The Water Report™
Water Rights, Water Quality & Water Solutions in the West

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ENDANGERED SPECIES ACT IN THE TRUMP ERA

IS THE ESA ITSELF ENDANGERED?

by Glen H. Spain, Northwest Regional Director
Pacific Coast Federation of Fishermen's Associations
and the Institute for Fisheries Resources (Eugene, OR)

"Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed. It is a many-faceted treasure, of value to scholars, scientists, and nature lovers alike, and it forms a vital part of the heritage we all share as Americans…This important measure grants the Government both the authority to make early identification of endangered species and the means to act quickly and thoroughly to save them from extinction."

President Richard M. Nixon
From his signing statement for the federal Endangered Species Act (1973)

Introduction

In a recent conference conducted by the Seminar Group on January 23-24th, 2020 entitled "27th Annual Endangered Species Act Conference" (*The Water Report* is a sponsor of this conference), one of the most interesting of many topics was the likely fate of the federal Endangered Species Act (ESA) under the Trump Administration, which recently finalized a number of regulatory changes to the ESA and its implementation. *See* Gerard, et al., *TWR* #187.

Critics of the ESA claim these are long-overdue changes to "streamline" and "modernize" the ESA, which has not been substantially updated since minor amendments in 1988. Proponents of the ESA, however, say these new regulations are an effort to "gut the ESA," and to make it subservient to the interests of major developers and industries whose activities damage wildlife habitat. As is often the case, the truth is likely somewhere in between.

The Earth's biodiversity is the ultimate source of all human wealth and the basis for our ability to maintain and feed our civilization. The accelerating loss of biodiversity is thus of major concern worldwide. International institutions that monitor the loss of biodiversity, such as the International Union for Conservation of Nature (IUCN), reinforce the urgent need to protect remaining species and their habitats. According to a 2007 IUCN Report, "[T]he rapid loss of species we are seeing today is estimated by experts to be between 1000 and 10,000 times higher than the 'background' or expected natural extinction rate (a highly conservative estimate). Unlike the mass extinction events of geological history, the current extinction phenomenon is one for which a single species — ours — appears to be almost wholly responsible."

The Fishing Industry's Unique Perspective

The Pacific Coast Federation of Fishermen's Associations (PCFFA) is a major west coast commercial fishing industry trade association, with many of our boats engaged in

ESA Update

Fishing Industry

"Ecosystem" Based

ESA Battles

the salmon fisheries. But salmon stocks everywhere have declined dramatically due to decades of over-development of rivers, which has dewatered, blocked, or radically changed water quality conditions in nearly every west coast river system. In the process, this has devastated our once productive ocean salmon fisheries, with many salmon runs now ESA-listed. Consequently, PCFFA frequently uses the ESA in court to try to limit these adverse impacts on salmon habitat, and to work toward salmon recovery.

On the other hand, our ocean commercial fisheries can and do have impacts on other ESA listed species, such as ESA-listed whales, and our salmon fisheries are themselves now all highly constrained with so many once abundant salmon runs ESA-listed. Our industry is thus both pro-ESA and a regulated industry under the ESA. This gives us a unique (and perhaps more objective) perspective in this debate.

The Endangered Species Act

HOPEFUL BEGINNINGS

Enacted in 1973 and codified as 16 U.S.C. §1531 et seq., at the urging of and under a Republican President (Nixon) — and after receiving nearly unanimous bi-partisan support in Congress — the Endangered Species Act (ESA) was a Congressional response to the wholesale destruction of wildlife habitat (a public trust resource). This destruction resulted from poorly-planned development projects that were rapidly leading toward species extinction or the threat of extinction all across the American landscape. 16 U.S.C. §1531(a).

The ESA is in fact a unique "ecosystem" based conservation program designed to identify, conserve, and ultimately recover species that were declining toward extinction. 16 U.S.C. §1531(a)-(b). The ESA implements these purposes by requiring the federal government to conserve endangered and threatened species, by precluding the import and "taking" of protected species by "any person," and by encouraging federal cooperation and coordination with State and local agencies. 16 U.S.C. § 1531(c); 16 U.S.C. §1538(a). *See* Howard, *TWR* #192.

Long History of Attacks on the ESA in Congress

Industry attacks on the ESA began almost immediately after its adoption in 1973, and have continued ever since. More than two decades ago, Michael Bean, former Principal Deputy Assistant Secretary for Fish and Wildlife and Parks, US Department of the Interior, and author of *The Evolution of National Wildlife Law*, characterized the conflict over the Endangered Species Act as a battle between "two camps." In Congressional testimony regarding proposed legislation to amend the ESA back in 1997, Bean stated:

> For the past six years, Congress has been deadlocked over the future of the Endangered Species Act. Two camps have put two quite starkly different views of the Act before you. The environmental camp, my camp — has argued that the existing law must be strengthened, that it is not accomplishing its vitally important goal of conserving rare species as effectively as it must if it is to stave off a flood of extinctions. The other camp has argued that the existing law is unduly onerous for those whose activities it regulates, and must be made less so. Unable to choose between these two divergent views, Congress has done nothing, an outcome that furthers the goals of neither camp and serves the interests of our nation's wildlife not at all.
>
> The solution to breaking this impasse is to recognize that what is needed is not to choose between these two views, but to find the solutions that accomplish both goals. By making the Act more effective at conserving species and less onerous for those it regulates, real progress can be accomplished. That, however, is much easier said than done. Improvement in the conservation of rare species doesn't flow automatically from loosening the regulatory screws, as some in the regulated community have argued, but neither does tightening those screws guarantee better conservation results. The task before all of us is much more difficult than that. It is to build a much larger endangered species conservation toolbox than that which now exists, one that has enough different tools in it to address effectively the many varied challenges that declining species and landowners face.

Senate Environment and Public Works Committee, "*Testimony of Michael J. Bean before the Senate Committee on Environment and Public Works concerning S. 1180, the Endangered Species Recovery Act of 1997 on behalf of Center for Marine Conservation, Environmental Defense Fund, and World Wildlife Fund, September 23, 1997*" - available at: www.epw.senate.gov/105th/bean.htm.

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ESA Update

Congressional efforts to amend away or greatly restrict the scope and power of the ESA culminated in the efforts of then House Natural Resources Chairman Rep. Richard Pombo in the 109th Congress. His *Threatened and Endangered Species Recovery Act of 2005* (H.R. 3824) would have substantially weakened the ESA and it actually passed in the then Republican-controlled House. However, the ESA is still the most popular environmental law in the US, and his bill not only failed in the Senate but Rep. Pombo lost his seat in the next election largely as a result of the public backlash.

"Reform" Rivalry

Criticism of the ESA, particularly by land-using industries and some state governments continues unabated. Today, these pro- and anti-ESA "two camps" are organized into these two major national coalitions, each struggling to direct Congress toward their version of ESA "reform" (as very differently defined by each).

The Endangered Species Coalition (ESC) (endangered.org), (of which PCFFA is a major industry member) website notes:

Effective Law

> The Endangered Species Act is one of America's most effective and important environmental laws. It represents a commitment by the American people to work together to protect and restore those species most at risk of disappearing forever...But worldwide, plants and animals are disappearing at an alarming rate, and the natural systems that all species, including humans, depend on are at serious risk...Unfortunately, some in Congress appear willing, even eager, to break our nation's promise to future generations to protect our natural heritage.

Legal Use Obstruction

On the flip side of the debate, with an industry-based ESA "reform" agenda that would largely disable the ESA is being presented by the National Endangered Species Act Reform Coalition (NESARC) (nesarc.org): "While the original intent of the ESA was to conserve and protect American species of plant and wildlife that are threatened with extinction, the law has been increasingly used to block projects and to deter the legal use of privately owned land."

ESA Constraints Broadly Overstated

Misperception

There is a common misperception, often cited in anti-ESA testimony to Congress, that the ESA seriously impedes planning and development by requiring lengthy consultations and costly modifications to projects to accommodate species. A recent factual scientific analysis of Section 7 consultations, however, strongly refutes this claim.

Section 7 Consultation

Section 7 is the section of the ESA that requires project proponents to consult with the relevant federal agency regarding projects on federal lands that could potentially affect listed species and/or their habitat. The researchers and authors, Jacob Malcom and Ya-Wei (Jake) Li, analyzed all 88,290 consultations made by the US Fish & Wildlife Service (USFWS) from January 2008 through April 2015.

They found that:

Contrasting Evidence

> In contrast to conventional wisdom about section 7 implementation, no project was stopped or extensively altered as a result of FWS finding jeopardy or adverse modification during this period. We also show that median consultation duration is far lower than the maximum allowed by the Act, and several factors drive variation in consultation duration. The results discredit many of the claims about the onerous nature of section 7.

The researchers also found that of the 88,290 consultations recorded by the USFWS from January 2008 through April 2015, only 7.7 percent of projects during this time period required formal consultation, with the rest of the projects under informal Section 7 consultation being quickly approved as proposed.

Formal Consultations

The study also found that the median recorded time for informal consultations was only 13 days, compared with 62 days for formal consultations — which are only required when the service determines that the proposed action could result in jeopardy for a federally listed endangered species. Likewise, while 20 percent of the formal consultations did exceed the USFWS statutory limit of 135 days for formal consultations, the large majority of these were completed by a mutually agreed upon extension. As this study indicates, nearly 99 percent of all formal and informal consultations recorded by the USFWS during this time frame were completed within established timelines. Jacob W. Malcom and Ya-Wei Li, "Data contradict common perceptions about a controversial provision of the US Endangered Species Act," *Proceedings of the National Academy of Sciences of the United States of America* 112 (52) (2015): 15844–15849.

Gridlock Not Evident

Clearly, the actual timelines for these USFWS ESA consultations are very different than the gridlock some accuse the ESA of causing, and the facts clearly challenge the assertions made recently by Trump Administration officials that complying with the ESA is "unnecessarily burdensome."

ESA Update

Flexibility

Available Tools

ESA Flexibility

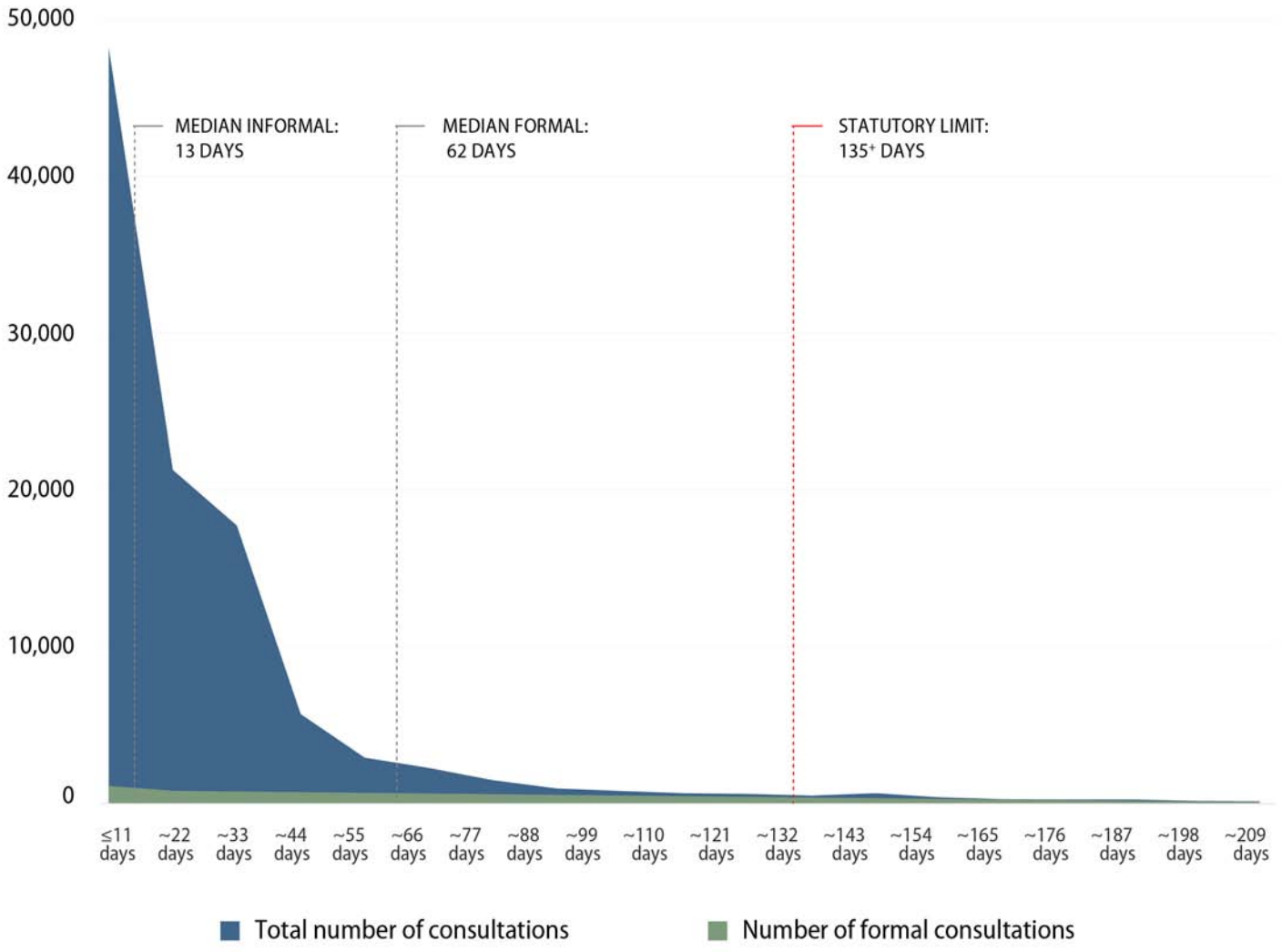
A frequent complaint of industry and some state Governors seeking to amend the ESA is that the ESA currently "does not provide enough flexibility" and does not take into account state-based conservation efforts that might be sufficient to avoid a federal ESA listing.

However, there are many tools in the ESA toolbox today that did not exist when the Act was first signed into law in 1973. Particularly under the Clinton Administration and the leadership of then Secretary of Interior Bruce Babbitt, the National Marine Fisheries Service (NMFS) and USFWS (together: "the Services") adopted and expanded on Habitat Conservation Plans (HCPs) under Section 10, and created a "no surprises" policy to encourage landowners to conserve species under "safe harbor agreements," "**c**andidate **c**onservation **a**greements with **a**ssurances (CCAAs)," and tailored rules for species conservation under Section 4(d) of the ESA. These tools have been greatly expanded in recent years to minimize ESA impacts on landowners and businesses as well as to maximize habitat conservation efforts generally.

FIGURE 1

Consultations required under the Endangered Species Act are typically approved within weeks

Time to approval, by consultation type



Source: Center for Conservation Innovation at the Defenders of Wildlife, "Endangered Species Act consultation explorer," available at https://c-ci-dev.org/shiny/open/section7_explorer/ (last accessed November 2017).

CAP

ESA Update

State Agencies Role

Additionally, Section 6 of the ESA requires the relevant federal agency to cooperate with states in conserving protected species through cooperative agreements to provide financial and technical support of states' wildlife conservation programs. Partially in response to state conservation efforts, the Services updated the ESA Cooperative Policy of 1994 to clarify further the role of the states in implementing the Act. In February 2016, the Services issued the *Revised Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities*. This updated policy clarified implementation of Section 6 of the ESA and expanded measures to ensure federal collaboration with the states in prelisting conservation, listing, consultation, habitat conservation planning, and recovery activities.

On its face, this effort to expand the working relationship and information-sharing between the USFWS, the NMFS, and the states is positive. But in fact, many states lack the capacity — both staffing and funding — to engage in major wildlife conservation activities. Historically, states have invested significantly less money in the conservation of listed species than the federal government.

Trump Administration ESA Changes

Rule Changes

In August, 2019, the Services issued three final rule packages significantly amending the regulations that implement the ESA, particularly Sections 4 and 7 (16 U.S.C. §§ 1533, 1536). The three rule change packages were published in the August 27, 2019, Federal Register as follows (in numerical page order):

Take Prohibitions

Package 1 – Sec. 9 changes: 84 Fed. Reg. 44753 et. seq. A USFWS-only rule change removing the current automatic default 4(d) rule applying the same ESA Section 9 "take" prohibitions for endangered species to most threatened species and, instead, requiring take prohibition to be applied to all future-listed threatened species only by a species-specific 4(d) rule (echoing NMFS' longstanding practice).

Causation Tests

Package 2 – Sec. 7 changes: 84 Fed. Reg 44976 et seq. These are USFWS and NMFS joint rules redefining and collapsing rules' terms "direct," "indirect," "interrelated," and "interdependent," which have often been confusing. The changes instead apply supposedly simpler "but for" and "reasonably certain to occur" causation tests for projecting effects of an action; better define programmatic consultations; more narrowly define the environmental baseline; and add first ever deadlines for an informal consultation process (formal consultations already have statutory deadlines).

Critical Habitat

Package 3 - Sec. 4 changes: 84 Fed. Reg. 45020 et seq. This package redefines USFWS and NMFS joint rules governing species listings and **c**ritical **h**abitat (CH) designations. Among the changes:

- language that could be construed to curtail the scope of time in threatened species listings in the definition of "foreseeable future" used in the statutory requirement of "likely to become and endangered species within the foreseeable future"
- new criteria for species delisting (i.e., making it easier to delist)
- definition of "physical or biological features essential to the conservation of the species"
- restoration of a long-standing pre-Obama requirement that once occupied, but currently unoccupied habitat, can be designated as "critical habitat" *only if* occupied habitat would be inadequate to ensure species conservation

Economic Impacts

- additional criteria for a Section 4 finding that designation of critical habitat would not be "prudent"
- removing the existing regulatory bar against assessing economic impacts of listing decisions in parallel to that initial listing decision, which are by statute (and prior regulations) supposed to be made solely on the basis of best available science — a particularly controversial provision

There a many complexities to these new rules, most of which cannot be covered in this article. For more details on these changes, refer to the new regulations themselves. There are also other ESA rule changes in the proposal stages but not yet published in final form as of the date of this writing — also beyond the scope of this article.

The More Problematical Changes

Independent Assessment

At least one independent assessment, from the generally objective Environmental Policy Innovation Center (EPIC) (http://policyinnovation.org) indicates that of the 33 discrete changes introduced in the new regulations, five would "improve conservation," five would "undermine conservation," another six (including some of the more controversial changes) "depend mostly on agency implementation," and 17 would simply codify past practices and should thus result in "no or very minor alternations in ESA practice." *See A Guide to the Revised Endangered Species Regulations* (http://policyinnovation.org/esaregs19).

Problematic Changes

The problematical changes included, however, are major, including:

- repealing the longstanding USFWS 4(d) default regulation that automatically extended "take" prohibition protections to threatened animals and plants upon listing
- amending other parts of ESA Section 4 that govern listing, delisting, and designation of critical habitat
- changed regulations governing ESA Section 7 consultations

Litigation

Taken together, these more problematical regulatory revisions can justifiably be said to significantly weaken definitions, substance, and processes used by USFWS and NMFS when complying with their ESA duties. Not surprisingly, those are among the sections now being tested in litigation.

ESA Update

Rules Litigation

Ongoing Litigation

At the time of this writing there are at least three major litigation actions attacking these new ESA rules, with multiple Intervenors seeking to defend the new rules, more or less as follows (note: information on legal actions is subject to rapid change).

Major Current ESA Rules Litigation includes:

Earthjustice Suit: This suit was filed by Earthjustice on August 21, 2019, and is now the lead action, with the other two later-filed cases (now "related actions") assigned to the Judge in this leading case. Plaintiffs including Center for Biological Diversity, Defenders of Wildlife, Sierra Club, Natural Resources Defense Council, National Parks Conservation Association, WildEarth Guardians, and the Humane Society of the United States, *Center for Biological Diversity, et al. vs. Bernhardt, et al*., filed in the U.S. Dist. Court of Northern California, San Francisco Division as Case No. 4:19-cv-05206.

States Suit: 17 States have filed (CA, MA, MD, CO, CT, IL, MI, NV, NJ, NM, NY, NC, OR, PA, RI, VT and WA) as *California et al. vs. Bernhardt, et al.* in the Northern California District Court on Sept. 25, 2019. This is Case No. 4:19-cv-06013.

Animal Defense Fund Suit: *Animal Defense Fund vs. U.S. Dept. of Interior, et al*., filed in the US Dist. Court of Northern California SF Division (Case No. 4:19-cv-06812) on October 21, 2019.

There may be other litigation soon seeking to overturn portions of the new rules. The outdoor recreation company Patagonia filed a formal 60-day Notice of Intent to Sue on October 30, 2019, but so far there is no complaint filed according to the PACER court proceedings tracking system.

Defense of Rule Changes

In defense of the final rules, there have been at least the following Interveners:

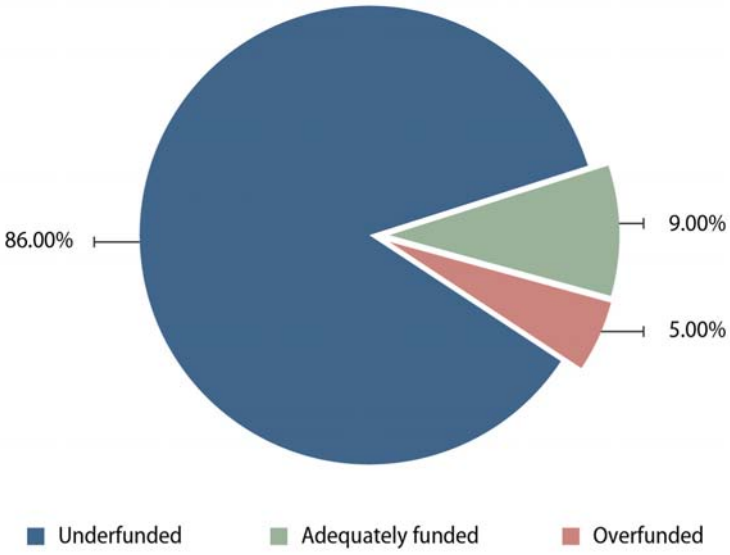
States: 13 additional states moved to intervene as Defendants on December 9, 2019 (AL, AK, AZ, AR, ID, KS, MI, MT, NE, ND, UT, WV and WY)

Trade Associations: At least eight trade associations moved to intervene as Defendants on December 13, 2019 (AFBF, AFRC, API, FFRC, NAFO, NAHB, NCBA and PLC), as well asseveral individuals and companies.

FIGURE 2

Species recovery has been chronically underfunded

Funding levels for Endangered Species Act recovery plans



Source: Leah R. Gerber and James A. Estes, "Conservation triage or injurious neglect in endangered species recovery," Proceedings of the National Academy of Sciences of the United States of America 133 (13) (2016): 3563-3566.

CAP

The Basis of Ongoing Litigation

ESA Update

Listing Criteria

Introducing Economics Into Science-based Listing Decisions

One complaint of conservationists is that when deciding the threshold question of whether a species even merits protections under the ESA, the government can now conduct economic assessments as part of (or at least in parallel to) that initial listing process. However, the ESA requires that listing decisions to protect endangered and threatened species be made "solely on the basis of the best scientific and commercial data available." (16 U.S.C. § 1533(b)(1)(A)) ["Commercial data" here means such information as fisheries landing statistics, which are a measure of abundance.]

"Solely" Biological

Congress added the word "solely" in the 1982 amendments to the Act to underscore its intention that non-biological considerations should play no role in listing decisions. Pub. L. No. 97-304, 96 Stat. 1411. H.R. Rep. No. 97-567, at 19 (1982) also noted that the term "solely" was added to emphasize that listing determinations were to be made "solely upon biological criteria and to prevent non-biological considerations from affecting such decisions." The Services' final regulation *deletes* from 50 C.F.R. § 424.11(b) — the Services regulation establishing listing factors — the phrase "without reference to possible economic or other impacts." The Services stated in the response to comments in the Federal Register that such data can be collected but then simply will not be used to make a listing decision. Given human nature, however, this sort of decision-making compartmentalization is unlikely.

"Take" Protections

Eliminating Automatic Protection of Threatened Species

Another litigation concern is with the repeal of the USFWS' automatic 4(d) rule default provisions which applied Section 9 "take" protections to threatened species to give them the same protections that endangered species have. Conservation biologists complain that this change will simply make it that much harder to prevent already threatened species from sliding further toward extinction, when only the "endangered" category of protection gives "take" protections.

Delisting

Undermining Recovery Criteria - Delisting Due to Extinction

ESA advocates also complain that, under these new rules, it has become much easier to delist species, even though they are not recovered.

For nearly four decades, the ESA's listing regulations restricted the delisting of a species to only situations where the best scientific and commercial data available "substantiate" that the species is no longer threatened nor endangered. 45 Fed. Reg. 13,010, 13,023 (Feb. 27, 1980) (promulgating original version of 50 C.F.R. § 424.11(d)). The previous regulations specified that the Services either must know the locations and fate of all individuals of the species or must allow "a sufficient period of time" before delisting to "indicate clearly" the species is actually extinct. 50 C.F.R. § 424.11(d)(1). The Services previously insisted on this high bar to ensure that any decision to delist due to extinction is based on "conclusive evidence appropriate for the species in question." 49 Fed. Reg. 38,900, 38,903 (Oct. 1, 1984). *See also* USFWS, *Proposed Rule, Endangered Status for Franklin's Bumble Bee*, 84 Fed. Reg. 40,006, 40,008 (August 13, 2019), which stated, "[R]ecent approaches to evaluating extinction likelihood place increased emphasis on the extensiveness and adequacy of survey effort, and caution against declaring a species as extinct in the face of uncertainty."

Extinction

Substantiation Dropped

The Services' revisions, however, drop the requirement that data "substantiate" any delisting decision. The revisions also permit the Services, in making delisting decisions, to disregard formal recovery and/or delisting criteria established in species recovery plans for the very purpose of gauging species' progress towards recovery.

Critical Habitat Exemptions

Expanding Critical Habitat Designation Exemptions

The ESA already allows the Services to forego designating critical habitat for a species if such designation is "not prudent" because it could result in actual harm to the species. The final regulations expand the circumstances under which the Services may find designation of critical habitat "not prudent" to include situations where:

- the threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species;
- threats to habitat "stem solely from causes that cannot be addressed through management actions resulting from" Section 7 consultations; or
- the areas are within the jurisdiction of the United States that provide no more than a "negligible" conservation value for a species occurring primarily outside the jurisdiction of the United States.

ESA Update

Unoccupied Critical Habitat

Certainty Requirement

Designation Limitation

"Essential" Features

Foreseeable Impacts

Benefit of Doubt Loss

The ESA defines unoccupied critical habitat to include "specific areas outside the geographical area occupied by the species at the time it is listed" that "are essential for the conservation of the species." 16 U.S.C. § 1532(5)(A)(ii). Instead of focusing on whether unoccupied areas are essential for conservation based on the best available scientific data, the final regulations *limit* the designation of unoccupied critical habitat to those situations where it can be determined with "reasonable certainty" both that the area will contribute to the conservation of the species and that the area contains at least one "physical or biological feature" essential to the conservation of the species. The final rule thus imposes an elevated certainty requirement on the determination of what areas are "essential," rather than requiring decisions be made based on the best available science.

Litigants also argue that the final regulation impermissibly and unreasonably limits the designation of unoccupied areas as critical habitat to situations where the designation of only occupied areas would be inadequate to ensure the conservation of the species. The Services have previously identified such a limitation as "unnecessary and unintentionally limiting." USFWS/NMFS, *Proposed Regulatory Amendments re: Critical Habitat*, 79 Fed. Reg. 27,073 (May 12, 2014).

The final regulation also revises the definition of "physical and biological features" at 50 C.F.R. § 424.02 to define such features as "essential" only when they "occur in specific areas." Litigants argue that this introduces a new limitation, not based on the statute, that restricts the designation of critical habitat. This change affects the designation of occupied critical habitat and, under the final rules, unoccupied critical habitat as well.

Limiting "Foreseeability" (i.e., "Avoiding Discussions of Climate Change")

One of the hallmarks of the ESA is its ability to proactively protect threatened or at-risk species from foreseeable future impacts that might drive it to extinction. But the definition of "foreseeable" has been much litigated in the courts recently, especially in light of the long-term impacts projected from worldwide climate change over the next 100 years.

Recent lawsuits claim that with the new rules the Services finalized a new definition of the term "foreseeable future," which increased the level of certainty required to protect species, contravening Congress's intent to "give the benefit of the doubt to the species." H.R. Rep. No. 96-697, at 12 (1979) (Conf. Rep.), reprinted in 1979 U.S.C.C.A.N. 2572, 2576.

FIGURE 3

The U.S. Fish and Wildlife Service has been spending less to protect listed species

Expenditures per species, by year

Source: U.S. Fish and Wildlife Service, "Expenditure Report" (2004-2014), https://www.fws.gov/Endangered/esa-library/.

ESA Update

Listing

Climate Change Denial

"Likely" Threshold

Foreclosing On Science

ESA Threats

ESA Benefits

Perception v. Reality

Habitat Importance

Prevention v. Reaction

As noted above, by statute listing decisions must be made "solely on the basis of the best scientific and commercial data available," and so injecting additional notions of "likelihood" into those decisions appears contrary to the ESA's specific intent. While the Services purported to follow the guidance set forth in a 2009 Opinion from the Department of the Interior's Solicitor (M-37021, Jan. 16, 2009), the revised definition deviates significantly from current practice and from the 2009 Opinion.

The 2009 Opinion's definition of "the foreseeable future" was animated by a desire to avoid "reliance on assumption, speculation, or preconception." 2009 Opinion at 8. However, to ensure imperiled species receive the benefit of the doubt in listing decisions — as Congress intended — the 2009 Opinion requires only that predictions be reliable, rejecting a definition that would limit "the foreseeable future" to only "predictions that can be made with certainty." *Id*. at 9.

Climate change denialism is still alive and well in the Trump Administration. They continue to claim that climate change impacts are too far in the future and too uncertain to be "foreseeable," and are unlikely to occur at all — in spite of a nearly unanimous international scientific consensus and some of the Administrations' own scientific reports.

Litigants assert that this rule change in merely a transparent effort to avoid even the consideration or discussion of projected future climate change impacts on ESA-listed species. The final changes to Section 424.11 do not adopt the 2009 Opinion's definition, instead adding the requirements that "both the future threats and the species' responses to those threats are likely."

Demanding that both threats and responses to threats be "likely" — which the Services clarified means "more likely than not" — apparently goes well beyond ensuring against decisions based on assumption, speculation, or preconception. The consequence of imposing this increased certainty requirement is that species facing extinction from the impacts of climate change or other future events involving prediction and uncertainty will improperly be deprived of protection until after it is too late to prevent their extinction. There are multiple climate-change science suits that will likely define whether climate change impacts are "foreseeable" or not, but foreclosing the use of that science by rulemaking fiat would seem to violate the requirement that ESA decisions be based on the best available science, however inconvenient that science might be.

"Reform" — A Euphemism for Repeal?

A Center for American Progress (CAP) (americanprogress.org) Report issued on November 28, 2017, authored by Jim Lyons, *Under Threat: The Endangered Species Act and the Plants and Wildlife It Protects*, does a good job of summarizing the various arguments for and against ESA "reform," including citing many of the factual studies of the ESA in actual operation.
The Report concludes that:

> The evidence suggests that if adequately funded and effectively implemented, the Endangered Species Act can work to protect threatened and endangered species from extinction on public and private lands with minimal impacts to their economic uses.
>
> The flexibility provided in the ESA has been used extensively to develop administrative policies, programs, and strategies to improve the act's implementation and address many of the concerns of the law's critics. In some instances — as illustrated by perceived, and unfounded, problems with [US]FWS Section 7 consultations — the rhetoric does not square with reality...
>
> Ultimately, success in preventing the need to list species as threatened or endangered to avoid extinction relies on a commitment to early intervention to protect the habitats of species whose populations are in decline. More than four decades ago, the authors of the ESA made clear that conserving the ecosystems upon which species depend is a principal purpose of the act and the key to species' survival. Yet the penchant of the human species to procrastinate when it comes to addressing issues that might be difficult or controversial seems, with rare exception, to overrule better judgment and common sense and preclude conservation actions that might be initiated to prevent the need for listing a species under threat. As a result, species are often pushed to the brink of extinction before action is initiated, which limits options for conserving the species and incurs greater costs when doing so. The blame then falls on the ESA, when the true fault lies in our collective failure to recognize that "an ounce of prevention is worth a pound of cure."

ESA Update

Inadequate Funding

Bi-Partisan Reform Attempt

Under Funding

Deadlines

Cost v. Benefit Analysis

Inaction Costs

Ecosystem Approach

That study also documents a long history of the lack of Congressional funding for NMFS and USFWS implementation of the ESA. This funding failure results in listing and recovery plan delays, and an intimidating backlog of listing petitions for hundreds of species. Looking to productive ways to improve the administration of the ESA, while citing a long history of Congressional cutbacks under hostile Administrations, the Lyons Report also concluded:

> The real impediments to implementing the ESA more effectively, and addressing specific substantiated concerns raised by ESA critics, appear to be inadequate resources — specifically, the lack of funding and people needed to implement the ESA; the accelerated pace of change across the nation's remaining wildlands that is causing a concurrent increase in proposed listings; and the continuing jurisdictional tension between the FWS and various states over who should be in charge when it comes to managing imperiled wildlife resources in particular states or regions of the country.

Conclusion

WHAT REAL ESA REFORMS MIGHT LOOK LIKE

Even if there were agreement on how best to update and modernize the ESA, there is little political space today for Congressional bi-partisan efforts to do so.

The last serious Congressional bi-partisan effort to actually make the ESA work better was Rep. George Miller's bill (H.R. 2351), *Endangered Species Recovery Act of 1997*, introduced on July 31, 1997 in the 108th Congress, which had 108 co-sponsors, including prominent Republicans. Since that high-water mark, however, nearly every Congressional effort to "reform" and "streamline" the ESA — including this latest round of Administration efforts to skip Congress and achieve change purely via rule-making — can be characterized as merely a thinly disguised effort to disable the ESA itself.

But what would real reform look like? For one thing, Congress should provide far more resources to the Services to administer the ESA than it does now. Nearly every species recovery effort that is on-going is underfunded.

There should also be deadlines on ESA-listed species Recovery Plans. Hundreds of listed species still have no recovery plans even after years of listing, and just hang on the brink of extinction indefinitely. There are now statutory deadlines for nearly every other ESA action — except adopting recovery plans.

Cost vs. benefits analysis (for instance, for ESA critical habitat designations) also needs major reform. In almost every instance, only the costs to industry or landowners of species recovery efforts are ever considered, never the benefits to the species, to the ecosystem, or to society generally that would result from the protection of species diversity. Resource economists have been complaining for years that particularly when it comes to ecosystem protection decisions, costs and benefits — of both action and inaction — must be fully considered. Failure to act also exacts an economic price on society generally. And while the value of a healthy and diverse ecosystem cannot be easily assessed nor compared to purely market values, the value of an intact and healthy ecosystem is far from zero — its value for food production and the protection of clean air and water alone could well be beyond anything we can calculate as a "cost" of protection. The ultimate support of our whole civilization, and ultimately its economy, depends upon our protective and supportive ecosystems.

Finally, the best alternative to a species-by-species patchwork of ESA protections like we now have — is a much more comprehensive wildlife protection system that first and foremost prevents species from even needing last-ditch ESA protections. We can start by emphasizing the protection of whole ecosystems, thus supporting thousands of different species and a whole range of biological diversity all at the same time. In that way, we not only preserve biological diversity, we also preserve and protect the fundamental foundations of future human society.

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The opinions expressed in this article are the author's own and not necessarily the official policies of either PCFFA nor IFR.

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Irrigation Upgrade

Collaboration

Canal Losses

IRRIGATION MODERNIZATION

TUMALO IRRIGATION DISTRICT'S GROUNDBREAKING PROGRESS

by David Hanson, Farmers Conservation Alliance (Hood River, OR)

Introduction

Ongoing improvements at the Tumalo Irrigation District in central Oregon make a strong case for collaboration and long-term commitment when modernizing inefficient irrigation. A colorful homesteader history, reticent patrons, a lawsuit, an extremely low slope angle for delivering pressurized water, and the tenacity of a few committed, visionary, district managers have all contributed to this success story.

The Tumalo Irrigation District (TID) is comprised of 28,000 acres that funnel to an end in the western suburbs of Bend, Oregon. The Deschutes River marks the district's east boundary with the western boundary at the Upper Tumalo Reservoir near the foothills of the Cascade Mountains and the Deschutes National Forest.

Tumalo Creek flows approximately 20 miles from the confluence of Middle Fork Tumalo Creek and North Fork Tumalo Creek below Mt. Bachelor and Broken Top Mountain to its mouth at the Deschutes River. In addition to Crescent Lake storage, there are two primary diversion sources: Tumalo Creek below Shevlin Park and the Deschutes River near Pioneer Park. Despite the creek's source being high in the Cascades (with numerous waterfalls, including the 97-foot Tumalo Falls) as the creek descends east toward Bend the gradient drops to nearly flat throughout much of the district.

Celebrating Modernization Success at Tumalo Irrigation District

Left to Right: **Ron Cochran** (TID Board Member), **Matt Lohr** (Chief, USDA-NRCS)

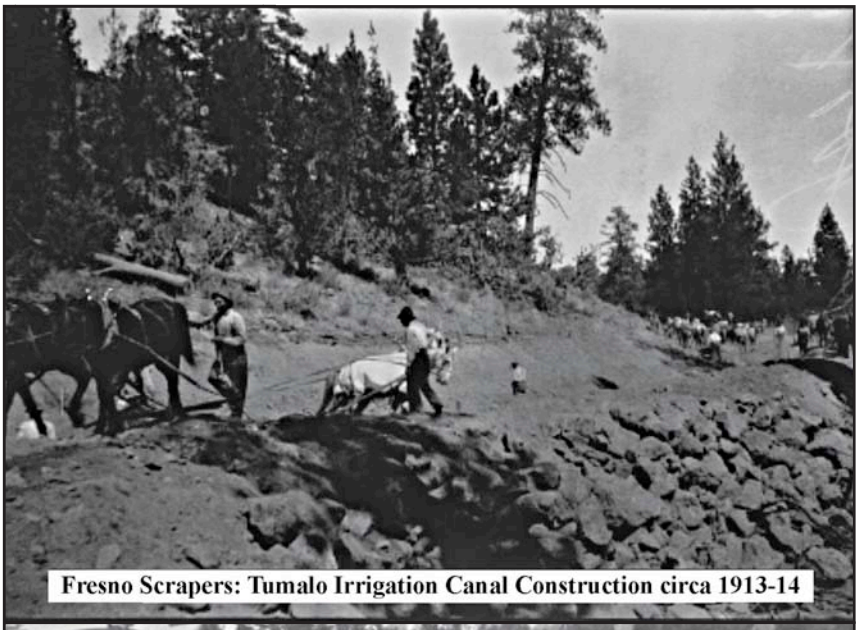
Ken Reck (TID District Manager), US Senator **Jeff Merkley**

March 2019 - Photo courtesy of the Energy Trust

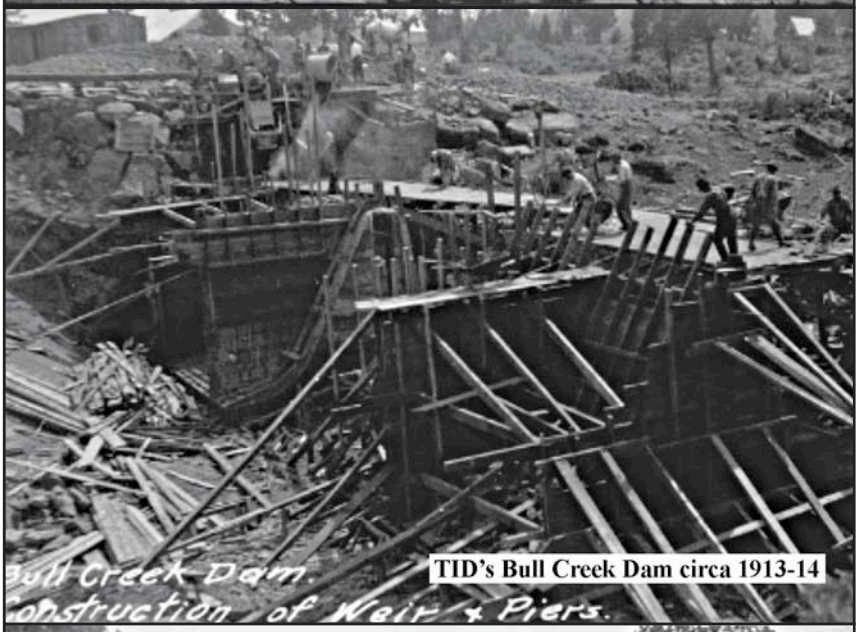
In 1990, when Ken Rieck joined the staff of Tumalo Irrigation District, the district dried up Tumalo Creek at the diversion point during irrigation season yet still only delivered 35% of allotments to the 685 patrons who irrigate 7,400 acres in the district. Over the next three decades, TID was determined to find solutions to the challenges facing their district, chief among them the crumbling irrigation ditches and canals that wasted up to 50% of water between diversion and farm.

TID worked for many years to complete projects with a number of key partners, including the Oregon Watershed Enhancement Board and Oregon Water Resources Department. However, with limited funds available from the State, the improvement efforts were not able to achieve the desired pace and scale. In 2017, US Senator Jeff Merkley (Dem/OR) helped to lead an effort to appropriate $75 million into the "PL 83-566 program" — a federal funding opportunity administered through the US Department of Agriculture's (USDA's) National Resources Conservation Service (NRCS). This federal grant program allows irrigation districts to leverage state dollars to attain significant federal investment. Accessing PL 83-566 funds dramatically increased the pace and scale of TID's modernization efforts. At present, the district has piped all of its main canals and has moved on to "Group 2" of its laterals with project completion now in sight.

This article provides historical context of the Tumalo Irrigation District and looks at the ups-and-downs of their multi-decade commitment to piping their canals and offering pressurized water to their patrons. The ultimate success at TID owes itself to a few dedicated individuals, a groundbreaking program to assist in large-scale irrigation modernization, and a willingness to collaborate in order to expeditiously navigate the application process and access available funding.



Fresno Scrapers: Tumalo Irrigation Canal Construction circa 1913-14



TID's Bull Creek Dam circa 1913-14

Tumalo Irrigation Main Canal Finishing Crew circa 1914

Photos adapted from the US Library of Congress online archive
www.loc.gov/resource/hhh.or0547.photos/

Historical Background

HIGH HOPES / LOW FLOWS

The first homesteaders began dry farming in the district in the 1880's. In 1883, farmers dug the first documented ditch to divert water from Tumalo Creek. A year later the first crops were irrigated with Tumalo Creek water on the area known as Wimer Flat. In the 1890s, a decade of dubious speculation and marketing exaggeration took hold. Land developers and marketeers: promoted unrealistic year-round flows in Tumalo Creek (250-500 **c**ubic **f**eet per **s**econd (cfs)); over-estimated irrigable land (30,000-60,000 acres); and under-estimated costs of irrigation system construction. Expectations peaked around 1900 when the railroad reached Shaniko, 88 miles to the northeast, and neighboring Three Sisters Irrigation District claimed to have a system capable of delivering Tumalo Creek water to 10,000 acres of farmland.

In 1901 Oregon accepted the federal Carey Act (of 1894), which provided homesteaders with 160 acres with a requirement to irrigate 20 acres. The Tumalo Creek land became the first "Selection List" for Oregon State after the Columbia Southern Irrigation Company acquired rights to the Tumalo flow and was authorized by the State to use the water to irrigate 27,000 acres. Railroad promoters used June flows (1,200 cfs) to claim an abundance of water for 80-acre land parcels. By 1903, over 9,000 acres had been sold, with promoters claiming 30,000 more acres would be sold and irrigated by 1904. By 1905, with the Company claiming to have dug 40 miles of canals and after Oregon State had certified that 11,600 acres had sufficient water for crops, reality set in. The facts: Tumalo Creek and its canals could only deliver enough water for 1,000 acres.

Promoters were jailed and the Columbia Southern Irrigation Company sold out to a new developer. The State, feeling pressure from the fiasco, enacted a Water Code. But the Tumalo roller coaster was just beginning.

Over the next half century, the Tumalo district, with support from the State, built Tumalo Reservoir at Wimer Flat and enlarged its canal system with wooden trestle flumes. The district again over-reached on its estimate to irrigate, this time promising a 22,500 acre capacity. Tumalo Reservoir failed to hold water when sinkholes opened on the basin's floor. The Tumalo farmers then bought rights to the Deschutes River at Crescent Lake, built an impoundment, diverted water via another wooden trestle and again promoted more colonization from would-be farmers. A period of low flows during the late 1920s-early 1930s doomed more growth. By the early 1950s, only 92 farm units remained in the Tumalo Irrigation District and a third of farmers had second jobs.

In the mid 1950s, the US Bureau of Reclamation (Reclamation) built a dam at Crescent Lake. However, failing flumes and leaking canals continued to curtail flows to struggling farmers, many of whom had converted to cattle grazing or non-farm work. By the 1970s, there were 236 farm units — most of them small (under 5 acres) — in the district. The Tumalo Irrigation District, with a $3.5 million, 40-year loan from Reclamation, undertook a long-term plan to rehabilitate failing canal sections. [Author's Note: this section is sourced from *Tumalo – Thirsty Land*, by Martin Winch, published in six successive issues of the Oregon Historical Quarterly (vol. 84 no. 4 through vol. 87 no. 1).]

Modernization

Ken Rieck joined the Tumalo Irrigation District (TID) in 1990. He recalls most of the patrons at that time were angry about flows being unreliable and in far less volume than patrons' allotments. The district brought Elmer McDaniels, a veteran of two other irrigation districts, out of retirement. His role was intended to be a six month stop-gap reorganization to get the district moving in the right direction. McDaniels ended up staying for 22 years. Ken Rieck remains there today as the district manager.

After a few initial years of evaluation, McDaniels, Rieck, and TID determined they were losing 50% of their water due to failing canals and transmission. Tumalo Creek was completely drying up at the diversion point and TID was only delivering 35% of allotments to their patrons. A Congressional earmark became available in the 1990s that would have authorized $4 million for system improvements. However, it required that the district (and its patrons) take on a multi-million-dollar bond. Perhaps leery due to the area's history of risks and failures and a fear of an unrealized bond, the patrons voted down the earmark. "They didn't believe piping would work," says Rieck. "There weren't any other precedents back then. Plus, they didn't comprehend that we'd have to put water back in the stream — that was a totally foreign concept."

McDaniels and the TID Board of Directors forged ahead with the goal to pipe the canal system, despite having to forego the Congressional earmark and state and federal funds. The district had accumulated large tracts of property during the Great Depression — so they could sell property to incoming Bend suburbanites. TID used this funding to pipe around 1,500 feet-per-year on a $500,000 to $1,000,000 annual construction budget.

Irrigation Upgrade

Canal Piping

Safety & Seepage

Low Slope

Pressurized Piping

Friction Factor

Laterals In-House

Instream Flows

ESA Challenge

Minimum Flows

Low Slope Angles

AN ENGINEERING CHALLENGE

TID contracted Bend-based Black Rock Consulting, Inc. on their piping projects. Black Rock's first main task was to pipe the Bend Feed Canal, which began at the Deschutes River at the First Street Rapids in Bend and traveled five miles to Tumalo Creek. There was only 22 feet of fall over the five-mile distance.

Kevin Crew of Black Rock remembers the feeling of success accompanying this project's completion, which was accomplished on a limited budget and within a limited timeframe long before PL 83-566 infused the district with more plentiful resources. "The water resources department felt like that was the project of the decade," says Crew. "Everyone assumed that once we got the Bend Feed Canal done it would be this monumental task and that would be the end. But TID continued to look at the Tumalo Canal and continued the momentum, looking at piping the canal piece by piece. The idea was to close in all the canals for safety and to minimize seepage."

The hydrology of the district provided plenty of challenges. As in many irrigation districts, the upper reaches of the district — i.e., the reaches nearest the reservoir or natural source of water — lacked pressure. Black Rock was seeing open channel flows (air on water), even in pipes.

The piping project, which passes through public and private lands, had to remain in the irrigation easement set aside when the district was developed under the Carey Act. There was no way around the low slope angles throughout the district — it is how the pioneers built the system. One end point would remain at the reservoir.

There was a high risk for miscalculation and inadequate water delivery and pressure. "If you get your friction factor wrong on a 12-mile run, you can create a fatal flaw in the system and not have enough water coming out the other end," says Crew. "That would be a bad day for the engineer."

Typically, the lowest slopes for pressurized water piping are around 0.10% grade. Some places in the district were as low as 0.000059. Success depended on selecting the perfect piping material. Crew went with Weholite, a high-density polyethylene product that is lightweight and can tolerate pressures up to 30 **p**ounds per **s**quare **i**nch (psi) and, perhaps most importantly, is malleable enough to curve. Segments can be welded together, heated, and then adapted to the long sinuous courses typical of an irrigation ditch. Without the ability to curve the pipe, the engineers would have to add angle fittings into the system, which results in reduced head loss every time the water turns through a bend. Weholite also has an optimal "Hazen-Williams Coefficient" or friction factor — i.e., it is slick enough to let water slide easily. The only major downside is that Weholite expands and contracts over extreme temperature variations and central Oregon regularly sees temperatures of 20 degrees in the morning and 70 degrees by middle of the afternoon. So the pipe can move and contractors must be aware of this attribute when connecting it to structures.

Rieck and TID worked on the main canals in short sections with Black Rock. The plan was to then switch over and pipe the smaller laterals with in-house staff. TID followed that plan for many years, not really knowing how long it would take. After the first five years they had piped about half of one of the main canals.

The district then qualified for funding from the federal Investment and Recovery Act of 2009. This funding allowed for $2-3 million-dollar projects. With additional funding secured through the Deschutes River Conservancy, Oregon Watershed Enhancement Board, and other partners, they were able to pipe 1.5 miles of the 6 miles of the second main canal. By then, with 11 total miles of canal piped, patrons were seeing benefits and increasingly accepting the piping scheme. TID was able to put some water back into the stream for instream flow purposes (e.g., the fishery) while delivering the full allotment to patrons for six consecutive years.

Lawsuit

ALTERING THE COURSE

As had happened so often in TID's history, a challenge suddenly arose — this time in the form of a lawsuit. The Center for Biological Diversity and WaterWatch of Oregon sued TID (along with four other Oregon irrigation districts and Reclamation) in 2015 over concerns of water availability for the Oregon spotted frog, a species listed as "threatened" under the federal Endangered Species Act.

The Deschutes Basin Board of Control, a coalition of eight central Oregon irrigation districts of which Tumalo is one, settled the lawsuit in 2016 after the sides ultimately reached a compromise. The settlement required the irrigation districts to ensure minimal flows in the upper Deschutes Basin as a way to protect Oregon spotted frog habitat. For TID, that meant they had to eliminate 10,000 acre-feet of water from district use per year — allowing that water to remain instream.

Irrigation Upgrade

"The new release requirements put us back to square one," says Rieck. "We were in bad shape, with only 35% of allotment available to the patrons and no real way to increase it."

Watershed Protection and Flood Prevention Act

NEW FUNDING – NEW SOLUTIONS

Federal Funds

The federal Watershed Protection and Flood Prevention Act (PL 83-566) is a fund authorized by the US Department of Agriculture's (USDA's) National Resources Conservation Service (NRCS) to aid local organizations and government branches to plan and implement projects that address natural and human resource problems in watersheds. Projects can include: "flood prevention and damage reduction, development of rural water supply sources, erosion and sediment control, fish and wildlife habitat enhancement, wetland creation and restoration, and increased recreational opportunities."

Benefits Demonstration

In 2017, Senator Jeff Merkley, as Ranking Member of the Senate Appropriations Subcommittee on Agriculture, was able to secure $150 million of PL 83-566 funding for the Watershed and Flood Prevention Operations program in Oregon, including funding for irrigation districts. Application for the funds required that districts submit a comprehensive Watershed Plan-Environmental Assessment to demonstrate how funds would be used to enhance the watershed for both economic and environmental benefits.

Watershed Plan (Seepage)

TID was ahead of the game. TID had years of piping experience and had studies completed for previous federal funding applications on hand. "We had already contracted out for a **s**ystem **i**mprovement **p**lan (SIP) when we were preparing for the Congressional earmark in the 1990s," says Rieck. "So we could roll that SIP into the PL 83-566 Watershed Plan and develop that [plan]. We were able to take a lot of information and studies on canal seepage that we had done on our main canal when we were considering the earmark. Having those studies made it exponentially easier to do the Watershed Plan. We just had to confirm it and update it. We were aggressive to get first in line for the Watershed Plan. We had spotted frog liabilities. We were right there and 'shovel ready.' "

Collaborative Effort

IRRIGATION MODERNIZATION PROGRAM

Substantial Workload

Even with much of the legwork on the Watershed Plan complete, the PL 83-566 application was still a strain on the small, busy, irrigation district office. "We were a small district," says Rieck. "We had seven people on staff and six of those were out there with shovels. Not a lot of capacity to do big things."

Completing a PL 83-566 Watershed Plan requires identifying the specifics of the project, assessing the environmental impacts, and conducting a public comment period (per the National Environmental Policy Act (NEPA)). Despite TID's head-start with impact studies and SIP documentation, the Watershed Plan represented a heavy lift. Time was of the essence with allotments for irrigators hovering at 35% since the spotted frog settlement.

"Farmers Screen"

By 2017, Farmers Conservation Alliance (FCA) based in Hood River, Oregon, was working with irrigation districts throughout Oregon to support modernization assessments and implementation. FCA was founded in 2005 as a non-profit tasked with bringing to market the "Farmers Screen" — an innovative design for diversions of water from streams and rivers. The patented screen allows for safe fish passage while minimizing debris intake. The screen's success earned FCA a foothold in the ongoing improvement efforts at irrigation districts throughout Oregon.

Irrigation Modernization Program

In addition to promoting the Farmers Screen, FCA has grown into an organization with the capacity to assist irrigation districts in securing funding and building the collaborative partnerships that facilitate irrigation modernization projects. In large part that growth is attributable to FCA's Irrigation Modernization Program (IMP) — a groundbreaking effort that helps irrigation districts and the farmers they serve to modernize aging, outdated, and inefficient water delivery systems. With the support of Energy Trust of Oregon, FCA launched the program in 2015 as a one-stop shop to navigate the complex world of planning, permitting, and funding required to enable districts to be shovel ready. Since irrigation modernization is one of the only ways to unlock the in-conduit hydro and energy savings possibilities associated with agricultural water delivery systems, Energy Trust saw opportunity in the comprehensive approach the IMP was creating. Energy Trust has provided significant funding to enable irrigation district enrollment in the IMP.

Comprehensive Approach

By joining FCA's program, TID was able to find a partner that could champion and support their modernization goals. As part of the program, participating districts partner with their irrigators and appropriate agency and community stakeholder groups to: identify the values and goals they want to achieve in the future; quantify potential modernization benefits; and develop strategies for funding and implementation. For each participating district, FCA produces: System Improvement Plans; Modernization Strategies; and Watershed Plans in partnership with NRCS.

Irrigation Upgrade

Partnerships

Increased Pace

Collaborative Effort

FCA Contribution

Piping & Pressurization

Energy Savings

Instream Flows Achieved

FCA endeavors to bring people together to build partnerships. Building strong coalitions — oftentimes among organizations and stakeholders with a history of conflicting interests — is often the key to securing the funding required to tackle large projects that benefit a variety of interests. The agricultural sector, rural communities, and wildlife and conservation advocates have all reaped benefits.

The combined efforts of Rieck and TID, FCA, Energy Trust, and NRCS propelled TID's watershed plan across the finish line in an astonishing 18 months. Successful colaboration is a major reason TID was the first district in Oregon to submit its plan and the first district authorized for PL 83-566 funding.

With the PL 83-566 funding, TID increased its modernization pace five-fold. Six million dollars per year meant that in the first year they piped Group 1 pipelines within twelve months of completing the watershed plan and began work on Group 2 eight months after submitting the plan. (*See* Map).

"We peaked at over 100 people in the field," says Rieck. "We sometimes had seven crews laying pipe and welding pipe and getting it trenched in the ground between snowstorms. The current project with Group 2 was envisioned in the Watershed Plan as a two-season project (they do most work between irrigation seasons). But Black Rock said we can do this in one season if we add more people. We'll finish two-year projects in one year and we're making an attempt to get all the details in order for Group 3 now."

Some Lessons Learned

Ken Rieck has learned some lessons since he first arrived in 1990. "It's a collaborative effort," Rieck says. "Everybody needs to be on the same page. Or at least most people. You need to get the district board on point. If they can drive it and put up with the flack they'll get (from neighbors) and still work and shake hands with NGOs and environmental organizations then that's the first thing that helps the rest fall into place. Everyone might not agree on everything, but if they have a similar goal, that helps."

"Groups like FCA helped so much with the learning curve," Rieck continues. "If we didn't have them to help with the Watershed Plan, we'd never have gotten it done. We'd still be five years out. With FCA we got it done in 18 months. They could probably do it faster now. We raised our hand and were willing to stand in front, but it was a collaborative effort to get it all done."

Conclusion

The success of Tumalo Irrigation District's piping and pressurization has yielded tangible results for all TID patrons. What began in the 1990s as a contentious system overhaul plan opposed by most farmers in the district has proven to be a boon. As of now, TID is delivering a few hundred acres of pressurized water in Group 1. Group 2 is seeing 40 psi range on the higher end of the canals and everything going forward will be at least 30 psi. One 200-acre tract at the end of the canal system received the max pressure recorded in the system: 85 psi. That farmer was able to take three 20-horsepower pumps offline, saving him roughly $3,000 to $4,000 per month in energy costs.

The immediate benefit of pressurized water to farmers is reliability and the potential to forego costly water pumps. Savings from taking pumps offline has allowed farmers to make equipment upgrades and some have even switched to the higher-yield hemp crop, which, in turn, requires less water than hay or alfalfa, thus further reducing the strain on the irrigation system.

The piping means the district saves water by mitigating leaks and being able to deliver full or near-full allotments to patrons while also meeting the mandated minimum requirements for instream flows. In 2019, the Deschutes River Conservancy recognized TID for its water restoration efforts as the district was able to leave over 18 cfs in Tumalo Creek during the hottest part of the summer and an average of 45 cfs over the full season.

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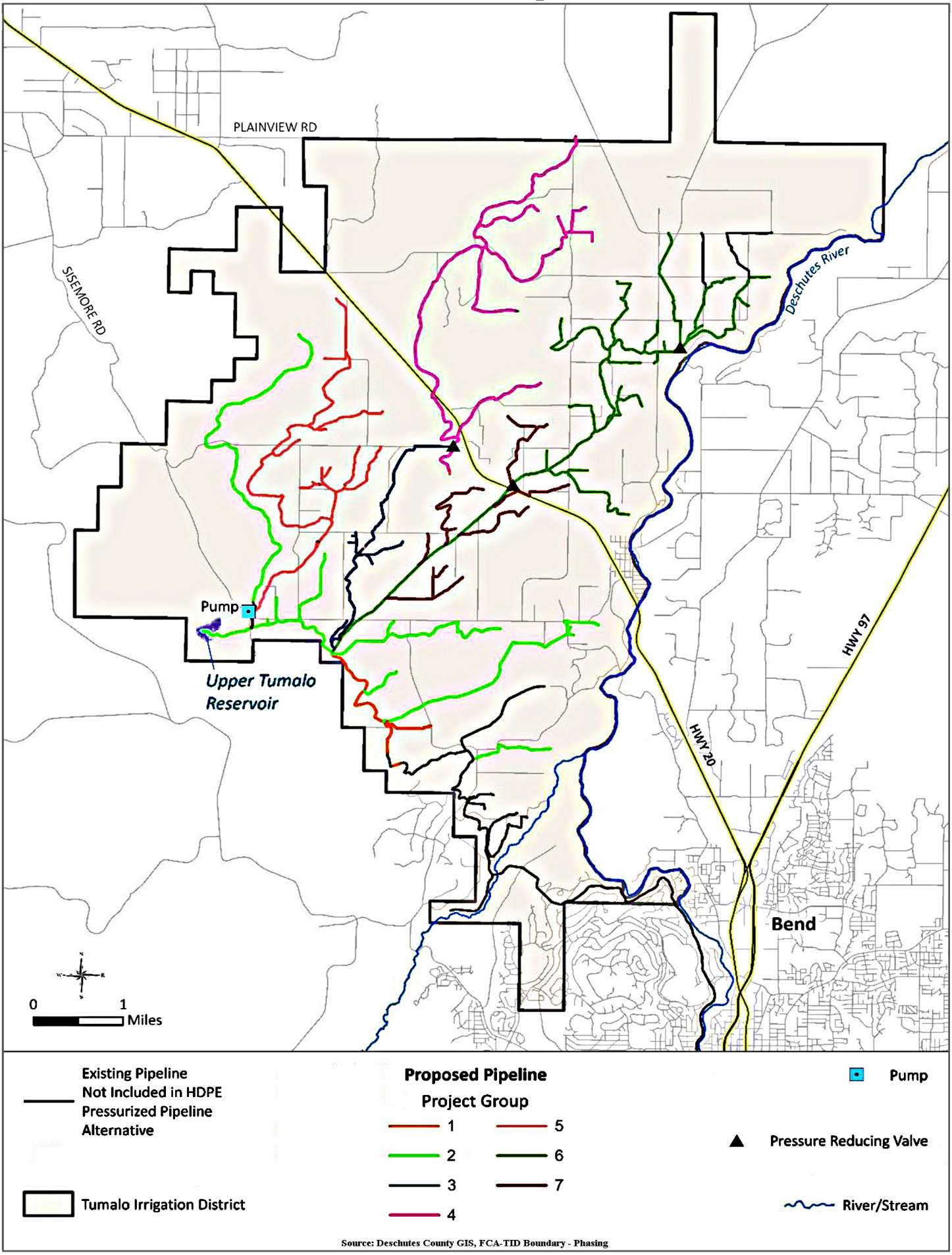
Farmers Conservation Alliance

Farmers Conservation Alliance (FCA®) is a 501(c)(3) nonprofit organization that is championing irrigation modernization strategies to achieve agricultural resilience and conservation benefits. Formed in 2005, FCA is currently partnering with farmers throughout the west to install fish screens and develop and implement customized approaches for broad-scale irrigation modernization.
Farmers Conservation Alliance website: fcasolutions.org

David Hanson is a freelance writer in Hood River, Oregon, currently working as a part-time communications specialist with Farmers Conservation Alliance.



Interstate CWA § 401 Dispute

Coal Export Terminal

Interstate Conflict

Landlocked Coal Reserves

Asian Market

Section 401 Certification

Water Quality Conclusion

Adverse Impacts

Mitigation Measures

INTERSTATE CLEAN WATER ACT DISPUTE

MONTANA & WYOMING V. WASHINGTON

US SUPREME COURT FILING OVER CWA § 401 CERTIFICATION DENIAL FOR COAL TERMINAL

by Eliza Whitworth, Andrew Fuller & Richard Du Bey
Ogden Murphy Wallace, PLLC (Seattle, WA)

Overview

On January 21, 2020, the States of Montana and Wyoming filed a Bill of Complaint (MT/WY Complaint) in the United States Supreme Court requesting that the Court decide whether the State of Washington violated the US Constitution by denying a permit to build a coal export terminal on the Columbia River in the State of Washington. The MT/WY Complaint claims that the State of Washington "completely barred Montana and Wyoming's access to an international shipping port" and placed a "de facto embargo" on the transportation of Montana and Wyoming coal, not just within Washington, but internationally.

While it is still unclear whether the US Supreme Court will agree to consider the case, this complaint poses significant threats to the sovereignty and autonomy of coastal states to enact and enforce laws to protect public health and welfare. A ruling in favor of Montana and Wyoming could allow heavy coal producing states to use the US Constitution, in particular the commerce clause, as a tool to override coastal states' authority to enforce their own environmental policies and regulate the transport of dangerous and/or pollution generating products within their borders.

Factual Background

Montana and Wyoming have vast coal reserves. With a reserve base of 58.1 billion tons, Wyoming is the largest producer of coal in the country. Montana, with 118 billion tons, has the largest recoverable coal reserve in the country but is only the sixth largest producer. Most of this coal is shipped out of state. Coal production in these states creates jobs and generates hundreds of millions of dollars in tax revenue. Other midwestern landlocked coal producing states include Colorado, Nevada, Utah, and North Dakota.

The United States is in the process of evolving away from coal combustion as a primary energy source, resulting in a significant decrease in the domestic demand for coal production. In seeking new markets, coal-producing states have found increasing demand for low-sulfur coal in Asian markets. To meet Asian coal demands, Wyoming, Utah, and Montana began collaborating with a coal supply chain company to build a new coal export facility on and in the Columbia River at the existing Millennium Bulk Terminal in Longview, Washington. Coal would be transported to this facility primarily from the Powder River Basin, stockpiled, and then reloaded onto ocean going vessels for shipment to Asia.

The permitting process for the proposed terminal began in 2012 and the final application for Section 401 Certification under the federal Clean Water Act (CWA) was submitted to the Washington Department of Ecology for approval on July 18, 2016 (*see* Section 401, CWA, 33 U.S.C. § 1341). A Final Environmental Impact Statement (FEIS) prepared in accordance with Washington's State Environmental Protection Act (SEPA) was issued on April 28, 2017. The SEPA review requires disclosure of all probable significant, adverse environmental impacts likely to result from the construction and operation of a proposed development project, like the coal transport facility in question. Chapter 43.21C RCW, as implemented by WAC 173-802-110.

Scope of SEPA Review

In this instance, the FEIS report concluded that, so long as certain measures were implemented, "there would be no unavoidable and significant adverse environmental impacts on *water quality*." (Millennium Bulk Terminals — Longview Final SEPA Environmental Impact Statement, Section 4.5.8, p. 4.5-34 (emphasis added) available at: www.millenniumbulkeiswa.gov/assets/mbtl_sepa_final-eis_volume_i_04252017_web_sm.pdf). However, the FEIS report found that "unavoidable and significant adverse environmental impacts could remain for *nine* environmental resource areas: social and community resources; cultural resources; tribal resources; rail transportation; rail safety; vehicle transportation; vessel transportation; noise and vibration; and air quality." *Id.* at Section S.7, Unavoidable and Significant Adverse Environmental Impacts, p. S-41 (emphasis added). The FEIS went on to note that the proposed mitigation measures "would reduce but not completely eliminate significant adverse environmental impacts resulting from construction and operation of the Proposed Action." *Id.* at pp. S-1, S-41-43 (summarizing findings below). Finally, the FEIS noted the potential impacts to climate change, greenhouse gas

Interstate CWA § 401 Dispute

Global Impacts

Certification Denied

Commerce Clause Discrimination

Exclusive Federal Power

Foreign Commerce

Improper Motives

Non-Water Quality Related Impacts

Improper Interference?

Unreasonable Barriers?

States' Sovereignty

Weighing Impacts

emissions, and air quality resulting from the coal combustion and emissions globally. *Id.* at Section S.5.8 and 5.8, Greenhouse Gas Emissions and Climate Change p. S-38, 5.8-1. Review of environmental impacts outside of Washington's borders (WAC 197-11-060(4)), including global environmental quality (RCW 43.21C.030(f)), are required under Washington law.

The Department of Ecology, lead agency for processing the applicant's CWA 401 Certification, denied the requested approval on two grounds. First, that the proposed terminal's "significant unavoidable adverse impacts" identified in the FEIS conflicted with the SEPA policies in WAC 173-802-110, and second, that the State was not provided with reasonable assurance that the proposed terminal would meet applicable water quality standards. The denial is being actively appealed in Washington Courts as well as in Federal District Court. *Lighthouse Res. Inc. v. Inslee*, 3:18-CV-05005-RJB, 2019 WL 1572605 (W.D. Wash. Apr. 11, 2019).

The Federal Commerce Clause

In response to Washington's denial of the Section 401 Certification for the coal terminal project, Montana and Wyoming are requesting the opportunity to present legal arguments before the U.S. Supreme Court. Their main argument is that Washington's administrative decision to deny the Section 401 Certification unlawfully discriminated "against Montana and Wyoming coal" in violation of the U.S. Constitution.

Under the United States Constitution, Congress has the exclusive power "[t]o regulate Commerce with foreign Nations, and among the several States." U.S. Const., Art. I, § 8, cl. 3. Consequently, the courts have long recognized a limitation on the power of States to either discriminate against out-of-state commerce or impose a "substantial burden" on interstate commerce. This restriction is generally referred to as the "dormant commerce clause." *See Nat'l Ass'n of Optometrists & Opticians v. Harris*, 682 F.3d 1144, 1148 (9th Cir. 2012). The "*foreign Commerce Clause*," similarly restricts state authority to enact laws or regulations that regulate "commercial relations with foreign governments." *See Barclays Bank PLC v. Franchise Tax Bd. of California*, 512 U.S. 298, 311, 114 S. Ct. 2268, 2276, 129 L. Ed. 2d 244 (1994).

Primary Issues

In the MT/WY Complaint to the Supreme Court, Montana and Wyoming argue that Washington's denial of the Section 401 Certification was based on improper motives, such as: 1) discriminatory favoritism of Washington products, including agriculture, over Montana and Wyoming coal; 2) the Governor's political opposition to and discrimination against coal; and 3) an unduly burdensome review process that includes consideration of the overall environmental impacts of coal combustion in foreign markets.

However, the MT/WY Complaint ignores any reference to the adverse non-water quality related environmental impacts that were identified in the FEIS, which were relied on by Ecology as grounds for denial of the permit. Instead, Montana and Wyoming repeatedly refer to the finding in the FEIS that the proposed project would result in "no unavoidable and significant adverse environmental impacts on water quality." The MT/WY Complaint further asserts that all other reasons for denial were irrelevant and that the Section 401 Certification would not have been denied but for the Governor's improper interference in the permitting process.

Conclusion

Montana and Wyoming are asking the US Supreme Court for a determination that Washington has discriminated against coal and that the Court should require Washington State to approve development of the coal processing plant, regardless of the unavoidable adverse environmental impacts identified in the FEIS. The MT/WY Complaint goes on to claim: "Washington, Oregon, and California have already erected unreasonable barriers to coal exports."

Washington State has been at the forefront of the environmental movement, enacting strong environmental laws and regulations intended to protect the natural resources within its borders. Should this case be taken up by the Supreme Court, the ability of States to exercise their independent sovereign authority to protect the health and welfare of their citizens will be on trial. In effect, Montana and Wyoming seek a determination that federal policies and non-coastal state economic interests outweigh the environmental concerns of coastal states that will be subject to the impacts stemming from those economic projects.

The OMW Environmental Practice Group will continue to follow the developments in this matter as it proceeds through the US Supreme Court. Please let us know if you have any questions, or if we may otherwise be of assistance.

Interstate CWA § 401 Dispute

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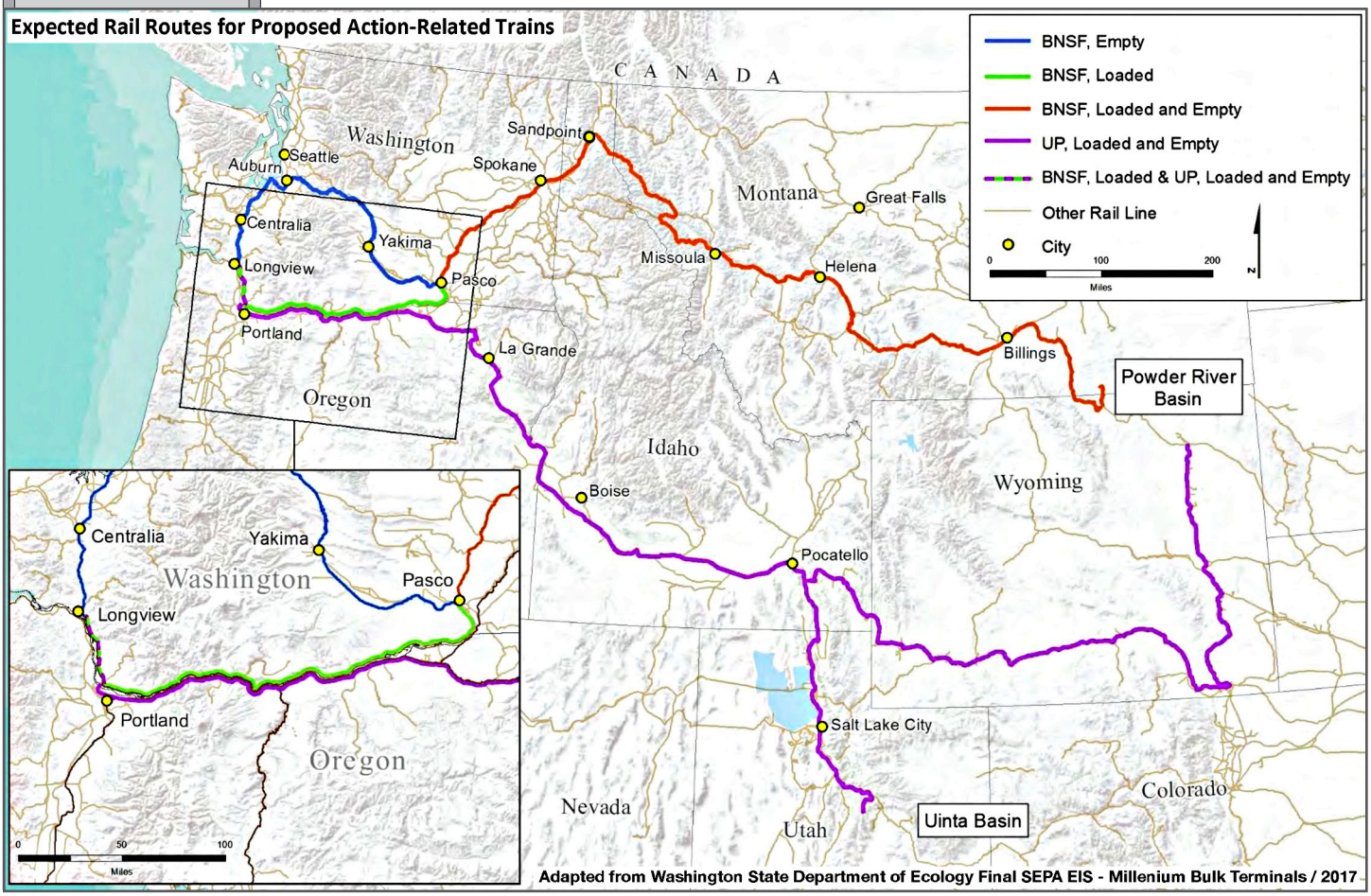
Andrew Fuller is an associate attorney in Ogden Murphy Wallace's Environmental Practice Group. He applies his background in environmental science to assists clients in a range of land use and environmental matters. In addition, he assists Indian tribes with the development and implementation of their environmental programs.

Richard Du Bey focuses his practice on environmental and natural resources law and tribal government matters, with an emphasis on environmental regulation and litigation, water and natural resource law, Native American law, administrative law, and inter-governmental negotiations. He counsels private and public sector clients in regulatory program development, compliance and enforcement, environmental risk management, hazardous substance cleanup, natural resource damages, Brownfield development, and tribal economic development. Richard is chair of the firm's Tribal Government Practice Group.



Keystone XL

KEYSTONE XL PIPELINE UPDATE

CONSTRUCTION HALT REQUEST

by David Moon, Editor

Presidential Permit

Preliminary Injunction

Irreparable Harm

Mineral Estates

Salient Legal Issues

Pipeline Route

Permit Authority

"Injury to Water Resources"

The Rosebud Sioux Tribe (Sicangu Lakota Oyate) and the Fort Belknap Indian Community (Assiniboine (Nakoda) and Gros Ventre (Aaniiih) Tribes) in coordination with their counsel, the Native American Rights Fund (NARF), sued the Trump Administration on September 10, 2018, for numerous violations of the law in the Keystone XL pipeline permitting process. The Tribes are asking the federal district court to rescind the illegal issuance of the Keystone XL pipeline presidential permit. *Rosebud Sioux Tribe v. Trump*, Case No. 4:18-cv-00118-BMM. In January, TransCanada — the entity attempting to construct the Keystone XL Pipeline (KXL) — reported that it would begin KXL construction in April despite ongoing questions about the project's permitting.

On March 2, 2020, the Fort Belknap Indian Community and Rosebud Sioux Tribe (Tribes) filed a motion for preliminary injunction, asking the court to prevent TransCanada from beginning construction of the pipeline while the case is under review. The Tribes argue that the court's intervention is needed to protect the Tribes' lands, water, natural, and cultural resources. The Tribes allege that TransCanada's activities could cause irreparable harm to tribal waterways, cultural resources, and minerals in the path of the pipeline's easement. The Tribes' memo in support of preliminary injunction lays out the Tribes' positions in detail; note the "Injury to Water Resources" at pages 21-23 (memo available at: www.narf.org/nill/documents/20200302kxl-injunction.pdf).

Represented by NARF, the Tribes continued their fight against the illegal permitting of the Keystone XL Pipeline with two filings in the US District Court of Montana on February 25, 2020. The Tribes filed a response to TransCanada's motion for summary judgment and a memorandum in support of their own motion for partial summary judgment. (Response and Memo in Support are available under "Case Updates" at: www.narf.org/cases/keystone/).

In those February 25th filings, the Tribes highlighted that TransCanada admitted that the Keystone XL pipeline would cross Rosebud mineral estates held in trust by the United States. This undisputed fact — that the pipeline would cross Rosebud mineral estates held in trust — has several legal implications, according to NARF:

- Trespassing into Rosebud's mineral estates, held in trust, without Rosebud's consent is a violation of the 1851 and 1868 Fort Laramie Treaties.
- The activities described in the project's Environmental Impact Statement, namely rock ripping, blasting, trenching, topsoil removal, and replacement of removed materials as backfill would adversely affect Rosebud's mineral estate. Federal agencies have a duty to prevent mineral trespass and protect Indian lands and tribal mineral estates.
- TransCanada must comply with Rosebud law. The mineral estates qualify as Indian lands and the Tribe has jurisdiction over them.

The publicly available maps that the Tribes have seen show that the pipeline corridor also would cross Rosebud surface and mineral estates.

According to NARF Staff Attorney Natalie Landreth, "What we have seen in these recent filings is that TransCanada's Keystone XL pipeline route crosses Rosebud-controlled lands. If and when TransCanada provides sufficient maps of the pipeline's route, we expect that we will see even more affected tribal lands. These lands are Indian lands. As such, they are protected by treaties as well as tribal and federal laws. As much as they would like to, TransCanada cannot ignore the laws that protect Native American people and lands."

The Tribes also point out in their filings that, contrary to defendants' arguments, neither the president's foreign affairs power, nor his role as commander-in-chief provides him authority to permit the pipeline. Instead, the authority to permit the pipeline falls within Congress's exclusive and plenary power to regulate foreign commerce.

The "Injury to Water Resources," among the many alleged irreparable injuries, is set out at pages 21-23 in the Memorandum in Support of Preliminary Injunction (filed March 2nd):

> Injury to natural resources are, by their nature, irreparable. *Amoco Prod. Co. v. Vill. of Gambell*, 480 U.S. 531, 545 (1987) ("Environmental injury, by its nature, can seldom be adequately remedied by money damages as it is often permanent or at least of long duration, i.e., irreparable."). Construction of KXL poses immediate and irreparable injuries to the Tribes' drinking water and water resources generally.

Keystone XL

Tribes' Water Resources

Groundwater Contamination

Reserved Rights

Spills & Other Impacts

Additional Water Rights

KXL crosses the Ogallala Aquifer, Missouri River, Cheyenne River, and White River, and Rosebud has federally reserved rights to these waters. (Dkt. 115 at 12-13, 15); *Winters v. United States*, 207 U.S. 564, 577 (1908); *Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist.*, 849 F.3d 1262, 1268 (9th Cir. 2017). Fort Belknap also has water rights to the Milk River that are currently in the process of quantification. Werk Decl. ¶¶ 10-11. Of the aquifers KXL crosses, the Ogallala is at the highest risk of contamination given the shallow depth of its water tables. (Dkt. 115 at 13). In the inevitable event of a spill (which has happened three times since 2016 from the existing Keystone Pipeline (Dkt. 58, at 162-65)), the groundwater would be contaminated, and groundwater wells nearby likewise would be contaminated with chemicals. (Dkt. 115 at 13). In Tripp County, South Dakota, within one mile of the KXL's proposed route, 2,537 wells are already in existence, with Rosebud retaining federally reserved rights to that groundwater (and the right to drill new wells to obtain that water) on land near the route. (Dkt. 115 at 13).

There will likewise be impacts to surface water from construction and any spill of KXL. (Dkt. 115 at 13-14). Impacts such as sedimentation, changes in stream channel morphology and stability, reduction in stream flow, and contamination are all possible. (Dkt. 115 at 14). Of the 1,073 waterbody crossings, only fourteen will utilize horizontal drilling under the waterbody. (Dkt. 115 at 13-14). The rest will primarily be open cut trenches through the waterbody. (Dkt. 115 at 14). The open cut method typically involves excavating the channel bed and banks of a stream and digging a trench directly in the stream. (Dkt. 115 at 14). If there were to be a spill in surface water, it could travel as far as ten miles downstream, perhaps farther, contaminating the water. (Dkt. 115 at 15).

KXL would cross the Cheyenne River upstream from the Mni Wiconi Project intake plant, meaning a spill in or near the river could disperse into the Mni Wiconi Project and Rosebud Water System through the intake plant. (Dkt. 115 at 15). KXL would also cross the White River in Tripp County just upstream from Rosebud land held in trust. (Dkt. 115 at 15). The White River is the 1889 Rosebud reservation boundary. Act of Mar. 2, 1889, ch. 405, 25 Stat. 888. Rosebud has federally reserved rights to the water in the White River and any spill into the White would impact these rights and the appurtenant Rosebud land along the river. (Dkt. 115 at 15). Similarly, KXL will cross the Milk River and a spill will impact Fort Belknap's water rights.

For Additional Information:
Native American Rights Fund website: www.narf.org/cases/keystone/

WATER BRIEFS

INFRASTRUCTURE FUNDING US

STATE REVOLVING FUNDS

On February 12, the US Environmental Protection Agency (EPA) announced the availability of $2.7 billion for State Revolving Funds (SRFs). This funding assists states, tribes, and territories with infrastructure projects that help protect surface water and provide safe drinking water to communities across the United States. In 2020, EPA is providing approximately $1.6 billion in new federal grant funding for the Clean Water State Revolving Fund (CWSRF). This funding is available for a wide range of water infrastructure projects, including modernizing aging wastewater infrastructure, implementing water reuse and recycling and addressing stormwater. More than $64 million in CWSRF grant funding is available to tribes, certain U.S. territories, and the District of Columbia for infrastructure projects.

EPA is also making available more than $1.07 billion in new federal grant funding for the Drinking Water State Revolving Fund (DWSRF). This funding can be used for loans that help drinking water systems install treatment for contaminants, improve distribution systems by removing lead service lines and improve system resiliency to natural disasters such as floods. In addition, more than $50 million in DWSRF grant funding is available to tribes, U.S. territories, and the District of Columbia to use for drinking water system upgrades.

Under the Clean Water and Drinking Water State Revolving Fund programs, EPA provides funding to all 50 states and Puerto Rico to capitalize SRF loan programs. The states and Puerto Rico contribute an additional 20% to match the federal grants. The 51 SRF programs function like infrastructure banks by providing low-interest loans to eligible recipients for drinking water and clean water infrastructure projects. As the loan principal and interest are repaid over time, it allows the state's DWSRF and CWSRF to be recycled or "revolve." As money is returned to the state's revolving loan fund, the state makes new loans to other eligible recipients. These funds can also be combined with EPA's WIFIA loans to create a powerful, innovative financing solution for major infrastructure projects.

For info: EPA websites at: www.epa.gov/dwsrf and www.epa.gov/cwsrf

WATER BRIEFS

DAM REMOVAL OR/CA

KLAMATH INFO SUBMISSION

In a February 28 filing to the Federal Energy Regulatory Commission (FERC), the Klamath River Renewal Corporation (KRRC) submitted updated cost information, including the "Guaranteed Maximum Price" (GMP) submitted by Kiewit Infrastructure West (Kiewit) and Resource Environmental Solutions, LLC (RES). In addition, KRRC submitted other requested material that further demonstrate KRRC's capacity to become licensee for the Lower Klamath Project (Project). This filing is another concrete step toward implementing the Amended Klamath Hydroelectric Settlement Agreement (KHSA), removing four dams and restoring a free-flowing Klamath River. "Our project is on track, within budget, and ready to roll," said Mark Bransom, KRRC Chief Executive Officer. "This submission to FERC proves that we have the funding, the team, the expertise and the plan to do it right and pen a vibrant new chapter of Klamath River history."

"This [filing] augments an extensive record that establishes that the Renewal Corporation has the legal, technical, and fiscal capacity to become the licensee for the Lower Klamath Project, and that this license transfer is in the public interest. The Renewal Corporation respectfully requests that the Commission approve the license transfer as soon as possible and start the license surrender proceeding." Cover letter to FERC submitted by Markus Quehrn and Laura Zagar of Perkins Coie, Attorneys for KRRC (2/28/20), pp. 1-2. The cover letter ended with the request that the "Commission take final action and approve the license transfer application by April 2020." *Id*. at 10.

In 2016, KRRC submitted license transfer and surrender applications to FERC, both of which are necessary for KRRC to take ownership of the four Lower Klamath dams, remove them, and restore the river. In 2018, KRRC submitted to FERC its "Definite Plan," a comprehensive, 2,300-page document that covered every aspect of its proposal, including plans for facilities removal, site remediation and restoration, estimated cost, and risk mitigation. Removal of the Klamath dams would comprise the largest dam removal project ever undertaken. *See* Roos-Collins, *TWR* #187 (9/15/19) for additional details.

With the February 28 filing, KRRC asserts that its committed funds are sufficient to complete dam removal as proposed in the license surrender application. The updated cost estimate for full dam removal that is based on the contractor-provided GMP is $446 million, including more than $50 million of contingency funding. This puts project costs well within KRRC's $450 million budget. The significant contingency funding is conservative and reflects accepted industry standards for complex infrastructure projects.

This updated total cost estimate reflects project contractor Kiewit Infrastructure West's GMP of $199 million. The GMP is based on 60% design completion and integrates bids from more than 100 potential sub-contractors, including many local and tribal businesses. The $78 million GMP from RES includes restoration implementation and serving as the Liability Transfer Corporation.

The recent submission also includes revised contracting arrangements that add clarity and cost savings to the project; updated risk registers; insight into KRRC's plans for a Local Impact Mitigation Fund to address potential damages to private properties not otherwise covered by the insurance program and related measures; wildfire risk analysis assessment; and an updated insurance approach. The insurance is part of a risk management program believed to be the most comprehensive ever considered by FERC for purposes of dam removal. In addition to insurance, the risk package includes performance bond and indemnity coverages to offset potential short- and long-term project effects.

As part of the review process for KRRC's Definite Plan, FERC directed KRRC to convene an independent Board of Consultants (BOC) to analyze KRRC's work and provide feedback and suggestions. The BOC comprises experts in dam construction and removal, engineering, aquatic and terrestrial biology, construction cost estimating, insurance, and bonding for large infrastructure projects. The BOC has provided ongoing review and guidance on the dam removal project. They will culminate their comprehensive review of KRRC's February 28 submittal in a report that will go to FERC in mid-March.

FERC will decide on the KRRC license transfer and surrender applications. KRRC anticipates beginning drawdown and removal as early as 2022, pending action by FERC and other regulators.

For info: KRRC website - Definite Plan: www.klamathrenewal.org/definite-plan/

DAM REMOVALS US

RESOURCE CENTER

On February 13, American Rivers issued a press release touting the latest statistics on dam removals in the US for 2019. Ninety dams were removed in 2019, with 26 states involved in dam removal. This resulted in 973+ upstream river miles reconnected in 2019 through dam removal projects. The top four states removing outdated dams in 2019 were: California – 23 dams removed; Pennsylvania – 14 dams removed; New Hampshire and Vermont– 6 dams removed. American Rivers maintains a database of dam removals in the United States. The database includes information on 1,722 dams that have been removed across the country since 1912. Most of those dams (1,476) were removed in the past 30 years. *See* www.americanrivers.org/DamRemovalDatabase.

To ensure safer and healthier communities, American Rivers is championing sustainable approaches to river management that restore natural river functions, floodplains, and wetlands. American Rivers also announced its newly revamped River Restoration Tools and Resources website (available at: www.americanrivers.org/conservation-resources/river-restoration/). This digital guide contains a series of resources designed to empower federal and state agency staff, engineering design firms and other consultants, and nonprofit organizations with the tools, skills, and understanding necessary to

WATER BRIEFS

restore damaged rivers. The webpage includes a series of videos, fact sheets, and reports to learn more about removing dams, replacing culverts and restoring floodplains.
For info: www.americanrivers.org/

WATER BLUEPRINT CA

SAN JOAQUIN VALLEY GW

A new report by University of California, Berkeley, economists Dr. David Sunding and Dr. David Roland-Holst shows that the California economy will suffer unless responsible, balanced water reforms are enacted to achieve groundwater sustainability goals in the San Joaquin Valley (Valley). Permanent economic impacts will include:

- California stands to permanently lose as many as 85,000 full-time jobs and $2.1 billion in employee wages across California, counting indirect and induced job losses together with direct losses. These losses will reach further into the economy as newly unemployed workers have less income to spend on household purchases.
- Tax revenue for local and state government is expected to drop by approximately $535 million per year, based on $242 million in lost city and county tax revenue and $293 million in lost tax revenue at the state level.
- Based on an analysis of SGMA and other anticipated water supply restrictions, up to one million acres may be permanently fallowed in the Valley over a period of 2-3 decades as a result of reduced ground and surface water availability (representing one-fifth of all acres under cultivation).
- The annual farm revenue loss associated with this fallowing is $7.2 billion per year, or roughly 14 percent of California's total farm production.
- Despite a demonstrated statewide impact, the areas most impacted by job losses are the state's most underserved communities already suffering from the lack of quality drinking water.

The report was supported by the "Water Blueprint for the San Joaquin Valley," a broad coalition of local governments, academic institutions, water users, and others working toward achieving balanced solutions that limit economic, community, and environmental impacts. The group recognizes the need for cooperation between water stakeholders, including environmental groups and disadvantaged community groups, to develop and advance solutions.

Read the full report for the preliminary results of the economic analysis of anticipated water supply restrictions affecting growers in the San Joaquin Valley (*see* weblink below). A second phase of the study, which is expected to be released later this year, will identify the consensus reforms and infrastructure investments required to help mitigate community, environmental, and industry impacts.
For info: Water Blueprint available at: https://waterblueprintca.com/

RESERVOIR MEASURE US

CAPACITY CURVE

If water will be stored in a California reservoir from one season to the next (i.e. diverted to storage), an owner is required to apply for a water right or demonstrate an appropriation has been acquired. All reservoirs diverting more than 10 acre-feet per year must comply with measurement requirements. Quantities measured annually must be submitted to the California State Water Resources Control Board (SWRCB).

SWRCB has prepared a guidance document that will assist reservoir owners with measuring and recording water volumes collected in their reservoirs. "Reservoir Storage Measurement & Recordkeeping Guide For Above-Ground Reservoirs" is available at www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/docs/res_measure6.pdf.

The guidance provides information on installing a measuring device, record keeping, and creating a reservoir storage capacity curve.
For info: www.waterboards.ca.gov/waterrights/

SEA RISE / FLOODING FL

LONG-TERM STRATEGY

The City of Miami has always been vulnerable to hurricanes, storm surge, and flooding, and has a strong history of thriving in the face of adversity. However, over the past decade Miami's acceptance and response to climate change has emerged as a new factor influencing the growth, and future trajectory, of the City. To ensure a sustainable and enduring future, the City of Miami is taking bold steps towards implementing an innovative and holistic approach to resilience via a long-term strategy to address flooding, sea level rise, and other issues brought about by climate change.

The *Miami Forever Climate Ready* strategy is a living document. It involves multiple departments within the City and strategic partnerships beyond. Miami is planning to shape its future through smart investments in resilient infrastructure, further strengthening of land use and building policies, advancing new mobility, technology, and housing solutions, and most importantly, increased community involvement. Learn more about Miami's specific vulnerabilities to climate change and efforts to date to address them by going to the *Miami Forever Climate Ready* webpage and downloading the 36-page "strategy."

As outlined in the strategy at page 5: "Today the City of Miami is affected by various forms of potential flooding — from rain, seasonal high tides, and storm surge. While our coastline is particularly vulnerable to storm surge and tidally influenced flooding, the City's low elevation and its porous limestone bed make inland areas vulnerable as well. Increased development and sea level rise are challenging the city's aging system of stormwater management. In order to combat increasing severity and frequency of flooding, the City must commit to significant investments in infrastructure and updates to design requirements."

The strategy sets forth the foundational principles guiding how Miami tackles the increasing challenges posed by climate change, then sets out the five goals of the program:

GOAL 1 — Ensure decisions are data-driven and human-centered;
GOAL 2 — Protect and enhance our waterfront;
GOAL 3 — Inform, prepare, and engage our residents and businesses;
GOAL 4 — Invest in resilient and smart infrastructure;
GOAL 5 — Promote adaptive neighborhoods and buildings.
For info: Strategy available at: www.miamigov.com/Government/MiamiForeverClimateReady

WATER BRIEFS

ESA LAWSUIT CA

CALIFORNIA SUES FEDS

On February 20, California Attorney General Xavier Becerra, the California Natural Resources Agency, and the California Environmental Protection Agency filed a lawsuit against the Trump Administration for failing to protect endangered fish species from federal water export operations. The lawsuit asserts that biological opinions prepared by federal agencies under the Endangered Species Act to direct water project operations lack safeguards for protected species and their habitat in the Sacramento and San Joaquin River watersheds, including the Bay-Delta. Filed in the US District Court for the Northern District of California, the lawsuit requests that the court declare the Trump Administration's adoption of the biological opinions unlawful. *See The California Natural Resources Agency, et al., v. Wilbur Ross, et al.*, Case 3:20-cv-01299 (2/20/20).

"As we face the unprecedented threat of a climate emergency, now is the time to strengthen our planet's biodiversity, not destroy it," said Attorney General Becerra. "California won't silently spectate as the Trump Administration adopts scientifically-challenged biological opinions that push species to extinction and harm our natural resources and waterways."

The lawsuit challenges the actions of the Bureau of Reclamation (Reclamation), which adopted the biological opinions. The lawsuit also challenges the biological decisions issued in October 2019 by the National Marine Fisheries Services (NMFS) and the US Fish and Wildlife Service (FWS), which lack sufficient protections for endangered and threatened fish. The lawsuit argues the agencies' biological opinions and Reclamation's decision violate the law because the Trump Administration: Fails to provide actual analysis of whether the effects of its action applied to current conditions would tip a species toward extinction; Improperly relies on uncertain plans to mitigate the harms of project operations; Ignores the requirement that a biological opinion must consider not only the continued survival of listed species, but also their recovery; Neglects to consider the material decline of the smelt (fish), and provides a limited analysis of climate change impacts; Disregards the National Environmental Policy Act by failing to provide the public with a meaningful opportunity to comment on relevant information about the proposed action and potential impacts and failing to adequately respond to public input; and Puts at risk Delta smelt, Chinook salmon, Central Valley steelhead, and other fish species. Previous biological opinions by the agencies addressed the risk posed to the listed species' continued existence by Central Valley Project operations and required measures to limit impacts.

According to the California Attorney General, Reclamation adopted new biological opinions that do not adequately protect species and highly sensitive and critical habitat throughout California. This lack of protection can cause long-term and irrevocable damage to protected species in California's Sacramento and San Joaquin Rivers. The lawsuit also asserts the Trump Administration's actions violate the Administrative Procedure Act and the National Environmental Policy Act.

In addition to the lawsuit, Attorney General Becerra, the California Environmental Protection Agency and the California Natural Resources Agency sent a 60-day Notice Letter to the Bureau that puts the Trump Administration on notice of California's intent to file additional claims alleging that Reclamation's decision to approve the biological opinions violates the federal Endangered Species Act.

For info: Complaint at: https://oag.ca.gov/system/files/attachments/press-docs/FILED%20Complaint.pdf

FISH LADDER/DIVERSION CA

ESA RULING UPHELD

The Ninth Circuit Court of Appeals in an unpublished opinion on February 26th upheld a federal court's 2018 ruling that the United Water Conservation District (UWCD or United) violated the Endangered Species Act by jeopardizing steelhead survival and recovery in the Santa Clara River as a result of its inadequate fish ladder and diversion of river flows at the Vern Freeman Dam near Santa Paula. The extremely detailed 152-page lower court decision by the Honorable Judge David O. Carter, ordered UWCD to design and implement a needed long-term steelhead passage solution for the dam and to release sufficient water downstream needed for steelhead migration.

Southern California steelhead is a federally protected, endangered anadromous fish that matures in the ocean but returns inland to spawn in freshwater upstream. The Santa Clara River historically supported thousands of steelhead and is critical for the recovery of steelhead throughout their range. The 1,200-foot-wide, 25-foot-high Freeman Dam's fish ladder, combined with UWCD's diversion of the Santa Clara River's flow at the dam, prevent steelhead from returning to their prime upstream spawning habitat in the river and migrating to the ocean.

Judge Carter found that United also "dragged its feet" on critical solutions, and that "…in the last decade or more United has proved itself unable and unwilling to tackle the two key problems repeatedly identified as perpetuating harm to Steelhead: (1) the inadequate fish ladder and the need for a new fish passage structure; and (2) the need for sufficient bypass flows to mimic the natural flow of the river and preserve the bulk of migration opportunities for Steelhead downstream of VFD." *Wishtoyo Foundation, et al., v. United Water Conservation District* (Findings of Fact and Conclusions of Law (9/23/18), pages 57 and 128-129 respectively).

The court's ruling requires United to immediately ensure the river has sufficient flows for steelhead to swim the 10.5-mile stretch of river to and from the ocean. In addition, the court's ruling requires United to fully design both a 400-foot-wide notch and a hardened ramp solution to allow fish to migrate past the dam, and to construct the fish passage option acceptable to the National Marine Fisheries Service.

The ruling resolves a lawsuit filed in 2016 by Wishtoyo Chumash Foundation and the Center for Biological Diversity.

For info: Jason Weiner, Wishtoyo Chumash Foundation, 805/ 823-3301 or jweiner.venturacoastkeeper@wishtoyo.org; John Buse, Center for Biological Diversity, 323/ 533-4416 or jbuse@biologicaldiversity.org; Findings & Conclusions 9/23/18 available upon request from TWR

WATER BRIEFS

WATER EFFICIENCY US
RECLAMATION GRANTS

The US Bureau of Reclamation (Reclamation) has selected 54 projects to share $40.99 million in WaterSMART Water and Energy Efficiency Grants to help projects use water more efficiently and effectively in the western US.

Water and Energy Efficiency Grants provide water districts and communities the needed assistance to modernize their water delivery infrastructure and increase hydropower generation. Projects are located in California, Colorado, Idaho, Kansas, Montana, Nebraska, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming. The types of projects receiving funding include: canal lining; advanced water metering; flow measurement and real-time monitoring of water deliveries; and pressurized irrigation systems.

Examples of the selected projects are:

The City of Grand Junction, located in western Colorado, will receive $300,000 to upgrade 4,069 manual-read water meters with advanced metering infrastructure compatible meters. The City will also install a fixed network data collection system that will automatically collect and store hourly consumption data from its 9,867 customer meters. By providing customers with real-time data, the project is expected to result in annual water savings of 741 acre-feet, which is currently lost to customer overuse and leaks. As a result of the project, the City expects to reduce diversions from the Kannah Creek watershed, leaving water in the river system or otherwise making water available for other uses in the Upper Colorado River Basin.

The Kittitas Reclamation District located near Yakima, Washington, will receive $975,000 to install 4,637 feet of double barrel 60-inch, steel reinforced polyethylene pipe on the existing earthen South Branch Canal. The project is expected to result in annual water savings of 515 acre-feet, which is currently lost to seepage and operational spills. The water conserved through the project will be delivered to Manastash Creek for instream flows to benefit threatened species, including Coho and Chinook salmon. The project is consistent with a memorandum of agreement between Reclamation, the Washington State Department of Ecology, and the District to address water management issues in over-appropriated or flow-impaired tributaries to the upper Yakima River.

The Buffalo Rapids Irrigation Project—District 2 located in eastern Montana, will receive $300,000 to convert 8,660 feet of open canal to a closed plastic irrigation pipeline. The District has experienced drought conditions over the last five years, and leakage and conveyance losses have contributed to water shortages and water scheduling issues. In response to system inefficiencies, the District has frequently had to divert and pump additional water from the Yellowstone River. By completing the project and increasing efficiency, the District will be able to reduce diversions. The project is expected to result in annual water savings of 1,087 acre-feet currently lost to seepage, which will remain in the Yellowstone River.

Some projects complement on-farm improvements that can be carried out with the assistance of the USDA's Natural Resources Conservation Service to accomplish coordinated water conservation improvements. A number of the projects selected are expected to help make additional on-farm improvements possible in the future, including the Eden Valley Irrigation and Drainage District and the Dixie Bench Ditch Lateral Association projects. The Dixie Bench Ditch Lateral Association, located in southeastern Idaho, will decommission 8,000 feet of earthen canal and install 7,040 feet of high-density polyethylene pipeline and pressurized polyvinyl chloride pipeline, bypassing the original canal. The project is expected to result in annual water savings of 90 acre-feet, which is currently lost to seepage and operational spills. As a result of the project, the Association will reduce diversions from Maple Creek and reduce the need for imported water to meet late-season allocations, allowing water to remain instream. Once completed, the pipeline will complement a current Natural Resources Conservation Service's Environmental Quality Incentives Program project to improve an existing irrigation system with pivots, wheel-line, pumping plants, and a variable frequency drive.

For info: Summaries of all selected projects available at: www.usbr.gov/watersmart/weeg.

TRIBAL PROJECTS NM/MT
RECLAMATION WATER SETTLEMENTS FUND

Reclamation has initiated the first annual allocation of $120 million from the Reclamation Water Settlements Fund for Indian water rights settlements. The allocation will provide important funding for the Navajo-Gallup Water Supply Project in northern New Mexico and water projects on the Blackfeet Reservation in northwestern Montana. Specific allocation amounts include:

Navajo-Gallup Water Supply Project - $100 million: The Navajo Gallup Water Supply project is a key element of the Navajo Nation Water Rights Settlement on the San Juan River in New Mexico. Construction of the project is well underway, with the first project water deliveries anticipated before the end of 2020. When fully complete, the project will provide reliable municipal, industrial, and domestic water supplies from the San Juan River to 43 Chapters of the Navajo Nation; the City of Gallup, New Mexico; the Navajo Agricultural Products Industry; and the southwest portion of the Jicarilla Apache Nation Reservation.

Blackfeet Settlement - $20 million: The "Blackfeet Water Rights Settlement Act" authorizes Reclamation to plan, design and construct facilities to supply domestic water and support irrigation — including developing new water infrastructure on the Blackfeet Reservation, located in northwestern Montana. Under the Settlement Act, Reclamation will plan, design and construct the Blackfeet Regional Water System, which at full buildout will serve an estimated 25,000 reservation residents in the communities of Browning, Heart Butte, Babb, East Glacier, and Blackfoot, as well as rural farms and ranches.

These allocations are in accordance with the Omnibus Public Land Management Act of 2009 (P.L. 111-11), which established the Reclamation Water Settlements Fund, detailed how funding is to be deposited into the fund, and described the way the fund is to be expended.

For info: Marlon Duke, Reclamation, 385/ 228-4845 or mduke@usbr.gov

CALENDAR

March 15-17 OH
National Stormwater Symposium, Cincinnati. Energy Convention Center. Presented by Water Environment Federation Stormwater Institute. For info: www.wef.org/events/conferences/upcoming-conferences/nationalstormwater/

March 16 AZ
Membrane Technology Conference, Phoenix. Phoenix Convention Center. Presented by American Water Works Assoc. For info: www.awwa.org/Events-Education/Events-Calendar

March 16 UT
Utah Water Law & Policy Seminar, St. George. The Dixie Center. For info: https://conference.usu.edu/uwuw/Law.cfm

March 17 ID
PFAS Workshop, Boise. Grove Hotel. Presented by Northwest Environmental Business Council. For info: https://nebc.regfox.com/pfas-workshop-boise-march-19-2020

March 17 WEB
Financing a Program of Projects (WIFIA), WEB. Presennted by EPA. For info: www.epa.gov/wifia

March 19 WA
Speak Up for Salmon: Public Hearing on Lower Snake River Dams, Seattle. Hilton Seattle Airport & Conference Center, 4 pm. Presented by Save Our Wild Salmon, Sierra Club Washington Chapter & Earth Ministry; EIS available at: www.nwd.usace.army.mil/CRSO/#top. For info: www.facebook.com/events/209633500422476/

March 19 CO
America' Environmental Future: The Water Solution Event, Denver. University of Colorado Denver, Baerresen Ballroom, Tivoli Student Union, 900 Auraria Pkwy. Presented by Walton Family Foundation. For info: https://thewatersolution.splashthat.com/

March 19-20 OR
Shoreline Regulation, Permitting & Development Seminar, Seaside. Seaside Civic & Convention Center. For info: The Seminar Group, 800/574-4852, info@theseminargroup.net or www.theseminargroup.net

March 20-21 OR
Pacific Northwest Ground Water Exposition, Portland. Red Lion Hotel. Presented by Pacific Northwest Ground Water Assoc. For info: pnwgwa.org

March 20-23 CO
Drought and Water Shortage Preparedness Training, Denver. EUCI Conference Center. For info: www.euci.com/events/

March 23-25 TX
Ten Across Water Summit: The Responsibility of Knowing, Houston. Asia Society Texas Center & Houston Museum of Natural Science. Presented by HARC (Houston Advanced Research Center). For info: www.10xwatersummit.com/?ct=t(EMAIL_CAMPAIGN_JAN_NEWS)

March 23-26 IL
Watercon Conference, Springfield. Crowne Plaza Springfield. For info: www.isawwa.org/mpage/2015conf00

March 24 WEB
Stormwater Permitting at Schools & Community Colleges Webinar, 10-11 am PDT. For info: www.bbklaw.com

March 24 CA
Phase II MS4 Permit Reissuance Stakeholder Workshop, Rancho Cordova. Central Valley Regional Water Quality Control Board, Board Room, 11020 Sun Center Drive, #200; 9 am - 1 pm. For info: Paul Levy, SWRCB, 916/323-5598 or Paul.Levy@waterboards.ca.gov

March 24-26 CA
Water Innovation Week 2020: The Next Decade, San Francisco. Multiple Venues. Presented by Imagine H2O. For info: www.imagineh2o.org/wiw2020

March 24-26 CA
16th Annual Western Boot Camp on Environmental Law, San Francisco. Covington & Burling LLP, 415 Mission Street, Ste. 5400. Presented by Environmental Law Institute; Registration Required by 2/28. For info: www.eli.org/boot-camp/western-bootcamp-environmental-law

March 25 OR
44th Annual Oregon Water Education Foundation - Water Environment School, Portland. Clackamas Community College. For info: OWEF website: www.orwef.org/

March 26 CA
4th Annual Water Innovation Summit 2020: The Next Decade, San Francisco. Presented by Water Environment Federation & Imagine H2O. For info: www.wef.org/events/conferences/upcoming-conferences/waterinnovation20/

March 26-27 CO
37th ABA Water Law Conference, Denver. Grand Hyatt. Presented by the ABA Section of Environment, Energy, and Resources. For info: www.americanbar.org/events-cle/

March 27 AZ
Water at the Crossroads: The Next 40 Years: WRRC Annual Conference 2020, Phoenix. Black Canyon Conference Center, 9440 N. 25th Avenue. Presented by the Water Resources Research Center. For info: https://wrrc.arizona.edu/wrrc-conference-2020

March 27-29 TX
Cattle Raisers Convention & Expo, Fort Worth. Fort Worth Convention Center. Presented by the Texas & Southwestern Cattle Raisers Assoc. For info: http://cattleraisersconvention.com/

March 29-April 1 MN
Sustainable Water Management Conference, Minneapolis. Hyatt Regency. Presented by American Water Works Assoc. For info: www.awwa.org/Events-Education/Events-Calendar

March 30-April 3 VA
WSWC/ICWP/NWSA Washington, DC Roundtable * WSWC Spring (192nd) Meeting * WSWC/WestFAST Forum, Arlington. DoubleTree Hotel Crystal City. Presented by the Westernn States Water Council, Interstate Council on Water Policy & the National Water Supply Alliance. For info: www.westernstateswater.org/upcoming-meetings/ or www.icwp.org

March 31-April 3 TX
Texas Water 2020: Exhibition & Conference, Fort Worth. Fort Worth Convention Center. For info: www.txwater.org

April 1-3 FL
Vision 20/20 Convention & Exhibition, Orlando. Rosen Centre Hotel. Presented by Water Treatment Industry. For info: www.wqa.org/convention

April 2-3 CA
ACWA California Water Policy Conference, Davis. UC Davis Conference Center. Presented by the Association of California Water Agencies. For info: www.acwa.com/events/

April 2-4 CA
29th Annual Toxic Torts & Environmental Law Spring Conference, Coronado. Hotel Del Coronado. Presented by the American BAR Association. For info: www.americanbar.org/events-cle/mtg/inperson/392911128/

April 3 DC
Environmental Law & Policy Annual Review, Washington. Environmental Law Institute, 1730 M Street, NW, Ste. 700. 9:30 am - 3:00 pm EST; Registration Required by March 27. For info: www.eli.org

April 6-9 CA
The West's Growing Water Needs in the Face of Water Shortages: California-Nevada Section of the American Water Works Association Annual Conference & Exposition, Anaheim. Disneyland Hotel. For info: www.acwa.com/events/ca-nv-awwa-spring-conference-2020/

April 7 TX
Texas Film Contest - Red Carpet Screening, Austin. AFS Cinema. Presented by the Texas Water Foundation. For info: www.watertexasfilms.org/

April 7 CA
Phase II MS4 Permit Reissuance Stakeholder Workshop, San Luis Obispo. Central Valley Regional Water Quality Control Board, Watershed Room, 895 Aerovista Place, #101; 9 am - 1 pm. For info: Paul Levy, SWRCB, 916/ 323-5598 or Paul.Levy@waterboards.ca.gov

April 7-8 NM
Law of the Rio Grande: Hot Topics in Water Management & Conservation Conference, Santa Fe. La Fonda. For info: CLE Int'l, 800/ 873-7130, live@cle.com or www.cle.com

April 14 WY
"2020 Water Supply Outlook" (USBR) & National Weather Service Update on Spring Runoff - Water Forum, Cheyenne. Water Development Office, 6920 Yellowtail Road, 9 am - Noon. Presented by Wyoming State Engineer's Office. For info: Jeff Cowley, WSEO, 307/ 777-7641, jeff.cowley@wyo.gov or https://sites.google.com/a/wyo.gov/seo/interstate-streams/water-forum

April 14-15 CO
International Symposium on Inorganics, Denver. Embassy Suites Downtown. Presented by American Water Works Assoc. For info: www.awwa.org/Events-Education/Events-Calendar

April 14-16 OR
CONNECT 2020 - Conference, Sunriver. Sunriver Resort. Presented by Oregon Conservation Education & Assistance Network. For info: www.connectoregon.net/register

April 16 CA
CLEE Environmental Awards Banquet, Berkeley. Bancroft Hotel. Presented by the Center for Law, Energy + the Environment. For info: www.law.berkeley.edu/research/clee/

April 17-18 OR
Oregon Environmental Justice Pathways Summit, Eugene. University of Oregon: Gerlinger & Straub Halls. Presented by Beyond Toxics & NAACP Eugene-Springfield. For info: https://ejpsummit.org/

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CALENDAR

(continued from previous page)

April 20 NV
Nevada Water Law Conference, Reno. Peppermill Resort. For info: CLE Int'l, 800/ 873-7130, live@cle.com or www.cle.com

April 21 CA
Phase II MS4 Permit Reissuance Stakeholder Workshop, San Diego. San Diego Regional Water Quality Control Board, Board Hearing Room, 2375 Northside Drive, #100; 9 am - 1 pm. For info: Paul Levy, SWRCB, 916/ 323-5598 or Paul.Levy@waterboards.ca.gov

April 21 TX
9th Annual Gulf Coast Water Conservation Symposium: Integrating Water Management on the Texas Gulf Coast - Moving Forward with a One Water Approach, Houston. United Way of Greater Houston, 50 Waugh Drive, 8 am - 3:30 pm. For info: www.harcresearch.org/sites/default/files/documents/2020_GCWCS_Program.pdf

April 22-23 CA
WSWC - NASA Western Water Applications Office (WWAO) Research to Operations (R2O) Workshop, Irvine. National Academy of Sciences Beckman Center. Presented by the Western States Water Council. For info: www.westernstateswater.org/upcoming-meetings/

April 22-25 IL
49th Spring Conference - Section of Environment, Energy & Resources, Chicago. Swissotel. Presented by the American BAR Association. For info: www.americanbar.org/groups/environment_energy_resources/events_cle/

April 23 CA
Phase II MS4 Permit Reissuance Stakeholder Workshop, Los Angeles. Los Angeles Regional Water Quality Control Board, Carmel Room, 320 W 4th Street, #200; 9 am - 1 pm. For info: Paul Levy, SWRCB, 916/ 323-5598 or Paul.Levy@waterboards.ca.gov

April 27-28 OR
10th Annual Pacific Northwest Water Research Symposium, Corvallis. OSU, CH2M Hill Alumni Center. Presented by Oregon State University Hydrophiles. For info: http://hydrophilesresearchsymposium.org/

April 27-28 MI
Project Management for Water and Wastewater Utilities Workshops, Detroit. DoubleTree by Hilton Detroit Downtown. For info: www.euci.com/events/

April 29 CA
Phase II MS4 Permit Reissuance Stakeholder Workshop, Eureka. Sequoia Conference, Center Annex Boardroom, 901 Myrtle Avenue; 1 pm - 5 pm. For info: Paul Levy, SWRCB, 916/ 323-5598 or Paul.Levy@waterboards.ca.gov

May 5-8 CA
Association of California Water Agencies Spring Conference & Exhibition, Monterry. Monterey Conference Center. For info: www.acwa.com/events/

May 6 TX
Texas Rainmaker Award Dinner, Austin. Presented by the Texas Water Foundation. For info: www.rmmlf.org/conferences

May 7-8 NM
Public Land Law, Regulation and Management Conference, Santa Fe. The Eldorado Hotel, 309 W. San Francisco Street. Presented by Rocky Mountain Mineral Law Foundation. For info: www.rmmlf.org/conferences

May 8 CO
Native American Rights Fund 50th Anniversary Gala: Celebrating Fifty Years of Fighting for Native Rights, Aurora. Gaylord Rockies Resort & Convention Center. For info: www.narf.org/50thgala/

May 12 WY
Land-to-Sea Stewardship Through Education, Advocacy & Leading by Example - Water Forum, Cheyenne. Water Development Office, 6920 Yellowtail Road, 10 am - Noon. Presented by Wyoming State Engineer's Office. For info: Jeff Cowley, WSEO, 307/ 777-7641, jeff.cowley@wyo.gov or https://sites.google.com/a/wyo.gov/seo/interstate-streams/water-forum

May 12-13 TX
Environmental Trade Fair & Conference, Austin. Austin Convention Center. Sponsored by Texas Commission on Environmental Quality. For info: www.tceq.texas.gov/p2/events/etfc/etf.html

May 12-13 NC
Eastern US Annual Power Plant Water Treatment Conference, Charlotte. Crowne Plaza Charlotte Executive Park. For info: https://lmnpower.com/