LAW OFFICES OF

CARTER , MOMSEN & KNIGHT, LLP

444 NORTH STATE STREET
POST OFFICE BOX 1709
UKIAH, CALIFORNIA 95482

JARED G. CARTER
BRIAN C. CARTER
BRIAN S. MOMSEN
MATISSE M. KNIGHT

PHONE: (707) 462-6694
FAX: (707) 462-7839
E-MAIL: jaredcarter@pacific.net

June 30, 2011

VIA FEDERAL EXPRESS

Jeanine Townsend
Clerk of the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814-0100

Re: Comment Letter - Proposed Russian River Frost Regulation

Dear Ms. Townsend:

Introduction

This firm represents Dr. Rudy Light and Mrs. Linda Light who are the owners and users of both riparian and appropriative rights within the project area of the referenced proposed regulations. In our opinion, which is elaborated herein, the proposed regulations cannot be validly adopted by this Board, and must be found by the Office of Administrative Law ("OAL") to be invalid, because the regulations fail to meet the standards of "necessity," "authority," "clarity" and "consistency" mandated by Government Code §§11349.1(1), (2), (3), and (4), and 11349.3, as defined by Government Code §11349(a), (b), (c), and (d), (herein "APA").

Dr. and Mrs. Light will be adversely affected by these proposed regulations. Their License, No. 9490B (App. #17091b, Permit #13155), has a priority date of May 14, 1956, and authorizes diversion of 49 acre feet per annum for storage on an unnamed tributary of the West Fork of the Russian River between

December 1 and April 15 for use in the following agricultural season on 60 acres of riparian land. The application noted that applicant also had "another water right" to irrigate this same land, a "riparian" right.[1] Between March 15 and May 15, Dr. Light uses water for frost protection on 24 acres of grapes on this riparian land. He has maintained careful records of this use; and none indicates that his use has harmed, or could harm, fish in this unnamed unnavigable stream.[2]

Dr. Light's vineyard is certified organic by California Certified Organic Farmers and is certified by Fish Friendly Farming. As conservationists, the Lights constructed a major river habitat restoration project and won the John Wesley Powell Stewardship Award from the Russian River Watershed Council in 2005. The booklet Dr. Light prepared describing this project is enclosed as Attachment 1. In short, his uses of water are entirely consistent with protection of listed species and other environmental values to the maximum extent feasible.

"...it is established in California that a person may be possessed of rights as to the use of the waters in a stream both because of the riparian character of the land owned by him and also as an appropriator. ..." Pleasant Valley Canal Co. v. Borror (1998) 61 Cal.App.4th 742, 774.

2 He has 21 years of consecutive records, and the median number of frost events requiring overhead sprinkling to protect vines is eight nights per season; the median number of hours that water is used is 54 hours (including about 7 hours to flush lines and clean sprinkler heads) and the median amount of water is 12.0 acre-feet. Half of the years contain from four to ten events, and use between 4.5 and 17.6 acre-feet of water. One-fourth of the years have three or fewer events and one-fourth of the years have 11 or more events. Only two of the 21 years had more than 20 events (24 in 1995 and 30 in 2008), and only three years had between 11 and 20 events.

Yet, the proposed regulations would restrict use of his water rights in the same way they would restrict all other water users, without acknowledging or protecting his priorities under established law. And, the regulations would prevent him from using his appropriative or riparian right for frost protection from March 15 to May 15 - the period when these rights have been used for many years and the period when their use is essential - unless he successfully overcomes the uncertainty and bears the burden and expense of obtaining this Board's approval a "plan," with unspecified content and dimension - a "WDMP."

Dr. and Mrs. Light oppose the adoption of the proposed regulations for the reason, among others, that they will adversely impact the Lights' grape farming operations and the value of their property, including their water rights and the costly infrastructure that has been developed to put to beneficial use water diverted pursuant to these rights.

Fundamentally, Dr. Light's complaint is that the State Water Resources Control Board is ignoring, indeed consciously violating, its duty, as articulated in the State Constitution and several Supreme Court cases, to protect their water rights, which are "property" every bit as entitled to Constitutional protection as ownership of land. The Board is claiming the power to adopt new rules - i.e., to legislate, not adjudicate - that will deny the Lights the right to continue an established use during 2 months of every year because the Board has concluded as a matter of policy that in-stream use of water for the protection of fish is of higher priority than diverting the water for agricultural

use.

This same basic issue – agricultural or municipal uses v. fish and recreation – was presented to the Board and the courts over 30 years ago, and two different Courts of Appeal decided that in-stream requirements of fish and recreation cannot underlie an "appropriation" of water that will preclude that water from being "available" for future "appropriations" for "agricultural or municipal uses." (See Fullerton v. State Water Resources Control Board (1979) 90 Cal.App.3d 590, 604 n.17; California Trout, Inc. v. State Water Resources Control Board (1979) 90 Cal.App.3d 816.) In those cases the claimants, The California Department of Fish and Game and Cal. Trout, sought to "appropriate" unappropriated water for in-stream use to protect fish so the water could not later be appropriated and removed from the stream. No effort was being made to deny use of water under an existing water right, as is involved in this current proposal. The Board opposed DFG and Cal. Trout, based upon Article X, Sec. 2 and established water rights law; and the courts agreed with the Board. The Fullerton court pointed out that under the Water Code, "the amounts of water required for recreation and the preservation and enhancement of fish and wildlife resources" can be taken into account in determining the "amount of water available for appropriation," so long as riparian rights are not affected (90 Cal.App.3d at 600, n.9), but this did not mean these uses had priority over "agricultural and municipal" uses (Id., at 607, n.17) or that water could be appropriated to remain in the stream to serve these uses.

It is disconcerting to the Lights, some 30 plus years later, when all that has really changed is the Board's membership and its staff's composition, that their property rights and the value of their land and the value of almost every other landowner's land in the Russian River drainage, are being severally threatened because the Board and its staff have changed their minds.

Dr. Light is opposing the Board's action not only to protect his own interests, but also to further the public interests reflected in the Constitution, the Water Code, and many judicial opinions that the Board is refusing to protect and defend.

The Board's consideration of these proposed regulations has been long and detailed. Dr. Light and others have heretofore made extensive comments upon drafts of the proposed regulations stating their opposition to adoption. These oppositions will not be rehashed in the body of this letter, but they are endorsed, and incorporated by reference.[3] These inputs demonstrate that the proposed regulations do not meet the "necessity" and "clarity" requirements of the APA.

---

[3] Specific reference is made to Dr. Light's comments of January 13, 2010 and March 13, 2010; the California Farm Bureau's comments of November 30, 2010; March 29, 2010, and November 23, 2010, comments by the law firm of Gallery & Barton representing Williams Selyem Winery; comments of November 29, 2010 by the Russian River Flood Control and Water Conservation Improvement District; comments of November 30, 2010, by Wagner and Bonsignore; and comments of November 30, 2010, by the California Department of Fish and Game ("CDF&G"). Obviously, many more comments will now be made by these presenters and others, which will all be before the Office of Administrative Law if and after these regulations are adopted.

The Board is requested to consider these inputs carefully before adopting these regulations because, even apart from Water Law issues, they demonstrate, we believe conclusively, that this regulation should not be adopted to apply even in respect to Lake Mendocino and Lake Sonoma project water being used by land owners with no higher priority appropriative or riparian rights. These prior comments also show that the factual basis for this regulation - 25,000 steelhead killed by diversions on one particularly cold night - is fundamentally flawed and, in any event, aberrational and not likely to be repeated.[4]

The comments by CDF&G make clear that the proposed regulations, rather than being a proposal to prevent "waste" or the "unreasonable use" or "unreasonable method of use" of water, are a legislative, rulemaking, effort by the Water Board to regulate or supervise frost protection of grapes in the Russian River Basin, whatever water right is implicated. The Board has no "authority," as defined by Government Code §11349(b), to adopt such a regulatory scheme.[5] DF&G's comments state, in part:

> "DFG is supportive of the State Water Resources Control Board's efforts to develop a Water Demand Management Plan (WDMP) to

---

[4] Attached as Attachment 2, are NMFS technical paper and a refutation of its methods and conclusions by Dr. Light.

[5] In City of Barstow v. Mojave Water Agency (2000) 24 Cal.4th 1224 (herein "Barstow") the Supreme Court invalidated a trial court's adjudication of a "physical solution" to an overdrafted basin which ignored water rights priorities in order to "fairly apportion" the available water. The Supreme Court said that water rights priorities had to be protected because "water right priority has long been the central principal in California Water Law." (Id. at 1243, emphasis added.)

> control diversions from the Russian River stream system for purposes of frost protection from March 15 through May 15. ... .
>
> The principal intent of the Frost Protection WDMP is to develop a strategy to comply with the federal Endangered Species Act(ESA) and the California Endangered Species Act (CESA) by ensuring that operation of frost protection diversions do not result in take of listed fish species: chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), and steelhead (*O. mykiss*). The WDMP should assure that its measures meet all applicable statute and regulations applicable to frost protection diversion and establish program goals based on regulatory compliance. The requirements and compliance with CESA, Fish and Game Code Section 1600, and California Water Code should be addressed. ...."

The comments of Gallery and Barton carefully point out several fatal deficiencies in the proposed regulations and their accompanying EIR, including that time and use priorities under California water law are ignored; reasonable alternatives, such as regulating release of water from Lakes Mendocino and Sonoma, aren't considered; and clearly foreseeable adverse environmental impacts are not adequately considered.

But, this Board has considered these previous comments and nevertheless apparently decided to adopt these regulations. Therefore, these current comments in opposition will essentially be limited to new points not heretofore made by Dr. Light or, to his knowledge, others.

Summary

By defining as "unreasonable" the use under established water rights of water from the Russian River stream system for frost protection during the period of the year when use of that water is essential for that purpose, unless diversion is pursuant to a "Board approved" plan (WDMP), these regulations would be invalid, as diametrically inconsistent with the meaning and intent of "self executing" Article X, Sec 2 of the California Constitution. They will certainly be invalid as applied to riparian rights holders such as Dr. Light. Moreover, the Board does not have delegated Legislative authority, under the laws cited in its Notice or under any other provision of law, to adopt these regulations.

Article X, Sec. 2, of the California Constitution was adopted to avoid the "waste of water or unreasonable use or unreasonable method of use" - i.e., letting it run into the sea unused for an economically productive purpose - because such a result would be contrary to the "general welfare" and "public welfare" and "policy" of the 1928 amendment. The holders of riparian rights and pre-1914 appropriative rights were subjected to the "reasonableness" standard articulated in the amendment but assured their existing rights would be protected. Riparians were assured of "so much of the flow ... as may be required or used ... for the purposes for which such lands are [used] or may be made adaptable ...."

The basic idea behind the 1928 Amendment was to make more water "available" for appropriation so that it could be put to

economically productive "beneficial use" on lands that lacked a water supply adequate to support viable, economically productive use.

It is impossible to interpret the 1928 Amendment, and its enabling legislation now in the Water Code, as authorizing a definition of "unreasonable use" that results in making the growing of grapes uneconomic on vast tracts of land and results in the flow into the sea of water unused for economic purposes for which it can be, has been, and is being utilized. (See, e.g., the brief discussion in footnote 9 of Joslin v. Marin Mun. Water Dist. (1967) 67 Cal.2d 132, 139.)

California Courts generally agree that Constitutional language may be elaborated, massaged, and slightly reinterpreted to reflect changing times and new facts and values. And, this Board's powers to adjudicate competing water rights interests (See, e.g., In re Waters of Long Valley Creek Stream System (1975) 25 Cal.3d 339), and to decide in adjudicative proceedings that water uses are "waste" or "unreasonable" (See, e.g., Imperial Irrigation District v. State Water Resources Control Board (IIDI) (1986) 186 Cal.App.3d 1160; Imperial Irrigation District v. State Water Resources Control Board (IIDII) (1990) 225 Cal.App.3d. 548) have been expanded beyond what they were previously perceived, by most observers, to be. But, these expansions of the Board's powers involved efforts to prevent "waste" or to make more water available for economic uses by other diverters. No case known to the undersigned has held that the Board has been delegated rule making authority to make

fundamental changes in the law of water rights and water use that result in making less water available for agricultural or municipal uses so that the in-stream uses of fish protection can be enhanced.[6] In People ex rel. State Water Resources Control Board v. Forni (1976) 54 Cal.App.3d 743, the court stated that a regulation purporting to adopt a rule that would curtail riparians' usages to make more water available to other riparians for agricultural usages could be considered only a statement of the Board's "policy." And, no case we know of has held that an existing utilized riparian water right can even be diminished, much less abolished, for any period of time. (See, e.g., In Re Water of Hallett Creek Stream System (1988) 44 Cal.3d 448, 470, where the court says that while an "unexercised" riparian right can be "limited" in a proceeding under §§2000 et seq. of the Water Code, even an "unexercised" right can't be "abolished.")

This current effort is a rule making - i.e., a Legislative -

---

6 National Audubon Society v. Superior Court (1983) 33 Cal.3d 419 is sometimes cited for the proposition that it empowers the Board to take almost unlimited action to protect fish in navigable waters, under the "public trust" doctrine. But, that case's holding provides no basis for upholding the Board's effort to legislate a new regulatory regime that would retroactively impose upon even water rights beyond the Board's regulatory control - e.g., riparian and pre-1914 rights - the Board's chosen balance between "public trust uses" and "usufructuary rights to appropriate water." What the case holds is that when post-1914 appropriative rights are involved, the Board can consider, and even reconsider, the balance to be drawn between these important sets of values in an adjudicative context or when considering a new appropriation. The "public trust" doctrine is not a grant of Legislative authority to the Board. Certainly the "public trust" doctrine is not a grant of authority to the Board to change the State's decision on the proper balance, reflected in the 1928 Amendment and the Water Code on the one hand, and CEQA and Fish and Game Code on the other hand, between protection of public trust values and the need to divert "great quantities of water ...for purposes unconnected to any ...fishing, recreation or ecological use.... (Audubon, supra, 33 Cal.3d at 426) that exists under current Constitutional and statutory law.

effort that, in effect, seeks to redefine "white" as "black". Dr. Light's position is that this is beyond the Board's power and that Article X, Sec. 2 can't be reinterpreted to allow or, as here proposed, to require water to flow unused to the sea between March 15 and May 15 of each year unless a particular group of users - i.e. agriculture users, without regard to the priority or nature of their water right - devise a "plan" to protect fish suitable to this Board and its staff and the many and varied commentators who under law will have the right to comment on the proposed "plan" and subject it to judicial review if it does not meet with their approval. A similar effort, in a court adjudication, was rejected by the Supreme Court in Barstow, supra, 24 Cal.4th 1224. The "certainty in the definition of property rights to the use of water ..." (Water Code §109) that current law states is essential to accomplish the objective of Article X, Sec. 2, of the Constitution - putting the waters of the State to "beneficial use to the fullest extent of which they are capable ..." - is impossible to attain if every change in membership of the Board can result in new regulations that upset longstanding, and investment backed, expectations.

Because the impact of the regulation can't be known until the WDMP is adopted, and because that adoption process could take several years, these proposed regulations fail the "clarity" requirement of the APA on that basis alone.

Discussion

1. The Proposed Regulations Fail the "Authority" Requirement of the APA Because They Would be Inconsistent with Article X, Sec. 2, of the California Constitution. It is important to understand the Board's limited authority under the 1928 Amendment to adopt regulations such as those being proposed, which govern riparian rights and make substantive changes in general water rights law. And, it is important to understand the context in which that authority has been granted by the Legislature to the Board and will be interpreted and applied by the courts. While there are some very expansive judicial statements about how broad the Board's powers are (see, e.g., IIDI and IIDII, supra) those statements are usually made within the context of adjudications before the Board about "waste" of water; or the statements are about the Board's power to make rules governing new appropriations.

Dr. Light believes that, because these proposed regulations purport to regulate established riparian rights and make significant changes in basic water law, the courts will determine as a matter of law whether these regulations are authorized by and consistent with existing law. Dr. Light also believes that when the courts make this decision this Board's views on the law and the meaning of "unreasonable" will not be entitled to deference because the meaning of longstanding constitutional and statutory language is involved, and vested property rights are being taken or deprived. See, e.g., Yamaha Corp. of America v. State Board of Equalization (1998) 19 Cal. 4th 1, 11, fn.4; Burke v. California Coastal Commission (2008) 168 Cal.App.4th 1098, 1106. It is surprising when a Court of Appeal suggests that old

water law is bad water law, as the court did in IIDII, 225 Cal.App.3d at 573. But, most courts don't subscribe to that view, or to the view that the courts can and should accept whatever the Board says about the meaning and effect of the Water Code or Article X, Sec. 2. Most courts understand the difference between "Rule by Law" and "Rule of Law" and believe that even, or perhaps particularly, in the field of water law, a society works best under the "Rule of Law." See, e.g., In Re Waters of Hallett Creek, supra, Passim.

a. These Regulations Would Deny Dr. Light and All Riparians the Right to Continue an Established Reasonable Use of Water for Frost Protection Protected by the 1928 Amendment.

As this Board well knows, its authority, inherited from its predecessor agency, stems from the Water Commission Act of 1914 and its successors as expanded and circumscribed by the 1928 amendment. Prior to 1914, water rights holders either had riparian rights or appropriative rights acquired under the common law or under Civil Code §§1410-1422. (See the discussion in Lux v. Haggin, (1886) 69 Cal. 255 at 368-379 of the relation between pre-1914 appropriative rights and riparian rights; see generally the discussion in Hallett Creek, supra.) Conflicts between appropriators of water and riparian water rights holders gave rise to the adoption of a constitutional amendment in 1928 (now Article X, §2) that gave the Legislature and its delegee, the Board and its predecessor, authority and the power and duty to assure that even water used under riparian rights and pre-1914 appropriative rights were 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" is prevented.

The undesirable situation sought to be remedied by the 1928 constitutional amendment was that created by and explained in Lux v. Haggin (1886) 69 Cal. 255, and Herminghaus v. So. Cal. Edison Company (1926) 200 Cal. 81. In these and other cases the California Supreme Court had held that a downstream riparian water rights holder was entitled to enjoin an upstream appropriator from diminishing in any significant manner the natural flow of the stream to which he was riparian even though the result was that vast amounts of water wasted unused into the ocean. Such a rule, of course, had the practical effect of preventing the establishment of large water companies to appropriate water to serve the domestic, agricultural and industrial needs of vast areas of the State. Certainly it prevented developments to transport water from the water rich north to the dry, arid areas of the southern part of the State, without engaging in a elaborate condemnation proceeding to acquire, for these public uses, all of the riparian rights that would thereby be adversely affected.

It is impossible to read the cases decided shortly after adoption of this amendment, such as Gin S. Chow v. Santa Barbara (1933) 217 Cal. 673; Peabody v. Vallejo (1935) 2 Cal.2d 351; Tulare v. Lindsay-Strathmore Irrigation District (1935) 3 Cal.2d 489; and Meridian v. San Francisco (1939) 13 Cal.2d 424, and not understand that the purposes of the amendment were to avoid water

wasting unused into the sea and to facilitate the maximum possible use of water for domestic, agricultural, industrial and other uses vital not only to water rights holders' subsistence and economic prosperity but also to an expanding California economy. No one thought then, or now at least until this current proposal was floated, that the amendment gave the Legislature or its delegee the right to order cessation of an established "use" of water for a beneficial purpose under riparian or pre-1914 appropriative water rights. Even as recently as 1976, a Court of Appeal thought it clear that the Board had no authority to adopt Legislative rules that govern these or other established uses by the legerdemain of applying new labels to old practices, See People v. Forni; supra, where the court said a regulation similar to the proposed regulation could be considered only as a statement of "policy."

Under Article X, Sec. 2 what "use" or "uses" are "beneficial," and what "uses" and "methods of use" are "unreasonable" are mixed questions of fact and law, to be determined in judicial proceedings where answers depend upon the circumstances. (See Lux v. Haggin supra, 69 Cal. at 394-409, Joslin v. Marin Mun. Water District, supra, 67 Cal.2d at 139-141 and n.9). Irrigation, even flood irrigation, while "beneficial" and "reasonable" on rich, loamy soil subject to a mediterranean climate, might not be "reasonable" on very porous, sandy soil. And, if the sandy soil were subject to a wet, cold climate the use might not even be "beneficial." (Ibid.) Under this standard, there is no doubt that frost protection of grapes, during the very period grape buds are subject to freezing, is a "beneficial"

and "reasonable" use. And, sprinkling water to accomplish frost protection is a "reasonable method of use". Without this frost protection the land becomes much less valuable and less productive, not a result consistent with the objectives of the 1928 Amendment as interpreted by the Supreme Court in Joslin, supra, 67 Cal.2d at 140 n.9, and other cases.

For riparian and pre-1914 rights holders, such as Dr. Light, at least, their rights are specifically protected by the 1928 Amendment, which provides that:

> "Riparian rights ...attach to ...so much of the flow [of a stream]...as may be required or used ...for the purposes for which such lands are, or may be made adaptable.... [N]othing herein contained shall be construed as depriving any riparian owner of the reasonable use of water ...under reasonable methods of diversion and use .... This section is self-executing ...." (Emphasis added.)

The Supreme Court has made clear that this Board's duty is to protect, not try to define away, these rights. In Meridian Ltd. v. San Francisco (1939) 13 Cal.2d 424, 450, the court said:

> "It should be the first concern ...of the (SWRCB) in the exercise of its powers under the ...[Water Code] to recognize and protect the interests of those who have prior and paramount rights to the use of the waters in the stream ...."

This Board's effort to ignore these rules by defining as "unreasonable" diversion of water for frost protection unless

pursuant to a plan it has approved brings to mind the conversation between Humpty Dumpty and Alice in Lewis Carroll's *Through the Looking Glass*:

> "'When I use a word', Humpty Dumpty said in rather a scornful tone, 'it means just what I choose it to mean - neither more nor less'. 'The question is,' said Alice, 'whether you can make words mean so many different things.' 'The question is,' said Humpty Dumpty, 'which is to be master - that's all.'" (*Through the Looking Glass, Chapter 6*)

Apparently, this Board thinks it is the "master" and it can make words mean what it wants them to mean!

A riparian water right - which is a protected property right (See Thayer v. California Development Co. (1912) 164 Cal. 117, 125; see generally, *Hutchins, The California Law of Water Rights,* 183 et seq. (1956)) - is the right to take and use a portion of the flow of a stream every day, all day, all year long, as long as the owner of the right can make reasonable use of the water. This proposed regulation would deprive the holders of that property right in violation of the assurance in Article X, Sec. 2 that such a deprivation will not occur. In fact, if the regulation is adopted and put into effect, it may well be interpreted as a physical "taking" of the land owners' property for the public purpose of protecting fish, without compensation, entitling the owners to a money judgment under the Federal and State Constitutions. (See, e.g., United States v. State Water Resources Control Board (1986) 182 Cal.App.3d 82, 101.)

The Supreme Court recently reiterated that the Board has no authority to regulate the beneficial use of riparian rights.

> "The Water Rights Division has no permitting or licensing authority over riparian, or pueblo rights, or over appropriative rights acquired before 1914. The SWRCB does have authority to prevent illegal diversions and to prevent waste or unreasonable use of water, regardless of the basis under which the right is held."

California Farm Bureau Federation v. State Water Resources Control Board (2011) 51 Cal.4th 421, 429. See also, People v. Shirokow (1980) 26 Cal.3d 301, 309, Nicoll v. Rudnick (2008) 160 Cal.App.4th 550, 557; People v. Murrison (2002) 101 Cal.App.4th 349, 359, fn. 6.

Since these proposed regulations are clearly designed to regulate or supervise the use of all water for frost protection diverted from the Russian River or its tributaries - under whatever water right - as recognized by DFG, these regulations run afoul of the 1928 Amendment as interpreted in these cases and violate the "authority" requirement of the APA. Cf. Barstow, supra, 24 Cal.4th at 1242-1254.

b. The Proposed Regulations Fail the "Authority" Mandate of the APA for the Additional Reason That They Would Violate that Provision of the 1928 Amendment that Limits Legislative Authority to Regulate Water Rights to the Enactment of "*Laws in Furtherance of the Policy in this Section Contained.*" (Emphasis added)

As mentioned, and as simply restated, the "policy" contained in the Amendment is to prevent waste - allowing water to run unused into the sea - and to encourage and protect the "use" of water for reasonable economically productive purposes. Not only does the Amendment prevent the Board from regulating riparian rights holders for any purpose other than to prevent waste, etc. (See Farm Bureau, supra) it imposes upon the Board a duty to protect such right holders in their use of their established rights (See Meridian, supra). Adoption of these regulations would be in violation of that duty because, the regulations do not respect and protect the priorities established by law (cf. Barstow, supra), and compliance with the regulations would be extremely costly for Dr. Light and others, probably depriving their vineyards of economic viability. This Board has no authority to deny a priority water rights holder the opportunity to benefit from the use of his right in order to make water available for a lower priority use.

2. Even if the Language of the 1928 Amendment Could be Stretched to Allow the Legislature to Enact Laws that Would Authorize This Regulation, the Legislature has not done so; and the Proposed Regulation is Not Consistent with or Authorized by the Authority Cited by the Board.

a. None of the Code Sections Cited by the Board Provides the Board with APA "Authority" to Adopt These Regulations.

The Board cites as authority for this regulation, Article X, Section 2, of the Constitution and Sections 1058, 100, 275, and

1051.5 of the Water Code. The prior discussion has shown Article X, Sec. 2, provides no such authority; and the following discussion demonstrates that the Water Code doesn't even purport to convey such authority.

Section 1058 of the Water Code, which provides the Board with its basic rule making authority, provides in full as follows:

> "The Board may make such reasonable rules and regulations as it may from time to time deem advisable in carrying out its powers and duties under this code." (Emphasis added.)

Section 100 merely restates a portion of the self-executing 1928 amendment - the general welfare of the State requires that water be put to beneficial use to the fullest extent possible, and that waste, unreasonable use, and unreasonable methods of use should be prevented. Section 275 gives the Board authority to appear before other executive, legislative or judicial agencies to prevent waste, unreasonable use, unreasonable method of use, or unreasonable methods of diversion. And, Section 1051.5 says only that in furtherance of the Board's "powers and duties" under Parts 2 and 3 of Division 2 of the Code "The Board may supervise trial distribution of water in accordance with agreements and court orders therefore."

These sections have been given expansive interpretation as they apply to new appropriations and to adjudications properly

before the Board (see, e.g., IIDI and IIDII, supra).[7] But, none of these sections can be read to give the Board authority to adopt a comprehensive scheme for regulating frost protection, as DFG has correctly defined this effort, or to define "beneficial use" however it chooses, or to say that the use of water at the time and by the method essential to economically produce a saleable agricultural crop, is an "unreasonable" use or method of use. (See, e.g., Forni, supra; Farm Bureau, supra.) Nothing in any of these sections, or any section, authorizes the Board to require parties to give up their priorities under law or to enter agreements setting up the expensive regulatory framework required by this proposed regulation.

At the very least, if the Board believes that some "power" or "duty" it possesses authorizes these regulations, it should specify and elaborate the section imposing or authorizing that "power" or "duty" and let affected members of the public comment on its analysis.

---

7 In recent years the Board has sought to greatly expand its authority over riparian and pre-1914 appropriative rights holders by issuing draft "cease and desist" orders which are based upon theories that diminish those rights under new, Board-imposed standards. The undersigned has a case that has been pending before the Board for over a year in which the staff claims a pre-1914 right has been lost or greatly diminished by "forfeiture" which it can declare and adjudicate, despite many cases saying only a court can do so (Notice of Cease and Desist Order Regarding Unauthorized Diversion of Water and Violation of Conditions Under Licenses 3697, 4216, 4729A, and 5559 Applications 10795, 14178, 13684A, 13384; File No. 363:JO:262.0(23-03-06). Recently, the San Joaquin County Superior Court struck down a similar effort respecting riparian and/or pre-1914 rights holders in the Delta. (See, Young v. SWRCB San Joaquin County Superior Court #39-2011-00259191 opinion filed June 1, 2011) In both cases the staff, and Board, are seeking to avoid the supreme Court's statement that the Board has no authority to regulate these rights. The San Joaquin Co. Superior Court said, "The Water Board did not proceed in the manner required by law, acted without or in excess of jurisdiction, and thereby denied Petitioner due process of law."

As mentioned earlier, the courts, and not this Board, have the ultimate responsibility and authority to define the constitutionally significant terms "beneficial use," "waste," "unreasonable use" and "unreasonable method of use"; and the meanings adopted must be consistent with and in furtherance of the "policy" contained in the 1928 Amendment. If Section 1058 is interpreted as authorizing these regulations, then that Section authorizes this Board to mandate a change of water use patterns in every part of the State to accomplish any number of objectives that it newly perceives to be in the "public interest," without any new legislative decision weighing the competing interests involved. It boggles the mind to contemplate the Board requiring Los Angeles water users to return the Los Angeles River to its natural condition in order to protect some fish or water bug listed under the State or Federal ESA!

Surely the Legislature never contemplated this result; and the result is belied and prevented by the history and language of Article X, Sec. 2.

b. <u>The Water Code as a Whole, Read Together With Other Laws Dealing with the General Subject of Water and Fish, Provides Clearly That the Board Cannot, at Least Outside The Context of Passing on New Applications or Exercising Reserved Licensing Authority, Curtail Established Beneficial Uses of Water in Order to Protect Fish</u>.

It is abundantly clear from other sections of the Water

Code, quite obviously not cited by the Board, that its "powers and duties under this Code" (section 1058) do not include the power or the duty to prohibit the established beneficial use of water for frost protection during the frost season in the grape growing areas of the State. And, nowhere can the authority be found to ignore the priorities of use established by California law or to mandate the establishment of the elaborate "water demand management program" that must be established and complied with to save as "reasonable" or "beneficial" a long established and accepted "use" such as frost protection. If there is any doubt about this point respecting some or all post-1914 appropriative rights, no such doubt exists respecting riparian rights or pre-1914 appropriative rights, since the 1928 Amendment protects these rights and the Supreme Court has made clear that the Board has no authority to regulate them.

Most of the Board's "powers and duties" are limited to its ability to establish rules governing the appropriation of unappropriated water. As mentioned, some Court of Appeal decisions state that the Board has broad power to determine what uses are "waste" or "reasonable" or "unreasonable" in adjudicative proceedings properly before the Board. Neither situation is involved with these proposed regulations, which purport to govern the use of established valid water rights, whether riparian, pre-1914 appropriative or post-1914 appropriative, and to treat them as of equal priority. It is questionable whether regulations such as these could be adopted even to govern the appropriation of unappropriated water, because even in that context - i.e., when acting upon an application to

appropriate water - the Water Code (section 1257.5), is abundantly clear that the Board "shall consider stream flow requirements proposed for fish and wildlife purposes pursuant to section 1001 and 1002 of the Public Resources Code." (Emphasis added.) Those code sections say that it is the Department of Fish & Game that will establish stream flow requirements necessary for the protection of fish and wildlife, not the State Water Resources Control Board. It is basic law governing statutory interpretation that: "a statutory grant of power or regulation of the mode of exercise implies that no other power passes by the grant and that it is to be exercised only in the prescribed mode." (58 Cal.Jur.3d, *Statutes*, §130, p. 551. See also Wildlife Alive v. Chickering (1976) 18 Cal.3d 190; Martello v. Superior Court (1927) 202 Cal. 400.)

Section 1241 and the Common Law controlling water rights are also inconsistent with the Board's claimed authority to prevent a person from making use of his/her established water right during a 62 day period of the year (i.e., March 15 to May 15) when the exercise of that right is most essential. Section 1241 provides that a person can lose an established post-1914 appropriative water right - many of which will be affected by this regulation - if he/she "fails to use beneficially all or any part of the water claimed by him, for which a right of use has vested, for the purpose for which it was appropriated or adjudicated, for a period of five (5) years ...." Pre-1914 appropriative rights are subject to loss only under similar rules recently articulated by North Kern Water Storage District v. Kern Delta Water District (2007) 147 Cal.App.4th 555. Established riparian rights are

subject to loss only by adverse prescription and use. See, generally, *Hutchins, the California Law of Water Rights, supra,* 284-348. Contrary to this important body of law protecting water rights, the proposed regulation provides that a holder of any water right will be unable to use that right for at least 62 crucial days each year if he/she does not adopt a WDMP that meets Board approval.

Under section 1243, which states that use of water for recreation and enhancement of fish and wildlife is a "beneficial use", the Board when considering water rights applications can determine "the amount of water available for appropriation for other beneficial uses". But, this section also clearly provides "this section shall not be construed to affect riparian rights." See also sections 1243.5 and 1244, which impose limits upon the Board's authority to prioritize fish and wildlife and recreational uses over other beneficial uses.

The State's "police power" undoubtedly extends to protecting fish from unreasonable uses of water, even by riparians, at least when the method chosen by the State does not offend the 1928 Amendment. But, the exercise of that power in various circumstances may give rise to "regulatory takings" issues. Also, as mentioned, the State's power of eminent domain may be implicated if it takes a water right from a land owner in order to use it for the public purpose of protecting fish. Dr. Light's position is that the State has not exercised, or authorized the exercise of, either its police power or its powers of eminent domain to protect fish by the methodology of preventing the

holders of established water rights from utilizing those rights at the times most critical to them. In other words, Dr. Light's position is that the Board does not have delegated legislative authority to adopt the proposed regulations, at least as they would apply to established riparian rights. If a court holds the regulations are legally adopted these "regulatory taking" and "physical taking" issues will be presented.

Many years ago, when interpreting sections 1410-1422 of the Civil Code adopted in 1872, the Supreme Court explained that Legislation should not be interpreted as purporting to deprive a riparian rights holder of his "property." The issue was whether section 1422, which said "the rights of riparian proprietors are not affected by the provisions of this title," protected only the owners of riparian rights "then (i.e., when the statute was adopted) vested." The argument was that subsequent purchasers of the riparian property were subject to the law of appropriation and that the riparian rights did not pass with the real property. The court said:

> "It must follow, independent of section 1422, that a purchaser from one who was a riparian owner when the code provisions took effect, by purchase made after the code enactments, would acquire all the estate and property of his vendor. Otherwise, private property would be taken without due process of law, since arbitrarily to deprive the owner of property of all capacity to sell it is to deprive him *pro tanto* of its benefits. 'The right of acquiring, possessing, and protecting property is inalienable.' 'No man shall be deprived of his property without due process of law.' (Const. 1849, art. 1, secs.

> 20-8; Const. 1879, art. 1, sec. 13.) The provisions of the constitution are intended effectually and completely to protect substantial rights, and cannot be frittered away by indirect legislation." Lux v. Haggin supra, 69 Cal. at 372. (Emphasis added.)

This same thought permeated the Supreme Court's analysis in Hallett Creek, supra, where it emphasized the importance under State Law of "unexercised" riparian rights, even as they adhered to federally owned reserved lands. And, the thought is embedded in section 109 of the Water Code. (See also, United States v. State Water Resources Control Board supra, 182 Cal.App.3d at 101.)

A fair reading of the Water Code compels the conclusion that the Legislature intended that riparian rights and other vested water rights should receive no less protection today, after adoption of Article X, Sec. 2, than they received in 1886, except that such rights don't include the right to "waste" water or to make "unreasonable" use of it. Any suggestion in IIDII, supra, or any other case, that these rights are subject to change by the Board's redefinition of words or phrases in the 1928 Amendment or the Water Code, will not survive judicial analysis.

c. People, Ex. Rel. State Water Resources Control Board v. Forni, Relied Upon By the Board Does Not Sustain This Proposed Regulation.

The Board cites Peabody v. Vallejo (1933) 2 Cal.2d 351 and People Ex. Rel. State Water Resources Control Board v. Forni

(1976) 54 Cal.App.3d 743 as providing it with authority to adopt these regulations. Neither case provides that authority. Peabody, and other cases cited at pages 14-15 of this letter, held that the prevention of waste requirement and the "reasonableness" test in the 1928 Amendment apply to riparian and pre-1914 appropriative rights, as well as to other appropriative rights. As mentioned, those cases don't allow the Board to make up its own definitions of "reasonable" or "unreasonable" and force them upon all water users.

Forni is closer on point, as it involved a Board regulation, somewhat like the proposed regulations, stating that direct diversion from the Napa River for frost protection during the period of March 15 to May 15 was an "unreasonable" use of water within the meaning of the 1928 Constitutional Amendment. The Water Board sought an injunction against riparian users diverting directly from the River because this use caused the river to dry up, preventing other vineyardists from being able to divert water they needed to protect their vines. The purpose of the regulation was to make more water available to other riparian users for the beneficial use of frost protection purposes, not to protect fish. The trial court granted the land owners a "judgment on the pleadings", on the apparent grounds that use of water for frost protection could never be an "unreasonable" use.

The Appellate Court reversed, saying that what's "reasonable" is to be decided by the Court under the facts in each case. "Beneficial use" doesn't equal "reasonable use", so just because frost protection is a beneficial use of a riparian

right that does not mean the riparian owner cannot be "required to endure some inconvenience or to incur some reasonable expense" in order to make the water resources of the State "available for the constantly increasing needs of all the people." As stated by the court in United States v. SWRCB, supra, 182 Cal.App.3d at 104, Forni held that:

> "In times of water shortage all riparians must curtail their usage in order they share the available water. Similarly, all riparians may be required to share expenses or inconvenience for the common good to enable all riparians to use the water."

Whether the Board could mandate that all these riparian users be required to build off-stream reservoirs or lose the ability to frost protect was a question subject to judicial determination, not a question to be decided by the Board. Its regulation could be considered only as a statement of "policy".

The court said it wanted to make "unmistakenly clear ...that the question of reasonable use or reasonable method of use ...constitutes a factual issue. ..."

Thus, as here relevant the case holds: (1) whether direct diversion of water for frost protection is reasonable is a question of fact to be "judicially determined"; and (2) the Board can't compel a specified answer to that question by adopting a regulation. In other words, the Board had no "authority" to adopt a binding regulation within the meaning of the APA!

These are points Dr. Light is arguing in this situation, in addition to other points not considered or decided in the Forni case.

d. Federal Agencies Can't Confer Legislative Authority on the Board.

Apparently the Board's theory is that what used to be a reasonable and beneficial use - that is, frost protecting grapes during the period of time when frost protection is essential to the economic viability of a vineyard - can be prohibited as an unreasonable use because NOAA fisheries requested the Board to make such a determination. However, the Board's authority comes from the State Legislature and is limited by the State Constitution; its power does not come from NOAA or any other Federal agency. Even CEQA, the State's primary environmental protection statute, does not grant state agencies authority they don't otherwise have under their legislation to protect environmental values. (See, e.g., PRC §21004; 14 CCR §15040(b); Sierra Club v. California Coastal Commission (2005) 35 Cal.4th 839, 858-860.) Similarly, neither the Federal nor State laws governing species protection grant any new regulatory authority to the Water Board.

Even brief consideration of the enforcement scheme enacted into the Federal and State Endangered Species Acts reveals the fallacy in the Water Board's reasoning. Simply stated, the basic approach of each statute has two prongs: (1) "Take" of a protected species is a crime - i.e, no riparian water rights

holder can "take" a protected fish without being subject to criminal prosecution; and (2) no agency can perform, finance or approve (i.e., issue a permit for) any activity if that activity will "take" a species, unless protective conditions are imposed on the activity. In the absence of a private or public person needing a new permit, or money, only the criminal prohibition applies. If a permit is issued it is conditioned to avoid "take" to the maximum feasible extent, but usually "incidental take" is allowed if appropriate protections are followed so that overall and over time the species is better off.

The Water Board's proposed regulations do not follow this approach. The water right holder is not required to be an applicant for governmental permission before being subjected to this proposed regime, and he is not given any "incidental take" protection even if he complies and submits a WDMP that is accepted. That is, even if a vineyard owner built an off-stream reservoir and got Board approval for a WDMP if he killed one protected fish while filling his pond he would be subject to prosecution for a felony!

The Board's new concept - that it can will itself new power because of perceived changed circumstances affecting protected species and a request from a Federal agency - is inconsistent with the requirements of due process, fundamental rules of administrative law, and specific provisions in the Water Code. For instance, Section 2 of the Water Code states that the provisions of the code, "shall be construed as restatements and continuations" of early statutory provisions dealing with the

same subject matter. Section 103 says that, "in the enactment of this code the Legislature does not intend thereby to effect any change in the law relating to water rights." Section 109 says that, "the growing water needs of the State require the use of water in an efficient manner and that *the efficient use of water requires certainty in the definition of property rights to the use of water and the transferability of such rights.*" (This statute paraphrases the statement quoted at pages 26-27, supra, from Lux v. Haggin; emphasis added.)

All these statutory declarations are fundamentally at war with the State Board's current claim to be able to adopt regulations that ignore priorities established by law and have the effect of prohibiting what was heretofore considered an essential, reasonable and necessary "beneficial use" for the economic utilization of vast portions of the State's prime agricultural land. We know of no rule of State law that provides that despite these rules, apparently because NOAA requested it, this established use can be declared as no longer a beneficial use or no longer a reasonable method of use.

Conclusion

For the reasons stated, these proposed regulations can't pass the "authority," "clarity," and "consistency" requirements of the APA. Other comments demonstrate that they fail the "necessity" requirement. One is left with the question of "Why" are the regulations being proposed.

It is very difficult to understand why this Board would even contemplate adoption of these regulations. Throughout the world international organizations, national governments, local governments and non-governmental organizations all recognize and espouse loudly and clearly the essentiality of the "rule of law" and reliable protection of property rights if investment and economic development are to occur. The proliferation of "regulations" and the abuse of the regulatory process are decried by every responsible government or private leader or spokesperson who wants to encourage economic development. California water law is to the same effect. This body of law encourages economic development and recognizes the need for certainty in the protection of property owners' expectations. The 1928 Amendment says that the State's "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, section 109 of the Water Code, and many court cases, recognize that "the efficient use of water requires certainty in the definition of property rights to the use of water." In the face of this background, indeed in spite of it and in an extreme example of administrative hubris, this Board proposes to adopt a regulation, without any clear authority to sustain it, that will have at least 2 immediate impacts that are contrary to those Constitutional and Legislative mandates: the regulations will prevent the exercise of established water rights thereby preventing the beneficial use of water resources of the state "to the fullest extent of which they are capable" and the regulations will interject great <u>uncertainty</u> in the "definition of property rights to the use of water."

The record is clear on several key points:

1. This regulation will cause severe economic harm to many grape growers in Mendocino and Sonoma Counties and will cause great uncertainty in the "definition of property rights to the use of water" contrary to Lux v. Haggin, supra, Joslin, supra, fn. 9, the discussion throughout Hallett Creek, supra, and Section 109.

2. A good factual case for adoption of these regulations has not been made. The arguments about fish dying, etc., are specious at best; no significant number of prosecutions for killing fish have been filed; both the State and Federal Governments have the power and duty under their respective ESAs to bring those prosecutions if significant numbers of protected species are being taken; and all current information indicates the relevant fish stocks are improving.

3. The WDMP required by the regulations will take years to adopt, if they are adoptable, because they will be subject to CEQA review and subsequent litigation. After these regulations are adopted, no land owner will know when, how and at what cost he/she will be able to use his/her water right to frost protect his/her vineyard - a clear violation of the "clarity" requirement of the APA.

If there really is a fish problem, why aren't NOAA and/or CDF&G dealing with it by bringing prosecutions or otherwise? Why is the Water Board doing CDF&G's and NOAA's bidding rather than

pursuing its duty to "protect the interest of those who have prior and paramount rights to the use of the waters of the stream," as required by the Meridian case?

The Board should seriously contemplate these questions and not adopt these regulations. It will save itself and Northern California water users much money and loss of time and energy by doing so.

If the State's basic water laws require revision in such a fundamental manner as here proposed, the Board should propose a Constitutional Amendment or at least comprehensive Legislation appropriate to the significance of the changes they propose. Regulatory encroachments of this type are at war with the objectives to the "Rule of Law" and the economic and political objectives underlying the 1928 Amendment and section 109 of the Water Code.

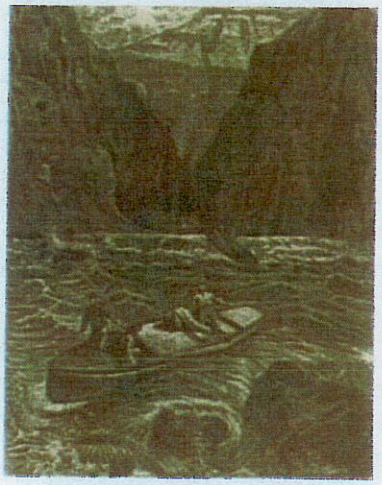
Respectfully submitted,

Jared G. Carter

JGC:gtv
Enclosures

WEST FORK RUSSIAN RIVER RESTORATION
LIGHT RANCH, REDWOOD VALLEY
1999 - 2005

John Wesley Powell
Stewardship Award



PRESENTED TO

Rudolph Light

In recognition of innovative, locally led approaches
to restoring and enhancing the Russian River watershed.

October 27, 2005
RUSSIAN RIVER WATERSHED COUNCIL

ATTACHMENT 1

A Word About the Cover

On October 27, 2005, I was honored to receive the John Wesley Powell Stewardship Award from the Russian River Watershed Council at a celebration held at the Luther Burbank Center in Santa Rosa.

The Russian River Watershed Council was created in 1998, under the chief sponsorship of the Resources Agency of the State of California and the U.S. Army Corps of Engineers. There are more than 70 members and most are with environmental and watershed groups such as the Sierra Club and Audubon Society, but several trade associations are involved, and representatives from the public sector include supervisors and water agency staff from both Sonoma and Mendocino Counties. The Council is careful to have a membership consisting of economic groups, environmental groups and public agencies recognizing that even diverse interests can come together on behalf of improving the Russian River and its watershed. The Sotoyome Resource Conservation District and the Community Foundation of Sonoma County assist technically and financially.

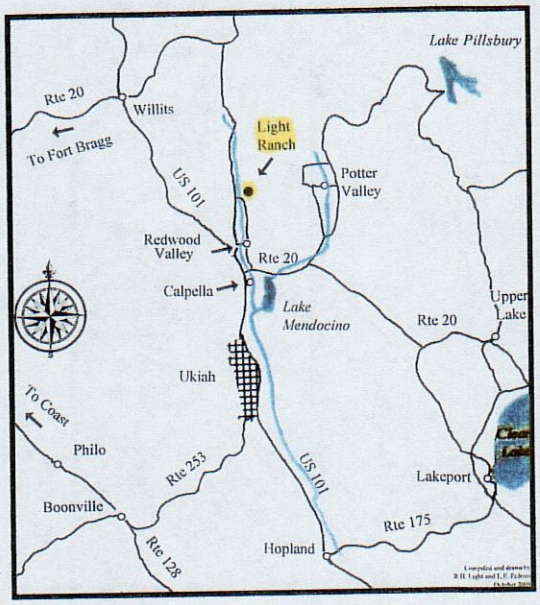
The Council's mission is "to protect, restore, and enhance the biological health of the Russian River and its watershed through a community-based process, which facilitates communication and collaboration among all interested parties." Michelle LeBeau is the Watershed Coordinator of the Council.

In 2005, the Council decided to honor groups and individuals by giving awards. The steering committee plans to conduct these award ceremonies annually. The awards for this year were given in several categories, including tangible environmental improvements, demonstrated leadership in the protection of the Russian River, political activity and public education. The John Wesley Powell Stewardship Award was conceived and developed as an award to recognize an individual or group which successfully completed a significant and long-term watershed improvement project.

I was honored this year to be the first recipient of this award for our conservation work, primarily our West Fork Russian River Restoration which we began in 1999. This booklet tells the story of our work.

Rudolph H. Light
11535 East Road
Redwood Valley, CA 95470
(707) 485-1335

This project is located in Redwood Valley, north of Ukiah, on the West Fork of the Russian River. This river dries up completely each summer but can flow in a winter storm at a volume of hundreds or even thousands of cubic feet per second, and at a velocity of 8 to 10 miles per hour. The vegetation of the surrounding area is oak woodland with valley oak, blue oak, Oregon white oak, interior live oak, and black oak all commonly found close by. Gravel mining has taken a toll downstream and there are some barriers to fish migration. One of the major barriers was recently mitigated by a series of jump pools (see Mumford Dam report authored by R.H. Light for the Mendocino County Fish and Game Commission and available from R.H. Light on request).



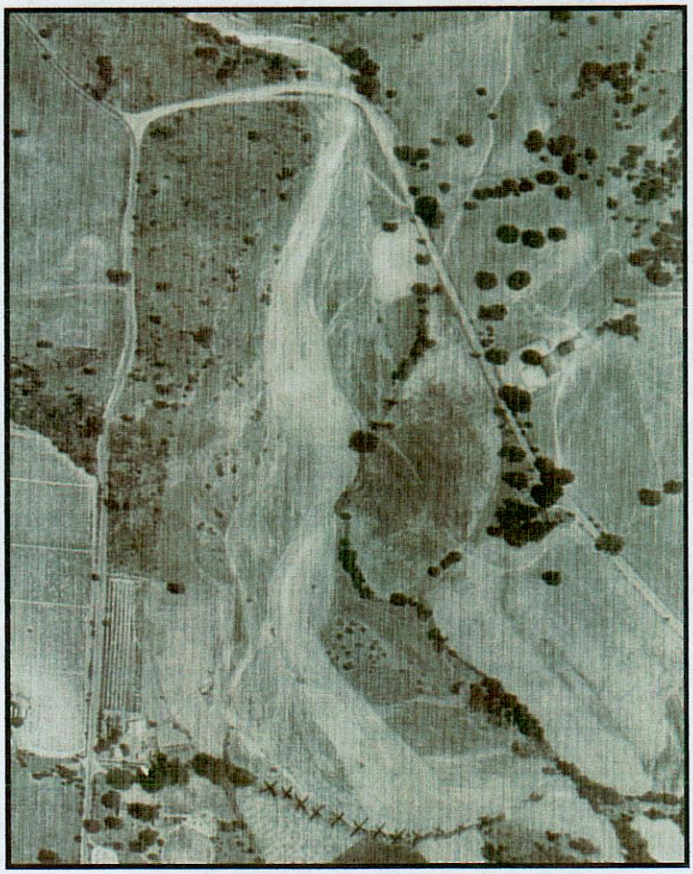
In 1952, the river and adjacent areas were seriously degraded and very little vegetation grew anywhere nearby as the photograph on page 2 shows. The river, flowing south, was relatively confined in a single channel. A bridge had been constructed in 1948 which caused no problems to the hydrology of the system. As time went on, the stream became braided and very shallow about 1,000 feet below the bridge. Note the bush on the left bank of the river in the 1984 and 1988 photographs, which are found on page 3.

In 1989, a new bridge was constructed just downstream from the old one of 1948. The radius of the new road curve was much greater than before, and the road was widened. Although the road was much safer, the construction had some deleterious effects on the river. Refer to the 1998 aerial photograph on page 5 for locations of the sites which needed treatment. The river was "aimed" more to the east than before and serious erosion began to take place just downstream from the bridge (Site 1). The water then "ricocheted" off the bank to go further west than before and became entrenched in a channel (1995 and 1998 aerial photographs) which had been unused for maybe a century (Site 2). As the river washed away the bank, the sediment load increased significantly. Note bush or small tree is still present in 1992 photograph at Site 1.

By 1995, erosion had removed the bush near Site 1 and the river was fully entrenched some distance below the bridge and was seriously eroding the river bank where the river now had to make a sharp left turn at Site 2 and soon after a sharp right turn at Site 3. Both areas were scouring badly.

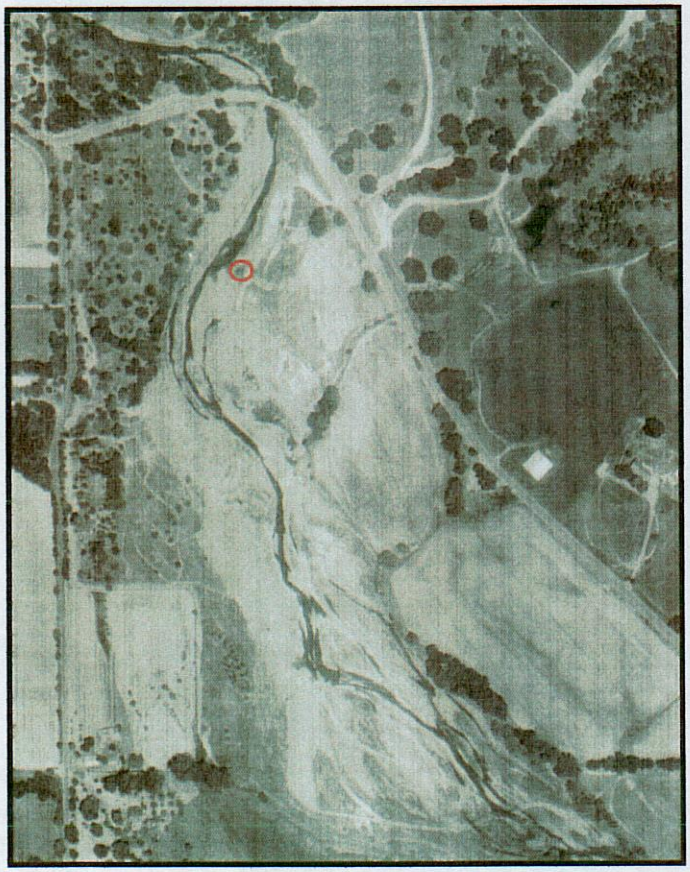
Aerial Photographs
1952-1998

This first aerial photograph taken 53 years ago shows sparse vegetation in the area. The land was heavily grazed. The subsequent five aerial photographs taken between 1984 and 1998 show cumulative changes in the river and vegetation prior to the restoration project. The land west of the river shows the maturation of an oak woodland as a result of benign neglect while the meandering river and channel remain severely degraded. The river channel underwent dramatic change in large part due to the construction of the new bridge in 1989. Restoration work began in 1999.

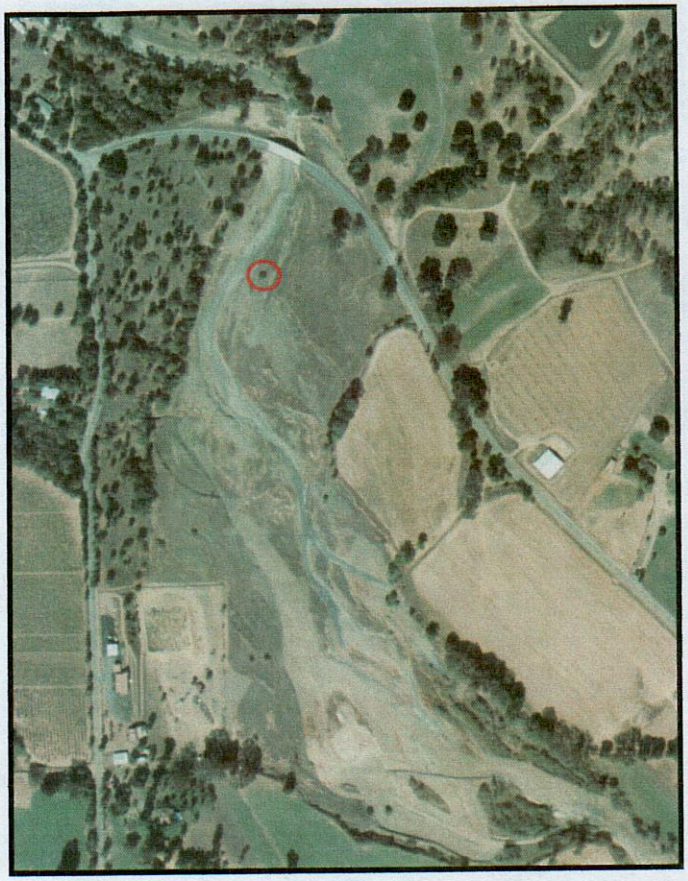


July 15, 1952. Old bridge crosses river at top center of photo.

April 1984.
Note bush (circled in red) growing on edge of river bank.

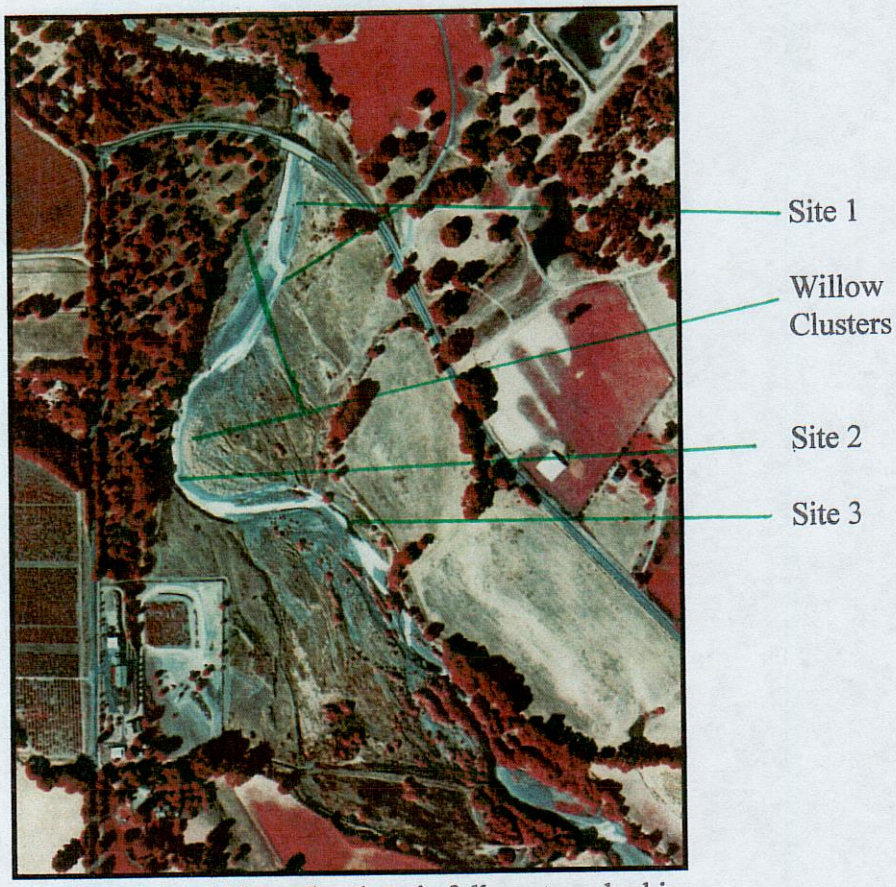


April 1988, before new bridge. Course of the river is gently curved and the stream is braided. The channel is not well defined but shows no tendency to move to the southwest.



October 7, 1992, after new bridge. Bush is still present, and river course is more or less the same as before bridge construction but is beginning to shift to the east just below the bridge. It has not yet begun to move to the southwest downstream from the bush.

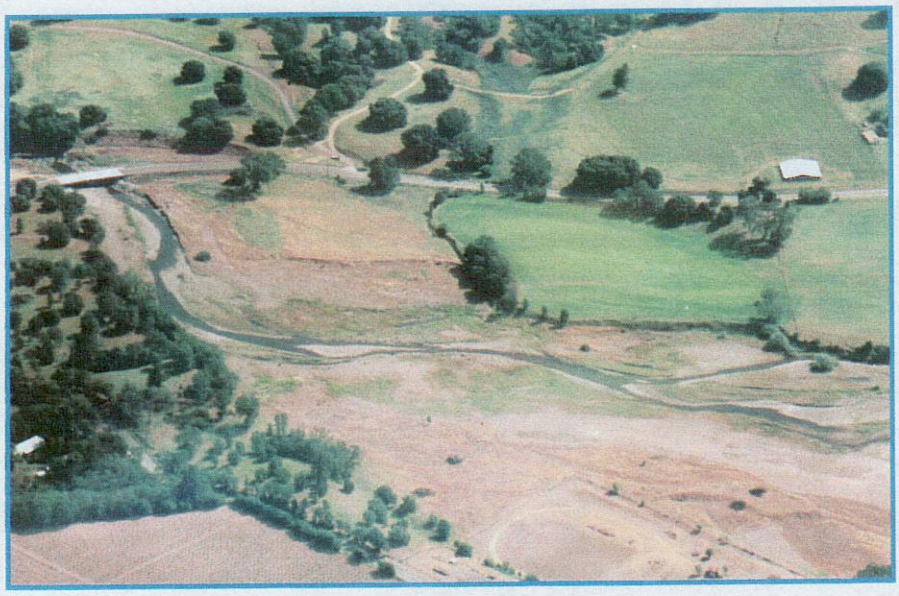
October 18, 1995. The river channel has changed markedly, the bush was lost to erosion, and the river has swung far to the southwest forcing it to make a sharp left turn. Serious erosion is taking place there and the channel is now fixed in place.



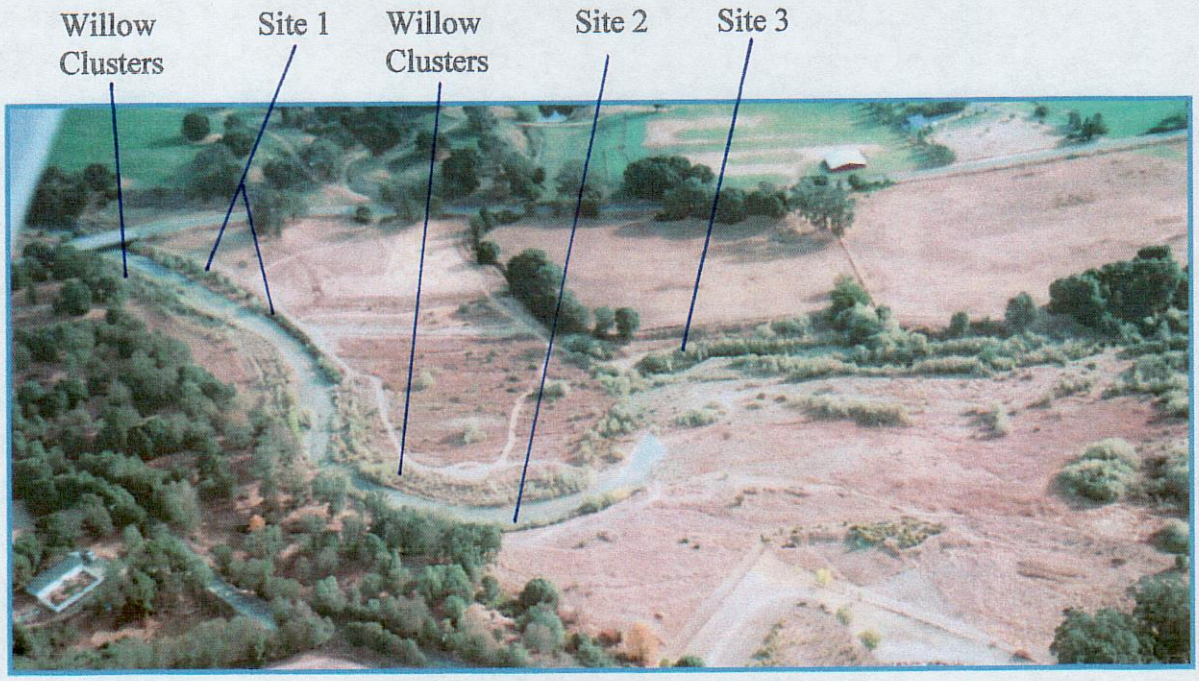
September 14, 1998. The river is fully entrenched in its new course. Arrows point to places where work was to begin in 1999.

We sought advice from the Department of Fish and Game, and Bob Coey, a fishery biologist with the Department, agreed the problems should and could be fixed. Laurel Marcus, an environmental consultant, looked at it and said that since the river was so entrenched, we should leave it where it was, work with it in that channel, and not even attempt to bring it back to its former course.

We devised a plan to work at three sites which are shown on the 1998 aerial photo on this page, taken a year before construction began. On the next two pages are low altitude aerial photos taken in 1992 and 2005 to show the improvements due to the project. On the page following the low altitude aerials is a series of four pictures from 1999 to 2005, all taken from the same place on the new bridge. These photos look south and show the dramatic transformation of a barren and sterile riparian environment to a living and productive ecosystem.

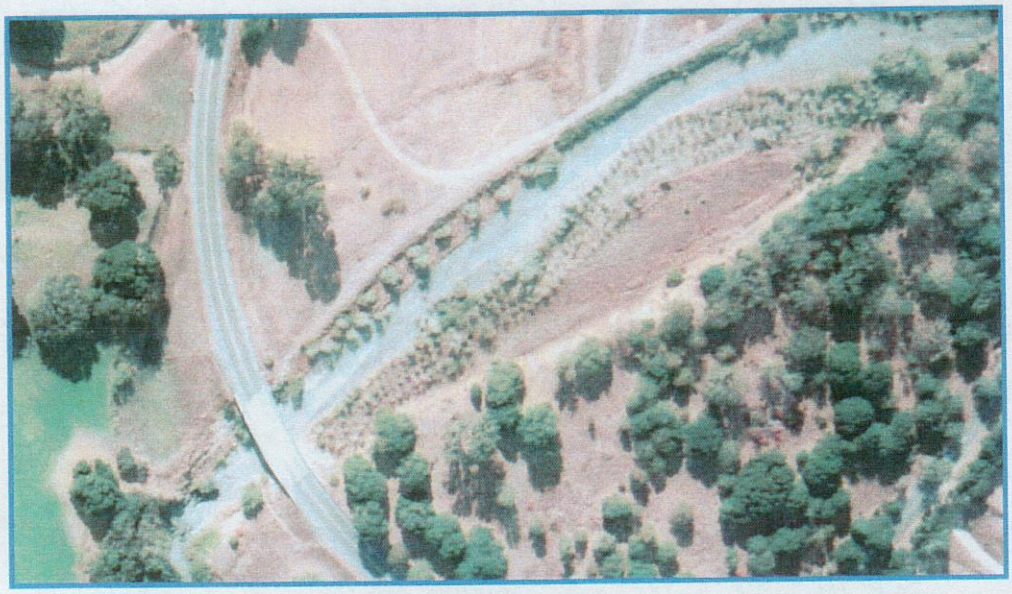


May 8, 1992. Note barrenness of riparian area.

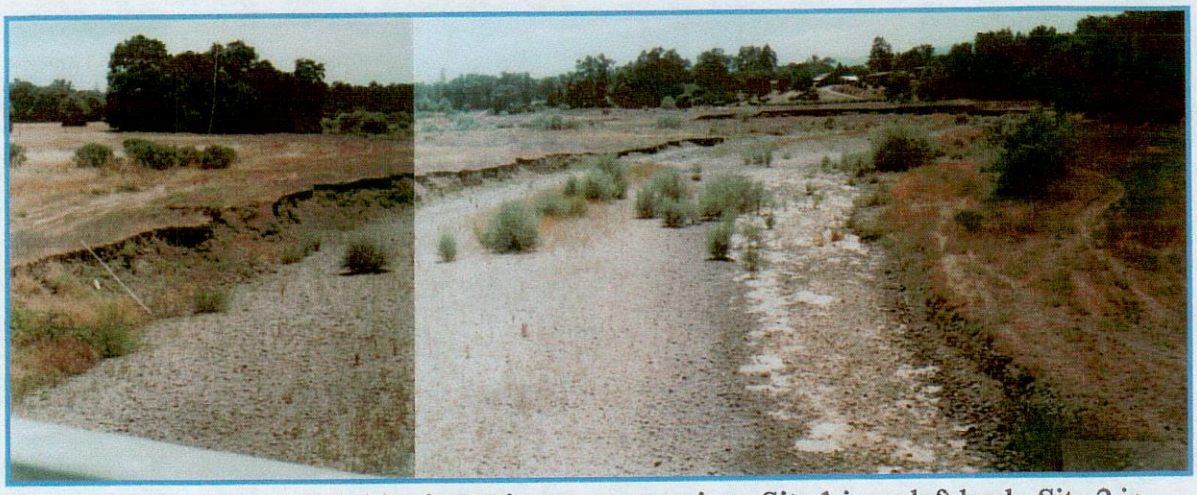


October 14, 2005. Note that although river is entrenched at Sites 2 and 3, willows now completely protect bank from further erosion.

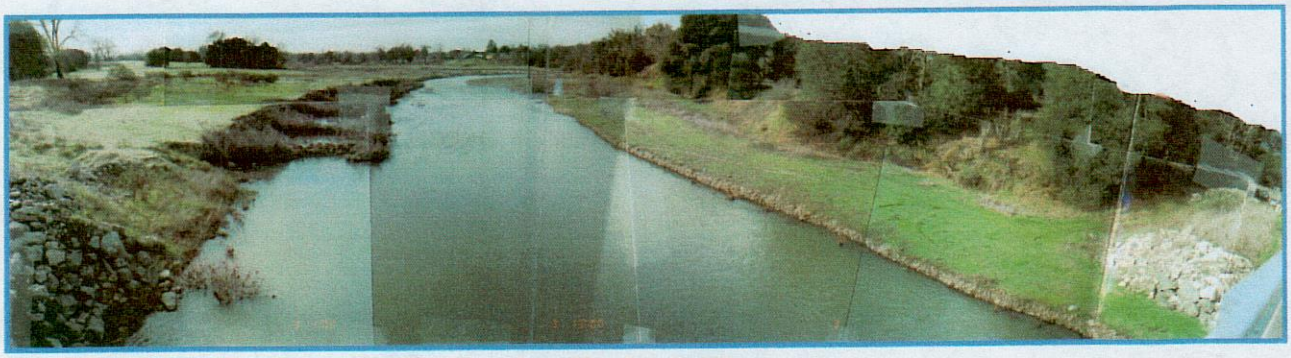
May 8, 1992. Note lone bush upper right center. River removed bush by 1995. Channel is wide and shallow.



October 14, 2005. River flows lower left to upper right. Siltation baffles just downstream of bridge on left bank, willow brush mattress below baffle. The baffles on the left bank and the willow clusters on the right serve to define the now narrower channel, and deepen it. Note willow clusters dotting the right bank as much as 50 feet away from the channel.



August 1999. View from bridge just prior to construction. Site 1 is on left bank, Site 2 in background.



March 1, 2000. View from bridge showing siltation baffles.

November 6, 2000. View from bridge with siltation baffles on left bank and willow clusters on right bank.

April 16, 2005. View from bridge of completed project at Site 1. Note willows line both banks.

SITE 1 CONSTRUCTION
SILTATION BAFFLE
1999

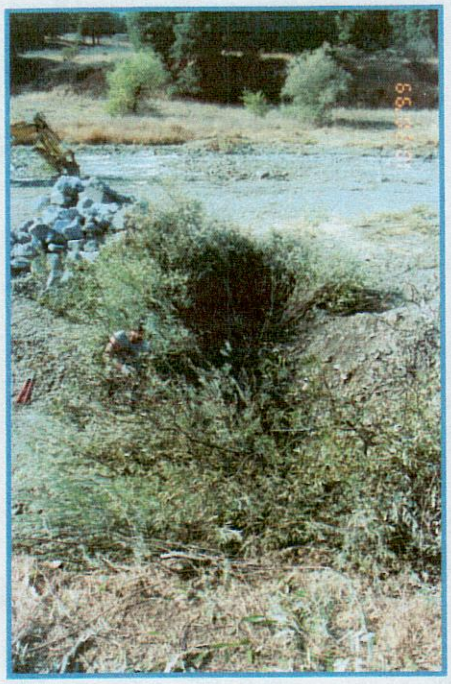
October 12, 1999. River bed before construction.

November 1997. River bed where siltation baffles will be installed just beyond water in channel.

We contacted Evan Engber of Bioengineering Associates of Laytonville and he agreed to secure the permits and do the work. Evan had by then over 15 years experience in river restoration on small and large projects. He was well known as an expert in the field.

Site 1, just below the bridge and on the left bank, was worked on in fall 1999. We constructed 11 willow siltation baffles just downstream from the bridge on the left bank. These narrowed the channel width by about 1/3 and consequently deepened the channel which in turn made it easier for migrating fish to go upstream. Just downstream from the baffles, we planted about 350 feet of willow brush mattress which stopped erosion there, and ensured the river will stay in the channel it developed by itself around 1994.

Toe trench for siltation baffle; note boulders which will anchor willows in place.



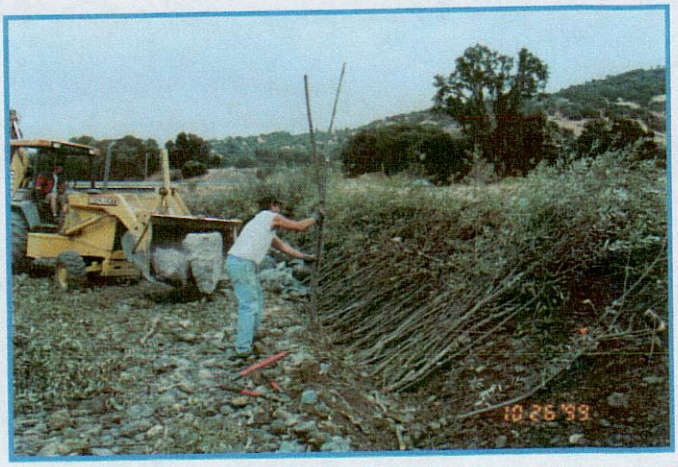
Planting willows in trench.

October 20, 1999. Watering willows of completed siltation baffle.

November 11, 1999. Completed willow siltation baffle narrows and deepens channel, and collects sediment upstream of the baffle.

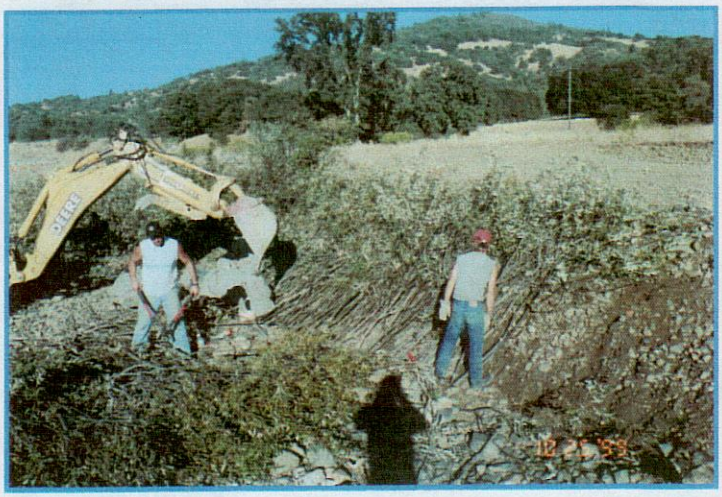
SITE 1 CONSTRUCTION
WILLOW BRUSH MATTRESS
1999

October 26, 1999. Willows laid in trench.

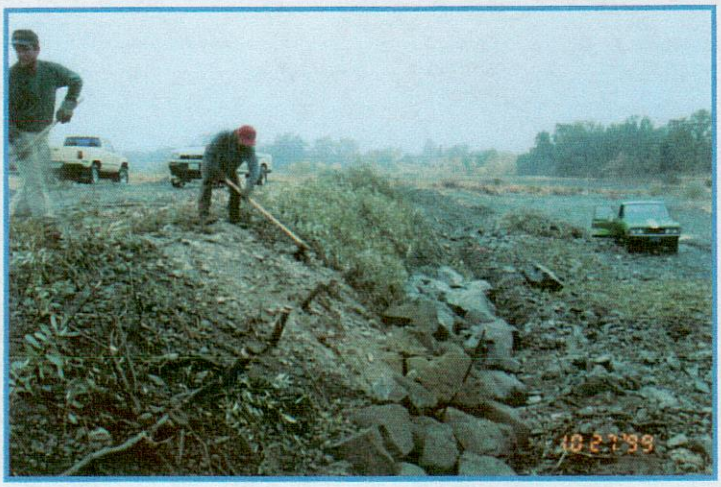


Willows are placed almost touching each other.

Closeup of backfilling.



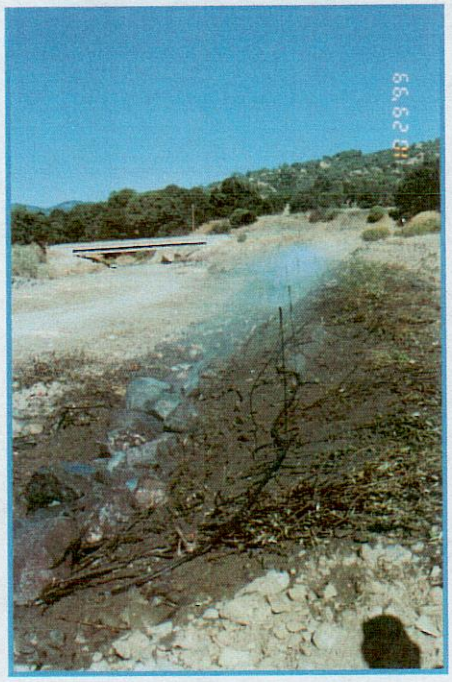
Excavator backfilling willow brush mattress with rocks.



Backfilling dirt on rock on top of willow stems.

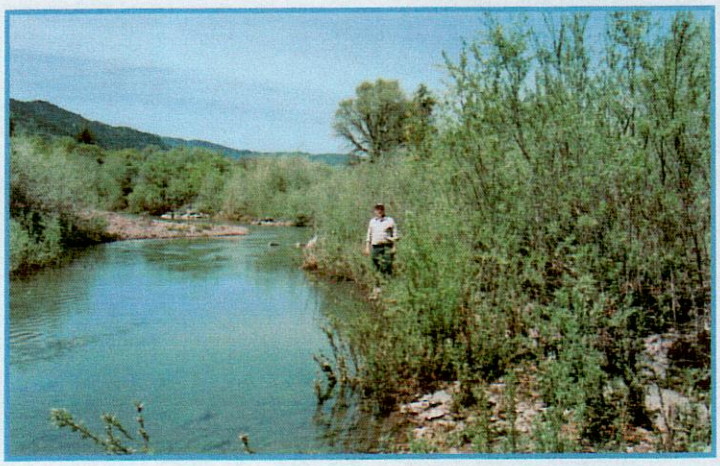
Detail of stakes anchoring willows to bank.

Completed willow brush mattress. Note willows are anchored into bank with rope.



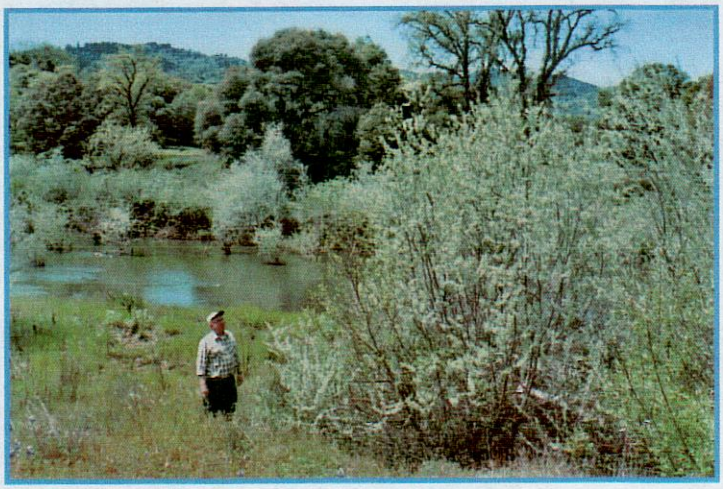
October 29, 1999. Watering the completed willow brush mattress. We use small sprayers to irrigate the mattress.

SITE 1 RESULTS
2005

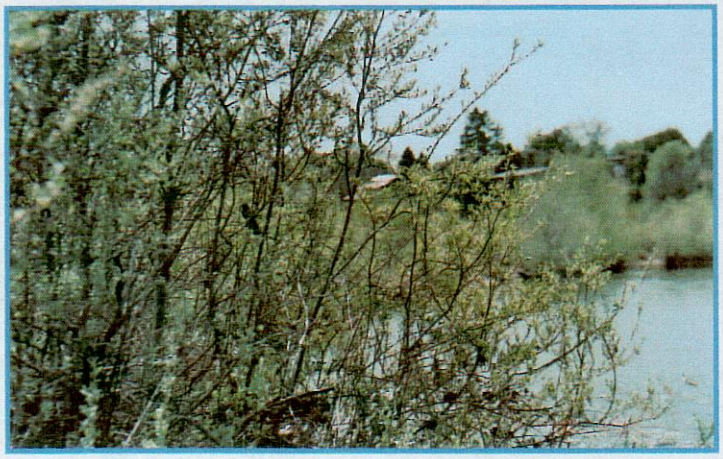


April 16, 2005. Willow brush mattress is now an integral part of the riparian corridor.

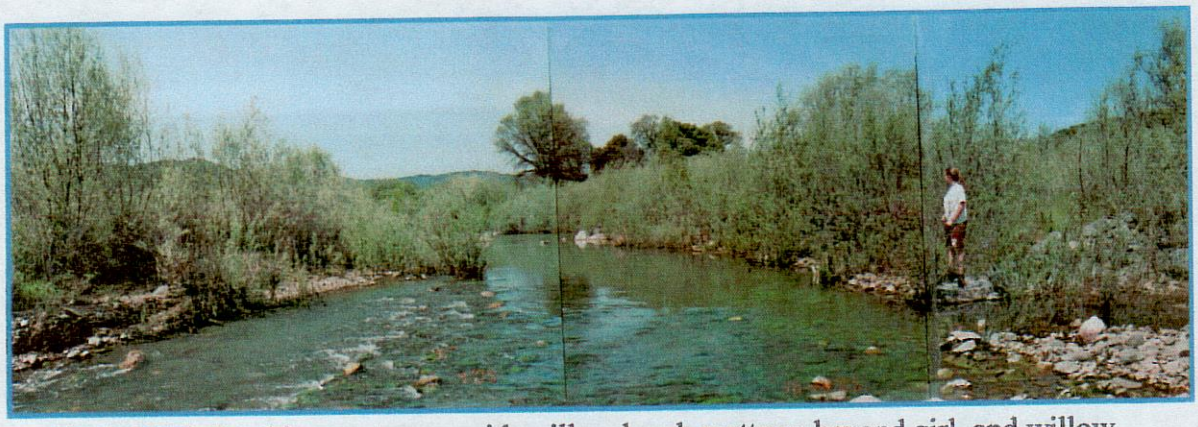
Compare this photo to the one at the bottom of the previous page.



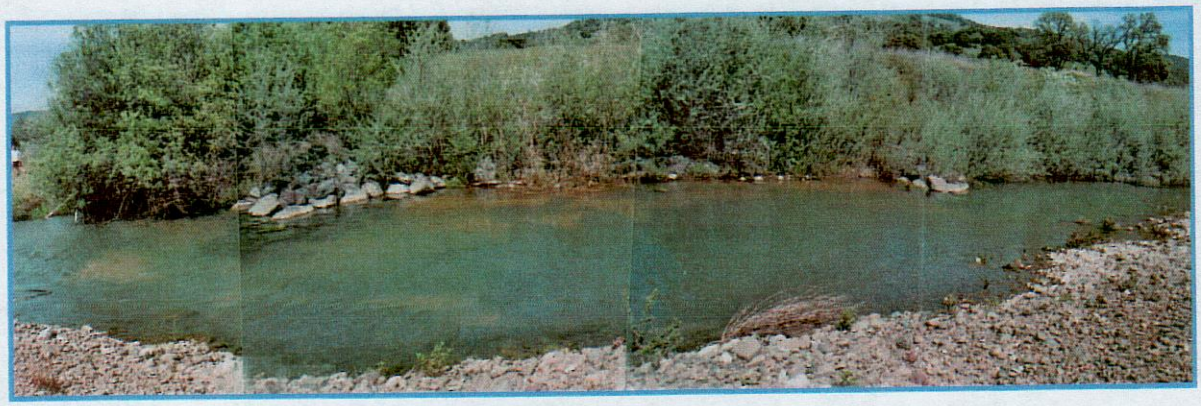
Willows are 15 feet high in April 2005.



Bird in willows at Site 1.

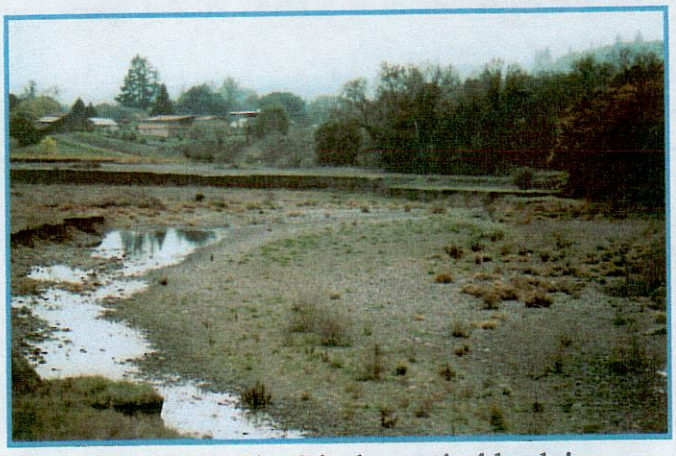


April 16, 2005. Looking upstream, with willow brush mattress beyond girl, and willow clusters on opposite bank.



Looking east at willow brush mattress at Site 1.

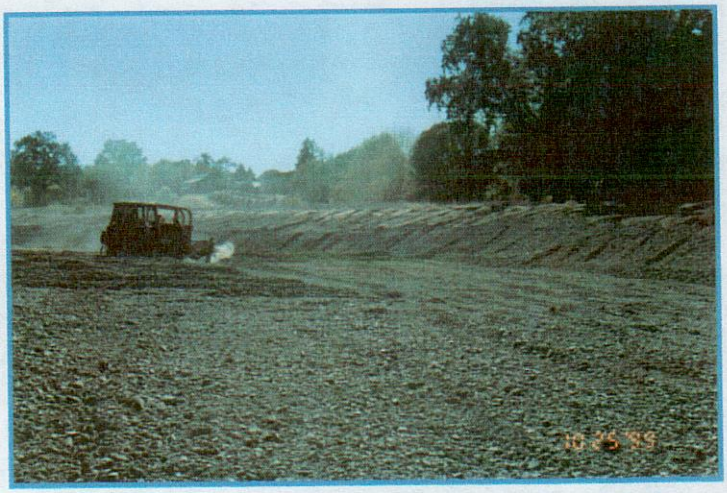
SITE 2 CONSTRUCTION AND RESULTS 1999



November 1997. Site 2 is the vertical bank in background where we will construct willow brush mattress, and area in foreground is where willow clusters will be planted.

That same year, 1999, we tackled Site 2 where the entrenched river was eroding the banks so badly. Before construction, the banks were vertical and 11 feet high. Evan used a bulldozer to reduce the slope to about 1:3, dug a deep toe trench and then planted nearly 600 feet of willow brush mattress, anchored at the lower end by large boulders.

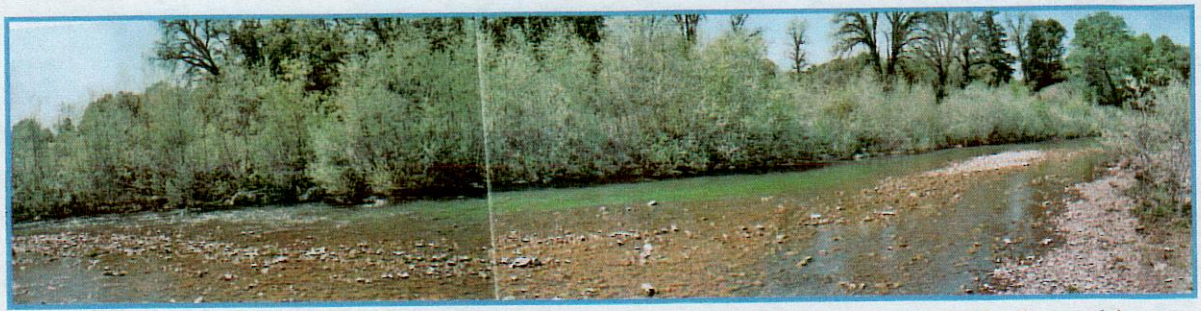
Closeup of 11-foot high vertical bank.



October 25, 1999. Bulldozer shaping bank to 1:3 slope.

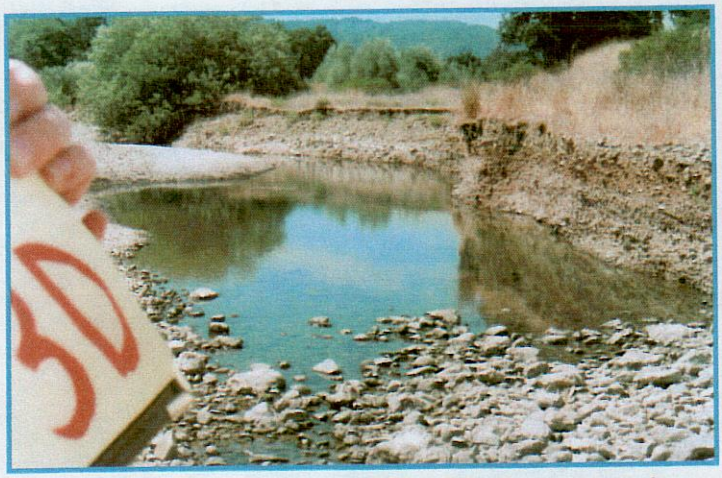
Trench for willow brush mattress.

November 11, 1999. Panorama of Site 2 just after completion.



April 16, 2005. It's hard to believe this is the same place as in the photograph above this one. Look carefully and you can match several trees in the two panoramic photos.

SITE 3 CONSTRUCTION AND RESULTS 2000

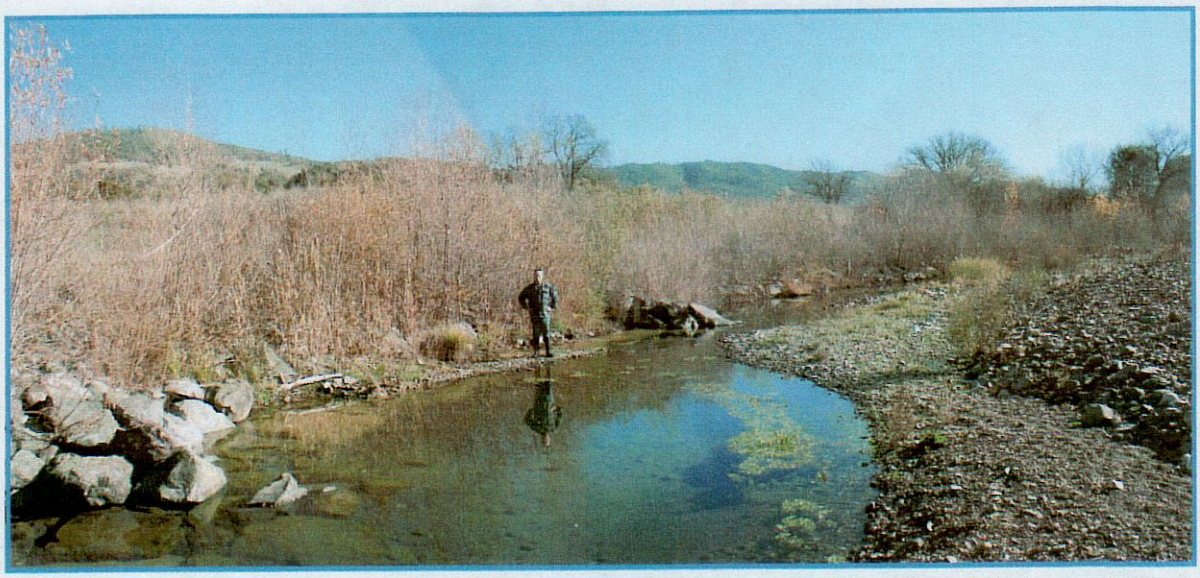


In 2000, we restored Site 3 with a 350-foot long willow brush mattress. There is a pool nearby which has water all year long.

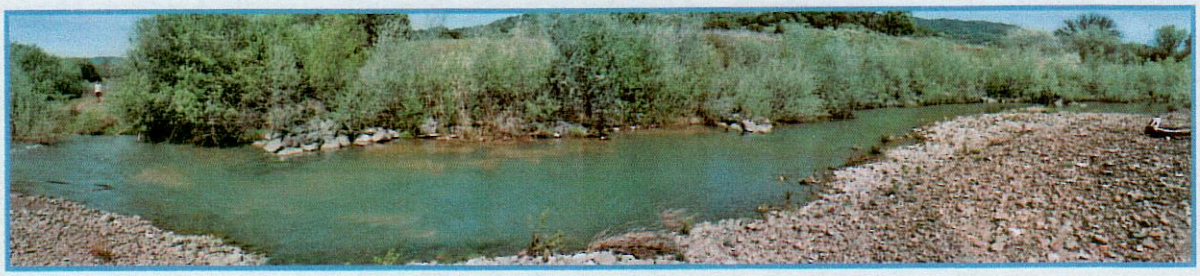
August 1999. Appearance of Site 3 before restoration.

Construction of willow brush mattress.

November 6, 2000. View looking upstream of nearly completed construction with willow mattress at river edge and willow clusters above. Note rocks on right of photo.



December 2, 2004. Rocks to right of man are the same ones on right side of photograph on previous page.



April 16, 2005. Panorama of Site 3 restoration showing line of willows anchoring river bank. Compare to photo before restoration.

WILLOW CLUSTERS
2000

Clusters being planted.

Young clusters on first terrace.

Also in 2000, we planted about 500 clusters of willows on the right bank just below the bridge across from Site 1. Each cluster contains 10 trees. In 2001, we planted another 400 clusters of willows on the flood plain of the left bank of the river where the former channel had been, between Sites 2 and 3. We water each cluster with drip irrigation for four to five months each summer. Refer to the low altitude aerial photos on pages 6 and 7 to see how they line the area just behind the river bank.

November 2000. Willows planted just above high water across from Site 1.

CHINOOK SALMON
2004

December 18, 2004. Chinook salmon carcass after spawning.

A few chinook salmon arrived in 2003 and migrated upstream to spawning areas. In 2004, four chinook not only came to this restored site, but spawned here. We look forward to helping fish populations increase in the coming years.

December 18, 2004. Up until 2003, chinook salmon had not been seen here for 50 years.

This was a major undertaking, and for it to succeed, the land had to be treated as a whole with each site as a necessary part. Doing work only at Site 1 with the baffles would have left Sites 2 and 3 vulnerable. Likewise, correcting the problem only at Site 2 with the 11-foot high vertical bank would have helped, but would have been inadequate and allowed water to tear away the river bank at Sites 1 and 3. Moreover, the banks and terraces had to be planted with all the willow clusters to initiate a riparian forest. The riverine environment was most important, but we also had to restore the environment back from the river's edge. The project called for 320 tons of boulders and large rock to anchor the willow trees prior to backfilling with large cobbles. Each large anchor boulder weighed in at six tons or so. Roughly 27,000 willows have been planted. Some 18,000 of these were in the brush mattresses and sedimentation baffles, and 9,000 were planted in the 900 clusters.

Once built, we had to anticipate years of maintenance. That means water, and lots of it. We established an agricultural irrigation account with the Redwood Valley County Water District just for these trees. Every tree is watered during the summer. For the willow brush mattresses, we use misters which deliver an "umbrella" of water about four feet in diameter and flowing at 10 gallons per hour. Drip won't work in this application because there are six to eight trees each lineal foot and the whole area must be wetted. We do use drip on the tree clusters, generally at the rate of one to two gallons per hour. The project is divided into four zones, and total water volume is as high as 70 gallons per minute. Each zone receives water for about 24 continuous hours, then we switch to the next zone. The first year, we began watering in May because the roots were shallow. As time went by, we started later in each summer because the tree roots are deeper underground.

Watering the first years required over 50 acre-feet (more than 16 million gallons) each summer, all purchased from the Redwood Valley County Water District. By 2003 we used less, and hoped we could eventually use very little supplemental water. In 2004, we tried an experiment to see what would happen under a reduced watering regimen. We watered less frequently and by the middle of August had put on only 9 acre-feet. By late August, many trees had brown and crisp leaves, and some leaves had fallen. Trees weren't dying but they were clearly in trouble. So we added more than 10 acre-feet (three million gallons) of water from late August to October and they revived quickly. It was obvious the trees still required great quantities of water. We will try this same experiment in 2009 and see if we can reduce irrigation. For the next three years, we'll surely need to add at least 20 to 22 acre-feet of purchased water annually. We look forward to the day when the trees are weaned and little or no supplemental water is required, but can't say when that will be.

Construction cost of a major project isn't cheap. We paid $120,000 over the three summers of construction, the State paid about $35,000 through the SB271 program and the NRCS Equip program provided about $6,000. The water district charged us $12,000 to install a hookup and meter.

Maintenance costs are about $6,000 per year. At $125 per acre-foot, 25 acre-feet of water costs over $3,000. The filter for the drip system needs cleaning every day or two, and we run the

irrigation intermittently from June through July, then 24/7 from early August until late October. Lines need to be checked for leaks and plugs regularly. Finally, there is the labor to install and remove the main lines each summer. Total walking distance to check all main and lateral lines, emitters and misters is about two miles, and must be examined regularly.

We have held six field day classes for the Department of Fish and Game and for Evan Engber who is an adjunct instructor for University of California. It's an especial pleasure to share this restoration project with other conservation-minded people. I always am asked how long will we need to water the trees. I don't know the answer but as I said above, it will be for many more years.

Nature seldom operates a single biological system in isolation, and that is especially true for rivers. Except for rivers in deserts, the biological contribution of the river is far greater than just the water itself. The riparian area back from the water is as interesting and important as the water flow and generally contains a greater variety of animal and plant species. Willows are the pioneer species on bare river banks. They thrive in full sunlight and since they are able to take most nutrients from the water, they can grow in only gravel and sand. We used three willow species (Pacific willow, arroyo willow and Hind's willow). Once willows are firmly established the next seral stage belongs to alders and cottonwoods which are both somewhat shade tolerant and which need more real soil. After them come large trees such as bay laurel, buckeye and oaks to form a dense forest.

Eventually, we hope to develop not only a riparian forest, but a forest which extends back from the river several hundred feet. To that end, we have planted about 2,000 oaks, buckeyes, bay laurels, redbuds, Oregon ashes, and other species on the flood plain and on the benches above the river. We understand full well we are compressing time by two centuries or so, and are bypassing the seral stages of natural succession. It's an experiment with an uncertain outcome, but well worth the effort. All the oaks and most of the other seedlings come from seeds of our own trees. Each is protected at first by a tree shelter, then at the sapling stage by a wire cage, and all are watered 8 to 10 gallons per week. It's too soon to tell how successful this will be, but we think we're succeeding.

Finally, there are salmonids. With construction of the jump pools at Mumford Dam two miles south of here, anadromous fish can now easily migrate upstream to traditional spawning grounds. Through the years, a few steelhead have been able to swim over the dam, but no chinook have been seen up here in 50 years or so. Imagine our delight in December 2004 to find four chinook carcasses in the restoration area. We had assumed this project would become a migratory corridor for anadromous fish but were pleasantly surprised to discover they chose to spawn at the restored site.

Clearly, this restoration effort is a success by any measure one chooses. It is our hope that our grandchildren will enjoy a natural river teeming with steelhead and salmon, birds and insects just as our great grandparents first found it.

Biological Context of the Spring 2008 De-Watering Event in the Upper Mainstem of the Russian River

1. **No author's name**

National Marine Fisheries Service, Southwest Region
March 2011

Introduction

2. The cultivation of wine grapes is a major industry in the Mendocino County portion of the Russian River. There are currently an estimated 15,539 acres of wine grapes under cultivation in this region; which represents a 30 percent increase in vineyard acreage over the last 20 years.

A significant challenge to the successful harvest of wine grapes in the upper Russian River is the threat that frost damage poses to crops. In spring, grape vines emerge from their winter dormancy with the initiation of new vegetative growth, which sprouts from buds established in the previous growing season. This "bud break" often coincides with spring frost events. Frost can damage this new tissue and significantly affect the subsequent yield of grapes.

As the frost risk map (Figure 1) indicates, Mendocino County faces a substantially greater frequency (and intensity) of frost events than other areas in the basin. To combat this climatic threat to their crops, growers have increasingly used water, dispersed via overhead sprinklers at a typical rate of 55gal./minute/acre. Water applied in this manner forms a protective layer of ice over the new growth and protects it from frost damage. This practice in conjunction with the expansion of vineyards, has resulted in an intensive demand for water along the mainstem Russian River (Figure 2). The 2008 frost protection events from April 19th to April 23rd

3. resulted in the removal of an estimated 412 acre-feet of water (134 million gallons), as documented at the Hopland gauge.

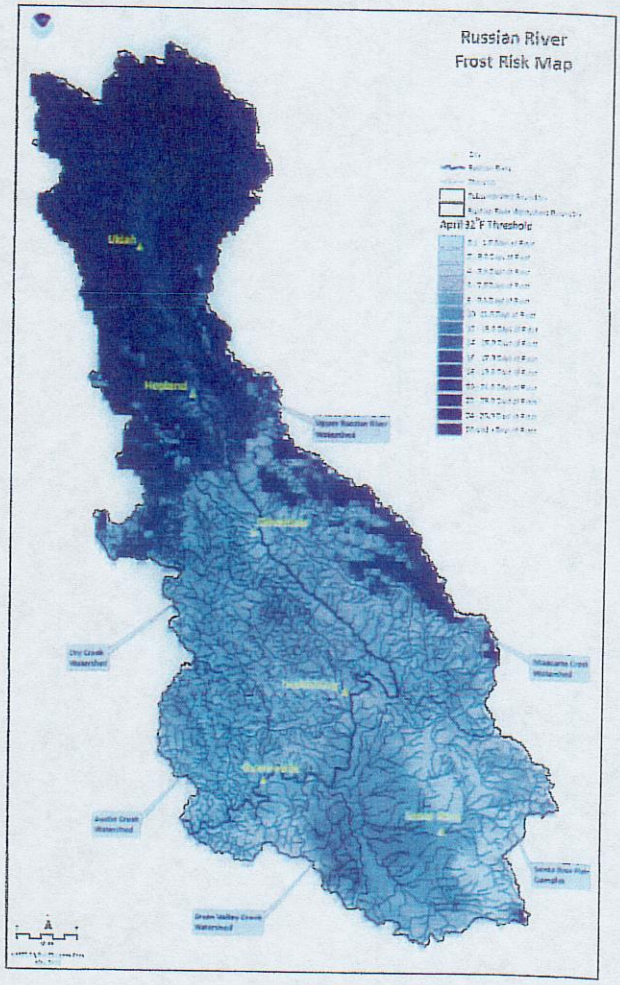


Figure 1. Frost risk map indicating a pronounced increase in the probability of frost events in the Mendocino County portion of the Russian River basin. Product developed by Fox Weather using PRISM climate model and 20 years of data from 16 local weather stations.

ATTACHMENT 2

2008 Fish Kills

The hydrologic effects of frost protection diversions can coincide with the emergence of salmonid fry from their redds. Fry typically rear in shallow low velocity areas of the stream such as stream margins and side channels. Fry are particularly susceptible to stranding because they occupy shallow habitats, have poor swimming ability and respond to flow changes by seeking refuge in the interstitial species of cobble or gravel substrates which can then dry out. Parr, smolt and even adult salmonids may also get stranded depending on the circumstances. We have observed mortalities of all these life stages in Russian River tributaries associated with frost events.

4.

5.

On the morning of April 20, 2008, during a frost event, a NMFS biologist documented the stranding mortality of 10 steelhead fry along the gravel margins of the mainstem river just north of Hopland (Figure 3). This effort is best described as an opportunistic spot check. The biologist spent approximately 1 hour searching dewatered margins of the river and covered 50 to 75 meters of river length. The biologist's search was limited to a quick scan of the surface to search for stranded fish. Due to the tendency for fry to get stranded in interstitial spaces and other issues with detectability, it is likely a significant portion of stranded fish went undetected even within the small area that was searched.

6.

6.

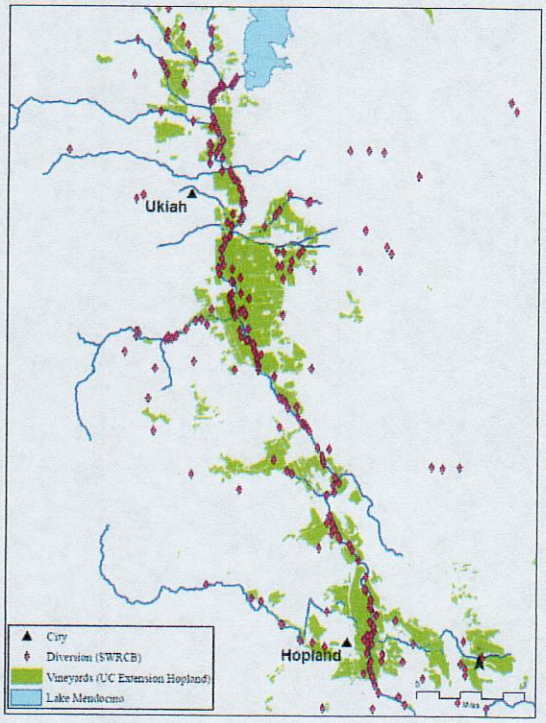


Figure 2. Distribution of vineyards and documented diversions along the Russian River mainstem between Ukiah and Hopland.

Significance of the Threat to Salmonids

Despite the seemingly insignificant nature of the observations of April 20, a consideration of the totality of evidence clearly indicates the fish kill was "substantial" and that it is reasonable to conclude the threat to salmonids is significant. To support this, we first summarize the hydrologic effects, and use that to provide an estimate of the fish kill to indicate the scope of the impact in the mainstem. We then summarize the overall threat, with particular reference to tributary streams.

7.

Figure 3. Salmonid fry mortality observed near Hopland, April 20, 2008.

Though frost protection impacts occur throughout the basin and to a lesser extent in the mainstem below Hopland, we limit our estimate of the 2008 fish kill to the 28 miles of mainstem river from the East Branch/West Branch confluence below Coyote Valley Dam in the northern Ukiah Valley to the USGS gauge north of Cloverdale where hydrologic signals from the frost events were still detected. 7.

Hydrologic Effects: The USGS stream flow gauge on the mainstem Russian River just north of Hopland is located 14.4 miles south of the East Branch/West Branch confluence. This gauge indicates at least 20 discernable stage reductions at low flows associated with air temperatures approaching 32°F between March 15 and May 30, 2008[1] (Figure 4). The most severe event occurred on April 21 when stage dropped 8.5 cm at a rate of 1cm per hour. Although this is not in itself impressive, due to the low gradient configuration of the channel, a drop of that magnitude would expose an 8 foot wide strip of gravel substrate, assuming a cross-sectional slope of 2°. Gravel bars do not occupy the entire channel, but typically form alternating bars interspersed with vegetated banks. For the sake of this estimate, we assume 25 percent of the river channel by length has gravel substrate, side channel, backwater pool, or some other feature where fish could potentially be stranded.

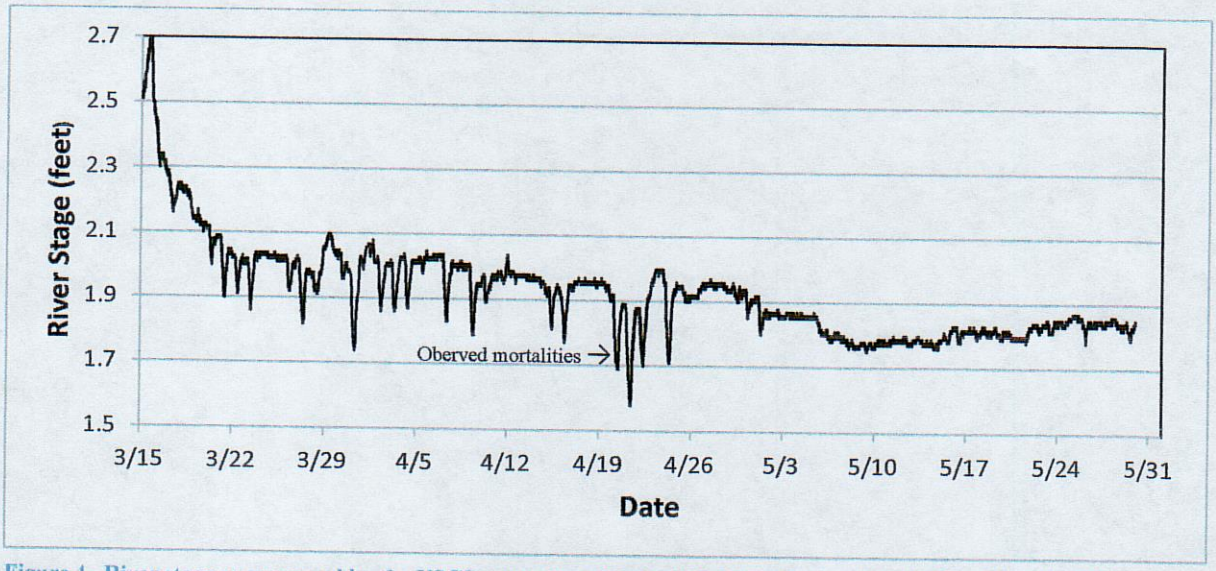


Figure 4. River stage as measured by the USGS gauge near Hopland, California from March 15 to May 30, 2008.

[1] March 15 to May 30 is the period from "bud-break" until the frost events become unlikely with the approach of summer.

8. Stage changes equal to or greater than those observed here are regular occurrences at higher flows when discharge decreases rapidly after a storm event. What made these events biologically significant was they occurred when stream flows were already very low due to drought conditions[2]. Pre-frost event flows were approximately 250 cubic feet per second (cfs). This volume is low enough, relative to the channel's capacity, that gravel bars and other low-gradient features would be partially exposed. Rapid stage changes at this low flow have no analogue in nature, so fish are likely to have difficulty coping with them (Figure 5).

Estimated Take of Threatened Steelhead: The following estimation may help indicate the scope of the April 2008 events. We make three important assumptions in making this estimate: 1) There was an average stranding density of 10 stranded fish per 100 feet of stream for events
9. equal to that observed on April 20; 2) Stranding density varied by severity of events, and; 3) A constant 25 percent of the river length had features likely to induce stranding during an event. When we applied our calculations to the 28 mile assessment reach, we estimated a total of
10. 25,872 stranding mortalities for 2008 (Table 1). We recognize this is a coarse but conservative approximation which could be modified with quantification of these additional considerations:

- The cumulative effect of diversions would increase the effect in a downstream direction.
- The magnitude and rate of stage change was probably greater at points of diversions than what was documented at the Hopland gauge.
- Channel morphology, especially with respect to the distribution of gravel bars, is unknown and varies.
- Fish density varies in space and time and may be depleted with each event.
- There were additional drawdown events not considered in this estimate.
- Hydrologic effects may have extended beyond the assessment area.

Table 1. Explicit assumptions used to derive estimates of the total number of salmonids killed in the upper Russian River mainstem during the 2008 frost season.

Event Dates	# of Events	Severity	Severity Index	Fish Density	Reach Length	% stranding habitat	Estimated # of Fish
3/23-4/16	10	Less	0.25	2.5/100ft	28 miles	0.25	9,240
4/20	1	Observed	1	10/100ft	28 miles	0.25	3,696
4/21	1	Most	1.5	15/100ft	28 miles	0.25	5,544
4/22	1	Equal to obs.	1	10/100ft	28 miles	0.25	3,696
4/24	1	Equal to obs.	1	10/100ft	28 miles	0.25	3,696
						Total Fish Kill:	**25,872**

11.

[2] Flow in this reach is regulated by releases from Coyote Valley Dam, so low flow conditions were more directly the result of reduced flow releases intended to maximize reservoir storage under drought conditions.

12. Whether the actual number of stranded fry was 5,000, or 50,000, it should be apparent that: a) The fish mortality constitutes a substantial threat to the reproductive success of steelhead in the assessment area, and; b) These impacts may negatively influence the survival and recovery of local populations, which may in turn be relevant at the species scale.

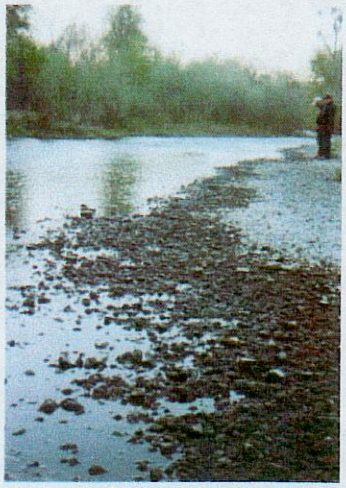


Figure 5. Mainstem Russian River near Hopland on March 31, 2009 during a stage reduction of less than one inch. Note the recently de-watered stream margin.

Tributary Streams: In addition to the 28 miles of mainstem Russian River considered above, there are over 140 miles of tributary stream occupied by steelhead above that point. Tributaries not only constitute many more stream miles than the mainstem, they typically provide higher quality spawning and rearing habitat as well. For steelhead, the bulk of spawning and rearing therefore takes place in the tributaries when seasonal precipitation provides enough stream flow for adults to ascend them[3]. In dry years however, as was the case in 2008, there is limited access to the tributaries, so a larger proportion of the steelhead run are forced to spawn in the mainstem.

Although the threat of frost protection is clearly significant in the mainstem, we believe the threat to salmonids in tributaries is even greater. First, as it is with Mendocino County, tributaries throughout the Russian River basin provide the great majority of habitat for salmonids; impacts in those areas therefore threaten to harm a far greater portion of salmonid populations. Secondly, flow is typically less in the smaller tributary channels than in the larger mainstem, so cumulative water demands can more easily overtake supply and result in significant stream desiccation. Published research in Maacama Creek, a Sonoma County tributary to the Russian River, documented up to 97% stream flow reductions associated with episodic frost protection activities.

13. No citations

[3] Chinook salmon however, tend to be restricted to the mainstem and lower reaches of the major tributaries.

Critique of NMFS Paper

by Rudolph H. Light, Ph.D.

27 June 2011

Biological Context of the Spring 2008 De-Watering Event in the Upper Mainstem of the Russian River
National Marine Fisheries Service, Southwest Region
March 2011

The following is a critique of a paper that NMFS wrote and released to the public in March 2011. This anonymously authored paper is apparently the sole "scientific" justification published by NMFS to ask the SWRCB to require new emergency regulations regarding the use of water for frost protection. NMFS contends that the practice of using water for frost protection must be denied except when done under full control of the SWRCB. Frost protection regulations were to have been implemented as emergency regulations because NMFS believed massive fish kills had occurred in the spring of 2008 due exclusively to water being used on vineyards for frost protection during a frost incident.

My critique discusses some of the serious shortcomings of this NMFS report and illustrates why it cannot be used as a factual finding to support the proposed frost regulations. My comments are numbered (below) and these numbered comments are referenced by label and underlining on an attached copy of NMFS' "Biological Context . . ." paper.

1. There is no author's name provided.

2. The number of acres of winegrapes needs substantiation; David Lewis and Glenn McGourty, University of California Cooperative Extension scientists, wrote a paper two or three years ago. What were their figures for acres of grapes in the Russian River Watershed in Mendocino County?

3. Four events totaling 412 acre-feet of water removed is a meaningless statistic. Every diverter, whether ag or municipal or industrial, removes water. Only an event that causes harm to anadromous fish has meaning in this context and there's no real evidence that these four events did cause any mortality.

4. There is no discussion about natural mortality prior to an assertion that "Fry are particularly susceptible to stranding because they occupy shallow habitats, have poor swimming ability and respond to flow changes by seeking refuge in the interstitial species [sic] of cobble or gravel substrates which can then dry out." There is no discussion about the fact each female lays 4,000 to 5,000 eggs and that nearly all the progeny will die for a variety of natural reasons before reaching reproductive age. There is no discussion about young fish being able to swim to deeper water when river levels fall. Nothing is said about fish habits and survival. We are led to believe that the ***only*** reason a stranding or death occurs is due to frost protection.

5. The author continues, "Parr, smolt and even adult salmonids may also get stranded depending on the circumstances. We have observed mortalities of all these life stages in Russian River tributaries associated with frost events." There is no evidence provided nor even a simple citation for these alleged observations. No dates, no numbers, no locations nor anything else are provided. As far as the readers know, a NMFS biologist made one field site visit on April 20, 2008. There is no mention of the times the biologists did field studies when there were no observed strandings. Furthermore, it is likely that the biologists have observed mortalities of all these life stages that were not associated with frost events, but the author doesn't discuss this as he should have.

6. There is no evidence that the number of fish found stranded was higher than 10. Moreover, the biologist did not sample the stream except on a single early morning after the river had dropped. It is certain that alevins and fry die every day due to predation or a stranding or other causes, regardless of frost protection. One would need to sample the stream on numerous occasions under various conditions, preferably over several years to come to any valid conclusions about the different causes of fish stranding. The reason these species have evolved to have so many young in nature is that only a few are able to reach adulthood. This low reproductive success rate came about long before any mortality could be attributed to human causes.

7. The biologist spent just one hour at one site, walking for 50 to 75 meters, which is the equivalent of 0.031 to 0.047 miles. From this one sample, the author of "Biological Context . . ." derives conclusions on 28 miles of river, or about 600 to 900 times the length of his one short walk. He is in effect saying that one sample representing less than 0.2% of the length of the assumedly affected river can be used to extrapolate conclusions to the whole 28 miles. There were no site replications, so no conclusion whatever can be drawn, and certainly no inferential conclusions because there are no descriptive statistics to base them on.

8. The author acknowledges that large stage changes occur naturally after storm events, but persists in attributing with certainty the observed stranding was due to frost protection and asserts more strandings were certain to have occurred. A low water stage can naturally occur and not be due to river lowering caused by frost protection, and on unimpaired streams, this does happen. Rapid stage changes can occur in nature as well as from human activity, but whether or not these natural or human caused stage changes strand and kill fish is a question to be addressed by experiment.

9. Assumptions 1, 2, and 3 are fictitious because they have no factual basis.

Assumption 1. In his earlier paragraph, the author said there were 10 fish found in a length from 164 to 246 feet (50 to 75 meters) in the reach. This is equivalent to between 4 and 6 fish per 100 feet, and for that one site only. Now the author changes an estimate of from 4 to 6 stranded fish per 100 feet to 10 fish per 100 feet and extrapolates that to create a number of strandings for 147,840 feet (or 28 miles). There is no science behind or acceptable statistical analysis for increasing the number of stranded fish to 10 per 100 lineal feet nor to extrapolate strandings over a length of 28 miles.

Assumption 2 says that "stranding density varied by severity of events." This is no doubt true, but he then develops a "severity index" in Table 1, based on "less", "most", and "equal to

observed", and then assigns a value of 0.25 to less, 1.5 to "most" and 1.0 to "equal to observed". This is preposterous on the face of it. He has only one observation and can't possibly assign any number to a relative class of more or less severity. Consult any elementary statistics text and study sample size, mean, variance, standard deviation, standard error and coefficient of variation. With a sample size of ***one***, there are no descriptive statistics possible, let alone inferential statistics.

Assumption 3 says there's a constant 25% of the river length possessing features likely to strand fish. There's no evidence nor citation for this. He doesn't even say what features were present at or near the one site that the biologist did examine. He cannot justify this assumption.

10. He estimates 25,872 fish were stranded and perished during these 14 frost events, and says, ". . . this is a coarse but conservative approximation. . . ." It is nothing of the kind. These are numbers derived without any substantial data whatever and is not an "approximation" of anything. The author needs to become more familiar with statistics and the methods of science.

11. Table 1 is most instructive. It provides estimates which have no basis in reality at all. The Table appears to be robust, because it contains numbers. In fact, everything is based on a part of only one line: on 4/20 there was observed a stranding. Period. The author didn't even put in the Table that it involved 10 fish over a 50 to 75 meter reach. Instead, he extrapolated from this one observation to conclude 3,696 fish died that night. Then he again used this one observation to extrapolate numbers for 14 alleged stranding events and concluded there were stranding deaths caused by frost protection and over 28 miles of stream to come up with a total fish kill of 25,872 individuals. The author went on to say in the text this was a "conservative approximation". And all of this was from one observation of 10 dead fish.

12. The author says, "Whether the actual number of stranded fry was 5,000 or 50,000, it should be apparent that: a) The fish mortality constitutes a substantial threat to the reproductive success of steelhead in the assessment area, and; b) These impacts may negatively influence the survival and recovery of local populations, which may in turn be relevant at the species scale." The 10 fish in the author's world view, now become 50,000 stranded fry, an unsupportable conclusion.

13. At the end of the paper there is no list of references or citations.

As a general comment, this paper is almost fact-free, and the author clearly is comfortable with that. The most significant omission apart from facts is that he does not discuss (and seems to be unaware of) natural mortality among salmonids.

A quick search of the internet revealed several papers in which there are at least partial life tables for chinook salmon (Mullan, 2009?) and for coho salmon (Lestelle, 2007). Mullan says that for summer/fall chinook in the Wenatchee River drainage, the survival from the egg stage to the migrant stage is from 4.8% to 8.5%, and from the migrant stage to the adult stage, it is from 4.0% to 7.1% (Table 3 of his paper). Using actual numbers, over a 20 year period, on average 20,300,000 eggs were deposited, and 68,600 adults returned. There are also figures for other drainages.

It is true this study is on the Columbia River system, but the figures represent valid

population estimates, derived from real data over a long period of time. The author of this NMFS paper on the mainstem of the Russian River had no data except 10 fish found one morning.

The important thing to recognize is that there is significant high natural mortality at the alevin, fry, parr and smolt stages. Dead fish are naturally found in all waterways and most fish that die are never found because they are eaten by predators or scavengers. The NMFS author of "Biological Context . . ." does not address this at all and this is a primary reason his paper fails. This is a paper developed on a foundation of untenable assumptions and hypothetical constructs to justify what the author had previously decided would be his overall conclusion: water used for frost protection kills vast numbers of fish.

The author did not use the scientific method. He should have included a literature search, proposed one or more hypotheses, and gathered extensive data instead of basing everything on one observation during one hour of one morning. After he had gathered and examined sufficient data, he could perhaps determine if any of the hypotheses were supported. After all this was done, he could come to a conclusion. It is completely unacceptable in the academic and professional world to write a "scientific" paper to try to support a desired predetermined conclusion. Clearly, this paper never should have been released by NMFS as a professional work of science. NMFS should either publicly justify this work with supporting scientific data and research or publicly retract this paper.

As a postscript, we can briefly look at this NMFS paper in another way. If it were true that up to 26,000 fish were killed in these 14 events, it implies that there was an enormous number of fish in the river, very possibly so many that steelhead trout should not be on the list of threatened species. Of course, the author might contend that these events wiped out all or nearly all the fish in the river during those nights of frost protection, which would be another unsubstantiated assumption. And if this assumption of a massive kill were true, there should not be any returns in 2011 or 2012 from that cohort. It's beyond the scope of this critique to develop this train of thought further. But unless one takes the position that much of the entire river's population was killed during these frost events, one has to acknowledge there had been a lot of spawning females, and enormous numbers of fry in the river in the spring of 2008.

References:

Lestelle, L.C., 2007. Coho salmon (*Oncorhynchus kisutch*) life history patterns in the Pacific Northwest and California. Poulsbo, WA: Biostream Environmental. Available at www.fishsciences.net/projects/Klamathcoho/_media/Coho_Life_History_Patterns-FINAL_3-26-07.pdf

Mullan, J.W., 2009?. Session II: Stock status and carrying capacity. In: NOAA F/NWC-187. Status and Future of spring Chinook salmon in the Columbia River basin - conservation and enhancement. Available at www.nwfsc.noaa.gov/publications/techmemos/tm187/mullan.htm.

27 June 2011

Rudolph H. Light, Ph.D.
P.O. Box 736
Redwood Valley, CA 95470