cuts to lower basin operators when compared to other alternatives.

IV. ALTERNATIVE JUDICIAL AND ADMINISTRATIVE RESPONSES TO THE COLORADO RIVER PLAN 2026

The Colorado River Plan 2026 will significantly alter water allocations, with some alternatives even modifying long-standing priority water allocation structures. In the context of lithium operations, this means that EISs approved today do not account for the water governance system that will be in place when lithium projects will begin operations in the post-2026 period. If lithium extraction facilities hope to avoid costly and time-

[90] *See* Alan Kennedy, *White Gold: Mapping U.S. Lithium Mines,* VISUAL CAPITALIST (Mar. 21, 2024), https://www.visualcapitalist.com/sp/us-lithium-mines-map/ (highlighting the concentration of known lithium deposits in the lower Colorado basin states).
[91] Bureau of Reclamation, *supra* note 40.
[92] *Id*.
[93] *Id.* at 3.
[94] *Id*.

consuming litigation as they obtain approval for new lithium projects, they must ensure that their accompanying EISs address foreseeable changes in water allocations before the end of the decade. This note takes the position that EISs that avoid discussions of the Colorado River Plan 2026 or changes in water allocation should be struck down as arbitrary and capricious. In response, the note proposes alternative management processes that balance the need to accelerate lithium development with the need for faithful planning of water resources throughout the Colorado River Basin.

A. Routes for Judicial Correction

Currently unfolding court cases are testing the theory that lithium extractors with EISs that do not account for the Colorado River Plan 2026 may be arbitrary and capricious.[95] While community organizations and residents of the Colorado River basin are spearheading these legal battles, ample support for finding the plans arbitrary and capricious exist within both the caselaw and literature.[96] In fact, this note suggests the argument must extend further in this anticipatory period before the Plan's adoption: EISs must account for the foreseeable impacts these plans will have on water availability as drought conditions persist in the Colorado River Basin. If EISs do not account for those impacts, courts will and should find that the EISs are arbitrary and capricious.

Support for this position begins in the Administrative Procedure Act (hereinafter "APA").[97] The APA provides that final agency actions, which include EISs, are reviewable by the judicial system and may be overturned when they are found to be arbitrary and capricious.[98] The arbitrary and capricious standard is illuminated by both caselaw and the APA. The APA provides that the arbitrary and capricious standard is violated when a court finds that any of the four principles apply:

I. the agency relied on evidence outside the scope of Congress' intention;
II. the agency entirely failed to consider important aspects of a problem;

[95] Comite Civico Del Valle, et al vs. County of Imperial, et al, Docket No. ECU003425 (Cal. Super. Ct. Mar 13, 2024).

[96] Eric Everwine, *Judge Orders Clarity on Key Disputes in Lithium Valley Lawsuit*, HOLTVILLE TRIB. (Oct. 31, 2024), https://holtvilletribune.com/2024/10/31/judge-orders-clarity-on-key-disputes-in-lithium-valley-lawsuit/#:~:text=Comit%C3%A9%20Civico%20and%20Earthworks%2C%20both,first%20hearing%20in%20the%20case [https://perma.cc/KA7W-XTY7].

[97] 5 U.S.C. § 706

[98] *Id*.

III. the agency offered a rational contrary to the evidence before the agency; or,
IV. the rational provided by the agency is so implausible that it cannot be explained by a differing agency perspective.[99]

The U.S. Court of Appeals for the District of Columbia Circuit further elaborated on these principles. In *Sierra Club v. Federal Energy Regulatory Commission*, 867 F.3d 1357 (D.C. Cir. 2017), the court held that EISs specifically may be found to be arbitrary and capricious when they lack sufficient discussion of relevant issues and opposing viewpoints.[100] Despite community comments and requests, many final EISs for lithium extraction projects omit any discussion of water allocation under the Colorado River Plan 2026. The Imperial Valley's Hell's Kitchen Project exemplifies this omission.[101]

Both caselaw and statutory law highlight that the arbitrary and capricious standard provides multiple routes for litigation to successfully delay or halt lithium projects whose EISs failed to discuss the Colorado River Plan 2026. For example, the arbitrary and capricious standard could be successful under either *Sierra Club v. FERC* or the APA's "failure to consider important aspects of a problem" prong. To succeed, litigants need only highlight the Plan's impact on water access for lithium extractors or how lithium extractors may exacerbate water allocation pressures to rebut an EIS's lack of discussion on water allocation. Successfully demonstrating these omissions provides grounds to delay or disrupt planned lithium operations in the Colorado River Basin. While no EISs have been overturned at this point for their lack of engagement with the Colorado River Plan 2026, litigation is already underway challenging EISs that lack this dialogue.[102]

The application of the arbitrary and capricious standard to EISs' reflection of the Colorado River Basin's stewardship and the Colorado River Plan 2026 is not without its weaknesses. Namely, lithium extractors may argue that accounting for or planning for the changes in water allocation is too to be legally required. Courts have repeatedly held that EISs cannot be challenged for not addressing speculative or unforeseeable

[99] *Id.*; Motor Vehicle Manufacturers Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29 (1983).
[100] Sierra Club v. FERC, 867 F.3d 1357, 1368 (D.C. Cir. 2017) (abrogated on other grounds).
[101] *See* CHAMBERS GROUP, FINAL ENVIRONMENTAL IMPACT REPORT FOR THE HELL'S KITCHEN POWERCO 1 AND LITHIUMCO 1 PROJECT IMPERIAL COUNTY, CALIFORNIA (2023), https://www.icpds.com/assets/Hell'sKitchen-FEIR-1701483474.pdf [https://perma.cc/XVJ2-D85Q].
[102] Kori Suzuki, *Hearings Begin in Lawsuit Challenging First Lithium Project in the Imperial Valley*, KPBS (Nov. 7, 2024). https://www.kpbs.org/news/environment/2024/11/07/hearings-begin-in-lawsuit-challenging-first-lithium-project-in-the-imperial-valley.

impacts.[103] When making these rulings, some courts have relied on 42 U.S.C.A. § 4332 where EISs are required to provide statements only on "reasonably foreseeable environmental impacts."[104] The strength of this defense by would rest on the fact that, at this moment, it is unclear how water allocation would change or which alternative the Bureau of Reclamation will ultimately implement in 2026. The standard applied by courts to determine if a topic is too speculative is whether there is sufficient available information "to make consideration of the topic useful for decision makers."[105] Lithium develops may rely on this standard to argue that as there is no sufficient information about which alternative will be selected, EISs do not need to discuss the Colorado River Plan 2026.

However, in *Dubois v. U.S. Dept. of Agriculture,* the First Circuit Court of Appeals clarified that agencies may not forgo their responsibility to assess impacts in EISs by labeling all discussions of the future as "crystal ball inquiry."[106] Applying this ruling, litigants may respond to lithium developers by arguing that the Colorado River Plan 2026's impacts are not speculative: decades-long and worsening drought conditions throughout the Colorado River Basin make it sufficiently foreseeable that water allocation will change. Therefore, EISs that fail to acknowledge these dynamics are arbitrary and capricious.

Overall, while lithium extractors may attempt to prevail in litigation by labeling changes under the Colorado River Plan 2026 as speculative, this process does not stop the litigation itself from occurring and the caselaw cuts against claims of speculation. Instead, to promote effective stewardship of the Colorado River Basin and the development of a critical mineral industry in the United States, the Bureau of Reclamation should work to sidestep these lawsuits altogether and promote a Climate Alternative for the Colorado River Basin's management.

B. Alternative Management Goals

This note suggests that to balance the stewardship of the Colorado River Basin and deter time consuming litigation, the Bureau of Reclamation should create and implement a Climate Alternative. Such an alternative would prioritize water access for critical minerals and infrastructure that are necessary to achieve emission goals and combat climate change by

[103] Montana Env't Info. Ctr. v. U.S. Off. of Surface Mining, 274 F.Supp.3d 1074, 1091 (D. Mont. 2017).
[104] 42 U.S.C. § 4332.
[105] Dubois v. U.S. Dep't of Agric., 102 F.3d 1273 (1996); Sierra Club v. U.S. Forest Serv., 857 F.Supp.2d 1167 (2012).
[106] *Id*.

driving drought conditions throughout the Colorado River Basin. The Bureau's inclusion of a conservationist alternative makes it clear that the Bureau is prepared to consider other stakeholders beyond the states in the post-2026 water management. The Bureau should be interested not only in conservation efforts, but also in global climate change, which is the root cause for the region's decades-long drought.

The Climate Alternative could take one of two forms: (1) protecting the water access of mineral and manufacturing operations (e.g., batteries) when shortages are distributed across right holders to the Colorado River or (2) increasing the seniority of water rights for projects that are contributing to efforts to combat climate change. Both mechanisms share the same goal: to insulate lithium operations from the processes that will be used to distribute water allocations across water users in the Colorado River Basin. If such a goal was adopted, it would resolve concerns about competing water interests since the Bureau of Reclamation would cement critical mineral operations as a higher priority interest relative to other interests. Additionally, it would reassure critical mineral and lithium investors that their operations will continue to operate even if conditions worsen throughout the Colorado River Basin, since their water allocations would be the last to experience the distribution of shortages.

The adoption of a Climate Alternative would likely require statutory changes by Congress. Without statutory changes, the Climate Alternative would likely face serious legal challenges. The most foreseeable challenges are potential conflicts between the statutory conservation obligations of the Bureau of Reclamation and the climate change goals of the proposed alternative. In cases of conflict, the Bureau would be compelled to set aside the non-statutory goal to satisfy its statutory obligations. For example, some lithium operations in the lower basin states have been challenged under the Endangered Species Act for their impacts on local flora.[107] In Nevada, one project was challenged because it was believed to threaten local endangered flora known as Tiehm's Buckwheat.[108] If the alternative's distribution of water shortage empowers the production of critical minerals at the expense of the endangered species in the Colorado River Basin, obligations to preserve those species would succeed.[109] Thus, a Climate Alternative that would conflict with priorities

[107] Wyatt Myskow, *A Nevada Lithium Mine Nears Approval, Despite Threatening the Only Habitat of an Endangered Wildflower*, INSIDE CLIMATE NEWS (Sept. 21, 2024), https://insideclimatenews.org/news/21092024/nevada-lithium-mine-nears-approval-threatening-endangered-wildflower/ [https://perma.cc/EMZ8-PFW7].

[108] *Id*.

[109] *Preserving the Incredible Wildlife of the Colorado River Basin,* NATURE CONSERVANCY (Mar. 20, 2024), https://www.nature.org/en-us/about-us/where-we-work/priority-landscapes/colorado-river/wildlife-

outlined in earlier environmental conservation statutes would likely face serious legal challenges from conservationists to limit the protections afforded to lithium operations under a Climate Alternative without the creation of new statutory authority.

At the same time, there is some evidence that courts have protected complex management plans implemented by the Bureau even when they have conflicted with goals or protections outlined in statutes like the Endangered Species Act.[110] For example, several conservationist organizations, challenged a plan for the management of the Glen Canyon Dam, arguing that its model for the distribution of water to and from Glen Canyon Dam endangered the vitality of the Colorado River Basin and its wildlife. Ultimately, the court held that the Bureau of Reclamation maintained the authority to issue the Glen Canyon Dam management plan without consideration of the impacts of climate change on conservation goals as demanded by the plaintiffs. While some evidence suggests that courts may be willing to deprioritize conservation goals—at least those held by conservationists—a Climate Alternative would mark a far starker departure from the statutory regime on which conservationists rely on and would therefore be best defended if accompanied by congressional action.

C. Alternatives to the Colorado River Basin

Lithium does not exist exclusively within the Colorado River Basin.[111] This raises the question of whether modifying the Colorado River Plan 2026 to disproportionately benefit the lithium industry is necessary to achieve desired climate and energy transition goals. If sufficient lithium can be obtained elsewhere, such modifications to the Colorado River Plan 2026 may be unnecessary. Unfortunately, discovery of lithium outside of the Colorado River Basin has been limited.[112] As of 2024, twelve of the fourteen identified lithium deposits in the United States are in the lower basin states (nine in the state of Nevada alone).[113] Further, the only operable lithium mine in the United States is currently located in the lower

video/#:~:text=The%20river%20and%20its%20tributaries,threatened%20or%20endangered%20fish%20species [https://perma.cc/E9G2-C6BM].

[110] Save the Colorado v. United States Dep't of the Interior, No. CV-19-08285-PCT-MTL, 2022 WL 18859975 (D. Ariz. Dec. 23, 2022).

[111] Prachi Patel, *Massive Potential Lithium Source Found in Pennsylvania*, CHEM. & ENG'G NEWS (Jun. 4, 2024), https://cen.acs.org/energy/Massive-potential-lithium-source-found/102/web/2024/06 [https://perma.cc/782X-96C3].

[112] Alan Kennedy, *White Gold: Mapping U.S. Lithium Mines*, VISUAL CAPITALIST (Mar. 21, 2024), https://www.visualcapitalist.com/sp/us-lithium-mines-map/ [On File with the Columbia Journal of Environmental Law].

[113] *Id*.

basin state of Nevada.[114] Therefore, unless the landscape of lithium deposits within the United States rapidly evolves, the management of the Colorado River must account for the demands of lithium operations in order to support the nascent industry and, by extension, the overall energy transition.

V. CONCLUSION

The management of the Colorado River Basin will inevitably change following the implementation of the Colorado River Plan 2026. For the nascent and water-intensive lithium extraction industry, which is heavily concentrated within the lower basin states,[115] this shift creates novel litigation risks and productivity problems that existing legal frameworks are not yet adapted to manage, especially considering massive federal interest and investment in securing domestic supplies of such critical minerals.

By outlining the four proposed alternatives by the Bureau of Reclamation, this note shows that, although differences exist between the alternatives, no alternative would leave the lithium extraction industry's access to water in the Colorado River Basin untouched. Further, this note demonstrates that despite claims that such impacts are too speculative, the future of the basin will inevitably be defined by broader and more frequent water shortages affecting more users. On this basis, the note suggests that EISs failing to address the foreseeable impacts of the Colorado River Basin should be found to be arbitrary and capricious. This conclusion is reinforced in part by pointing towards the ongoing litigation that is already delaying lithium projects in the lower basin states, where residents and community groups have already begun demanding EISs account for changes in the Colorado River's stewardship later this decade. Finally, the note proposes that, to balance the stewardship of the Colorado River Basin and deter time-consuming litigation, the Bureau of Reclamation should create and implement a Climate Alternative which prioritizes water access to the critical minerals and infrastructure that are necessary to achieve emission goals and combat the climate change driving drought conditions throughout the Colorado River Basin.

[114] Ana Almerini, *Lithium Mines in the United States: Where Mining Stands Today*, SOLAR REVS. (Jan. 2025), https://www.solarreviews.com/blog/lithium-mining-in-the-united-states#:~:text=The%20Albemarle%20Silver%20Peak%20Mine,like%20North%20Carolina%20and%20California [https://perma.cc/82N6-FKYC].

[115] Alan Kennedy, *White Gold: Mapping U.S. Lithium Mines*, VISUAL CAPITALIST (Mar. 21, 2024), https://www.visualcapitalist.com/sp/us-lithium-mines-map/ [On File with the Columbia Journal of Environmental Law].