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

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City of Bend Water Supply

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& More!

Floodplains and Flood Risk

A BRIEF OVERVIEW OF CHANGING MANAGEMENT RESPONSIBILITIES

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&
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Introduction

When it comes to how our communities address flood risk and protect populations and economies from flooding, no one government agency is in charge. Instead, there are multiple agencies at the federal, state, and local levels, and it can be difficult to figure out which agency carries out which responsibilities. The number of overlapping issues and authorities continues to grow as communities become more aware of flood risk. The goal of this article and an upcoming seminar in Seattle (more information below) is to shed light on these complexities and to improve how critical flood risk decisions are made. This article focuses primarily on the role of the federal government through the Federal Emergency Management Agency (FEMA) and the US Army Corps of Engineers (Army Corps). It also summarizes how FEMA has responded to claims that its implementation of the National Flood Insurance Program has not complied with the federal Endangered Species Act.

The Primary Federal Agencies

There are two key federal agencies involved in floodplain management — FEMA and the Army Corps. FEMA is the federal agency tasked with disaster mitigation, preparedness, and response and recovery planning. As part of that mission, FEMA administers the National Flood Insurance Program (NFIP or Program). The NFIP offers federally backed flood insurance to homeowners, renters, and business owners in communities that adopt and enforce local development regulations that meet or exceed FEMA minimum requirements designed to reduce flood risk. FEMA is in the business of reducing flood risks by ensuring that homes in at-risk places are built to particular standards and insured for flood damage. Below we will discuss the NFIP program, its finances, and the politics surrounding it.

The Army Corps is a federal agency and branch of the US Army focused on engineering of critical infrastructure — including flood risk management facilities and levee safety. The Army Corps: constructs flood infrastructure; assesses the safety and stability of flood infrastructure built by others; and permits local projects that modify Army Corps-constructed infrastructure. In addition to authorizing flood infrastructure projects constructed by local and state governments and levee districts, the Army Corps also constructs projects authorized through the federal Water Resources Development Act, as discussed below.

Floodplains

States Vary

Land Use Decisions

Insurance Program

Flood Hazard Maps

"Grandfathered" Rates

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State and Local Agencies

States have varying levels of participation in floodplain management and flood control. Some states, such as California, have a developed system in which multiple state agencies: perform levee maintenance; fund or carry out levee improvement projects; establish adequate levels of flood protection; and issue permits for projects in floodplains. In Washington, counties and other local governments have assumed primary responsibility for non-Army Corps flood control facilities, with episodic support from the State. To support these efforts, a number of counties have formed Flood Control Zone Districts to take advantage of taxing authority to support construction of new flood infrastructure. Also, throughout the US, cities and counties are typically the primary land use agencies, controlling local land use decisions including placement of housing and other structures in flood-prone areas.

The National Flood Insurance Program

The US Congress established the NFIP with the passage of the National Flood Insurance Act of 1968. As noted above, the NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations designed to reduce future flood damages. Participation in the NFIP is based on an agreement between communities and FEMA. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the government will make flood insurance available within the community as a financial protection against flood losses.

As part of its administration of the NFIP, FEMA publishes flood hazard maps called Flood Insurance Rate Maps, or FIRMs. The purpose of a FIRM is to show the areas in a community that are subject to flood risks. FIRMs map areas of the country into Special Flood Hazard Areas (SFHAs), which are areas with more than a 1% chance of flooding annually. FEMA uses the information provided in FIRMs to determine insurance requirements and rates within each mapped community. In areas mapped as SFHAs, property owners with federally backed mortgages must purchase flood insurance.

The NFIP was never designed to be actuarially sound. Early in the Program, Congress authorized substantially reduced rates for "pre-FIRM" structures — i.e., structures constructed before an area was first mapped in the floodplain under the NFIP. The Program also offers reduced ("grandfathered") rates for certain homes and other structures that were constructed when the flood risk at the particular property was considered to be less severe than it is today. Moreover, even prior to this year's historic hurricane season, Hurricanes Katrina and Sandy resulted in huge payouts, putting the NFIP about $24 billion in debt. The Program remains saddled by unsustainable debt. The NFIP embodies the struggle between the Federal government's desire to balance its books and the policy implications of substantially increasing rates, particularly on pre-FIRM and grandfathered properties that do not — and never did — reflect the true risk of flooding.

In late October 2017, the House and Senate both passed a $36.5 billion disaster relief bill that would forgive $16 billion in debt owed by the NFIP. Congress will also soon be debating the terms of reauthorization of the Program, which is scheduled to expire on December 8, 2017. Congress seems particularly focused on:

- shifting some of the flood insurance risk to the private insurance market;
- increasing compliance with the mandatory flood insurance purchase requirement; and
- finding a way to reduce the cost and risk of "severe repetitive loss properties" — i.e., properties that flood frequently and for which the NFIP has paid out repeated claims.

FEMA Borrowing

Congress authorized FEMA to borrow from Treasury when needed, up to a preset statutory limit. Originally, Congress authorized a borrowing limit of $1 billion and increased it to $1.5 billion in 1996. Following the catastrophic hurricanes of 2005, Congress amended FEMA's borrowing authority three more times to more than $20 billion. After Superstorm Sandy in 2012, Congress increased FEMA's borrowing authority to $30.425 billion. In January 2017, FEMA borrowed an additional $1.6 billion, increasing the total debt to $24.6 billion. Before 2005, NFIP was mostly self-sustaining, only using its borrowing authority intermittently and repaying the loans.

From GAO Report to Congress: GOA-17-425 — April 2017

Floodplains

Civil Works Program

Congressional Authorization

"Earmarks"

Local Funding

Water Resources Development Act

HOW FEDERAL PROJECTS GET APPROVED

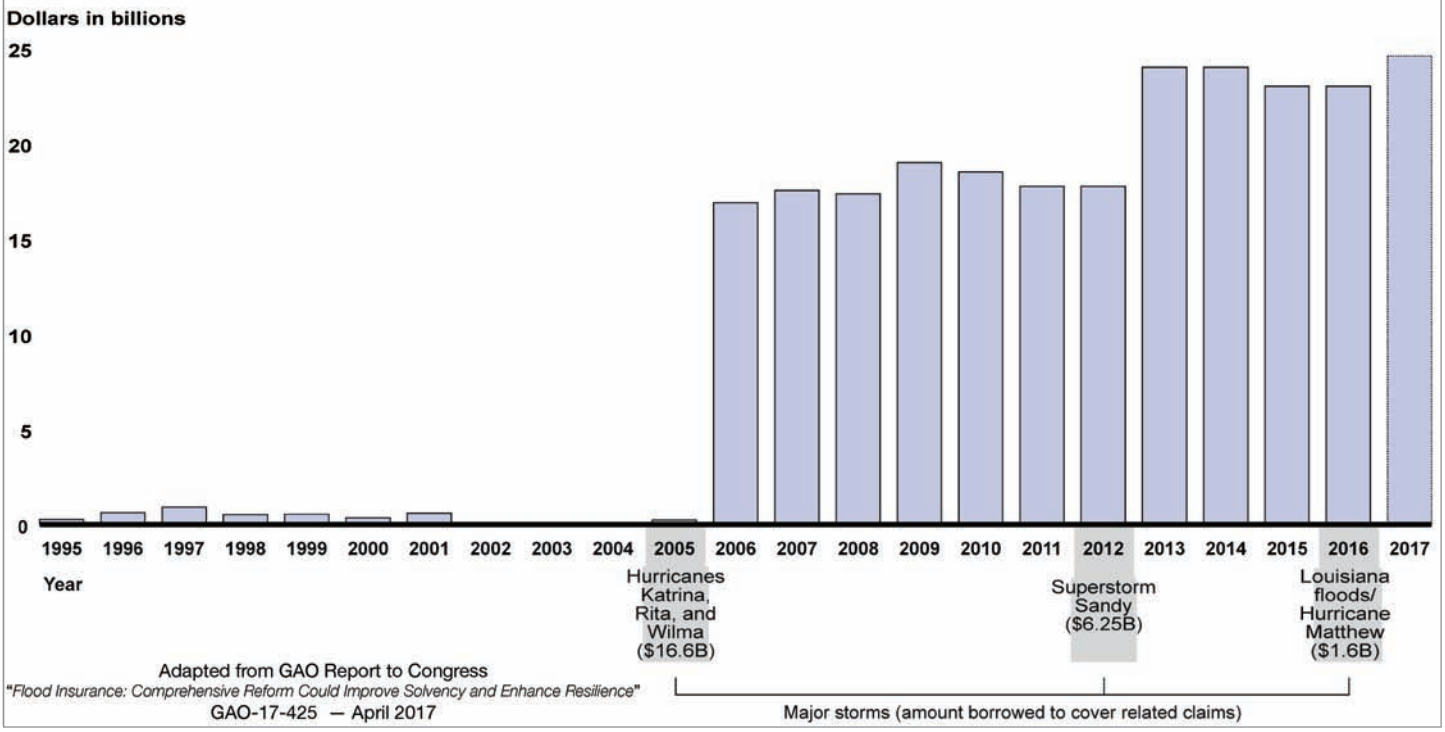
The federal Water Resources Development Act (WRDA) is the primary vehicle through which the federal government authorizes water resources projects. The Army Corps' Civil Works Program (Civil Works) is the nation's largest water resources program. Through Civil Works, the Army Corps plans, constructs, and operates facilities for a wide variety of purposes, including: navigation; flood control shoreline protection; hydropower; water supply; and disaster response and recovery. The Army Corps' Civil Works priorities are set by Congress through Water Resources Development Acts (WRDAs). WRDAs authorize the study or construction of new projects, or modify existing projects. WRDA legislation is cumulative, and each WRDA builds on or amends prior WRDAs.

Historically WRDA reauthorization legislation had been passed every two years, but recently there have been larger gaps between WRDAs. The most recent WRDA was passed in 2014 (the previous WRDA was in 2007). WRDA authorization is typically a two-step process, first requiring Congress to authorize a particular project, and subsequently to appropriate funding for such projects. Unfortunately, only a small fraction of the flood infrastructure projects that begin through the Army Corps' Civil Works review process are ultimately authorized, funded, and constructed.

In the past, WRDA bills would name and authorize funding for specific projects (also known as "earmarks"). Since 2007, however, the House has banned earmarks, requiring that future WRDA bills develop other methods for identifying and prioritizing funding for water resources projects.

Over the past decade, local interests have increasingly decided not to wait for the federal government to authorize and appropriate funding for water resources projects. Local entities have instead moved forward to fund local projects with the promise that if the federal government authorizes the project later, the locals would get credit for the non-federal share of the cost of the federal project. Particularly in California's Central Valley — where local entities in and around Sacramento have moved ahead to fund and build local projects for flood protection — authorization through WRDA has taken on increased importance. In Washington State, by comparison, funding comes increasingly from local property taxes through Flood Control Zone Districts. These Zones implement a novel and effective partnership between the Washington State Department of Ecology and The Nature Conservancy known as "Floodplains by Design."

National Flood Insurance Program Annual Year-End Outstanding Debt to Treasury, Fiscal Years 1995–2017



Adapted from GAO Report to Congress
"*Flood Insurance: Comprehensive Reform Could Improve Solvency and Enhance Resilience*"
GAO-17-425 — April 2017

Floodplains

ESA Issues

ESA Litigation

Documentation of Compliance

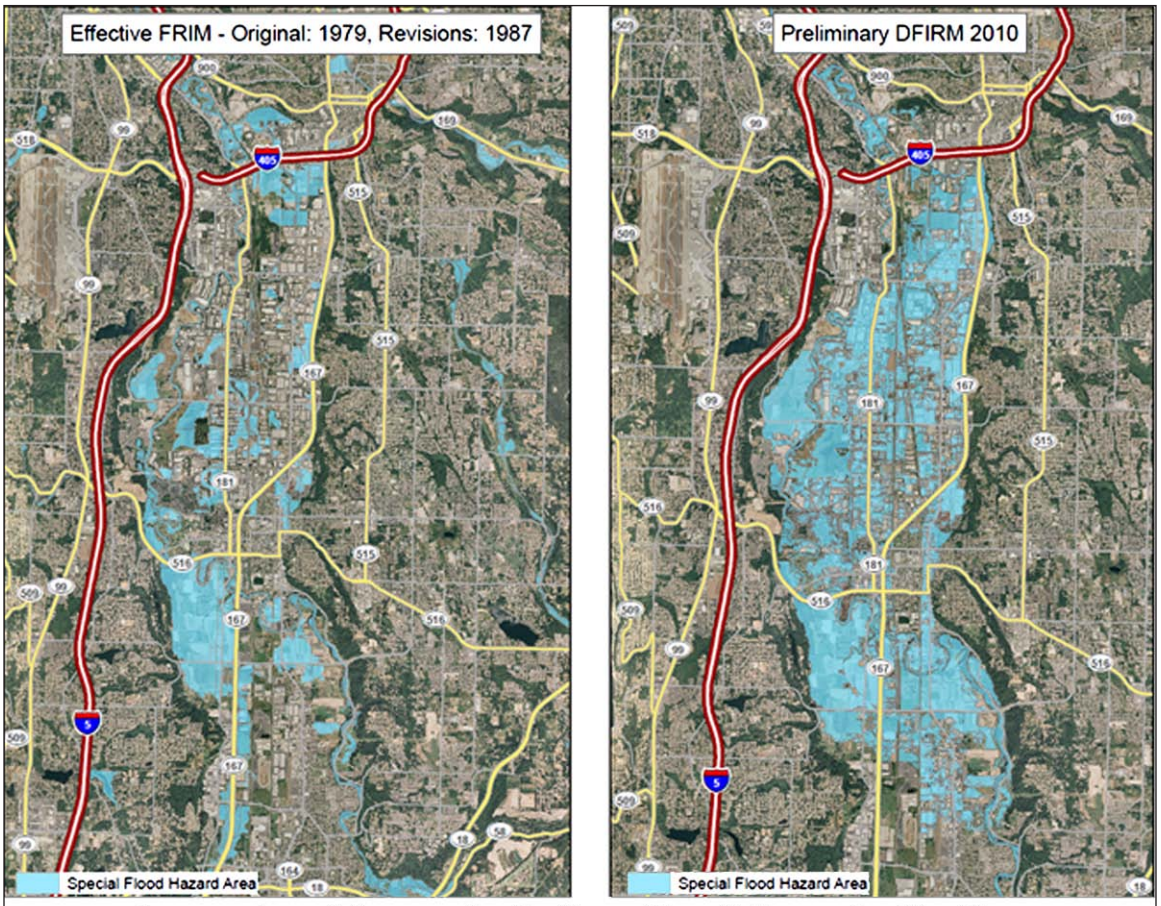
Flood Insurance Rate Maps

FEMA's Obligations Under the Endangered Species Act

Over the last two decades, FEMA has come under fire by numerous environmental groups for not considering the effect of the NFIP on certain species listed as threatened or endangered under the federal Endangered Species Act (ESA). The purpose of the ESA is to ensure that federal agencies and departments use their authorities to protect and conserve endangered and threatened species and their critical habitat. Section 7 of the ESA requires that federal agencies prevent or modify any projects authorized, funded, or carried out by the agencies that are "likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of critical habitat of such species."

FEMA has been sued in Washington, Oregon, and California for failing to consider the effects of the NFIP on: endangered salmon; Orca ("killer whales"); and other anadromous (ocean-going) species. In both Washington and Oregon, those lawsuits resulted in the National Marine Fisheries Service issuing Biological Opinions under the ESA directing FEMA to substantially change the way it operates the NFIP in those states. [For more information regarding the Washington and Oregon NFIP Biological Opinions, please *see* Lawrence and Mandell-Rice, TWR #152, *NFIP: Oregon Communities and Developers Face Significantly Heightened Standards following ESA Consultation on the National Flood Insurance Program* (Oct. 15, 2016)].

More recently, FEMA issued a nationwide programmatic Biological Evaluation (November 2016) pursuant to the ESA in which FEMA concluded that its implementation of the NFIP had no effect on threatened and endangered species or their designated critical habitat. FEMA nevertheless appears poised to change its implementation of the NFIP to require local governments to "obtain and maintain documentation of compliance with the ESA" as a condition of issuing any development permit within the SFHA, and requiring local communities to document compliance with the ESA as a condition of approving any proposal to change a floodplain map. *See* FEMA, *National Flood Insurance Program Final Nationwide Programmatic Environmental Impact Statement*, (Sept. 2017).



A comparison of the maps for the Green River Valley south of Seattle.
On the left is from the 1990s and reflects FEMA assuming the levees met accreditation standards. The second is the DFIRM (digital rate map) produced by FEMA in 2010 without that assumption. Adapted from FEMA sources.

Floodplains

Expanded Boundaries

Increasing Regulation

Conclusion

Over the last decade, the National Flood Insurance Program, as well as state and local regulations, have been continuously changing the way floodplain areas may be utilized. Ongoing floodplain mapping efforts are expanding the boundaries of established floodplains while at the same time the applicable regulations are becoming more restrictive and flood insurance rates are climbing. On December 8th, your authors will be co-chairing a seminar covering the latest developments in the laws and regulations controlling floodplains, including changes to the way that FEMA and other federal agencies are mapping floodplain areas, the evolving integration of the Endangered Species Act into the National Flood Insurance Program, and how some western states are integrating these changes into their own local regulatory programs.

Please join us in Seattle on December 8th for an all-day seminar called "*Navigating Floodplains and Flood Risk in the Northwest*" (*see* www.theseminargroup.net/seminardetl.aspx?id=17.FldwA).

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WATER: A FUNDAMENTAL RIGHT

CONSTITUTIONALITY OF THE PRIOR APPROPRIATION DOCTRINE

by James H. Davenport, Attorney, JHDavenport LLC, (Buena, WA)

Equal Protection

Time-Based Classification

Equal Protection

Senior User's Prerogative

Protection Denied?

Exempt Wells v. Instream Rights

14th Amendment

Dynamic Application

Introduction

In the American West, access to water is managed primarily through the "prior appropriation doctrine." The core principle of this doctrine is "first in time is first in right" — whereby prioritized rights to water use are determined based on how early a water use was initiated. In this way, the doctrine prioritizes competing uses of water based on classification in time. Statutes and constitutions in 18 states — affecting more than 110 million people in 2014 (more than 35.7% of the US population) — incorporate the doctrine.

This article examines how the prior appropriation doctrine's time-based classification system may deny some citizens the equal protection of the law, violating the Equal Protection Clause of the Fourteenth Amendment of the US Constitution. While prior appropriation is well entrenched throughout the American West, Supreme Court Justice Kennedy has noted, "…in interpreting the Equal Protection Clause, the Court has recognized that new insights and societal understandings can reveal unjustified inequality within our most fundamental institutions that once passed unnoticed and unchallenged." *Obergefell v. Hodges*, 576 U.S.___, 135 S. Ct. 2071 (2015), *Slip Op*. at 20.

If a senior water right holder using water for agricultural or environmental purposes prevents a newer water right from using water for domestic purposes, has the latter been denied the equal protection of the law? If a senior agricultural water right holder prevents a junior agricultural water right holder from using water, or establishing a new right — the farmers growing the same crops in the same soil and delivering their crops to the same market — has the latter been denied the equal protection of the law?

Such questions are already arising in Washington State. There, the Court of Appeals ruled in its 2016 *Fox* decision, that the well on the Fox' property, "despite being exempt from the water permit requirement, is not an adequate water supply for purposes of the building permit statute because the well is subject to senior water rights — namely, the 2001 instream flow rule for the Skagit River. We conclude that a permit-exempt well under *RCW 90.44.050* is subject to the prior appropriation doctrine and therefore may be limited by senior water rights, including the instream flow rule. Accordingly, because the Foxes' well may be interrupted, water is not legally available for purposes of their building permit application." *Fox v. Skagit County, et al.*, 193 Wn. App. 254, 259, 372 P. 3d 784, (Division 1, April 11, 2016).

Did the prior appropriation doctrine deny the Foxes the equal protection of the law? Do the Washington Supreme Court's other decisions — involving the doctrine's protection of administratively-established instream flows and who should apply the doctrine to determine whether water is "legally available" — do the same? *See References* - Recent Washington Supreme Court Decisions (below).

It may be time to question the sanctity of "first in time is first in right."

The Equal Protection Clause

Section 1 of the Fourteenth Amendment to the United States Constitution, provides:

> All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the state wherein they reside. No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; *nor shall any state* deprive any person of life, liberty, or property, without due process of law; *nor deny to any person within its jurisdiction the equal protection of the laws*. (emphasis added)

This constitutional protection is applied initially by US District Courts, under 42 U.S.C. §1983, and ultimately by the US Supreme Court. That Court's equal protection jurisprudence is dynamic, responding to meet the needs of the times. Citing the changed attitudes of social order between *Plessy v. Ferguson* in 1896 and *Brown v. Board of Education* in 1954, the US Supreme Court pointed out that:

> …the Equal Protection Clause is not shackled to the political theory of a particular era. In determining what lines are unconstitutionally discriminatory, we have never been confined to historic notions of equality, any more than we have restricted due process to a fixed catalogue of what was at a given time deemed to be the limits of fundamental rights. (citation omitted). Notions of what constitutes equal treatment for purposes of the Equal Protection Clause do change.

Harper v. Virginia Board of Elections, 383 U.S. 663, 669 (1966). *See also, Obergefell v. Hodges*, 576 U.S. ___, 135 S. Ct. 2584 (2015).

Equal Protection

Constitutional Exposure

Rights of Use

"Prior Appropriation"

Riparian Rights

Correlative Rights

"Fee" Interest

Constitutional Preclusion

Constitutionality

Law's Purpose

"Fundamental Interest" (Strict Scrutiny)

"Rational Basis"

State statutes based on the prior appropriation doctrine were forged in an era when water availability went largely unquestioned. This is hardly the case any longer. Population growth, growth management, interconnectivity of surface and groundwater, and limited water supply generally are now colliding with the prior appropriation doctrine. It would be advantageous to think through the problem before the collision becomes a catastrophe. It is time for the courts to address the constitutionality of statutes incorporating prior appropriation.

> "While neither the antiquity of a practice nor the fact of steadfast legislative and judicial adherence to it through the centuries insulates it from constitutional attack, these factors should be weighed in the balance" and "[t]he need to be open to reassessment of ancient practices other than those explicitly mandated by the Constitution."

William v. Illinois, 399 U.S. 235, 239 (1970).

The Prior Appropriation Doctrine

Water rights are rights to use water for domestic and other economic purposes. These include rights to use water on land where the source is available on or adjacent to the land, and rights to use water on land remote from the source.

"Prior appropriation" is the name of the attribute of the appropriative water right that permits senior appropriators to compel junior appropriators to stop using water until the senior user is able to use *all* of his/her water right. It is this attribute that raises the constitutional problem.

Statutory rights to appropriate and use water are distinguishable from common law "riparian" or "groundwater" rights. Riparian property is next to, or on, the banks of a river or other surface water supply. ("Littoral" property lies next to a surface water lake.) The "riparian doctrine" recognizes a riparian property owner's right to use water flowing past the property. Common law groundwater rights include the property owner's right to use a reasonable amount of water beneath his or her property. The right is "correlative" with other properties' groundwater rights, i.e. landowners are limited to a reasonable share of the common source of groundwater, in some cases based on the amount of land owned by each. Both common law riparian and groundwater rights go along with (are "incident to") the ownership of the property. They are part of the "fee" interest of the property. "The riparian right is a right of private property, vested exclusively in the owner of the abutting land for use only on that land; and it is not of a political nature." Hutchins, Wells A., *Water Rights Laws in the Nineteen Western States*, U.S. Depart. of Agriculture, 1971, p. 155, citing *San Bernardino v. Riverside*, 186 Cal. 7, 198 Pac. 784 (1921) and *Antioch v. Williams Irr. Dist*., 188 Cal. 451, 205 Pac. 688 (1922).

By 1890, the right of appropriation was established in the constitutions of Colorado, Idaho, and Wyoming and was adopted by the legislatures of all the western states. Colorado's Constitution prohibits any diversion of water (without distinction as to right) by anyone other than those who possess the prior rights to the full extent of the water supply. Art. XVI, §6. The class of latecomers is constitutionally precluded from enjoying the right. The same is true in Idaho. "The right to divert and appropriate the unappropriated waters of any natural stream to beneficial uses, shall never be denied... ." Art. XV §3. The necessary corollary is that there is no right for non-right holders in waters that have been fully appropriated. In the "progressive" era of the early Twentieth Century, the states adopted more comprehensive water codes incorporating the prior appropriation doctrine

The Supreme Court's Two-Tiered Application of the Equal Protection Clause

Whether a state law is constitutional under the Equal Protection Clause depends upon judicial scrutiny of the relationship between the class of persons or rights subject to the law's mandate and the governmental purpose the law is intended to pursue. The Court uses two tests to determine whether the class established by the law violates the Equal Protection Clause.

The first test is used when a "fundamental interest" is involved. If it is, judicial scrutiny is "strict." The state's interest must be compelling and the classification's definition must be the narrowest possible to accomplish the state's objective. If not, the classification is "suspect" or "wholly arbitrary," and a violation of the Equal Protection Clause.

Where the relationship between classification and purpose is colorable, and there is no fundamental interest involved, judicial scrutiny is more relaxed. [Editor's Note: "colorable" means a open to a plausible legal claim — i.e., a claim strong enough to have a reasonable chance of being valid if the legal basis is generally correct.] In the absence of fundamental interest, judicial scrutiny evaluates only whether there is a "rational basis" for the classification's definition. If the relationship is not rational, the classification is "invidious" or "arbitrary," and a violation of the Equal Protection Clause.

There are more than 56 US Supreme Court cases applying the Equal Protection Clause, with at least 27 of them being "fundamental right/strict scrutiny" cases. The balance are "rational basis" cases. When these cases are considered, it appears that "first in time is first in right" fails *both* tests.

Equal Protection

Strict Scrutiny

Compelling Interest

Domestic Use Precluded

Fundamental Rights

Water Fundamental

Human Right

Water Provision Requirement

Over-Appropriation

Deference

Strict Scrutiny

"Strict scrutiny" first establishes whether a fundamental right is involved. If so, then the court asks whether a compelling state interest is involved. Then it inquires whether the statutory classifications or distinctions involved in the state's enactment are necessary to promote that interest. The court examines the extent of the particular enactment's interference with the fundamental right. It examines whether the state's interest is, in fact, compelling. It examines whether the state's interests and objectives are, in fact, served by the enactment's classifications. It questions whether less drastic, or more precise, means exist to realize the same state objectives.

An interest is compelling if it relates to something necessary or crucial, such as national security, preserving large numbers of lives, or promoting explicit constitutional rights or protections. A law or policy is "narrowly tailored" if it avoids including more persons in the classification than are necessary to achieve realization of the compelling state interest and addresses the essential aspects of that compelling interest. If it does not, it is "overbroad."

The Right to Water is Fundamental

The constitutional question is most profound where the domestic use of water is precluded by the prior appropriation doctrine's time-based water right priority system. Without water, there is no life. Liberty means nothing. Happiness cannot be pursued. "Life, liberty, and the pursuit of happiness" are "inalienable" rights according to the Declaration of Independence. Certainly the right to water, necessary for the availability of all three of these rights, is also "inalienable." If "inalienable," the right to water is axiomatically "fundamental." The constitutional question is most profound where the domestic use of water is precluded by prior appropriation's time-based priority system.

In order to determine whether a right is fundamental, the Court may search for the source, nature, and status of the right or interest that has allegedly been encroached upon by the regulation at issue. Is it God given, expressly granted by the US Constitution, Bill of Rights, Declaration of Independence, recognized by the common law, or a traditional or modern societal value? The US Supreme Court has recognized a number of fundamental rights, often premised upon their nexus to "life, liberty and the pursuit of happiness." These include the right to vote, the right to associate, the right to racial equality, the right to privacy, the right to practice your religion, the right to work for a living, the right to marry, the right to procreate — a "human right" basic to perpetuation of the human race, the right of parents to direct the upbringing of their children, the right to interstate travel, and the right to possess and bear arms for personal self-defense.

You can live without voting; you can live without associating; you can live without racial equality; you can live without privacy; you can live without religion, marriage, procreation, and child rearing; you can live without interstate travel; and you can live without bearing arms. But you cannot live without water. Nothing is more fundamental.

California has at least partially addressed this issue. That state adopted a statute in 2013 that declared that the right to domestic water was a human right. *See* California Water Code, Section 106 (a): "It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."

The Pacific Institute, a non-governmental organization, states it correctly: "Governments, international aid agencies, non-governmental organizations, and local communities should work to provide all humans with a basic water requirement — and to guarantee that water as a human right. By acknowledging a human right to water and expressing the willingness to meet this right for those currently deprived of it, the water community would have a useful tool for addressing one of the most fundamental failures of 20th century development." *See* http://pacinst.org/issues/the-human-right-to-water/recognizing-the-human-right-to-water/.

One "fundamental failure" is the inadequacy of the water right distribution approaches put in place by western state legislatures in the early Twentieth Century to address limited water supply. The prior appropriation doctrine has often created more rights to water use than there was water supply. Moreover, once the supply began to be known to be limited, the system precluded the issuance of any new rights, even for domestic use. Can a time-based priority system provide the equal protection of the laws to later domestic water rights seekers?

The right to use water for domestic purposes is a fundamental right. Domestic use has been granted some deference over the right to use water for economic purposes both in statute and court rulings, but explicit prioritization is not universal. *See Department of Ecology v. Abbott,* 103 Wn.2d 686, 694 P.2d 1071 (1985) (Matter of Deadman Creek Drainage Basin, Spokane County); *Huberman v. Sander,* 166 Wash. 453, 7 P.2d 563 (1932). [Additional citations omitted.]

Equal Protection

Economic Purpose

It is arguable that the right to use water solely for economic purposes is also fundamental. Indeed, it may have substantial relevance to liberty and pursuit of happiness. It is certainly advantageous to wealth, perhaps even economic subsistence — but does not rise to the level of essential-for-life.

What is the Compelling State Interest that Justifies Unequal Treatment?

It is not the means by which water rights may be established that is the issue. Rather, it is: 1) *the attribute of the statutory right — the right to divest or preclude a similarly situated subsequent (junior) right holder of the same benefit*; and 2) *the classification that defines who may divert water* — which must be justified by the compelling state interest.

Exclusion Necessary?

If the right to water is a fundamental interest, then the classification *excluding* some persons from obtaining that right must be necessary to promote a compelling state interest. Thus is posed an essential question: what is the state's interest or purpose in establishing the time-based classifications implemented by the prior appropriation doctrine?

Law's Objective

Legislative purpose in the context of equal protection analysis has been described as the "goal" or "objective" of a law — i.e., what the law principally wishes to bring about. Sometimes the purpose may be expressly stated in statute. Sometimes the purpose must be divined either from legislative intent, the law's operation, or the preceding common law history. Sometimes purpose can be divined through etymology (the history and meaning of the words used), through context (how words are used in a sentence or paragraph) or through inclusionary and exclusionary examples.

Unfortunately, neither the states' legislatures nor the courts have clearly defined the interest intended to be served by the prior appropriation doctrine. However, several of the more commonally mentioned motivations include the following:

Arid Lands

"Make the Deserts Green"

The historical development of the prior appropriation doctrine, with its first institution in arid lands, and the ability to remove water from the source for transportation and use on remote, otherwise dry lands, suggests that the states' intention was to make dry lands arable — to "make the deserts green." Throughout the West, the early "codes were limited to dealing with irrigation." (Beck, §11.01). More generally, "[I]n the development of the appropriation doctrine in the Western States, diversions of water for mining, domestic and irrigation purposes were commonly made" through appropriation (Hutchins, Vol. 1, p. 227). That the appropriation doctrine has been adopted throughout the arid states, but not in the less arid states, and that it has been called the "arid states doctrine," suggests that this may be the state's primary interest in the doctrine. It is, in short, a legal convenience through which to enable movement of water from where it is to where it is not.

Beneficial Uses

Economic Benefit

The "beneficial use" requirement necessary to perfect the right to use appropriated water suggests that the states' purpose may be to generate economic benefit from water use. Alternatively, the requirement may merely be a condition precedent to the right to move water to arid lands. Western states' statutes generally do not define "beneficial use" beyond listing examples and are silent whether that list is exclusive or merely suggestive of a more general attribute. Reading the early cases (e.g., water used for milling, mining, farming), one clearly discovers that the common attribute of "beneficial" is economic benefit. Under all the early cases, water was used beneficially when it was put to work. Grinding flour, turning a wheel, producing energy were all "beneficial uses" in the early riparian use cases. Moving earth in mining and farming arid ground were beneficial uses in the early appropriation cases. Only later did statutory amendments suggest non-economic uses (e.g., water held in-stream for environmental purpose, fishery enhancement, recreation). The courts have not used the word "beneficial" in the water context to mean beneficial to the common good, although the common good was generally regarded to be enhanced during the Nineteenth Century when personal economic gain occurred.

Non-Economic Issues

Although domestic use is typically added by statute to the definition of "beneficial use," it is for the most part not an economic use. Sustenance of life is the object with domestic use, rather than economic benefit. The doctrine's greater deference to economic benefit indicates that the states' compelling interest has not been enhancement of domestic water use.

Economic Stability

Certainty

The time-based priority element of the doctrine suggests that the state's interest may be to establish certainty as between rights, as in the nature of property recordation or lien priorities in commercial law, or simply to protect those vested interests and the economic stability founded on vested rights.

State Interest Is Not Sufficiently Compelling to Justify the Classification's Discrimination

Equal Protection

Interference Justified?

The question is: are any of these state interests so compelling as to justify interference with the fundamental right? The US Supreme Court's search for state interests sufficiently compelling to justify interference with fundamental rights in the marriage, race, indigence, voting rights, and religion cases compel the conclusion that states' interest in establishing classifications of water rights — effectively prohibiting the use of water for domestic purposes by some later users — is not sufficiently compelling to interfere with the fundamental right to water.

Economic betterment or "beneficial use" alone is not a justification if the classification that accomplishes it is defective in its own right. Beneficial use could have been stated as justification for the classification of slavery before the Thirteenth and Fourteenth Amendments were adopted. The question is whether the human rights of life, liberty, and happiness can be compromised to further an economic purpose.

Individual Autonomy

Most recently, in *Obergefell v. Hodges*, 576 U.S.___, 135 S. Ct. 2071 (2015), the Supreme Court held that there could be no state interest so compelling as to justify a legal structure that did not accord respect to fundamental rights "central to individual dignity and autonomy." In that case, it was the right to marry whom one pleases at issue. Justice Kennedy said for the Court:

> Under the Due Process Clause of the Fourteenth Amendment, no State shall "deprive any person of life, liberty, or property, without due process of law." The fundamental liberties protected by this Clause include most of the rights enumerated in the Bill of Rights. *See Duncan v. Louisiana*, 391 U.S. 145, 147-149 (1968). In addition these liberties extend to certain personal choices central to individual dignity and automomy, including intimate choices that define personal identify and beliefs.

Slip Op. at 10 (citations omitted).

New Insights

The right to water would seem, if anything, more central to the same dignity and autonomy. Again, Justice Kennedy stated:

> The nature of injustice is that we may not always see it in our own times. The generations that wrote and ratified the Bill of Rights and the Fourteenth Amendment did not presume to know the extent of freedom in all of its dimensions, and so they entrusted to future generations a charter protecting the right of all persons to enjoy liberty as we learn its meaning. When new insight reveals discord between the Constitution's central protections and a received legal stricture, a claim to liberty must be addressed.

Id. at 11.

Existence & Survival

A number of US Supreme Court marriage/gender rulings evolved out of *Loving v. Virginia*, 388 U.S. 1 (1967), an inter-racial marriage case (*see* e.g., *J.E.B. v. Alabama ex rel. T.B.*, 511 U.S. 127, 156 (1994) and *United States v. Windsor*, 570 U.S. 12 (2013)). In *Loving*, the Court found that marriage was "fundamental to our very existence and survival." *Id*. at 12. Access to water is obviously more "fundamental to our very existence and survival" than marriage. The Court said that "[t]he freedom to marry has long been recognized as one of the vital personal rights essential to the orderly pursuit of happiness by free men." *Id*. Cannot the same be said for water?

Permissible Objective

Loving illustrates the point that illegitimate purposes cannot be legitimately used as a justification for classifications designed to achieve the same illegitimate purpose. States' prior appropriation statutes, likewise, must be premised upon a permissible objective other than the discrimination that its time-based prioritization classification system creates.

Deprivation of Water Use

The Supreme Court in *Brown v. Board of Education*, 347 U.S. 483 (1954), found the racial classification inherent in "separate but equal" education was clearly a deprivation of the right to educational opportunity and a violation of the Equal Protection Clause. The Court was so certain of the violation that it didn't even question whether the state interest was compelling. Can there be any compelling interest that would justify deprivation of the right to use water?

Burden Imposed

The declared purposes of the legislative or judicial fiat are not the only indicator of equal protection problems. The implicit "nature of the issue" can be indicative of purpose. In *Washington v. Seattle School Dist. No. 1*, 458 U.S. 457, 458 (1982), the Supreme Court found that Washington's Initiative 350 (which did not use the word "race" at all) violated the Equal Protection Clause because it "uses the racial nature of an issue to define the governmental decisionmaking structure, thus imposing substantial and unique burdens on racial minorities." Likewise, the time-priority attribute of the prior appropriation doctrine defines the governmental decision making structure, thus imposing substantial and unique burdens on later water users. Whereas Initiative 350's discrimination was implicit, prior appropriation statutes are explicit. ("[A]s between appropriations, the first in time shall be the first in right." RCW 90.03.010).)

Equal Protection

Prior Appropriation Purpose

Time-Based

Burden Created

"Property Interest"

Durational Requirements

Racial Implication

Denial of Fundamental Rights

Equal Treatment

In an affirmative action case, *Fisher v. University of Texas*, 570 U.S. ___ (*Fisher I*), 133 S. Ct. 2411 (2016), the Court observed that "[S]trict scrutiny requires the university to demonstrate with clarity that its 'purpose or interest is both constitutionally permissible and substantial, and that its use of the classification is necessary...to the accomplishment of its purpose.'" The case for prior appropriation has not been demonstrated with clarity to justify the use of time-based classifications or to define the purpose of the doctrine. There is the requirement that appropriative uses be for beneficial — i.e., economic — purposes, but this requirement is distinct from the purpose of the time element.

Strict scrutiny requires state legislatures to demonstrate with clarity that their purpose in adopting prior appropriation, and applying it to any or all water supplies (surface or groundwater):

- is both constitutionally permissible and substantial; and
- that its use of the classification is necessary to accomplish its purpose.

In *Oregon v. Mitchell*, 400 U.S. 112 (1970), the Court found that a state-law distinction between long and short term residents' eligibility for voting — laws also made illegal by the Voting Rights Act — violated the Equal Protection Clause because they discriminated between classes of people *based on time* (duration of residence). Similarly, does the interest of utilization of arid lands or general economic betterment have any relation to the time a water right was established?

In *Williams v. Rhodes*, 393 U.S. 23, 39 (1968), the Court found that Ohio's creation of complex electoral laws, including distinctions between electoral processes, created an "invidious discrimination," as they would make it difficult for new political parties to vie against established ones. Ohio argued that the processes themselves were the compelling interest. The Court held they were not sufficiently compelling to justify laws creating substantially unequal burdens on the rights to vote and to associate. The distinctions violated the Equal Protection Clause. Prior appropriation also creates "substantially unequal burdens" on junior and senior rights holders, and even more substantial ones on those late arrivals for whom there is no water legally available.

In *Kramer v. Union Free School District No. 15*, 395 U.S. 621, 631 (1969), the Court found that the "property interest" was not sufficiently compelling to justify a classification that excluded non-property owners. State interests in protecting the vested rights of prior appropriators of water — to the exclusion of later economic or domestic water users — are also not sufficiently compelling to justify the broad, exclusionary classification of the priority system.

In *Dunn v. Blumstein*, 405 U.S. 330 (1972), the Court found the right to vote fundamental and that exclusions from general classifications must be necessary to promote a compelling state interest. The Court found that Kentucky's purposes of "purity of the ballot box" (protecting it against dual voting and colonization) and insuring knowledgeable voters were not sufficiently compelling to justify durational residence laws dividing residents into two classes of old residents and new residents. Time-based classifications, like that imposed by prior appropriation, penalize persons who arrive later. The durational residency requirement in *Dunn* is directly analogous to the time factor integrated within the prior appropriation system — i.e., state "interests" had the consequence of entitling some and disentitling others.

It also cannot be said that the prior appropriation doctrine has no racial implication. The makeup of the American population is changing due to ethnic migration. Recent migrants, "newcomers," will not be able to realize the same rights as can long-established Americans through their own self actualization, unless the newcomers can enrich the early settlers through outright purchase of senior rights. As the passage of time exacerbates this inequality, the asset value of senior rights, traded in a free market, becomes more dear.

Taking these cases and others into account, it is fair to conclude that the US Supreme Court would likely find that the right to water is a fundamental right and that States' prior appropriation laws do not involve a sufficiently compelling interest to justify their time-based classification and priority system. The system can deny later users their fundamental right to water.

Rational Basis Analysis

No Rational Basis for the Time-Based Classification of Prior Appropriation Statutes

Even if the right to water were not fundamental, there is no rational basis for a time-based classification to realize a state's interest in effective water supply management. The question, again, is whether a classification established by a state's legal infrastructure, either itself or by its effect, is rationally related to that infrastructure's purpose. "But the classification must be reasonable, not arbitrary, and must rest upon some ground of difference having a fair and substantial relation to the object of the legislation, so that all persons similarly circumstanced shall be treated alike." *F.S. Royster Guano Co. v. Virginia*, 253 U.S. 412, 415 (1920).

Equal Protection

> The equal protection clause does not detract from the right of the state justly to exert its taxing power or prevent it from adjusting its legislation to differences in situation or forbid classification in that connection, "but it does require that the classification be not arbitrary, but based on a real and substantial difference having a reasonable relation to the subject of the particular legislation."

Quaker City Cab Co., v. Pennsylvania, 277 U.S. 389, 400 (1928), quoting *Power Co. v. Saunders*, 274 U.S. 490, 493 (1927).

Time Factor

Can a statute pass muster, under rational basis analysis, that permits one water user to obtain water when it is in short supply, but stop another water user — even though their water needs are the same? The water users' aridity, crops, needs, and economic circumstances may be the same. Their only distinguishing characteristic is the date their rights were established. Can a statute that permits the holder of prior-established rights to preclude the grant of similar rights to later applicants — particularly domestic users of water — be upheld under the rational basis analysis? Is the time factor rationally related to natural resource management?

Rational Basis Analysis

Traditional rational basis analysis exercises three main types of judicial formulae, all with the objective of determining whether the differences called out by the law relate to the legislative purpose:

1) there must be a fair and substantial relationship or a "reasonable and just relationship" or a proper relationship between legislative purpose and classification;
2) the legislative classifications must be rationally related to the permissible legislative objectives or be relevant or reasonable; and
3) the classificatory distinctions must have some basis in practical experience and must fall short of "invidious discrimination." In other words, was the classification made on the basis of criteria wholly unrelated to the objective of the statute, or does the classification rest on grounds wholly irrelevant to the achievement of the state's objective?

Case Types

Rational basis cases sort into three types (*see* References below for case citations):

1) those dealing with state interests approbrious (illegitimate) on their face (closely affiliated with the fundamental rights cases);
2) those where the purpose is legitimate and clear. This type falls into three groups dealing with:
   a) judicial administration;
   b) tax administration; and
   c) business and commerce administration ; and
3) those where the state's purpose is unknown or unclear.

Evaluation of a state's prior appropriation regime in the context of all three of these types and groups indicates that there is no rational relationship between the classifications and the purpose of the prior appropriation system.

Vested Interests

Approbrious Purpose Cases

Considering the approbrious (illegitimate) purpose cases, the question becomes whether the preservation of existing, vested interests — if that is the purpose of the prior appropriation doctrine — is an approbrious purpose. Protection of vested interests certainly is a common effect of legislation, one normally promoted by those same interests. The influence of the voting rights cases, however, suggests that protection of classes including property ownership alone would not likely pass muster as a rational strategy to manage public water resources.

Time of Creation

Arguably, vested interests make positive contributions to the general economic well-being, if that is the purpose of the prior appropriation doctrine. But the same is true of both old and new interests, or those interests yet to be developed. In fact, some older vested uses may no longer be economically advantageous. Time of a right's creation is not rationally connected to its contribution to economic well-being.

The value of protecting vested rights is simply not logically connected to the objective of the equitable, practical, or intelligent distribution of natural resources. Protection of vested interests is also in direct contravention of the idea of equal distribution of rights, inherent in the Equal Protection Clause.

Denying New Rights

Clear Purpose Cases

Considering the clear purpose cases, the judicial administration cases suggest a rigorous application of the rational basis approach, closer to fundamental rights/strict scrutiny thinking. These cases intimate that the Supreme Court would look skeptically upon the validity of the prior appropriation system's effect of denying new water rights for domestic use. Both the tax administration cases and business and economic regulation cases suggest that the Equal Protection Clause guarantees an equal/level economic playing field. Arbitrary legal classifications interfere with that. Generally, these cases evaluate whether different classes suffer different economic consequences due to the law in question. Under this thinking, the classifications created under the prior appropriation system would seem to violate the Equal Protection Clause as they create different economic effects upon otherwise equivalent water users.

Level Playing Field

Equal Protection

Statutes' Purposes

Similar Situations - Similar Treatment

Unclear Purpose

Time Element Discrimination

Absence of Reason

Reasonable Basis?

Unknown or Unclear Purpose Cases

Considering the unclear purpose cases, the difficulty of ascertaining the purpose of a state's prior appropriation system makes it likely that the Court would find that its classifications violate the Equal Protection Clause.

The Supreme Court's more traditional "rational basis" analysis therefore brings us back to the need to ascertain the *purpose* of western states' prior appropriation statutes. Traditional equal protection analysis would ask whether the classification established by the legislation rationally pursues its purpose. Purposes outlawed by the Constitution fail notwithstanding the relationship between purpose and classification. Taking of property without compensation, for example, is an outlawed purpose whatever the means adopted. A classification which takes one class of property, but not another, is a suspect classification.

> The basic rule developed by the Supreme Court in the area of constitutional equality is that 'the Equal Protection Clause does not forbid discrimination with respect to things that are different' but only demands that similar things or persons must be treated similarly. '(W)hat the equal protection of the laws requires is equality of burdens upon those in like situation or condition.'

Polyvios Polyviou, *Equal Protection of the Laws*, p. 681 (quoting respectively, Stone, J., *Puget Sound Power & Light Co. v. Seattle*, 291 U.S. 619, 624 (1934), and Day, J., *South Carolina ex rel. Pheonix Mut. Life Ins. Co. v. McMaster*, 237 U.S. 63, 72-3 (1915). "The purpose of an act must be found in its natural operation and effect... ." (citations omitted) *Truax v. Raich*, 239 U.S. 33 (1915).

The purpose of time classifications in natural resource management is unclear. Several rational basis cases deal with the situation where the state's purpose is unknown or unclear. Where no purpose is apparent, a classification is likely irrationally related to purpose. In a seminal rational basis case, *Mayflower Farms v. Ten Eyck*, 297 U.S. 266 (1936), the Court considered a classification directly analogous to the prior appropriation classification. A New York City law established a regulated price for milk. However, it also allowed certain milk dealers whose businesses commenced before a certain date to sell their milk at a lower price. As with prior appropriation, a time element discriminated between the classifications. A significant factor, upon which the Court relied in finding that the time-based classification violated the Equal Protection Clause, was the absence of any stated reason for the discrimination. Rather, the Court found:

> The question is whether the provision denying the benefit of the differential to all who embark in the business after April 10, 1933, works a discrimination which has no foundation in the circumstances of those engaging in the milk business in New York City, and is therefore so unreasonable as to deny appellant the equal protection of the laws in violation of the Fourteenth Amendment.
>
> The record discloses no reason for the discrimination. The report of the committee, pursuant to which the Milk Control Act was adopted, is silent on the subject. While the legislative history indicates that the differential provision was intended to preserve competitive conditions affecting the store trade in milk, it affords no clue to the genesis of the clause denying the benefit of the differential to those entering the business after April 10, 1933.

297 U.S. 266, 272.

In *Hartford Steam Boiler Inspection and Ins. Co. v. Harrison*, 301 U.S. 459 (1937), the Court dealt with a statute dealing with mutual insurance companies, that excluded stock insurance companies from the class. The statute permitted corporate action through salaried representatives, but precluded stock insurance companies from so acting. The Court cited the trial court ruling that this "act…sets up an arbitrary classification bearing no reasonable relationship to the subject matter of the legislation, and is discriminatory... ." *Id*. at 461. Again, the challenged classification served no apparent purpose.

> Despite the broad range of the state's discretion, it has a limit which must be maintained if the constitutional safeguard is not to be overthrown. Discriminations are not to be supported by mere fanciful conjecture. *Borden's Co. v. Baldwin*, 293 U.S. 194, 209. They cannot stand as reasonable if they offend the plain standards of common sense.
>
> It is idle to elaborate the differences between mutual and stock companies. These are manifest and admitted. But the statutory discrimination has no reasonable relation to these differences. We can discover no reasonable basis for permitting mutual insurance companies to act through salaried resident employees and exclude stock companies from the same privilege. If there were any such basis, it would have been discovered by the state courts. The trial court said there was none. Two Justices of the Supreme Court were of the same opinion. The prevailing opinion in that court fails to disclose any good reason for the discrimination.

301 U.S. 459, 462-463. The entirety of the Court's reasoning in this case is applicable to the prior appropriation doctrine.

Equal Protection

Objectives Not Addressed

Rational Relationships

"Grandfathering" Dismissed

Public Purpose v. Economic Interest

Unclear Purpose

Certainty

Tautological Classifications

Classifications Based on Time Are Not Reasonable

The classifications created by the prior appropriation doctrine are based solely on time. "First in time is first in right." Previously established "senior" rights are in the class, later established "junior" rights are excluded. Existing rights are included in the class, those not yet established are excluded. Throughout the West, there are no more water rights available in most situations. Prior appropriation classifications do not consider proximity to source water, amount of investment, nature of use, or any other particularly described purpose. It is difficult to reason that timeliness addresses the objectives of aridity, beneficial use, or efficiency.

Other classifications might have been more rational, e.g., "the most arid, the first in right," "the most economic benefit, the first in right," "the most efficient, the first in right," "the most proximate, the first in right," or the "most environmentally healthy, the first in right." Timeliness would seem to suggest preference for development of riparian lands, rather than remote arid lands, as they were settled earlier and easier to develop. Timeliness does not indicate whether any use is any more or less beneficial, is any more or less wasteful, or more advantageous to the current whim of society (e.g. environmental use, industrial use). Timeliness is *irrationally* related to the purpose of protecting the water supply for domestic sustenance. We all need water, notwithstanding when our right was established.

Presume for the moment that the purpose of the prior appropriation regime is to develop arid lands. Is that purpose served by creating a class whose rights were established earlier, and another class whose rights were developed later, or not yet created at all? Are those classes any more relevant to any other potential purpose of the prior appropriation regime?

Six of the US Supreme Court's equal protection cases address time-based classifications. All the challenged state actions in those cases were struck down by the Court. No time-based classification cases were found where such a classification was upheld.

In *Mayflower Park v. Ten Eyck*, the Court searched for a possible justification for the time-based discrimination, but could find none. The Court particularly dismissed statutory "grandfathering" as a legitimate purpose for the time-based classification:

> We are referred to a host of decisions to the effect that a regulatory law may be prospective in operation and may except from its sweep those presently engaged in the calling or activity to which it is directed. Examples are statutes licensing physicians and dentists which apply only to those entering the profession subsequent to the passage of the act and exempt those then in practice, or zoning laws which exempt existing buildings, or laws forbidding slaughterhouses within certain areas but excepting existing establishments. The challenged provision is unlike such laws, since, on its face, it is not a regulation of a business or an activity in the interest of, or for the protection of, the public, but an attempt to give an economic advantage to those engaged in a given business at an arbitrary date as against all those who enter the industry after that date. The appellees do not intimate that the classification bears any relation to the public health or welfare generally, that the provision will discourage monopoly, or that it was aimed at any abuse, cognizable by law, in the milk business. In the absence of any such showing, we have no right to conjure up possible situations which might justify the discrimination. The classification is arbitrary and unreasonable, and denies the appellant the equal protection of the law.

297 U.S. 266, 272-274 (1936).

The same can easily be said for prior appropriation statutes. Remember that *Mayflower Park* was an unclear purpose case. Its purpose could only be deduced from its statutorily-created classifications. Its purposes and classifications were tautological — (if A therefore B) = (if B therefore A). The classifications created certainty of income for one class of otherwise equivalently based market participants. In the water context, certainty is the only purpose for which time categorization has a plausibly rational relationship. *See* Davenport, J.H., *Nevada Water Law,* Colorado River Commission of Nevada, (2003), pp. 226, 227: "This need for certainty upon which to base capital investment is either expressed or implied in the older water cases, perhaps more in the 'first in time' element than the nature of use element of prior appropriation."

Certainty does enhance the economic benefit derived from exercising a vested right. But traditional equal protection analysis eschewed tautological purpose-classifications — where the classification was used to define the purpose. In such cases, rationality must be presumed and not questioned. Any classification would justify its purpose. All suspicious classifications, including those with nefarious, discriminatory, or other undesirable purposes, would be justified if coinciding classification and purpose constituted a "rational" relationship. Protection of vested interests; preference for the social mores of prior generations; preference for the economic conditions of a prior society; or preference for prior invested capital over yet-to-be invested capital would be justified under tautological classifications.

Equal Protection

Time-Based Distinctions

In *Oregon v. Mitchell*, the Supreme Court found fault with the distinction between long and short-term residents' eligibility for voting because it discriminated between classes of people based on time (duration of residence). In *Shapiro v. Thompson*, the unconstitutional classification was again residence time; the classification interfered with the welfare applicants' right to travel. In *Dunn v. Blumstein*, the Court again found durational residence laws violated the Equal Protection Clause because they divided residents into two classes, old residents and new residents. In *Memorial Hospital v. Maricopa County*, 415 U.S. 250 (1974), the Court found that Maricopa County's interest in maintaining the fiscal integrity of its free medical care program — by discouraging the influx of immigrants and in inhibiting the immigration of indigents generally — was not sufficiently compelling to justify a classification that excluded new residents (those later in arriving within the County) from eligibility for medical care. In *Schlesinger v. Wisconsin*, 270 U.S. 230 (1926) the Court found that differentiation of tax treatment on inter vivos transfers (those performed within six years of death versus those performed more than 6 years after death) violated the Equal Protection Clause.

Timeliness Arbitrary

Comparison of the classification of timeliness, as implemented by the prior appropriation doctrine and the classification of reasonable use, as inherent in the common law, illustrates the arbitrariness of the former classification.

Rational Relationships

Several cases where state laws passed muster under rational basis analysis are informative. In *Kadrmas v. Dickinson Public Schools*, 487 U.S. 450 (1988), the Supreme Court considered a statute that differentiated between organized and reorganized school districts. It found no violation of the Equal Protection Clause due to the distinction's relationship to the statute's purpose — encouragement of reorganization of thinly populated school districts. In *Lalli v. Lalli*, 439 U.S. 259, 265 (1978), the Court considered a statute that differentiated between legitimate children and illegitimate children: "Two state interests were proposed which the statute was said to foster: the encouragement of legitimate family relationships and the maintenance of an accurate and efficient method of disposing of an intestate decedent's property." The Court found these purposes worthy and rationally related to the statutory classification.

Irrational Classification

Conclusions and Recommendation

In sum, timeliness seems an irrational classification through which to pursue either the irrigation of arid lands or deriving economic benefit from the water resource. It begs the question whether such a classification can be consistent with modern objectives of making the greatest social utility of the resource. It cannot be forgotten that every person, every society, every societal sector must have water for basic human existence. There is a social need for economic interests in natural resources to *forego* claims in lieu of those held by the public good. Where the resource is unlimited, the legislation may be based on economics. But when the resource becomes limited and access to the resource is essential to life, then the legislation should be motivated by more than economics.

Limited Resource

Other Sources?

The fact that water may be made available through another source than one's own water right, e.g. bottled water, municipal supply, or captured rain water, is no defense to the equal protection problem. Compare the marriage cases (*Loving v. Virginia*, *Skinner v. Oklahoma*, *United States v. Windsor*, *Obergefell v. Hodges*). The fact that a same-gender couple had heterosexual marriage or a government sanctioned partnership agreement available to them did not cure the equal protection problem. The question is whether the right to water is fundamental — in which case the state interest must be compelling — or whether the classification is alone, on its face, rationally related to a legitimate statutory purpose.

Highest Value

The prior appropriation doctrine does not consider which uses of water are most valued by a contemporary society. Its time-based classification is not necessary, or rationally related, to farming of arid lands, environmental stewardship, conservation, growth management, or increasing the water supply. The limitation of that classification imposed upon domestic water use is a breach of a fundamental right and a denial of the equal protection of the laws.

"Reasonable" Use

Why need there be any priority system between rights at all? Under the common law's water law principles, equality of rights, opportunity, and use was the prevailing concept, not priority. Every water right was subject to the same use limitation: "reasonable" or "correlative" use. This equivalence concept still prevails throughout large portions of the US and the rest of the world. From a global perspective, appropriative water rights are the exception rather than the rule.

Attribute at Issue (Preclusion)

What would be the consequence of ruling that the prior appropriation doctrine violates the Equal Protection Clause? The question is not whether the legal entitlement to divert and use water has been legally and appropriately created or whether that entitlement should continue. Instead, the question is the extent of one attribute of the right. Should the right possess the attribute that its owner may preclude another's use of water merely because the other's entitlement was established later?

Equal Protection

Solutions

Domestic Preference v. Water Markets

Highest & Best Uses

What are the solutions or alternatives to this problem? It is probably better to address the problem legislatively than respond to judicial action. Repeal the time element of the prior appropriation doctrine. Leave existing rights in place. Leave in place existing agreements between rights holders as to their relative rights. Leave beneficial use in place as a standard corollary to waste, but repeal its use as a measure of volume. Rather, recognize the correlative rights limitations still arguably pertaining to common law (pre-statutory) rights and establish the same limitation for statutorily created rights. Repeal "use it or lose it." As to new rights, let them be established subject to the same correlative rights principle.

What will be the effect? As populations and demands increase, society at large will feel the burden. The burden, though, will be distributed by the reasonable use requirement — taking into account competitive demand, modern technology, and conservation. Individual water users will be compelled to exercise conservative water practices. Equality of rights will be restored.

In the alternative, establish by statute a clear domestic preference exempt from senior priorities. Another alternative — largely touted as a means to make the prior appropriation system work in a modern, more competitive environment — is that of water marketing, or "banking." That alternative, however, exacerbates the disparative effects of the prior appropriations doctrine's time classifications, by monetizing the senior right even when its utility value in the original place of use has fully amortized.

We know that surface waters are limited in volume. We also know, even though we cannot see beneath the ground's surface, that groundwater is likely connected to surface water in some hydraulic/ hydrogeologic manner and, therefore, the water stored in the ground is not itself unlimited. We would be better off if we put all users, and all holders of right, on a level playing field, each constrained by a reasonable or correlative use doctrine. This certainly would be better for sorting out future rights and would permit society to help determine the highest and best uses of water based on the priorities of a modern society.

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The preceding is a much abridged version of the original article. Additional information and case citations that provide much more detail are available from the author.

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References

Recent Washington Supreme Court Decisions:

See Swinomish Indian Tribal Community v. Washington State Dept. of Ecology, 178 Wn.2d 571, 311 P.3d 6 (2013); *Sara Foster v. Dept. of Ecology*, 184 Wn.2d 465, 362 P.3d 959 (2015); and *Kittitas County v. Eastern Washington Growth Management Hearings Board*, 172 Wn.2d 144, 256 P.3d 1193 (2011); *Whatcom County v. Western Washington Growth Management Hearings Bd.*, 186 Wn.2d 648, 381 P.3d 1 (2016) (*Hirst*); *see also, Rettkowski v. Dept. of Ecology*, 122 Wn.2d 219, 858 P.2d 232 (1993).

Rational Basis Cases:

1) those dealing with state interests approbrious on their face:
see Shapiro v. Thompson, 394 U.S. 618 (1969); *Romer v. Evans*, 517 U.S. 620 (1996); *Skinner v. State of Oklahoma, ex. rel. Williamson*, 316 U.S. 535 (1942);

2) those where the purpose is legitimate and clear:

a) judicial administration:
See Kentucky Finance Corp. v. Paramount Auto Exchange, 262 U.S. 544 (1923); *Power Manufacturing Co. v. Saunders*, 274 U.S. 490 (1927); *Levy v. Louisiana*, 391 U.S. 68 (1968); *Glona v. American Guarantee and Liability Ins. Co*. 391 U.S. 73 (1968), *Rinaldi v. Yeager*, 384 U.S. 305 (1966); *Douglas v. California*, 372 U.S. 353 (1963); *Gulf, Colorado & Santa Fe Railway Co. v. Ellis*, 165 U.S. 150 (1891); see also, *Atchison, Topeka & Santa Fe Railway Co. v. Vosburg*, 238 U.S. 56 (1915)

b) tax administration:
See Southern Railway Co. v. Greene, 215 U.S. 400 (1910); *Morey v. Dowd,* 354 U.S. 457 (1957); *F.S. Royster Guano Co. v. Virginia,* 253 U.S. 412, 415 (1920); *Louisville Gas & Electric Co. v. Coleman,* 277 U.S. 32, 37; *Sioux City Bridge v. Dakota County*, 260 U.S. 441 (1923); *Quaker City Cab Co. v. Pennsylvania*, 277 U.S. 389 (1928), *Schlesinger v. Wisconsin*, 270 U.S. 230 (1926); *Cumberland Coal Co. v. Board of Revision,* 284 U.S. 23 (1931); *Iowa-Des Moines Bank v. Bennett*, 284 U.S. 239 (1931)

c) business and commerce administration:
See Connolly v. Union Sewer Pipe Co., 184 U.S. 540 (1902);
Department of Agriculture v. Moreno, 413 U.S. 528 (1973)

Western Water Law — Flexible Enough?

Is western water law flexible enough to pursue distribution of water in accord with shifting demand and changing societal expectations? Only time will tell. Eighteen western states employ the prior appropriation doctrine, in similar but not identical ways. Fifteen states now have statutes enabling protection of instream flows. Fourteen have some form of "domestic preference." Fifteen states' statutes declare protection of pre-statutory, i.e. common law, water rights. Eleven states have "exempt well statutes." Eleven states close the resource, precluding the ability to create new water rights, when it has become fully appropriated. Sixteen states have some form of abandonment or relinquishment statutes.

Equal Protection

State	Prior Appropriation Statute	Closed Source Statute	Exempt Well Statute (Groundwater)	Domestic Preference	Forfeiture / Abandonment	In-Stream Flow Protection	Pre-Statutory Rights Protected
Alaska	Alaska Constitution, Article VIII, §13, AS §46.15.030, 040, 050		AS §46.15.035 (c)(4)	AS §46.15.035 (c)(3) see also: AS §46.15.090, .150	AS §46.15.140	Alaska Constitution, Article VIII, §13, AS § 46.15.030, .035(c), (d), .145	AS §46.15.060, .065
Arizona	ARS § 45-151(A), 45-175		ARS § 45-258 (B)	ARS § 45-157(B)(1), 251(1)	ARS § 45-188, 189	ARS § 45-152.01	ARS § 45-171, 45-182
California	Cal. Water Code §§ 102, 1225, 1228	Cal. Water Code § 1205. (a)		Cal. Water Code §§106, 106.3, 1228.1 (b)(1), 1228.2	*North Kern Water Storage District v. Kern Delta Water District* (2007) 147 Cal.App. 4th 555 [54 Cal.Rptr.3d 578]	Cal. Water Code § 1707	
Colorado	Colorado Constitution, Art. XVI, 5 and 6, CRS § 37-82-101, -102, -103; *Greeley & Loveland Irr. Co. v. Farmrs Pawnee Ditch Co.*, 58 Colo. 462, 146 P. 247 (1915).	Yes, source closed in effect by Constitution. CRS § 37-92-203 et seq., Determination of water courts.	Colo. Rev. Stat. § 37-92-602 (1)(b)	Colorado Constitution, Art. XVI, 5 and 6	Judicial "Abandonment"	CRS § 37-92-102(3)	CRS § 37-82-104, § 37-84-102
Idaho	Idaho Constitution, Art. XV, § 3, ICA §§42-101, 42-104, 42-106, 42-226, 42-229	Yes, source closed in effect by Idaho Constitution. Art XV, §3	ICA 42-§227	Idaho Constitution, Art. XV, §§ 3, 4; ICA §42-111	ICA §42-222 (3)	ICA §§ 42-1503, 42-1761 to 42-1766	Idaho Constitution, Art. XV, § 4
Kansas	KSA § 82a-703, 82a-701(f), 82a-707	KSA § 82a-706b		KSA § 82a-701(c), 82a-705	KSA § 82a-718	KSA § 82a-928(i), 82a-703a, 82a-703c	KSA §82a-703; 82a-701(d)
Montana	Mont. Const. Art. IX, § 3, M CA § 85-2-301	MCA §85-2-311-(a)(ii)(B), 85-2-360	MCA §85-2-330 (2)(C)(i) (Surface Water)		MCA § 85-2-404	MCA § 85-2-320	Mont. Const. Art. IX, § 3, MCA § 85-2-381
Nebraska	NRS § 46-203			NRS § 46-204 (Natural Streams)		NRS §§ 46-2, 107 to 46-2,108	NRS § 46-202 (1)
Nevada	NRS § 533.030 (1)	NRS § 533.460			NRS § 533.060	NRS § 533.030	NRS. § 533.085
New Mexico	NMSA §§ 72-1-1, 72-1-2	NMSA §§ 72-5-39, 72-8-4, 72-12-1	NMSA § 72-12-1.1	W. Peter Balleau & Steven E. Silver, *Hydrology and Administration of Domestic Wells in New Mexico*, 45 Natural Resources Journal 807, 833 (2005)	NMSA §§ 72-5-28, 72-12-8	NMSA § 72-14-3.3, 98-01 Op. N.M. Att'y. Gen. (1998).	NMSA §§ 72-1-3, 72-1-4, 72-5-31, 72-9-1, 72-12-4

Equal Protection

State	Prior Appropriation Statute	Closed Source Statute	Exempt Well Statute (Groundwater)	Domestic Preference	Forfeiture / Abandonment	In-Stream Flow Protection	Pre-Statutory Rights Protected
North Dakota	NDCC §61-03, 61-04-06(4), 61-04-06.3	NDCC §61-14-08	NDCC § 61-04-02	No. NDCC §§ 61-01-01.2, 61-04-01.1 (4), 61-04-06.1 (applies when there is insufficient water supply)	NDCC §§ 61-04-23, 61-04-24, 61-04-25	None	
Oklahoma	Okla. Stat. tit. 82. § 1020-1 et seq			Okla. Stat. tit. 82. §§ 1020-1 (12), 1020-3		None, but see, Okla. Stat. tit. 82. § 1102	Okla. Stat. tit. 82. § 1020-14
Oregon	ORS § § 532.120, 537.332-360		ORS § 537.535 (2), 537.545(1)(d)	ORS § 536.310 (12), 537.525 (5)	ORS § 540.610 (2)	ORS § 536.310(7), § 537.332-360	ORS §§ 537.120, 537.585, 539.010
South Dakota	SDLC §§ 46-1-3, 46-5-5, 46-5-7, 46-5-10	SDLC §§ 46-2A-7, 45-2A-7.1-7.7, 46-2A-9	SDLC § 46-5-8 (also applies to surface water)	SDLC § 46-1-5, 46-1-9 (2)	SDLC §§ 46-2A-18, 46-5-37, 46-5-37.1, 46-5-37.2	None	SDLC § 46-1-9
Texas	Tex. Water Code §§ 5.121, 11-002 (6), 11-022, 11-023, 11-027, 11-129			Tex. Water Code § 11.024 (1)	Tex. Water Code § 11.030	Tex. Water Code § 11.0235 (c), 11.02362.	Tex. Water Code § 11.001
Utah	Utah Code Ann. § 73-3-1, 73-3-21.1(2)(a)				Utah Code Ann. § 73-1-4	Utah Code Ann. § 73-3-3(11)	
Washington	RCW 90.03.010, 90.44.050	RCW 30.70A. *Richard A. Fox and Marne B. Fox v. Skagit County, et al.*, 193 Wn. App. 254, 372 P. 3d 784. (Division 1. April 11, 2016). See also. *Kittitas County v. Eastern Washington Growth Management Hearings Board*, 172 Wn.2d 144, 256 P.3d 1193 (2011); *Whatcom County v. Western Washington Growth Management Hearings Bd.*, 186 Wn. 2d 648, 381 P. 3d 1 (2016) 186 Wn. App. 32, 344 P.3d 1256 (2015) ("Hirst");	RCW 90.44.050	none	RCW § 90.14.160	RCW § 90.03.247	Washington Const. Art. 17. § 1; RCW §§ 90.03.010, 90.44.050, 90.54.920, 90.42.070, 90.14.044
Wyoming	Wyo Constitution. Art 1. §31. Art VIII § 3. WSA §41-3-101, 41-3-202, 41-3-904	WSA § 41-3-915 (a)	WSA § 41-3-907	WSA § 41-3-102 (b), 41-3-103, 41-3-907	WSA § 41-3-401	WSA § 41-3-1001	WSA § 41-3-905

Public Private Partnerships

Infrastructure Financing

Arcane Policies

Reclamation Assets

"MR&R"

Budget Decreases

Reserved Works

Transferred Works

Federal Ownership

Title Transfer

PUBLIC PRIVATE PARTNERSHIPS

CAN THEY WORK FOR FEDERAL WATER INFRASTRUCTURE?

by Martin Doyle, Duke University, Nicholas Institute for Enviromental Policy Solutions (Durham, NC)

Introduction

The Trump Administration has been a proponent of a greater private sector role in infrastructure, particularly as concerns leveraging the potential for public-private partnerships. This article examines whether such approaches are possible for western water infrastructure managed by the US Bureau of Reclamation (Reclamation) due to small, arcane, but significant federal budget policies.

Limitations to Public-Private Partnerships for Federal Water Infrastructure

Reclamation's water resource infrastructure assets include almost 4,000 real property assets. This includes the 471 dams and dikes used in creating 348 reservoirs with a total storage capacity of 245 million acre-feet of water. Reclamation, through this infrastructure, is the largest wholesaler of water in the US. Much of this infrastructure was built during the early and mid-20th century, placing it at or greater than half-a-century in age. In this sense, many components of Reclamation infrastructure have met or exceeded their expected design life, and the remaining infrastructure is rapidly approaching similar thresholds. While a substantial portion of this infrastructure remains fully functional, there is an existing and ever-growing need for **m**aintenance, **r**ehabilitation, and **r**eplacement of Reclamation's infrastructure, referred to by Reclamation as "MR&R." For infrastructure managed by Reclamation, estimates of MR&R needs for the period 2014-2019 are almost $3 billion.

Congressional appropriations were the primary source of capital for financing the construction of Reclamation infrastructure, and have similarly been a source for ongoing MR&R (discussed further below). However, appropriations have been decreasing or become stagnant for Reclamation. Between 1992 and 2000 Reclamation's budget declined by 19% and the number of Reclamation employees was reduced by 26% (Simon, 2007). Appropriations have been stagnant since then, while costs for MR&R have increased (Stern 2013). For the period of 2015-2019, 64% of anticipated MR&R — over $1.8 billion — will need funding through sources other than federal appropriations.

The Trump Administration, like the Obama Administration, has sought ways to bring the private sector into infrastructure finance and operations. **P**ublic-**p**rivate **p**artnerships (P3s) are often advocated as a way to do so. While P3s are a well-known practice in transportation infrastructure (e.g., toll roads) and municipal water systems, such P3 approaches are comparatively rare for irrigation systems. P3s are particularly rare for water systems with a federal government nexus. There are several reasons, discussed below, why this is the case.

Realities of How Reclamation Works With Water Users

Reclamation designates its infrastructure as either "reserved works" or "transferred works."

Reserved works are those facilities for which Reclamation is responsible for operation and maintenance, thus internalizing all costs of that infrastructure, including long-term maintenance, rehabilitation, and replacement. Reserved works cover a range of different infrastructure types, but include those with a very broad range of users or those that are critical to entire regions (e.g., Hoover Dam).

Transferred works are those facilities for which a non-Federal operating partner has **o**peration and **m**aintenance (O&M) responsibility. For transferred works, Reclamation provides debt financing to water users who use that capital to construct infrastructure and then repay the federal government under the terms of a contract (which is why Reclamation often refers to water users as "contractors"). Importantly, when these contracts are paid off, the infrastructure itself remains in federal ownership. That is, transferred works are owned by the federal government, but the water users (contractors) must continue to pay for O&M. About 67% of Reclamation's facilities are transferred works, i.e., Reclamation has contracted with non-federal entities (e.g., municipalities, irrigation districts) to perform the operation, maintenance, and repair (which can include replacement) on facilities owned by Reclamation.

The ownership of the federal water infrastructure can be fully transferred to the non-federal partner — a process referred to as "title transfer." Thus far, this has occurred in only around 20 cases. There are significant policy and economic barriers to title transfer. For example, does safety liability transfer fully to the water users, or does Reclamation bear some portion of the liability? The implication of federal ownership is that water users don't have infrastructure with which to collateralize debt obligations, which greatly constrains their ability to secure private financing for infrastructure rehabilitation and replacement. Despite such constraints, there is growing interest in title transfer (*see* special issue of *Irrigation Leader* focused on title transfer, March 2016, volume 7, issue 3).

Public Private Partnerships

Incremental Appropriations

Another element that makes infrastructure financing problematic is the federal Anti-Deficiency Act (31 USC §1341), which prohibits federal agencies from entering into contracts that are not fully funded. Essentially, no federal agency can obligate the government for future appropriations, and so all projects or contracts must be fully appropriated. This doesn't mean that Congress appropriates all the money an infrastructure project needs; instead, it means that the federal government carves up the project into bits that can be paid for through incremental appropriations. Each Congress makes its own decisions about appropriations, meaning that a project cannot be certain to receive appropriations from one year to the next. This creates significant appropriation risk. It is also an inordinately inefficient approach to infrastructure construction (imagine building a $200,000 house with only $10,000 available per year, and no commitment that the next payment will be forthcoming). In addition, for water projects this approach means that there is no revenue from the project during the many years that the project is incomplete. It is difficult to imagine a more inefficient approach to financing and building water infrastructure.

Could P3s Be the Answer?

P3 Benefits

P3s become attractive because a private sector partner would bring all the necessary capital to the table to get the project built and operating as soon as possible, thus generating benefits for water users as early as possible. P3s also bring the efficiencies of the private sector to design, construction, and operation. There are also tremendous benefits of risk-sharing: if developed and contracted appropriately, the private partner would shoulder the risks associated with design and construction costs over-run, for example.

Revenue Generation

An important and necessary piece of a P3 is the revenue generation during the period of the contract. During the contracted period, instead of water users paying the irrigation district or Reclamation, they would pay the private partner. While the private partner would bring all the capital to the table to build the project, they must be able to repay the underwriting investors and generate a profit from revenues through operation of the project during the contracted period. After the agreed-upon period of contract (e.g., 20 or 30 years), the operations and maintenance of the project would be handed back over to the public partner.

Project Evaluation

Several Reclamation projects have been recently evaluated for P3s. One example is the Eastern New Mexico Rural Water System Project, a regional rural water supply project that would supply 16,450 acre-feet of water per year. The proposed project has an estimated cost exceeding $500 million and consists of about 150 miles of water conveyance pipelines, raw water intake structures, and pump stations. At current Reclamation funding levels, the Project is not likely to be completed for many years, or even decades, but via a P3, the local water authority would continue as project owner with a 50-year contract with a private partner who would be responsible for providing upfront financing and completing the entirety of the works within a stipulated time period (e.g., three years). After completing the works, the private partner would be compensated either from revenue generated by the project or through offtake/availability payments, depending on the final structure of the transaction. Offtake/availability payments are payments made to have access to the infrastructure regardless of actual use, similar to a gym membership (you pay to have access over a set period of time, whether or not you use it).

Offtake/ Availability

Long-Term Contract

Importantly, the long-term contract is the key component of P3s: by guaranteeing a customer for 50-years (or even 30-years), the private partner is able to economically justify the large up-front investment of private capital along with the commitment to operating the project. As is typically the case in recently proposed P3s (*see* Goldsmith and Jamieson, 2017), to be financially viable to the private partner, there must be some combination of:

(a) long-term contract with the public partner; and

(b) some guaranteed minimum revenue stream over that contract period, such as an "availability payment" (received by the private partner regardless of how much water is actually used by the public partner) or a minimum annual purchase agreement.

Lease Similarity

An essential aspect of P3s is that they work similar to a lease — the private partner takes over the infrastructure for a period of time and then hands back the infrastructure ownership after the contracted period.

Arcane Budget Policy Barriers

Lease Policy Barrier

Unfortunately, arcane federal budgetary policy constrains the potential for P3s. In 1991, the Office of Management and Budget (OMB) laid out criteria for how leases would be scored on the federal budget and this detail is buried way down in OMB Circular A-111; Appendix B: *any lease that results in eventual government ownership must be scored in its entirety on the agency budget in the first year of the lease*.

Thus, in the case of the Eastern New Mexico project, because the infrastructure would revert back to government ownership, the entire cost of the project ($500 million) would be scored on Reclamation's budget in the first year of the agreement. This amount would consume half of Reclamation's total

Public Private Partnerships

Long-Term Contract Limit

water-related budget, almost 17% of its total budget — which makes such an approach impossible for Reclamation to consider. This occurs even though the private partner would be responsible for financing, operating, and maintaining the project and the users would be paying rates to cover the private sector participation.

The Anti-Deficiency Act also plays a limiting role in that it will not allow Reclamation to enter into a long-term, year-by-year contract, which would be necessary (due to its owning the infrastructure) to ensure availability payments to a private partner. This inability to contract long-term and inability to commit Reclamation to annual payments undermines crucial elements of a P3 contract.

The end result is that these two federal budgeting policies — scoring capital leases up front and prohibiting long-term contracts — preclude public-private partnerships as a method of rehabilitating Reclamation infrastructure.

Conclusion

what's next?

Multi-Year Commitments

Quite simply, we won't see P3s for Reclamation infrastructure unless we see changes to federal budget policies coming out of OMB. So long as the Anti-Deficiency Act constrains multi-year commitments of the federal government, P3s will not be possible. Also, so long as OMB scores P3-related leases in their entirety up-front, it will be impossible for Reclamation to move a P3 forward (unless it is fairly small).

Restricting Policies

These are the two most restricting policies that would need to be adjusted. There would be other policies and practices to adjust as well, such as: ring-fencing revenue at the project level; leveraging trust funds to backstop loans; and viability gap funding. While these are significant policy changes, Reclamation is not the only federal agency limited by federal budgetary practices: the US Army Corps of Engineers faces equally daunting challenges for rehabilitating and updating its infrastructure as does the General Services Administration. Thus, there are a growing number of inter-agency calls for reconsidering policies for federal infrastructure, which may provide the necessary impetus for changes to occur.

Prompt Change Doubtful

It is doubtful that these OMB policies will change unless significant pressure is applied from either Congress or the White House's National Economic Council. While the Council is advocating P3s (which would require a somewhat fiscally progressive approach), the OMB under Mick Mulvaney is currently following a far more fiscally conservative approach to federal budgeting generally, which would keep the current practices in place.

There are two things to watch for over the coming years:

Budget Deals

1) Whether there are changes to these practices either coming out of the OMB (doubtful under Mulvaney) or out of any kind of broader budget deals. Congress under Republican leadership has been very resistant to alternative fiscal approaches (hence Mulvaney's hostility, who came out of the House of Representatives), and so there is likely limited appetite for any big deals between the current Congress and the White House. Ironically, a Congressional change may be needed to enable a Trump-led infrastructure deal.

Proof of Concept

2) A more realistic option would be for Congress to appropriate funds specifically to backstop a small number of moderate-sized P3s. That is, Congress may appropriate enough funding to allow Reclamation to try a couple of specific P3s as a proof of concept. This would allow OMB to continue its conservative budgeting approach, allow Reclamation to not sacrifice a big chunk of its budget to an unknown strategy, while letting the Trump Administration show its ability to put some private sector infrastructure into action.

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Reclaimed Wastewater

Reclaimed Water

Irrigation Season

Irrigation District Concerns

Quality Standards

Treatment Capacity

Treatmen Success

Irrigation Use

WASTEWATER & IRRIGATION

CITY OF HERMISTON RECLAIMED WATER AWARD

by David Moon, Editor

On August 28th, the Oregon Water Resources Department (OWRD) announced that the City of Hermiston, Oregon (City) and the West Extension Irrigation District (WEID) are sharing the Tyler Hansell Agricultural Efficiency Award for their reclaimed water project, which sends the City's wastewater into WEID's irrigation canals. The project represents the culmination of the City's efforts over several years to find a long-term solution to discharging its wastewater during the summer irrigation season. The City had received warnings from Oregon's Department of Environmental Quality (ODEQ) that they were not meeting the temperature discharge requirements of their ODEQ wastewater discharge permit (NPDES permit).

New discharge regulations designed to protect salmon in the Umatilla River left the City unable to discharge to the river during the summer irrigation season. Also in irrigation season, WEID observed flows decreasing in the Umatilla River, which limited their ability to withdraw critical irrigation supplies for its patrons. Discussions between the City and the District began in 2007 to determine if a mutually beneficial arrangement could be created.

WEID first had to be assured that the recycled water was compatible for their use, not create a burden to its irrigators, and would provide clear benefits to its farmers and landowners. To address these concerns the City and WEID worked closely with WEID's partner, the US Bureau of Reclamation. They interfaced with several governmental/public agencies including the Oregon Farm Bureau, Oregon Tilth, the Confederated Tribes of the Umatilla Indian Reservation, Oregon Fish and Wildlife, ODEQ, and the National Marine Fisheries Service to perform environmental reviews and develop a regulatory framework for the process. After all processes, reviews, and permits were completed, WEID began receiving water from the Hermiston Recycle Water Treatment plant in the summer of 2016. "Keeping our patrons informed with good communications was a key for us," Bev Bridgewater, WEID's Manager, told *The Water Report*. "We did our due diligence and had great interaction with the City, who initially contacted us about the project."

The recycled water meets the most rigorous quality standards in the industry, termed "Class A Recycled Water." To continuously meet Class A standards, the City invested $27 million in its Membrane Bioreactor Treatment System, which produces water that is virtually indistinguishable from drinking water. For example, drinking water for human consumption must have turbidity (a measure of cloudiness of the water) of less than 0.3 turbidity units over 95% of the time. The new Recycled Water Plant will routinely produce a turbidity of less than 0.1 turbidity units. Class A Recycled Water is suitable for direct use on all food crops including organically labeled produce. It must meet the most stringent water quality standards developed by ODEQ, including total coliforms (less than bacteria per 100 mL).

According to the City, the project will reliably meet NPDES permit levels for the next 20+ years; increase treatment capacity from roughly 1.7 **m**illion **g**allons per **d**ay (MGD) to 3.0 MGD to match projected population growth in the service area by 2026; address environmental concerns impacting the Umatilla River and threatened salmonid species; and discharge the highest quality Class A Recycled Water to the Umatilla River, when the reclaimed water is not piped to WEID's canal.

City sewer ratepayers funded the upgrade to the community's treatment system, which became fully operational in the Fall of 2014. With nearly three years worth of data available from transforming municipal sewage to Class A water, the City said the increase in discharge quality is crystal clear. Total Suspended Solids (TSS) in the City's discharge averaged 14 Parts Per Million (PPM) in the year prior to the new system operating. Since that time, TSS levels are down to just 1.0 PPM. Ammonia levels have also plummeted from 16.1 PPM to less than 1.0 PPM, and Biological Oxygen Demand (BOD) has fallen to 1.0 PPM, from an average of 18.0 in 2014.

The reclaimed water is being used to supplement WEID's existing water rights, which it uses to irrigate a total of 9,235 acres. The City pumps the reclaimed water into a pipeline that leads to WEID's canal. According to the Municipal Reclaimed Water Registration Form (Form) filed with OWRD, flow of 600-2,000 gpm will be used, averaging 1.2 million gallons per day during the period of use of April 1st to October 31st (August 23, 2016 Form). "We're pretty pleased with the project. The City was a great partner in the project, providing the technical and financial support to assure that it got done. There has been no downside to it and it provides us with a consistent source of water," Bridgewater said. WEID each month receives approximately 440 acre-feet of reclaimed water from the City, with 2017 the first full year of reclaimed water use. Bridgewater pointed out that the reclaimed water is a relatively small amount compared to the 130 cubic feet per second that runs through its canal.

For info: RM-209 Registration Form available at: http://apps.wrd.state.or.us/apps/wr/wrinfo/ (search on Application "RM 209"; WEID website: http://westextension.com/; City website: www.hermiston.or.us

WATER BRIEFS

CONSERVATION CO BASIN
PILOT PROGRAM RFP REQUEST

On October 2nd, Upper Colorado River Commission (UCRC) issued a Request for Proposals regarding a potential funding opportunity for voluntary participation in the Pilot System Water Conservation Program (Pilot Program) in the Upper Colorado River Basin.

UCRC is an interstate administrative agency established by the Upper Colorado River Basin Compact of 1948 (Upper Basin Compact). UCRC members consist of a Commissioner representing each of the four Upper Division States of Colorado, New Mexico, Utah and Wyoming (Upper Division States) and a Commissioner appointed by the President of the United States. The UCRC assists the Upper Division States in developing their apportionments of Colorado River water pursuant to the Colorado River Compact of 1922 and the Upper Basin Compact, and has specific responsibilities to assist in implementing the Upper Basin Compact consistent with laws of the Upper Division States.

Facing declining levels in Lakes Mead and Powell, the UCRC, the US Bureau of Reclamation, and four water providers (Funding Partners) that depend on Colorado River Basin supplies have been funding pilot projects to test methods for saving water that could be part of a drought contingency plan in the Upper Basin of the Colorado River. The four major water providers that have contributed funds for pilot System Conservation projects in the Upper Basin are: the Southern Nevada Water Authority; Denver Water; the Central Arizona Water Conservation District; and the Metropolitan Water District of Southern California.

The purpose of the Pilot Program is to explore and learn about the effectiveness of temporary, voluntary, and compensated measures that could be used — when needed — to help maintain water levels in Lake Powell above the elevations needed to protect Colorado River Compact entitlements and maintain hydroelectric power production. Although the Pilot Program's term was originally set to expire in 2016, the overall success of the Pilot Program has prompted the Funding Partners to again extend the Program through 2018.

The Funding Partners and other stakeholders have committed funding in a magnitude similar to previous years towards one-year projects in the Upper Colorado River Basin to be implemented for 2018. The UCRC is looking for projects that demonstrate the effectiveness of temporary, compensated, and voluntary water savings actions.

Project proposals are asked include: a detailed project description; the estimated amount of conserved consumptive use; the method for monitoring and verifying the conservation activities employed; approximate time frame for startup; project duration; amount of funding requested; and additional information.

Through the Pilot Program, water users in the Upper Basin (municipal, industrial, and agricultural) will be monetarily compensated for voluntary actions that temporarily reduce consumptive use of Colorado River System water. For 2018, these pilot projects could include: temporary fallowing or deficit irrigation of agricultural crops; reuse of industrial water; recycling of municipal supplies and improvement of distribution system efficiency to reduce consumptive use; reductions in municipal landscape irrigation or indoor use; and other methods that would result in additional water conservation for the Colorado River System. Priority will be given to projects that demonstrate how conserved water can make it to Lake Powell (shepherding) without being taken by downstream diverters. Additionally, it is important for the UCRC to understand the cost-competitiveness of water in the Upper Basin, and projects that demonstrate conservation efforts at a lower cost per acre-foot will have an advantage during the project selection process.

The UCRC and Funding Partners will jointly review and select project proposals. The UCRC will then facilitate implementation of the selected projects in the Upper Basin with the particular participants.

Selected participants will be required to execute a System Conservation Implementation Agreement with the UCRC, which will provide the terms and conditions for design, implementation, monitoring, verification, and evaluation of the Pilot Program project and compensation to the participant (see contract template at www.ucrcommission.com).

The UCRC hopes to see projects proceed that have not been carried out previously in the program, and in regions that have not previously participated. To be considered for funding under this RFP, proposals should be received by December 1, 2017. Based on current estimates, the UCRC and the Funding Partners anticipate providing an initial response to project proposals by mid-February, 2018.

For info: UCRC website: www.ucrcommission/RepDoc/SCPilotP.html
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For Wyoming: Charlie Ferrantelli, charlie.ferrantelli@wyo.gov or 307/ 777-6151.

CWA CRIMINAL CHARGES MO
CHICKEN FEED SPILL

On September 27, Tyson Poultry Inc. (Tyson) pleaded guilty in federal court in Springfield, Missouri, to two criminal charges of violating the federal Clean Water Act (CWA) stemming from discharges at its slaughter and processing facility in Monett, Missouri. Tyson, the nation's largest chicken producer, is headquartered in Springdale, Arkansas. The charges to which Tyson pleaded guilty arose out of a spill after the company mixed ingredients in its chicken feed at its feed mill in Aurora, Missouri.

WATER BRIEFS

One ingredient in Tyson's feed was a liquid food supplement called "Alimet," which has a pH of less than one. According to the plea agreement filed in federal court, in May 2014, the tank used to store Alimet at the Aurora feed mill sprang a leak and the acidic substance flowed into a secondary containment area. Tyson hired a contractor to remove the Alimet and transport it to Tyson's Monett plant, where the Alimet was unloaded into the in-house treatment system that was not designed to treat waste with Alimet's characteristics. Some of the Alimet made it into the City of Monett's municipal wastewater treatment plant, where it killed bacteria used to reduce ammonia in discharges from the treatment plant into Clear Creek and resulted in the death of approximately 108,000 fish.

Under the terms of the plea agreement, Tyson will pay a $2 million criminal fine and serve two years of probation. In addition, Tyson will pay $500,000 to maintain and restore waters in the Monett area, with a focus on Clear Creek and the adjoining waterways. Tyson will also implement environmental compliance programs including: hiring an independent, third-party auditor to examine all Tyson poultry facilities throughout the country to assess their compliance with the CWA and hazardous waste laws; conducting specialized environmental training at its poultry processing plants, hatcheries, feed mills, rendering plants, and wastewater treatment plants; and implementing improved policies and procedures to address the circumstances that gave rise to these violations.

The US Environmental Protection Agency's (EPA's) Criminal Investigation Division was involved in the investigation. The case is being prosecuted by the US Attorney's Office for the Western District of Missouri and the Environmental Crimes Section of the Justice Department's Environment and Natural Resources Division.

For info: EPA website: www.epa.gov/enforcement/environmental-crimes-case-bulletin

ENFORCEMENT POLICIES CA

WATER QUALITY REVISIONS

On October 5th, the California Office of Administrative Law approved regulatory action by the State Water Resources Control Board (SWRCB) that adopted Resolution No. 2017-0020, which revised the Water Quality Enforcement Policy on April 4, 2017. The Resolution revised the Water Quality Enforcement Policy to: 1) clarify principles that guide enforcement; 2) amend policies relating to case prioritization, violation ranking, and penalty calculation methodology; and 3) make other technical changes for clarity.

For info: www.waterboards.ca.gov/water_issues/programs/enforcement/water_quality_enforcement.shtml

CLEAN WATER PROJECTS US

INFRASTRUCTURE PROGRAM

On October 31, EPA recognized 28 water quality treatment projects for excellence and innovation within the Clean Water State Revolving Fund (CWSRF) program. Honored projects ranged from large wastewater infrastructure projects to small decentralized and agriculture projects. Over the past 30 years, CWSRF programs have provided more than $125 billion in financing for water quality infrastructure.

EPA's Performance and Innovation in the SRF Creating Environmental Success (PISCES) program celebrates innovation demonstrated by CWSRF programs and assistance recipients. The CWSRF is a federal-state partnership that provides communities a permanent, independent source of low-cost financing for a wide range of water quality infrastructure projects. "For decades the Clean Water State Revolving Fund has supported critical water infrastructure projects that help grow the American economy and support our way of life," said Mike Shapiro, Acting Assistant Administrator for EPA's Office of Water. "These projects are a testament to the power of the Clean Water State Revolving Fund in leveraging investment to meet the country's diverse clean water needs."

Twenty-eight projects by state or local governments, public utilities, and private entities were recognized by the 2017 PISCES program. Included within that group are the following projects in the western US: from the West: Washington — On-Site Sewage System Loan Program (Tacoma-Pierce County Health Dept.); Colorado — Biological Nutrient Removal (Boxelder Sanitation District); Idaho — Wastewater System Consolidation and Upgrade Project (City of Fruitland); New Mexico — Montoyas Arroyo Improvement (S. Sandoval County Arroyo Flood Control); Oklahoma — Green Infrastructure Project (Oklahoma Conservation Commission); and Texas — Grand Lakes Reclaimed Water System (North Fort Bend Water Authority). More about all 28 of the 2017 recognized projects and the PISCES program can be found at the PISCES website listed below.

For info: www.epa.gov/cwsrf/pisces

URBAN HEAT MITIGATION US

COOL ROOFS — WATER CONSERVATION

The energy and climate benefits of cool roofs are well established. By reflecting rather than absorbing the sun's energy, light-colored roofs keep buildings, cities, and even the entire planet cooler. A new study by the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) has found that cool roofs can also save water by reducing how much is needed for urban irrigation.

Based on regional climate simulations of 18 California counties, Berkeley Lab researchers Pouya Vahmani and Andrew Jones found that widespread cool roof adoption could reduce outdoor water consumption by as much as 9% percent. In Los Angeles County, total water savings could reach 83 million gallons per day, assuming all buildings had reflective roofs installed. The water-savings benefit was even stronger on hotter days. Their study — "*Water Conservation Benefits of Urban Heat Mitigation*"— was published in the journal Nature Communications. "You might not do cool roofs just to save water, but it's another previously unrecognized benefit of having cool roofs. And from a water management standpoint, it's an entirely different way of thinking — to manipulate the local climate in order to manipulate water demand," Vahmani said.

WATER BRIEFS

Cool roofs can reduce water demand by reducing ambient air temperature — this study found urban cooling ranging from 1 to 1.5 degrees Celsius — which means lawns and other landscaping need less water. The scientists, both in the Lab's Climate and Ecosystem Sciences Division, acknowledge that modification of human behavior may be needed to realize this water-savings benefit. "In order to reap the benefits, we would need people to be aware of the appropriate amount of water, or else use sensors or smart irrigation systems, which are a good idea anyway," Jones said.

Countywide irrigation water savings ranged from 4% to 9%, with per capita savings largest in medium density environments (those with a mix of buildings and landscaping). The study also confirmed a finding that has been emerging: that water conservation measures that directly reduce irrigation, such as drought-tolerant landscaping, can have the unintended consequence of *increasing* temperatures in urban areas. Vahmani and Jones ran a simulation of the most extreme case — a complete cessation of irrigation — and found a mean daytime warming of 1 degree Celsius averaged over the San Francisco Bay Area.

For info: Study available at: www.sciencedaily.com/releases/2017/10/171020092213.htm

SUPERFUND CLEANUP TX

DIOXIN CONTAMINATION

On October 11, EPA announced that the cleanup plan to address highly toxic dioxin contamination at the San Jacinto Waste Pits Superfund site in Harris County, Texas has been approved. The Houston-area Superfund site was one of the sites flooded by Hurricane Harvey in August. The selected remedy will remove highly contaminated material from the site and secure less contaminated areas. EPA maintains that the plan provides certainty to people living nearby by permanently addressing risk posed by the contamination and also provides certainty to other economic interests that rely on the San Jacinto River for navigation and Interstate-10 for transportation.

EPA's cleanup plan includes installing engineering controls such as cofferdams before excavating almost 212,000 cubic yards of dioxin contaminated material for disposal. A small amount of material will stay on-site where controls will prevent access, eliminate off-site migration, and monitor natural recovery. The estimated cost for the remedy is $115 million.

EPA's final cleanup plan, called a Record of Decision (ROD), addresses comments on the proposed plan concerning the risk of water spreading dioxin contamination downstream by installing controls such as cofferdams to allow for dry excavation of the waste material. Changes in the construction method will effectively eliminate any potential for spreading contamination to downstream areas EPA says. The $97 million proposed plan outlined wet excavation of material.

The Superfund site consists of two sets of impoundments, or pits, built in the mid-1960s for disposal of solid and liquid pulp and paper mill wastes that are contaminated with polychlorinated debenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans). In 2011, the impoundments were covered with an armored cap as a temporary way to contain contaminants.

EPA's decision, explained in the ROD, is based on extensive studies of the contamination, human health risks, and environmental risks of this site. The final cleanup plan considers the ever-changing San Jacinto River, which encroaches on the site, and the need to protect important downstream resources including the Galveston Bay estuary.

EPA added the San Jacinto Waste Pits site to the National Priorities List of Superfund sites in 2008, after testing revealed contamination from dioxins and furans near the waste pits. The northern set of impoundments (~14 acres), is located on the western bank of the San Jacinto River, north of the Interstate-10 bridge over the San Jacinto River. The northern impoundments are partially submerged in the river. The southern impoundment, less than 20 acres in size, is located on a small peninsula that extends south of the Interstate-10 bridge. EPA is the lead agency for addressing the site and cleaning up the contamination, with support from several state partners and the US Army Corps of Engineers.

For info: r6press@epa.gov; Administrative Record (including Record of Decision) available at: www.epa.gov/tx/sjrwp

WASTEWATER TECH US

CELLULOSE RECOVERY

The overall winner of the Aquatech Innovation Award 2017 was announced on October 30, with the top spot going to a highly innovative Dutch technology that can recover toilet paper cellulose fibers at sewage treatment plants and produce a marketable cellulose product suitable for use in applications such as road construction. The winning entry was from company CirTec B.V., garnering the award over 78 entries.

The winning technology, named "Cellvation," was developed in partnership with KNN Cellulose. The benefits cited include a reduction in energy and chemical costs for sewage treatment, along with a reduction in the amount of sludge that is produced. Cellulose is used as a technical product in applications such as road construction, offering an outlet for the marketable product derived from the Cellvation process. "It also means you have to cut down fewer trees, and the enormous amount of energy and chemicals that are used to convert a tree into cellulose can also all be saved," said Award jury chairman Prof. Cees Buisman, Scientific Director of Wetsus, European centre of excellence for sustainable water technology.

Entries to the Aquatech Innovation Award are assessed against three criteria: innovation; feasibility; and sustainability. Cellvation scored highly against all three. In terms of feasibility, Buisman notes that two full-scale plants are in operation, and that use of the final product in road building has been demonstrated. "The whole chain has been shown, so we believe it is completely feasible," he says. "The innovation is that they have connected all these steps together, and not only taken the cellulose out of sewage, but processed it so it can be reused."

For info: Annelie Koomen, A.koomen@rai.nl or www.aquatechtrade.com

WATER BRIEFS

ARSENIC EXPOSURE US
USGS-CDC STUDY

A new study by the US Geological Survey and Centers for Disease Control and Prevention — *Estimating the High-Arsenic Domestic-Well Population in the Conterminous United States* — estimates about 2.1 million people in the US may be getting their drinking water from private domestic wells with high concentrations of arsenic, presumed to be from natural sources. About 44 million people in the lower 48 states use water from domestic wells."

Using a standard of 10 micrograms of arsenic per liter — the maximum contaminant level allowed for public water supplies — the researchers developed maps of the contiguous US showing locations where there are likely higher levels of arsenic in groundwater, and how many people may be using it.

Nearly all of the arsenic in the groundwater tested for this study and used to map probabilities is likely from natural sources, and is presumed to be coming primarily from rocks and minerals through which the water flows.

Using water samples from more than 20,000 domestic wells, the researchers developed a statistical model that estimates the probability of having high arsenic in domestic wells in a specific area. They used that model in combination with information on the US domestic well population to estimate the population in each county of the continental United States with potentially high concentrations of arsenic in domestic wells.

Some of the locations where it's estimated the most people may have high-levels of arsenic in private domestic well water include:

- Much of the West – Washington, Oregon, Nevada, California, Arizona, New Mexico
- Parts of the Northeast and Midwest – Maine, Massachusetts, New Hampshire, New Jersey, Maryland, Michigan, Wisconsin, Illinois Ohio, Indiana
- Some of the Atlantic southeast coastal states – Florida, Virginia, North Carolina, South Carolina

The study did not include Alaska and Hawaii.

Public water supplies are regulated by EPA, but maintenance, testing and treatment of private water supplies are the sole responsibility of the homeowner. Surveys indicate many homeowners are unaware of some basic testing that should be done to help ensure safe drinking water in the home.
For info: Study at: http://pubs.acs.org/doi/abs/10.1021/acs.est.7b02881

NESTLE WATER EXCHANGE OR REQUEST TO WITHDRAW APP

On October 27, Oregon Governor Kate Brown wrote to Curtis Melcher, the Director of the Oregon Department of Fish and Wildlife (ODFW) requesting that ODFW withdraw its application to exchange .5 **c**ubic **f**eet per **s**econd (cfs) of spring water (currently supplying water to ODFW's salmon hatchery) for .5 cfs of City of Cascade Locks (City) groundwater. "This application was in response to requests by the City in pursuit of its plans to supply water to a proposed Nestle water bottling plant. Under the exchange application, both ODFW and the City would retain their existing water rights, but the sources of water would be swapped." Governor's Letter - October 27. If the exchange had been approved, the City would then supply the spring water to Nestle.

The Governor's letter laid out her rationale for asking that the application be withdrawn: "…I understand that ODFW's processing of the proposed exchange would take significant staff resources and legal costs for expected challenges and court appeals." Governor Brown also stated that the costs were of "particular concern" due to the "uncertainty around the City's plans for a Nestle plant" — given that in 2016 "69% of Hood River County voters passed a ballot measure…to prohibit any operation that produces more than 1,000 gallons a day of bottled water for commercial sale. This law makes the ultimate goal of the proposed water exchange uncertain."

Governor Brown cited current problems with Oregon's budget, and also noting the "legacy unfunded liabilities" of the state's retirement program. She concluded that "…I find it irresponsible to incur additional significant state costs for an uncertain outcome. For these reasons, I am asking that you withdraw the ODFW exchange application."
For info: Governor's Letter available upon request from TWR; OWRD website: www.oregon.gov/OWRD/, then click on ODFW's Transfer and Water Exchange Applications for additional background

CLIMATE CHANGE US
ECONOMIC EXPOSURE

On September 28, the US Government Accountability Office released its Report GAO-17-720, "*CLIMATE CHANGE: Information on Potential Economic Effects Could Help Guide Federal Efforts to Reduce Fiscal Exposure*" (Report). As noted in the letter to Senators Maria Cantwell and Susan Collins, included in the Report, "According to the President's budget proposal for fiscal year 2017, over the last decade, the federal government has incurred direct costs of more than $350 billion because of extreme weather and fire events, including $205 billion for domestic disaster response and relief; $90 billion for crop and flood insurance; $34 billion for wildland fire management; and $28 billion for maintenance and repairs to federal facilities and federally managed lands, infrastructure, and waterways." Report at 5. The Report also notes that "[T]hese costs will likely rise as the climate changes, according to the U.S. Global Change Research Program." GAO Highlights, Report at 2.

Information about the potential economic effects of climate change could inform decision makers about significant potential damages in different US sectors or regions. The federal government has not undertaken strategic government-wide planning to manage climate risks by using information on the potential economic effects of climate change to identify significant risks and craft appropriate federal responses. By using such information, the federal government could take an initial step in establishing government-wide priorities to manage such risks.
For info: The 45-page Report is available at: www.gao.gov/products/GAO-17-720

CALENDAR

November 15 WA
The Growth Management Act's Voluntary Stewardship Program & Critical Aquifer Recharge Areas: AWRA-WA November 2017 Seattle Dinner Meeting, Seattle. Ivar's Salmon House on Lake Union, 401 NE Northlake Way. For info: https://waawra.wildapricot.org/

November 15-17 AZ
NWRA Annual Conference, Tucson. Loews Ventana Canyon Resort. Presented by National Water Resources Assoc. For info: www.nwra.org/upcoming-conferences-workshops.html

November 16 TN
Water Infrastructure Finanace & Innovation Act (WIFIA) Information Session, Nashville. Tennessee Tower, 312 Rosa L. Parks Avenue. For info: https://events.r20.constantcontact.com/register/eventReg?oeidk=a07een7xhfuccc46610&oseq=&c=&ch=

November 17 CA
Floodplain Development & Management in Northern California Conference, Napa. Hampton Inn & Suites NAPA. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

November 28-Dec. 1 OR
Oregon Water Resources Congress Annual Meeting, Hood River. Hood River Inn. For info: http://owrc.org/event/owrc-2017-annual-conference

November 29 KS
Water Infrastructure Finanace & Innovation Act (WIFIA) Information Session, Lenexa. EPA Region 7 Headquarters, 11202 Renner Blvd.. For info: https://events.r20.constantcontact.com/register/eventReg?oeidk=a07een8220v9a9b15c5&oseq=&c=&ch=

November 29-30 DC
P3 Federal Conference: Solving Infrrasturcture Challenges Through Partnerships, Washington DC. Marriott Marquis Hotel. Presented by P3 Federal Conference. For info: www.p3federalconference.com

November 30 OR
Natural Resources Damages: Assessment & Restoration Conference, Portland. World Trade Center Two, 3825 SW Salmon Street. For info: Environmental Law Education Center, www.elecenter.com/

December 3-5 CA & Web
North American Water Loss Conference, San Diego. Paradise Point Resort. Hosted by California-Nevada Section, American Water Works Assoc. For info: http://www.northamericanwaterloss.org/

December 4 WA
Tribal Natural Resource Damages Assessments Seminar, Seattle. Washington State Convention Ctr., 800 Convention Place. For info: Law Seminars Int'l, 206/ 567-4490 or www.lawseminars.com

December 4-5 DC
Clean Water Act: Law & Regulation 2017 Conference, Washington. Hunton & Williams LLP, 2200 Pennsylvania Avenue, NW. Presented by American Law Institute and the Environmental Law Institute. For info: www.ali-cle.org/index.cfm?fuseaction=courses.course&course_code=CZ010

December 4-7 PA
Brownfields 2017: Sutainable Communities Start Here — National Brownfields Training Conference, Pittsburgh. David L. Lawrence Convention Center. For info: www.brownfields2017.org

December 6 WA
Northwest Conference on Climate Change: Strategies to Reduce Carbon Emissions, Seattle. Washington State Convention Ctr. 800 Convention Place. For info: Environmental Law Education Center, www.elecenter.com/

December 6 WEB
Overview of the Water Infrastructure Finanace & Innovation Act (WIFIA) Program, WEB. 2-3:30 pm. For info: https://register.gotowebinar.com/register/9156860765268783617

December 8 WA
Navigating Floodplains & Flood Risk in the Northwest Conference, Seattle. Washington Athletic Club, 1325 6th Avenue. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

December 12 WY
Wyoming Water Forum: Brad Carr, WyCEHG. "Groundwater Investigations on the Brule Formation", Cheyenne. Herschler Bldg., Room #1699, 122 W. 25th Street. Presented by Wyoming State Engineer's Office. For info: http://seo.wyo.gov/interstate-streams/water-forum

December 13 WEB
Benefits of Financing with Water Infrastructure Finanace & Innovation Act (WIFIA) Loans, WEB. 2-3:30 pm. For info: https://register.gotowebinar.com/register/2291604719436842242

December 14-15 CA
CEQA — A Review of 2017 — 12th Annual Conference, San Francisco. Mariott Marquis. For info: CLE Int'l, 800/ 873-7130 or www.cle.com

December 20 WEB
Water Infrastructure Finanace & Innovation Act (WIFIA) Application Process:Tips for Submitting a Letter of Interest, WEB. 2-3:30 pm. For info: https://register.gotowebinar.com/register/2620872168072096514

January 9 WY
Wyoming Water Forum: Kim Johnson, WY Dept. of Homeland Security. "National Flood Insurance Program (NFIP) and Flood Risk Management", Cheyenne. Herschler Bldg., Room #1699, 122 W. 25th Street. Presented by Wyoming State Engineer's Office. For info: http://seo.wyo.gov/interstate-streams/water-forum

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CALENDAR

(continued from previous page)

January 16-18 ID
Idaho Water Users Assoc. Annual Convention, Boise. The Riverside Hotel. For info: IWUA, 208/ 344-6690 or www.iwua.org/

January 17 DC
Water Infrastructure Finanace & Innovation Act (WIFIA) Information Session, Washington. EPA Headquarters, William Jefferson Clinton East Bldg., 1301 Constitution Avenue, NW. For info: https://events.r20.constantcontact.com/register/eventReg?oeidk=a07eeq8d6abafcc5e55&oseq=&c=&ch=

January 24-26 CO
Colorado Water Congress 2018 Annual Convention, Denver. Hyatt Regency Denver Tech Center. For info: http://www.cowatercongress.org/annual-convention.html

January 25-26 WA
25th Annual Endangered Species Act Conference, Seattle. Crowne Plaza Downtown. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

January 25-27 BC
2018 Environmental & Energy, Mass Torts & Products Liability Committees' Joint CLE Seminar, Whistler. Westin Resort & Spa. Presented by ABA Sections. For info: https://shop.americanbar.org/ebus/ABAEventsCalendar/

February 1 TX
Central Texas Water Conservation Symposium, Austin. For info: http://www.texaswater.org/

February 6-8 WA
16th Annual Stream Restoration Symposium, Stevenson. Skamaia Lodge. Presented by River Restoration Northwest. For info: http://www.rrnw.org/

February 8-9 DC
Environmental Law Conference, Washington. Washington Plaza. Presented by American Law Institute. For info: www.ali-cle.org/index.cfm?fuseaction=courses.course&course_code=CZ014

February 13 WY
Wyoming Water Forum: Paige Wolken, US Army Corps of Engineers. "Compensatory Mitigation", Cheyenne. Herschler Bldg., Room #1699, 122 W. 25th Street. Presented by Wyoming State Engineer's Office. For info: http://seo.wyo.gov/interstate-streams/water-forum

February 22-23 NV
Family Farm Alliance Conference, Reno. Eldorado Hotel. For info: www.familyfarmalliance.org