

Public Trust Doctrine, Selenium Contaminated Drainage and Unreasonable Use of Water

by
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Introduction

The Central Valley Project (CVP) managed by the Bureau of Reclamation has reworked several of California's rivers and altered the natural flows of the Central Valley. This massive undertaking was largely to help the San Joaquin Valley farmers who had seriously over drafted their groundwater. The Sacramento Basin (Shasta Dam and Reservoir) water covered the needs of the Lower San Joaquin River water rights holders (riparian and adjudicated) so selected farmers could be served water from the San Joaquin River via Friant Reservoir and the Madera and Friant – Kern Canals. The development of addition Northern California water (American and Trinity Rivers) opened new lands to irrigation on the San Joaquin Valley's Westside (Dunning-1993).

The CVP benefited the farming economy of California and probably the US balance of payments. It unquestionably, however had a devastating environmental legacy. The negative impacts include dewatering reaches of a major river system. The San Joaquin River was dried up. It's spring-run of Chinook salmon now extinct. The Sacramento River Winter-run Chinook salmon was brought to near extinction. Steelhead, Chinook and Coho salmon runs of the Trinity River were decimated. Folsom Reservoir releases to the American River routinely fluctuate throughout the summer months to provide extra water to maintain Delta water quality and for export. In the American River during the summer water temperature are above temperature needs of summering over steelhead stressing this population. Flow reversal in the central and south Delta degraded water quality and confused migrating fish both adults and out-migrants (Dunning-1993, Rennie -1996). Delta smelt are endemic to the Delta and live just about one year, which makes them particularly vulnerable to short-term threats. Extinction of Delta smelt could result from just a single year spawning failure.

Agricultural drainage from the western San Joaquin Valley contains selenium which can be toxic and has had disastrous environmental consequences to wetlands, fish, migratory birds, mammals, frogs, reptiles, and other resident wildlife, surface and

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groundwater supplies. The drainage problem has been greatly magnified with water imported from the Sacramento, American and Trinity Rivers (Rennie - 1996).

The State Water Resources Control Board (Water Board) should answer the following questions regarding selenium contaminated drainage and wastewater:

1. With today's knowledge about the extent of selenium in soils of the western San Joaquin Valley and with the long-term environmental impacts resulting from selenium contaminated drainage and wastewater on beneficial uses of water and the public trust; -- Is it good public policy and a good investment of public and private funds to irrigate saline - seleniferous soils?
2. Is it good public policy to dam Northern California Rivers and divert massive amounts of such waters to irrigate selenium containing lands, when the drainage and wastewater from this activity results in poisoning fish, birds, mammals, reptiles and other wildlife and renders their habitats toxic; killing the soil thru salinization as well as degrading or destroying beneficial uses of water?
3. Is it a reasonable and wise use of our limited water resources to continue to irrigate saline-seleniferous soils to grow surplus crops in a near desert environment when other options are available?
4. Have we pushed the assimilative capacity of Central Valley rivers and the Delta to the point where the water quality is detrimental to the sustainability of fish and other aquatic life, water dependent species, migratory birds, recreation and other beneficial uses of such waters?

Who owns the water?

Ownership of the waters of California resides in the people. The California Supreme Court in *Eddy v. Simpson* (3 Cal 249 - 1853) stated "It 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". The American Heritage Dictionary defines – usufruct –as the right to utilize and enjoy the profits and advantages of something belonging to another so long as the property is not damaged or altered in any way". In the context of a water right - a water right holder or user of water must respect the rights and interests of others and protect the integrity of that water as a supply or ecosystem.

The State Constitution, Article X, Section 2, as amended in 1928, 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 of water in or from any natural stream or water course in this State is and shall be limited to such water 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 (Emphasis added).

Article X, Section 2 of the California Constitution clearly establishes that any waste or unreasonable use or method of use of water should be prevented. The right to use water does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diverting the water to its place of use.

Section 100 of the Water Code contains language similar to the State 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 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 of water in or from any natural stream or water course in this State is and shall be limited to such water 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**. (Emphasis added)

The Water Board administers water rights. It can grant permission to utilize an amount of water for beneficial uses. A holder of a water right must exercise his or her right in such a manner so it does not infringe on the rights, uses or ecological values of others or the people. No person is permitted by law to use his or her water right in a manner so that the quality of the water remaining in stream along with its associated beneficial uses and ecological values are impaired. In exercising a water right, no person is permitted by law to discharge their wastewater or 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 U.S. Environmental Protection Agency administers the Federal Clean Water Act, as amended. The Regional Water Quality Control Boards administer California's Porter-Cologne Water Quality Control Act, while the Water Board provides for oversight and appeals. The Water Board and the Regional Water Quality Control Boards are to regulate activities to attain the highest water quality which is reasonable, considering all demands being made on the water resource and beneficial uses of water (Water Board Res. 75-80, August 21, 1975).

Beneficial uses of San Joaquin Basin water outlined in the Water Quality Control Plan Report 5C include agricultural water supply, domestic water supply, groundwater recharge, water contact recreation, recreational navigation, sport fishing, warm fresh

water fish habitat, cold freshwater fish habitat, fish migration, fish spawning and rearing, wildlife habitat, preservation of areas of special biological or ecological significance and estuarine habitat.

The people are supposed to be protected against all unreasonable uses of State waters. A use of water can be considered unreasonable if it pollutes, or if it offends our sense of aesthetics or natural beauty, or if it interferes with the right of the public to enjoy a natural resource, or if it threatens in a harmful way to upset the ecological balance of nature, or to allow it confers a valuable privilege which is inconsistent with protecting beneficial uses. Nearly all uses of water can be called beneficial, but not all uses can be called reasonable and beneficial. For example, the use of water for diluting salts, trace elements, (selenium, boron, agricultural chemicals and sediment, etc) is not a beneficial use of water because it is detrimental to many other beneficial uses of water (Central Valley Basin Plan 5C).

California Administrative Code, Title 23, provides that any interested person upon showing cause can file a complaint (nuisance or unreasonable use of water) with the State Board and it shall investigate the particulars of the complaint. The Water Board does not have to provide the person filing a complaint a report of findings.

Ownership

Ownership of land is the link between the owner and how he or she uses of the land. Ownership fixes responsibility for the way land is used. Berry, in his essay "*Private Property and the Common Wealth*", is an uneasy believer in the right of private property (agricultural land, forests, minerals, etc.) because this right can be easily abused. It could be misunderstood as the right to use it, to destroy it and to destroy its use by others. In a practical sense, we do not have absolute property in land. Society places restrictions on the use of land. Ownership includes a bundle of rights or interests. The bundle comprises a person's right to possess the land and to exclude others who might trespass; the power to sell it and the privilege to use it, subject always to the right of others who may have a legal interest in the land (Berry-1995).

Two destroyers of private property and associated values are ignorance and perceived economics. We have over used our land. We forced it to produce beyond its ability to recover. Lands were plowed that should not have been. The driving force almost always was economics (Berry-1995). The more marginal is the land, the worse the abuse. The cheaper the cost of applied water, the greater the abuse of land. The greater the crop subsidy, the more the land is abused. Too frequently the social cost is lost topsoil, poor water quality, absentee landowners; polluted rivers, contaminated fish and wildlife resources; greatly reduced fish and wildlife populations with severe habitat and environmental degradation. Lost recreational opportunities and lost scenic values can relegate a community to near impoverished status (Worster-1984-a).

The right of land ownership and putting the land to use can be a challenge. The landowner or lessee of land has the obligation to secure to the rest of us the right to use that same property in the future. Therefore a person / corporation does not really own

the land in the same sense that one owns his boots or his watch. A person can destroy his watch or boots with no impact on others. A person destroying his land can have tremendous and far-reaching impact on lands and resources belonging to others that are often far removed from the site of destruction. Therefore the privilege to use land is subject to police power regulations by governments and is subject to the common law of nuisance. If an activity or use is deemed a nuisance, it is the responsibility of the owner to cease the activity, bring it up to standard or remove it. In the spirit of free enterprise, such costs should not be a public cost.

For a small piece of property the rights and issues may be minor. But for land management entities and corporations owning or controlling thousands upon thousands of acres in farming, timber, minerals, etc., the bundle of rights becomes blurred at the watershed level. Watershed impacts can be extensive and reach far extending hundreds of miles. In agriculture, trace elements have been released to bio-accumulate in biota of wetlands and riverine ecosystems. Agricultural chemicals, farm runoff and wastewater impacts surface and ground water, fish and wildlife and associated habitats; and land use modifications could impact water quality for domestic and recreation uses, wildlife, fish and other aquatic life. There could be line of sight impacts at recreation and scenic areas.

Today, every person exercising his or her right to use the air, water, or land and associated natural ecosystems, has the obligation to secure for the rest of us, the right to live or otherwise use that same resource or property for use long term and enjoyment by future generations (Berry –1995). To say it another way, ownership of land fixes the responsibility for the way it is used. A landowner or lessee as well as a water right holder, has an obligation to use such resources in a manner as not to impair or diminish the people's rights and the people's long-term interest in that property or resource, including down slope lands, waters and resources.

Public Trust Doctrine Protection

The Public Trust Doctrine of the 21st Century has its roots in the Roman Empire and Emperor Justinian during 529 to 534 A.D. (Althaus –1978). The Public Trust Doctrine protects many interests and values including ecological values, environments which provide food and habitat for fish and other aquatic life, wildlife, scientific study, scenery, open space and recreation values of bathing and swimming, in addition to traditional uses of navigation, fishery and commerce (See *Marks v. Whitney*, 6 Cal. 3d 251, 491 P. 2d 374, 98 Cal Rptr. 790 - 1971). The public trust doctrine is an affirmation of the duty of the state to protect 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. (*National Audubon Society v. Superior Court* (33 Cal. 3d 419, 189 Cal Rptr. 346; 658 P.2d 709, cert. denied 464 U.S. 977-1983).

Judge Racanelli in his 1986 decision regarding *U.S. v. State Water Resources Control Board* (227 Cal Rptr 161-1986, also called *Racanelli*) stated the Water Board should consider the impacts of all upstream diversions and uses of water. He also

stated that it is essential that the Water Board take a global perspective in carrying out its water quality planning obligations. This includes point and non-point discharges and unreasonable uses of watershed water and lands.

Racanelli (at 227 Cal Rptr. 161, at 195) ordered the State Board to set water quality standards to protect all beneficial uses. What *Racanelli* in essence told the State Board was “Set water quality standards and then let the agencies do everything necessary to meet them. And if they complain that they can’t meet the standards by modifying their water rights and changes in operation, they should explain why in detail.” *Racanelli*’s global view of the Central Valley – Delta watershed would include pre-1914 right holders as well as post-1914 water right holders and diverters (depletions), uses of water, and who is discharging what materials to the surface and ground waters of the Great Central Valley. The *Racanelli* (227 Cal Rpt 161, at 200) also stated the State Board has a mandate under state and federal law to set water quality standards to protect fish and wildlife and ecological values.

People refer to the *Audubon* decision and to Water Board’s Mono Lake Basin Water Right Decision 1631 for guidance in how to manage public trust assets. The *Audubon* Court stated that the public trust is more than affirmation of State’s power to use public property for public purposes with any surrendering that right of protection only occurring in rare cases when abandonment of that right is consistent with the purposes of the trust. The *Audubon* Court also said parties acquiring rights in trust property (in *Audubon* it was freshwater), hold those rights subject to the public trust and can assert no vested right to use those rights in a manner harmful to the trust. One can conclude that protecting the public trust is a pre-condition of any water right permit or license or any discharge permit issued by the Water Board or Regional Boards. See also *Racanelli* –1986.

The Public Trust Doctrine applies to fills in navigable waters that impact or destroy navigation, fish habitat, fisheries, ecological values and other trust uses. The Doctrine applies to extractions of water that destroys navigation, fish migration, fish habitat, fisheries, ecological values and other public interests of those waters because both actions result in the same damages to the public interest. The *Audubon* decision supports this reasoning (*Audubon* 33 Cal.3d 419 at 457). It follows then that the public trust doctrine protects the water quality believed necessary to have quality instream values, water contact recreational uses, healthy and sustainable fish populations and ecosystems. However when the use of water leads to a nuisance such as the toxic effects of drainage and wastewater from saline seleniferous soils, that use must be considered unwise and unreasonable (Johnson -1980 & 1989).

Many beneficial uses and ecological values of water are protected under the Public Trust Doctrine. The public trust cannot be diluted by treating it as merely just another beneficial use under the California Constitution, Article X, Section 2, coequal with irrigation, power production and municipal water supply. The Doctrine of the Public Trust is multi-faceted and it occupies an exalted position in any judicial or administrative determination of water allocation (Hodge Decision–1990, Moskowitz - 1994.)

The *Audubon* Court tied public trust protection to the maintenance of natural resources for the innate value and not to private beneficial uses of water. Under *Audubon* the Water Board's first task was to determine the water requirements necessary to protect trust uses in the Mono Lake Basin. In the Water Board Decision 1631 regarding Mono Lake Basin, the effort was to establish standards to protect Mono Lake and tributaries for many natural values and beneficial uses before water could be exported out of the Basin (Koehler - 1995).

The State of California has sovereign fee ownership as well as public trust easements in Sacramento and San Joaquin Rivers, beds and shore lands, its waters, fish and wildlife resources. Therefore the State has the duty and under public trust responsibilities, the obligation to abate any nuisance, which can be shown to have a deleterious effect on rights or interests, protected by the public trust doctrine (State Lands Commission 1993). There are Federal National Wildlife Refuges (NWR), State Game Management Areas and State Park and Recreation Areas in the central San Joaquin Valley. Fish and wildlife resources are held in trust and managed by California Department of Fish and Game (CDFG). The U.S. Fish and Wildlife Service (FWS) manages the lands of National Wildlife Refuge system. The CDFG and FWS have water rights or contracts to use the area's surface waters for fish and wildlife management purposes. The Convention on Wetlands of International Importance (the Ramsar Convention represented by 144 nations) meeting February 2005 designated the Grasslands Ecological Area of Merced County, CA, as Wetlands of International Importance. This is an area of about 160,000 acres in Federal, State and private ownership (Fish and Wildlife News –FWS, Spring 2005).

The Water Board has a continuing responsibility to reevaluate the uses of water and to protect public trust resources, uses and ecological values from being impacted by unwise or unreasonable diversion or use of water. This includes drainage and wastewater impacts resulting from the diversion or use of water. This too was a part of Judge Racanelli's global perspective (*Racanelli* –1986).

The Public Trust Doctrine provides a principled common law foundation for protecting water quality, especially against non-point polluters. Irrigation that causes pollution that can be poisonous to fish and wildlife or render their habitat toxic like selenium contaminated drainage and wastewater, presumably can be regulated under the theory that the term "beneficial use" means both beneficial to the appropriator and not harmful to the public interest. Protecting fisheries and other aquatic uses and ecological values necessarily implies protecting water quality (Sax, 1970, *Audubon* – 1983, Johnson -1989 at 485, 488).

Protecting Water Quality and Ecosystem Sustainability

Water is the environment in which fish and other aquatic life must carry on all their life processes. Therefore aquatic resources, their uses and ecological values are inextricably tied to the physical, chemical and biological aspects of the aquatic environment. Healthy and diverse aquatic populations are indicative of good water quality (flow, temperature, oxygen and chemical parameters). Good water quality

allows for near optimum use of water, as an urban and agricultural supply, as an environment for fish and other aquatic life and as a place to recreate, seek solitude or a food supply. For healthy and sustainable fish populations to exist (also wildlife populations), the total aquatic environment (the water, the bed –gravel, sediment, the riparian vegetation and associated insect life, i.e. the food web) all interact and therefore must be suitable for aquatic life at the individual, population and community levels.

A water quality problem exists when there is failure to provide water of sufficient quality or quantity to protect or enhance an ecosystem, its resources, beneficial uses and ecological values. For example, the Water Board –2000, regarding the San Joaquin River states, “Water quality problems in the San Joaquin River watershed are selenium, salt, boron, pesticides and unknown toxicity”.

One of the duties of the Water Board and Regional Boards is to protect the sustainability of aquatic ecosystems so people can continue to benefit from associated resources, uses and ecological values. This is an obligation supported by case law. Protecting aquatic ecosystem is a principle of the Public Trust Doctrine discussed in *Audubon* and is a moral obligation of all levels of government and all of us.

The Pacific Institute in its California Water 2020 A Sustainable Vision (at ES-3) defines sustainable water use as: “the use of water that supports the ability of human society to endure and flourish into the indefinite future without undermining the integrity of the hydrological cycle or the ecological systems that depend on it” (Gleick, et al-1995).

Selenium Contaminated Drainage and Wastewater

San Joaquin Valley drainage problems are caused or exacerbated by natural and man-made conditions. There are naturally high concentrations of trace elements (selenium, arsenic and mercury) and a variety of salts in the soils derived from marine sediments. There is a shallow ground water table in an arid region, and there are massive amounts of subsidized water imported from northern California Rivers and applied to the land (Tidball, et al. 1986).

Selenium in the Lower San Joaquin River and tributaries is derived from several sources. These include surface agricultural return and wastewater, subsurface agricultural drainage, wetland discharge, groundwater accretions and tributary inflow. Importing subsidized water allowed for expanding the irrigated acreage that in turn magnified the selenium, salt and drainage problem. It is the application of massive amounts of water that greatly increased the leaching of selenium, other trace elements and salts accumulating in soil, surface and adding to the high groundwater table. The subsurface drainage flow is the primary source of the selenium. There is little doubt that the biological and ecological issues surrounding the selenium drainage and wastewater were greatly magnified and expanded with water imported from the Sacramento, American and Trinity watersheds (Dunning–1993, Rennie- 1996).

Selenium from an ecotoxicology perspective has some interesting characteristics that must be recognized:

1. It behaves similarly to sulfur and it is very active biologically.
2. Selenium has the smallest margin between what is safe and what is toxic of any essential element.
3. It is dietary intake rather than direct bioconcentration from the water column that is the primary source of selenium in fish and wildlife bodies.

Selenium, because of its characteristics, toxicity, persistence in the environment, bioaccumulation and mobility, a little bit of it goes a long way. Therefore a Total Maximum Daily Loading (TMDL) for selenium is not a good indicator of water quality because organisms bioaccumulate selenium to many times the concentration level in the surrounding water. As a result, a slight increase of selenium in the surrounding environment can cause a disproportional increase of selenium in organisms, rapidly crossing the safe threshold from benign nutrient to a deadly toxin. Fish and wildlife literature indicated that a range of 2-3 ug/l of water borne selenium to be fully protective of fish and wildlife resources (Skuropa –1993, Ohlendorf –1993, DOI -1998).

The bioaccumulation of selenium is very interesting. A selenium concentration of 5 to 30 ppb could see a 500 to 800 times the waterborne concentration in plankton; in sediment 200 to 400 times; in benthic invertebrates 800 to 2000 time and in fish tissue (depending species) 1000 to 35,000 time the water borne concentration. Because of its many forms, selenium is able to bond with many substances, in water, sediment and biota. Selenium is being magnified in animal tissues as it goes up the food chain. The high selenium concentration in fish is a result of selenium accumulation via dietary intake. Therefore fish eating other fish and invertebrates, and the birds and mammals that feed on such animals can receive toxic quantities of selenium through their diet even though the selenium concentration in water is low (Lemly -1985 and 1993). In one study selenomethionine at water borne concentration of less than 1 ppb has been shown to be bioconcentrated by a factor of 50,000 in algae and 350,000 in daphnids (Presser –1994).

Among vertebrates, reproductive toxicity is one of the most sensitive endpoints. Egg-laying vertebrates such as birds and most fish species seem to have substantially lower threshold for reproductive toxicity than placenta vertebrates (mammals) (DOI 1998). It also appears that the teratogenic effects of selenium in natural populations of fish and aquatic birds are essentially the same (Lemly 1993, DOI 1998).

The First Deformed Migratory Bird

In the early 1980s some people, including a few duck club owners, believed that something was wrong in the northern Grasslands on the west side of the San Joaquin Valley. They noticed sick and dead birds in 1981 and 82. This author was a biologist assigned to the U. S. Fish and Wildlife Service (FWS) research team to look into the sick and dead bird issue. This author held the first deformed migratory bird, an American coot hatchling, found at Kesterson National Wildlife Refuge (NWR) in 1983 (Smith – 1996). This was the first of many deformed bird and dead birds found at

Kesterson NWR. Kesterson NWR was then the terminus of the San Luis Drain and was actually a series of holding / evaporation ponds. People were disturbed by the pictures of dead and grossly deformed waterfowl and shorebirds found at Kesterson that were appearing almost nightly on the television news at dinner time. Today the people are just as sickened by the sight of the dead and deformed waterfowl and shore birds that were found at Kesterson NWR in 1983. At other locations in the San Joaquin Valley dead and deformed young of several species of shorebirds were found as selenium in the agricultural drainage is accumulating to toxic levels via the food chain. Several species of raptors and several species of birds, mammals and fish had elevated selenium levels in their tissues that could cause and is causing health and reproductive problems (CH2MHILL–1999, USFWS –2006).

The Water Board, with the selenium issue in the news almost every day, followed with its Order WQ 85-1 (February 1985). The Water Board found that agricultural drainage and wastewater reaching Kesterson Reservoir “is creating and threatening to create conditions of pollution and nuisance” (Emphasis added). The Order then warned “If the Bureau 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 Water District could constitute an unreasonable use of water” (Emphasis added).

In 1977 Sacramento blackfish sampled from Salt Slough a tributary to the San Joaquin River had whole body selenium of 1.53 ppm, which was 5 times greater than the 1972 samples taken by the National Pesticide Monitoring Program (Lowe-1985). However selenium was not reported found in water samples and fish tissues taken from the San Joaquin River at Fremont Ford Bridge or at Vernalis in water year 1980-81 (CSWRCB-1982). At that time very high DDT and Toxaphene concentrations were found in fish that far exceeded EPA guidelines.

Selenium contamination and toxic ecological conditions were more widely spread than first thought. Dead and deformed young or embryos were documented by FWS biologists in all years between 1983 and 2003, except for 1986, 1990, 1994, 1997-1999. Today the selenium concentration in bird eggs is used to determine mortality / deformity. Selenium concentration in bird eggs at one or more sampling sites within the San Joaquin Valley have been measured every year since 1983, either by FWS biologists, U.C Davis researchers, or private consultants. In every year from 1983 to 2006 eggs exceeding the FWS recognized selenium toxicity threshold have been documented (Emphasis added). It is reasonable to conclude that agricultural drainage related selenium-caused “take” of migratory birds has now occurred in the Valley every year since 1983 (Skorupa Per. Com. Aug. 17, 2007). The “take” refers to ---“ it shall be unlawful at any time, by any means or in any manner---to take, capture or kill – any migratory bird or parts thereof except as permitted by regulations developed under the Migratory Bird Treaty Act. Migratory birds at risk include coots, several duck species, grebes, avocets and Black-necked stilts.

It is easy to believe that more birds probably died or suffered deformities on about 5,000 to 7,000 acres of private evaporation ponds and allied facilities than ever died at

Kesterson NWR. An accurate estimate of bird deaths and deformities is unknown because of restricted access to the private evaporation ponds. A FWS biologist estimated that as many as 10,000 birds may have died annually at the evaporation ponds from the effects of selenium toxicity during the period 1987 –1989 (Owens-Viani 1996). Since then changes in the number, size and operation of evaporation ponds along with the development of mitigation and compensation habitat has helped to offset the “take” at evaporation ponds (Skorupa Per. Com. Aug. 17, 2007).

Fish and bird resources continue to show high levels of selenium, the result of a contaminated diet. Selenium has been found in what is called edible tissues and in reproductive organs of birds and fish. The health of birds that eat fish and aquatic life are at risk. Four species of small mammals have been found to have intersex (both sexes). Therefore mammal health is at risk. Raptors feeding on birds and mammals in the vicinity of the evaporation ponds have been tested and found to be carrying a heavy selenium burden. Fish populations have been impacted by reduced growth, partial or complete reproductive failure. (USFWS –2006, CH2MHILL –1999)

In the Delta, selenium concentrations found in 62 white sturgeon muscle samples and 42 liver samples far exceed tissue thresholds for reproductive effects. State Water Board reports indicate that in the Bay-Delta, surf scoter, greater and lesser scaup and white sturgeon appear to be the most at risk to selenium toxicity because they feed on filter feeding bivalves. Other species are being added to the list as data come in. These include the Sacramento splittail, Dungeness crab, largemouth bass, blue gill, Sacramento blackfish, black crappie, green sunfish, etc. (USFWS -2006, CH2MHILL - 1999, Presser & Luoma -2006)

The most sensitive indicator of selenium toxicity in fish, waterfowl and other aquatic birds is reproductive failure or gross deformities. Such affects normally occur with little or no mortality or visible toxic symptoms in adults. Less hard to identify is selenium induced immune system dysfunction at the individual and population level (Lemly –1993, DOI 1998).

Human health advisories have been issued yearly against consuming selenium contaminated fish tissues (bluegill and largemouth bass) and of migratory birds (ducks and coots) from the Grasslands. Women of childbearing age and children are cautioned against eating any such tissues.

Understanding the bio-transfer of selenium is essential for evaluating the fate and impact of proposed changes in selenium contaminated discharge to State waters. Confusion about selenium threats in the past stemmed from failing to consider the full complexity of the processes that result in selenium toxicity in components of the environment. With fish and wildlife, it is the top feeder (predator) that is really at risk from selenium contaminated habitat and food supply. Environmental concentrations of selenium, its speciation, its transformation to particulate form, its bioaccumulation by invertebrates, its transfer to predators via the food chain, and the effects on those predators are all part of understanding the overall impacts of selenium. (Presser and Luoma – 2006)

There is a lot of Selenium in western San Joaquin Valley

The USGS report "Forecasting Selenium Discharges to the San Francisco Bay-Delta Estuary; Ecological Effects of a Proposed San Luis Drain Extension" (Drs. Theresa S. Presser and Samuel N. Luoma -2006) (USGS report), indicates that the reservoir of selenium in the soils of the west side of San Joaquin Valley (WSJV) is sufficient to provide loading at an annual rate of approximately 42,500 pounds of selenium to the Bay-Delta disposal point for 63 to 304 years at the lower range of its projection. This is with the influx of selenium from the Coast Range curtailed. Also according to the USGS Report disposal of drainage and waste-water on an annual basis outside of the western San Joaquin Valley may slow the degradation of valley resources, but drainage alone cannot alleviate the salt and selenium buildup, at least within a century. Other projections extending the loading range from 45,000 to 128,000 pounds of selenium per year depending on management.

The USGS Report concludes that bivalves appear to be the most sensitive indicator of selenium contamination in the Bay-Delta. In the Bay-Delta and the lower San Joaquin River tidal action will increase the resident time of selenium, exposing all aquatic organisms and increasing the ability of food organisms to accumulate greater amounts of selenium and pass it up the food chain to the top feeders and predators.

The USGS Report indicates that selenium discharges during low flow seasons will have a high likelihood of causing losses to fish and wildlife via the food chain. There also will be selenium build-up in edible tissues (people food) and in the fish and wildlife reproductive systems, causing reproductive impacts deformities and dead young). There also would be impacts to species that feed on selenium contaminated tissues and bodies of fish and wildlife.

Selenium criterion

The current USEPA national **Selenium criterion** to protect aquatic life is 5 ug Se/L (5 ppb). The USFWS recommended criterion is 2 ug Se/L (2 ppb) based on case studies. The Canadian criterion for the protection of wildlife is 1 ug Se/l (1 ppb).

In 1997 the CRWQCB-CVR placed a selenium criterion of 20 ug/l (ppb) 4-day average in the San Joaquin River sack dam to Merced River. The CRWQCB-CVR also placed a 12 ug/l (ppb) 4-day average in the San Joaquin River from Merced River to Vernalis. Effective in 2002 October the criterion is 5-ug/l monthly mean San Joaquin River from Merced River to Vernalis. Effective 2005 the selenium criterion was 5 ug/l as a 4-day average during normal and wet years. Starting in October 2010 the performance goal for selenium is 5ug/l as a 4-day average from sack dam to Vernalis.

The combination of California's climate, hydrology, selenium loading, selenium reactivity, and selenium bioavailability poses a significant threat to the aquatic ecosystem of the Lower San Joaquin River and Bay-Delta. Risks to fish and bird reproduction could lead to extinction via contamination of the invertebrate food supply.

Filter feeders are great concentrators of selenium. Aquatic insects were the primary food item of shore birds. And because of the capability of selenium to bioaccumulate, any selenium TMDL by itself is a poor measure of this problem trace element. For a comprehensive review of biological effects of selenium, (see DOI –1998.)

One can conclude that waterborne selenium is the single best predictor of pollution, that it can and will continue to have an adverse affect on the aquatic ecosystem, associated fish and wildlife resources, uses and values (Saiki, et al-2001). The San Joaquin River contributed about 4.8 tons of selenium annually to the Delta at Vernalis between 1986–98 (SWQCB – CVR- 2000). What is not known is the amount of selenium sequestered in the sediments and biota of the San Joaquin River and Delta and how much is being recycled into the water column and food chain.

The bottom line is that saline / seleniferous soils of western San Joaquin Valley contain a reservoir of selenium, other trace elements and a variety of salts that, with irrigation, will continue to leach from the soils to the shallow groundwater for years and years to come. This selenium leachate / drainage will continue to degrade down slope lands, surface and groundwater, fish and wildlife habitats and other beneficial uses of the receiving waters including the San Joaquin River and Delta.

Other Bad Actors - Chemicals

The agricultural drainage and wastewater is just not about selenium, boron and a few trace elements. It includes a variety of salts, plus at least 49 agricultural herbicides, insecticides and other chemicals used in the San Joaquin and Tulare Basins. Some chemicals banned in 1970 such as DDT (including DDD and DDE), toxaphene, dieldrin and chlordane, exceed guidelines for protecting aquatic life and fish eating wildlife are still found in mud, clams and fish tissue samples from the San Joaquin River and Delta. There was strong correlation between concentrations of total DDT in clam and fish tissues and bed sediments suggesting that bioaccumulation and recycling of DDT is still occurring. Also found were seven pesticides that exceeded criteria for the protection of freshwater aquatic life. These included the herbicides diuron and trifluridin and the insecticides azinphos-methyl, malathion, carbaryl, diazinon, and chlorpyrifos. The exceedance of water-quality criteria indicates a strong probability that aquatic species are being adversely affected across the ecosystem (Dubrovsky, et al, 1998).

Many agricultural chemicals can affect aquatic organisms. Developmental processes can be affected. These chemicals can induce toxicity, can impair immune system response or are endocrine disruptors. These responses are of particular concern because so little is known about them long term. In the wild the individuals most affected by poor water quality are eggs, larvae, and young, the aged, the sick, pregnant, or otherwise stressed. Millions and millions of fish eggs and larvae could be lost with little visual evidence. Millions of small fish most likely would not be noticed. However a few hundred dead adult fish would float for a couple of days and stink up the place to quickly draw attention to the situation.

Test organisms in a laboratory are exposed to one pesticide at a time, while 49 chemicals were identified in this chemical brew called the San Joaquin River. The synergistic effects of such chemicals with each other are unknown. What happens when selenium is added to the mix is also unknown.

The San Joaquin River Today

The Water Board in its 2000 California 305 (b) Report on Water Quality listed Mud Slough, Salt Slough and the San Joaquin River as selenium impaired. Other stressors included boron, DDT, Diazinon, a variety of salts and at least 49 agricultural chemicals.

Today we have the longest selenium hazardous waste site know to man, extending from at least the Mendota pool and the Grasslands, downstream via the San Joaquin River to the Delta, Suisun Bay and adjacent marshes. This involves 130 miles of San Joaquin River, miles of waterways in the Delta and 1,000s upon 1,000s of acres of San Joaquin Valley lands and aquatic ecosystems. This drainage / chemical brew could be a contributor to the Delta's Pelagic Organism Decline (Sommers, et al –2007).

There is ample evidence in state reports, some conducted under Water Board contracts, that the goals of the Clean Water Act are not being met because fish and wildlife as well as their habitats, public use, and the swimable and fishable waters are impacted by poor water quality in the lower San Joaquin River from the Mendota Pool downstream to the Delta. There are pesticides, selenium, a variety of salts, Boron, and something called "unknown toxicity" in lower San Joaquin River and tributary waters. One only has to look at selected State Board reports to verify such information. See 2000 California 305 (b) Report on Water Quality – State Board –2000, Presser and Luoma –2006, and Dubrovsky et al –1998).

Today people are more aware of nature and what natural systems need. People realize that selenium in biota of the San Joaquin River, adjacent wetlands and Delta leads back to irrigating San Luis Unit lands, to water pumped from the south Delta, and to Federal dams on the Trinity, Sacramento and American Rivers. Direct cause and affect impacts are often not realized for 10 to 30 or more years.

With the above information, that continuing to irrigate saline - seleniferous soils on the west side of the San Joaquin Valley and the resultant selenium contaminated drainage and discharges to the San Joaquin River constitute a waste and unreasonable use of the State's water and is a nuisance. This clearly is not within the meaning of beneficial use of Section 8 of the Reclamation Act of 1902 and the contemporary equal priority setting of CVPIA, Section 3406 (a) (3) and the Clean Water Act, as amended.

Subsidy

Water from the Central Valley Project (CVP) has long been recognized as a subsidy. Much of the land on the west side of the San Joaquin Valley and the source of most of the selenium drainage / pollution would not be farmed were it not for public subsidies. The availability of CVP water encouraged Westside farmers to develop lands

that could not be farmed for lack of water and to irrigate marginal lands that could not be farmed at a profit (LeVeen-1986, Rennie – 1996).

Some the farm operators that contract for and receive subsidized CVP water grow crops that receive direct price support payments with the largest farms getting the most subsidy payments. Subsidized water and crop subsidies inject a value into the land that it would not otherwise have. The Bureau of Reclamation long-term contracts promise more such skullduggery and bogus added value.

Irrigating saline-seleniferous soils with its drainage issues is a liability, not an agricultural or fish and wildlife asset of the San Luis Unit of the CVP. In 1978, the Federal subsidy (public investment) was put at \$770 million, or a value of \$1,540 per acre for the San Luis Unit, with \$2.7 billion or \$1,100 per acre for the CVP. This is the part the farmers will not pay back. The value of the land has increased about \$800.00 per acre while the project cost was \$1,540.00 per acre. This is about a \$2.00 dollar cost to \$1.00 dollar benefit ratio. This does not include the annual subsidized cost of water and power that is used to pump water through the various pump lifts and canals. The annual water and power subsidy per acre of Westlands was estimated at \$217.00 per irrigated acre (see pages 38 & 39 – Task Force Report -USBR 1978).

To bring the 1978 subsidy value up to 2007, a conservative 5% value for long-term Treasury Bonds (pg. 40 of the Task Force Report) was used. The subsidy value for 2007 is about \$6,652.00 per acre. Using the Cost of Living Calculator, the \$1,540.00 value in 1977 is \$5,227.00 per acre in 2007. Whatever the dollar value used, it does not include the damages to public trust resources (several races of Chinook salmon, Coho salmon and steelhead), uses and ecological values in the area of origin of the water supply such as the Trinity, Sacramento and American Rivers. The subsidy value does not include damages to trust interests of the Grasslands, degraded surface and ground-water supplies, the cost of replacement water supplies or any clean-up and allied costs associated with selenium damages, or the \$100 million to \$150 million drainage water study.

Today the value of the selenium source uplands or contaminated bottomlands would be far less than the \$800.00 figure of 30 years ago. Without Federally subsidized water much of the newly developed farmed land, the source of the selenium drainage, would not be irrigated. Such lands on the open market would be nearly worthless without subsidized water and crop subsidy payments (LeVeen -1985, Rennie – 1996).

Rule of No Compensation

Based on the Federal jurisdiction over navigation under the Commerce clause of the Constitution, the United States can oust any conflicting ownership, interest or use from navigable waters without compensation (emphasis added - Morreale-1963). The growth of the no compensation rule largely parallels the Federal navigation powers and a contemporary understanding of navigation, commerce and fishery and other interests protected by the public trust (See Marks v. Whitney - 1971). Today, the no compensation rule extends to all state waters whether navigable or not, and whether or

not they support a fishery, and includes the tributaries to Mono Lake (*Audubon* -1983 and *Cal. Trout I* -1989). It seems most reasonable that this would apply to the San Joaquin River as a tributary to the Delta and San Francisco Bay.

The reasoning that a conflict with the right of navigation (or other trust uses) can be ousted, can be applied to water rights. Such thinking can be applied to improper water allocation, point and non-point pollution, unreasonable diversion and unreasonable use of water, all of which can and frequently does impact public trust interests and the beneficial use of water. According to Ralph W. Johnson - Professor of Law, University of Washington and prominent public trust scholar, -- no one, including irrigators with appropriative rights (or contracts) -- has a vested, constitutionally protected property right to pollute or otherwise degrade the quality of public waters. Pollution control can be accomplished either under the State's police power or the public trust doctrine without becoming derailed by the taking issue (Johnson 1989). Water right holders or users of water do not acquire a property right by their past history of water uses or its past customs of disposal. If a use of water is found to be unreasonable, the water rights associated with such use can be taken without compensation.

In *Audubon* the California Supreme Court reviewed trustee responsibilities and taking. The Court discussed *Mallon v City of Long Beach* (1955) 44 Cal 2d 199, 282 P. 2d 481; *Colberg, Inc. v State of California* (1967) 67 Cal 2d, 408, 62 Cal Rpt 401, 432 P.2d 3; *City of Berkeley v Superior Court* (1980) 26 Cal 3d 515, 162 Cal Rpt 327, 606 P.2d, 362. The *Audubon Court* explicitly addressed the issue of taking and refused to find a taking. The *Audubon Court* stated, "Once again we reject the claim that the establishment of the public trust constituted a taking of property for which compensation was required-". Holders of water rights (either permit or license) hold them subject to the public trust (189 Cal Rpt. 346 at 360- 1983). Since protecting the public trust was a pre-condition of any water right permit or license issuance, the water necessary to protect the public trust was never transferred and therefore there is no taking issue.

Protecting the public trust interests and beneficial uses of water is or should be a pre-condition of any discharge permit issuance. Therefore any discharge that is found to be or result in an unreasonable use of water or a nuisance, the discharge permit can be with drawn, the discharged enjoined and there is no taking (*Audubon* – 1983).

Discussion

Historical perspective – unreasonable use and a nuisance

A historical perspective regarding the legality of disposing wastes and other debris (including wastewater) into waters and waterways was clarified by case law over 120 years ago. For years hydraulic mining companies blasted away at hillsides with powerful streams of water to get at the gold. The mining companies disposed of their waste and other debris in such a way that it ended up covering acres of agricultural land, wrecked several towns. The water was polluted and unfit for domestic uses. The concern then was hydraulic mining wastewater, sediment and other debris. This

material was impacting the waters of the Yuba, Feather and American Rivers, the navigability of the Sacramento River, Delta and San Francisco Bay. The impacts were a public nuisance of major proportions.

The Anti- Debris Society believed that California's courts were too corrupt to provide relief to those impacted by the hydraulic mining debris. So Woodruff an absentee landowner, sued North Bloomfield Mining Company in federal court. In 1884 the Federal Ninth Circuit Court in *Woodruff v. North Bloomfield Mining Co.*, (18 F. 753 – 1884) issued a permanent injunction against any further dumping by the North Bloomfield Mining Company. Judge Sawyer was stunned at the damage unbridled exploitation could do. In following years, Federal courts, case by case shut down most of the other hydraulic mines in the Sierra and occasionally sending in the military to enforce its will (Brechin-1999).

Later that year the State Court issued its decision in *People v. Gold Run Ditch and Mining Co.*, (66 Cal. 138 –1884). Hydraulic mining debris was making such waters unfit for household and irrigation uses. The debris covered agricultural lands and impacted navigation by reducing the navigability of such waters. Other beneficial uses were also impacted. The State asserted on behalf of the people in *People v. Gold Run Ditch and Mining Co.* (4 Pac Rpt at 1152, November 24, 1884) that mining companies / corporations did not gain a right through custom or by common practice to continue to dump their wastewater and debris into streams and waterways of the State.

The State presented evidence that hydraulic mining debris dumped or placed on the banks of non-navigable streams was being washed into the downstream lands and waterways impacting beneficial uses of water, destroying navigation and was a nuisance. The State engineer estimated that 310,000 acres of farmland was either ruined or severely damaged (Brechin-1999). The State alleged that the pollution and filling of waterways caused by the mining debris and other wastes could be enjoined. The State also asserted that the public trust rights held by the people in navigable waters are paramount and controlling over allowing mining debris and other wastes to be dumped or allowed to pass into waters of the State. In *Gold Run* it was about navigation, but it could easily include commerce, fisheries, water quality for domestic uses and many other beneficial uses protected by the public trust.

The *Gold Run* Court ruled that mining companies / corporations did not gain a prescriptive right to dump or allow their waste material to enter navigable waters, and that dumping of such material constituted a nuisance that could be enjoined. The *Gold Run* Court noted that there were large amounts of capital investments in the hydraulic mining business. But it stated:

--- 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 so 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 the state or Federal legislature could, by silent acquiescence, or by attempt legislation, ... divest the people of the State of their right in the navigable waters of the State for the use of a private business, however extensive or long continued. (Cal Rpt at 1158-1159)

The *Gold Run* Court emphasized that public trust rights held by the people are paramount and controlling over the dumping of wastewater and other debris into the State's waters and waterways. The *Gold Run* Court decision followed the Federal Court Decision by Judge Sawyer dated January 7, 1884 in the case *Woodruff v. North Bloomfield Gravel Mining Co.* (Fed Rpt Vol. 12, -1884.)

The *Gold Run* Decision agreed with the State's premise. The disposal of mining debris was found to be a public nuisance, an invasion of public rights, and therefore unlawful. The act of disposing of mining debris could be enjoined. The ruling was against the entire hydraulic mining industry. Each company could continue to mine, but could not dump or allow their wastewater and other debris to enter the waters and waterways of the state.

In 1895, a case involved dumping of lumber and ranch waste and other debris into State waters came before the California Court. This was *People ex rel Ricks Water Co. v. Elk River Mill and Lumber Co.* (40 Pac Rpt 486 -1895). The owner of a lumber mill and ranch enterprise was allowing filth from cows, hogs, stables, other debris and fetid matter to enter and contaminate Elk River which was a water supply for people and other interests downstream including the City of Eureka. Clearly this was not a wholesome setting. The *Court* found the pollution a nuisance and an unreasonable use of the waters of the stream. The *Court* reasoned that the acts enjoined are equivalent to actually putting the polluting material directly into the water. The *Court* further stated if the conformation of the defendant's land is such that he cannot carry on a dairy without putting such filth directly into the water, then he must find some other use for the land (emphases added). The decision followed the rulings laid down in 1884 in *People v. Gold Run Ditch and Mining Co. and Woodruff v. North Bloomfield Gravel Mining Co.*

In 1897 the case *People v. Truckee Lumber Co.* (116 Cal 397, 48 Pac 374 -1897) came before the court. The action was to enjoin a nuisance. Truckee Lumber allowed saw mill wastes (shavings, dust, edgings and other wastes) to enter the Truckee River. This material was polluting the river, was deleterious to and was killing trout and other aquatic life, and was destroying a trout fishery.

The *Truckee* Court recognized the public trust aspects of the various properties being impacted. The *Court* stated "it is well established principle that every person shall so use and enjoy his own property, however absolute and unqualified his title, that his use of it shall not be injurious to the equal enjoyment of others having an equal right to the enjoyment of their property nor injurious to the rights of the public". The *Truckee Court* also stated that fish in our rivers and streams and other waters of the state are unique property with ownership in the people.

The *Truckee Court* ruled that dumping mill wastes in the Truckee River violated the rights of the people and was a public nuisance. This was based on the people's

ownership of the fish resource, the water and the quality of that water and the fishery of the Truckee River.

Potential actions / failed actions to protect the public trust

It is now over a quarter of a century since the first selenium caused deformed and dead migratory birds were found at Kesterson National Wildlife Refuge in 1983.

The Water Board's 1984 in its Agricultural Water Management Guidelines for Water Purveyors, and its 1985 Order WQ 85-1 defined what constitutes an unreasonable use of water. The effects of irrigating saline seleniferous soils with resultant drainage and wastewater are by definition a waste and unreasonable use of water, and a nuisance.

This drainage activity also violates the wastes and unreasonable use or unreasonable method of use clauses of Article X, Section 2, of the State Constitution. This irrigation activity violates Section 8 of the 1902 Reclamation Act which states in part "The Secretary of the Interior shall proceed in conformity with state law" and "That the right to use water acquired under the provisions of this Act shall be appurtenant to the land irrigated, and the beneficial use shall be the basis, the measure, and the limit of that right". The continued irrigation use and resultant impacts violate public trust responsibilities of the Water Board. By definition the continued use of CVP water to irrigate saline seleniferous soils of the San Luis Unit, with the known impacts can be called a public nuisance and can be enjoined by a court order similar to the *Gold Run* and *North Bloomfield* decisions of 1884.

The Water Board has not acted on its 1984 and 1985 warnings. The Regional Board has failed to take enforcement action against those dumping drainage and wastewater containing high levels of selenium into the Grasslands. While Water Board orders, management guidelines, and regulations support protecting water quality are in favor of the people; the appointed officials who are supposed to enforce such orders and guidelines are not in favor of the people.

The Water Board has not exercised the public trust doctrine in any significant degree to support its actions (Dunning 1985- Selenium II). A year later Mr. Gerald Johns, then Assistant Division Chief, Division of Water Rights, State Water Resources Control Board, at Selenium III (1986) stated, the Water Board was pushing for a selenium discharge requirement of 2 to 10 pbb. Mr. Johns was not impressed with the thought of having the Water Board exercise its responsibilities under the Public Trust Doctrine. He stated, "The Board feels strongly that we must first use our authority to regulate water quality to address the agricultural drainage issues. If for some reason we cannot effectively resolve the problem with our water quality authority, then the Board will evaluate actions necessary under its water right authorities to protect beneficial uses and public trust resources."

Since the first selenium caused deformed migratory bird was found at Kesterson NWR in 1983, there has been no significant exercise of the Water Board's water right authority or public trust responsibilities. Any plans to do so remain a mystery.

The Water Board and staff were well aware that the bioaccumulation of selenium was going to be a major water quality problem that was damaging or destroying beneficial uses. The Water Board also knew that selenium was a long-term problem when it pushed for a Selenium TMDL as an objective rather than a standard in 1988. Because of the capability of selenium to bioaccumulate, any TMDL for selenium, by itself, is a poor yardstick for determining the safe level of this trace element especially in productive waters.

It is also apparent that trying to manage the San Joaquin River on a constant selenium concentration bases could easily create problematic bioaccumulation in biota during a wet year, especially during low flow, because high flows translate to high selenium loads not always offset by seasonal river flows (Presser and Luoma – 2006).

Mr. Ken Willis was a member of the Water Board in 1985. At the time of its Order 85-1, there was a "campaign of misinformation" along with heavy lobbying by agribusiness of Water Board members trying to prevent them from taking any serious actions against the drainers. Mr. Willis specifically criticized Westlands for its efforts during the fall and winter of 1984-85 for pressuring Water Board members not to issue a Kesterson clean-up order. Mr. Willis went on to say that as more research findings about selenium became known, it was an inescapable conclusion the it could be come a public health hazard let alone continue as a hazard to wildlife. He went on to say that if parts of the San Joaquin Valley become unproductive, the people responsible are not the environmentalists, or the government. It will be corporate agribusinesses themselves (Fresno Bee Aug. 11, 1985). It was readily apparent the Water Board and agribusiness leaders knew the extent of the selenium toxicity problem early on, but were hoping for a magic solution and quick political fix with little sacrifice on their part.

Agribusinesses and pond operators had known for a long time that the selenium contaminated drainage and wastewater was toxic in their evaporation ponds. They have ignored or circumvented State and Federal laws. They continue to spend large sums of money lobbying their cause. That was true in 1996 (Owens-Viani – 1996) and it is no doubt true today. The drainers and pond operators hope to stall long enough so that their friends in Congress can pass a law with sufficient funds to buy out their lands, pay them not to irrigate their lands, or retire the selenium lands. The public hope is water saved will be used for urban and environmental needs.

The ever-increasing evidence indicates that the act of irrigating saline seleniferous soils results in drainage and wastewater contaminated with selenium, boron and other trace elements, chloride and sodium sulfate salts. This on going contamination was so extensive that beneficial uses of water were and continue to be impacted (Smith-1996). As irrigation continues the impacts continue. The shallow groundwater of the down slope lands plus the lands, waters and habitats used by resident and migratory birds and other wildlife many species of fish and other aquatic life are being impacted. The

contamination of habitats adversely affects the basic elements of the food chain. This in turn affects the upper trophic levels of the aquatic food chain and extend to seedeaters, reptiles mammals and avian predators.

Aquatic ecosystems are being degraded resulting in reduced or failed reproduction of selected fish and wildlife species. That death and deformities to fish and wildlife continues and ecosystem diversity is being reduced. Public health advisories have been issued warning people about eating fish or waterfowl that may contain high levels of selenium and other public trust interests and uses were being degraded or destroyed. Today selenium contaminated habitat and organisms extends from the Mendota pool, down the San Joaquin River to the Delta and Suisun Marsh and Bay. There are pesticides, selenium, a variety of salts, Boron, and something called “unknown toxicity” in lower San Joaquin River and tributary waters. One only has to look at selected Water Board reports to verify such information. See 2000 California 305 (b) Report on Water Quality – State Board –2000, Presser and Luoma –2006, and Dubrovsky et al –1998).

Studies have revealed that the organochlorine, synthetic organic pesticides and volatile organic compounds can be harmful to the endocrine (hormone) and immune systems of fish, wildlife and humans at much lower concentrations than was previously thought. Man-made chemicals (pesticides and other chemicals) plus some metals (mercury and selenium) that are persistent and that bioaccumulate are of particular concern. Pesticides and trace elements already affect many wildlife populations. Impacts include thyroid dysfunction in birds, and fish, decreased fertility in birds, fish, shellfish and mammals; decreased hatching success in birds, fish and turtles: gross birth deformities in birds, fish and turtles; metabolic abnormalities in birds, fish and mammals: behavioral abnormalities in birds; demasculinization and feminization of male fish, birds, and mammals; and compromised immune systems in fish, birds and mammals (Colborn and Clement –1992). Fish and wildlife populations exposed to such chemicals compounds that disrupt development of the reproductive, immune, nervous and endocrine systems can lead to population instability. The pollutants of greatest concerns are those that regulate developmental, endocrine and immunological functions. Current contamination of wildlife has reached levels in some regions at which there are known sub-lethal effects sufficient to impair populations (Colborn 1993).

The Pelagic Organism Decline, or the decline of Delta fish populations (Delta smelt and longfin smelt), is not an acceptable trade-off for the continued irrigation of seleniferous soils on the west side of the San Joaquin Valley.

The Water Board and its members have both the duty and moral obligation to protect the sustainability of the aquatic ecosystems of the State. This reasoning is supported by case law and the public trust doctrine. To remedy the selenium drainage and wastes water problems the Water Board can use its regulatory powers and continuing authority to control upstream diversions, limit the lands irrigated, withdraw permission to use water on selected lands and control drainage and wastewater discharges. The Water Board also can use its public trust responsibilities to control such activities. So far the Water Board has only acted to set a water quality standards in the San Joaquin River. Meeting water quality standard and meeting the purpose and

intent of the Clean Water Act does not appear possible if irrigating saline- seleniferous soils is allowed to continue. All the Water Board needs is political will to enforce positive change in the public interest.

This author with the above knowledge, filed a complaint with the Water Board in 1995, alleging an unreasonable use of water, a nuisance and that the Water Board was violating its public trust responsibilities by failing to act to control such discharges. (See Smith-1996.) There was lots of foot dragging regarding my complaint. In 2000 the Water Board dismissed my complaint stating that the issues in my complaint are being handled in other venues so no action was deemed necessary or required. A lawsuit appears to be the last resort. One does not have to exhaust administrative remedy before taking legal action. The Water Board jurisdiction / actions are not exclusive. Courts have concurrent jurisdiction (*Audubon*, 189 Cal Rptr 346 at 367). It took a lawsuit and the resultant *Audubon* decision before the Water Board acted to protect the public interest and the public trust of Mono Lake and tributaries. It is much easier for the Water Board to respond to a court decision than it is for it to initiate its own investigation and action. After all, they are political appointees.

The meaning of the *Gold Run*, *Elk River* and *Truckee Lumber* decisions are clear. As a matter of law, one must exercise his or her rights or use his or her property so as not to infringe on the rights, interests or properties of others and that water right holders are entitled to the natural flow of the water undiminished in quality. These cases relied on common law public nuisance theory. These decisions also fit the contemporary understanding of the public trust doctrine and the needs of the people interested in protecting resources, uses, ecological values and water quality for all beneficial uses.

Casting the meaning of the *Gold Run* decision in agricultural drainage and wastewater context, the decision would read "Farming and other agricultural entities / corporations did not gain through custom, any right to dump their wastewater, drainage and other liquid or other material, sediment, etc., into State waterways. The disposal of such agricultural wastewater and other wastes is a public nuisance, an invasion of public rights, and therefore unlawful. The act of disposing of such agricultural drainage, wastewater and other wastes can be enjoined. The ruling would impact the entire agricultural community and associated corporations. Each entity could continue to farm, but could not dump or allow their wastewater, drainage and other debris to enter the waters and waterways of the State.

The Court decision in *People ex rel Ricks Water Co. v. Elk River Mill and Lumber Co.* (40 Pac Rpt 486 -1895) was an agricultural setting and a water quality issue. The *Elk River* Court found that the filth from cows, hogs, stables, other debris and fetid matter was polluting Elk River (a domestic water supply), was a nuisance and an unreasonable use of State waters. The *Court* reasoned that the acts are equivalent to actually putting the material directly into the River. The *Elk River* Court stated if the conformation of the defendant's land is such that he cannot carry on a dairy without putting such filth directly into the water, than he must find some other use for the land.

A court order or the Water Board could enforce the meaning of the *Gold Run* and *Elk River Mill and Lumber Company* decisions under its continuing authority and its public trust responsibilities. The meaning being the public trust rights held by the people are paramount and controlling over the dumping of wastewater and other debris into the State's waters. While it was nuisance law that was the driving force in the above cases, the State could have used its public trust duties and responsibilities to enforce the law. The Water Board just needs the political will to do so or be forced by a court decision to take action.

The rational thinking of the *Elk River* Court in 1895, over 110 years ago, is particularly relevant to today's selenium drainage and wastewater issues associated with the irrigation of selected lands in the San Joaquin Valley. That thinking is --- if the Westside farmers cannot carry on their operations without polluting the local ground and surface waters, poisoning the soil through salinization, poisoning fish and wildlife and rendering their habitat toxic, then **they must find some other use for the land**. And there is no taking issue for a use that is deemed unreasonable, a nuisance and if it is necessary for protecting public trust interests and beneficial uses of water (*Audubon-1983*). If they refuse to find some other use for the land, (retire, fallow, etc.) and continue to irrigate saline – selenium soils, then the water should be shut off and returned to the area of origin.

The corporations and their board of directors, the land owners, water purveyors and farm operators responsible for the selenium-laden drainage and wastewater, should be held accountable for the toxic wastes and nuisance impacts. This would include administrators from USBR (and all water right permits and licenses) and the Department of Water Resources. It includes managers of Westlands Water District and other irrigation or drainage districts receiving CVP water, such as Broadview Water District, Firebaugh Canal Water District, Pacheco Water District, Panoche Drainage District, Central California Irrigation District, and Charleston Drainage District. This should also include landowners (including lending institutions) and farm operators irrigating highly saline - selenium soils or otherwise causing drainage problems. These people are known or can be quickly identified. They are the responsible parties and should be held accountable for their actions and damages to beneficial uses. (See *Newhall Land and Farming Co. v. Superior Court*, 19 Cal. App. 4th; 23 Cal. Rptr. 2d 377 Oct. 1993.)

The U.S. Fish and Wildlife Service (March 2006) has stated that it believes full land retirement of the 379,000 acres identified as drainage impaired is the best all-around solution to the drainage problem. However one must also look at the upslope lands -300,000 to 675,500 acres- the source of the selenium that is mobilized by irrigating saline selenium soils. (San Joaquin Valley Drainage Program 1990.) Irrigating saline selenium soils results in a hydraulic head that pushes the selenium contaminated drainage down slope to impact the bottomlands, wetlands and the San Joaquin River. Some of the highest concentration of selenium in the soils was measured at 4.5 PPM is found in the area of the Panoche Creek and Cantua Creek alluvial fans. The other location of high selenium measurements is in the Antelope Hills of western Kern County with 1.5 PPM were measured. There was little difference between the top 12 inches and those taken at 66-to 72 inches (Tidball, et al 1986).

Studies indicate that disposing of selenium contaminated wastewater on an annual basis outside of the San Joaquin Valley may slow the degradation of Valley resources, but drainage alone cannot alleviate the salt and selenium build-up in the San Joaquin Valley at least within a century (Presser and Luoma-2006).

The high tech “alternatives” for the treatment, reuse and disposal of selenium contaminated drainage and wastewater are a lot more expensive than the agricultural benefits produced from the land. There is only one cost-effective solution and that is to shut off the water. No one should have the privilege to farm land if the value of the crops grown do not cover the cost of water, the cost of cleaning up the drainage and the value of lost resources, associated uses and ecological values do not exceed the value of the crops grown (Rennie -1996).

In 1884 the people did not pay off the once powerful mining companies to stop their nuisance mining activities. The totality of the evidence was overwhelming. The hydraulic mining operators were enjoined. If they could not mine profitably without putting their waste and other debris in the waterways of the state, the companies could not legally operate.

In 2008 the totality of the evidence and impact of the selenium and other chemicals is overwhelming. The high tech alternatives to control selenium have not yet found a way to convert selenium into gold to help line the pockets of the cooperate drainers. Today’s taxpayers do not owe agribusiness Federal tax dollars or another subsidy to buy them out so they can improve their bottom line.

Response to the introductory questions from the evidence:

1. No. It is not a good public policy nor is it a good investment of public and private funds to continue to irrigate saline seleniferous soils that are the source of the selenium drainage and wastewater because of its toxic impacts and destruction of beneficial uses of water, associated resources, uses and values.
2. No. It is not good policy nor is it wise use of our water resources to dam Northern California rivers and divert massive amounts of water to irrigate saline seleniferous soils which results in drainage and discharges that degrade water quality, poison the soil, kill fish and wildlife and render wetland habitats toxic and destroying beneficial uses of the State surface and groundwater.
3. No. It is not reasonable to use our limited high quality water resources to irrigate saline seleniferous soils to grow surplus crops. In addition with today’s knowledge such an irrigation use is not sustainable.
4. Yes. From the evidence the State Board may have pushed the assimilative capacity of the San Joaquin River, its valley tributaries and the Delta beyond its ability to recover. The synergistic effects and the safe limits of selenium coupled with boron, molybdenum, and a variety of salts and dozens of agricultural chemicals (many herbicides, insecticides, volatile organic compounds and

fertilizers) found in Valley waters are unknown. The pelagic organism decline in the Delta may be a real warning sign.

Conclusion

It is about 25 years since the first dead and deformed migratory birds were found at Kesterson NWR. It is over 20 years since the Water Board Order WQ 85-1 and the finding that agricultural drainage and wastewater reaching state waters "is creating and threatening to create conditions of pollution and nuisance".

The San Joaquin River, the Delta, Suisun Bay have been impacted by selenium. There are also miles of waterways in the Delta and 1,000s of acres of San Joaquin Valley lands and aquatic ecosystems. There are about 5,000 acres of private evaporation ponds in the Tulare Basin containing selenium contaminated drainage that are taking an unknown number of migratory birds annually in spite of mitigation habitat.

Because of the characteristics of selenium, the only realistic way to control or prevent selenium toxicity of fish and wildlife and associated habitats is to avoid making / releasing it to the environment. Diluting selenium pollution does not really abate the problem. It will take reducing the absolute quantity of selenium in the drainage and wastewater being discharged or ending up in the aquatic environment. If that is not possible, selenium-contaminated drainage should not be discharged to the aquatic environment by any means. It is the old story parents tell their children, "If you don't make the mess (selenium mess) in the first place, you have nothing to clean up". Source control is paramount. The big issue is once we have contaminated the aquatic environment with selenium, how does one clean up the aquatic ecosystem? The Water Board has not tackled this problem. However the responsible parties can be identified.

A use of water that so degrades the sustainability of a downstream ecosystem or a component of that ecosystem to make it unsuitable for sustaining viable agriculture, wildlife, fish and other aquatic life, or which makes fish unsuitable for human consumption, or which is a hazard to other fish and wildlife, or which degrades ecological, aesthetic, recreational uses, small craft navigation, and scenic values, is inconsistent with public trust protection, the reasonable use of water and is therefore a nuisance. When chemicals enter the bodies of adults or children, or enter the domestic or wildlife food supply to toxic levels without our consent, it is a trespass.

By policy and guidelines of the Water Board, the act of irrigating highly saline seleniferous soils must be considered an unreasonable use of water; a public nuisance and contrary to the protection of public trust interests especially in an arid region.

In the hydraulic mining cases, the public did not pay off the once powerful mining companies to stop their nuisance creating activities. The ruling by the *Gold Run* Court was clear and simple. If the mining companies could not mine profitably without putting their waste and other debris in the State waterways, the companies could not legally operate. In the cases of *Elk River Mill and Lumber*, and *Truckee Lumber* the public did not pay these companies to stop dumping of waste and other debris into State waters.

The people do not owe any payment to the drainers to stop their nuisance activities. The findings and thinking of the *Elk River* Court are clear, --if the Westside farmers / drainers cannot carry on their operations at a profit without putting their selenium contaminated drainage and wastewater into ground and surface waters with all its associated impacts, and they cannot pay the clean-up costs, they should not be allowed to legally operate. These farmers / drainers then **must find some other use for the land**. If they refuse to find some other use for the land, then the water should be shut off and returned to the area of origin. There is no taking issue for a use that is deemed unreasonable and a nuisance.

The people or the US Government do not owe any financial reward to the selenium drainers for impacts to resources, uses and values protected by the public trust doctrine. The public has already a high price through lost recreational opportunities, lost fish and wildlife resources, toxic habitats, degraded water quality and the possible collapse of the Delta ecosystem called Delta Pelagic Organism Decline. The value of Federal and State owned lands have been degraded. There have been public health advisories issued annually. All these impacts are a vast subsidy to those farming saline seleniferous soils. Impacts also extent into Northern California, to the Chinook salmon and steelhead resources and other public trust interests of the upper Sacramento and American River and to the Chinook salmon, Silver salmon, steelhead resources and other public trust interests of the Trinity River.

The key to carrying out the State's public trust duties are its powers to regulate and its powers to protect the State's fundamental rights in trust properties, ecological values and public use of those properties. "The powers of the State as trustee are not expressed. They are commensurate with the duties of the trust. The State as trustee has the implied power to do everything necessary to the execution and proper administration of the trust". (*People v. California Fish Company*, 166 Cal. 576, 138 Pacific 79, 87, 88 (1913), *City of Long Beach v. Mansell*, 91 Cal 23, 476 P. 2d 423 at 437 (1970).

The Federal Environmental Protection Agency (EPA) and California's EPA were established to protect the public interest and quality of the Nation's lands and waters. Such agencies are not to allow the pollution of our rivers, streams and groundwater, are not to allow the pollution or other degradation of our land leaving a degraded legacy for our grandchildren; or allow polluting the body's of our children, our fish and wildlife resources or our food supply from chemicals. These same agencies should not look like shills for corporate farms such as Boswell Farms or massive water districts such Westland Water District. Nor should elected public officials.

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