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The Kesterson Effect: Reasonable Use of Water and the Public Trust

by

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THE KESTERSON EFFECT: REASONABLE USE OF WATER AND THE PUBLIC TRUST

*Felix E. Smith**

INTRODUCTION

In 1983, I held in my hand the first deformed American coot hatchling found at the Kesterson National Wildlife Refuge, a critical Pacific Flyway wintering ground for migratory ducks and shorebirds in Merced County in the western San Joaquin Valley. I was a United States Fish and Wildlife Service biologist and along with my colleague, Dr. Harry Ohlendorf, I was investigating why the Kesterson marshes had gone silent.

The cause of the grotesque mutations found in the Kesterson birds—corkscrewed beaks, missing eyes and shriveled limbs uneasily reminiscent of the 1950's Thalidomide deformities in humans—was food chain poisoning triggered by agricultural waste water from western San Joaquin Valley fields laced with the trace element selenium. The volcano-generated selenium, eroded from the ancient seabed material of the Coast Range mountains, had been harmlessly dispersed through the western valley soils over eons by geochemical and hydrological processes. Selenium, and other trace elements and metals in the alluvial fan soils, were mobilized into a soluble form by flood irrigation methods in the Westlands Water District of western Fresno County. The shallow groundwater was then pumped from the waterlogged lands and

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the drainage was funnelled to Kesterson via the San Luis Drain, an 82-mile cement-lined canal.

Legally, Kesterson was a "dual use" federal facility. The United States Bureau of Reclamation, an Interior Department agency, had paramount authority to operate the Kesterson ponds to store and evaporate drainage water until a drainage canal to the Delta was completed from Kesterson. That second leg of the San Luis Drain has never been completed although the Bureau of Reclamation is now under a federal court order to seek a permit from the State of California to complete the drain.[1]

Kesterson Reservoir was built in porous, thin clay soils, in 1969-1970, and was composed of approximately 1,280 acres of diked evaporation ponds. United States Bureau of Reclamation officials chose the middle of an ancestral wintering grounds for millions of ducks to build Kesterson after plans to build the facility in Fresno County were thwarted by opposition from farmers. There were also plans to build another 5,000 acres of ponds at Kesterson. Kesterson Reservoir was composed of 12 "cells" or ponds, approximately 100 acres each, which were separated by four-foot to six-foot levees.

A secondary Department of Interior purpose for the Kesterson ponds was as a national wildlife refuge. Kesterson had been supplied with fresh Delta water in the 1970's and had developed lush vegetation and wildlife habitat. Kesterson was touted as the California test model for the premise that water unwanted by farmers—drainwater loaded with salts, metals and pesticides—would be good for marsh birds and mammals despite warnings as early as 1960 that drainage was unusable for beneficial purposes[2] and as early as 1962 that the drainage could be toxic to downstream receiving waters and their biota.[3] The "drainage is good for ducks" premise, of course, proved to be dead wrong.

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[1] Order of February 6, 1995, issued by U.S. District Court Judge Oliver W. Wanger, No. CV-F-91-048 (E.D. Cal. Feb. 6, 1995). The U.S. appealed Judge Wanger's order to the Ninth Circuit Court of Appeals in early 1995, Case No. 95-15300.

[2] DIVISION OF PLANNING, CAL. DEP'T OF WATER RESOURCES, LOWER SAN JOAQUIN VALLEY WATER QUALITY INVESTIGATION, Bulletin No. 89 at 95-96 (1960).

[3] Travis Roberts of the Bureau of Sport Fisheries and Wildlife (predecessor agency to the U.S. Fish and Wildlife Service), in a July 9, 1962, letter to the agency's regional headquarters, warned that food chain contamination of the lower San Joaquin River and Delta, up to and including humans, could result from river disposal of irrigation drainage.

A small amount of Westlands drainage began entering the Kesterson ponds in 1978, mixed with Delta supplies. In 1981, all the ponds were filled to the brim with undiluted, full-strength drainage. The marsh began to die almost immediately. All fish species but one—the hardy mosquito fish—had died off in the ponds by 1982.[4] Massive bird die-offs occurred in 1983 and 1984.[5] In three years, full-strength drainwater had poisoned the Kesterson marsh food chain, moving from the plants to the insects to the birds, bio-concentrating thousands of times as it moved up each trophic level.

The truth became apparent to even the stubborn in 1983-1985, when grisly photographs of the recurring bird embryo deformities showed up on newspaper front pages or were flashed repeatedly across the nation's television screens, including CBS's "60 Minutes."[6]

The discovery of the bird mutations sent a shock wave through the nation's richest farming region which reverberates to this day. The legal and political questions Kesterson raised, state and federal, also remain unresolved eleven years after it was closed as a toxic waste site. Ecologically, conditions have worsened. Today, more birds are suffering deformities at 5,400 acres of private evaporation ponds in the western San Joaquin Valley than ever died at Kesterson.

Moreover, agricultural waste carrying toxic levels of selenium or other trace elements or pollutants is pouring into national wildlife refuges throughout the American West, triggering reproductive impacts. More than a decade after Kesterson, there is still

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[4] Michael K. Saiki, *A Field Example of Selenium Contamination in an Aquatic Food Chain, in* SYMPOSIUM ON SELENIUM IN THE ENVIRONMENT 67-76 (Cal. Agric. Technology Inst., Cal. St. Univ., Fresno, 1986).

[5] Harry M. Ohlendorf, *Aquatic Birds and Selenium in the San Joaquin Valley, in* SELENIUM AND AGRIC. DRAINAGE: IMPLICATIONS FOR SAN FRANCISCO BAY AND THE CAL. ENVT., SECOND SELENIUM SYMPOSIUM, March 23, 1985, at 15, 17 (Bay Inst. of San Francisco).

[6] The 13-minute Kesterson segment on "60 Minutes" aired on Sunday evening, March 10, 1985. Six days later, on March 15, Interior Secretary Donald Hodel ordered Kesterson closed because of possible violations of the Migratory Bird Treaty Act. The following Sunday, a smiling Dianne Sawyer told "60 Minutes" viewers that Kesterson had been closed, implying that CBS' coverage triggered the closure. That was the first and last coverage of the drainage crisis by "60 Minutes," which has never done a follow-up story on the aftermath of Kesterson, the continuing bird deformities, or the drainage crisis now in full bloom in the American West.

no written federal policy on how to deal with the impacts of agricultural drainage from federal irrigation projects. We learn slowly.

This paper is written with an informed lay person's understanding of water law, a scientist's understanding of biology, and a citizen's perplexity at government inaction and the lack of a scientific basis for drainage disposal decision-making. Now retired from federal service, I am free to speak my mind on issues that I have been intimately familiar with for 30 years. The purpose of this article is to present the argument that water usage on high salinity, high selenium farmland, and the disposal methods employed to get rid of the resulting drainage, now constitute waste and an unreasonable method of use of water under state law. Under evolving concepts of California law and the realities of a state running out of its most precious resource, a powerful argument can now be made that drainage disposal methods violate the California Constitution's prohibition on unreasonable use or method of use.

I. Why Federal Law Has Not Provided a Remedy

Despite being the largest purveyor of water in the West, the United States Department of the Interior has no written policy on irrigation drainage which impacts downstream natural resources and wildlife. As a result, wildlife refuges in the American West, like Kesterson, Stillwater, Nev. and the Salton Sea, are known more for their drainage-caused bird and fish die-offs and deformities than they are as sanctuaries.

Congress' solution for the drainage dilemma was to remove it from regulation. Agricultural runoff is exempted from the Clean Water Act,[7] the federal water protection law, under an exemption pushed through Congress in 1977 by western states lawmakers sympathetic to desert agriculture.[8] The Clean Water Act regulates only "point sources."[9] A "point source" is: "[a]ny discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container . . . concentrated animal feeding operation . . . from which pollutants are or may be discharged. *This term does not* in-

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[7] 33 U.S.C. §§ 1251 to 1387 (1988).

[8] Federal Water Pollution Control Act of 1972, Pub. L. No. 92-500, § 2, 86 Stat. 886 (1972) (as amended in Pub. L. No. 95-217, § 33(b), 91 Stat. 1577 (1977)).

[9] 33 U.S.C. § 1311(b)(1)(A) (1988).

clude agricultural stormwater discharges and *return flows from irrigated agriculture* . . . ." (Emphasis added.)[10]

Just what the words "return flows" meant to Congress is not certain. The EPA, through its inaction on the issue, apparently takes the position that "return flows" means both surface runoff from fields *and* the salty and often toxic shallow groundwater—subsurface drainage—which is pumped from below western San Joaquin Valley fields through "the end of a pipe."[11]

Kesterson was ordered closed by the Department of Interior on March 15, 1985, after attorneys for the departments of Interior and Justice took the legal position that they were unable to say that the operation of Kesterson was in compliance with the Migratory Bird Treaty Act,[12] a tough bird protection law. Interior Secretary Hodel said he would not violate the law and ordered Kesterson closed.[13] That was the last time Interior officials have taken that legal position.

Eleven years later, despite identical bird mutations at private evaporation ponds in the western San Joaquin Valley, the U.S. Justice Department, invoking its discretionary authority to refrain from prosecution, has taken no action to halt the continued deformities and embryonic mortalities in bird species protected by the Migratory Bird Treaty Act.[14]

For whatever mix of reasons, political or legal, United States government agencies have been unwilling or unable to halt methods of disposal of water from federal irrigation projects which result in wildlife deformities in the western San Joaquin Valley and other locations in the American West.

Short of corrective Congressional action, which seems unlikely, the only possible remedy for the problems caused by agricultural wastewater disposal appears to lie in state law, which under section 8 of the Reclamation Act of 1902,[15] is paramount over federal law absent an explicit Congressional directive to the contrary.[16]

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[10] 33 U.S.C. § 1362(14) (1988).

[11] Congress has also exempted agricultural return flows from the Resource Conservation and Recovery Act, 42 U.S.C. § 6903(27) (1988).

[12] 16 U.S.C. §§ 701-718(j) (1988).

[13] Lloyd G. Carter, FRESNO BEE, March 16, 1985, at 1.

[14] 16 U.S.C. §§ 701-718(j) (1988).

[15] Reclamation Act of 1902, 32 Stat. 388 (1902) (codified as amended at 43 U.S.C. § 383 (1988)).

[16] Section 8 provides in pertinent part that:

II. THE CALIFORNIA CONSTITUTION, VARIOUS STATE LAWS, AND THE PUBLIC TRUST DOCTRINE FORBID THE UNREASONABLE USE OF WATER

If the impacts of irrigating high selenium soils and the disposal of the resulting drainage in the western San Joaquin Valley are to be controlled and contained, it will have to be under state water law or the common law doctrines of nuisance and trespass.

The roots of state authority to control unreasonable use or methods of use of water lie in the California Constitution. Article X, Section 2, of the state constitution provides:

> It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, *and that the waste or unreasonable use or unreasonable method of use of water be prevented,* and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof *in the interest of the people and for the public welfare.* The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and *such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.* Riparian rights in a stream or water course attach to, but to no more than so much of the flow thereof as may be required or used consistently with this section, for the purposes for which such lands are, or may be made adaptable, in view of such reasonable and beneficial uses; provided, however, that nothing herein contained shall be construed as depriving any riparian owner of the reasonable use of water of the stream to which the owner's land is riparian under reasonable methods of diversion and use, or as depriving any appropriator of water to which the appropriator is lawfully entitled. This section shall be self-executing, and the Legislature may also enact laws in the furtherance of the policy in this section contained.[17] (Emphasis added)

This constitutional section was adopted in 1928, during a prolonged drought, in a public and legislative reaction to a Califor-

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> [N]othing in this Act shall be construed as affecting or intended to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of Interior, in carrying out the provisions of the Act, shall proceed in conformity with such laws . . . .

Id. § 8; *See also* California v. United States, 438 U.S. 645 (1978), wherein the United States Supreme Court held that the U.S. Bureau of Reclamation had to comply with state water law absent "clear Congressional directives."

[17] CAL. CONST. art. X, § 2.

nia Supreme Court decision, *Herminghaus v. Southern California Edison Co.*,[18] which held that a riparian landowner on the San Joaquin River had no duty to use water reasonably or to use reasonable methods of diversion in relation to an upstream appropriative water user, the Southern California Edison Company, which wanted to build a hydropower plant. Mrs. Herminghaus wanted natural flooding to irrigate her riverside pastures rather than a more efficient irrigation system which would rely on water stored behind a dam which could also be used for power generation.[19]

After Article X was passed, all water users in California, whether they were riparians or appropriators, had a duty not to waste water or use it unreasonably.

Water Code Section 100 contains language similar to the Constitutional provision:

> It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, *and that the waste or unreasonable use or unreasonable method of use of water be prevented,* and that the *conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.* The right to water or to the use or flow of water in or from any natural stream or watercourse in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and *such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.*[20] (Emphasis added)

It is with unreasonable use and methods of use that we are concerned here. There are additional sections of the State Water Code and numerous sections in the California Code of Regulations which define the powers of government to regulate the unreasonable or wasteful use of water.[21] The California Code of Regulations defines "misuse of water" or "misuse" as "any waste, unreasonable use, unreasonable method of use, unreasonable method of diversion of water . . . ."[22]

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[18] Herminghaus v. Southern California Edison Co., 200 Cal. 81 (1926).

[19] Herminghaus v. Southern California Edison Co., 200 Cal. 81, 106-107 (1926).

[20] CAL. WATER CODE § 100 (Deering 1977).

[21] *See* CAL. WATER CODE §§ 275 (requiring the Department of Water Resources *and* Water Board to take all legal action to halt unreasonable use), 1058, 1240, 1251, 1253 and 1257 (Deering 1977 & Supp. 1995).

[22] 23 CAL. CODE REGS. tit. 23, § 4000 (1990).

Ownership of the waters of California resides in the people.[23] However, there is also a form of private property rights in water. In 1853, the California Supreme Court in *Eddy v. Simpson*[24] recognized that a property right in water was not in the corpus of the liquid but in its use. It stated "[i]t is laid down by our law writers that the right of property in water is usufructuary, and consists not so much of the fluid itself as the advantage of its use."[25] In other words, the value of a property interest in water is not that the actual water is "owned" by the user, but that he puts it to a beneficial and reasonable use in light of the public's overriding interest in reasonable use.

Water rights in California, which are a hybrid of riparian and appropriative rights, are now administered by the California State Water Resources Control Board (hereinafter Water Board).[26] The Water Board grants permission to utilize a certain amount of water for beneficial uses. All users of water, including riparians, pre-1914 appropriators and modern appropriators, are subject to the beneficial use doctrine and the prohibition on unreasonable use or waste. The Board exercises continuing jurisdiction over water usage.

In theory, the holder of a water right must exercise his right in such a manner so that such use does not infringe on the rights, uses or values of others or the public at large or harm public trust interests. No entity, in theory, is permitted by law to use its water right in a manner so that the quality of the water remaining in the stream, the associated beneficial uses, and related ecological values are unreasonably impaired.

Similarly, no person or entity is permitted by law to discharge their wastewater or otherwise allow the discharge of any material in any manner which degrades the quality of the receiving waters, so that associated resources, beneficial uses and ecological values are impaired. The California Department of Water Resources, a water-development oriented agency, has been empowered to investigate and prevent all waste of water, or unreasonable use, or unreasonable method of use of water before executive, legislative,

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[23] CAL. CONST. art. X, § 2; CAL. WATER CODE § 102 (Deering 1977).

[24] Eddy v. Simpson, 3 Cal. 249 (1853).

[25] *Id.* at 252.

[26] CAL. WATER CODE § 174, stating the Board performs both "adjudicatory and regulatory functions of the state in the field of water resources" (Deering 1977).

or judicial agencies.[27]

Thus, the Water Board and the Department of Water Resources both have the duty to enforce the public trust doctrine and the authority to re-evaluate definitions of the beneficial and reasonable uses of water granted under permit or license. The Courts also have traditionally had concurrent jurisdiction over water disputes, and serve as an appellate system when the Water Board fails to act or acts incorrectly.

The public trust doctrine,[28] founded in Roman times when navigable waters were considered public, is an affirmation of the duty of the state[29] to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right only in rare cases when abandonment of that right is consistent with the purposes of the trust.[30]

A classic example of a water use which became unreasonable over time, as conditions changed in California, was the outlawing of hydraulic mining in California's Gold Country.

By the 1870s, mining companies were using huge fire hoses to wash away hillsides containing gold deposits. The resulting debris, thousands of tons of it produced every day, was washed into tributaries of the Yuba, Feather and American rivers. This had the practical effect of elevating the riverbeds by as much as 12 feet, making adjacent farmlands more vulnerable to floods all the way down to the Delta. Eventually, farmers and riparian landowners, tired of endlessly raising their levees, filed for injunctive relief, alleging public nuisance.[31] The hydraulic mining industry argued that it provided a booming local economy, jobs and tax revenues for the state and operated in a manner long established by custom. Ironically, these are the same arguments used today

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[27] CAL. WATER CODE § 275 (Deering 1977).

[28] A seminal article on the public trust doctrine was written by Professor Joseph Sax in 1970. *See* Joseph Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

[29] While I focus on California public trust doctrine, the U.S. Supreme Court, in Illinois Central R.R. v. Illinois, 146 U.S. 387 (1892), held that the states have a duty to protect publicly-owned resources and thus the Illinois state legislature could not give away virtually the entire public Chicago waterfront on Lake Michigan to a railroad.

[30] *See* National Audubon Society v. Superior Court, 33 Cal. 3d 419 (1983), *cert. denied* 464 U.S. 977 (1983).

[31] For an excellent history of flood control in the Sacramento Valley, see ROBERT KELLEY, BATTLING THE INLAND SEA (1989).

by western San Joaquin Valley agribusinesses in defending current methods of drainage disposal.

However, in 1884 the California Supreme Court, in *People v. Gold Run Ditch & Mining Co.*,[32] held that landowners or mining companies did not gain a right through custom or common practice to continue dumping their wastewater and debris into streams and waterways of the State.[33] The High Court noted that there had been investments and expenditures of large amounts of capital in hydraulic mining.[34] But the court then stated:

> But a legitimate private business, founded upon a local custom, may grow into a force to threaten the safety of the people, and destruction to public and private rights; and when it develops into that condition, the custom upon which it is founded *becomes unreasonable*, because dangerous to public and private rights, and cannot be invoked to justify the continuance of the business in an unlawful manner. Every business has its laws, and these require of those who are engaged in it to so conduct it as that it shall not violate the rights that belong to others. Accompanying the ownership of every species of property is a corresponding duty to so use it as that it shall not abuse the rights of other recognized owners ... Upon that underlying principle, neither State nor *Federal* legislatures could, by silent acquiescence, or by attempted legislation ... divest the people of the State of their rights in the navigable waters of the State for the use of a private business, however extensive or long continued .... As we have already said, the rights of the people in the navigable rivers of the State are paramount and controlling.[35] (emphasis added)

Thus, the act of disposing of mining debris into rivers could be enjoined and a perpetual injunction issued. The *Gold Run Ditch* ruling was invoked against the entire hydraulic mining industry in California. Each company could continue to mine, but could not dump or allow its wastewater and other debris to enter the waters and waterways of the state. That ruling, coupled with a similar decision in the federal court,[36] effectively led to an end of most hydraulic mining in California and allowed agriculture to blossom.

While the *Gold Run Ditch* ruling relied on common law public nuisance theory and did not use the language of modern public trust doctrine, the seeds of that doctrine are clearly discernible in

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[32] People v. Gold Run Ditch & Mining Co., 66 Cal. 138, 4 P. 1152 (1884).
[33] *Id.* at 152.
[34] *Id.*
[35] *Id.*
[36] Woodruff v. North Bloomfield Mining Co., 18 F. 753 (1884).

that decision. It wasn't until 99 years later that the California Supreme Court, in *National Audubon Society v. Superior Court of Alpine County*,[37] made clearer the contours of current public trust doctrine, in light of evolving public values.

The High Court stated in *Audubon* that the public trust is more than an affirmation of the State's power to use public property for public purposes. It is an affirmation of the duty of the State to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when abandonment of that right is consistent with the purposes of the trust.[38]The *Audubon* court also said that parties acquiring rights in trust property (such as water), hold those rights subject to the trust, and can assert no vested right to use those rights in a manner harmful to the trust.[39] From this case, it can be readily inferred that protecting the public trust is a continuing condition of any permit or license issued by the State Board and is not a duty that can be shirked or endlessly postponed.[40]

The public trust doctrine applies to environmental insults to, or diversions from, navigable waters which impact or destroy navigation, fish habitat, fisheries, ecological values and other trust uses. The public trust doctrine also applies to extractions of water which destroy navigation, fish habitat, fisheries, ecological values and other public interests of those waters because both actions result in the same damage to the public interest. I believe the *Audubon* holding supports this concept. It equally follows that the public trust doctrine protects that water quality believed necessary to protect in-stream values, water contact recreational uses, navigation and a healthy and sustainable ecosystem and fish and riparian wildlife population.[41]

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[37] National Audubon Society v. Superior Court of Alpine County, 33 Cal. 3d 419 (1983), *cert. denied*, 464 U.S. 97 (1983).

[38] *Id.* at 425.

[39] *Id.* at 425-426.

[40] *See also* United States v. State Water Resources Control Board, 182 Cal. App. 3d 82, 227 Cal. Rptr. 161 (1986).

[41] *See* Ralph W. Johnson, *Public trust protection for stream flows and lake levels, in* CONFERENCE PROCEEDINGS, THE PUBLIC TRUST DOCTRINE IN NATURAL RESOURCES LAW & MANAGEMENT, REGENTS OF THE UNIV. OF CAL. (H.C. Dunning, ed., 1980); Ralph W. Johnson, *Water Pollution and the Public Trust Doctrine*, 19 ENVTL. L. REV. 495 (1989).

III. PUBLIC TRUST, NUISANCE, AND UNREASONABLE USE IN THE ADMINISTRATIVE BATTLE TO CLOSE KESTERSON.

Just after the *Audubon* case was decided, the problems at Kesterson surfaced and the State Water Board was thus under judicial admonition that it must consider public trust resources in its management and regulation of water permits and water uses.

On April 27, 1984, Robert James "Jim" and Karen Claus, owners of a duck club-cattle ranch adjacent to Kesterson, appeared before the Central Valley Regional Water Quality Control Board (Regional Board)[42]asserting that cattle on their ranch had died or had been sickened by toxic drainwater leaking from the Kesterson ponds. In Jim Claus' petition filed with the Regional Board, the Clauses sought immediate corrective action at Kesterson and wanted immediate regulation of the agricultural drainage flowing through the Grasslands Water District and into the duck clubs, whose owners had been assured that drainage could be safely used to "flood up" the clubs during duck season. After use in Grasslands, this degraded water was being discharged to the river.

The Claus petition targeted the United States Bureau of Reclamation and farming districts up-slope of Kesterson, alleging those entities were discharging poisonous drainage through the duck club canal system which constituted a continuing private and public nuisance.

The Clauses, both with doctorates from Stanford University, amassed an impressive amount of information from the state and federal governments' own files. Reports on the potential effects of drainage, in studies dating back decades, had warned about the possible dangers of drainage disposal from Westlands. Challenges to the assumption that drainage was safe for duck clubs, refuges, and the San Joaquin River were made by the United States Fish and Wildlife Service as early as 1962.

At the April, 1984, hearing, the Clauses established convincingly that 30 years of drainage studies on the west side had not yielded a solution and that damage was clearly being done at Kesterson, the Grasslands, and in the lower San Joaquin River. However, the Regional Board, with several members coming from agribusiness occupations or backgrounds, turned a deaf ear to the Clauses. The Regional Board heard a short presentation from

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[42] Cal. State Water Resources Control Bd. Order No. WQ 85-1, at 1 (Feb. 5, 1985).

attorneys for the irrigation districts draining into the Grassland district. The lawyers argued that any change in disposal methods would be economically unfeasible to their growers. The Regional Board members asked few questions and too quickly concluded that no immediate corrective action need be taken at Kesterson or in the Grassland duck clubs.

The Clauses then appealed to the State Water Board. The Board held hearings in October and December of 1984, and again in January, 1985,[43] when busloads of San Joaquin Valley farmers packed the Water Board's Sacramento chambers. Busloads of farmers and farmworkers showed up at the later hearings. The media coverage and public interest grew considerably over the summer and fall of 1984.

When the Water Board finally made its decision, there were numerous TV news camera crews inside the hearing room, including a team from "60 Minutes." The board voted to adopt a staff recommendation that Kesterson be cleaned up immediately or closed. On February 5, 1985, the Board issued Order WQ 85-1.[44] At that point in time, I now contend, western San Joaquin Valley agriculture's irrigation of unsuitable soils, and the resultant methods of disposal of untreated drainage, became unreasonable methods of use of water and have continued to be unreasonable.

Order WQ 85-1 found that the drainage entering Kesterson Reservoir contained many salts or metals in concentrations known to be harmful to humans, animals and aquatic life.[45] The Board also concluded that agricultural drainage had caused severe biological and reproductive problems to federally-protected migratory birds and was toxic to invertebrates and fish.[46]

The Order also found that the Bureau of Reclamation (Bureau) was discharging wastewater which was reaching waters of the State and was creating and threatening to create conditions of pollution and nuisance.[47]

The Order also stated: "If the Bureau [of Reclamation] closes Kesterson Reservoir and continues to supply irrigation water to Westlands Water District without implementing an adequate disposal option, *continued irrigation in the affected area of Westlands*

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[43] *Id.*

[44] *Id.*

[45] *Id.* at 11.

[46] *Id.* at 17.

[47] *Id.* at 11, 17-18.

Water District could constitute an unreasonable use of water (emphasis added)."[48] However, eleven years later the Bureau continues to provide water to the Westlands without any adequate drainage option and the Water Board still has not acted.

In the fall of 1984, when Kesterson was in the headlines, the Water Board's Division of Water Rights expressed the Board's growing unease about the reasonableness of methods of agricultural water use and disposal in the western San Joaquin Valley.

In the General Policy of its Agricultural Water Management for Water Purveyors, the Division of Water Rights stated: "Failure to take appropriate measures to minimize excess application, excess incidental losses, or degradation of the water quality constitutes unreasonable use of water."[49]

In a May, 1987 draft Technical Committee Report of the State and Regional water board staffs, written as part of Order No. WQ 85-1, it was noted that "waste disposal and assimilation *are not and cannot be beneficial uses* (emphasis added)."[50] But the staff report went on to quote the Board's Order WQ 85-1, stating that waste disposal and assimilation "are recognized as part of the necessary facts of life, to be evaluated and subject to *reasonable* consideration and action by the regional boards."[51]

The Board's policy, therefore, should be that if it is shown that a use of irrigation water or a drainwater disposal method is destroying the beneficial uses of the water consumed, or the beneficial uses of receiving waters, then that particular use or method of use is outside the bounds of the Constitutional prohibition against unreasonable or wasteful use. The Water Board should enforce the policy it established in 1985.

IV. Evidence of Unreasonable Use

The application of irrigation water to saline, seleniferous soils and the resultant drainage and wastewater has impacted water and its beneficial uses and has contaminated habitats (waters, waterways, wetlands and their respective biota) for decades. Also of concern is the contamination of groundwater and surface drink-

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[48] *Id.* at 43.

[49] Division of Water Rights, Cal. State Water Resources Control Bd., Agric. Water Management for Water Purveyors 1 (Sept. 1984).

[50] Cal. State Water Resources Control Bd., Technical Committee Report (pursuant to order WQ85-1) at III-1 (May 1987).

[51] *Id.* appendix F, at 4.

ing water supplies and ecological values of receiving waters, the Grasslands waterways and wetlands, and the lower San Joaquin River.

Current research by federal scientists indicates that waterborne selenium of 2 parts per billion (ppb) or greater is considered hazardous to the aquatic ecosystem and to the health and long-term survival of fish and wildlife populations because of bio-accumulation of selenium in food-chain organisms.[52] The extremely narrow margin between "safe" and "toxic" selenium levels in tissue, along with the propensity for it to accumulate in the aquatic food web, underscores the biological danger of even slight increases of selenium in the environment.[53] The most sensitive indicator of selenium toxicity in fish and aquatic birds is partial or complete reproductive failure. Such failure can occur with little or no mortality or visible symptoms in adults.[54]Obviously, the subtle effects of reduced or failed reproduction has devastating long term consequences for aquatic biota.[55]

Moreover, research findings indicate that the dietary toxicity threshold for selenium in fish and wildlife is only 3 parts per million (ppm).[56] "Because of this, food chain organisms containing 3 λg/g (parts per million) dry weight or more should be viewed as potentially lethal to fish and aquatic birds that consume them."[57] Therefore selenium residues in fish tissues and that of other aquatic life in excess of 3 ppm should be considered hazardous to the health of fish and aquatic life and should be considered as presumptive evidence of significant contamination of the aquatic ecosystem.

Continuing research has demonstrated that aquatic ecosystems and associated fish and wildlife are more sensitive to selenium and other substances of concern in subsurface drainage and wastewater than previously believed. Water quality criteria must protect aquatic ecosystems rather than specific species. This would

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[52] A. Dennis Lemly, 1993, *Guidelines for evaluating selenium data from aquatic monitoring and assessment studies*, 28 ENVTL. MONITORING & ASSESSMENT 83, 88, 94 (1993).

[53] *Id.* at 83.

[54] A. Dennis Lemly, et al., *Sources and Impacts of Irrigation Drainwater Contaminants in Arid Wetlands*, 12 ENVTL. TOXICOLOGY & CHEMISTRY 2265, 2272 (1993).

[55] Gerald A. LeBlanc, *Subtle Effects: Devastating Consequences*, SETAC NEWS, SOC. OF ENVTL. TOXICOLOGY & CHEMISTRY at 30-31 (May 1995).

[56] Lemly, *supra* note 52, at 83.

[57] *Id.* at 90.

indicate a selenium concentration in state waters of 2 ppb or less.[58]

Drainage resulting from irrigating saline, seleniferous soils is a pollutant and continues to move through the soil and into the groundwater and over the surface in drainage ditches, creating a continuing nuisance to downstream receiving waters. Such discharges, because of the toxic effects of selenium and its ability to bio-accumulate in biota, is expressly prohibited by at least three California statutes.[59]

The following facts indicate that irrigation of high selenium soils and the disposal of the resultant drainage is impacting beneficial uses downslope and downstream and now constitutes an unreasonable use of water and an unreasonable method of use:

1. During water years 1993 and 1994 the mean monthly selenium concentration standard of 5 parts per billion (ppb)—the EPA standard for aquatic wildlife[60]—in the San Joaquin River was violated 21 of the 24 months of record, or 87% of the time, at the Hill Road test site upstream of the Merced River confluence.[61] No enforcement action was taken by the Department of Water Resources, the State Water Board, or the Central Valley Regional Water Quality Control Board.

2. Groundwater supplies used for drinking, other domestic uses, agricultural uses, and fish and wildlife are being degraded. When sodium sulfate soils laden with other minerals are leached, an undrinkable shallow groundwater is the result, which is why the farm town of Mendota, a farm town on the edge of the San Joaquin River in the trough of the valley, can no longer use its groundwater as a drinking supply.[62]

3. Surface water supplies used for drinking, other domestic uses, agricultural uses, and fish and wildlife are being degraded.[63]

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[58] *Id.* at 94.

[59] CAL. FISH & GAME CODE § 5650 (Deering 1989); Cal. Health & Safety Code §§ 5410-5411 (Deering 1975); and CAL. WATER CODE. § 13000 (1977).

[60] 40 C.F.R. § 131.36 (1995).

[61] CAL. REGIONAL WATER QUALITY CONTROL BD., CENTRAL VALLEY REGION, 1995 WATER QUALITY OF THE LOWER SAN JOAQUIN RIVER: LANDER AVE. TO VERNALIS, OCT. 1992 TO SEPT. 1994 at 33, 55 (Jan. 1995).

[62] Ivan Barnes, *Sources of Selenium, in* proceedings of the SECOND SELENIUM SYMPOSIUM, SELENIUM & AGRIC. DRAINAGE: IMPLICATIONS FOR SAN FRANCISCO BAY & THE CAL. ENVT. 41-42, 49 (The Bay Inst. of San Francisco, ed., 1986); *see also infra* note 63.

[63] T.S. Presser & Ivan Barnes, *Dissolved Constituents, Including Selenium, in Wa-*

The 1990 Water Quality Assessment describes 29 miles of Salt and Mud Sloughs and the lower 100 miles of the San Joaquin River as impaired for most beneficial uses.[64]

4. Some existing surface water (agricultural drainage) flowing through the Grassland Water District duck club canal system contains elevated levels of selenium and boron and is unusable for beneficial uses.[65] A recent draft study by the United States Fish and Wildlife Service estimates it may take more than a decade to detoxify the Grassland district with fresh water flows in order to reduce continuing selenium impacts on federally protected birds.[66] This unusable drainage has prevented the United States Fish and Wildlife Service and the California Department of Fish and Game from exercising their existing water rights for fish and wildlife management purposes since 1985. About 29,000 acre-feet in Licenses 10120 and 10741 (USFWS), and 012074 and 005016 (CDFG), are involved.[67]

5. Water-contact and non-contact recreation in the San Joaquin River and navigable tributaries is discouraged by concerns over poor water quality, as indicated by turbid water, muddy streambed, stench, public health advisories and potential health concerns. In addition, the Technical Advisory Committee on Irrigated Agriculture to the State Water Board has reported that elevated bacterial levels were noted as a water quality problem in seven of the nine regional water quality control board regions.[68] The bacteria was from animal wastes activated by irrigation activity, dairies, or grazing, and carried into rivers by drainage ditches.[69]

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ters in the Vicinity of Kesterson National Wildlife Refuge and the West Grassland, Fresno and Merced Counties, California 73, Water Resources Investigations Report 85-4220, U.S. Geological Survey (1985).

[64] DIVISION OF WATER QUALITY, CAL. STATE WATER RESOURCES CONTROL BD., WATER QUALITY ASSESSMENT 85-86, 96 (Apr. 1990).

[65] U.S. BUREAU OF RECLAMATION, news release MP-95-72 (Oct. 3 & 11, 1995).

[66] Fred Paveglio, U.S. Fish and Wildlife Service, 1996, in draft (on file with author); Pers. Comm. Gary Zahm, U.S. Fish and Wildlife Service, manager of the Kesterson National Wildlife Refuge.

[67] Zahm, U.S. Fish and Wildlife Service, Pers. Comm., 1995.

[68] Report on Irrigated Agriculture to the California State Water Resources Control Board Technical Advisory Committee, Appendix D (Dec. 1994); personal observations by this writer and others, including a state park ranger, confirm this assertion.

[69] *Id.*

6. Fish populations, except for mosquito fish, were eliminated from Kesterson ponds before 1983. A fish kill in September, 1983, eliminated all species except the selenium-tolerant mosquito fish in the San Luis Drain.[70]

7. Fish populations in waters of the state are being impacted by selenium-induced reproductive failure, abnormalities, and retarded growth. In addition, the atypical salt composition of the brackish subsurface agricultural drainage can be toxic to euryhaline fishes that inhabit the San Joaquin River.[71] Salt-tolerant fishes such as chinook salmon and striped bass, when exposed to subsurface drainwater dominated by sodium sulfate, experience poor growth and body condition, and low survival.[72] These fish, in similar salinities of sea water dominated by sodium chloride, survived well, and had good growth and body condition.[73]

8. Warmwater fish habitat is being impacted through selenium contamination of the food chain. Selenium concentrations found in fish tissues taken from Mud Slough at Los Banos Wildlife Management Area in 1972-1973 were about the same as fish sampled from the Sacramento River.[74] By 1985, the selenium residues in fish taken from Mud Slough at the Los Banos Wildlife Management Area were almost nine times (range 6.4 to 9.6 parts per million (ppm)) greater than the 1972-73 residue levels of 1.1 ppm.[75] However, selenium residues up to 23 ppm were found in fish sampled from other Grasslands locations in 1984.[76]Selenium residues above the 3 ppm in the food chain are now recognized as being potentially lethal to fish and aquatic birds that consume them.[77]

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[70] Michael K. Saiki, *supra* note 4.

[71] Michael K. Saiki et al., *Toxicity of agricultural subsurface drainwater from the San Joaquin Valley, California, to juvenile chinook salmon and striped bass*, 121 TRANSACTIONS OF THE AM. FISHERIES SOC. 78 (1992).

[72] *Id.*

[73] *Id.*

[74] National Pesticide Monitoring Program (now called National Contaminant Biomonitoring Program, NCBP); *see also* Felix E. Smith, U.S. FISH & WILDLIFE SERVICE, *Agricultural Wastewater and the Public Trust: A Discussion*, at 40, Table 3, and 52 (Nov. 1986).

[75] Michael K. Saiki et al., *Selenium and Other Elements in Freshwater Fishes from the Irrigated San Joaquin Valley, California*, 126 THE SCIENCE OF THE TOTAL ENVT. 109, 129-133 (1992).

[76] Michael K. Saiki, *supra* note 4.

[77] A. Dennis Lemly, *supra* note 54; Kurt J. Maier & Allen W. Knight, *Ecotoxicology of selenium in freshwater systems*, 134 REVIEW OF ENVTL. CONTAMINATION &

9. Cold-water fish populations (non-salmonids) utilizing the San Joaquin River are at risk through contaminated foods that can cause reproductive failure, abnormalities, and retarded growth. White sturgeon have accumulated significant selenium residues via their food chain.[78] Measured residue levels are approaching those levels where U. S. Fish and Wildlife Service (USFWS) researchers suspect chronic and acute effects.[79] Spawning of white sturgeon in the San Joaquin River is believed unsuccessful because of a combination of poor water quality and low stream flow.[80]

10. Smolts of anadromous fishes — Chinook salmon outmigrants — from the Merced River must travel the selenium-laden sodium sulfate waters of the lower San Joaquin River. These outmigrants could be at risk due to consumption of contaminated foods which can retard growth and induce smoltification complications[81] or from the effects of high levels of sodium sulfate in the water.[82]

11. Dead adults and deformed embryos or hatchlings of migratory birds have been found at Western Valley sites (including evaporation ponds) contaminated by selenium-laden drainage and wastewater every year since the first find at Kesterson in 1983.[83]

12. Public health advisories have been issued by the California Office of Environmental Health Hazard Assessment since 1983 because of elevated selenium levels in fish and migratory birds. These warnings advised that no one should eat more than four ounces of fish or duck meat from the Kesterson-Grassland area in any two-week period and that women who are pregnant or may

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TOXICOLOGY 31 (1994).

[78] CAL. STATE WATER RESOURCES CONTROL BD., SELENIUM VERIFICATION STUDY, 1988-1990, WQ91-2, 28-33 (May 1991).

[79] *Id.* at 26, 33.

[80] Larry R. Brown & Peter B. Moyle, *Native fishes of the San Joaquin Drainage: Status of a remnant fauna and its habitat, in* ENDANGERED & SENSITIVE SPECIES OF THE SAN JOAQUIN VALLEY, CAL.: THEIR BIOLOGY, MANAGEMENT, & CONSERVATION 92 (D.F. Williams et al., eds., Cal. Energy Comm'n 1992).

[81] LEMLY, *supra* note 54; MAIER & KNIGHT, *supra* note 80.

[82] SAIKI ET AL., *supra* note 75.

[83] Harry M. Ohlendorf, *Aquatic Birds and Selenium in the San Joaquin Valley, in* proceedings of the SECOND SELENIUM SYMPOSIUM, SELENIUM & AGRIC. DRAINAGE: IMPLICATIONS FOR SAN FRANCISCO BAY & THE CAL. ENVT. 15, 17 (The Bay Inst. of San Francisco, ed., 1986); Schwarzbach, S., U.S. Fish and Wildlife Service, pers. comm., 1995.

soon become pregnant, nursing mothers, and children under 15 years of age, should not eat any fish or duck meat from the area.

13. A report on pesticides in drainage runoff from the western San Joaquin Valley, issued by the Central Valley Regional Water Quality Control Board in December of 1995,[84] stated that herbicides used in the winter, and carried into the San Joaquin River through drainage ditches, were toxic to invertebrates and constituted a violation of EPA standards.[85]

14. A staff technical report issued by the State Water Resources Control Board on March 11, 1996, stated six of fourteen evaporation pond complexes in the western San Joaquin Valley (totalling 5,400 acres) had such elevated levels of selenium that the probability of reduced hatchability and embryonic deformities in bird populations was high.[86]

The evidence, viewed impartially, appears clear and convincing. Irrigation of unsuitable, inappropriate, or metal-laden soils constitutes an unreasonable use of water and current drainage disposal methods constitute an unreasonable method of use and a common law public nuisance downstream. Both are violations of the public trust doctrine.

The years continue to roll by since I held that first deformed embryo in my hand, but the State Water Board has taken little action to halt or regulate the operation of evaporation ponds known to be triggering deformities in federally protected birds. It has also acted quite slowly to protect the lower San Joaquin River, which is now a cesspool of contaminants from pesticides to selenium to salts and boron. The Water Board's inaction cannot be because of lack of evidence that harm is occurring. That evidence is mountainous and grows with each new report.

A decade after Kesterson, and with more than $100 million expended in drainage studies and cleanup, dozens of scientific studies point to the inescapable conclusion that drainage of the type

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[84] CAL. WATER QUALITY CONTROL BD., CENTRAL VALLEY REGION, pesticide run-off report in draft (Dec. 1995) (on file with author).

[85] *Id.*

[86] CAL. STATE WATER RESOURCES CONTROL BD., Staff Technical Report on Petitions Regarding Tulare Lake Evaporation Ponds at ES-6 (Mar. 11, 1996). The Technical Report noted: "The evaporation ponds have been considered a temporary solution to the disposal of agricultural waste water. The [Regional Board's] Basin Plan indicates that *evaporation ponds will not be considered permanent solutions unless long-term water quality and environmental protection have been documented, a provision that has not been met*" (emphasis added). *Id.* at ES-2.

that destroyed Kesterson is creating, and will continue to create, downstream and downslope conditions of pollution and nuisance, both above and below the ground.

Western San Joaquin Valley agricultural drainage reaching the San Joaquin River contains confirmed or suspected toxic levels of pesticides, selenium, boron, other trace elements, chloride and sulfate salts. This agricultural sewage is unquestionably polluting many watercourses, natural and manmade, feeding the waste waters into the San Joaquin River and its tributaries.

Despite the poisoning of Kesterson, private landowners and California drainage districts continue to operate bird-attracting evaporation ponds with lethal results to migratory birds. Each spring in the western San Joaquin Valley, selenium-caused mutation takes its toll among shorebirds at the private evaporation ponds. The lower San Joaquin River is little more than an agricultural sewer and fish populations have been impacted by reduced growth and partial or complete reproductive failure.

Downstream water rights have also been rendered unusable. Public trust properties and interests have been degraded and the biological integrity of the Grasslands marshes of western Merced County and the San Joaquin River have been impaired.

This continuing pollution has multiple long term consequences for water supply, water quality, and the viability of aquatic ecosystems in California. The inability or unwillingness of the appropriate state agencies to resolve the problem has been apparent for more than a decade. At stake is no less than the health of the Bay-Delta estuary and the integrity of public drinking supplies, as well as fish and wildlife interests. Corrective action can be exercised through the Board's continuing constitutional authority to prohibit unreasonable use and its duty to protect public trust interests.

CONCLUSION

It is now 13 years since I held the first of what became a long and still growing list of dead and deformed migratory birds found in the polluted wetlands of the western San Joaquin Valley. It has been ten years since the Board issued Order WQ 85-1, based on a finding that agricultural drainage entering state waters was "creating and threatening to create conditions of pollu-

tion and nuisance."[87]

That continuing failure of the Water Board to take any regulatory approach other than to order more studies is why I filed a petition to have the Board declare current methods of disposal of agricultural drainage unreasonable and to issue cease-and-desist orders for evaporation ponds that kill wildlife.

I contend, backed by the government's own reports, that the continued irrigation of poor quality, salty farmlands high in selenium is an unreasonable use of water and that disposal of toxic drainage with proven negative impacts on receiving waters of the state constitutes an unreasonable method of use of water. And that, according to the Board's own words of 11 years ago, unreasonable use of water in the western San Joaquin Valley is now occurring.

One thing is certain. For decades, western San Joaquin Valley farmers have known that they had to export more salt than they imported in their irrigation supplies or their reclaimed saline desert land would go out of production due to salty shallow groundwater. In the wake of Kesterson, government regulatory agencies, state and federal, now know that many of the soils of the western valley are loaded with selenium, boron and other trace elements, chloride and sodium sulfate salts, and that drainage loaded with these minerals can contaminate aquatic and avian food chains.

This contamination is so great that beneficial uses of water are being impacted, groundwater supplies are being impacted, aquatic ecosystems are being damaged, reduced or failed reproduction of fish and wildlife is occurring, and death and deformities in birds continues in the western valley. Agribusiness interests have argued that treatment methods to detoxify the drainage are not economical. This argument failed in the hydraulic mining court cases of a century ago. Land retirement has been suggested for over a decade but has not been implemented.[88]

If the State Board denies my petition, or refuses to abate the unreasonable use and methods of use, the courts, pursuant to the *Audubon* decision, will hopefully provide a remedy so that the

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[87] Cal. State Water Resources Control Bd., *supra* note 42.

[88] U.S. BUREAU OF RECLAMATION, ALTERNATIVES DESCRIPTION REPORT, San Luis Unit Drainage Program, Mid-Pacific Region, at 3-1, and Table 5-5 at 5-32 (Apr. 1991). This report estimated that up 275,000 acres of land in the western valley, out of an estimated two million acres of farmland, contains elevated levels of selenium or other metals.

public trust interests of present and future generations are adequately protected.