CALIFORNIA TROUT
KEEPER OF THE STREAMS

50 YEARS
TROUT UNLIMITED

February 24, 2010

Brian J. Johnson
Director, California Water Project & Staff Attorney
Trout Unlimited

Curtis Knight
Deputy Conservation Director
California Trout
(contact information on signature page)

John McCamman
Director
Department of Fish & Game
1416 Ninth Street
Sacramento, CA 95814
(via email and U.S. Mail)

Subject: Emergency Interim Terms and Conditions for the Shasta River Permitting Program

Dear Director McCamman:

In September we requested that the Department act before the 2010 irrigation season to establish interim streamflow and temperature terms and conditions to prevent extirpation of coho salmon from the Shasta River. A copy of our original letter is attached (Exhibit B). Following receipt of our letter we met with Northern Region staff including Gary Stacey and Steve Turek. During our meeting we all agreed that interim streamflow and temperature thresholds were critical to establish and implement during 2010. Since that date, the situation for salmon and steelhead has grown even more urgent.

We again call on the Department to establish interim temperature and streamflow conditions through the watershed-wide Streambed Alteration Agreement permitting program in time for the 2010 irrigation season, so that the program can be tested and refined in time to be fully functional to benefit the last remaining cohort of Shasta River coho salmon returning to spawn in the fall of 2010.

Summary of Recommendations

1. The Big Springs Complex hosts the highest value juvenile coho rearing habitat in the Shasta River. Therefore, we recommend focusing emergency measures to prevent extinction in the area south of County Road A12.

2. Within the Big Springs Complex (as elsewhere within the Shasta River) lethally high water temperatures, primarily due to irrigation water runoff (tailwater), is the primary limiting factor for coho salmon. Therefore, the recommendations focus on maintaining suitable levels of cold water.

3. Reasonable rangeland management practices such as cattle exclusion fencing and tailwater control are necessary immediately in some locations.

4. Streamflows in spring and fall are known to impair coho salmon smolt emigration access for juveniles into cold water rearing habitat and access for adults to reach spawning habitat. Our recommendations also include standards to maintain minimum depths for migration during those times for both coho salmon and Chinook salmon.

5. We are recommending only those measures that are absolutely necessary to avoid certain extirpation of the last coho salmon in the Shasta River. Our recommendations should be considered the minimum, literally, that will avoid direct mortality in reaches affected by the agreements. If the Department cannot take at least these steps, that would equal an admission of defeat, and the state may as well begin formulating a reintroduction plan for the day the population is extirpated.

6. All of the measures we are calling for are compatible with continued ranching in the valley, and none are prohibitively expensive.

7. Two of three cohorts of Shasta River coho salmon are effectively extirpated from basin. We request the Department work with stakeholders to develop a reintroduction plan that specifies proactive measures to rebuild the two lost cohorts.

Rationale and Methods

In this letter, we offer our specific recommendations. The text of the letter describes our rationale and methods and summarizes our recommendations. Exhibit A consists of draft terms and conditions for inclusion in Streambed Alteration Agreements along with the Master List of Terms and Conditions.

Despite the dire circumstances, our organizations remain profoundly optimistic about the potential for salmon and steelhead population recovery in the Shasta River. We know from recent experience that reasonable changes in land and water management can result in incredible improvements in habitat for fish, without imposing an undue burden on ranchers. We know that many organizations and landowners have worked very hard to protect salmonid habitat, and that this work may soon begin to pay off. Because of the cold spring water influence in the Shasta River and the river's extraordinary biological productivity, it can be restored to its former level as a world class salmon and steelhead river. It is definitely not too far gone for recovery.

Existing Conditions

The 2008 and 2009 cohorts (Brood Years) of coho salmon appear to be extirpated from the Shasta River. In the fall of 2008, only 31 adults returned to the Shasta River. These 31 adults will not produce enough smolts to successfully return spawners in the fall of 2011 based on the estimated number of smolts produced and predicted smolt-to-adult return rates. In the fall of 2009 only nine coho salmon returned to the Shasta River to spawn. Preliminary results of the video review indicate that all nine fish may have been males. This represents the loss of the 2009 Brood Year of coho salmon in the Shasta River. Therefore, both the Brood Year 2008 and 2009 cohorts of coho salmon are believed to be effectively extirpated from the Shasta River.

The Brood Year 2010 cohort of coho salmon has recently been the strongest of the three. In 2004 this cohort returned over 350 adults to spawn. Unfortunately, estimates for Brood Year 2010 predict only about 150 adults returning to spawn in the fall of 2010. Despite this relatively small number this cohort represents the last hope to stave off extirpation of coho salmon in the Shasta River. The highest priority should be given to protecting the spawning and rearing habitats of this last remaining cohort.

Below we outline efforts to maximize the survival of this cohort. We believe these actions are necessary and provide the best opportunity to reverse the declining trend of coho numbers in the Shasta River.

Limiting Factors

The primary limiting factors for juvenile coho salmon in the Shasta River are access to cold water rearing habitat during the spring and summer months, maintenance of cold spring flows during the summer and suitable flows and temperatures in the spring for smolts to emigrate from the Shasta River. During the summers of 2008 and 2009, juvenile coho salmon successfully reared in only a few isolated cold water refugia areas in the Big Springs Complex area of the upper Shasta River above County Road A12. Protecting the last remaining pockets of rearing habitat should be the highest priority.

The "Big Springs Complex" area of the Shasta River generally encompasses the area between Grenada Irrigation District and Dwinnell Dam on the mainstem river, plus all of Big Springs Creek, lower Parks Creek, and several small springs. The Big Springs

Complex harbors the only remaining known locations of over-summer rearing juvenile coho salmon in the entire Shasta River watershed.

In the summer of 2008, juvenile coho salmon were documented in only three locations in the watershed; one pool below Big Springs Lake in Big Springs Creek, a one-mile section of the Shasta River below Clear Springs, and in three spring locations on Hole-in-the-Ground Ranch (Chesney et al. 2009).

In the summer of 2009, juvenile coho salmon were documented in only small pockets of cold water refugia in lower Parks Creek and the mainstem Shasta River above Big Springs Creek. No juvenile coho salmon were observed rearing over the summer in Big Springs Creek (Chesney et al. 2009). However, two juvenile coho did migrate into Big Springs Creek in October (Carson Jeffres, personal communication).

Wales (1951) reported Big Springs Creek flows of approximately 125 cfs and water temperatures of 11 degrees C (52 degrees F).[1] These conditions were ideal for juvenile coho rearing. In 2006, The Nature Conservancy purchased the Nelson Ranch allowing access for research and monitoring to the mainstem Shasta River approximately 1.5 miles below the confluence with Big Springs Creek. Stream temperature monitoring indicated Big Springs Creek was providing pulses of 24 degree C water (75 degrees F) and displacing rearing juvenile coho salmon in the Shasta River below Big Springs Creek in May (Jeffres et al 2008). Further analysis indicated Big Springs Creek excessive cattle grazing, water diversions, and tailwater return were responsible for this warm water pulse.

In 2009, The Nature Conservancy purchased the Shasta Big Springs Ranch and put up electric fencing to keep cattle excluded from the stream and implemented a progressive water management plan that resulted in August stream temperatures that peaked at 18 degrees C (64 degrees F) compared to 24 degrees C (75.2 degrees F) in 2008. It is worth noting that the highest stream temperatures in Big Springs Creek in 2009 occurred in May (24 degrees C) before the benefits of cattle exclusion and irrigation efficiency could be realized.

This progressive management of Big Springs Creek also extended the suitable rearing temperatures for coho all the way to A12. Unfortunately, due to small numbers of adult coho salmon returning to the system in the fall of 2008 no juvenile coho salmon reared in the Big Springs Creek in 2009, despite habitat conditions conducive to rearing, especially later in the summer.

Above Big Springs Creek, in the area of Hole in the Ground, Shasta Springs and Seldom Seen Ranches, small pockets of cold water refugia have sustained the last remaining juvenile coho salmon in the Shasta River. In 2008 more than 70 percent of the rearing juvenile coho salmon were found on these three properties and in 2009 this area was the only known area to harbor juvenile coho salmon (Chesney et al. 2009). Unfortunately, in

[1] All temperatures in this memo are rounded to the nearest half-degree.

2009 only 14 juveniles were observed to be rearing in this area through the summer (Chesney et al. 2009).

Temperature and Coho Tolerance

In recent years the Department, UC Davis, and The Nature Conservancy have conducted some of the most intensive monitoring of coho and water temperatures that have ever been attempted. In particular, the scientists installed an extremely dense network of temperature loggers which have allowed researchers the opportunity to determine locations of high rates of stream heating and helped to prioritize locations where restoration would have the most benefit for rearing coho salmon. This information has allowed for identification of limiting factors to salmon production in the Shasta River and set the stage for the implementation of specific actions.

As stream temperatures increased in 2008 from 21.4 degrees C (70.5 degrees F) in April to over 24.2 degrees C (75.5 degrees F) during four consecutive days in May, juvenile coho salmon were displaced from three of four observed rearing areas in the Big Springs Complex (Chesney et al. 2009). As these refugia were the most hospitable remaining rearing areas, the fish either perished as temperatures reached intolerable levels or were displaced to seek out limited pockets of cold water elsewhere.

The DFG research cited above is consistent with other studies which have demonstrated that water temperature is limiting coho salmon abundance (Jeffres et al. 2008 and Jeffres et al., 2009). Generally speaking, studies put the range of acute "lethal" temperatures for coho at 25-31 degrees C (Becker and Genoway 1979). Chronic temperatures (mean weekly maximum temperature, MWMT) greater than 18 degrees C are not "good" in that they induce stress in coho salmon and reduce the likelihood of survival (Welsh et al. 2001). Griffiths and Alderice (1972) found that coho stop growing and swimming speed is reduced at temperatures greater than 20.3 degrees C.

The primary cause of heating in Big Springs Creek is the encroachment into the stream channel by cattle and machinery that can alter the channel shape in a way that results in a shallower and wider channel cross section. A wide shallow stream with little emergent or riparian cover is susceptible to solar radiation and an increased air/water interface to facilitate heating. The exclusion of cattle and resultant growth of emergent vegetation narrowed and deepened Big Springs Creek and also provided shade to reduce solar loading (Jeffres et al., 2009). The narrower, deeper, and shaded Big Springs Creek reduced heating significantly, thus resulting in much improved habitat conditions for rearing coho salmon.

In the Shasta River and its tributaries, water diversions contribute to artificially high water temperatures in two ways. First, reducing the volume of cold water in the channel makes the remaining water more susceptible to warming during hot days. Secondly, site specific studies have shown that warm tailwater return flows have had dramatic impacts to stream temperature (Shasta Valley RCD 2009).

For these reasons, our recommendations focus on limiting artificial increases in stream temperature, and specifically on avoiding acute temperatures that rise above 20 degrees C (68 degrees F) and chronic temperatures above 18 degrees C (64.4 degrees F). Note that this recommendation allows temperatures that can be predicted to stress coho salmon, and are well above what we and most biologists would consider "good." (See, for example, the TMDL standard of 16.7 degrees C (62 degrees F) at A12.) Critically, however, they are feasible even in the immediate future – and we need to make progress immediately. If the Department can do nothing else with its interim standards, we ask that it put in place standards that do not allow conditions that would almost certainly destroy the last individual fish in an already threatened population.

Because there is often a lag time between the time of a diversion and the timing of return flows, we recommend that the agreement include a mechanism for the landowner to begin to adjust before temperatures reach a lethal level. We also recommend including a feedback mechanism so that landowners have notice as conditions approach intolerable levels so that the landowner can take action before temperatures reach a level that would require a diversion to be temporarily suspended.

This interim temperature standard would apply initially to the nine points of diversion within the Big Springs Complex (listed below). In future years it should be evaluated and adjusted as necessary to keep fish in good condition below these diversions, and also applied more broadly within the valley – with variations, as necessary, for different needs within different parts of the basin.

Summer Stream Flows

In addition to altering thermal conditions, artificially low summer stream flows can also limit juvenile rearing habitat availability. In the mainstem, the stream does not generally become completely dewatered. However, some tributaries and springs that host viable rearing habitat do become dewatered. Moreover, rearing habitat productivity also depends on steady sources of food (as temperatures rise food consumption must also rise), and food sources become more limited as streamflows drop, especially in the tributaries.

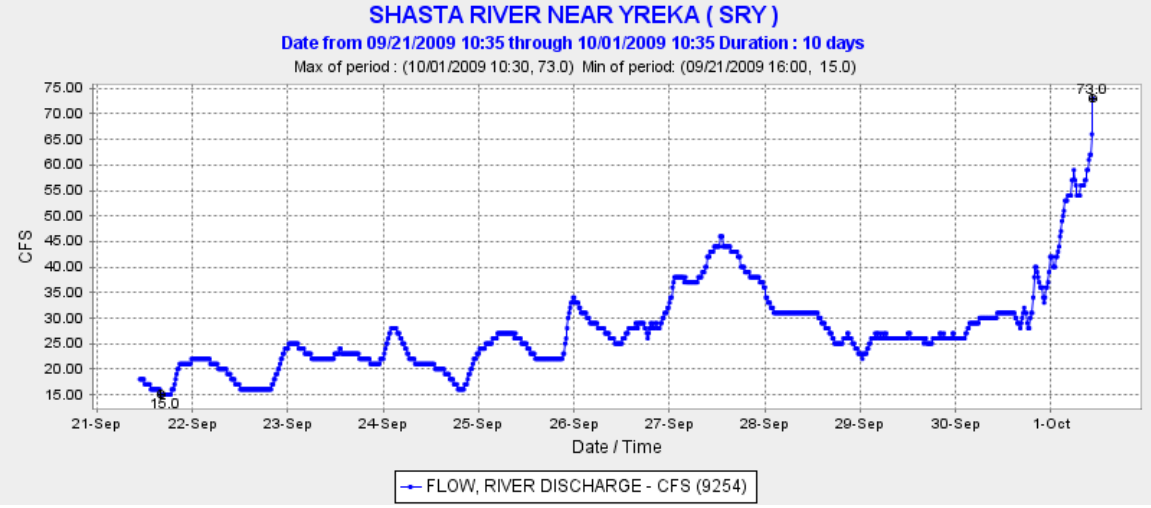
For these reasons, and in the absence of site-specific relationships between habitat and streamflow, our recommendations focus on maintaining at least a minimum depth in the channel below each diversion. We recommend that the interim standards utilize a relatively quick site specific survey such as the wetted perimeter method. If the landowner is unwilling to make site access available for such a survey we recommend that the Department establish a minimum depth at a monitoring location downstream of the POD that would be sufficient to inundate food producing riffle habitats.

This minimum depth standard would apply first to the nine points of diversion within the Big Springs Complex (listed below). In future years it should be evaluated and applied more broadly with variations, as necessary, for different needs within different parts of the basin.

Spawning Return Flows

In the fall of 2009 stream flows in the Shasta River canyon delayed fall-run Chinook salmon migration up the Shasta River. While flows were low stream temperatures were suitable in September and the Shasta River provided thermal refuge for fall-run Chinook from the warmer Klamath River. However, low flows prevented fish from moving upstream. Efforts by adjudicated water right holder s to increase flows in the river in September were only briefly successful around Sept 26-28 as unregulated groundwater pumping and riparian water users counteracted efforts to increase flows before the irrigation season ended October 1. (See graph below.)

.



For this reason, we recommend a low-flow standard for Shasta River Canyon during September to protect fall-run Chinook salmon migratory access and spawning. Flows above 40 cfs may meet minimum passage requirements and 80 cfs may be a lower threshold for spawning flows in the canyon (McBain and Trush 2009). However, more water in the canyon is not always good for fish if the water is too warm. These prescribed flows and their intended functions should therefore be evaluated during the late-summer 2010 as an adaptive exercise that targets flows of 40-80 cfs and maintains stream temperatures of below 20 degrees C (68 degrees F).

Because meeting this standard will require participation by more than diverters throughout the watershed, we recommend that it be added to all 1602 agreements within the program, with a requirement that the diverters ask the watermaster for assistance in achieving their permit requirements.

Warm Water Releases from Dwinnell Reservoir

Water users have water rights to store water in Dwinnell Reservoir for rediversion from the Shasta Mainstem below the Dam. This requires the release of very warm water from Dwinnell through the mainstem to the point of rediversion, and degrades water quality in the mainstem river. For example, Clear Springs at river mile 37.0 runs at a constant 3 cfs and 13 degrees C providing good cold water rearing habitat for juvenile coho. The release of 8 cfs of water from Dwinnell Dam was measured to be 27 degrees at river mile 37.4 just above Clear Springs.

This call on Dwinnell water eliminates suitable rearing habitat in the mainstem from Dwinnell Dam to Big Springs. For this reason, we recommend Streambed Alteration Agreement terms that require such diverters and the operators of Dwinnell Dam and Reservoir to work with DFG to eliminate the impacts of warm water releases on cold water refuge in the mainstem above Big Springs, with particular attention paid to the cold water benefits of Clear Springs.

Recommendations

We recommend that DFG incorporate the following principles in its Streambed Alteration Agreements. Draft terms and conditions are contained in Exhibit A.

These are interim measures, adopted on an urgent basis, and they are designed for adaptive management. DFG would provide that they may be modified annually based on information gathered each diversion season, with notice.

1. Establish interim terms and conditions for temperature and flow in the Big Springs Complex. These terms would take effect for the points of diversion listed below in 2010, and be reevaluated and adjusted (if necessary) before the all-important 2011 diversion season.

    a. Establish real time stream temperature and streamflow monitoring below each point of diversion in the reaches described below.

    b. Prohibit practices that artificially raise temperatures above 20 degrees C (68 degrees F). Temperatures of 18 degrees C or less should be considered a target.

    c. Prohibit practices that artificially lower depths during the rearing season below the level needed to maintain rearing habitat and inundate food producing riffle habitat (using the wetted perimeter method or similar methodology) at the monitoring station below each point of diversion.

d. Prohibit practices that artificially lower depths during the migration season below 0.8 foot at the monitoring station below each point of diversion.

e. Locations for these terms and conditions include:

i. MWCD [Upper Mainstem Shasta River]
ii. Clear Springs to Parks Creek [Shasta River]
iii. Rogenbuck Springs [Shasta River]
iv. Kettle Springs [Parks Creek]
v. Bridgefield Springs [Parks Creek]
vi. Cardoza [Parks Creek]
vii. TNC [Upper Mainstem Shasta River and Big Springs Creek]
viii. Novy-Rice [Nelson Ranch Reach]
ix. GID [Nelson Ranch Reach]

2. Establish cattle exclusion fencing at the following locations (at a minimum) the following locations. These terms would take effect for the points of diversion listed below in 2010, and be reevaluated and adjusted (if necessary) before the all-important 2011 diversion season.

a. Kettle Springs and downstream channel to Parks Creek (tributary to Parks Creek)
b. 1.0 miles Below Clear Springs (mainstem Shasta River on Hole in the Ground Ranch)

3. Maintain minimum fall spawning migration flows from September 1st to December 1st of 40-80 cfs and temperatures below 20 degrees C at the mouth of the Shasta River (USGS gage #11517500). A term would be added to all section 1602 agreements within the watershed making them collectively responsible for maintaining the minimum flow, and directing them to seek the assistance of the water master to facilitate their compliance with the term. It would take effect on an interim basis in 2010.

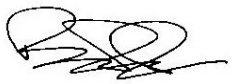
4. Limit warm water releases from Dwinnell Dam that overwhelm cold water refugia pockets between Parks Creek and Dwinnell dam. This term would require all diverters that have a water right to store water in the reservoir for rediversion below Dwinnell Dam to work with DFG to limit the transport of lethally hot Dwinnell water through the mainstem Shasta River, by moving their points of diversion upstream, installing pipes, or taking other measures. The term would take effect in 2010 and include a time schedule for making improvements.

Conclusion

We look forward to working with the Department on this urgent matter. We believe the above efforts are reasonable and achievable and offer our cooperation in meeting these emergency standards.

Sincerely,

Curtis Knight
Deputy Conservation Director
California Trout
701 S. Mt. Shasta Blvd.
Mt. Shasta CA, 96067
(530)926-3755
cknight@caltrout.org



Brian Johnson
Staff Attorney & Director, California
Water Project
Trout Unlimited
1808 B 5th Street
Berkeley, CA 94710
(510) 528-4772
bjohnson@tu.org

References

Becker and Genoway. 1979. Evaluation of the critical thermal maximum for determining thermal tolerance of freshwater fish. Environmental Biology of Fishes 4(3): 245-256.

Chesney et al. 2009. Shasta River juvenile coho habitat and migration study. Department of Fish and Game. Report prepared for Bureau of Reclamation. 76pp.

Griffiths and Alderice. 1972. Effects of acclimation and acute temperature experience on the swimming speed of juvenile coho salmon. Journal of Fisheries Research Board of Canada. 29:251-264,

Jeffres et al. 2008. Baseline assessement of Salmonid habitat and aquatic ecology of the Nelson Ranch, Shasta River, California Water Year 2007. Report prepared for: United States Bureau of Reclamation, Klamath Area Office.

Jeffres et al. 2009. Baseline assessment of physical and biological conditions within waterways on Big Springs Ranch, Siskiyou County California. Report prepared for: United States Bureau of Reclamation, Klamath Area Office.

McBain and Trush. 2009. Shasta River instream flow methods and implementation framework. Report prepared for California Trout and California Department of Fish and Game. 124 pp.

Shasta Valley Resource Conservation District. 2009. Tailwater Prioritization Maps developed by AquaTerra Consulting and Natural Resources Geospatial for the Shasta Valley Resource Conservation District for the Shasta River Tailwater Reduction Project.

Wales, J. H. 1951. The decline of the Shasta River king salmon run. Bureau of Fish Conservation, California Division of Fish and Game.

Welsh, et al. 2001. Distribution of juvenile coho salmon in relation to water temperatures in tributaries of the Mattole River, California. North American Journal of Fisheries Management 21:464-470.

Exhibit A

Draft Terms and Conditions for Streambed Alteration Agreements

The text in *italics* is already included in the proposed Master List of Terms and Conditions; the remaining text is our proposed addition.

26. Notwithstanding any right the responsible party has to divert and use water, the responsible party shall allow sufficient water to pass over, around, or through any dam the party owns or operates to keep in good condition any fish that may exist below the dam, as required by Fish and Game Code section 5937.

27. All water diversion facilities shall be designed, constructed, and maintained so they do not prevent, impede, or tend to prevent or impede the passing of fish upstream or downstream, as required by Fish and Game Code section 5901. This includes, but is not limited to, maintaining or providing a supply of water at an appropriate depth and velocity to facilitate upstream and downstream migration of juvenile and adult salmonids.

[Terms 27.1-27.3 would be incorporated into Streambed Alteration Agreements for the nine points of diversion listed above.]

27.1. Diversions shall comply with the following reasonable measures to protect the resource, as required by see Fish and Game Code section 1602. The terms of this paragraph shall serve as emergency interim measures to avoid extirpation of coho salmon while long term protective measures are developed pursuant to the Fish and Game Code (including but not limited to sections 1602, 5901, and 5937, as applicable).

27.2. The responsible party shall not divert water in a manner that contributes to a daily maximum stream temperature of 20 degrees C (68 degrees F) or mean weekly maximum temperatures of 18 degrees C (64.4 degrees F) by diverting cold water from the stream or by causing return flows that are warmer than existing conditions.

a. Because there is sometimes a lag of roughly 48 hours between a diversion and the time when return flows from that diversion reach the stream, the responsible party must take corrective action to avoid increasing temperatures to an intolerable level before temperatures reach 20 degrees C (68 degrees F). Therefore, the responsible party may not divert water for any operation that could possibly result in return flows if the previous day's maximum temperature reached 18 degrees C (64.4 degrees F).

b. Temperatures shall be monitored as follows. The responsible party shall allow the Department to install an instrument that continuously records temperature on the party's property, if requested by the Department, as part of a regional

temperature monitoring program. The Department shall, within 15 days of completion of this Agreement, notify the responsible party of the location(s) at which temperature will be monitored. The Department will be responsible for maintaining daily logs of temperatures at this location. The responsible party will be responsible for maintaining daily logs of diversions. The responsible party will be responsible for checking the temperature logs before initiating a diversion, in order to ensure compliance with this section.

c. Violations of the emergency interim temperature measure will be evaluated as follows. If daily maximum temperatures reach 20 degrees C on any day and the responsible party diverted water on that day or either of the previous two days, the responsible party will be deemed to have contributed to a violation of the temperature term. If daily maximum temperatures reach 20 degrees C. on any day and the responsible party did not divert water on that day or the previous two days, the responsible party will be deemed not to have contributed to a temperature violation. In that circumstance, the 20 degrees C. stream condition will be deemed to beyond the responsible party's control.

27.3. The responsible party shall not divert water in a manner that causes the stream to become dewatered or to become too shallow for upstream or downstream migration of juvenile or adult salmonids. The minimum depth [or flow] shall be as follows: [insert results of rapid assessment study here, or DFG estimate in the absence of access].

a. [Where minimum flow is based on DFG estimate without having had stream access] The responsible party may, at any time for which this agreement is active, commission a site-specific study to develop locally-tailored minimum bypass flows as an alternate to the depths required above. Provided the methodology of the study plan is jointly agreed upon by the responsible party and the Department before it is conducted, the results shall be binding on both the responsible party and the Department.

b. Stream depths shall be monitored as follows. The responsible party shall allow the Department to install an instrument that continuously records depths on the party's property, if requested by the Department, as part of a regional streamflow monitoring program. The Department shall, within 15 days of completion of this Agreement, notify the responsible party of the location(s) at which depth will be monitored. The Department will be responsible for maintaining daily logs of depths at this location. The responsible party will be responsible for maintaining daily logs of diversions. The responsible party will be responsible for checking depths before initiating a diversion to ensure that the diversion does not cause depths to decrease below that required by this section.

[Terms 27.4 would be incorporated into Streambed Alteration Agreements for the parcels listed above as having a critical immediate need for exclusionary fencing.]

27.4. To prevent streambed alteration and habitat destruction from livestock, the responsible party will install exclusionary fencing along riparian areas in locations designated by the Department.

[Term 27.5 would be incorporated into Streambed Alteration Agreements for the parcels that redivert water first stored in, and then released from, Dwinnell Reservoir, and for Montague Water Conservation District.]

27.5. The responsible party will work with DFG to design an alternative method of diversion that limits warm water impairment to the Shasta River from releases of water from Dwinnell Reservoir for rediversion downstream. Unless the Department determines that it is infeasible, the alternative method will be by use of a pipe or canal from the reservoir to the irrigated lands, so that no warm water is released directly into the river, and the improved method of diversion will be operational by the 2011 diversion season.

[Terms 27.6 and 27.7 would be incorporated into Streambed Alteration Agreements for every diversion in the Shasta River watershed.]

27.6. The responsible party and all other responsible parties in the Shasta River watershed shall insure a minimum streamflow of at least 40 cfs at the mouth of the Shasta River (gage # 11517500) from September 1 through the end of the diversion season. The responsible parties will adaptively manage diversions so as to increase minimum streamflows to 80 cfs if possible without causing stream temperatures to exceed 20 degrees C (68 degrees F). The responsible parties shall ask the watermaster to help them achieve compliance with this legal obligation.

27.7 The conditions in paragraphs 27.1 to 27.6 are interim measures designed for adaptive management. They may be modified annually based on information gathered each diversion season, provided the Department notifies the responsible party in writing at least one month prior to the start of each diversion season.

Exhibit B

September 18, 2009

Brian J. Johnson
Director, California Water Project & Staff Attorney
Trout Unlimited

Curtis Knight
Mt. Shasta Program Manager
California Trout
(contact information on signature page)

Donald Koch
Director
Department of Fish & Game
1416 Ninth Street
Sacramento, CA 95814
(via email and U.S. Mail)

Subject: **Urgent Measures to Protect Shasta Valley Salmon and Steelhead Watershed-Wide Permitting Program**

Dear Director Koch:

We are writing to provide additional comments on the Watershed-Wide Permitting Program for Streambed Alteration Agreements and Incidental Take Permits for the Shasta River, and the Draft EIR, and to request urgent measures to protect salmon and steelhead.[2] At the outset, we wish to emphasize our thanks for the hard work and energy that you and your staff have dedicated to developing this program. These issues are extremely challenging and we are grateful for your leadership in taking them on.

[2] California Trout commented on the Draft EIR and watershed program on December 9, 2008. Trout Unlimited agrees with those comments, and they are incorporated herein. Although our specific recommendations are directed to the Shasta River, our general comments are also applicable to the Scott River program.

We are obligated to write to you because of the dire situation confronting the Shasta River and specifically coho salmon. As you know, stream flows and coho salmon numbers are at historic lows in the Shasta River this year. Thirty-one coho salmon returned to the Shasta River and less than 20 juveniles have been observed in the entire watershed during the summer of 2009. This suggests the potential loss of an entire cohort and an unfortunate step toward extirpation of coho salmon from the Shasta River.

We also believe maintaining and improving anadromous fish populations, especially coho salmon, below the Klamath dams is a critical. Efforts underway to remove four dams are progressing to restore access to hundreds of miles of salmon and steelhead spawning and rearing habitat. To fully realize the potential of dam removal on the Klamath we need healthy sustainable populations to colonize the area above Iron Gate Dam. The coho salmon of the Shasta and Scott River are unique because of how long they migrate upstream—these runs are especially critical for colonization upstream following dam removal.

Specifically, we urge you to take the following steps:

(1) Act immediately to prevent the impending extirpation of coho salmon from the River;

(2) Modify the Watershed-Wide Permitting Program for Streambed Alteration Agreements (SAAs) to incorporate immediately applicable interim measures for instream flows and temperature control; and streambed protection from livestock and other impacts for existing spawning areas.

(3) Decline to adopt the Incidental Take Permits (ITP) portion of the program.

California Trout (CalTrout) and Trout Unlimited (TU) request a meeting as soon as your schedule permits to discuss these matters and our recommendations for immediate action.

I. TU and CalTrout Support a Watershed-Wide Permitting Program for Streambed Alteration Agreements

First, we wish to emphasize that our groups strongly support the Department of Fish and Game in its efforts to develop a watershed-wide permitting program for Streambed Alteration Agreements. The Fish and Game Code, sections 1600-1616, represents perhaps the best mechanism for the Department to ensure that water diversions and water management practices once again leave streams and fish populations in good condition, and to promote salmon and steelhead recovery.

Because large numbers of diverters do not currently comply with the code sections requiring SAAs, the Department is faced with both an opportunity and a practical challenge. In our view, case-by-case regulation for each individual diverter would be both difficult to implement and unlikely to result in sensible terms. By contrast, a program that establishes standard terms and conditions for SAAs and watershed-wide management stream objectives is likely to be better for fish populations and easier to manage for

diverters. We agree that it is a good approach to use a watershed-wide CEQA document to determine standard terms that can then be incorporated into individual SAAs.

We are thankful for your leadership and guidance, and we will continue to support the Department in its efforts to develop a watershed-wide program for SAAs and salmon recovery.

Unfortunately, given the dramatic downward trends for coho salmon populations and natural resource conditions in the valley, we have reluctantly concluded that the watershed-wide permitting program as currently conceived does not go far enough, fast enough, and we urge you to modify the Department's approach.

While we think the watershed-wide permitting program for compliance with DFG code sections 1600-1616 holds promise, with the proposed Incidental Take portion of the program we are far less confident.

The draft program states that the ITP Permit

> may be terminated by the Department at its sole discretion if circumstances or new information provides evidence that continued program implementation may result in jeopardy to coho salmon …. (A-34).

We now know that current trends and baseline management practices have resulted in jeopardy to coho salmon. We ask then, why go forward implementing a program that will likely need to be terminated based on current information? It is therefore appropriate to shift the Department's focus from finalizing an ITP toward immediate actions to prevent extirpation of the species, and interim measures that can be implemented through a modified form of the watershed-wide SAA program.

II. Plummeting Fish Populations Demand Urgent Action

The estimated numbers of adult coho salmon returning to the Shasta River have continued to show an alarming downward trend in recent years. Fish population biologists and geneticists have established that effective population sizes of less than 50 returning adult anadromous fish result in a high risk of extinction in the short-term. Over the long-term, sustainability of genetically robust fish populations requires effective population sizes of more than 500 fish.[3]

Given the above criteria, return rates of coho salmon during the last three years indicate that two of the three cohorts of coho salmon returning to the Shasta River are in immediate risk of extinction. Each adult coho salmon cohort shows a decreasing trend. Adult coho salmon returns over the past three years have been—47 coho in 2006, 255

---

[3] Nelson, K., and M. Soulé. 1987. Genetical conservtion of exploited fishes. Pages 345-368 *in* N. Ryman and F. Utter, editors. Population genetics and fishery management. Univeristy of Washington Press, Seattle, Washington.
Allendorf, F. W., and N. Ryman. 2002. The role of genetics in population viability analysis. Pages 50-85 *in* S. R. Beissinger and D. R. McCullough, editors. Population viability analysis. University of Chicago Press, Chicago, USA.
Hilderbrand, R. H., and J. L. Kershner. 2000. Conserving inland cutthroat trout in small streams: how much stream is enough? North American Journal of Fisheries Management 20:513–520.

coho in 2007, and 31 coho in 2008. Projections for 2009 are for only 6 coho salmon to return, the offspring of the 47 coho that returned in 2006. Likewise, 148 coho are predicted to return in 2010 and with only 18 coho returning in 2011.[4]

These numbers indicate that Shasta River coho salmon populations are already below levels necessary to maintain long-term genetic integrity. Further, the declining trend of coho salmon cohorts indicates coho salmon will likely be extirpated in the Shasta River by 2012.

III. Feasible Actions Could Benefit Coho Salmon This Year

In light of these alarming trends, we request a meeting with you, the Water Branch, and Regional DFG staff, as quickly as your calendar allows, in order to discuss immediate term actions that can be taken to avoid losing a class of coho salmon this year.

Following are a few ideas that we would like you to consider. We believe that these actions, and others like them, are realistic, feasible, and necessary to prevent the extirpation of the species from the Shasta Valley. We recognize that DFG and other stakeholders will have their own suggestions, and what follows is meant to begin the discussion, rather than to be a final list of recommendations. We suggest that DFG work with all interested parties to:

(1) Develop a feasible intervention program for this year's cohort of adult coho salmon that would include consideration of relocating non-hatchery origin spawners from the canyon to other areas.

(2) Identify and protect spawning and rearing areas for this year's cohort of coho salmon.

(3) Compile, publish and have peer reviewed all available coho salmon population data and trends for the Shasta River.

(4) Adopt interim temperature and streamflow standards in time for next year's irrigation season. This proposal is explored in more detail in the following section.

IV. The SAA Program Should be Modified to Incorporate Interim Stream Flow Measures and Temperature Improvements

As we said in CalTrout's previous comments on the Draft EIR, our major concern with the draft SAA Master List of Terms and Conditions is that the program does not include sufficient measures to address high summer water temperatures or instream flows. As noted there, summer temperatures are the most critical factor limiting coho salmon survival in the basin.

---

[4] Chesney, W.R., W.B. Crombie, and H.D.Langendorf. 2009. Annual Report Shasta and Scott River Juvenile Salmonid Outmigrant Study. California Department of Fish and Game, Anadromous Fisheries Resource Assessment and Monitoring Program, March 2009.

We recognize that it is difficult to adopt interim measures for instream flows and temperature improvements for inclusion in SAAs. However, that is not a rationale for issuing SAAs with no measures for stream flows or temperatures, or for deferring these decisions to a future date. What the Department requires is not perfect information, but substantial evidence and a rational basis for developing the terms.

The Fish and Game Code requires maintenance of stream flows to keep fish in good condition; if the Department cannot adopt streamflow maintenance terms and conditions that do that, the lawful alternative is to deny the SAA and require the diverter to refrain from diversion. The Draft EIR approach, by contrast, includes a term requiring that the diversion comply with section 5937 and other laws, but does not say what that entails. This approach will not work, and it is vulnerable to a legal challenge.

Our approach is to develop a list of interim conditions that can be adapted as more information is developed. We propose that the Department conduct interim instream flow studies this winter for inclusion in SAAs that will take effect before the next irrigation season. We would proceed roughly as follows, although we are eager to discuss the details with you and your staff.

(1) Install real-time stream gages and temperature monitors that are publicly available and can be read remotely at:

Shasta River at Big Springs Creek, Shasta River at A12, mouth of Little Shasta, mouth of Parks Creek and springs feeding Parks Creek below I-5.

(2) Review existing information and establish interim maximum temperature standards and where appropriate minimum instream flow standards to be applied at above gauging stations.

(3) Establish an interim protocol of not to exceed maximum temperatures above which no diversions that result in return flows would be allowed upstream of the gage stations;

(4) Adopt an interim temperature and stream flow standard term to add to the Master List of Terms and Conditions requiring all diverters collectively to adhere to these standards; and

(5) Require all diverters as a condition of their SAA to seek the water master's help in ensuring that their diversions are coordinated so as to jointly comply with stream flow and temperature requirements at the gaged interim compliance points.

We recognize that the water master and DWR may question whether stream flows required as a result of SAAs, for compliance with FGC code section 5937, or for protection of the public trust can be left in the stream consistent with the adjudication decree. We do not believe that this issue presents an unsolvable barrier to progress. Rather, we believe that the program we describe for joint compliance would be easier for the water master to implement and monitor than a program that regulates diverters individually. In any event, to the extent this concern is an issue, we submit that it is also

an issue with the Watershed-Wide Permitting Program as currently conceived, and we strongly recommend that DFG, DWR, and SWRCB staff meet at a senior level to resolve any potential differences.

TU and CalTrout also support the DEIR's draft MLTC terms for screens, fencing, and barriers, but we would accelerate the dates by which these terms would be satisfied. In addition, we would apply all MLTC terms and conditions to all diverters in the watershed, including large irrigation districts, groundwater diverters (unless a diverter can show that the diversion does not affect surface stream flows), and diverters above Dwinnell Reservoir. (See CalTrout comments on DEIR.)

V. The ITP Program Should Not Be Adopted Until Agricultural Practices Comply With Existing Laws, Including FGC Code Section 5937 and the Basin Plan

CalTrout and TU recommend that the Director not approve the ITP portion of the program while jeopardy of the species remains imminently foreseeable. As noted above, the Draft program states that ITPs may be withdrawn in the event that jeopardy is imminent. Unfortunately, that condition already exists. (See FGC section 2081(c) stating that an ITP may not be issued if current trends, foreseeable actions and other variables will result in jeopardy to the species.)

In addition, there are other flaws in the program as it exists in the DEIR. In particular, any ITP program must be limited to actions that result from "otherwise lawful activity." (FGC section 2081.) However, the motivating premise behind the watershed-wide program is that diversions have *not* kept the stream in "good condition" as required by the Fish and Game Code (section 5937), and that many diversions block fish passage (section 5901) or lack screens (see sections 5980-5993, 6020-6028, and 6100), and that conditions in the river violate the Clean Water Act and Basin Plan (see, e.g., Temperature TMDL). Unless diversions are operated to keep fish in good condition, comply with other provisions of the Fish and Game Code, and comply with the Basin Plan, an ITP may not be issued because the covered acts are not incident to otherwise lawful activities.

Second, the standard for issuing an ITP is to "fully mitigate" the effects of the practice that is permitted. (FGC section 2081.) There is nothing in the DEIR to indicate that the Department may make this finding for the practices to be covered by the program. Moreover, portions of the DEIR appear to signal that the ITPs may be issued for activities that cause no adverse change to existing conditions. As explained in the next section, that is not the standard for an ITP, even if it is arguably the standard for a CEQA analysis.

Third, the program relies too heavily on deferred mitigation. In particular, the program relies on stream flow and temperature improvements that are expected to happen at an indeterminate time, and on a water leasing program that has not been established.

Fourth, the activities (including monitoring for compliance and effectiveness) need adequate assurances of funding, which do not exist.

Finally, the Fish and Game Code requires that all activities be mitigated in a manner that is roughly proportionate to their impact. Specifically, FGC section 2081(b)(2) states that the "measures required to meet this obligation shall be roughly proportional in extent to the impact of the authorized taking on the species." However, the program largely exempts large irrigation districts, and explicitly fails to address groundwater and resources upstream from Dwinnell Dam. (See CalTrout comments.)

For these reasons, we urge the Department to defer consideration of any ITPs for the region until the emergency actions and stream flow measures have put the species on a path to recovery and ensured that all actions to be covered by the program are incident to otherwise lawful activities.[5]

VI. The DEIS and SAA/ITP Analysis Improperly Evaluated Baseline Conditions

We have a final observation regarding the draft documents, including the DEIR. In particular, we believe that portions of the DEIR unnecessarily confuse the "baseline" issue.

While we do not agree with the interpretation given to the baseline issue for CEQA purposes (as described briefly below), we recognize that reasonable people could conclude that existing caselaw on CEQA establishes current conditions as the baseline, and that the baseline includes ongoing trends and illegal activity. Assuming for the sake of argument that this is appropriate under CEQA, it would remain the wrong frame of analysis for a SAA or an ITP.

The standard for approval of a SAA is not "no adverse change from existing trends" but whether the action substantially affects fish and wildlife resources. A SAA must include reasonable measures to protect natural resources. (FGC sections 1602, 1603.) Therefore, the standard is whether an activity, as conditioned, is protective. (Id.) As the draft SAA program recognizes, this include measures to keep fish in "good condition." See MLTC draft term 25. Unfortunately, other portions of the draft program appear to analyze the protectiveness of the SAA as if the standard was the CEQA baseline.

The standard for approval of an ITP is even more stringent, and requires the impacts to be "fully mitigated." (FGC section 2081(b)(2).) For purposes of the ITP, "impacts" of a taking include "all impacts on the species that result from any act that would cause the proposed taking." (Id.) Although portions of the DEIR appear to recognize this standard, other portions of the DEIR blur this standard with the CEQA standard. The end result is inadequate mitigation measures.

Finally, we note our disagreement with the Draft's interpretation of the CEQA standard itself. Although there is caselaw on the subject that can be read to grandfather in illegal

[5] Since the Federal Government is not participating in the program, landowners would have no take coverage under the Federal ESA in any event. Therefore, removing the ITP portion of the program may have limited downside for landowners or the Department.

activities in the existing condition baseline, we do not believe that the cases dictate that any *future* activity that harms the environment be considered part of the baseline.

An example may help illustrate the point. If an applicant were to illegally pave half of a parking lot before filing a CEQA document for the parking lot, the agency might be warranted under the caselaw in including the paved half of the lot within the baseline condition. But the agency would not be warranted in assuming that the applicant will continue to pave the lot and treat the entire parcel as paved for the baseline. In the same way, it rains every year—so even if past illegal diversions are part of the baseline, future diversions are not.

Although baseline issues are notoriously complicated, the principle behind CEQA is simple: the statute requires agencies to understand and disclose the effects of its proposed decision. If the decision is whether or not to grant a SAA for water diversions, the analysis is the impact caused by the allowing the diversion to proceed, versus denying the application.[6]

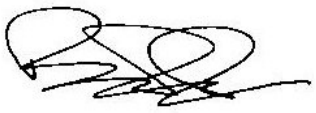
Again, however, the important point is not our disagreement with the draft's treatment of CEQA, but that the analysis for CEQA is different than the analysis for SAAs or ITPs.

VII. Conclusion

Thank you for your leadership in the Shasta Valley and for your consideration of our comments. We look forward to discussing these issues with you.

CC: Regional Director Gary Stacey, Craig J. Wilson, Caitlin Bean, DFG
Charlie Hoppin, Victoria Whitney, SWRCB
Bob Anderson, Catherine Kuhlman, North Coast RWQCB
Steve Edmondson, National Marine Fisheries Service
(all CC's sent via email)

[6] In other contexts, including a few SWRCB processes that DFG has participated in, the Department has made this very argument.



_____

Brian J. Johnson
Staff Attorney & Director, California Water Project
Trout Unlimited
1808 B 5th Street
Berkeley, CA 94710
(510) 528-4772
bjohnson@tu.org

_____

Curtis Knight
California Trout
701 S. Mt. Shasta Blvd.
Mt. Shasta, CA 96067
(530)926-3755
cknight@caltrout.org