CONSERVATION SCIENCE PARTNERS

TECHNICAL REPORT
30 June 2025

For the project entitled:

Defending national monuments through a freshwater conservation lens

Recommended Citation: Conservation Science Partners (CSP). 2025. Defending national monuments through a freshwater conservation lens. Technical Report. Truckee, California, USA.

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1. Background and motivation

The Trump Administration's efforts to dismantle longstanding protections for America's most iconic public lands—through rollbacks of national monument designations, potential legislative assaults on the Antiquities Act, and other actions—threaten more than just natural beauty and biodiversity. These actions may jeopardize critical but often underappreciated ecosystem services afforded by protected lands, including providing clean drinking water (Dudley et al. 2016). Loss of protections and land-use conversions can compromise water quality and quantity, thus contributing to negative human health impacts and rising water treatment costs (McDonald et al. 2016). Across the political spectrum, Americans consistently rank clean, safe, and reliable drinking water as a top concern, often above even the economy, health care, and education.[1] Yet, the essential connection between protected lands and the water millions depend on remains underleveraged in advocacy efforts.

Although national monuments represent a relatively small portion of protected lands in the United States, the landscapes and resources they safeguard are often uniquely valuable. Rivers and streams that flow through national monuments benefit from this land protection designation, which can safeguard the natural capacity of lands to produce and maintain clean water. Additionally, restrictions on land-use within monument boundaries limit activities that might otherwise degrade water quality. As a result, the benefits of national monument protection can extend well beyond their borders, supporting downstream water quality and watershed health across broader hydrologic networks.

We sought to quantify the vital role that threatened national monuments play in safeguarding drinking water supplies for communities and, in addition, examine the current and future threats affecting the watersheds benefiting from such protected lands. We leveraged analytical workflows and derived datasets previously developed to support the Center for American Progress in advocating for extending public land protections and those that underpin the National Protected Rivers Assessment, created in collaboration with American Rivers. Specifically, we (1) quantified the number of river miles and watersheds within national monument boundaries or under the influence (i.e., downstream) of the national monuments, (2) estimated the number of water users that may be affected by these rollbacks, (3) characterized the relative importance of watersheds in terms of their importance to drinking water, (4) characterized the threats these watersheds are expected to face in the near future in terms of water quality and quantity, and (5) summarized the socioeconomic characteristics of the communities living in watersheds that could be impacted by the rollback of national monument protections. We focused on a set of 'at-risk' national monuments, corresponding to the national monuments designated by the Clinton, Obama, and Biden presidential administrations that face rollback threats from the current Trump administration (Fig. 1).

The analyses presented in this report primarily focus on the influence of national monuments on surface water. In the U.S., 61% of all public water system withdrawals come from surface

[1] U.S. Water Alliance; American Rivers; Natural Resources Defense Council; Gallup

water and approximately 60% of these withdrawals support the drinking water of 283 million people (~87% of the U.S. population, Dieter et al. 2018). While groundwater (on both public and private lands) also supports drinking water provisioning, the precise populations served by these sources are more difficult to establish, as groundwater may originate near where it is withdrawn or from some distance away (Liu et al. 2022). Therefore, including groundwater in the present analysis was beyond the scope of our effort.

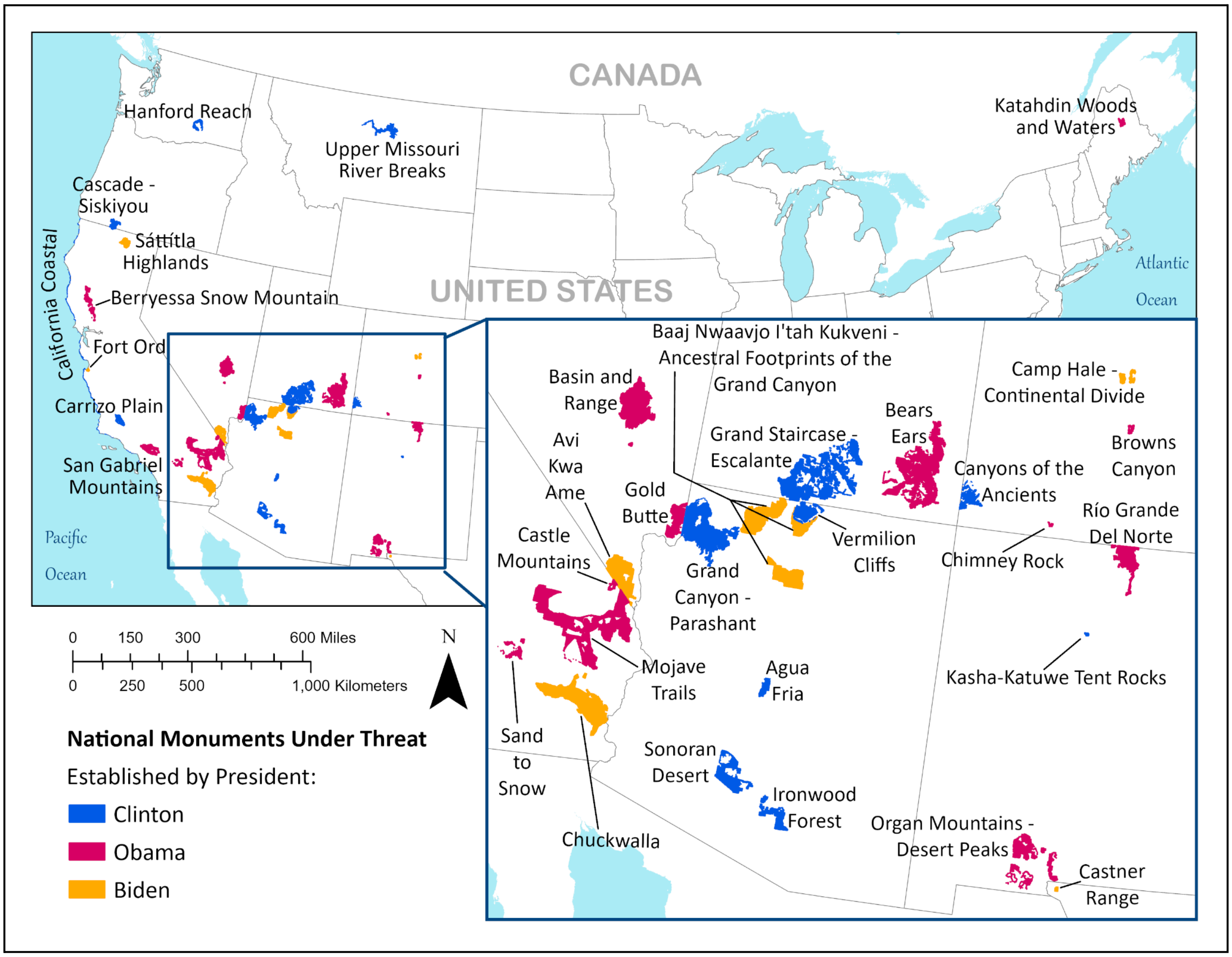

Figure 1. At-risk national monuments established during the Clinton, Obama, and Biden presidential administrations.

Our results, as presented in this report and accompanying maps and datasets, aim to harness the unifying power of water—an issue that transcends political ideology—to build durable public and political support for resisting current threats to our national monuments and expanding protections in the future.

2. Data sources and analysis methods

2.1.1 National monuments

We focused on 31 national monuments designated under the Clinton, Obama, and Biden administrations in the past 30 years that now face rollback threats during the Trump administration, herein referring to them as 'at risk.' We obtained the boundaries of these monuments through the Protected Area Database of the United States (PAD-US v. 4.1; USGS 2024), the Bureau of Land Management's National Conservation Lands geodatabase, or, where needed, from partner organizations.

2.1.2 Datasets used for analyses

We used multiple geospatial datasets to evaluate the influence of national monuments on drinking water. Core datasets included:

- Flowline datasets from the National Hydrographic Dataset version 2.1 (NHDPlus v2.1; 1:100,000 scale) for the conterminous U.S. (McKay et al. 2012).
- Watershed boundaries at the 12-digit Hydrologic Unit Code (HUC12) level from the Watershed Boundary Dataset (WBD), corresponding to local sub-watersheds (hereafter, referred to as 'watersheds' for brevity) that capture tributary systems (approximately 97,000 nationwide).
- The National Protected Rivers Assessment (NPRA, CSP 2025). American Rivers partnered with Conservation Science Partners to develop a data-driven nationwide inventory of present-day river protection status.
- Forests to Faucets 2.0, which combines information on water demand, water yield, and threats to drinking water provisioning both now and in the future across HUC12 watersheds in the conterminous U.S. (Mack et al. 2022). This dataset includes the number of water users dependent on public water systems sourced from surface water or groundwater under the influence of surface water. Importantly, the dataset excludes populations obtaining drinking water supplies from groundwater sources or purchased surface water supply from another public water system or public water systems serving less than 25 people, derived from the EPA Safe Drinking Water Information System (SDWIS), a federal database of public drinking water systems. Data in the Forests to Faucets analysis represents information current to 2017. Forests to Faucets estimates water yield using the Water Supply Stress Index (WaSSI) model parametrized at the watershed level, which does not account for water exchanges through inter-basin transfers.
- The EPA's Restoration and Protection Screening (RPS) dataset, which compiles socioeconomic, demographic, and ecological indicator values at the level of HUC12 watersheds (EPA 2025).
- City Water Map (CWM) version 2.2, which describes surface water contributing areas for major cities across the globe and the location of the water intakes (The Nature Conservancy and McDonald 2016).

2.2 Data Preparation

2.2.1 Delineating local and downstream rivers and streams influenced by national monuments

We retrieved river and stream segments (hereafter, ‘rivers’) within and downstream of national monuments using NHDPlus v2.1 flowline data accessed through the *nhdplusTools* R package (Blodgett 2023). We applied a 100-m buffer around each national monument to account for any small discrepancies among the spatial datasets. The river segments were then clipped to the buffered boundaries. We denoted segments as 'local' if they were within the buffered boundaries. We denoted segments as ‘downstream’ of those within the national monument if they were hydrologically connected to flowlines within the national monument.

2.2.2 Delineating influenced watersheds

We identified two groups of HUC12 watersheds that are influenced by national monument protections. We identified watersheds as ‘local’ if they intersected with national monument areas. We applied a minimum overlap threshold of 5% to exclude watersheds with minimal monument coverage. Downstream watershed connectivity was established using network topology analysis with the *igraph* R package (Csárdi et al. 2025), with watersheds treated as nodes in a directed hydrologic network. For each local watershed intersecting a monument, we identified all ‘downstream’ watersheds using graph traversal algorithms based on existing network topologies from the WBD, thereby creating comprehensive upstream-to-downstream watershed networks. This approach allows us to capture the full scope of national monument water protection benefits, and we use the term 'influenced watersheds' throughout this report when referring to local and downstream watersheds collectively.

We validated both the local and downstream watershed datasets to ensure that the watersheds contained actual water flow connections to national monuments. To do so, we intersected preliminary watershed boundaries with downstream flowline networks to calculate total flowline length within each watershed. Watersheds containing no connected flowlines were excluded from further analysis, as they lacked direct hydrologic connectivity despite topographic positioning in the watershed network. This refinement step ensured that only watersheds with measurable water flow potentially influenced by monument protection were retained in the analysis.

2.3 Assessing the importance of national monuments as a protection mechanism for rivers

Our first objective was to evaluate the extent to which each national monument directly protects freshwater resources. We also characterized the potential indirect influence of national monuments by identifying downstream areas hydrologically connected to monument-protected lands.

2.3.1 River miles protected and influenced by national monuments

We first assessed the total river miles each national monument directly protects by summing the length of segments within the national monument boundaries. To maintain alignment with the flowline network used in the NPRA, we only included river segments corresponding to flowing water bodies in our calculations (i.e., perennial, intermittent, or ephemeral), and excluded segments overlapping with lakes (defined as water bodies with an area > 0.5 hectares and mean depth > 0.5 m). We also excluded human-made features such as aqueducts, stormwater canals and ditches, pipelines, underground conduits, and connectors (at the exclusion of general canals fully integrated into the river network). Results were calculated in kilometers and converted to miles.

Next, we assessed the degree to which national monuments provide 'unique' protections to these river miles. That is, we evaluated whether a national monument was the sole protection mechanism or if other alternative mechanisms were present. We did so by quantifying the number of mechanisms separate from the national monument designation, and intended to protect the segments flowing through the monuments. Segments were classified as "uniquely protected" if they received no protection from alternative mechanisms covering at least 5% of their length. Protection mechanisms included those associated with river conservation (e.g., Wild and Scenic River designations, Outstanding National or Tribal Resource Waters), riparian and floodplain conservation (e.g., Riparian National Conservation Areas, Emergency Watershed Protection – Floodplain Easements, Northwest Forest Plan Riparian Reserves), policies focusing on endangered species (Endangered Species Act Critical Habitat), and other terrestrial protected areas that incidentally protect rivers (e.g., National Wilderness Preservation System, National Parks, Areas of Critical Environmental Concern).

While national monument designations provide direct protection to the portions of rivers within their boundaries, they can also indirectly benefit large networks of downstream rivers and streams. To quantify this influence, we calculated the total length of all connected downstream river segments.

2.4 Assessing the influence of national monuments on drinking water

Our second objective was to quantify the degree to which local and downstream communities, including those in the nation's large municipalities, are reliant on surface water as their source of drinking water and are likely to benefit from national monument protections.

2.4.1 Overlap with watersheds of high importance for water supply

To assess the contribution of each national monument to drinking water provisioning, we used the Forests to Faucets Index of Drinking Water Importance (IMP). This index, calculated at the watershed scale, integrates both water yield and downstream demand and is provided as both a raw value and a national-level percentile score, with higher percentile values indicating greater relative importance among all watersheds in the conterminous United States. For example, a percentile score of 75 means that the watershed is in the top 25% nationally in terms of its importance for drinking water supply. Recognizing that the national distribution of the index is highly heterogeneous, we also derived drinking water importance scores at two additional geographic scales. First, for a regional analysis, we recalculated percentile ranks based on raw IMP values for all watersheds within the Hydrologic Region(s) (HUC02), which contain each monument and its associated downstream flowlines[2]. Second, we developed a state-level ranking by recalculating percentile ranks for all watersheds within any state(s) that contained stream segments influenced by each monument. If downstream watersheds or associated flowlines traversed multiple HUC02 regions, we retrieved all watersheds occurring within their collective bounds. Similarly, for monuments whose downstream influence spanned multiple states, we included watersheds from all affected states.

At each spatial scale, we identified the top 25% of watersheds based on their relative importance to drinking water supply. We then calculated the proportion of local and downstream watersheds influenced by each national monument that fell within this top tier of importance.

2.4.2 Number of surface water users in influenced watersheds

The Forests to Faucets dataset provides estimates of the number of people served by public water systems that source from surface waters or groundwater under the influence of surface water within each watershed (SUM_POP). We used these watershed-level estimates to quantify the number of people whose drinking water may be directly or indirectly influenced by each national monument. For each monument, we summed the number of surface water consumers in local watersheds that overlap the monument, and separately summed the consumers in all downstream watersheds connected by flow. We note that not all water users may have intakes that align with flowlines directly connected to those within national monuments. However, we believe that this summary metric provides a reasonable and robust approximation of the potential number of people who depend, at least partially, on surface water affected by national monument designations.

2.4.3 Identifying metropolitan areas benefiting from national monument protection of drinking water

We evaluated monument connections to major metropolitan water supplies using City Water Maps, a database of municipal water intakes and their upstream contributing watersheds (The Nature Conservancy, & McDonald 2016). We intersected surface water intakes for cities in North America with each monument's influenced watersheds. This analysis identified the metropolitan areas in the U.S. that benefit, at least in part, from monument water protection.

[2] If downstream watersheds or associated flowlines traversed multiple HUC2 regions, we retrieved all watersheds occurring within their collective bounds. Similarly, for monuments whose downstream influence spanned multiple states, we included watersheds from all affected states.

2.5. Assessing the implications of national monument rollbacks

Our final objective was to assess how national monument rollbacks could affect the production of clean drinking water and which communities may be impacted. Specifically, we assessed the current capacity of watersheds under the influence of national monuments to produce clean water, the degree to which these watersheds face future threats to water quantity and quality, and the socio-economic profiles of downstream communities, including those that have high proportions of low-income and minority residents. Notably, tribal communities have been instrumental in the designation of many national monuments in recent years (also see Blake 2021). To recognize these efforts and evaluate the degree to which the direct and indirect influence of national monument protections on drinking water may be felt by these communities, we quantified the average proportion of land area under tribal stewardship across all influenced watersheds for each national monument.

2.5.1 Assessing the contribution of national monuments to clean drinking water provisioning

To assess the contribution of each national monument to clean water production, we leveraged the Ability to Produce Clean Water Index from the Forests to Faucets dataset (APCW), which captures a watershed's ability to produce clean water by integrating five watershed characteristics: percent natural cover, percent agricultural land, percent impervious cover, percent riparian habitat cover, and mean annual water yield. Similar to the IMP index described above in Section 2.4.1, this dataset gives national-level rankings. As with the IMP index, we derived percentile scores for APCW at the regional (HUC02) and state scales. We then calculated the average APCW percentile scores for local and downstream watersheds associated with each national monument. As an example, an average value of 60 for local watersheds calculated at the national level would indicate that watersheds overlapping with the monument were, on average, in the top 40% of all watersheds nationally in terms of their ability to produce clean water.

2.5.2 Future threats to water quantity and quality

Climate change and land-use change are two major threats that can reduce the capacity of landscapes to provide abundant, clean water. To evaluate how national monument protections might help buffer against these threats, we used two model-based outputs from the Forests to Faucets dataset—one focused on climate change risk and the other on land-use change risk. These outputs assess potential threats to both water quantity and water quality.

Rising temperatures and shifting precipitation patterns, key indicators of climate change already observed across much of the U.S. (Jay et al. 2023), can alter a watershed's natural water balance, reducing the amount of water available to people and ecosystems. These declines in water yield can worsen water scarcity and disrupt flow patterns both locally and downstream. To estimate future changes in water availability, the Forests to Faucets analysis used the WaSSI model, which simulates the amount of water produced in each HUC12 watershed. Using projections from the HadGEM2-ES365 climate model, the analysis estimated the percent change in water yield expected by 2040 under two greenhouse gas emissions scenarios: an intermediate-emissions pathway (RCP 4.5) and a higher-emissions pathway (RCP 8.5; Taylor et al. 2012; Hayhoe et al. 2018). For each national monument, we calculated the proportion of local and downstream watersheds that are projected to experience declines in water yield, helping us assess potential future threats to water supply.

Expanding urban and suburban development can reduce the ability of landscapes to filter and absorb water, increasing the risk of runoff pollution and degrading water sources. One common indicator of this threat is the expansion of impervious surfaces, including roads, buildings, and parking lots. These surfaces can prevent water from soaking into the ground, thereby hampering natural filtering processes. To estimate future changes in impervious surface area, the Forests to Faucets analysis used projections from the U.S. Environmental Protection Agency's Integrated Climate and Land Use Scenarios (ICLUS) model (US EPA 2009, 2017). This model simulates population growth and migration patterns and then predicts associated changes in housing development and impervious land cover at the watershed scale. The Forests to Faucets analysis relied on projections of expected impervious land cover under two combinations of climate and socioeconomic futures: one representing intermediate emissions and slower population growth (SSP2/RCP4.5), and another representing higher emissions and rapid growth (SSP5/RCP8.5). Based on these projections, the analysis estimated the percent change in impervious surface area expected by 2040 for each HUC12 watershed in the U.S. Importantly, this modeling approach does not consider the expansion of impervious surfaces associated with other significant land uses such as energy infrastructure, nor does it forecast changes occurring on publicly owned or protected lands (e.g., national parks and monuments, national forests, state wildlife areas, etc.), thus likely providing a conservative estimate of future threat. Similar to the approach used for the water quantity index described in Section 2.5.1 above, we converted these projected changes into percentile scores at the national, regional (HUC02), and state levels using the outputs associated with higher emissions and rapid growth (SSP5/RCP8.5). This approach allowed us to evaluate the relative risk of future development that could degrade water quality in areas protected by national monument designations. For each national monument and the spatial scales described above, we calculated the average percentile scores for local and downstream watersheds. As an example, an average percentile score of 60 for local watersheds calculated at the national level would indicate that watersheds that overlap with the national monument, on average, are expected to see more development in 2040 than 60% of all watersheds nationwide.

2.5.3. Socio-economic characteristics of populations threatened by rollbacks

To characterize the socioeconomic characteristics of the communities located in the watersheds influenced by each national monument, we summarized data from the EPA's RPS dataset (United States Environmental Protection Agency 2025). We used three indicators from this dataset: the percentage of residents in each watershed who live in low-income households

(LOWINC_POP_PCT_HUC12)[3], the percentage of residents that belong to a racial or ethnic minority group (MINORITY_POP_PCT_HUC12)[4], and the proportion of the watershed occurring on tribal land (TRIBE_PCT_HUC12)[5]. For each national monument, we calculated the average percentage of low-income and minority residents in these three categories across all local and downstream watersheds influenced by the monument. We also calculated these same values at the three spatial scales outlined in sections 2.4.1, 2.5.1, and 2.5.2. (i.e., national, regional, and state scales). The average proportion of land area under tribal stewardship was calculated across all influenced watersheds.

3. Results and discussion

Collectively, the 31 most-at-risk national monuments directly protect 21,143 river miles in the conterminous U.S. (Table 1, Table 2). Most of these river miles (83% on average) are only protected by national monuments (Table 1, Table 2). This indicates that if these protections against potential harmful development activities like mining were to be lost, this could result in negative consequences for local and downstream water quantity and quality.

The at-risk national monuments directly or indirectly influence 2,125 watersheds across the nation: 957 of these watersheds fall (at least partially) within the national monument boundaries while another 1,251 receive downstream benefits from national monument protections; 83 are being locally protected by individual national monuments while also part of the downstream areas of other monuments, thereby receiving multiple benefits from these land protections, being (Table 1, Table 2).

Table 1. Statistics summarizing the influence of 31 at-risk national monuments on rivers and watersheds.

River miles directly protected	Average proportion of river miles uniquely protected by national monument designation	Total watersheds influenced	Local watersheds directly protected	Downstream watersheds	Watersheds locally protected and downstream of at-risk national monuments
21,143	83%	2,125	874	1,168	83

[3] ‘Low-income’ in this dataset corresponds to a household income that is less than or equal to twice the federal poverty level. Data were based on results from the U.S. Census Bureau American Community Survey 2016-2020 Five-Year Summary.
[4] Minority groups in this dataset include individuals who define their race as other than white alone and/or list their ethnicity as Hispanic or Latino. Data were based on the US Census Bureau American Community Survey 2016-2020 Five-Year Summary.
[5] This was calculated from map layers of federally recognized tribal lands published by the EPA in November 2021.

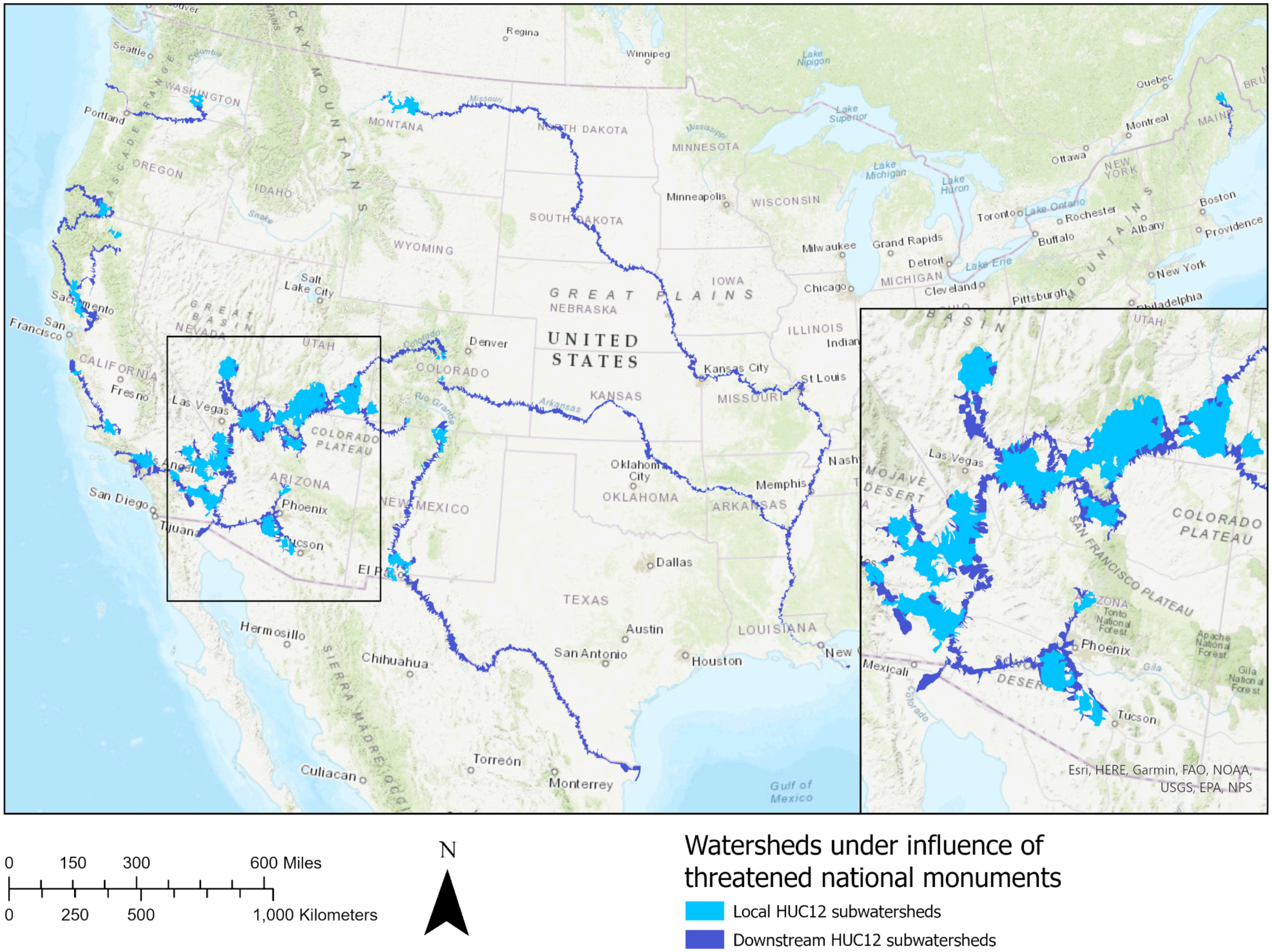

Figure 2. Local and downstream watersheds influenced by 31 at-risk national monuments.

Although the positive influence of national monuments on downstream water quality is likely to be felt most acutely in rivers closer to the monument boundaries, our analysis revealed that a large fraction of the hydrographic network in the conterminous U.S. also indirectly benefits from the upstream protection conferred by these national monuments. Our study revealed that each at-risk national monument, on average, influences over 859 miles of downstream river miles. Some monuments sit upstream of or within major river basins in the conterminous U.S., including those for the Colorado, Missouri, and Mississippi Rivers. For instance, nearly 3,500 river miles lie downstream of Upper Missouri River Breaks National Monument in Montana, stretching to the Gulf of Mexico. Similarly, over 1,300 river miles, including large sections of the Colorado River, lie downstream of Grand Staircase-Escalante National Monument and Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument (Table 3). Several major drinking water reservoirs, including Lake Havasu and Lake Mead, receive water influenced by these monuments.

The national monuments we assessed collectively influence the potential surface water supply of 13,392,600 water users. For example, in the southwest, over 90,000 people source their water from watersheds under the local or downstream influence of Bears Ears National Monument (Fig. 3), and over 365,000 people source their water from those influenced by Sáttítla Highlands National Monument in California (Table 2). While these numbers are certainly impressive, we note that there are some limitations of the Forests to Faucets dataset used to arrive at these estimates. The Forests to Faucets dataset does not account for purchased water in the estimation of surface water users within watersheds (personal communication, Peter Caldwell, Southern Research Station, Center for Integrated Forest Science, United States Forest Service, June 20, 2025), which can be substantial in some parts of the country. For instance, enormous volumes of water from the Colorado River are purchased and transferred via the Colorado River Aqueduct, which takes water from Arizona to southern California. As such, the reported number of surface water consumers is likely an *underestimate* of the total number of people who stand to benefit from the drinking water benefits conveyed by national monument protections.

National monuments provide drinking water protection benefits across multiple spatial scales. Our analysis showed that at-risk monuments directly overlap with 54 of the 17,447 watersheds ranked in the top 25% nationally for drinking water importance. An additional 242 of the nationally high-ranking watersheds are downstream of one or more of the 31 assessed monuments, and likely benefit from upstream protections that improve water quantity and quality. These benefits benefit human health and help reduce water treatment costs for many Americans. However, national-level rankings can obscure the regional importance of watersheds due to the heterogeneous distribution of water supplies and demands across the country. Watersheds that rank modestly at the national level may still represent critical water sources within their regional context, making their protection equally important for local communities. This scale-dependent importance is clearly illustrated by Cascade-Siskiyou National Monument, where only 39% of overlapping watersheds ranked in the top 25% nationally for drinking water importance. However, at the regional scale (HUC02 hydrographic region), approximately 78% of the same watersheds ranked in the top 25% within their region, demonstrating how national monuments protect watersheds that may be regionally critical, but less so at the national level (Fig. 4, Table 3).

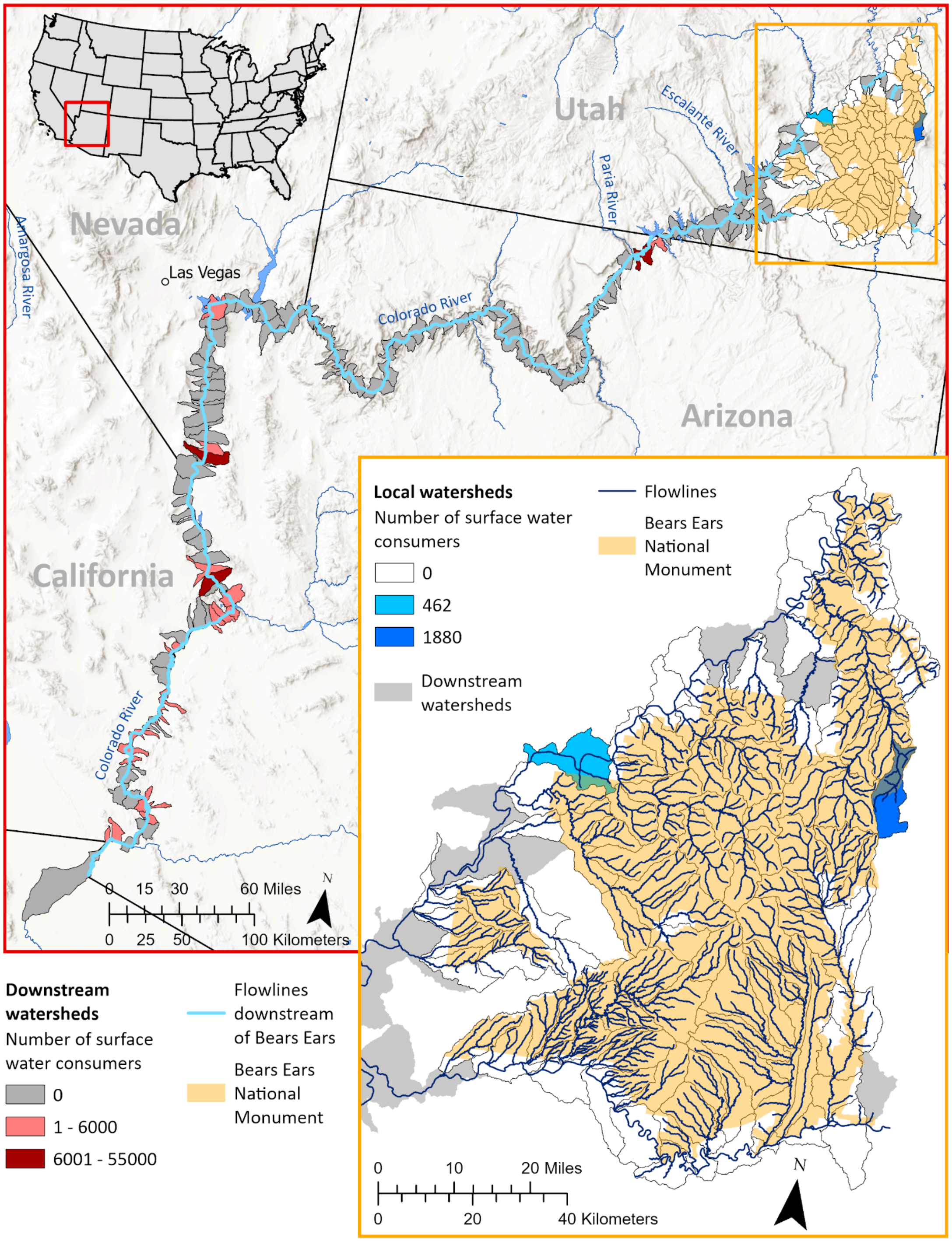

Figure 3. Maps showing the local and downstream influence of Bears Ears National Monument (gold polygons). The number of surface water users estimated in the Forests to Faucets dataset is displayed for local watersheds (inset map) and for all hydrologically connected downstream watersheds.

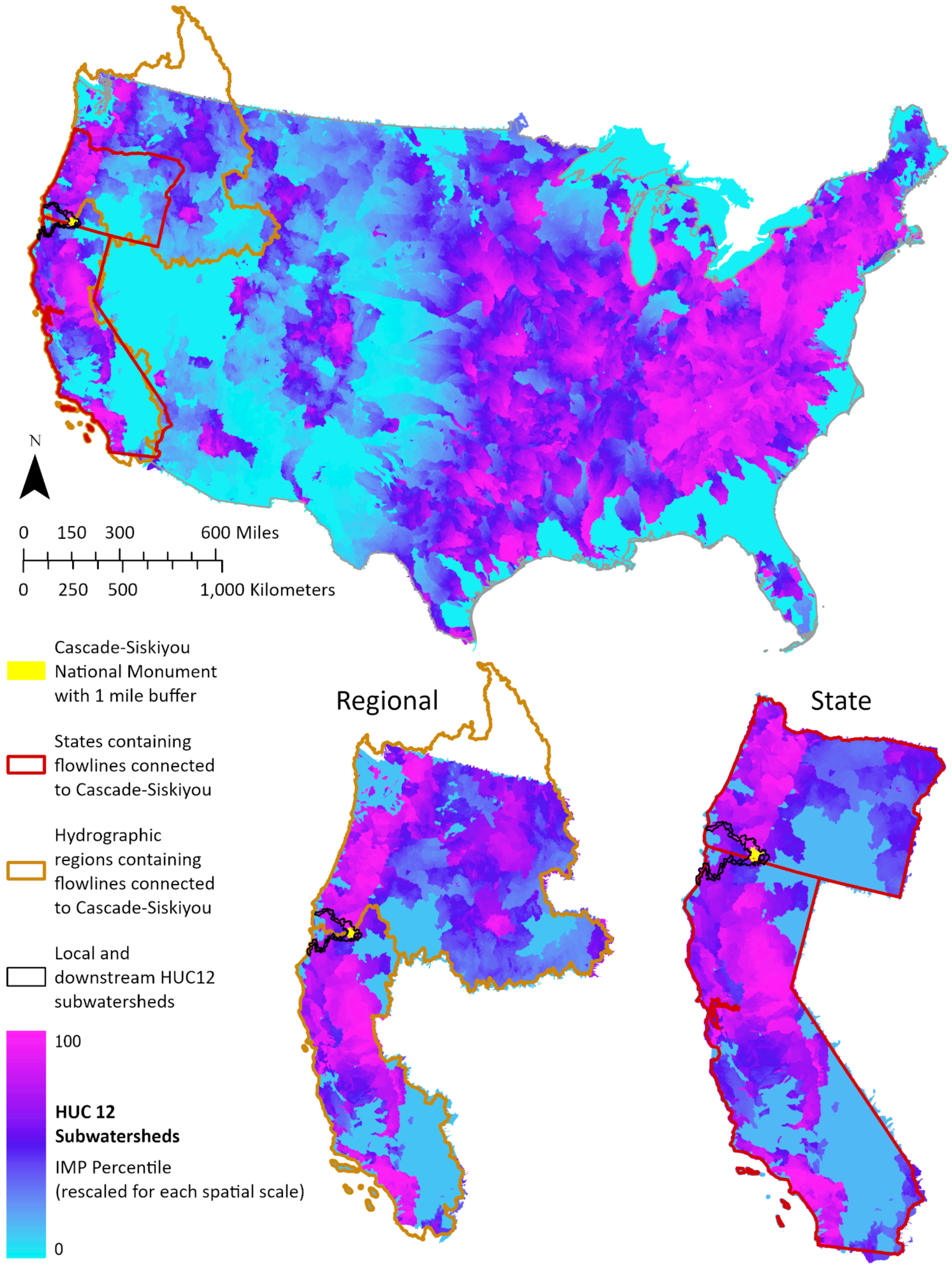

Figure 4. Example maps for Cascade-Siskiyou National Monument (yellow) showing the relative rank of watersheds based on the Forests to Faucets Index of Drinking Water Importance at three different spatial scales: nationally (top), within HUC02 regions containing influenced river segments (bottom left, HUC02 region boundaries in orange), and when considering all watersheds in states containing influenced river segments (bottom right, state boundaries in red). Note that watershed values have been rescaled for each map and are not directly comparable.

Even though national monuments may often be located in remote places, our analysis revealed how they are connected to the water supplies for many of the nation's large metropolitan areas (Table 4). Major cities, particularly in the relatively arid western U.S., often have water intakes that are quite distant from their city limits. Our analysis shows that many of these intakes are located in watersheds under the influence of these most-at-risk national monuments. The implications of these protections are particularly relevant to the multiple large cities found in the Colorado River Basin. For example, cities including Las Vegas, Phoenix, and Tucson all source drinking water from the Colorado River. Some of the nation's largest national monuments, including Bears Ears National Monument (Fig. 5), Grand Staircase Escalante National Monument, Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument, and Grand Canyon-Parashant National Monument, all protect waters that flow directly into the Colorado River, providing crucial protections to the drinking water supplies of hundreds of thousands of people. In other cases, the benefits of national monument protections to urban water supplies are also felt more locally. San Gabriel Mountains National Monument, for instance, overlooks the city of Los Angeles and provides drinking water directly to the metropolitan area.

National monuments protect watersheds with varying abilities to produce clean water, making potential rollbacks particularly consequential for those with already limited capacity due to local climatic, topographic, and vegetation context or the intensity of the surrounding anthropogenic land conversion. Avi Kwa Ame National Monument's local watersheds exemplify this vulnerability, ranking below 80% of watersheds nationally in their ability to provide clean water. Conversely, local watersheds protected by Katahdin Woods and Waters National Monument demonstrate high clean water production capacity, ranking better than 73% of all watersheds nationally (Table 5). Rollbacks that remove protections that prevent the disturbance of these landscapes could significantly diminish this critical ecosystem service. Our scale-dependent analysis approach again reveals hidden importance, as demonstrated by Berryessa Snow Mountain National Monument. Although its watersheds rank modestly at the national level (better than only 47% of watersheds), they rank among the top 25% within California (Table 5), emphasizing their critical role in state-level clean water provisioning.

Our analysis showed that many of the watersheds protected wholly or in part by national monuments could face declines in water yield by 2040 under a high-emissions climate future. Climate change is expected to affect watershed water yield primarily through temperature and precipitation changes that alter evapotranspiration rates and hydrological cycles. These shifts can reduce ecosystem resilience and compromise their ability to maintain consistent, clean water supplies (Mack et al. 2022). Monument protections are crucial for preventing additional stressors like extractive mining that could worsen these climate-vulnerable watersheds' declining water production capacity. For instance, nearly 90% of the 110 local watersheds overlapping with Grand Staircase-Escalante National Monument could see declines in water yield. At the other end of the spectrum, only around 5% of the watersheds that overlap with Cascade-Siskiyou National Monument are expected to see declines in water yield under the same climate future (Table 6). Keeping national monument protections in place would help safeguard these more resilient watersheds and the more than 185,000 local and downstream surface water users they support.

Our analysis revealed highly variable development pressures across monument-protected watersheds through 2040. National monuments serve as important buffers against development-driven watershed degradation by preventing the expansion of impervious surfaces that compromise natural water filtration processes. Roads, buildings, and pavement reduce water infiltration and increase polluted runoff, threatening both local and downstream water quality. The eight watersheds overlapping Camp Hale-Continental Divide National Monument are projected to experience more housing development than 56% of all watersheds nationwide, while the 12 watersheds intersecting with Sand to Snow National Monument rank among the top 32% nationally for expected increases in housing-related impervious surfaces (Table 6). These projections represent only one dimension of potential threats to water quality. Should national monument protections lapse, watersheds could face additional degradation from more intensive cattle grazing, mining, energy development, and other intensive land uses that compromise water quality and ecosystem functions.

National monuments provide valuable water protection for some of America's most socially vulnerable communities. Our demographic analysis revealed that monument-influenced watersheds, on average, have higher proportions of vulnerable populations than national averages. Given that water scarcity and quality risks disproportionately affect marginalized populations nationwide (Mueller & Gasteyer 2021; Sanchez et al. 2023), the loss of monument protections could exacerbate existing environmental justice concerns. For example, at the national level, the average watershed-level proportion of minority residents is approximately 18%. In contrast, the average proportion of minority residents in the 2,125 watersheds influenced by at-risk monuments in this assessment was 32%. For individual monuments, this proportion can be even higher. For example, of the 180 watersheds influenced directly or indirectly by Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument, the average proportion of minority residents is nearly twice the national average at 34% (Table 7). The average proportion of residents living in low-income households in watersheds influenced by the national monuments in this assessment was approximately 29%, which is nearly equivalent to the national average of 28%. However, monument-specific results varied from an average of 13.9% for watersheds influenced by Grand Canyon-Parashant National Monument to 41% for those influenced by Sand to Snow National Monument. While we did not assess the recreational value of the rivers within and influenced by national monuments, they nevertheless provide significant recreation opportunities like rafting, kayaking, and fishing. Removing these protections would almost certainly reduce public access and worsen existing nature access inequities among minority and low-income communities (Landau et al. 2020).

Finally, our analysis revealed that the proportion of land under tribal stewardship in watersheds influenced by national monuments is highly variable across the country. For example, among the 54 watersheds influenced by Ironwood Forest National Monument, the average proportion of land held by tribes was approximately 25%, nearly five times the national average of 5% (Table 7).

In conclusion, our analysis showed that national monuments play an impressive role in protecting America's freshwater resources. The influence of these protected areas extends well beyond their boundaries, safeguarding water supplies for millions of Americans while serving as critical buffers against climate change, development pressure, and environmental injustice.

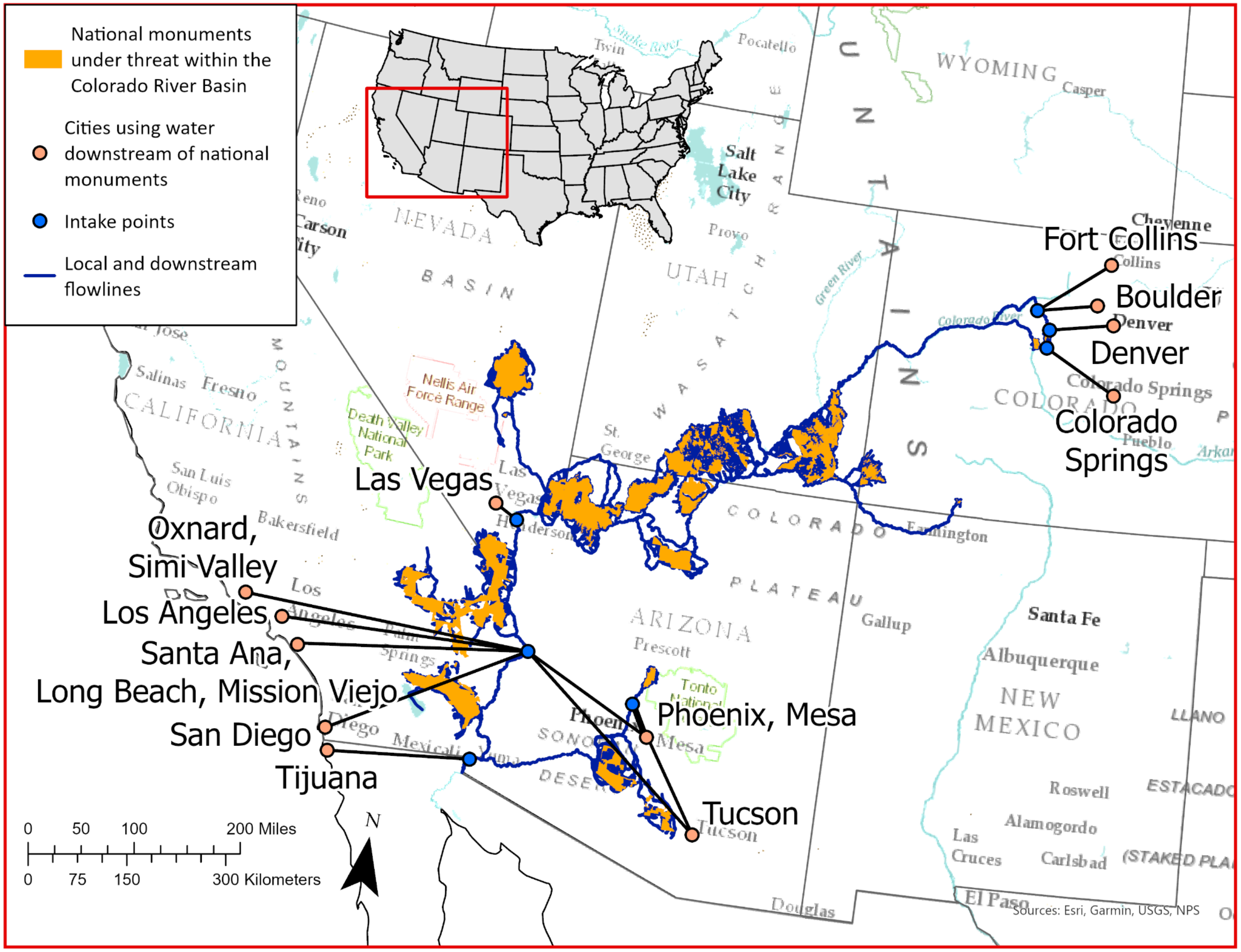

Figure 5. At-risk national monuments (gold) in the Colorado River Basin influence thousands of miles of downstream rivers (blue lines), many of which service drinking water intakes (blue circles) for major metropolitan areas (orange circles). Intake locations are sourced from the City Water Map version 2.2 (The Nature Conservancy & McDonald 2016).

Table 2. Summary statistics for 31 at-risk national monuments documenting the total number of river miles within each monument's boundaries, the proportion of those river miles that do not receive protections from other mechanisms (i.e. they are uniquely protected by national monument designation), the total number of connected downstream river miles from each monument, the number of local watersheds that directly overlap with each monument, and the number of downstream watersheds from each monument. Note that the total number of downstream river miles and downstream watersheds cannot be summed, as some segments and watersheds may be shared among monuments.

Monument	Total river miles within monument	% of river miles uniquely protected by monument	Total downstream river miles	# of local watersheds	# of downstream watersheds
Agua Fria National Monument	147	96.0%	114	9	8
Avi Kwa Ame National Monument	551	66.0%	563	36	42
Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument	1,688	47.0%	1,300	76	104
Basin and Range National Monument	1,489	97.0%	887	34	81
Bears Ears National Monument	2,274	61.0%	1,033	100	111
Berryessa Snow Mountain National Monument	1,014	95.0%	1,005	38	39
Browns Canyon National Monument	52	98.0%	2,140	3	171
Camp Hale-Continental Divide National Monument	77	95.0%	1,115	8	164
Canyons of the Ancients National Monument	321	87.0%	894	23	113
Carrizo Plain National Monument	397	97.0%	707	12	34
Cascade-Siskiyou National Monument	222	94.0%	554	18	56
Castle Mountains National Monument	37	73.0%	206	5	14
Chimney Rock National Monument	6	48.0%	895	4	131
Chuckwalla National Monument	1,376	71.0%	384	57	15
Fort Ord National Monument	19	98.0%	19	3	1
Gold Butte National Monument	439	87.0%	534	29	55
Grand Canyon-Parashant National Monument	2,296	99.0%	990	66	96

Monument	Total river miles within monument	% of river miles uniquely protected by monument	Total downstream river miles	# of local watersheds	# of downstream watersheds
Grand Staircase-Escalante National Monument	2,517	52.0%	1,312	110	118
Hanford Reach National Monument	327	83.0%	434	14	32
Ironwood Forest National Monument	277	87.0%	601	17	37
Kasha-Katuwe Tent Rocks National Monument	8	95.0%	1,073	1	171
Katahdin Woods and Waters National Monument	167	95.0%	211	10	11
Mojave Trails National Monument	1,138	71.0%	779	97	44
Organ Mountains-Desert Peaks National Monument	479	88.0%	1,042	36	125
Rio Grande del Norte National Monument	479	80.0%	1,443	25	191
San Gabriel Mountains National Monument	1,124	96.0%	694	39	23
Sand to Snow National Monument	119	93.0%	361	12	20
Sáttítla Highlands National Monument	28	73.0%	514	5	28
Sonoran Desert National Monument	914	87.0%	715	32	30
Upper Missouri River Breaks National Monument	854	76.0%	3,416	43	272
Vermilion Cliffs National Monument	202	93.0%	707	18	84

Table 3. Summary statistics for 31 at-risk national monuments documenting the number of surface water users within local and downstream watersheds, as well as the number of local watersheds protected entirely or partly by national monument designation that rank in the top 25% at national, regional, or state levels based on the Forests to Faucets Index of Drinking Water Importance (IMP). Regional boundaries were determined as those associated with the HUC02 regions traversed by influenced river segments and watersheds. A map of HUC02 regions is available here for reference: https://nas.er.usgs.gov/hucs.aspx. Similarly, state-level analyses included all watersheds from all states traversed by influenced segments. States included in this level of analysis are reported for each monument.

Monument	Surface water users in local watersheds	Surface water users in all downstream watersheds	% of local watersheds among top 25% nationally for IMP	HUC02 Regions	% of local watersheds among top 25% regionally for IMP	States	% of local watersheds among top 25% among relevant states for IMP
Agua Fria National Monument	0	627,069	100%	15	100.0%	AZ	100.0%
Avi Kwa Ame National Monument	0	75,770	0%	15,16	8.3%	AZ, CA ,NV	0.0%
Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument	0	79,883	0%	14,15	0.0%	UT, AZ,CA,NV	0.0%
Basin and Range National Monument	0	79,883	0%	15,16	0.0%	NV,AZ,CA,	47.1%
Bears Ears National Monument	2,342	89,520	0%	14,15	1.0%	UT, AZ, CA, NV	15.0%
Berryessa Snow Mountain National Monument	2,047	332,012	13.2%	18	13.2%	CA	13.2%
Browns Canyon National Monument	0	1,303,948	0%	08,11	0.0%	CO,AR,LA,MS,OK,KS	0.0%
Camp Hale-Continental Divide National Monument	43,428	203,664	12.5%	14,15	100.0%	CO,AZ,CA,NV,UT	100.0%
Canyons of the Ancients National Monument	0	89,520	0%	14,15	0.0%	CO,UT,AZ,CA,NV	0.0%
Carrizo Plain National Monument	0	195	0%	18	0.0%	CA	0.0%
Cascade-Siskiyou National Monument	7,340	181,603	38.9%	17,18	77.8%	CA,OR	38.9%
Castle Mountains National Monument	0	0	0%	15	60.0%	CA,NV	0.0%
Chimney Rock National Monument	29	139,081	0%	14,15	25.0%	CO,AZ,CA,NV,NM,UT	100.0%
Chuckwalla National Monument	173	1,761	0%	15,18	0.0%	AZ,CA	0.0%

Monument	Surface water users in local watersheds	Surface water users in all downstream watersheds	% of local watersheds among top 25% nationally for IMP	HUC02 Regions	% of local watersheds among top 25% regionally for IMP	States	% of local watersheds among top 25% among relevant states for IMP
Fort Ord National Monument	295	0	0%	18	0.0%	CA	0.0%
Gold Butte National Monument	0	79,883	0%	15	10.3%	AZ,NV,CA	72.4%
Grand Canyon-Parashant National Monument	0	79,883	0%	15	33.3%	AZ,NV,CA,UT	57.6%
Grand Staircase-Escalante National Monument	0	89,520	0%	14,15	0.0%	AZ,UT,CA,NV	35.5%
Hanford Reach National Monument	7,874	185,140	0%	17	7.1%	WA, OR	0.0%
Ironwood Forest National Monument	0	4,754	0%	15	0.0%	AZ,CA	0.0%
Kasha-Katuwe Tent Rocks National Monument	0	1,787,361	0%	13	100.0%	NM,TX	100.0%
Katahdin Woods and Waters National Monument	0	5,000	0%	01	0.0%	ME	20.0%
Mojave Trails National Monument	0	65,670	0%	15,18	0.0%	AZ,CA,NV	0.0%
Organ Mountains-Desert Peaks National Monument	0	1,185,298	0%	13	44.4%	NM,TX	44.4%
Rio Grande del Norte National Monument	0	1,787,361	0%	13	76.0%	CO,NM,TX	48.0%
San Gabriel Mountains National Monument	1,404,358	3,655,932	76.9%	18	79.5%	CA	79.5%
Sand to Snow National Monument	1,405	754,914	16.7%	18	16.7%	CA	16.7%
Sáttítla Highlands National Monument	0	365,296	0%	18	0.0%	CA	0.0%
Sonoran Desert National Monument	0	4,754	0%	15	0.0%	AZ,CA	0.0%
Upper Missouri River Breaks National Monument	30	4,314,619	0%	10,08,07	0.0%	MT,AR,LA,MS,MO,TN,IA,NE,SD,IL,KY,KS,ND	0.0%
Vermilion Cliffs National Monument	0	88,550	0%	14,15	0.0%	AZ,UT,CA,NV	5.6%

Table 4. Major metropolitan areas with drinking water intakes located in watersheds influenced by at-risk national monuments.

Monument	Cities with drinking water intakes in influenced watersheds
Agua Fria National Monument	Phoenix, Mesa, Tucson, Tijuana
Avi Kwa Ame National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Basin and Range National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Bears Ears National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Berryessa Snow Mountain National Monument	Antioch, Fairfield, Sacramento, Santa Rosa, Vallejo
Browns Canyon National Monument	Aurora, Little Rock, Colorado Springs, Pueblo, Wichita, Monroe, New Orleans, Albuquerque, Brownsville, Harlingen, Laredo, McAllen, El Paso, Santa Fe
Camp Hale-Continental Divide National Monument	Phoenix, San Diego, Los Angeles, Denver, Las Vegas, Long Beach, Mesa, Aurora, Santa Ana, Saint Louis, Tucson, Mission Viejo, Oxnard, Simi Valley, Boulder, Colorado Springs, Fort Collins, Pueblo, New Orleans, Kansas City, Omaha, Tijuana
Canyons of the Ancients National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Carrizo Plain National Monument	n/a
Cascade-Siskiyou National Monument	Medford
Castle Mountains National Monument	Phoenix, San Diego, Los Angeles, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Chimney Rock National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Chuckwalla National Monument	Tijuana
Fort Ord National Monument	
Gold Butte National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Grand Canyon-Parashant National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Grand Staircase-Escalante National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Hanford Reach National Monument	n/a
Ironwood Forest National Monument	Tijuana
Kasha-Katuwe Tent Rocks National	Albuquerque, Brownsville, Harlingen, Laredo, McAllen, El Paso

Monument	Cities with drinking water intakes in influenced watersheds
Monument	
Katahdin Woods and Waters National Monument	n/a
Mojave Trails National Monument	Phoenix, San Diego, Los Angeles, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana
Organ Mountains-Desert Peaks National Monument	Brownsville, Harlingen, Laredo, McAllen, El Paso
Rio Grande del Norte National Monument	Albuquerque, Brownsville, Harlingen, Laredo, McAllen, El Paso, Santa Fe
San Gabriel Mountains National Monument	Los Angeles
Sand to Snow National Monument	n/a
Sáttítla Highlands National Monument	San Diego, Los Angeles, Long Beach, Santa Ana, Antioch, Fairfield, Redding, Sacramento, Vallejo
Sonoran Desert National Monument	Tijuana
Upper Missouri River Breaks National Monument	Saint Louis, New Orleans, Kansas City, Omaha
Vermilion Cliffs National Monument	Phoenix, San Diego, Los Angeles, Las Vegas, Long Beach, Mesa, Santa Ana, Tucson, Mission Viejo, Oxnard, Simi Valley, Tijuana

Table 5. Summary statistics for 31 at-risk national monuments documenting the average percentile rank of influenced watersheds based on the Ability to Produce Clean Water (APCW) Index from the Forests to Faucets dataset. Results are presented from national, regional, and state-level analyses. Regional boundaries were determined as those associated with the HUC02 regions traversed by influenced river segments and watersheds. A map of HUC02 regions is available here for reference: https://nas.er.usgs.gov/hucs.aspx. Similarly, state-level analyses included all watersheds from all states traversed by influenced segments. States included in this level of analysis are reported for each monument.

Monument	Average local watershed APCW rank - national	Average downstream watershed APCW rank - national	HUC02 Regions	Average local watershed APCW Rank - regional	Average downstream watershed APCW rank - regional	States	Average local watershed APCW rank - state(s)	Average downstream watershed APCW rank - state(s)
Agua Fria National Monument	19.8	16.5	15	10.4	7.5	AZ	11.5	8.1
Avi Kwa Ame National Monument	19.8	17.6	15,16	21.4	17.4	AZ,CA,NV	22.4	17.8
Baaj Nwaavjo I'tah Kukveni –	20	18.9	14,15	15.8	13.7	UT, AZ,CA,NV	12	10.1

Monument	Average local watershed APCW rank - national	Average downstream watershed APCW rank - national	HUC02 Regions	Average local watershed APCW Rank - regional	Average downstream watershed APCW rank - regional	States	Average local watershed APCW rank - state(s)	Average downstream watershed APCW rank - state(s)
Ancestral Footprints of the Grand Canyon National Monument								
Basin and Range National Monument	20	18.7	15,16	22	19.4	NV,AZ,CA,	11.6	9.3
Bears Ears National Monument	20.1	18.7	14,15	16.2	13.2	UT,AZ,CA,NV	17.3	13.9
Berryessa Snow Mountain National Monument	65.4	47.3	18	75.6	50.4	CA	75.3	50.2
Browns Canyon National Monument	19.4	31.1	08,11	22.7	42.2	CO,AR,LA,MS,OK ,KS	28.2	44.3
Camp Hale-Continental Divide National Monument	42.3	19.9	14,15	64.5	16.5	CO,AZ,CA,NV,UT	72.7	22.9
Canyons of the Ancients National Monument	18	19	14,15	11.9	13.9	CO,UT,AZ,CA,NV	17.8	20.3
Carrizo Plain National Monument	18.6	15.4	18	26.7	19.8	CA	26.9	19.8
Cascade-Siskiyou National Monument	42	61.1	17,18	52.9	61.6	CA,OR	56.2	62.6
Castle Mountains National Monument	20	20	15	11	11	CA,NV	23.1	23.1
Chimney Rock National Monument	20	19	14,15	16	13.8	CO,AZ,CA,NV,N M,UT	21.8	19.2
Chuckwalla National Monument	19	15.8	15,18	19.9	14.1	AZ,CA	27.6	20.3
Fort Ord National Monument	10	18.3	18	10.3	24	CA	10.2	24.1
Gold Butte National Monument	19.9	18.2	15	10.8	8.1	AZ,NV,CA	11.2	8.4
Grand Canyon-Parashant	20	18.8	15	11	9	AZ,NV,CA,UT	15.1	12.6

Monument	Average local watershed APCW rank - national	Average downstream watershed APCW rank - national	HUC02 Regions	Average local watershed APCW Rank - regional	Average downstream watershed APCW rank - regional	States	Average local watershed APCW rank - state(s)	Average downstream watershed APCW rank - state(s)
National Monument								
Grand Staircase-Escalante National Monument	19.9	18.9	14,15	15.8	13.5	AZ,UT,CA,NV	16.8	14.3
Hanford Reach National Monument	17.5	35.1	17	16.9	31.3	WA, OR	26.7	32.9
Ironwood Forest National Monument	19.6	14.8	15	10.5	4.8	AZ,CA	11.5	5.3
Kasha-Katuwe Tent Rocks National Monument	20	17.2	13	17	11.9	NM,TX	18.9	13.8
Katahdin Woods and Waters National Monument	73.3	67.9	01	44	26.5	ME	26.7	14.4
Mojave Trails National Monument	18.3	17.5	15,18	18.5	16.9	AZ,CA,NV	25.8	23.8
Organ Mountains-Desert Peaks National Monument	18.5	17.1	13	14.4	11.7	NM,TX	16.3	13.6
Rio Grande del Norte National Monument	20	17.4	13	17	12.1	CO,NM,TX	26.1	20.1
San Gabriel Mountains National Monument	36	15.4	18	53.3	19.8	CA	53.4	19.5
Sand to Snow National Monument	20.6	15.3	18	28.4	18.6	CA	28.5	18.5
Sáttítla Highlands National Monument	57.3	40.7	18	66.8	46.7	CA	66.5	46.6
Sonoran Desert National Monument	19	15	15	9.3	4.8	AZ,CA	10.2	5.2
Upper Missouri River Breaks National Monument	18.6	27.9	10,08,07	26.4	45.7	MT,AR,LA,MS,MO,TN,IA,NE,SD,IL,KY,KS,ND	37.7	54.2
Vermilion Cliffs National Monument	20	18.7	14,15	16	13.3	AZ,UT,CA,NV	12.1	9.7

Table 6. Future water quantity and quality threat summary statistics for local and downstream watersheds of 31 at-risk national monuments. Water quantity threats are characterized by the proportion of watersheds expected to experience water yield declines under a high-emissions climate scenario. Water quality risks are characterized by the average percentile rank of watersheds based on their expected development increase under a high-emissions, high-population growth scenario, calculated relative to all watersheds nationally.

Monument	% of local watersheds projected to see declines in water yield in 2040	% of downstream watersheds projected to see declines in water yield in 2040	Average development risk percentile rank for local watersheds - national	Average development risk percentile rank for downstream watersheds - national
Agua Fria National Monument	100.0%	87.5%	0	43.7
Avi Kwa Ame National Monument	97.2%	97.6%	37.9	31.9
Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument	47.4%	75.0%	7.5	17.4
Basin and Range National Monument	47.1%	82.7%	0	25.3
Bears Ears National Monument	71.0%	82.0%	0.6	19.4
Berryessa Snow Mountain National Monument	21.1%	2.6%	29	54.5
Browns Canyon National Monument	100.0%	79.5%	0	56.9
Camp Hale-Continental Divide National Monument	0.0%	67.7%	56.2	31
Canyons of the Ancients National Monument	0.0%	87.6%	0	20.1
Carrizo Plain National Monument	0.0%	0.0%	10.9	38.3
Cascade-Siskiyou National Monument	5.6%	21.4%	18.9	34.2
Castle Mountains National Monument	100.0%	100.0%	0	5.1
Chimney Rock National Monument	50.0%	84.7%	0	22.5
Chuckwalla National Monument	98.2%	93.3%	13.1	29.3

Monument	% of local watersheds projected to see declines in water yield in 2040	% of downstream watersheds projected to see declines in water yield in 2040	Average development risk percentile rank for local watersheds - national	Average development risk percentile rank for downstream watersheds - national
Fort Ord National Monument	0.0%	0.0%	94.2	93.1
Gold Butte National Monument	100.0%	98.2%	10.7	34.4
Grand Canyon-Parashant National Monument	0.0%	85.4%	0	25.6
Grand Staircase-Escalante National Monument	89.1%	76.3%	0	20.1
Hanford Reach National Monument	21.4%	25.0%	21.6	58.2
Ironwood Forest National Monument	76.5%	83.8%	27.3	57.8
Kasha-Katuwe Tent Rocks National Monument	100.0%	52.0%	0	38.7
Katahdin Woods and Waters National Monument	50.0%	0.0%	6.2	32.6
Mojave Trails National Monument	0.0%	90.9%	7.7	30.6
Organ Mountains-Desert Peaks National Monument	97.2%	34.4%	28.9	32.4
Rio Grande del Norte National Monument	100.0%	57.1%	55.7	39.1
San Gabriel Mountains National Monument	59.0%	52.2%	75.2	93.1
Sand to Snow National Monument	91.7%	80.0%	68.2	81.7
Sáttítla Highlands National Monument	60.0%	17.9%	0	51.8
Sonoran Desert National Monument	43.8%	70.0%	41.4	61.2
Upper Missouri River Breaks National Monument	0.0%	55.5%	1.4	34.7

Monument	% of local watersheds projected to see declines in water yield in 2040	% of downstream watersheds projected to see declines in water yield in 2040	Average development risk percentile rank for local watersheds - national	Average development risk percentile rank for downstream watersheds - national
Vermilion Cliffs National Monument	0.0%	88.1%	4.1	22.6

Table 7. Socioeconomic characteristics of watersheds influenced by the assessed national monuments based on data from the U.S. EPA's Restoration and Protection Screening (RPS) database. Statistics are presented for local and downstream watersheds combined.

Monument	Average % low-income residents	Average % minority residents	Average % of watershed land area under tribal stewardship
Agua Fria National Monument	33.2%	19%	0.0%
Avi Kwa Ame National Monument	30.7%	24.6%	6.9%
Baaj Nwaavjo I'tah Kukveni – Ancestral Footprints of the Grand Canyon National Monument	24.3%	23.6%	16.1%
Basin and Range National Monument	18.2%	14.1%	5.1%
Bears Ears National Monument	19.7%	21.9%	12.0%
Berryessa Snow Mountain National Monument	33.7%	30.4%	0.4%
Browns Canyon National Monument	36.0%	30.6%	19.4%
Camp Hale-Continental Divide National Monument	23.4%	22.4%	10.4%
Canyons of the Ancients National Monument	35.3%	37.2%	24.7%
Carrizo Plain National Monument	35.1%	45.5%	0.0%
Cascade-Siskiyou National Monument	34.2%	20.4%	2.6%
Castle Mountains National Monument	22.1%	18.9%	0.0%
Chimney Rock National Monument	37.2%	44%	30.9%
Chuckwalla National Monument	20.5%	20%	1.5%

Monument	Average % low-income residents	Average % minority residents	Average % of watershed land area under tribal stewardship
Fort Ord National Monument	23.7%	48.6%	0.0%
Gold Butte National Monument	21.4%	16.9%	6.4%
Grand Canyon-Parashant National Monument	13.7%	11.4%	6.9%
Grand Staircase-Escalante National Monument	18.8%	14.8%	8.4%
Hanford Reach National Monument	27.9%	30.7%	0.4%
Ironwood Forest National Monument	37.2%	45.7%	25.4%
Kasha-Katuwe Tent Rocks National Monument	40.8%	62.6%	6.5%
Katahdin Woods and Waters National Monument	30.8%	2.9%	2.9%
Mojave Trails National Monument	18.8%	18.4%	3.6%
Organ Mountains-Desert Peaks National Monument	33.4%	57.6%	0.0%
Rio Grande del Norte National Monument	39.1%	58.8%	7.2%
San Gabriel Mountains National Monument	28.5%	60.0%	0.0%
Sand to Snow National Monument	41.5%	52.4%	3.7%
Sáttítla Highlands National Monument	33.7%	27.1%	0.0%
Sonoran Desert National Monument	34.2%	52.6%	9.4%
Upper Missouri River Breaks National Monument	31.3%	22.2%	11.8%
Vermilion Cliffs National Monument	25.6%	22.7%	15.3%

4. Acknowledgements

Analyses were designed and performed by Patrick Freeman, Helen Kesting, and Lise Comte with input from Julian Olden, Caitlin Littlefield, and Brett Dickson.

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