Indigenous People's Water Rights in the Colorado River Basin in the Face of Climate Change

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Abstract

The water rights of indigenous peoples within the Colorado River Basin are at risk due to climate change, with economic, social, and environmental impacts. In order to analyze these impacts and the broader implications of challenged water rights in the region, sociological models based on human-nature interactions will be used. By using legal cases surrounding water allocations for the Navajo Nation, Richard White's *The Organic Machine* and Langdon Winner's *Do Artifacts Have Politics?*, and water management policies, these impacts to indigenous peoples can be understood. The research paper found that cross stakeholder collaboration is vital for indigenous people to both realize and protect their water rights in the face of climate change effects along the Colorado River. Additionally, this paper argues the importance of providing these indigenous tribes with the infrastructure and flexibility to implement their water rights. This will allow for increased economic opportunity and with governments prioritizing indigenous people's input regarding water management policies, adverse effects from drought conditions in the basin can be minimized.

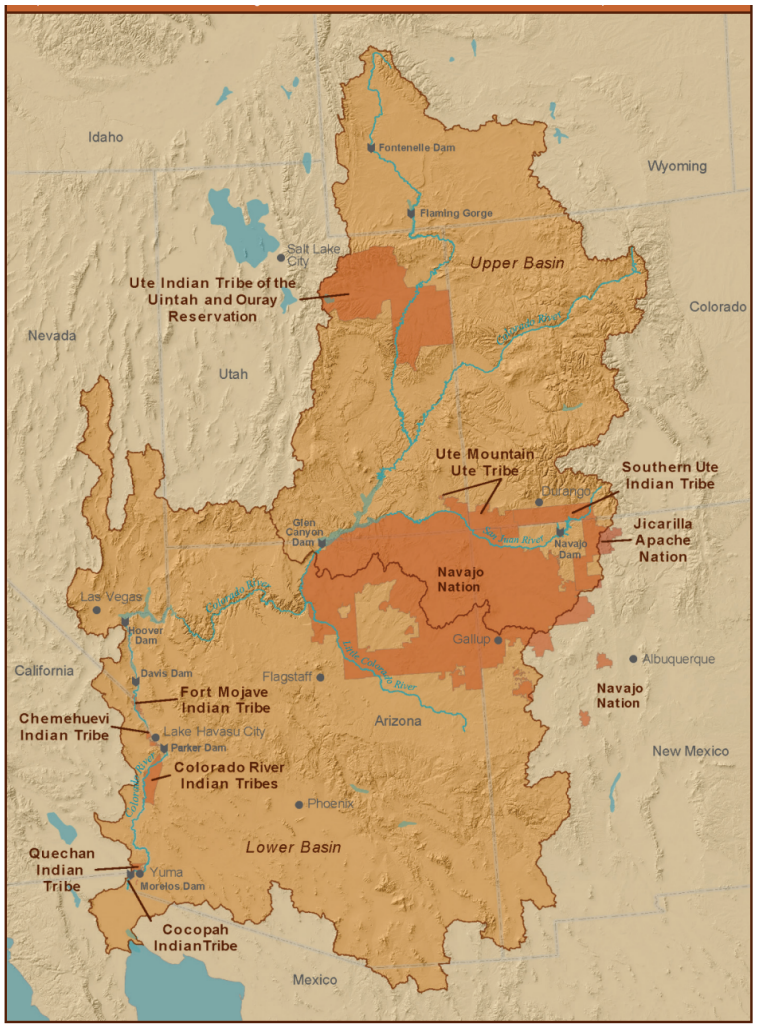
Introduction

With the Colorado River operating under Tier 1 shortage conditions for the first time, as defined by the U.S. Bureau of Reclamation, reconciling the current water rights of indigenous communities can help regions in the western United States of America better meet water demands in a changing climate (Schlageter, 2021). The Colorado River is a water resource that provides stakeholders with more than one trillion dollars of economic activity per year, where increased evapotranspiration is projected to lead to an increased risk of severe water shortages

(Milly, 2020). The tribes within this region include the Chemehuevi and Ft. Mohave in the Lower Basin, the Ak Chin and Ft. McDowell in Arizona, and the Navajo and Southern Ute in the Upper Basin, as seen in Figure 1 (Ten Tribes Partnership, 2018). The implications of shifting water resources for these indigenous peoples within the Colorado River Basin across social dimensions will be analyzed, as this group is a key stakeholder in watershed level planning. There are 29 federally recognized tribes within the basin and each tribal group has unique goals for their water rights, making negotiations and planning for the region a complex social problem (Colorado River Research Group, 2016). Using frameworks presented in the works *The Organic Machine* and *Do Artifacts Have Politics?* interactions between hydrology, legislation regarding water allocations, and economic outcomes can be better understood. This is accomplished through the analysis of human-nature interactions along the Colorado River and describing water as a political object. The works by White and Winner demonstrate how interconnected nature is to economic and social-based outcomes for humans, and this is especially true for water resources along the Colorado River.

Figure 1

Map of the Colorado River Basin showing the reservations of the members of the Ten Tribes Partnership



Note. From "Colorado River Basin Ten Tribes Partnership Tribal Water Study", by Ten Tribes Partnership, 2018. Copyright 2018 by Ten Tribes Partnership.

This research paper will be limited to discussing the current tribal groups within the Colorado River Basin and their water rights associated with water access. These water rights will be viewed through the lens of climate change and broader social and economic outcomes.

Frameworks for ways in which to view water as a fundamental human right and as a political object will also be employed in this paper. The main arguments found in this paper will focus on the social implications of a changing climate on the Colorado River's flows, through analysis of legal frameworks and human-nature interactions, and will not include any mathematical modeling of such flows, environmental impacts, or climatology.

Legal Framework for Water Rights

As these water allocations have implications for industries and groups of people across states in the region, including Wyoming, Colorado, Utah, New Mexico, Arizona, and California, understanding the legal framework for water rights can pinpoint the nature and scope of indigenous water rights. Tribal water rights were first recognized in the 1908 Supreme Court decision, Winters v. United States. This decision was reaffirmed in 1963, where Arizona v. California directed that tribes had reserved and quantified rights to water (Colorado River Research Group, 2016). Ultimately the right to access clean and safe water is a problem of justice, where impending scarcity of water will likely widen the gap between those who have plentiful access to natural resources and those who do not (Zwarteveen, 2014). By understanding the water allocation models and a case study of the Navajo Nation's water access, the issue of water rights as a justice-based problem will demonstrate the need for these indigenous tribes to be at the forefront of water management planning and allocations.

Water Allocations

Indigenous groups in the Colorado River Basin hold water rights to approximately one-fifth of the basin's annual supply, which will likely increase due to current outstanding water claims (Walton, 2015). However, even with the Supreme Court decisions and state-level allocations, many groups still face barriers in realizing the full nature of their water rights. This is

due to infrastructure and limiting legal options for use of the water via lease or other agreements (Armao, 2021). Further, these water allocations are based on “practicably irrigable acreage” (PIA) amounts, as outlined in the Arizona v. California decision (Navajo Nation Water Rights Commission, 2022). The rights of the five tribes included under this decision and standard summed to approximately one million acre-feet of water to be funneled towards about 135,000 acres of arable land, with half of the water amount able to be consumed. (Birdsong, 2011). This creates difficulties in assessing the extent to which water can be reserved for non-agricultural uses by these tribes. Further inequities exist for the water allocation methods under use for indigenous groups in the basin, where these communities are treated with much more stringent standards than non-indigenous groups in order to have irrigation projects federally-funded (Birdsong, 2011). The Colorado River and its subsequent legal and physical infrastructure have not considered the human right to water enough, leaving indigenous people and entire communities behind. Daryl Vigil, the water administrator of the Jicarilla Apache Nation, located in north central New Mexico, stated “there’s a whole bunch of inherent bias, injustice, racism built into the systems that exist, in terms of the allocation to tribal sovereignty” with regard to these initial allocations (Green, 2021). Thus, barriers to indigenous tribe’s full realization of their guaranteed water rights will only become more pronounced in the face of a changing climate and drought conditions. These new conditions will require careful consideration of both the human right to water and the ecological problems associated with manipulating the river and basin further.

Navajo Experience

The Navajo tribe, in the Upper Colorado River Basin, recently came to an agreement with the state of Utah under the Utah Navajo Rights Settlement Act, which was passed in 2020, to

provide enough water to meet the tribe's annual demand and create new water-related infrastructure (Hufham, 2021). While this agreement is historic and greatly beneficial to the Navajo Nation, the access to water for this community was long overdue. By understanding the experience of the Navajo Nation and the pathway towards the recognition of indigenous people's water rights, better policy and action can be taken to address inequities in water allocations towards other minority groups. Resource extraction has plagued the Navajo Nation, with domestic uranium mines under use from 1944 to 1986, which has led to groundwater contamination that persists today (Wilson, 2021). With contaminated water spanning multiple state, federal, and tribal jurisdictions, both environmental regulation and remediation efforts are slow-moving. Leaders of the Navajo Nation, among other tribes, stated that "Helping to provide clean water to us, throughout Indian Country, benefits everyone…" in an effort to gain access to clean water in the face of the spread of COVID-19 (Lakhani, 2021). This situation has allowed for "the inconsistent enforcement of water regulations and delayed environmental remediation…" (Wilson, 2021). The issues facing indigenous peoples, most notably the Navajo Nation, stem from the use of loosely defined and enforced legislation. As stated by Price:

> A right to water does not necessarily include a right to the capital investment necessary to realize the economic benefit of an entitlement, and limits on the uses of water may be at odds with the original purposes of the reservation. (Price, 1976)

Also, the Navajo were not represented during certain planning efforts such as the Colorado River Compacts, which further decreases the bargaining and negotiation power of these indigenous tribes. If certain tribes are left out from water management planning efforts then the entire groups' ability to push for more equitable indigenous development (Price, 1976). However, by passing more legislation in the vein of the Utah Navajo Rights Settlement Act, these minority

groups may finally have a seat at the water rights and planning table and be able to shape their own future.

Human-Nature Interactions

The interactions between humans and nature, namely indigenous people and the Colorado River Basin's water supply, can be analyzed using the frameworks found in Richard White's *The Organic Machine* and Langdon Winner's *Do Artifacts Have Politics?* By leveraging these two science, technology, and society (STS) mental models, new ways of thinking about issues facing the Colorado River can be developed. First, applying White's terminology to the present day drought conditions facing the basin allows for the water insecurity facing indigenous tribes to be viewed through a social-based lens, as opposed to a technical one. Then, knowing the ways in which water can function as a political object, by using Winner's definitions of technical arrangements, will help inform stakeholders on how to best address the implications of climate change through cooperation measures such as inclusive water policy.

Energy and Organization of the Colorado River

The environmental ethics associated with water usage for indigenous tribes, whether for irrigation use or the development of water-consuming businesses on their reservations, can be addressed with White's interpretation of the energy associated with the Columbia River in his work *The Organic Machine* (White, 1995). White's work describes how humans and the surrounding environment ought to work in tandem with one another, providing a viewpoint to balance environmental issues with human history. Further, the issues raised by White regarding the Columbia River maps directly to those associated with the Colorado River. As stated by Cohen, "'Organization' is a central motif, because it makes the meaning of energy transparently

both cultural and natural by showing how disparate elements can be configured into coherent meaning on the river" (Cohen, 2005). The Colorado River serves indigenous communities as a water source for irrigated agriculture and other uses that have profound economic impact on regions. By viewing the Colorado River through a lens of energy and organization, more development projects such as the one outlined in the Navajo Nation section, see above, have a chance of being implemented. There remains a need for new water infrastructure projects, with 5.8% of Native American households lacking complete plumbing in 2019. This statistic places indigenous peoples at a higher risk of disease transmission and indicates the threat of water insecurity facing certain groups in the United States (Wilson, 2021). White argues that the energy inherent in nature requires an equal amount of energy from humans during the formation of organized work, whether that means human labor or the social and political rituals needed for passage along the Columbia River. The cultural power of indigenous groups allows for an increased amount of self-determination of their water rights and how those rights are used, but first, all of the different energies along the Colorado River must converge. As White states on groups fishing along the Columbia River, "To watch such fisheries would be to watch an intricate series of convergences among the energy of the river, the work of the salmon, and the labor of humans" (White, 1995). By viewing the basin as a source of energy to all those who interact with it, better social arrangements of these groups and interests can be developed.

Water as a Political Object

The Colorado River Basin's water supply can be viewed as a technology beyond a source of and method for energy organization, it can also be a political object. This has been outlined in this paper's discussion of water allocations and future cooperation measures, but applying Winner's ideas to this technology can provide further insight on how indigenous communities

will be able to move forward with changing river flows and water allocations facing the region due to climate change, specifically drought conditions (Spiegel, 2021). Technical artifacts can often be interpreted using political language and either have political properties that serve to settle a particular issue in a community or have properties that are inherently political (Winner, 1980).

A case study from California in the 19th century regarding water's function as a political object can be applied to the present-day water rights for the indigenous communities discussed within this paper. In California, water became a boundary object between science and governance over the course of half a century beginning in 1850, beginning with the state's reclamation of Sacramento Valley's swampland. In this case study, water serves as "a critical point of contact between two otherwise relatively distinct realms of institutional action, a contact that generates new discursive, organizational, and material forms in both realms, which in turn stitches them together" (Carroll, 2012). Within the Colorado River Basin's group of stakeholders, the various states that are involved in these water allocations use such allocations as a means of order. For example, the seven states across the basin have had worsening anxiety over upper-basin states such as Colorado, New Mexico, Utah, and Wyoming potentially being forced to send more water downriver in the face of climate change (Finley, 2019). In this case, it is the threat of climate change that has caused water to become a political object, and one that may leave indigenous people and communities behind if they do not have a seat at the negotiating table and then in turn use their water rights to push for effective infrastructure to realize these rights.

Future Cooperation Measures

Due to impending supply and demand shifts along the Colorado River, cooperation measures must be taken that incorporate both forward looking policies and considerations of the human right to water. With the Colorado River's average flow decreasing by 9.3% for every 1 degree Celsius increase in global temperature, this region is at risk for even greater water shortages than the current conditions (Kuzdas, 2021). In light of these climate issues, there is an opportunity for tribal leaders to work with states in the basin, the federal government, and other water users and stakeholders to "... address tribal needs, interests, and priorities alongside other basin interests in water use, development, and conservation" (Water & Tribes Initiative, 2021). In light of this opportunity, water policy strategies centered around the aforementioned analysis concerning the human right to water, the energy and organization of the Colorado River, and the political nature of water will be outlined below.

Water Policy

Water management policies can incorporate social and ecological considerations in order to allow for equitable responses at a basin-wide scale. The Upper Colorado River Basin Compact of 1948 determined individual state water allocations and established the Upper Colorado River Commision to serve as an administrative agency to enact the provisions of the compact (Stern, 2021). In order for indigenous tribes across the upper and lower basin to have a seat at the water management table the Ten Tribes Partnership was formed in 1992. This coalition has worked to strengthen indigenous influence over the use of water resources in the region and has led to positive outcomes for various sectors such as agriculture, with the testing of innovative drip irrigation on fields within Colorado River Indian Tribes (CRIT) farms with other stakeholders such as the Central Arizona Project (CAP) (Colorado River Water Users Association, 2021).

Cooperative management strategies such as those seen with the Ten Tribes Partnership demonstrates the positive impact of having indigenous tribes' water goals at the forefront of the basin's forward-looking planning efforts. However, still today:

> ... management of the Colorado River Basin is marked by a decentralized and fragmented governance system: a complex web of disjointed and piecemeal authorities and institutions inform the allocation and use of water with no single venue to deal comprehensively with Colorado River Basin issues. (Karambelkar, 2020)

Karambelkar argues that stakeholder composition is at the core of the challenges facing water resource planning and governance, where analyzing the institutions that ought to be involved in specific projects and legislation can work to identify the communities that end up being most influenced by the outcomes of specific collaborations (Karambelkar, 2020). Thus, in the face of climate effects, by prioritizing indigenous groups' goals for water, better outcomes for various sectors of the economy and stronger collaboration between stakeholders in the region can be achieved.

Counter Arguments

Another viewpoint on the issue of indigenous people's water rights in the Colorado River Basin is that tribes are first in line for water rights, as outlined by Winters v. United States and subsequent legal cases, so there is not a need to prioritize their input on water management policies. First, many Native American communities are more likely than other ethnic groups in the United States to lack indoor plumbing and past issues with water contamination highlight the importance of advancements in the water rights of indigenous peoples. Further, this point of view does not take into account the climate risk on water rights, where the projected worsening flows along the Colorado River have the potential to diminish the ability of indigenous people to realize their water allocations and decrease subsequent economic opportunities. Also, opponents

to these water allocations for indigenous communities may cite increased water insecurity facing the entire region, where in order to address climate change equitably all parties must use less water and the marketing of unused water by indigenous tribes could lead to increased water stress for states. However, with the health and safety of indigenous tribes such as the Navajo Nation historically not aligned with the health outcomes of non-indigenous groups, their water rights ought to be prioritized.

Conclusion

The challenges currently facing indigenous tribes across the Upper and Lower Colorado River Basin and the potential implications of climate change on the basin's water resources requires the prioritization and development of Native American water use goals. This requirement is evident in current legislation and agreements concerning water allocations, the human-nature interactions as seen through the frameworks of energy and politics, and past examples of cooperative water management policies. As the Colorado River Basin faces worsening flows and conditions, the issues facing indigenous communities, such as inadequate and aging infrastructure, contaminated water, and outstanding water claims can be addressed by using the social-based analysis found in this research paper. These problems facing indigenous tribes are problems of justice, where the environment and human development goals need to be leveraged through the use of increased inter-disciplinary cooperation and state-funded infrastructure projects. This will enable the creation of a sustainable future, with water as a representative object of equity.

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