



# The Water Report™

*Water Rights, Water Quality & Water Solutions in the West*

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## WATERS OF THE UNITED STATES

DÉJÀ VU ALL OVER AGAIN: RE-REDEFINING WATERS OF THE UNITED STATES  
UNDER THE CLEAN WATER ACT

by Charles R. Sensiba, Partner, and Morgan M. Gerard, Associate  
Troutman Sanders LLP (Washington, DC)

### Introduction

On December 11, 2018, the Trump Administration's Environmental Protection Agency (EPA) and Department of the Army (DA) (together "Agencies") announced a new proposed rule, 83 Fed. Reg. 67,174 (December 28, 2018) ("Proposed Rule") modifying the definition of "waters of the United States." If promulgated as written, the new rule will significantly narrow the number of waterways and wetlands that fall within the jurisdictional scope of the federal Clean Water Act (CWA or "Act"), 33 U.S.C. 1251 et seq., and reverse the expansions adopted under the Obama Administration's waters of the United States rule. The practical implications of the Proposed Rule for project proponents are that ephemeral streams and many ponds and ditches used in agricultural, industrial, and construction activities would no longer be within the jurisdictional reach of the CWA, alleviating the requirement for and uncertainty surrounding permitting requirements and related mitigation measures. The next step in the Proposed Rule's process is the public comment period, and the Agencies will accept comments until February 26, 2019.

### Background

The CWA prohibits the discharge of any pollutants, including dredged or fill material, into "navigable waters" without a permit. These "navigable waters" are defined as the waters of the United States (WOTUS). Identifying which waters constitute WOTUS has long been the subject of contentious debate involving US Supreme Court opinions and multiple federal circuit and district court challenges across the country. At stake is the jurisdictional reach of CWA: whether WOTUS encompasses not only perennial rivers, streams, lakes and ponds, but also extends to waterbodies such as seasonal tributaries that flow only as the result of rainfall or melting snowpack, ephemeral streams, or isolated wetlands not physically connected to larger rivers and streams.

In 2015, the Obama Administration's EPA promulgated an expansive new definition of WOTUS, Final Rule, 90 Fed. Reg. 37,054 (June 29, 2015) ("2015 Rule"). The 2015 Rule prompted extensive litigation that remains pending at the time of publication of this article. The 2015 Rule significantly increased the type and number of waters afforded CWA protection and regulation, providing coverage if a particular waterway or wetland had a "significant nexus" to traditionally jurisdictional waters, in line with Justice Kennedy's concurring opinion regarding the waters covered by the CWA in *Rapanos v. United States*, 547 U.S. 715 (2006). Under the 2015 Rule, isolated waterbodies and features may be considered CWA jurisdictional if the regional hydrology supports the "significant connection" to the navigable water. If fully implemented, the 2015 Rule would envelop nearly 60 percent of the nation's waterbodies.

**WOTUS****Attempted  
Roll Back****APA Violations****Rule  
Implementation**

The Trump administration has taken the position that the 2015 Rule extends the CWA's reach beyond Congressional intent and has pursued several avenues to roll back the Obama-era rule. The first step in scaling back the 2015 Rule (referred to as "Step 1") was to delay the effectiveness of the 2015 Rule until February 6, 2020. On February 6, 2018, the Agencies finalized a rule suspending the effectiveness of the 2015 Rule ("Suspension Rule"), 83 Fed. Reg. 32,227 (July 12, 2018), and sought to reinstate the pre-2015 regulatory definition. However, the implementation of Step 1 has not avoided controversy. On August 17, 2018, a South Carolina Federal District Court in *S.C. Coastal Conservation League v. Pruitt*, 318 F. Supp. 3d 959, 961 (D.S.C. 2018), overturned the Suspension Rule and permitted the 2015 Rule to go into effect in roughly half the states. The District Court concluded that the Agencies violated the Administrative Procedure Act (APA), 5 U.S.C. §§ 551-559, by limiting its consideration to comments on only delay, rather than the merits of the 2015 Rule. Further, the court determined that the Agencies improperly abbreviated the length of the public comment period for the Suspension Rule. In addition, a Washington State federal District Court, in *Puget Soundkeeper Alliance, et al., v. Wheeler, et al.*, No. C15-1342-JCC (W.D. Wash., Order Nov. 26, 2018), recently followed the Sixth Circuit in vacating the Suspension Rule and also expressly ruled that the pre-2015 definition had been voided nationwide. *Puget Soundkeeper* seems to suggest that even if the 2015 Rule was repealed or vacated, there is no longer a clear, standing regulatory definition for the Agencies to rely upon if the Proposed Rule never becomes final.

On the other hand, and regardless of the validity of the Suspension Rule, federal District Courts in Georgia (*Georgia v. Pruitt*, Case No. 2:15-cv-79) and North Dakota (*North Dakota, et. al v. Environmental Protection Agency*, Case No. 3:15-cv-59-DLH-ARS) have issued preliminary injunction orders prohibiting the implementation of the 2015 Rule in a total of twenty-four states while the courts consider the legality of the 2015 Rule in full trials. Thus, the current jurisdictional reach of the CWA is essentially a state-by-state analysis. As of the publication of this article, the breakdown of the states and which rule applies are depicted in the map below.

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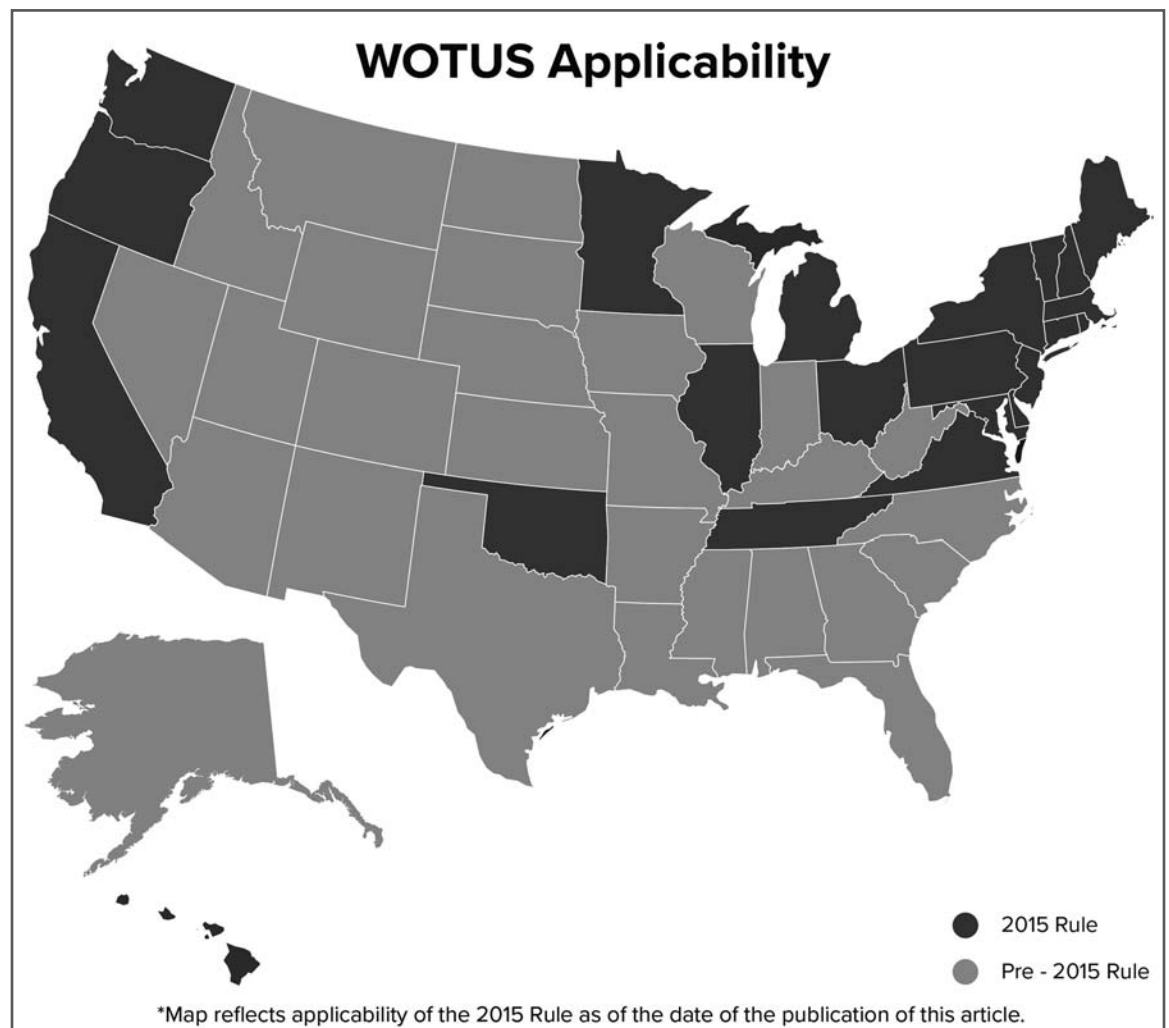
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### The Proposed Rule

## WOTUS

### New Definition

### Scalia Opinion

### Categorical Exclusions

### Proposed Rule Issues

### Ephemeral Streams

### Impoundments

### Interstate

### Tributaries

### Lakes & Ponds

The second step employed by the Trump Administration to scale back the jurisdictional reach of the CWA under the 2015 Rule (“Step 2”) was to promulgate a new rule (the Proposed Rule) that seeks to change the 2015 Rule by adopting a new definition of WOTUS that tracks the reasoning of the late Justice Scalia’s plurality opinion in *Rapanos*. In *Rapanos*, Justice Scalia described the reach of the CWA as limited to those waters with a “continuous surface connection” with a traditional navigable water that makes it “difficult to determine where the ‘water’ ends.”

Adopting Scalia’s plurality opinion in *Rapanos*, the Proposed Rule would continue to extend the jurisdictional reach of the CWA to traditional navigable waters, essentially meaning waterbodies that could be traveled by boat either naturally or with some improvement (territorial seas, rivers, large streams and large lakes). However, the Proposed Rule would redefine the jurisdictional reach of the CWA for waters connected to traditionally navigable bodies. While the 2015 Rule requires a case-by-case analysis for each stream, lake, pond, and wetland utilizing the “significant nexus test,” the Proposed Rule describes narrowly defined categories of connected surface waters and categorically excludes other flows. Thus, the Proposed Rule seeks to eliminate the bespoke analysis applied to each waterbody articulated by the 2015 Rule. Commenters are asked under the Proposed Rule whether jurisdictional waters are only those that are predictable and continuous, including perennial waters (“water flowing continuously year-round during a typical year”) or can include intermittent waters (“surface water flowing continuously during certain times of a typical year, not merely in direct response to precipitation, but when the groundwater table is elevated, for example, or when snowpack melts”). Further, the Proposed Rule does not provide insight into how to measure “predictable” or “continuous” flow.

The 2015 Rule protected areas that had features of water flow, including waterbeds, high-water marks, and features that indicate two-banks and connection to a larger water. While the 2015 Rule provides coverage for ephemeral streams (“surface water flowing or pooling only in direct response to precipitation, such as rain or snow fall”) based upon these features, the Proposed Rule would categorically exclude these flows. A study referenced by the Obama Administration’s EPA found that nearly 60 percent of all waterways, and 81 percent in the arid Southwest are intermittent or ephemeral.

#### Proposed Rule Categories

The Proposed Rule, if adopted, affects the jurisdictional status of the CWA for the following categories:

- **Impoundments:** The Proposed Rule does not change the current reach of the CWA concerning impoundments — which dates back to regulations adopted in 1986 (except where jurisdiction is affirmatively relinquished as noted below). If a particular waterbody is considered WOTUS under the Proposed Rule, impoundments within the waterbody (i.e., a dam that impounds water on a major river) will continue to have no bearing on whether the waterbody qualifies as WOTUS, despite the impoundment causing a break in the water flow.
- **Interstate Waters:** The 2015 Rule interpreted WOTUS as including waterbodies that span state lines. The Proposed Rule provides that the interstate nature of a waterbody will not automatically provide for the classification of that water as WOTUS. Instead, interstate waters must qualify as “navigable waters” or possess the requisite surface connection under the Proposed Rule to be considered WOTUS.
- **Tributaries:** Under the Proposed Rule, tributaries that are navigable or influence traditionally navigable waters remain a category of jurisdictional waters subject to the CWA. However, the Proposed Rule seeks to narrow the definition of tributaries to mean a “river, stream, or similar naturally occurring surface water channel that contributes perennial or intermittent flow to a traditional navigable water or territorial sea in a typical year either directly or indirectly through other jurisdictional waters, such as other tributaries, impoundments, and adjacent wetlands or through water features...so long as those water features convey perennial or intermittent flow downstream.” The Proposed Rule seeks comments on whether tributaries should be limited to perennial flows, or whether intermittent flows would also be covered by the rule.
- **Lakes and Ponds:** The Proposed Rule seeks to clarify which lakes and ponds should be considered jurisdictional. The Proposed Rule announces that certain lakes and ponds will continue to be considered WOTUS; however, these waterbodies will no longer be evaluated on a case-by-case basis to analyze the relationship between, for example, a particular lake or pond with downstream waters. Instead, the Proposed Rule identifies a category of certain lakes and ponds that are afforded CWA coverage due to their contribution of perennial or intermittent flow to navigable waters. The categories of lakes or ponds that, under the Proposed Rule, would be considered WOTUS are: (i) traditionally navigable waters; and (ii) lakes and ponds “that can contribute flow to [a traditionally navigable water] either directly or through a tributary, jurisdictional ditch, another jurisdictional lake or pond, an impoundment, an adjacent wetland, or through a combination of these waters.”



<div>WOTUS</div> <div>Wetlands</div> <div>“Adjacent”</div> <div>“Abut”</div> <div>Uplands</div> <div>Proposed Exclusions</div> <div>Groundwater</div> <div>Irrigation</div> <div>Stormwater</div> <div>Ditches Distinction</div> <div>Converted Cropland</div> <div>Constructed Lakes &amp; Ponds</div> <div>Excavated Pits</div> <div>Recycling Structures</div> <div>Water Treatment Components</div>	<ul style="list-style-type: none"> <li>• <b>Wetlands:</b> The Agencies are not proposing to change the 2015 Rule’s definition of “Wetlands.” However, the Proposed Rule seeks to refine the reach of jurisdictional wetlands. Under the Proposed Rule, jurisdictional wetlands will only be those wetlands that are adjacent to “traditional navigable waters” or other WOTUS categories. The key feature of the Proposed Rule is that to qualify as jurisdictional under the CWA, a wetland must be “adjacent,” meaning that the wetland must either abut or have a “direct hydrologic surface connection” to a WOTUS category. The term “abut” is proposed to mean “when a wetland touches a water of the United States at either a point or side.” A direct hydrologic surface connection as proposed “occurs as a result of inundation from a jurisdictional water to a wetland or via perennial or intermittent flow between a wetland and a jurisdictional water.” This definition would exclude from CWA jurisdiction wetlands that have an indirect hydrological connection and separated from a WOTUS category by dikes, barriers and similar structures, or by upland (any land area above the ordinary high-water mark or high tide line that does not satisfy all three wetland delineation factors, hydrology, hydrophytic vegetation, and hydric soils). Features that were once wetlands but have been naturally transformed or been lawfully converted to upland (e.g., in compliance with a CWA section 404 permit) would be considered upland.</li> </ul> <p><b>Proposed Rule Exclusions</b></p> <p>The Proposed Rule also announces several exclusions from the definition of WOTUS that, if adopted, would eliminate (or continue to eliminate) certain waters and infrastructure from CWA jurisdiction — and therefore the statutory permitting and certification requirements under the Act (e.g., section 401 water quality certification, section 402 National Pollutant Discharge Elimination System (NPDES) permitting, and section 404 dredge and fill permitting).</p> <p>The following categories are proposed to be excluded from WOTUS under the Proposed Rule:</p> <ul style="list-style-type: none"> <li>• <b>Groundwater:</b> The Proposed Rule excludes groundwater, including groundwater drained through a subsurface drainage system.</li> <li>• <b>Artificially Irrigated Areas:</b> The Proposed Rule excludes areas that are artificially irrigated primarily for agriculture, including fields flooded for rice or cranberry growing, that would revert to upland if irrigation of that area were to cease.</li> <li>• <b>Stormwater Control Features and Diffuse Stormwater Runoff:</b> The Proposed Rule excludes “stormwater control features excavated or constructed in upland [defined above] to convey, treat, infiltrate, or store stormwater run-off” as well as “diffuse stormwater run-off such as directional sheet flow over upland.”</li> <li>• <b>Ditches:</b> The Agencies propose to define “ditches” as “artificial channels used to convey water.” “Ditches” is a broad category that encompasses even canals used for navigation, and thus some ditches would be jurisdictional. The Proposed Rule seeks to distinguish between jurisdictional and non-jurisdictional ditches. Jurisdictional ditches are channels that are traditionally navigable, constructed in a jurisdictional tributary, constructed in a jurisdictional wetland, or satisfy the definition of a tributary. Non-jurisdictional ditches are all other ditches.</li> <li>• <b>Prior Converted Cropland:</b> This category has been excluded from WOTUS since 1993 and would continue to be excluded by the Proposed Rule. However, the Agencies propose to clarify that when cropland has been abandoned and wetlands have returned, then any prior converted cropland designation for that site would no longer be valid for purposes of the CWA.</li> <li>• <b>Artificial Lakes and Ponds:</b> Unless otherwise covered by a WOTUS category or maintaining the necessary direct surface connection, artificial lakes and ponds constructed in upland (e.g., water storage reservoirs, farm and stock watering ponds, settling basins, and log cleaning ponds) are excluded by the Proposed Rule.</li> <li>• <b>Water-Filled Depressions:</b> The Proposed Rule excludes water-filled depressions created in upland and “incidental to mining or construction activity, and pits excavated in upland for the purpose of obtaining fill, sand, or gravel.”</li> <li>• <b>Wastewater Recycling Structures:</b> The Proposed Rule would exclude wastewater recycling structures constructed in upland (e.g., detention, retention and infiltration basins and ponds, and groundwater recharge basins).</li> <li>• <b>Waste Treatment Systems:</b> Waste treatment systems have been excluded from the WOTUS definition since 1979, and they would continue to be excluded under the Proposed Rule; however, waste treatment systems are now expressly defined by regulation for the first time in the Proposed Rule. Waste treatment systems include all components of the system, “including lagoons and treatment ponds (such as settling or cooling ponds), designed to convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater prior to discharge (or eliminating any such discharge).” The preamble to the Proposed Rule notes that waste treatment systems can be constructed in existing WOTUS</li> </ul>
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**WOTUS**

— “when an applicant receives a permit to impound a water of the United States in order to construct a waste treatment system, the agencies are affirmatively relinquishing jurisdiction over the resulting waste treatment system as long as it is used for this permitted purpose, consistent with longstanding practice.”

**Comment Period and Looming Judicial Challenges****Continuous Surface Connection**

For non-traditional navigable waters to be jurisdictional under the CWA, the Proposed Rule requires a continuous surface connection that is relatively permanent in nature: a “mere hydrological connection” will not establish jurisdiction. These features of the proposal will have far-reaching but varying implications throughout the country. For example, in the arid West many seasonal waters (e.g., arroyos and gullies) may fall outside of the “continuous” requirement to be considered “intermittent” and might fall within the exclusion of “ephemeral.” While in coastal and lowland areas of Florida and Louisiana, some wetland areas may not “abut” a navigable water and therefore may not qualify as WOTUS under the Proposed Rule — even if such waters would satisfy the hydrologic connection required by the 2015 Rule’s significant nexus test. Thus, some waters currently classified as WOTUS may lose this characterization. If so, the individual states may be authorized to regulate waters falling outside of WOTUS.

**States’ Role****Criticisms**

Even before the comment period formally started, the Proposed Rule had already drawn both praise and sharp criticism from interested participants. Critics claim that the Proposed Rule is grounded in legal argument and not science. Further, critics argue that the proposal weakens federal management of water resources and plant and animal habitat. Proponents believe the Proposed Rule would reduce regulatory burdens and clarify permitting for projects in and near waterways.

**Groundwater Overreach?**

Supporters also believe that the Proposed Rule would curb the perceived “overreach” of the NPDES program articulated in recent circuit court decisions: *Hawaii Wildlife Fund v. County of Maui*, 886 F.3d 737 (9th Cir. 2018), cert. granted (No. 18-260), and *Kinder Morgan Energy Partners LP v. Upstate Forever*, 887 F.3d 637 (4th Cir. 2018), cert. granted (No. 18-268). See Robb, *TWRs* #170, #171 & #177. The NPDES is a permitting program within the purview of the CWA that prohibits the discharge of pollutants to navigable waters from a point source (an artificial conveyance such as a pipe into a stream) without a permit. The Ninth and Fourth Circuits have recently applied the NPDES standards to dischargers who released pollutants from a point source when their pollutants indirectly traveled into a navigable water — via ground water, a nonpoint source — due to a hydrological connection. Under the Proposed Rule, it is likely that the groundwater intermediary would not satisfy the continuous surface connection required for CWA jurisdiction to attach.

**Precedent Authority**

As such, the comment period may prove an opportunity to clarify the rule and preview the various future legal challenges to and defenses of the Proposed Rule. Challengers will have to wait until the rule is finalized before turning to a judicial solution; however, precedent does not provide stakeholders much clarity on a judicial outcome. *Rapanos* is a plurality decision (4-1-4), meaning that there a holding, but no majority opinion, leaving Circuit courts to wrestle with which opinion (Scalia’s or Kennedy’s) is binding precedent. *Marks v. United States*, 430 U.S. 188 (1977) serves as the authority on how to interpret plurality opinions issued by the High Court. Under *Marks*, “[w]hen a fragmented Court decides a case and no single rationale explaining the result enjoys the assent of five Justices, ‘the holding of the Court may be viewed as that position taken by those Members who concurred in the judgments on the narrowest grounds.’” *Id.* at 193. Courts of Appeals are split on how to interpret *Rapanos* without controlling authority, and six of the circuit courts have either determined that Justice Kennedy’s concurrence constitutes the “narrowest grounds” or have given weight to both the Justice Scalia’s plurality approach and Justice Kennedy’s concurrence. As of the date of this article, no circuit court has determined any opinion issued as controlling. Thus, any judicial challenge to the Proposed Rule provides the Supreme Court the opportunity to revisit and finally resolve the varying interpretations after *Rapanos*.

**Conclusion****Conservative Slant**

The composition of today’s High Court is markedly different than when *Rapanos* was decided in 2006. Neither late Justice Scalia nor retired Justice Kennedy remain on the Court to revisit their old opinions, and the current court is expected to slant more conservative with the more recent additions of Justices Gorsuch and Kavanaugh — two former clerks of Justice Kennedy. Although the tenors of these two junior Justices’ Supreme Court jurisprudence remain largely unknown, their time served on the lower courts may serve as guideposts. Justice Gorsuch is known as an “originalist,” which may tempt Court observers to predict that

**WOTUS****Gorsuch's View****Kavanaugh  
Stance**

his opinions would track closely with Scalia's. Notably, during Justice Gorsuch's tenure on bench of the Tenth Circuit, he did not rule on many environmental cases and has neither voiced opposition nor favor for environmental laws and protections. Hailing from Colorado, Justice Gorsuch has also been reported as an "outdoorsman," and thus his stance on natural resource related laws remains an open question for the moment. On the other hand, Justice Kavanaugh's environmental stance is much clearer as he has consistently ruled pro-industry and anti-regulatory, deciding against several environmental initiatives put forward by the Obama EPA during his time on the District of Columbia Circuit court. Thus, despite serving as a law clerk to the author of the "significant nexus" test that the Proposed Rule seeks to abandon, there is no strong indication that these two new Justices would be strongly inclined to preserve Justice Kennedy's views on the jurisdictional reach of the CWA.

Turning back to the Proposed Rule, stakeholders are able to submit comments through the Federal eRulemaking Portal: <http://www.regulations.gov> and by following the online instructions for submitting comments in docket EPA-HQ-OW-2018-0149. The Agencies will hold an informational webcast on January 10, 2019 and will host a listening session on the Proposed Rule in Kansas City, Kansas, on January 23, 2019.

**FOR ADDITIONAL INFORMATION:**

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**Chuck Sensiba** provides strategic counsel and legal representation to public utility districts, and governmental entities, investor-owned utilities, water districts, and independent power producers; and covers the full spectrum of complex licensing, natural resources, and environmental issues related to hydropower development. He has broad experience in matters under the Federal Power Act, National Environmental Policy Act, Endangered Species Act, Clean Water Act, National Historic Preservation Act, Federal Land Policy and Management Act and Coastal Zone Management Act. Chuck is recognized nationally as a leader in the water power industry, with experience in a wide range of projects across the US, from large and complex hydroelectric projects licensed and regulated by the Federal Energy Regulatory Commission (FERC), to small water supply projects. His litigation experience includes administrative litigation before FERC, as well as accompanying appellate litigation in multiple US Courts of Appeal. He also advises clients on federal policy issues affecting hydropower and is a recognized leader in energy and hydropower policy. Chuck currently serves on the Board of Directors for the National Hydropower Association.

**Morgan Gerard's** practice focuses on advising public and private sector clients on environmental and energy regulatory compliance, including permitting, rulemaking, and enforcement actions. Morgan's practice has focused on following the emerging energy trends and the associated environmental issues that arise in strengthening grid resilience and modernizing the energy system. Morgan has counseled clients ranging from those engaging in the hydropower licensing and re-licensing process to electric utilities and wholesale generators and distributed energy manufacturers, including electric vehicle manufacturers, solar installers, and energy storage providers. Morgan counsels clients on matters arising under the National Environmental Policy Act, Federal Power Act, the Clean Air Act, the Clean Water Act, the Coastal Zone Management Act, the Endangered Species Act and similar state and local regulatory schemes. Before joining Troutman Sanders, Morgan was a founding member of the energy efficiency company, Fisonic, where she assisted in the commercialization of new heating and water-based technologies.

**Drought  
Planning****Shortage  
Guidelines****Crisis Plan?****Plan Support****OTB Group**

# **COLORADO RIVER DROUGHT CONTINGENCY PLANS**

by Morgan Snyder (Walton Family Foundation) and Ted Kowalski (Walton Family Foundation)

## **Introduction**

The current drought cycle that the Colorado River basin is experiencing started in 1999. By 2005, hydrologic conditions were so dire that the basin states negotiated a set of guidelines that formally defined reductions in water allocations for the first time. The 2007 Guidelines defined elevations at which states would take reduced allocations and incentivize storage to prop up lake levels. Unfortunately, the drought cycle continued. We now find ourselves 19 years into the worst hydrologic cycle in over 1,200 years of historical records (tree ring data).

In context of the ongoing drought, the 2011 water year was an anomaly. In 2011, the hydrology of the Colorado River Basin was so extraordinarily above average that the US Bureau of Reclamation had to make some of their 2011 deliveries (which were required under the 2007 Interim Guidelines) from Lake Powell to Lake Mead, within the 2012 Water Year. Many people felt a momentary sense of relief. At the time, it was hard to believe that over the next two years, the hydrology could shift so quickly. In 2012-2013, the Colorado River Basin produced the lowest back-to-back two-year period of hydrology during the hundred year period of record (and by some treering estimates, in centuries). The basin was faced with its greatest challenge since the negotiations of the 2007 Interim Guidelines.

Facing the prospect of a water crisis, US Secretary of the Interior Sally Jewell summoned the basin states to Park City, Utah in June 2013 to review the unfolding and dire hydrologic situation. Secretary Jewell presented the troublesome hydrology of the previous two years, and posed the basic question: “If 2012/2013 hydrology were to repeat itself, and Lakes Powell and Mead were to start dropping to critical levels, what was the plan of the basin states?” The basin states could only offer an unfortunate response: there was no plan. Everyone agreed that a plan was necessary.

No one could know the twists and turns of the next five years, but today everyone stands on a threshold of entering into agreements to support a plan that could avoid a crisis for the entire Southwestern United States. The ensuing hydrology and rounds of negotiations have resulted in a number of complex and complicated draft agreements that make up the Drought Contingency Plans (DCPs) for the Upper Basin and Lower Basin. These DCPs, if finalized, will take the entire Colorado River basin to a new chapter in creative and flexible water management. There will be shared sacrifice and increased water security for the entire basin.

## **“Outside of the Box” Thinking**

After the June 2013 meeting, the basin states committed to meet with the US Bureau of Reclamation (Reclamation) to explore every possible option. The basin states and the United States formed a small group of legal, technical, and policy experts to explore better water management strategies, with the main goals of protecting critical water levels at Lakes Powell and Mead. The charge of this group was to be as creative as possible and to think “outside of the box.” The Colorado River basin, with a penchant for acronyms, quickly renamed the “outside the box” group as the OTB group.

The OTB group developed dozens of possible approaches to keep Lake Powell and Lake Mead above critical levels. Some of the ideas came straight from the options identified in the 2012 Colorado River Basin Study, but even more provocative and less politically feasible options were explored. While the OTB group was charged to develop innovative, open-minded options they were not able to coalesce around solutions that could move quickly forward. In addition, there were different legal and policy issues to resolve and conflicting positions that existed between the Upper Basin states and the Lower Basin states. The basins split into two separate, but conjoined, negotiations. Each basin — tasked with developing its own response — wanted to ensure a plan was in place if poor hydrology persisted. [Editor’s Note: this article’s use of the term “hydrology” is used to indicate precipitation as well as the antecedent conditions such as soil moisture and reservoir storage].

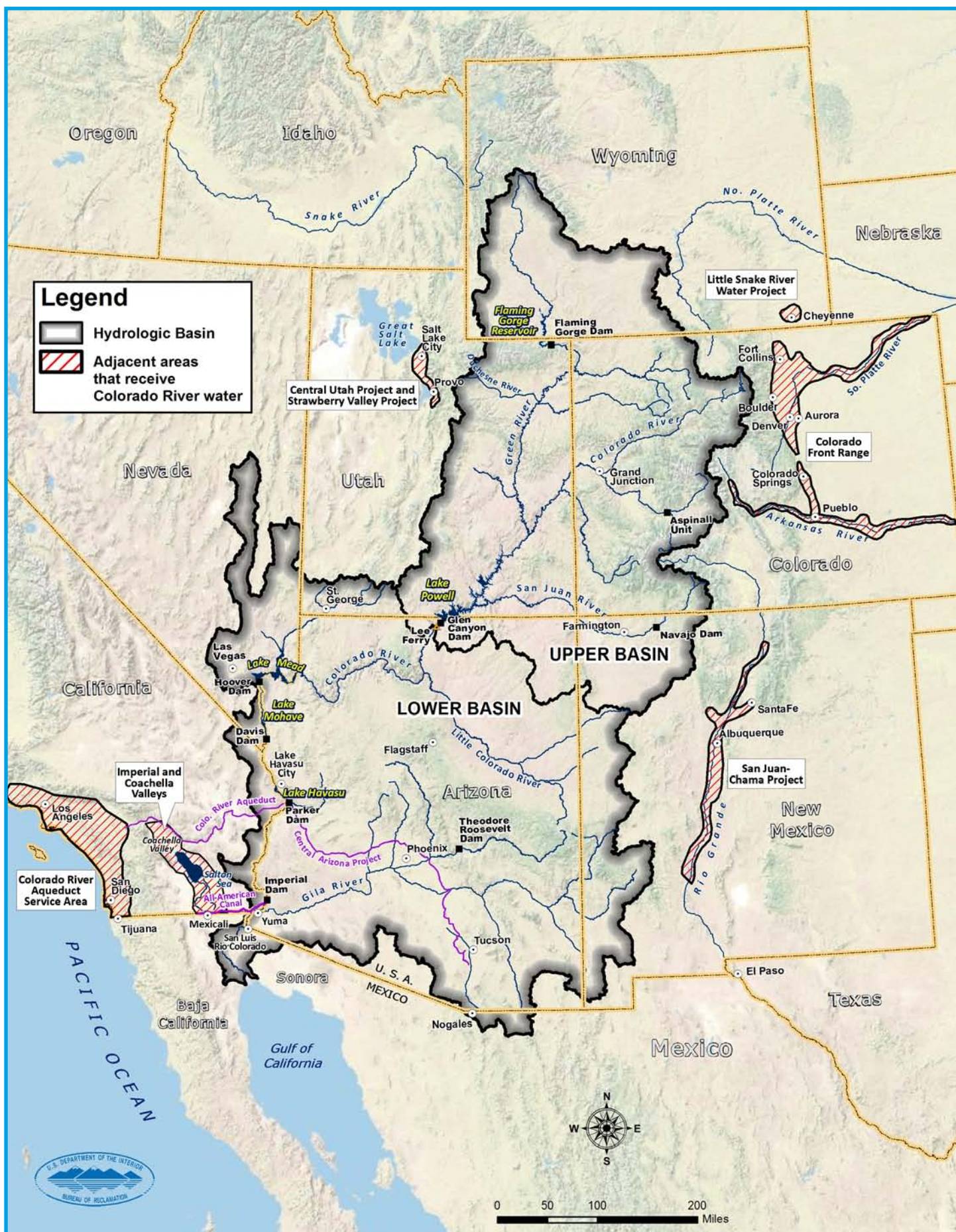


Lake Mead



<div data-bbox="152 176 310 264"><b>Drought Planning</b></div> <div data-bbox="152 296 310 369"><b>Upper Basin Key Focus</b></div> <div data-bbox="152 506 310 541"><b>Guideposts</b></div> <div data-bbox="126 821 334 894"><b>Lower Basin Planning Stalls</b></div> <div data-bbox="131 1068 326 1104"><b>2015 Pressures</b></div> <div data-bbox="136 1488 324 1524"><b>System Water</b></div> <div data-bbox="136 1625 324 1734"><b>Voluntary &amp; Compensated</b></div>	<div data-bbox="813 142 1097 178"><b>Negotiations Limp Along</b></div> <div data-bbox="380 174 1526 443"> <p>The Basin States continued their negotiations in 2014 and 2015, and documented continued commitments in the Lower Basin through the Lower Basin Memorandum of Understanding for Pilot Drought Response Actions, dated December 10, 2014. The Upper Basin states, led primarily by the Upper Colorado River Commission (UCRC) staff and the State of Colorado, held extensive negotiations, based in large part on modeling runs conducted by Reclamation's Upper Basin office. The Upper Basin States fairly quickly focused on three key components for their Upper Basin DCP: 1) weather modification; 2) demand management; and 3) coordinated operations among Colorado River Strategic Planning Act (CRSPA) Storage. CRSPA Storage refers to storage in Lake Powell, Navajo Reservoir, the Aspinall Unit, Flaming Gorge Reservoir, and Fontanelle Reservoir.</p> </div> <div data-bbox="380 447 1526 684"> <p>The Upper Basin States invited Reclamation, Environmental Non-Governmental Organizations (ENGOS), power interests, and others into a series of meetings to explore how coordinated reservoir operations could occur in a way that was:</p> <ul style="list-style-type: none"> <li>• Within the existing environmental compliance of the various reservoirs management plans;</li> <li>• In a way that recognized the need to continue to keep Lake Powell reservoir levels above critical levels; and</li> <li>• In a way that minimized impacts on other resource values (e.g. environmental, recreational, power, etc.).</li> </ul> </div> <div data-bbox="380 688 1526 806"> <p>Demand management issues in the Upper Basin were more complicated and more politically charged than the operational discussions. To the extent that the recently established system conservation program, discussed below, could provide some answers to some questions around such a program, the Upper Basin States hooked their wagon to that train.</p> </div> <div data-bbox="380 810 1526 1050"> <p>Notwithstanding the potential risks if severe dry hydrology persisted, the Lower Basin drought planning discussions stalled. The talks were complicated by long-standing tensions about how priorities would be administered during shortages between states and among water sectors within Arizona and California. Many of these challenging conversations had been going on since the 1920's and were exacerbated by ongoing tensions within the states. California was also faced with the very challenging ongoing drought affecting water supplies in Northern California and challenges associated with the State of California's lack of progress in implementing restoration programs at the Salton Sea as a promised condition of the Quantification Settlement Agreement (more on this agreement below).</p> </div> <div data-bbox="380 1054 1526 1199"> <p>As the 2015 water year was just about to begin, climate forecasters predicted an El Nino for the upcoming year, which sometimes results in increased hydrology in the Colorado River basin. Mike Connor, the Deputy Secretary of the Department of the Interior, gave a talk at the 2015 Colorado River Symposium in Santa Fe, New Mexico entitled "<i>El Nino is not a Drought Contingency Plan.</i>" The message was received.</p> </div> <div data-bbox="380 1203 1526 1413"> <p>The Upper Basin States, and Nevada, began to pressure Arizona and California to finalize a plan. Finally, in the winter of 2015, Reclamation Commissioner Estevan López led a series of high level discussions and negotiations with the principals from the Lower Basin states and their major water users — the Metropolitan Water District of Southern California (Met), Imperial Irrigation District, Coachella Valley Water District, Palo Verde Irrigation District, Central Arizona Water Conservation District (CAWCD), Southern Nevada Water Users (SNWA)). They undertook a series of intense negotiations, several times a month, including weekends and nights.</p> </div> <div data-bbox="480 1440 1429 1476"><b>The System Conservation Pilot Program or the Pilot System Conservation Program</b></div> <div data-bbox="380 1480 1526 1984"> <p>Also in 2015, Denver Water, SNWA, CAWCD, Met, and Reclamation, took a bold move, and dedicated \$11 million to stand up a System Conservation Program (the Program) that would apply in both the Upper Basin and the Lower Basin. This pool of funding would support voluntary, compensated, and temporary conservation projects that provided "wet water" to support the Colorado River Basin system — that is it would not be deposited into an entity's Intentionally Created Surplus (ICS) account but rather it would become system water for the benefit of the reservoirs and the entire Colorado River Basin system. This program was built on the notion that a rising tide could lift all reservoir levels (Lakes Powell and Mead), and that as a basin we needed to start "learning by doing." The extent of the demand for a program that offered funding for reduced water consumption was unknown, but the program proved to be very popular. Water users would conserve water voluntarily and temporarily, if compensated. To the casual observer, the appeal might have been obvious, but the program flies in the face of more than a century of water law where the underlying water management theme is "use it or lose it." [Editor's Note: ICS is a term of art for Intentionally Created Surplus. ICS water was created as part of the 2007 Interim Guidelines and ICS is a category of water that is available for one Lower Basin state or contractor to take in a given year that is "conserved" and banked in Lake Mead so that this water can be taken and consumptively used in a subsequent year. There are complicated and specific rules for who can create and use ICS, and for how ICS can be created, stored, and subsequently delivered].</p> </div>
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<div data-bbox="152 176 310 264"><b>Drought Planning</b></div> <div data-bbox="147 300 315 367"><b>Lower Basin Program</b></div> <div data-bbox="147 438 315 506"><b>Upper Basin Challenges</b></div> <div data-bbox="120 684 341 751"><b>Implementation Rules</b></div> <div data-bbox="168 999 292 1066"><b>Funding Provided</b></div> <div data-bbox="136 1278 324 1312"><b>UCRC Report</b></div> <div data-bbox="142 1455 318 1522"><b>Mexico's Participation</b></div> <div data-bbox="131 1734 329 1801"><b>New "Minute" Development</b></div>	<p>The Program was presented as a basin-wide program, but it has distinct differences in how it is implemented between the Upper Basin and the Lower Basin. In the Lower Basin, the Bureau of Reclamation oversees the implementation of the Program and it is called the Pilot System Conservation Program. Reclamation is a natural implementer of the program as the Secretary of the Interior serves as the Water Master in the Lower Basin and Reclamation is the water manager and provider, through contracts with contract holders. In the Lower Basin any conserved water naturally stays in Lake Mead because the Bureau reduces the delivery of water under the arrangement.</p> <p>In the Upper Basin, the program was administered very differently and significant challenges existed to being able to ensure the program could successfully increase the elevation level of Lake Powell. For example, there are thousands of water rights holders and they are all located upstream of Lake Powell. Thus, to see a benefit in the water elevation levels at Lake Powell from an individual water user, water must be conserved and shepherded (protected from diversion) down to Lake Powell — which has distinct legal and policy implications within each of the four Upper Basin states (each with their own set of water laws and policies). <i>See MacDonnell &amp; Castle, TWR #167.</i> Also, while Reclamation has a role in managing many of the key and important reservoirs within the Upper Basin, including Lake Powell, the Secretary of the Interior does not play a “water master” role of control there. Rather, the 1948 Upper Colorado River Basin Compact established the Upper Colorado River Commission (UCRC), which has a number of important authorities and responsibilities that are implicated by this Program. To address the different roles of the UCRC and the Upper Basin states, the original agreement between the funders recognized that both the UCRC and the Upper Basin state in which the conservation was occurring, would have a role to play in the implementation of the Program. The UCRC, the Upper Basin states, and the funders, later entered into an agreement to lay out the roles and responsibilities of each party in the implementation of the Program.</p> <p>In the first year of the Program in the Upper Basin there were only about a dozen proposals submitted, located only in Wyoming and Colorado. In the second year of the Program, the number of proposals nearly doubled, and covered each of the four Upper Basin states. The third year saw a 30% increase in proposals, and in 2018 there were even more. Since the first successful year of the Program in 2015, the original funders, and others who have seen the promise of the Program, have supported it for three additional years. The Colorado River Board of California, the Walton Family Foundation, the Gates Family Foundation, the S.D. Bechtel, Jr. Foundation, and the Gordon and Betty Moore Foundation have all stepped up to assure that the Program was successful. They supported the Program directly by providing funding to it and through the support of Environmental Non-Governmental Organizations (ENGOS), such as The Nature Conservancy (TNC) and Trout Unlimited (TU), who educated farmers, ranchers, water managers, policy makers, and others about the benefits of the Program and the nuts and bolts of the Program. These ENGOS were instrumental, and even served as an agent for a group of farmers and ranchers, during this most recent round of the Program. Importantly, early adopters — farmers and ranchers willing to try out the Program — were critical to the success of the Program as well.</p> <p>In February 2018, the UCRC issued a report on the Program, and in June 2018 voted unanimously to “take a pause” to assess several implemental issues around accounting, verification, shepherding, and protection, as well as issues involving sustainable funding. Those issues are also at the heart of the Upper Basin’s DCP implementation process that will unfold over the next few years.</p> <p style="text-align: center;"><b>Minute 32X-Mexico’s Role</b></p> <p>For at least a decade, Mexico and the United States have known that they need to be close partners in the operation of the Colorado River. In 2012, the US and Mexico entered into Minute 319, which built off of prior bilateral agreements in the Basin and established a five-year program of coordination for shortage and surplus conditions, environmental flows in Mexico, and development of conservation projects in Mexico. In 2014, in the midst of the implementation of the historic pulse flow authorized by Minute 319, which reconnected the Colorado River to the Sea of Cortez for the first time in decades, Mother Nature continued to throw everyone curve balls, and hydrologic conditions continued to decline. “Minutes” are interpretation agreements, about how to interpret the 1944 Treaty between the United States and Mexico, and they are catalogued numerically. <i>See Water Briefs, TWR #118.</i></p> <p>Participation by Mexico in the drought planning discussions was a key requirement for the basin states and Mexico. Minute 319 locked in shortage reductions for deliveries to Mexico through 2019, in parallel to reductions that would occur under the 2007 Interim Guidelines. However, both countries knew deeper reductions were needed to slow the decline of Lake Mead. The hydrologic risks combined with the looming expiration deadline for Minute 319 drove the US and Mexico to focus on development of “Minute 32X” (so named because it was unclear whether it would become Minute 322 or 323 or some other number based on other minutes adopted in the interim). At one meeting, Commissioner Salmon articulated that perhaps we need to just deal with the harsh, cold reality that we all may need to just depend on seeing less water from the Colorado River basin on a long-term average. But, who was going to give up what?</p>
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**Drought Planning****Binational Security****Water Conservation Agreements****Reduced Inflows Impacts****Bond Initiative****Demand Management Program****Western Slope Agriculture**

Those types of discussions are never easy, and discussions among the US and Mexico delegations proceeded with ebbs and flows in parallel with the US DCP negotiations until election night in 2016, which resulted in a heightened sense of urgency among the negotiation teams and a push to complete the new Minute. Finally, in September 2017, the US and Mexico signed Minute 323, which extended and expanded many of the provisions of Minute 319 so that they would run through 2026 (on a parallel track with the 2007 Interim Guidelines) and included a Binational Scarcity component that would reduce deliveries to Mexico in line with US lower basin DCP reductions, if the DCP agreements were completed. *See Water Briefs, TWR #164.* Mexico agreeing to share in shortages, up to 275,000 acre-feet, that parallel the US reductions set the stage for the parties in the US to complete the DCP negotiations. The US would be leaving water on the table if the DCPs did not come together, but domestic issues continued to be a challenge for the negotiators.

**Salton Sea**

Once a framework for a Lower Basin DCP was developed among the Lower Basin parties, the hard work began of figuring out how it would be implemented within the three Lower Basin states. California had the “benefit” of having developed extensive water conservation programs that have enabled California to reduce its Colorado River water uses by approximately 900,000 acre-feet per year since 2000 to be able to live within its normal allocation of 4.4 million acre-feet per year. California’s prior uses of water above 4.4 million acre-feet had been possible due to the water left unused by Arizona and Nevada, but as water uses grew, particularly in Arizona as a result of the Central Arizona Project, pressures mounted from the other basin states for California to cut back. A series of conservation agreements known as the Quantification Settlement Agreement, (QSA) and others, were negotiated, and have been implemented for over 15 years, at a cost of billions of dollars among California agencies and the State. The QSA would not have been possible without a 1993 commitment from the State of California to implement habitat restoration at the Salton Sea. Unfortunately, since 1993, little progress had occurred on that front until the Imperial Irrigation District (IID), and others, pressed for more action.

Without significant progress at the Salton Sea, the California water agencies, including IID, would not have been able to move forward with seeking approval of the DCP. IID, in particular, would not agree to participate in a DCP without certainty regarding solutions to address conditions at the shrinking Salton Sea. The 15-year period of mitigation, when IID was sending water to the Sea to meet the terms of California’s QSA ended in 2017. The State of California had done almost nothing to meet its responsibility of mitigating the environmental and public health impact of the reduced inflows to the Salton Sea. In 2016, federal and state parties, together with philanthropic partners committed to work together to address the issues at the Sea, including through the development of a ten-year plan for the Salton Sea Management Program confirmed through a November 2017 California Water Resources Control Board stipulated order that provided a measure of accountability to keep the plan’s implementation on track. In June of 2018, California secured an additional \$200,000,000 in funding through a voter approved bond initiative. This series of events helped pave the way for IID to be able to participate in the DCP. Over \$280 million has been allocated by California to implement projects on the ground and the California Department of Water Resources has recently issued a request for bids for large scale construction projects. Continued partnership and pressure will be essential to ensure the program will be a success.

**Colorado Trans-Mountain Issues**

The series of discussions in the Upper Basin around the DCP focused originally on Coordinated Reservoir Operations, but most recently focused around the demand management program. While the System Conservation Program had demonstrated that farmers, ranchers, cities, and other water uses would participate in a voluntary, temporary, compensated program, the future of such a program was uncertain and unclear. Would a subsequent version of this Program serve to make these mostly west slope reductions in consumption use permanent and mandatory — thus exposing a century-long feud between the Western Slope of Colorado and the Trans-Mountain Diverters (TMDs), who divert (as junior diverters) hundreds of thousands of acre-feet from the headwaters of the Colorado River Basin to serve front range municipal communities within Colorado (from Fort Collins in the North all the way down to Pueblo in the south)?

The western slope interests, led primarily by the Colorado River Water Conservation District and the Southwestern Water Conservation District, were concerned that if a demand management program was established, it would lead to the death knell of western slope agricultural economies. They insisted that any such program have guard rails to assure that western slope agriculture would not unfairly be burdened with meeting Colorado River compact obligations through a demand management program. They wanted to assure that there would not be sacrifice zones and that the TMDs (who were junior diverters after all) would also reduce their water uses when such a demand management program was in operation. The TMDs countered that a demand management program that relied on funding to support temporary, compensated,



**Drought  
Planning****Curtailment  
Approach****Compromise  
Policy****Power Struggle****"Sweet Spot"  
Controversy****Lake Mead  
Elevation  
Projection****January  
Deadline**

and voluntary reductions in water use may not be adequate to satisfy Colorado's obligations under the Colorado River Compact, and they also express concern that such a program would be extraordinarily expensive. They recommended that the State explore both a demand management program, and a mandatory curtailment approach.

Over the summer and fall of 2018, the western slope interests, the TMDs, and the State of Colorado met to hash out some guardrails about whether, when, and how a voluntary, temporary, and compensated demand management program would be established, and also when a mandatory curtailment program would be explored. In the end, the State was able to thread the needle, and at the November 2018 Colorado Water Conservation Board (CWCB) meeting, the CWCB adopted a policy that did not satisfy either the western slope interests or the TMDs, but it was enough of a balance that neither would stand in the way of the DCPs.

**Arizona Lags Behind**

While the Lower Basin parties continued to work through their implementation questions, the tensions among the basins grew, in part exasperated by tensions within Arizona regarding how the DCP framework would be implemented. Tensions related to the role of the State of Arizona versus the Central Arizona Water Conservation District, and to the fact that parties within Arizona had not figured out how water reductions would be implemented across multiple sectors. Arizona began with a false start in 2017. Governor Ducey led a process to engage key water stakeholders that quickly devolved into a power struggle between the CAWCD and the Arizona Department of Water Resources (ADWR). The result was no progress on the issues, backsliding at the legislature (with growing interest in weakening the existing groundwater management code), and a growing sense of distrust among the key parties. Many people now refer to it as the "lost year."

One of the most challenging events turned out to be the beginning of the turnaround for Arizona. In early 2018, CAWCD published a power point slide that shot around the inboxes of the water world with lightning speed. It was a slide dubbed the "sweet spot" and to many it demonstrated CAWCD's gaming of the 2007 Guidelines for the benefit of Lake Mead and Arizona's water supply. See Water Briefs, *TWR* #171. This weakened any perceived position of strength CAWCD had coming out of the failed power struggle with the Governor. In June 2018 the leads of both CAWCD and ADWR took the reins and kicked off a new process to pull together proposals for mechanisms to enable Arizona to implement the DCP reductions. The negotiations continue, and are particularly charged because of an Arizona statutory requirement that the State Legislature must authorize the ADWR Director to enter into the DCP. Arizona's Governor Doug Ducey, has reiterated a strong commitment to completing the DCP in early 2019, but success is not certain. Remarkably, Arizona has the most to lose, and the most to gain, by agreeing to a DCP. Only time will tell.

**Conclusion**

The DCP is a critical step for Colorado River Basin management. It will not help the Basin avoid shortages, but it will keep it from dropping to catastrophic levels. The DCPs would put a line in the sand by memorializing cuts that would keep Lake Mead from ever dropping below elevation 1020. As important and difficult an effort this has been, we recognize that it's only a step in the right direction. By the end of 2020, negotiations will begin again with a focus on the 2007 Interim Guidelines where additional actions will be necessary to maintain the health of the Colorado River to benefit people and the environment.

The 2018 Colorado River Basin "prom" was held on December 12th-14th at Caesar's Palace, with the highlight being a speech by Commissioner Burman, the Commissioner of Reclamation, imposing a deadline of January 31, 2019 for the basin states to complete the DCPs or risk having a drought operations solution *imposed* on the states by the US federal government. All of the states have committed to meeting that goal, with Nevada, New Mexico, Utah, Colorado, and Wyoming already taking formal steps to approve the DCP. Parties within California are very close, but as a leader from California recently indicated, "Close only counts in horseshoes and hand grenades," and continued diligence is required. So, it remains that all eyes are on Arizona for legislative action in January, and partners and allies are cheering them on because the risks of not succeeding are dire not just for Arizona, but for the entire Southwestern United States.

**FOR ADDITIONAL INFORMATION:**

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**Ted Kowalski** leads the Colorado River Program for the Walton Family Foundation. This Program has a long-term goal of ensuring sustainable water resources for the benefit of the environment and the communities that depend on a healthy Colorado River.

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## Streamflow & Agriculture

### "Instream Flow" Rights

### Loan Statute (Expedited Approval)

## STREAMFLOW RESTORATION & AGRICULTURE

REFINING STREAMFLOW RESTORATION APPROACHES WITH AGRICULTURE

by Zach Smith, Colorado Water Trust (Denver, CO)

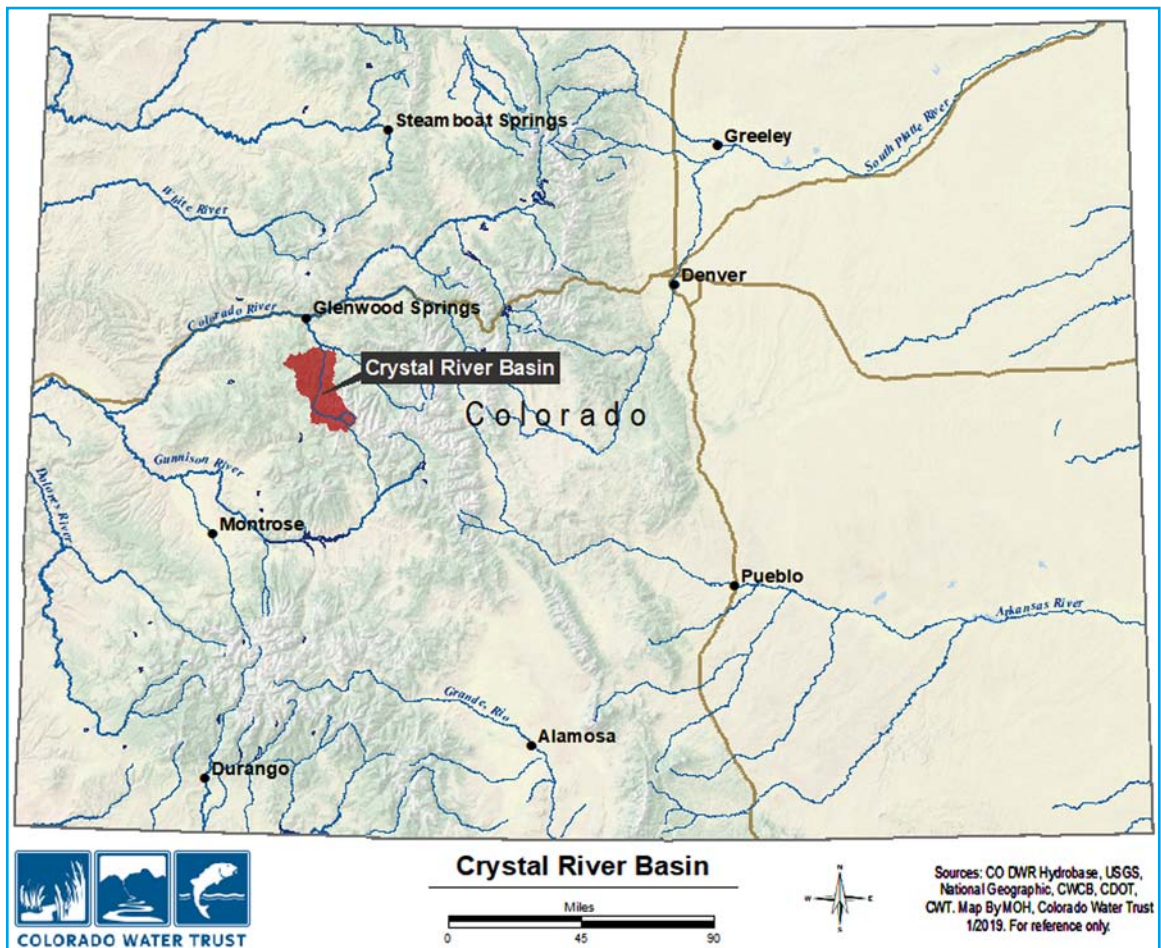
### Introduction

Restoration of streamflow in Colorado, a state where rivers have no inherent right to flowing water, requires either a reallocation of water or incentives for water users to reduce or retime their existing water use. Public interest organizations like the Colorado Water Trust (CWT) seek out voluntary, market-based, projects that restore flows. Such efforts can be hampered by: the statutory schemes governing water rights transfers; other conservation efforts; and mis-perceived risk as well as real risk.

This article tells of CWT's efforts in one Colorado basin and how a new state law, a willing partner, and the first-of-its-kind scientific modeling effort produced a uniquely tailored approach to streamflow restoration.

### CWT's Introduction to the Crystal River Basin

As described in an earlier article in *The Water Report*, drought came to Colorado in 2002 and again in 2012 (*Instream Flow Leasing in Colorado*, Smith and Koziol, *TWR* #121). In 2002, as streams dried up and some fish were being moved by hand to wetter rivers, a group of concerned water users offered water rights to the Colorado Water Conservation Board (CWCB) in an effort to keep de-watered streams alive. The CWCB is the only entity in Colorado allowed to hold "instream flow" water rights — which allow water to remain in a stream to help protect the natural environment. The state agency wanted to say "yes" to such offers, but was hampered by Colorado's water court approval process. By the time an offered water right was properly processed through Colorado's water right change procedure and legally available for instream flow use, the hot dry summer would be long past. The next year, Colorado's legislature recognized this limitation, and passed a law permitting an expedited approval process for loans of water to the CWCB in 2003. *See* Colo. Rev. Stat. §37-83-105 (2018) ("ISF Loan Statute"). The law sat quietly on the books until 2012, when snow again failed to fall in Colorado's mountains, and streams and rivers hit record low streamflows.



## Streamflow & Agriculture

### Leasing Options

### Agricultural Concerns

### Agricultural Operations

### Snowmelt Driver

Heading into 2012's dry summer, CWT worked closely with the CWCB and the State Engineer's Office to find water users willing to use the ISF Loan Statute to provide water to rivers. CWT performed a significant amount of outreach to water professionals, water agencies, the land conservation community, and water conservation and conservancy districts to find willing lessors. In specific basins, including the Crystal River basin and the Yampa basin, local non-governmental organizations (NGOs) held water meetings and invited CWT to discuss the water leasing program. In the Crystal River basin, the Roaring Fork Conservancy and Public Counsel of the Rockies held a water user meeting, made up mostly of local irrigators, to hear about water leasing possibilities during 2012.

The effort across the state in 2012 overall was a success. Hobby ranchers and reservoir owners found it economical and minimally disruptive to lease water, either for an entire season or under a split-season arrangement. However, most full-time agricultural producers found the ISF Loan Statute process problematic.

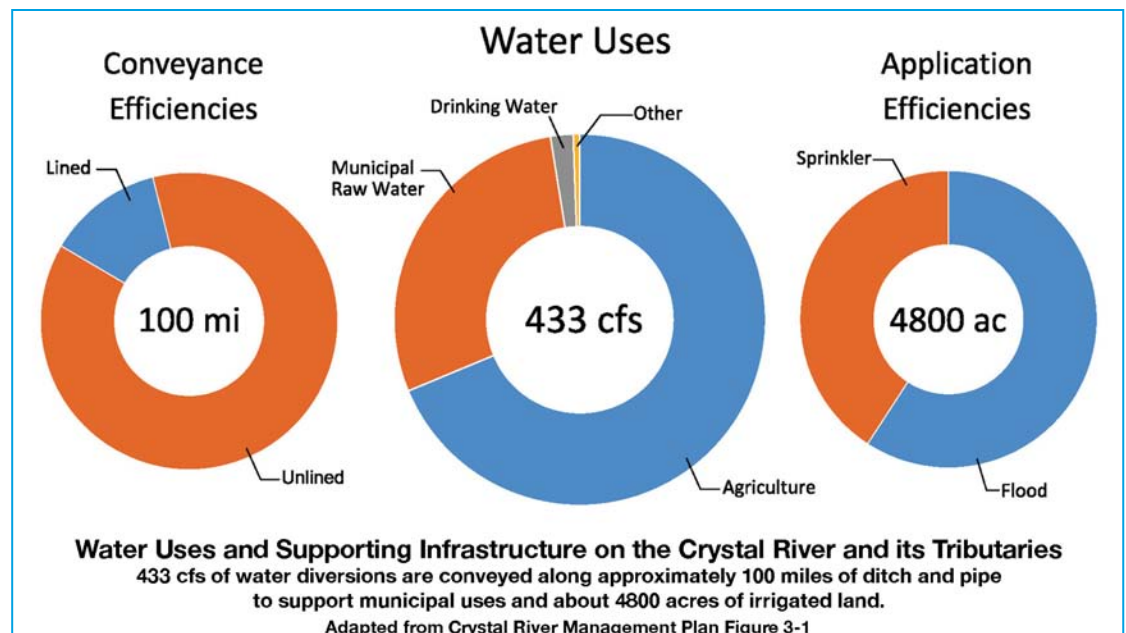
CWT's efforts in the Crystal River valley provide a window into concerns held by producers regarding participation in leasing programs. A 2016 Survey conducted by the Ag Water NETWORK revealed that 20% of surveyed persons who "own or lease ag water rights" would participate in a water lease, with another 40% of respondents in the maybe category ([www.agwaternet.org/Publications.aspx](http://www.agwaternet.org/Publications.aspx)).

What CWT's Crystal River outreach revealed is that agricultural concerns, both legitimate and misperceived, caused enough consternation in the community to make CWT's leasing program in the Crystal River unsuccessful. CWT had to find another path forward.

### The Crystal River — Flows, Users, and Administration

The Crystal River drops out of some of Colorado's highest and most beautiful mountains, the Elks, runs through a narrow canyon for several miles, and then drops, still with some gradient and speed, into the Crystal River valley. At its confluence with the Roaring Fork River (tributary to the Colorado River) in Carbondale, Colorado, the Crystal has already supplied both streamside and benchland fields with water via several ditches. These ditches have capacities and water rights ranging from less than ten to more than 70 cubic feet per second (cfs). The valley is iconic Colorado, with green fields and the massive, and often snow-covered, Mount Sopris always within view. Conservation easements are well established, penning in Carbondale's growth, requiring on-going agriculture, and often encumbering water rights (more on that later). Ranches are mainly cow/calf operations, some with sophisticated grass-fed branding. Cattle graze on bench or bottomland ranches in the winter, and are transferred to lands higher up during the summer. The ranches then grow a mixture of alfalfa and pasture grass for feed, and can get up to two cuttings a year. One ranch has switched some land to potatoes to supply a new distillery in Carbondale.

The Crystal itself, like most of Colorado's rivers, is snowmelt driven. In an average year, it peaks around 2,000 cfs near Carbondale and drops to 60 cfs in the late summer. Until the 2010s, regional water development agencies held large on-stream conditional storage water rights upstream of Carbondale. As a result of downsizing, as well as public fights in water court brought by Pitkin County and American Rivers (who named the Crystal one of 2012's Most Endangered Rivers), those water rights have been drastically reduced or abandoned. Contentious Wild and Scenic discussions are ongoing.





## Streamflow & Agriculture Flow Protection

### “Calls”

### Call & Stored Water

### Temporary Leasing

### Application Requirements

### Injury Determination (Expansion)

### Injury Standard

### Leasing Concerns

In wet years plenty of water will still flow past the various agricultural and municipal ditches and make it to the Roaring Fork. In dry years, however, the Crystal starves for water. In 2002, 2012, and 2018 flows dropped below ten cfs.

The Crystal is not lacking in flow protection. In 1975, the CWCB appropriated on the Crystal one of Colorado’s first instream flows not tied to a federally-mandated bypass flow — amounting to a whopping 100 cfs. Legend has it, to originally determine whether there was a natural environment in the Crystal River, state employees threw cyanide capsules into the river and counted the dead fish (this was not an extraordinary sampling technique at the time). The Colorado River Water Conservation District challenged the appropriations, claiming — among other arguments — that an instream flow is unconstitutional because it has no physical diversion component. In a 1979 Colorado Supreme Court ruling, the court affirmed the constitutionality of the Instream Flow Program and the Crystal River instream flow. *Colorado River Water Conservation District v. Colorado Water Conservation Board*, 594 P.2d 570 (Colo. 1979).

The CWCB has become active in recent years in enforcing their Crystal River water right, placing “calls” in 2010, 2016, 2017, and 2018. [Editor’s Note: A “call” is the official request by an appropriator to the Division of Water Resources for water which the person is entitled to under his decree; such a call will force those users with junior decrees to cease or diminish their diversions and pass the requested amount of water to the downstream senior making the call.]

However, the CWCB’s instream flow is not the only water right enforced up the Crystal. The Colorado River’s driving call — the so-called “Cameo call” — shuts down Crystal diversions to their decreed amount, and junior-to-Cameo agricultural water rights continue to divert under the Colorado River basin-wide exchange provided by releases of stored water from Green Mountain Reservoir. Traditionally, water users within the Crystal have refrained from placing hard administrative calls for water against their neighbors, instead working out shortages among themselves.

### 2012 & 2013 Streamflow Restoration Efforts

There was little doubt that Crystal River streamflow in 2012 would mirror 2002, given the winter snowpack numbers. At a meeting in late winter, CWT pitched temporary leasing, both for the full irrigation season and a split-season option to a full house of producers and local municipal suppliers.

These lease applications would require:

- Evidence of the proponent’s legal right to use the loaned water right;
- A statement of the duration of the proposed loan;
- A description of the original points of diversion, the return flow pattern, the stream reach, and the time, place, and types of use of the loaned water right;
- A description of the new proposed points of diversion, the return flow pattern, the stream reach, and the place and types of use of the loaned water right; and
- A reasonable estimate of the historic consumptive use of the loaned water right.

Colo. Rev. Stat. § 37-83-105 (2018).

Under the ISF Loan statute, leases of water to the CWCB must go toward the satisfaction of an existing instream flow. *See* Colo. Rev. Stat. §37-83-105(2)(a). Dry years on the Crystal River provide a perfect opportunity to use this law, as the 100 cfs instream flow is rarely met in dry years. Leasing requires full or partial season dry-up of irrigated lands to prevent expansion of the water right and injury. The application is sent to the appropriate division engineer, who has 20 days after notice to make an injury determination. No hearing is required. Notice is provided to subscribers to the basin’s substitute water supply plan list. Owners of water rights are given 15 days after notice to make comments.

Critically, the injury standard is relaxed. A “reasonable estimate of historic consumptive use” is less strict than a fully-vetted water court engineering report. Colo. Rev. Stat. §37-83-105(2)(b)(I)(E) (2018). But because the standard of review is relaxed and the lease is administratively approved, these leases may only run for three out of 10 years with no renewals. *See* Colo. Rev. Stat. §37-83-105(2)(a)(IV) (2018).

CWT’s pitch to lease water to bolster Crystal streamflow was met with healthy skepticism. The concerns generally fell into four buckets. First, why should agriculture dry up when other water users were to blame? Second, producers expressed concerns over the impacts of dry-up. Third, producers expressed concern over a state agency (CWCB) having control over a senior priority in the river, among a community that had, to date, not placed a formal administrative call against a neighbor. Would the CWCB share or rotate in shortage, or would they formally call for leased water? Fourth, producers asked what was CWT’s desired streamflow goal. When the river hit zero cfs, was CWT’s goal to lease 100 cfs, or something less? And when there was zero cfs in the river, did it make ecological sense to lease four or 10 cfs, or would that water just get lost in the river bottom’s exposed cobbles?

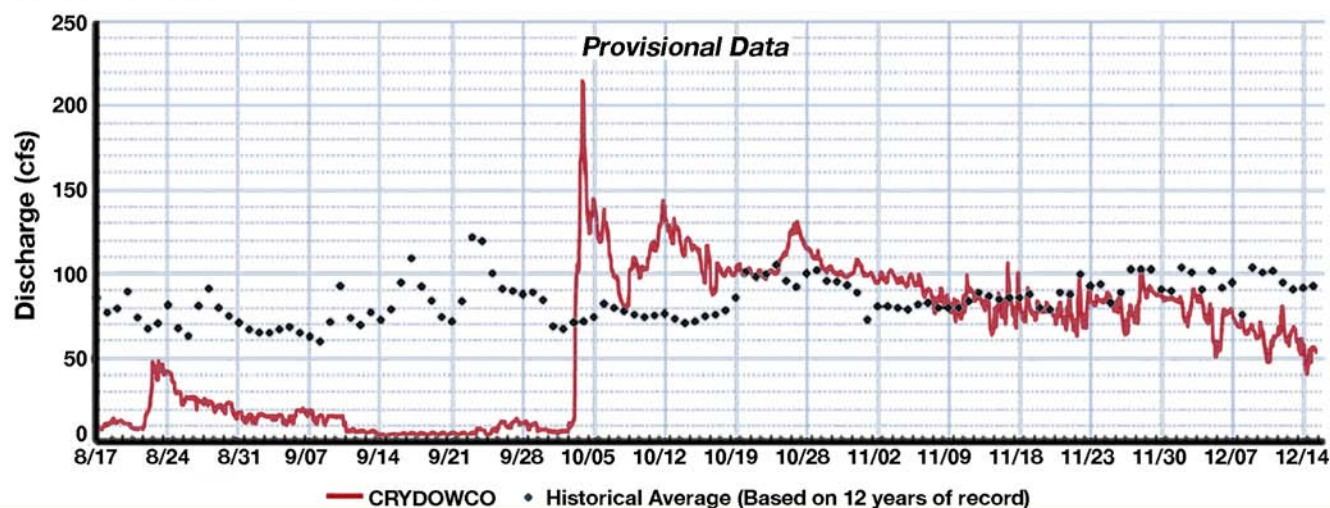
## Streamflow & Agriculture

In 2012, CWT had few answers and fewer takers. In 2013, which initially looked similar to 2012, six ditches signed up for a voluntary three-day diversion reduction to test whether measurable hydrological and ecological impacts might occur with added water. The night before the voluntary shut off was to occur, rains hit the region with fury and added more than 200 cfs to the river — prompting CWT to call off the effort. A similar situation occurred in 2018, where flows in the Crystal River increased dramatically, rising over 200 cfs in early October (see graph below).

### CRYSTAL RIVER AT DOW FISH HATCHERY AB CARBONDALE (CRYDOWCO)

Data Source: Colorado Division of Water Resources

August - December 2018



## River Health Issues

### Crystal River Management Plan

With leasing's problematic reception, and legitimate ecological and hydrological questions outstanding, Colorado Water Trust (CWT) took a step back, and local partners Roaring Fork Conservancy and Public Counsel of the Rockies embarked on a study to answer several important questions: were low flows a limiting factor in the Crystal's health? Where is the most problematic reach? At what flow levels does adding additional water produce ecological results? In the end, the study would combine a hydrological model, a water rights allocation model, and an ecological model to show environmental benefits of different rates of water introduced at different points in the river.

What started as a study to answer those questions turned into one of the state's first Stream Management Plans. In 2015, the CWCB completed the first State Water Plan, Colorado's first effort to plan strategically for its increasing demand and decreasing supply of water. See [www.colorado.gov/pacific/cowaterplan/plan](http://www.colorado.gov/pacific/cowaterplan/plan)

## Stream Management Plan

As an environmental goal, the state has pushed for 80% of locally prioritized streams to have a stream management plan (SMP). SMPs are not defined, but are funded to provide local basins with resources to determine how their rivers function today, and how their health might be improved for the future.

For CWT's purpose, the Crystal River Management Plan (CRMP), as it was formally titled, answered many of the producers' questions. See [www.roaringfork.org/media/1352/crmp\\_noappendix\\_bleeds.pdf](http://www.roaringfork.org/media/1352/crmp_noappendix_bleeds.pdf).

## Flow Benefits

The community learned that a stream reach below most of the major diversions, but above many points of return flow, was the hardest hit reach of stream. Constraints on ecosystem function are greatest on the lower Crystal River where surface water diversions modify the hydrological regime and limit the quality and availability of aquatic habitat. The report showed that when the Crystal is below 17 cfs, small amounts of added water in that reach would likely not provide any ecological benefits. See CRMP Figure 3-7, next page. But it also showed that a sweet spot existed between 40 and 55 cfs in which each additional cfs of added water improved the river's health. And it showed that above 55 cfs the benefits tapered off in moderate drought years.

## Agricultural Commitment

The CRMP made clear that tackling the driest years would be a challenge. In those years, supply for the senior ditches would be limited, and to raise the river from 0 to 17 cfs or even to 40 cfs would require significant water use reductions from the agricultural community. Even with compensation, one of the stated goals of the CRMP was to respect the agricultural heritage of the valley, and the study team interpreted such drastic measures as likely running afoul of that commitment. However, in moderate drought years (1-in-4 to 1-in-10 year droughts) an additional 5-20 cfs in the river when producers are getting all or close to all of their allotment of water could make a huge difference.

## Streamflow & Agriculture

### "Safe Harbor" Provision

### Historical Consumptive Use

### Transfer Quantification

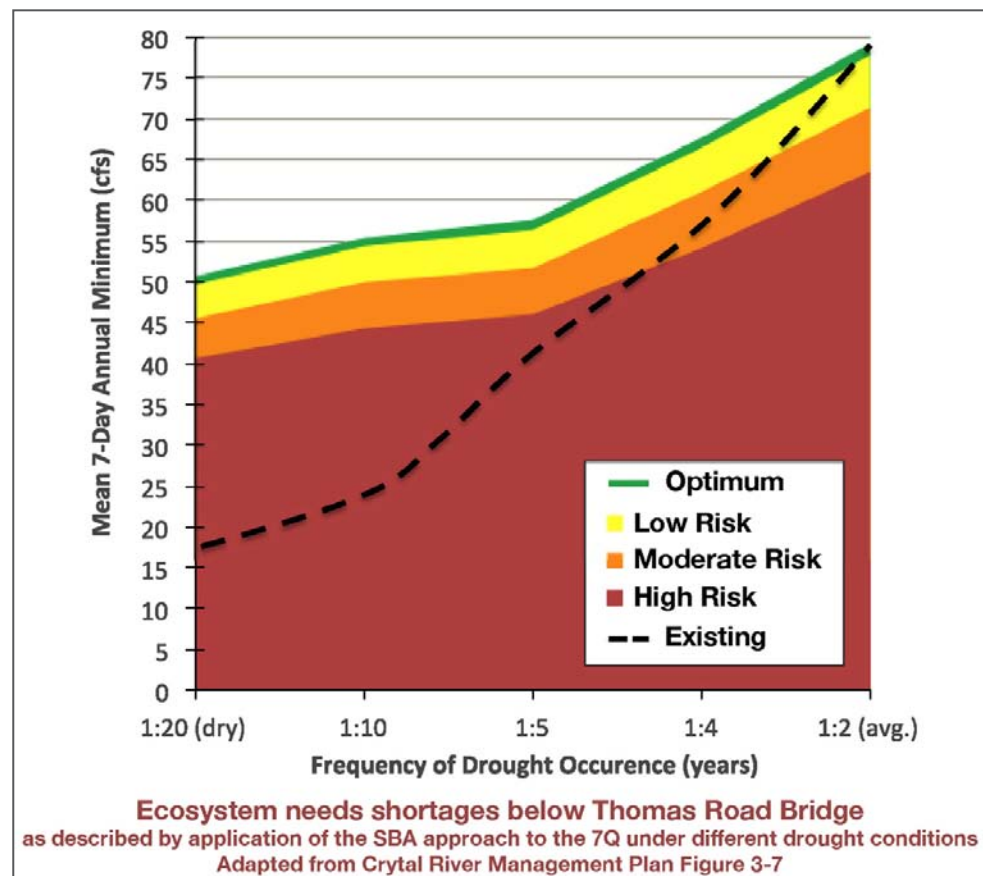
### Safe Harbor Effect

#### Failed Efficiency Transfer Legislation Provides an Unexpected Outcome

In 2013, residents of the Roaring Fork basin testified in Denver in support of Senate Bill 19. They even brought pictures of the dry Crystal River from 2012, urging legislators to vote in favor of legislation that would allow irrigators to transfer water saved by efficiency measures to the CWCB for instream flow use between the headgate and point of return flows. A second part of the bill provided a "safe harbor" to irrigators who wished to conserve water without penalty under the notorious "use it or lose it" doctrine. An established tenet under the Prior Appropriation Doctrine, "use it or lose it" can raise issues. A water right unused for an unreasonable amount of time coupled with the intent of the owner not to use the water right can result in abandonment of the water right. In that scenario, the priority of the water right is wiped from the books and the property right no longer exists.

Barring real neglect, however, it is not easy to abandon a water right in Colorado. Using water one day of the year shows intent not to abandon. The more likely risk in conservation is a reduction of a water right's historical consumptive use. A water right's priority and decreed rate is confirmed by a water court, but the transferable amount of a water right matures over time through its pattern of use. A water right's value on the open market is the amount transferable to a different use, and this is typically calculated on an average monthly consumptive use basis. If a water right owner broke an arm in 2015 and did not irrigate, the water right owner is not risking abandonment, but the average monthly use will drop. When water is sold on a dollar per acre-foot basis, this means a loss of value. Thus, there is a disincentive to conserve.

Colorado's Senate Bill 19 failed, in part, to alleviate "use it or lose it" concerns. The legislature ultimately cut the efficiency transfer portion, but passed the safe harbor provision. *See Colo. Rev. Stat. § 37-92-305(3)(c)*. In this context, safe harbor means that in any future transfer quantification, the water court may not consider years of decreased use in the quantification if the water right was properly enrolled in a water conservation plan. In other words, instead of a zero in the record, it would show as "not applicable." To receive the protections a water user must either enroll in a federal land conservation program, or participate in a water conservation program, approved land fallowing program, or a water-banking program. Water conservation programs must be approved in advance by one of the identified public entities. To CWT's knowledge, only the CWCB and the Colorado River Water Conservation District have created approved water conservation programs under this law. The CWCB's program protected water users who enrolled in the Upper Colorado River Basin System Conservation Pilot Program. *See* [www.ucrcommission.com/RepDoc/SCPPDocuments/2018\\_SCPP\\_FUBRD.pdf](http://www.ucrcommission.com/RepDoc/SCPPDocuments/2018_SCPP_FUBRD.pdf).





## A Revised Approach: Non-Diversion Agreements

Streamflow  
&  
AgricultureDiversion  
Reductions

In late 2015, as CWT's local partners rolled out the results of the CRMP in a series of public meetings, CWT put leasing ideas on the shelf and instead considered a series of non-diversion agreements. Based partly on work by The Freshwater Trust on the Lostine River (*see* [www.thefreshwatertrust.org/from-conflict-to-collaboration](http://www.thefreshwatertrust.org/from-conflict-to-collaboration)), CWT proposed to pay irrigators to reduce their diversions at specific locations when the river dropped below specific trigger streamflows, all guided by the results of the Crystal River Management Plan (CRMP). Agreements, once signed, would remain in hibernation until August and September. If, during those months, flows dropped below 40 cfs at a continuous stream gage within the critical reach of the Crystal, irrigators would have the option to reduce their diversions. Before then, CWT and the irrigator would agree on a baseline off of which to pay for reductions. That baseline could never be above a water right's decreed amount.

## Advantages

The approach had clear advantages and disadvantages as opposed to leasing.

The advantages mostly make the program friendlier to producers. No state agency would control a Crystal River senior priority. No dry-up was required, and an irrigator could feather reductions up and down over weeks to meet ranch needs and be paid on a cfs per day basis for water left in the river. CWT and irrigators would co-apply for water conservation program approvals from the Colorado River Water Conservation District, a closer-to-home agency with a strong ag-protection ethic for Colorado's Western Slope. If water could make it to the critical reach, it could flow two miles unimpeded to the next diversion downstream, at which point streamflows are boosted by return flows.

Approach  
Disadvantages

The approach had its disadvantages as well. With a formal lease, water can be called under its priority to the headgate, and then protected through the reach past intervening diversions. Under a water conservation program, the water right owner also forgoes the right to call for water as it will not be placed to a beneficial use. In a hypothetical worst-case scenario for a river, a non-diversion agreement with a downstream senior might free up water for an upstream transbasin diverter. In those cases, normal exercise of the water right is better for a river than water conservation. That said, careful analysis and strategic adoption of water conservation programs can still result in streamflow benefits.

## A Pilot Project at Cold Mountain Ranch

Conservation  
Easement

Cold Mountain Ranch irrigates several hundred acres of pasture grass and alfalfa on the west side of the Crystal River. The ranch gets water from three ditches, and makes up a sizable chunk of the valley's irrigated beauty. That scenic and agricultural value is recognized and protected under a conservation easement co-held by Colorado Cattlemen's Agricultural Land Trust and Pitkin County. The County invested in the easement, and the water rights are a part of the conservation easement.

The ranch's owners expressed interest in the water conservation program idea and engaged with CWT in drafting the original agreement.

## Key Terms

KEY TERMS OF THE DRAFT AGREEMENT WERE:

- Enroll one ditch with two priorities amounting to six cfs
- Three-year term
- Only active in August and September
- Triggered once streamflows dip below 40 cfs
- Payments for reductions cease if flows reach 55 cfs for three consecutive days
- The ranch retains discretion whether to reduce diversions, but if it does, it must keep diversions reduced for at least five days
- The ranch may not reduce diversions under the agreement for more than 20 days in any year
- CWT would pay on a cfs-per-day basis

## Incentives

Later, the agreement was re-characterized as a diversion coordination agreement, but the main terms remained unchanged. From the broadest perspective, CWT's hope was to provide an incentive for Cold Mountain Ranch to consider the river's flows as it scheduled its irrigation and made ranch management decisions. The ranch could earn money by retiming diversions away from periods of lowest flow to times when flows had recovered. To better monitor the project, CWT worked with local partners to have a stream gage installed within the critical reach. Using that gage, readings at the headgate, and a gage upstream, CWT and its partners felt like the project could be monitored properly.

## Monitoring

Reduction  
Payment Rate

CWT initially proposed paying a rate of \$80 per cfs-per-day reduction in diversion by the ranch. This offer was generally viewed as too low by the community, and Cold Mountain Ranch and CWT eventually settled on a rate of \$175 per cfs per day reduced (roughly \$295 an acre-foot of consumptive use). CWT believed this rate still represented a market rate for water in the basin.

## Streamflow & Agriculture

### Risks Minimal

### Dry Year

### Call Placed

### Restorative Effect Limited

### No Reduced Diversion (Factors)

### Minimize Disruptions

The diversion coordination agreement had to be drafted in a way that satisfied the two entities holding the conservation easement on the property. The drafters of the easement had the forethought to contemplate leases for instream flow use; however, this proposal was slightly different. One of the easement holders worried the project could risk the health of the ranch's water right. CWT felt strongly such risks were minimal. The ranch would show no intention of abandoning its water rights because it would use its water rights every year. The risk of devaluing the water right's historical consumptive use was moot — with the water rights already tied to the land under the conservation easement, a slight reduction of historical consumptive use would not impact their value — they couldn't be sold off anyway. And, like belts and suspenders, with the entire project enrolled in a water conservation plan, any reduction would be protected by Senate Bill 19. Once satisfied, both easement holders signed off on the agreement.

### The 2018 Drought and Agreement Operations

2018 was a dry year for rivers across the state. The Yampa River basin's snowpack reached 80% of average, better than 2012, yet so little water remained in the late summer that the State administered the first ever "call" on the mainstem of Yampa, shutting off junior water rights in order to meet the needs of more senior users downstream.

Farther south, the Crystal River saw unprecedented levels of administration. The CWCB placed a call for its 1975 instream flow water right (as it had in 2010, 2016, and 2017). More unusual was a call on the Crystal from one of the agricultural ditches, shutting down upstream agriculture priorities and limiting domestic supplies. The State's records indicate it was the first time an agricultural ditch placed an intra-Crystal call.

Come August, flows in the critical reach had already dropped to eight cfs. Flows were low enough to trigger the agreement, but water available to Cold Mountain Ranch's enrolled water right had shrunk to two cfs — limiting its restorative effect. Although there were short stretches of flows above 20 cfs in the critical reach, they didn't last.

In close coordination with Cold Mountain Ranch, the parties agreed to not run the project in 2018 for several reasons. First, flows in the critical reach sat below the CRMP's threshold for which Cold Mountain Ranch's water could make an ecological improvement. Second, very little water was actually legally and physically available to Cold Mountain Ranch's water rights — it was so dry. Third, the rancher owners were concerned that without irrigation water their crops might burn up. And fourth, even if CWT had organized additional similar agreements, flows were so low that to secure enough water to improve ecological conditions in the river, water users above would likely need to reduce their diversions by a third of what they were already limited to by physical supply and administrative calls. A reduction of that scale ran afoul of the CRMP's goal of preserving agricultural uses of water in the basin.

### Conclusion

For many, the tools to transfer water under Colorado's prior appropriation system have felt blunt. Why require an entire season's dry-up to provide water for another use only needed in August? This project, like more formal split-season leasing, is an effort to more finely allocate water to the environment when it needs it the most, and to thereby minimize disruptions to agricultural operations and make these projects more available to that community.

Hopefully, 2018 was a 1-in-20 or 1-in-50 drought year, a year type for which this project was not designed to work, although climate predictions make everyone nervous. With the pilot agreement active for two more years, there may still be an opportunity to showcase its strengths and weaknesses in a year that's less catastrophically dry. There may also be future willingness from other water users to participate under similar conditions, increasing the project's scope and impact.

#### FOR ADDITIONAL INFORMATION:

ZACH SMITH, 505/ 603-0020 or [zgsmith09@gmail.com](mailto:zgsmith09@gmail.com)

**Zach Smith** was counsel for the Colorado Water Trust from 2010 to 2018, advising CWT on water rights transactions and leading the design and development of three tributary-scale market-based streamflow restoration efforts. During his time at University of Denver Sturm College of Law, he held internships at the Colorado Office of the Attorney General and Denver Water. Before law school, he was a natural resources reporter in New Mexico and Colorado. He is in the process of transitioning to California.

## WATER BRIEFS

## TRIBAL WATER STUDY COLORADO BASIN

## COLORADO RIVER SYSTEM

Bureau of Reclamation (Reclamation) Commissioner Brenda Burman announced on December 13, 2018, the release of the Colorado River Basin Ten Tribes Partnership Tribal Water Study (Study) that was conducted collaboratively with the member tribes of the Ten Tribes Partnership. The Study documents how Partnership Tribes currently use their water, projects how future water development could occur, and describes the potential effects of future tribal water development on the Colorado River System. The Study also identifies challenges related to the use of tribal water and explores opportunities that provide a wide range of benefits to both Partnership Tribes and other water users.

Traveling over 1,400 miles from its headwaters in Wyoming and Colorado to the Gulf of California, the Colorado River is a lifeline to seven states within the United States, 29 Native American Reservations, and two states in northern Mexico.

Within the Colorado River Basin, the Partnership Tribes have reserved water rights, including unresolved claims, to the Colorado River and its tributaries. In many cases, these rights are senior to other uses. Recognizing the importance of furthering the understanding of tribal water (both currently and in the decades ahead), Reclamation and the Ten Tribes Partnership collaborated in the Study to document Partnership Tribes' water use and potential future water development to better facilitate planning and decision-making throughout the Basin.

"We face a prolonged drought that represents one of the driest 20-year periods on the Colorado River in the last 1,200 years," said Commissioner Burman. "This study is an important step forward that furthers our understanding of the challenges facing the Colorado River Basin and the actions we can take to collaboratively address them."

While not all federally-recognized tribes in the Basin are members of the Ten Tribes Partnership, the Partnership Tribes have reserved water rights, including unresolved claims, to potentially divert nearly 2.8 million acre-feet of water per year from the Colorado River and its tributaries. These rights are, in general, the most senior water rights in the Basin and therefore some of the most protected from shortage. Partnership Tribes currently divert nearly 1.4 million acre-feet of water per year, almost all of which is used for agriculture. As they look into the future, most tribes anticipate diverting their full water rights by 2040.

The Study, released in December 2018, includes perspectives and positions from each of the Partnership Tribes as statements from the Tribe's individual perspective. The Ten Tribes Partnership was formed in 1992 by ten federally recognized tribes with federal Indian reserved water rights in the Colorado River or its tributaries. Five member Tribes are located in the Upper Basin (Ute Mountain Ute Tribe, Southern Ute Indian Tribe, Ute Indian Tribe, Jicarilla Apache Nation, and Navajo Nation) and five are in the Lower Basin (Fort Mojave Indian Tribe, Colorado River Indian Tribes, Chemehuevi Indian Tribe, Quechan Indian Tribe, and Cocopah Indian Tribe).

The Study highlights tribal observations and concerns, including lack of water security, incomplete distribution systems, and regulatory and economic challenges to developing water systems in geographically diverse areas. According to Reclamation, although many of the Partnership Tribes do not currently use all their reserved water rights and have not developed the yet unquantified water rights, such tribal water does not go unused. The full development of tribal water rights for tribal benefit will widen the future gap of projected water supplies and demands; however, modeling indicates that the effect of tribal water development in the Basin is not as significant as full development of the state apportionments in the Upper Basin and the projected effect of climate change.

The Study revealed disparities among the Partnership Tribes, and between the Partnership Tribes and other water users in the Basin. These disparities have created barriers to the full development of federal Indian reserved water rights that include access to funding and capital markets for development, the lack of — and poor condition of — existing infrastructure, the number of tribal members and reservation residents without access to clean drinking water and adequate sanitation, and legal restrictions.

The comprehensive, Basin-wide analysis of tribal water in the Study builds on the 2012 Colorado River Basin Study, and allows each of the tribes to provide, from their own perspective, their views on the challenges and opportunities ahead.

In addition to producing technical information, the Tribes had other goals. First, they wanted to better understand how, at present, each of their individual water use scenarios fits into the overall scheme of Colorado River Basin management. Second, they wanted to know how future development of tribal water resources will alter Basin operations and affect other water users who are now using water to which a tribe may hold legal title, but which the title-holding tribe has not yet developed for its own use. Finally, they wanted to assess — to the extent present information allows — the role future development of tribal water rights will have on Basin operations.

From the Study's Ten Tribes Partnership Forward:

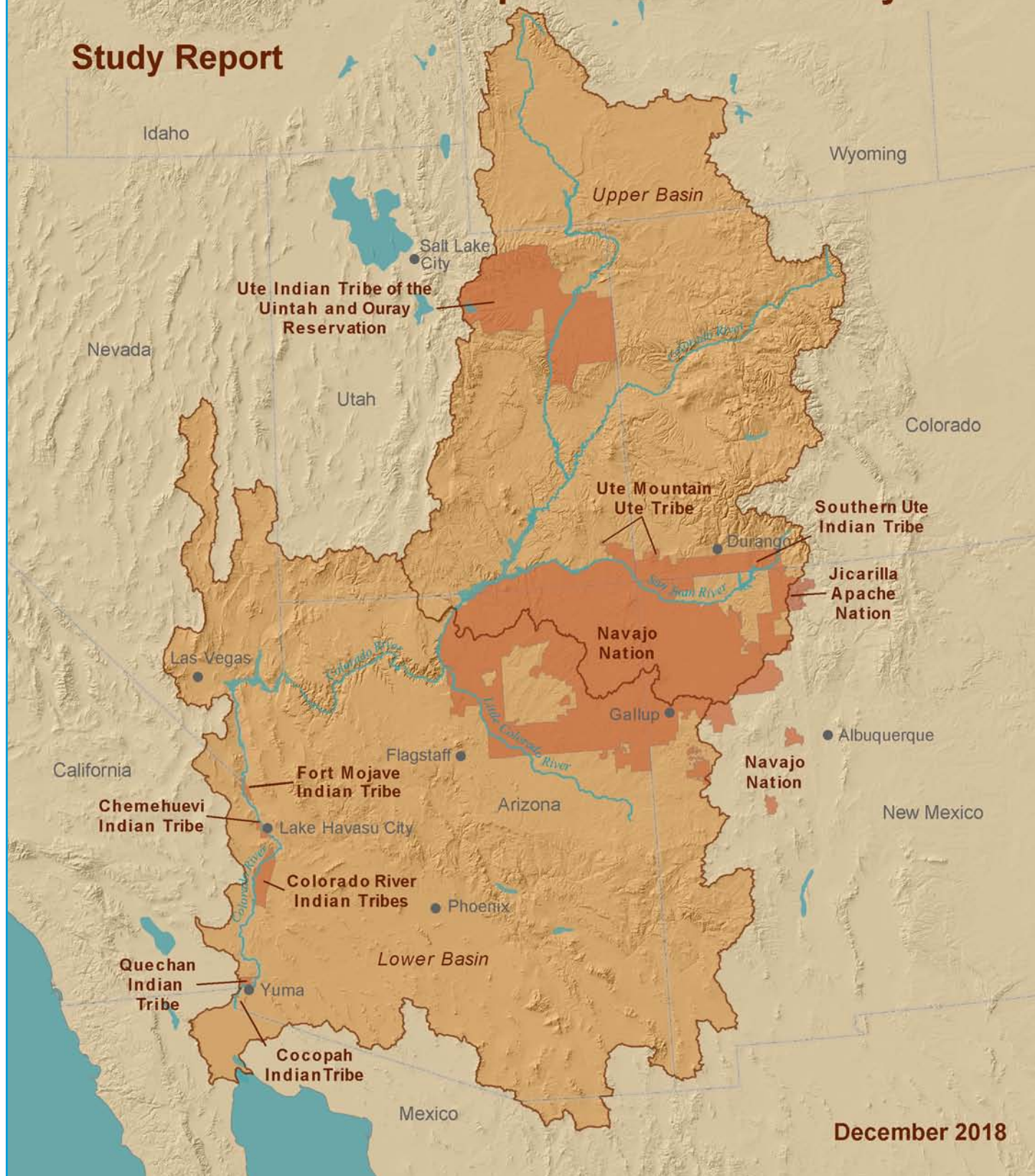
If there is a 'take-away' that was surprising, it is that, even under the most favorable of circumstances for rapid tribal water development, the amount of water that will be used by the Tribes is dramatically overshadowed by the effect of climatic conditions on the overall supply of water in the Basin. Nature is still in charge.

**For info:** Patti Aaron, 702/ 293-8189 or [paaron@usbr.gov](mailto:paaron@usbr.gov); Study available at: [www.usbr.gov/lc/region/programs/crbstudy/tribalwaterstudy.html](http://www.usbr.gov/lc/region/programs/crbstudy/tribalwaterstudy.html)



# Colorado River Basin Ten Tribes Partnership Tribal Water Study

## Study Report



## WATER BRIEFS

**GROUNDWATER LEVELS      AZ**  
**“BASIN SWEEP”**

In a press release dated December 20, 2018, the Arizona Department of Water Resources (ADWR) announced that it would be conducting a “basin sweep” to collect water-level measurements in the Pinal Active Management Area. Beginning the week of December 10, and continuing approximately through the end of January 2019, ADWR planned to conduct an extensive effort to measure water levels in wells in the Pinal Active Management Area (AMA).

ADWR staff will attempt to measure water levels at hundreds of wells in the Pinal AMA. This survey of area wells — or “basin sweep” as it is known — will be the first such basin survey of the area since 2013. The data collected will be used for several purposes, including: analysis of water-level trends; groundwater modeling; water-level change maps; hydrologic reports; and water resource planning and management.

Every year ADWR’s hydrologists collect water levels in a statewide network of about 1,600 to 1,800 “index” wells that have typically been measured annually over the last several decades. Also each year, ADWR targets at least one area of the State for a more intensive “sweep,” which provides a deeper dive into regional groundwater conditions. The involvement of well owners in sweeps is entirely voluntary and ADWR noted that it greatly appreciates the cooperation of well owners who participate in the well survey.

**For info:** Sally Stewart Lee, ADWR, 602) 771-8530 or [sslee@azwater.gov](mailto:sslee@azwater.gov)

**GROUNDWATER MAP      AZ**  
**INTERACTIVE SYSTEM**

The process of providing property owners with detailed information about their groundwater rights has been slow, cumbersome, and inconvenient. In mid-January, however, the Arizona Department of Water Resources (ADWR) will feature a new “interactive” search map that — for the first time — will allow the public to conveniently access geographical

and other data about their groundwater rights. The new interactive map will assist the estimated 4,000 to 5,000 holders of groundwater rights with information regarding the location and boundaries of their groundwater rights. It will also include a wealth of other data, including image information and aerial views, the number of acres included in each right, and the annual allotment of each right.

The system provides layers of maps that allow a viewer to determine how a parcel of land lines up with groundwater rights, or to determine which rights (or how many) are within a given sub-basin. The system was designed with the intent of providing a way to determine if a parcel of land has a grandfathered right appurtenant to it. Specifically, the Grandfathered Right (GFR) Web Map, as it is known, is an interactive map intended for use by owners and lessees of irrigation grandfathered groundwater rights and of “Type 1” non-irrigation GFRs.

The map also should prove useful to buyers and sellers of land within an AMA, showing the boundaries of all active GFRs, as well as the type of each GFR (for example, whether the GFR is for irrigation, Type 1 non-irrigation, exempt small rights, or other uses). It also will indicate if a GFR has been extinguished and/or developed. The map’s developers anticipate it will be of value to water providers and irrigation districts, as well as any entity seeking information about groundwater rights within its service area.

ADWR’s AMA section regularly fields questions about the boundaries of groundwater rights. Until now, one would have to wait for staff to create a map tailored to their request. The new, online system can be easily searched and viewed by address, parcel number, owner name or groundwater-right number.

The Grandfathered Right Web Map will be active by mid-January. A “work in progress” version can be viewed on the website listed below.

**For info:** <https://gisweb2.azwater.gov/igfr>

**WATER SUPPLY PIPELINE      AZ**  
**WIFA LOAN**

The Water Infrastructure Finance Authority of Arizona (WIFA) announced December 3rd that it has closed a \$2.5 million loan to the city of Williams for the design and environmental review of its Dogtown Transmission Line project. This design loan has a three-year interest only term and a rate of one percent.

The Dogtown transmission line is more than 70 years old, with a history of inefficiencies, breaks and leakages. It runs through the Kaibab National Forest and carries 80% of Williams’ water supply. The pipeline needs to be replaced to reduce water loss, according to the city. The city is also considering an alternative alignment of the pipeline, which would decrease the amount of water needing to be treated at the city’s water treatment plant. This loan will provide funding for the environmental review, including a review by the US Forest Service, and the design of the project. In 2020, this \$2.5 million loan will be refinanced into a WIFA construction loan to fund the installation of the pipeline.

The city of Williams was also approved for up to \$50,000 of technical assistance funding from WIFA. The additional funding will be used to hire a consultant who specializes in preparing Environmental Assessments for the US Forest Service.

WIFA is a governmental organization dedicated to protecting public health and promoting environmental quality through financial assistance for water and wastewater infrastructure. WIFA offers funding for drinking water, wastewater and stormwater projects designed to ensure safe, reliable drinking water and proper wastewater treatment. Over the last 25 years, WIFA has invested over \$2 billion in Arizona’s communities.

**For info:** WIFA’s website at: [azwifa.gov](http://azwifa.gov)

**WATERSHED PLAN      WA**  
**ICICLE RESTORATION & SUPPLY**

On January 3, the Washington Department of Ecology and Chelan County announced that the final programmatic environmental impact



## WATER BRIEFS

statement (EIS) has been adopted by Chelan County and the Washington Department of Ecology. The EIS spells out a plan for improving water efficiencies and boosting streamflows in the Icicle Creek Watershed. “The Icicle is a challenging watershed where we rely on snowpack and stored water, sourced in a wilderness area, to meet all our water needs,” explained Mike Kaputa, Natural Resources Director for Chelan County. Kaputa also noted that the “sensible plan...takes into account the unique characteristics of the basin.” For additional background information on the Icicle Creek Basin water project, *see* Kaputa, *TWR* #162.

Icicle Creek is a major tributary to the Wenatchee River in Chelan County. The Icicle Creek watershed encompasses an area of approximately 212 square miles most of which is undeveloped and resides in the Alpine Lakes Wilderness and the Wenatchee National Forest. Flows from Icicle Creek support a range of demands including both instream and out of stream uses, which affect a diverse set of stakeholders.

The plan’s preferred alternative identifies a mix of conservation and storage projects to achieve reliable water supplies. Efforts include implementing fish hatchery, irrigation, and domestic water use efficiencies; enhancing habitat, fish passage, and fish screening; automating and optimizing reservoir releases at seven lakes; and protecting tribal and non-tribal fisheries. The EIS is built around guiding principles adopted by the Icicle Work Group. Each project identified in the plan requires separate feasibility, funding, and environmental analysis. Cost of the program is estimated at \$82 million, with funding opportunities for early implementation projects to be explored next. Chelan County and Ecology considered the advice of an extensive work group, as well as over 8,800 public comments when adopting the EIS.

The work group is comprised of stakeholders representing the cities of Leavenworth and Cashmere, Icicle-Peshastin and Cascade Orchard irrigation districts, Icicle Creek Watershed Council, Washington Water Trust, Trout Unlimited, Yakama

Nation, Colville Confederated Tribes, US Forest Service, and Washington Department of Fish & Wildlife, NOAA Fisheries, US Fish & Wildlife Service, Bureau of Reclamation, and Cascadia Conservation District. The Work Group developed a water resource management strategy (Icicle Strategy) consisting of a comprehensive list of projects that address Icicle Creek issues and concerns identified in their Guiding Principles (*see* webpage listed below).

The Final Programmatic EIS and additional information on the Icicle Strategy is available on Chelan County’s Natural Resources Department webpage at [www.co.chelan.wa.us/natural-resources](http://www.co.chelan.wa.us/natural-resources). To request a thumb drive or hard copy version of the EIS, call 509/667-6532 or send an email to [maryjo.sanborn@co.chelan.wa.us](mailto:maryjo.sanborn@co.chelan.wa.us).

**For info:** Mike Kaputa, Chelan County Natural Resources Director, 509/670-6935 or [Mike.Kaputa@co.chelan.wa.us](mailto:Mike.Kaputa@co.chelan.wa.us); Kristin Johnson-Waggoner, 360/407-7139

#### SHASTA DAM LAWSUIT CA SALAMANDER THREATENED

On November 29, the Center for Biological Diversity and the Environmental Protection Information Center sued the US Fish and Wildlife Service today for failing to act on a 2012 petition to protect Shasta salamanders under the Endangered Species Act. Since the petition was filed, the species was split into three distinct species, each of which is rare and imperiled. CBD asserts that the salamanders are imminently threatened by plans to raise the height of Northern California’s Shasta Dam, which would result in extensive flooding of their habitat.

Work to raise Shasta Dam had stalled in recent years. President Trump has appointed former Westlands Water District lobbyist David Bernhardt as deputy secretary of the US Department of the Interior. Westlands has long supported raising the dam to provide more water for agricultural operations. At Interior, Bernhardt oversees both the Fish and Wildlife Service, which will decide the fate of the salamander, and the US Bureau of Reclamation

(Reclamation), which is responsible for the Shasta Dam project.

This past spring Congress allocated \$20 million in the 2018 federal omnibus bill to the project and pre-construction work started. Reclamation plans to award a construction contract in December 2019. Construction to raise the height of the dam would begin in late spring or summer of 2020. CBD’s press release noted that the Fish and Wildlife Service does not plan to review whether the Shasta salamander requires protection through a 12-month finding until 2022 — 10 years after the petition was filed and two years after construction is slated to begin.

**For info:** Jenny Loda, CBD, 510/ 844-7100 x336 or [jloda@biologicaldiversity.org](mailto:jloda@biologicaldiversity.org)

#### ENVIRONMENTAL JUSTICE CA SMALL GRANTS PROGRAM

On December 19, the California Environmental Protection Agency (CalEPA) began accepting applications for the Environmental Justice Small Grants Program. The program is open to community-based nonprofit groups and federally recognized tribal governments for support of environmental justice-related projects across California. The maximum grant amount is \$50,000, and the grant term is 12 months. Since its inception, the program has awarded 146 grants totaling \$3.8 million.

“CalEPA’s Environmental Justice Small Grants Program supports collaborative projects that help to reduce pollution in the state’s most vulnerable communities,” said Secretary for Environmental Protection Matthew Rodriquez. “In this cycle, we’re seeking grant applications that also integrate community education and training, as well as data collection and monitoring efforts in disadvantaged and tribal communities.”

Projects selected for the grants will address a variety of environmental and public health objectives, including: Disseminating information about pesticide use and the use of other chemical products; Reducing air pollution emissions; Ensuring safe drinking water; Improving climate



## WATER BRIEFS

adaptation and resilience; and Participating in environmental decision-making processes at the state and local levels. These projects may also entail regional and local capacity-building efforts to improve access to state program benefits. Grants under this program are awarded on a competitive basis.

Applications must be received by 5 p.m. on Thursday, March 21, 2019. To obtain an application package or check eligibility requirements, please visit CalEPA's Environmental Justice Small Grants Program webpage. Applications can also be requested by writing to: California Environmental Protection Agency, Office of the Secretary, Attn: Malinda Dumisani, EJ Small Grants Program, P.O. Box 2815, Sacramento, CA 95812-2815; by emailing Malinda.Dumisani@calepa.ca.gov; or by calling 916/ 445-9480.

**For info:** CalEPA webpage at: <https://calepa.ca.gov/envjustice/funding/>

**WATER RECYCLING****CA****INNOVATIVE PROJECT FUNDING**

On November 27, 2018, the US Environmental Protection Agency (EPA) issued a \$614 million Water Infrastructure Finance and Innovation Act (WIFIA) loan to the City of San Diego to help finance its Pure Water project. With EPA's WIFIA loan, San Diego will construct a new advanced facility to produce 30 million of gallons per day of high-quality drinking water. This additional drinking water supply will save the city money through reduced imported water costs, will benefit the environment through reduced discharges into the ocean, and will provide a reliable, sustainable, water supply for future generations.

San Diego's Pure Water project is estimated to cost \$1.4 billion. EPA's WIFIA loan will help finance nearly half that amount — up to \$614 million. Because the WIFIA program offers loans with low interest rates, the City is expected to save up to an estimated \$184 million compared to typical bond issuance. Project construction and operations are expected to create 480 jobs, with construction beginning in 2019 and targeted for completion in 2023.

Established by the Water Infrastructure Finance and Innovation Act of 2014, WIFIA is a federal loan and guarantee program at EPA that aims to accelerate investment in the nation's water infrastructure by providing long-term, low-cost supplemental credit assistance for regionally and nationally significant projects.

On November 1, 2018, EPA invited 39 projects in 16 states and DC to apply for a WIFIA loan. Selected borrowers will receive WIFIA loans totaling approximately \$5 billion to help finance over \$10 billion in water infrastructure investments and create up to 155,000 jobs. According to EPA's estimate of national drinking water and wastewater needs, over \$743 billion is needed for water infrastructure improvements. EPA's WIFIA program plays an important part in fulfilling this need and in the President's Infrastructure Plan, which calls for expanding project eligibility.

**For info:** WIFIA website at: [www.epa.gov/wifia](http://www.epa.gov/wifia)

**GROUNDWATER STUDY****WS****WELL CONTAMINATION**

A new groundwater study released on January 2, 2019, reveals water quality problems in southwest Wisconsin. The results of the first round of groundwater sampling in Grant, Iowa, and Lafayette Counties show widespread problems with well-water contamination by nitrate and coliform bacteria. Results of random samples from 301 private wells were released as part of the study. The causes and sources of the contamination are not yet known, and will be the focus of additional sampling and study in the coming year.

Overall, 42% of the wells tested were considered unsafe. Thirty-four percent of the samples were positive for total coliform and 4% were positive for E. coli. The presence of either total coliform or E. coli at any level in drinking water is considered unsafe according to state well codes and indicates possible risk of unsanitary water. Sixteen percent of the samples exceeded the health standard of 10 parts per million (ppm) for nitrate-nitrogen. High nitrate levels in drinking water have been associated with blue baby

syndrome, colorectal cancer, thyroid disease, and central nervous system birth defects.

Samples were collected November 9–10 by homeowners across the three counties. Wells were randomly selected to assure an accurate estimate of contamination. Individual well owners who participated in the study received analytical results for their own wells during the last half of December. Additional Information for well owners or others who might be concerned about drinking water quality is available from fact sheets prepared by the Wisconsin DNR. See <https://dnr.wi.gov/files/PDF/pubs/DG/DG0003.pdf> and <https://dnr.wi.gov/files/PDF/pubs/DG/DG0001.pdf>. These fact sheets include suggestions for actions well owners can take if contamination is found. Forty-four percent of residents in Grant, Iowa, and Lafayette Counties obtain their drinking water from private wells.

“While possibly of concern to residents, I’m not surprised by these contamination levels,” said State Geologist Ken Bradbury, Director of the Wisconsin Geological and Natural History Survey. “The shallow bedrock and thin soils in southwest Wisconsin make this a vulnerable setting from the standpoint of groundwater contamination. Now that we’re beginning to get some solid data sets we can begin to compare the results to physical parameters such as bedrock depth, soil type, and well construction in order to determine the most important factors controlling well vulnerability.”

The study was initiated by Grant, Iowa, and Lafayette Counties in collaboration with researchers from the U.S. Department of Agriculture, the Wisconsin Geological and Natural History Survey-UW Extension, and the U.S. Geological Survey. Support for the study comes from the counties and agencies involved as well as other organizations, including the Lafayette Agricultural Stewardship Alliance and the Iowa County Uplands Farm-led Watershed Group.

The two-year study will collect a second set of samples in the spring and then will evaluate factors that contribute to groundwater contamination. “Once we determine how widespread

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contamination is,” said Joel Stokdyk of USGS, “we’ll look at causes.” Scientists will evaluate factors that contribute to private well contamination, like precipitation, geology or bedrock, and well characteristics. The project will be completed in 2020.

**For info:** SWIGG Study at: <https://iowa.uwex.edu/community-development/swigg/>

## GROUNDWATER STUDY ID DEEP AQUIFER DEVELOPMENT STUDY

On November 30, the Idaho Water Resources Board (IWRB) released a study providing insight for groundwater development in the Lewiston Plateau. Portions of the Lewiston Plateau deep aquifer that are hydraulically connected to the Snake River or other surface waters are going to be more reliable for sustaining long-term ground water pumping than areas that have little to no hydraulic connection to surface water, the study author told the IWRB.

Dale Ralston, Ph.D., of Ralston Hydrologic Services, said the areas of the Lewiston deep aquifer that are closer to the Snake and Clearwater rivers hold more promise than areas farther to the south that are not recharged by surface water and involve pumping more than 1,500 feet to reach water. “As you go south, the take-home message is that it gets a little bleak,” Ralston said. “It’s not a pretty picture for long-term development.”

The Idaho Legislature passed SCR 137 in 2016 directing IWRB to undertake a study of the Lewiston Deep Aquifer to determine if there is a sustainable long-term water supply. The Ralston study was authorized by the Board in late 2016. Phase 1 of the study was completed in 2017, and Phase 2 was completed in late 2018.

Ralston said the purpose of the study was to develop a better understanding of the hydrogeologic setting and groundwater recharge characteristics in the eastern and southern portions of the Lewiston Plateau GWMA. The study involved the collection and analysis of geologic and hydrologic data with an emphasis on the hydraulic connection of aquifers with surface water streams including, the Snake River, Clearwater River,

Lapwai Creek, and Sweetwater Creek. “Aquifers that receive recharge only from surface sources (precipitation and irrigation) have a much less potential for large-scale well development than aquifers that are hydraulically connected to surface water systems,” he said. Ralston provided a map showing the areas of the deep aquifer that held the most promise for sustainable use, and those that did not.

**For info:** Brian Patton, IWRB Planning Bureau, 208/ 287-4800

## KLAMATH BIOLOGY CA/OR KLAMATH PROJECT ASSESSMENT

The Bureau of Reclamation (Reclamation) announced January 2nd that it completed the Final Biological Assessment on “The Effects of the Proposed Action to Operate the Klamath Project from April 1, 2019 through March 31, 2029 on Federally-Listed Threatened and Endangered Species.” The document was submitted December 21, 2018 to the National Marine Fisheries Service and US Fish and Wildlife Service. The 2018 BA was written as Reclamation’s portion of the reinitiation of consultation with the services. Reclamation believes all information necessary to continue and complete the formal consultation process with the services has been provided. However, exchange of information will continue during the development of the services’ coordinated biological opinion, which is anticipated to be complete before the 2019 irrigation season.

The BA contains: (1) a detailed description of the Klamath Project and its operation; (2) a description of the specific area that may be affected by the action and the environmental baseline; (3) a description of Endangered Species Act-listed species and critical habitat; (4) a description of the effects of the proposed action on ESA-listed species and associated critical habitat; and (5) other relevant available information incorporated by reference and citation. The information in the BA represents the best scientific and commercial data available.

Reclamation’s proposed action analyzed in the BA proposes to continue to: store waters of Upper Klamath

Lake (UKL) and the Klamath and Lost rivers; operate the project for the delivery of water to meet authorized project purposes and contractual obligations inclusive of deliveries to national wildlife refuges; conduct routine maintenance activities on project facilities; and implement conservation measures intended to minimize impacts of the proposed action.

The proposed action includes a water supply based operational strategy and consists of a water management approach for UKL and the Klamath and Lost rivers that mimic natural hydrologic conditions observed in the Upper Klamath Basin. This approach attempts to optimize the ecologic benefit of the available water supply, resulting in the ability to maximize the amount of remaining water available for the project while seeking to fill UKL during the fall/winter to increase the volumes available for the Environmental Water Account (including disease mitigation flows), UKL, and project irrigation supply during the spring/summer operational period.

**For info:** Laura Williams, [ljwilliams@usbr.gov](mailto:ljwilliams@usbr.gov); 2018 BA available at: [www.usbr.gov/mp/kbao](http://www.usbr.gov/mp/kbao)

## DAM REMOVAL CA/OR KLAMATH DAMS DEIR

The California State Water Resources Control Board (SWRCB) released its Draft Environmental Impact Report (DEIR) for the removal of the three Klamath River dams in California on December 27, 2018. A fourth dam included in the Klamath system, the J.C. Boyle Dam, is located in Oregon and is not included in this DEIR. The 1,800-page draft report provides SWRCB’s assessment of potential environmental impacts from the Lower Klamath Project and includes proposed measures to avoid, mitigate, or offset those environmental impacts, as required under the California Environmental Quality Act.

Mark Bransom, Chief Executive Officer for the Klamath River Renewal Corporation (KRRC), issued a statement in response to the December 27 release of the DEIR, noting that “[T]his draft report is a key step to completing this critical project and rehabilitating one of

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the great rivers of the American west. It's a sign of meaningful progress and I look forward to a thorough KRRC review of the report and its proposals. KRRC is pleased that after considering the full range of project benefits and impacts, the DEIR looked favorably on the Proposed Project." KRRC is the entity applying for de-commissioning of the four dams on the Klamath River. See Spain, *TWR* #170 and Water Briefs, *TWR* #174 for additional background on the dam removal.

The DEIR will be available for public review and comment until the comment deadline: 12:00 pm PST on February 26, 2019. SWRCB staff will hold public meetings on the DEIR in February 2019. More information on public meetings can be found in the Notice of Availability. SWRCB will evaluate and consider all responses and comments as it develops its final EIR, which is expected to be released in Summer 2019.

**For info:** Molly Croll, KRRC, 530/840-7373 or molly@klamathrenewal.org; KRRC website at: www.klamathrenewal.org/deir/

## KILLER WHALES WEST COAST ESA NOTICE LETTER

The Center for Biological Diversity (CBD) and Wild Fish Conservancy (WFC) notified the Trump Administration that its mismanagement of West Coast salmon fisheries is harming critically endangered Southern Resident killer whales (orcas), in violation of the Endangered Species Act (ESA). That orca population has dropped to just 74 individuals, mostly due to declining salmon runs leaving not enough to eat. The notice letter gives the administration 60 days to consult with wildlife officials to assess and mitigate the impact Pacific Ocean salmon fishing has on endangered orcas before the groups consider filing a lawsuit. The letter follows Washington Governor Jay Inslee's proposal last week for a \$1.1 billion program to protect orcas and restore salmon runs.

The population of Southern Resident killer whales reached a 34-year low in 2018 after the loss of a newborn calf and a young female orca. None of the calves born in the past three

years has survived, adding a sense of urgency to improve recovery efforts. In addition to lack of prey availability, the orcas are harmed by boat traffic and noise, which disrupts their feeding and communications, and water pollution.

In August, CBD sued the Trump Administration for failing to protect the Southern Residents' full West Coast habitat. CBD launched another lawsuit in August to establish a "whale protection zone" to shield orcas from boat noise and disturbance in the heart of their Puget Sound habitat.

According to the plaintiffs, their notice letter spells out the administration's obligation to update its salmon fishery management policies to comply with the ESA. It calls on the National Marine Fisheries Service to update its outdated biological assessment of Southern Residents.

**For info:** Julie Teel Simmonds, CBD, 619/990-2999 or JTeelSimmonds@biologicaldiversity.org; Kurt Beardslee, WFC, 425/788-1167 or kurt@wildfishconservancy.org

## TMDL PLANS

### TEMPERATURE PLANS REJECTED

On December 12, 2018, US District Judge Marco A. Hernández of the federal district court in Oregon (Portland Division) issued a ruling that threw out the pollution clean-up plans that EPA, the Oregon Department of Environmental Quality (ODEQ), and intervenors from the paper, logging, and electric power industry sought to leave in place for the next 12 years. Northwest Environmental Advocates (NWEA) were the plaintiffs in the case.

Stating "the Court concludes EPA's errors are serious," Judge Hernández ruled that 12 years of delay in replacing the temperature clean-up plans would be "manifestly unreasonable" and had no basis. He noted that Oregon has already adopted temperature water quality standards that are intended to protect salmon.

At issue was the EPA's repeated approval of an Oregon policy that routinely used clean-up plans, including those invalidated by the court, to override state water quality standards that are based on the biological needs of cold-water fish. Temperature is

Oregon's most widespread pollution problem, imperiling threatened and endangered salmon, steelhead, and bull trout populations.

The case involves clean-up plans called Total Maximum Daily Loads or "TMDLs" that are required by the Clean Water Act. Previously, NWEA obtained a court order that prohibited ODEQ from using the TMDL clean-up plans to override temperature standards that protect salmon. As compared to those standards, which are generally 16° C or 18° C (61 – 64° F), the Oregon TMDLs established temperatures as high as 32° C (90° F), a temperature EPA says kills salmon within seconds.

Although NWEA obtained a court order halting this process in 2012, the existing TMDLs remained in place. That brought NWEA to file the current case, which involves EPA's approval of temperature TMDLs for large swaths of Oregon, including the basins of the Willamette, Rogue, Umpqua, Grande Ronde, John Day, Klamath, Umatilla, Middle Columbia/Hood, Malheur, Snake, and Sandy rivers.

In rejecting the governments' plea to leave the TMDLs in place for 12 years, Judge Hernández found that the flawed TMDLs "could lead to the misprioritization of projects and the misallocation of state, municipal, and nongovernmental resources." He also ruled that the TMDLs had to go because their "flaws . . . are so fundamental" that new ones would be substantially different.

The court also rejected EPA's attempt to avoid a previously-ordered April 2019 deadline to complete TMDL clean-up plans for unsafe levels of mercury pollution in the Willamette River basin and temperature in the Klamath River basin.

The court's order is similar to but different from another court's order in October that instructed EPA to complete a temperature TMDL for the Columbia and lower Snake rivers in 90 days. Yesterday's order covers the Snake River along the Oregon-Idaho border, including the Hells Canyon dam complex, downstream to river mile 188 at its confluence with the Salmon River. **For Info:** Nina Bell, NWEA, 503/295-0490 or nbell@advocates-nwea.org



# The Water Report

## CALENDAR

**January 15** **GA**  
**WIFIA Information Session**  
 - Water Infrastructure Finance & Innovation Act, Atlanta. EPA Region 4 Office, 61 Forsyth Street, SW. Presented by EPA. For info: [www.epa.gov/wifia/wifia-resources#information](http://www.epa.gov/wifia/wifia-resources#information)

**January 17** **OR**  
**2019 Oregon Legislative Session: Preview of Environmental & Natural Resource Bills, Salem.** Willamette University, 1140 State Street, Room 102, Noon - 1:15 p.m. Presented by Oregon State Bar - Environmental & Natural Resources Section; RSVP by Jan. 14 at [www.eventbrite.com/e/2019-oregon-legislative-preview-environmental-natural-resource-bills-tickets-52846564497](http://www.eventbrite.com/e/2019-oregon-legislative-preview-environmental-natural-resource-bills-tickets-52846564497). For info: Maura Fahey, [maura@crag.org](mailto:maura@crag.org)

**January 17** **PA**  
**Lay of the Land: Healthy Soil, Healthy Water - Film, Avondale.** Stroud Water Research Center, 970 Spencer Road, 6:45 p.m. Presented by Stroud Water Research Center. For info: <https://stroudcenter.org/event/healthy-water-film/>

**January 22** **NC**  
**Agricultural Law & Regulation Seminar, Chapel Hill.** Courtyard by Marriott Chapel Hill. For info: HalfMoon Education, Inc., 715/ 835-5900 or [www.halfmoonseminars.org/](http://www.halfmoonseminars.org/)

**January 23-24** **CO**  
**The Law of Fracking Conference, Westminster.** The Westin Westminster. Presented by the Rocky Mountain Mineral Law Foundation. For info: [www.rmmlf.org](http://www.rmmlf.org)

**January 23-25** **TX**  
**Water for Texas 2019 Conference: The Story of Texas Water, Austin.** AT&T Executive Education & Conference Center. Hosted by the Texas Water Development Board. For info: <http://waterfortexas.twdb.texas.gov/2019/>

**January 24** **CO**  
**11th Annual Schultz Lecture in Energy by Prof. Jody Freeman, Boulder.** Wolf Law Bldg.-Wittermyer Courtroom, Univ. of Colorado. Presented by the Getches Wilkinson Center for Natural Resources, Energy, and the Environment. For info: [www.getches-wilkinsoncenter.cu.law/events/](http://www.getches-wilkinsoncenter.cu.law/events/)

**January 24-25** **WA**  
**Endangered Species Act Conference - 26th Annual, Seattle.** Washington Athletic Club, 1325 6th Avenue. For info: The Seminar Group, 800/ 574-4852, [info@theseminargroup.net](mailto:info@theseminargroup.net) or [www.theseminargroup.net](http://www.theseminargroup.net)

**January 28-29** **CA**  
**Groundwater Resources Association "Bridging the Gap" Conference, San Diego.** Dana Hotel. Hosted in collaboration with CDWR & the Center for Western Weather and Weather Extremes. For info: [www.grac.org/events/](http://www.grac.org/events/)

**January 28-29** **CA**  
**Tribal Water in California Seminar, Funnar.** Harrah's Resort Southern California. For info: Law Seminars International, 206/ 567-4490 or [www.lawseminars.com/](http://www.lawseminars.com/)

**January 30** **OR**  
**24th Annual Oregon Advanced Superfund Conference: CERCLA & Oregon Cleanup Law, Portland.** World Trade Center Two. CERCLA & Oregon Cleanup Law, Policy & Practices. For info: Environmental Law Education Center, 503/ 282-5220 or [www.elecenter.com](http://www.elecenter.com)

**January 30** **CO**  
**Colorado Water Laws & Regulations Seminar, Denver.** Renaissance Denver Stapleton Hotel. For info: HalfMoon Education, Inc., 715/ 835-5900 or [www.halfmoonseminars.org/](http://www.halfmoonseminars.org/)

**January 30-31** **TX**  
**Endangered Species Act, Wetlands, Stormwater & Floodplain Regulatory Compliance for Energy and Utilities Symposium, Houston.** The Westin Houston. For info: [www.euci.com](http://www.euci.com)

**January 31** **TX**  
**Integrated Water: Keeping Conservation at the Forefront - 2019 Central Texas Water Conservation Symposium, Austin.** Canyon View Event Center. Presented by Texas Living Waters Project. For info: <https://texaslivingwaters.org/events/2019-ctwccs/>

**February 4** **AZ**  
**WIFIA Information Session - Water Infrastructure Finance & Innovation Act, Phoenix.** Arizona DEQ Office, 1110 W. Washington Street. Presented by EPA. For info: [www.epa.gov/wifia/wifia-resources#information](http://www.epa.gov/wifia/wifia-resources#information)

**February 4-8** **WA**  
**18th Annual River Restoration Northwest Symposium, Stevenson.** Skamania Lodge. Presented by River Restoration Northwest. For info: [www.rnww.org/program/](http://www.rnww.org/program/)

**February 7-8** **DC & WEB**  
**Environmental Law 2019 Conference, Washington.** Washington Plaza Hotel. Presented by the American Law Institute CLE and cosponsored by the Environmental Law Institute. For info: [www.ali-cle.org/course/ca012](http://www.ali-cle.org/course/ca012)

**February 12** **WY**  
**Wyoming Water Forum: Water Law and Wyoming, Cheyenne.** WWDO Conference Room, 6920 Yellowtail Road. Presented by Abby Boudwys / Kelly Shaw, WY Attorney General's Office. For info: <http://seo.wyo.gov/interstate-streams/water-forum>

**February 21-22** **PA**  
**Wild & Scenic Film Festival, Avondale.** Stroud Water Research Center, 970 Spencer Road, 7 p.m.. Presented by Stroud Water Research Center. For info: <https://stroudcenter.org/event/film-festival-2019/>

**February 21-22** **NV**  
**2019 Family Farm Alliance Annual Conference, Reno.** Eldorado Resort Casino. For info: <http://familyfarmallianceconference.com/>

**February 24-27** **TX**  
**2019 Underground Injection Control Conference, Fort Worth.** Sheraton Fort Worth Downtown Hotel. Presented by the Groundwater Protection Council. For info: [www.gwpc.org](http://www.gwpc.org)

**February 25-26** **FL**  
**Deep Well Injection Conference, Miami.** Miami-Dade Water & Sewer Dept., 3071 SW 38th Avenue. Presented by American Ground Water Trust. For info: <https://agwt.org/events>

**February 26-28** **DC**  
**ACWA DC2019 - Annual D.C. Conference, Washington.** St. Regis Hotel, 923 16th Street NW. Presented by the Association of Clean Water Agencies. For info: [www.acwa.com/events/dc2019/](http://www.acwa.com/events/dc2019/)

**February 28-March 1** **CO**  
**2019 Martz Winter Symposium: The Changing Landscape of Public Lands, Boulder.** Wolf Law Bldg.-Wittermyer Courtroom, Univ. of Colorado. Presented by the Getches Wilkinson Center for Natural Resources, Energy, and the Environment. For info: [www.getches-wilkinsoncenter.cu.law/events/](http://www.getches-wilkinsoncenter.cu.law/events/)

**February 28-March 1** **CO**  
**Administrative Law & Natural Resources Development Conference, Denver.** Presented by the Rocky Mountain Mineral Law Foundation. For info: [www.rmmlf.org](http://www.rmmlf.org)

**February 28-March 1** **TX**  
**North American Shale Water Management 2019: Reducing the Cost of Water Recycling & Reuse Exhibition & Conference, Houston.** JW Marriott Houston by the Galleria. For info: [www.shale-water-management.com](http://www.shale-water-management.com)

**March 5-8** **TN**  
**The Utility Management Conference, Nashville.** Renaissance Nashville Hotel. Presented by the American Water Works Association. For info: [www.awwa.org/conferences-education/conferences/water-quality-technology.aspx](http://www.awwa.org/conferences-education/conferences/water-quality-technology.aspx)

**March 6** **WA**  
**Managing Stormwater in Washington Conference, Tacoma.** Greater Tacoma Convention Center. Northwest Environmental Business Council (NEBC) Event. For info: [www.nebc.org](http://www.nebc.org)

**March 7-8** **MT**  
**Buying & Selling Ranches Seminar, Helena.** Great Northern Hotel. For info: The Seminar Group, 800/ 574-4852, [info@theseminargroup.net](mailto:info@theseminargroup.net) or [www.theseminargroup.net](http://www.theseminargroup.net)

**March 7-8** **AZ**  
**Tribal Water in the Southwest Seminar, Laveen.** Vee Quiva Hotel & Casino. For info: Law Seminars International, 206/ 567-4490 or [www.lawseminars.com/](http://www.lawseminars.com/)

**March 12** **WY**  
**Wyoming Water Forum: Harmful Algal Blooms, Cheyenne.** WWDO Conference Room, 6920 Yellowtail Road. Presented by Mike Thomas, WY DEQ. For info: <http://seo.wyo.gov/interstate-streams/water-forum>

**March 14-15** **DC**  
**Natural Resources Damages Seminar, Washington.** Arnold & Porter Conference Center. For info: Law Seminars International, 206/ 567-4490 or [www.lawseminars.com/](http://www.lawseminars.com/)

**March 17-19** **CA**  
**2019 WaterReuse Conference, Garden Grove.** Hyatt Regency Orange County. RE: Design, Management, Operation & Use of Water Recycling Facilities. For info: <https://waterreuse.org>



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## CALENDAR

(continued from previous page)

### **March 20** **WA**

**Climate Change & Environmental Contamination Conference, Seattle.** Washington State Convention Center. For info: Environmental Law Education Center, [www.elecenter.com](http://www.elecenter.com)

### **March 20-22** **AZ**

**Western States Water Council Spring (189th) Council Meeting, Chandler.** Wild Horse Pass - Gila River Hotel & Casino. For info: <http://www.westernstateswater.org/upcoming-meetings/>

### **March 21-22** **AZ**

**Law of the Colorado River Conference, Tucson.** Hilton El Conquistador. For info: CLE Int'l, 800/ 873-7130, [live@cle.com](mailto:live@cle.com) or [www.cle.com](http://www.cle.com)

### **March 23-27** **NE**

**2019 AWRA Spring Specialty Conference - Setting Conditions for Success of Integrated Water Resources Management, Omaha.** Embassy Suites - Downtown Old Market. Presented by American Water Resources Association. For info: [www.awra.org](http://www.awra.org)

### **March 28-29** **TX**

**Texas Wetlands Conference, Houston.** JW Marriott by the Galleria. For info: CLE Int'l, 800/ 873-7130, [live@cle.com](mailto:live@cle.com) or [www.cle.com](http://www.cle.com)

### **March 29-30 United Kingdom**

**Alternatives to Markets & Governments: The Research & Intellectual Legacy of Elinor Ostrom Conference, Buckinghamshire.** The Vinson Centre, University of Buckingham. Presented by Institute of Economic Affairs. For info: <https://iea.org.uk/events/>

### **March 31-April 3** **AZ**

**2019 AWWA Sustainable Water Management Conference, Tucson.** Loews Ventana Canyon Resort. Presented by American Water Works Association. For info: [www.awwa.org/conferences-education/conferences/sustainable-water-management.aspx](http://www.awwa.org/conferences-education/conferences/sustainable-water-management.aspx)

### **April 1-3** **DC**

**Federal Water Issues Conference, Washington.** Embassy Suites. Presented by National Water Resources Assoc. For info: [www.nwra.org/upcoming-conferences-workshops.html](http://www.nwra.org/upcoming-conferences-workshops.html)

### **April 1-4** **TX**

**Texas Water 2019, Houston.** George R. Brown Convention Center. For info: [www.txwater.org/](http://www.txwater.org/)

### **April 2-3** **DC**

**Interstate Council on Water Policy - Washington Roundtable, Washington.** DoubleTree Crystal City. Co-Sponsored by the National Water Supply Alliance. For info: Sue Lowry, 307/ 630-5804, [avocetconsult@gmail.com](mailto:avocetconsult@gmail.com) or [www.icwp.org](http://www.icwp.org)

### **April 7-10** **DC**

**Association of Metropolitan Water Agencies 2019 Water Policy Conference, Washington.** TBA. For info: [www.amwa.net/event/2019-Water-Policy-Conference](http://www.amwa.net/event/2019-Water-Policy-Conference)

### **April 9** **WY**

**Wyoming Water Forum: 2019 Water Supply Outlook (Reclamation), Cheyenne.** WWD Conference Room, 6920 Yellowtail Road. For info: <http://seo.wyo.gov/interstate-streams/water-forum>

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