Chandra Ferrari, Staff Counsel (SBN 246012)
Kevin Takei, Staff Counsel (SBN 247429)
California Department of Fish & Game
Office of the General Counsel
1416 9th Street, 12th Floor
Sacramento, CA 95814
Telephone: (916) 654-3821
Fax: (916) 654-3805

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the matter of: BIG SUR RIVER WATER RIGHT HEARING, EL SUR RANCH WATER RIGHT APPLICATION 30166	**CLOSING STATEMENT OF CALIFORNIA DEPARTMENT OF FISH & GAME**

I. INTRODUCTION

For over 60 years, the El Sur Ranch (Applicant) or its predecessors have been diverting from the subterranean stream of the Big Sur River without condition. During that same period, the steelhead rainbow trout (*Oncorhynchus mykiss*), an important public trust resource that depends on the Big Sur River for survival, has seen its population numbers precipitously decline up and down the California coast. The record demonstrates that habitat and passage conditions for steelhead in the Big Sur River are not optimal. Despite such evidence, the Applicant is seeking to divert a much larger quantity of water from the Big Sur River watershed than what it has historically used and argues that its diversion should not be subject to any meaningful protective conditions.

Proposing to divert from a less than pristine river that contains sensitive resources is not a new problem. Including a minimum bypass flow in an applicant's water right permit to ensure the protection of biological resources is not a new answer. What is new to the State Water Resources Control Board (State Board) water rights process is the Applicant's theory that the impact to the Big Sur River from a subterranean stream diversion can be accurately quantified and used to support an argument that it should have no obligation to help protect the biological resources that rely on the watershed from which it diverts. This theory should be rejected outright because the record reflects that it is extremely difficult to accurately calculate such impact and, more importantly, Applicant failed to do so.

Therefore, the protective measures found in the Department of Fish and Game (DFG) Exhibits DFG-T-A and DFG-C-A (hereinafter "DFG recommended protective measures") including interim minimum bypass flows for steelhead adult passage and juvenile rearing should be included in the Applicant's water right permit. Of note, DFG's flow recommendation for juvenile rearing is the only such bypass flow before the State

Board that is based on an accepted methodology and real data collected from the Big Sur River.[1] The following arguments provide support for DFG's recommended protective measures and are responsive to the key issues posed by the State Board.

II. ARGUMENT (Key Issue 1)

A. THERE IS INSUFFICIENT WATER AVAILABLE TO ACCOMMODATE THE APPLICANT'S REQUESTED DIVERSION AND ENSURE PUBLIC RESOURCES ARE PROTECTED

The Applicant's Water Availability Analysis (WAA) makes unreliable conclusions and should not be utilized by the State Board. For example, the Applicant's WAA overestimates the amount of water available for diversion by failing to include the claims of all the upstream diverters. Ex. DFG-C-A, p. 4-5. The Applicant's WAA is also beset with other deficiencies as described in DFG's testimony. Ex. DFG-C-A, p. 4-10. The Applicant has offered no evidence to rehabilitate its WAA and refute DFG's claims. Therefore, it can be inferred that the Applicant has conceded that DFG's claims and conclusions are correct.

To address the deficiencies in the Applicant's WAA, DFG developed an alternative WAA and Cumulative Flow Impairment Index (CFII) that included, among other factors, consideration of upstream diverters. Ex. DFG-C-A, p. 4. DFG's analysis was done on a monthly basis to better determine the seasonal availability of water and thus allow for a more accurate depiction of the impairment to the river from the Applicant's diversion. Id. In addition, DFG calculated several different cumulative flow impairment indices to examine the change in the index if different rates of diversions were used, or amounts of riparian right were claimed. Id. The impairment calculations for June through November in all scenarios, including with DFG's proposed rates of

---

[1] Although critical of DFG's instream flow recommendations, the Applicant has failed to produce a defensible proposal of its own.

diversion, produced monthly values greater than 10%, suggesting potential impairment to the resources of the Big Sur River. Ex. DFG-C-13. The impairment calculations for December through May produced monthly values ranging from 3% to 16%, however the scenario that included DFG proposed rates of diversion had the lowest monthly CFII values. Id. These results point to a solid conclusion; there is not enough water available in the system to accommodate the Applicant's proposed diversion and prevent impairment to the resources.

Of note, the Applicant failed to produce evidence indicating that DFG's WAA and CFII are deficient or flawed in any capacity. The Applicant did challenge one of the scenarios examined by DFG in its CFII analysis relating to the amount of riparian right assumed. However, that is only one scenario analyzed by DFG. DFG analyzed three other scenarios, and the conclusions did not differ significantly between any of the scenarios. Ex. DFG-C-13. Therefore, the conclusions from the DFG's WAA and CFII can and should be utilized by the State Board to decide whether or not there is sufficient water available in the Big Sur River watershed to support the Applicant's proposed diversion. The results also provide support for inclusion of a minimum bypass flow and reduced maximum rates of diversion in the Applicant's water right permit.

III. ARGUMENT (KEY ISSUE 2)

A. APPROVAL OF THE APPLICATION WITHOUT DFG'S RECOMMENDATIONS FOR INTERIM MINIMUM BYPASS FLOWS AND OTHER PROTECTIVE CONDITIONS WILL RESULT IN SIGNIFICANT ADVERSE IMPACTS TO PUBLIC TRUST RESOURCES

It is undisputed that the Big Sur River watershed is home to many valuable public trust resources, including the steelhead trout. RT2:56. The State Board and DFG share an obligation to protect public trust resources. (*See* National Audubon Society v. State Water Resources Control Board, 33 Cal. 3d 419, 446 (1983); the State Board has "an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.")[2] DFG's recommended measures, including minimum bypass flows, are feasible measures the State Board should adopt to mitigate and/or avoid the potential adverse impacts to public trust resources caused by the Applicant's diversion from the Big Sur River.

The Applicant incorrectly argues that approval of its water right application will not result in significant adverse impacts to biological resources and therefore its permit should not be subject to any meaningful protective conditions. The Applicant appears to base its argument on two allegations: (1) the biological resources in the Big Sur River, including the steelhead, are "flourishing," and (2) its diversion does not notably "impact" the Big Sur River. RT1:74; Ex. ESR 2, p. V. However, the record reveals that both allegations are unsupported. In addition, there are numerous policy reasons the State Board should reject the utilization of an "impacts" analysis in a water rights adjudication involving a subterranean stream.

1. <u>The Big Sur River is important habitat for biological resources, including the federally threatened steelhead trout.</u>

While the Big Sur River provides habitat for many valued public trust resources, this proceeding's focus has been on steelhead because they are an exceptional resource from the public trust perspective and because they are listed as threatened under the federal Endangered Species Act as part of the South-Central California Coast Steelhead Distinct Population Segment, or DPS. RT2:56.

The steelhead trout is the most widespread anadromous fishery resource in California. Ex. DFG-T-A, p.2. The Big Sur River steelhead population has supported a significant sport fishery on the south-central California coast for many decades, and has become increasingly important for providing sportfishing opportunity to anglers from

[2] The State Board must always "bear in mind its duty as trustee to consider the effect of the taking on the public trust," and avoid such taking whenever feasible. <u>National Audubon</u>, 33 Cal. 3d at 44.

other regions whose local steelhead sport fisheries have experienced substantial decline. Ex. DFG-T-3, T-A; RT2:59. It is also particularly important ecologically because of its distinction as a so-called "source" population. Ex. DFG-T-A, T-8, T-9. Given this distinction, the Big Sur River population of steelhead is central to the survival of the many small steelhead populations that occur along the Big Sur Coast. RT2:59.

2. Big Sur River steelhead population numbers are in decline.

The Applicant emphasizes that the Department's fisheries expert, Dr. Titus, previously indicated that the Big Sur River steelhead population is healthy. Dr. Titus testified during this proceeding that he still believes that the steelhead are relatively healthy as compared to other watersheds. RT2:61, line 23. That is, relative to every major river system that once provided habitat for healthy, self-sustaining steelhead populations and supported vibrant and even famous sport fisheries, but where steelhead are now either extirpated, greatly reduced in abundance, or dependent upon human intervention for their persistence, the Big Sur River is a standout stream. RT2:62, lines 1-15. Given the Big Sur River's good condition relative to other rivers, it is imperative that measures be taken to avoid the substantial declines to steelhead populations that have been observed at these rivers.

However, contrary to the Applicant's argument, the steelhead in the Big Sur River are not "flourishing." RT1:74. In other words, the habitat conditions for steelhead on the Big Sur River are not unimpaired or without constraint as discussed more fully in (3) below. In addition, despite relatively good habitat conditions, the Big Sur steelhead population has still decreased over the last few decades. Ex. DFG-T-3, T-6. DFG estimated the Big Sur River steelhead population at 300 adults for the State of California's 1965 Fish and Wildlife Plan but the population has fallen to approximately 100 adults. Ex. DFG-T-A, T-6; RT2:57. Thus, although the conditions in the Big Sur

River are relatively good, they are not good enough for steelhead to thrive or even maintain population numbers as evidenced by their population decline over the last 40 years.[3]

3. Low flow conditions affect steelhead habitat, growth and ocean survival.

Low flow conditions in the Big Sur River can adversely impact steelhead habitat. These impacts include: increased temperatures, reduced dissolved oxygen, decreased food availability, and low water depth at critical riffles that impede upstream passage of both immature "half-pounder" and adult steelhead. Ex. DFG-T-A; ESR-24, p. 20-24; RT2:58; RT2:63-64; RT4:210-220.

The Applicant's expert, Dr. Hanson, testified that low flow conditions in the Big Sur River can negatively impact temperatures[4] and dissolved oxygen content and that the change in Big Sur River surface elevation caused by the pumps has an incremental effect on water depths and steelhead passage. RT1:128-138; Ex. ESR-21, p. 16; Ex. ESR-24, p.20-24. In addition, Mr. Horton noted that there was a documented decrease in dissolved oxygen at the P2-L location during the 2007 pump test. RT1:117. However, seemingly relying on Mr. Horton's conclusions, Dr. Hanson concluded that the Applicant's diversions were not a "statistically" significant contributor to these conditions. RT1:133; ESR-21, p.3. The record demonstrates that Mr. Horton's conclusions are inaccurate as discussed more fully in (4) below. By extension, Dr. Hanson's conclusions are also unsupported calling into question his conclusion that the Applicant's diversions are not a significant contributor to the stressful conditions in the watershed. Therefore, there is no credible evidence in the record to indicate that the

---

[3] Dr. Dettman's testimony that the Big Sur River juvenile population density is critically low also indicates that the conditions in the Big Sur River are suboptimal. RT4:198, lines 12-18.

[4] Dr. Hanson only conducted temperature studies in 2007 beginning after August 31. He concedes that it's possible that temperatures may have been higher earlier in the summer of 2007 or in other years. RT4:132, lines 10-23.

Applicant's diversion is not a statistically significant cause of the poor habitat and passage conditions that persist during low flow conditions.

In addition, the Applicant failed to conduct any studies or analysis to explain whether low flow conditions affect the quantity and quality of food available for juveniles.[5] In contrast, DFG provided testimony that low flow conditions in the Big Sur River affect the type and amount of food available to juvenile steelhead. RT2:58, lines 22-25. Essentially, low flows conditions can result in the stunted production and delivery of food, or "drift" and accordingly greater competition for food among juvenile steelhead. Ex. DFG-T-A, 11-15.

Without enough food, juvenile steelhead experience stunted growth (both length and weight) and lower weight/length ratios are linked to lower survival in the ocean.[6] Ex. DFG-T-A, 16, 17, 18. The record demonstrates that ocean survival of steelhead smolts is strongly size dependent, where relatively large smolts have a higher survival than small smolts. Id. Thus, it is extremely important for juveniles to achieve as much growth as possible prior to smolting. In addition, low growth can affect populations of steelhead as well as individuals. RT2:65-66.

The Applicant has attempted to misconstrue information about the relationship between drift of invertebrate food organisms and stream flow. Exhibit DFG-T-11 depicts the general relationship between invertebrate drift and flow on two central California coastal creeks with very similar hydrology to the Big Sur River. Dr. Hanson, on behalf of the Applicant, identified how drift generally increased and decreased with stream flow

---

[5] The evidence suggests that Dr. Hanson did not adequately assess the availability of juvenile rearing habitat as he based his conclusions on whether a 0.5 feet depth criterion was met. RT4:62, line 13-19. The record indicates that juvenile passage is not a sufficient criteria to assess quality of rearing habitat for steelhead. RT4:205, lines 20-22.

[6] Dr. Hanson testified that he agreed that "growth rates typically slow and are sometimes arrested in central coast streams during the summer." RT4:68, lines 10-12.

except during the fall portion of the low-flow period, when it appeared that drift increased substantially independent of any appreciable increase in flow. RT4:74-75. However when fall flows are examined on a daily mean basis during this period as opposed to a monthly mean basis as depicted in DFG-T-11, it is revealed that small spikes in flow did indeed occur during the fall, coincident with the overall increase in drift. RT4:146-147. Thus, the Applicant's suggestion that food availability to steelhead increases independent of flow during the fall low-flow period is not supported by the available evidence.[7]

The Applicant improperly dismisses the impact that its diversion, and low flow conditions generally, can have on steelhead contending that the Big Sur River steelhead population is in good condition or "flourishing." RT1:74. The Applicant essentially argues that the existence of federally threatened steelhead in the Big Sur River without intervention indicates habitat conditions are sufficient for the Applicant to continue diverting from its wells without condition, and even justifies an increase in the amount of water diverted. This cavalier attitude is inappropriate given the fact that, despite these relatively good conditions, the population numbers of steelhead have steadily decreased in the Big Sur River watershed and in other coastal watersheds in California over the last forty years, not to mention the fact that this species is federally

---

[7] Dr. Hanson also attempted to indicate that most movement of drift organisms occurs at night when steelhead feed inefficiently, implying that significant numbers of drift organisms would be recruited into stream areas farther downstream. RT4:73, lines 13-15. However, this argument is in clear contrast to testimony presented by Dr. Reiser on behalf of the Applicant, who explained that downstream movement of drift occurred most intensively during crepuscular periods of dawn and dusk, which is coincident with intensive feeding activity by steelhead. RT3:231, lines 14-23. Even though light intensity is relatively low during dawn and dusk, available light is sufficient to silhouette drift organisms against the sky for steelhead feeding from below the organisms, thus increasing feeding efficiency and effectively reducing drift abundance and accumulation farther downstream, as suggested by the Applicant.

listed as threatened. Ex. DFG-T-A, 3. This listing alone should warrant aggressive regulatory action by the State Board to ensure that steelhead do not further decline.

Contrary to the Applicant's assertions, the conditions for steelhead in the Big Sur River are not sufficient for the Applicant to divert greater quantities of water as compared to historic amounts. Therefore, to ensure that biological resources in the Big Sur River are sufficiently protected, the State Board should include in the Applicant's water right permit, all DFG recommended protective measures, including a minimum bypass flow requirement.

4. <u>The Applicant's diversion decreases the amount of water available to the Big Sur River thereby exacerbating low flow conditions for steelhead.</u>

It is undisputed that the Applicant's diversion decreases the amount of water available to the Big Sur River. Ex. ESR-2, p. V. Given the small amount of water available from the watershed during the summer-to-fall low-flow period, Applicant's proposed diversion would, in the short-term, exacerbate already suboptimal habitat and passage conditions for steelhead. Ex. DFG-T-A; RT2:58-59. In the long-term, the Applicant's diversion would further disrupt the river's ecological function inducing cascading effects on steelhead production and life histories that are likely to reduce an already modestly sized, yet critical, steelhead population. RT2:63, lines 9-18.

The Applicant has complicated the issue of whether or not its diversion adversely impacts biological resources in the Big Sur River through misleading descriptions and calculations about the "impact" of its diversion. Yet, the facts in the record reveal a simple, familiar problem; the Applicant is diverting water from a watershed that could use every drop.

The Big Sur River and its subterranean stream constitute one inter-connected watercourse from which the Applicant diverts water. Although the Big Sur River supplies the full diversion amount (RT1:188), the Applicant contends that only a fraction of its diversion "impacts" the Big Sur River. Ex. ESR-2, p. V. In addition, the Applicant contends that diverting from the subterranean stream is a less significant "impact" than diverting from the surface of the Big Sur River, seemingly suggesting that the river and the subterranean stream are two distinct water courses. RT1:213, lines 13-15. The evidence reveals the Applicant is wrong on both fronts.

a. Diversion of "upwelling" is just as significant an impact to the Big Sur River as a surface diversion.

The Applicant concedes that its diversion deprives the Big Sur River of water but attempts to diminish its significance by labeling its action as capturing "groundwater upwelling" inflow or reducing the "benefit of groundwater inflows." Ex. ESR-6, p.3-6; RT1:113. According to the Applicant, the interception of the "upwelling" doesn't reduce the Big Sur River flow to the point that the downstream outflow volume is less than the upstream inflow volume. Ex. ESR-6, p.3-6. Therefore, it concludes that its diversion has little impact on the Big Sur River. Essentially, the Applicant draws a distinction between diverting directly from the Big Sur River and diverting from a subterranean stream that feeds the Big Sur River. However, the evidence reveals that it is a distinction without a difference. Without interference from the Applicant's wells, the "groundwater upwelling" would enter directly into the Big Sur River. RT1:213, lines 13-21. Therefore, "capturing" the groundwater effectively deprives the Big Sur River, and the resources that depend upon it, the flow of that water. The impact to the Big Sur River is just as significant as if the Applicant were diverting directly from its surface flow.

b. The Applicant's "impacts test" is faulty and should not be relied upon by the State Board

The Applicant claims that approval of its water right permit will not cause significant adverse impacts to public trust resources, and supports its contention with a faulty "impacts" analysis aimed to determine how much of the water pumped by the Applicant's wells comes from the Big Sur River. The Applicant concluded that up to 0.3

cfs of water is removed from the Big Sur River for every 1 cfs of water pumped by the Applicant. RT4:45, line 3. This calculation is inaccurate and demonstrates the inherent issues, some of which are discussed below, that accompany the use of such a method in a water right proceeding concerning a subterranean stream.

First, even if one accepts the conclusions from the Applicant's impacts test, its narrow scope ensures that the results are of limited utility. Focused pump tests were only conducted in two years (2006 and 2007) with a maximum duration of eight days. Ex. ESR-5, p. 3-19; Ex. ESR-17. The tests do not represent the impacts to the Big Sur River that result from sustained or long-term pumping, or of the cumulative impacts to the watershed that have resulted from 60 plus years of pumping. RT2:84, lines 18-19. Also, the Applicant never obtained any data while pumping for 30 days at the maximum average rate requested in its application. Ex. ESR-17. Therefore, there is no evidence regarding the impact to the Big Sur River that would result from such an event.

Second, the Applicant did not attempt to obtain a comprehensive understanding of the watershed's pre-pumping condition. The Applicant never measured the pre-pumping surface water/ground water interaction, and therefore cannot competently differentiate natural gains and losses from pumping induced changes. RT2:84, lines 10-12. Without such information, the hydrogeologic setting of the Applicant's project is unclear. For instance, the record demonstrates that pumping induced losses continue to a river even after the pumping has ceased; these losses can be referred to as "residual losses."[8] RT2:87, lines 8-10; Ex.DFG-C-58. The Applicant's hydrologists agree that residual losses to a river occur in response to subsurface pumping. RT4:124, line 24;

---

[8] While conceding that residual loss to a river occurs, Mr. Horton attacked DFG's use of a Jenkins/Hunt model due to its assumptions. RT4: 23-28. However, DFG used the model conceptually to illustrate that Mr. Horton had failed to account for residual losses in his calculations, not to calculate an exact "impacts" number. RT2:90, lines 21-22, p.97, lines 1-2. In addition, Mr. Horton relied on models with similar assumptions to support his "impacts" analysis conclusions. RT4:105, lines 8-11.

RT3:263, line 25. The Applicant's 2007 pump tests were initiated just 5 days after several months of continuous pumping ceased (specifically after pumping all of June and July and all but nine days in August). Ex. ESR-17. One of the Applicant's expert witnesses, Dr. Harvey, agreed that five days was insufficient time to recover the river to a pre-pumping condition. RT3:265, lines 7-14. Therefore, it is highly likely that the Big Sur River was still losing water from previous pumping when the Applicant began measuring its levels to calculate pump test induced losses. As a result, the Applicant's pump test underreported the actual river losses.

The Applicant tried to minimize its failure to consider residual losses by claiming that all such losses occurred within the 4 day period required to achieve post-pumping stabilization of the groundwater drawdown levels. RT4:44, line 16. However, groundwater drawdown stabilization often precedes surface water stabilization. RT2:93, lines 10-13. In other words, pumping induced surface water loss continues to occur after groundwater levels have stabilized. The Applicant failed to continue to monitor surface water levels after the groundwater levels at monitoring points had stabilized, and therefore was not in a position to measure surface water loss that would have occurred after 4 days had lapsed. In conclusion, contrary to its assertion, the Applicant's measurements taken during the pump test periods failed to capture the full impacts to the surface flow of the river.

Third, the Applicant contends that its diversion has no impact because it calculated the groundwater elevation in the aquifer prior to the pumping season in 2004, and after the pumping season in 2007, and noted minimal change. T1:120. However, these measurements are not representative of what happens to the aquifer on a daily, monthly or yearly basis. For instance, the volume of the Big Sur River's storage aquifer has been estimated at 725 AF. Ex. ESR 27, p. 2-16. The Applicant is requesting the ability to divert 676 AF for the period July 1 though October 31. Ex. ESR 40. During the summer, when the aquifer is experiencing little if any recharge, the Applicant has the ability to deplete most of the storage volume of the aquifer resulting in significantly reduced groundwater elevation levels. RT2:90, lines 7-10. However, if the groundwater levels are not measured until the end of the year, this effect will not be observed because precipitation will have recharged the aquifer. If seasonal dewatering of the aquifer occurs, a significant amount of water is likely to transfer from the Big Sur River into the aquifer in response to depressed groundwater elevation levels. Such a result would affect biological resources in the river because fish respond to real-time conditions in the river, not average conditions or yearly conditions. Whether or not an aquifer is recharged after three years is meaningless to steelhead if the aquifer is stressed during times that are critical for its biological functions.

Fourth, several methods used to calculate the impact were faulty. For instance, the hydraulic conductivity was improperly calculated for the zone of influence as a geometric mean of all the validated falling-head permeameter tests. Ex. DFG-C-A, p. 45. Hydraulic conductivity measures the rate that water flows through certain material. Material with a higher permeability will in turn have a higher hydraulic conductivity value. Ex. DFG-C-47. The use of a geometric mean to calculate the hydraulic conductivity is only appropriate if the riverbed material is similar. Ex. DFG-C-A, p. 45. The Big Sur River is made up of many different types of riverbed material all with vastly different hydraulic conductivities. Ex. ESR-6, Table 3-2. Certain types of material more easily facilitate groundwater/surface water exchange, and therefore improper calculation of hydraulic conductivity can drastically change the conclusions of an impacts test. The Applicant's calculation of the hydraulic conductivity is improper and understates impacts because some parts of the riverbed will lose river water to the aquifer more easily than indicated by the Applicant's hydraulic conductivity value.

Next, the Applicant failed to measure all of the potential losses within the zone of influence, focusing only on losses in the section of the river between VT2 and VT3, a small segment of the zone of influence. Ex. DFG-C-45. Additional losses likely occurred in the remainder of the zone of influence unless those locations have no hydraulic connection to the subterranean stream, which has not been shown. Ex. DFG-C-A, p. 46. For example, the Applicant concedes that the zone of influence includes the lagoon. RT4:151, lines 2-11. However, river losses from the lagoon were not factored into the "impacts test." Ex. DFG-C-45. DFG analyzed the river reach in the whole zone of influence using data obtained from the Applicant's 2006 study and found that river losses increase almost two-fold as compared to the Applicant's analysis. Id. Therefore, the Applicant's analysis understates its impacts to the Big Sur River.

The Applicant's impacts analysis also wrongly assumes the impact is static. The evidence in the record does not support this assertion. This concept is explained more fully in section (c) below but a key example is the Applicant's assumption that the colmation zone will never change. The Applicant calculated that the colmation zone in the Big Sur River has a one foot depth that significantly retards the transfer of flow from the river to the aquifer. RT1:115. Mr. Horton concedes that high storm events remove this layer and even suggests that this happens yearly. RT1:209, lines16-22. However, he contends that the riverbed re-settles into a very similar layer every year and that it happens before the time of year that Applicant's diversion can really impact the surface level of the Big Sur River. RT1:210, lines 9-25. Mr. Horton offers no explanation to support this contention. In fact, DFG's testimony that the riverbed is made up of many different types of material suggests that the colmation layer would not necessarily settle the same way every time. Ex. DFG-C-A, p. 45. In addition, rain events can happen at anytime so the colmation layer could be removed or modified at any point in a year. RT2:221, lines 17-20. The Applicant's impacts analysis makes no effort to account for this variability, and therefore its "impacts analysis" is insufficient.

Finally, the Applicant's water balance analysis relies on inaccurate assumptions that render the results flawed. Accordingly, the Applicant's claim that it is diverting water from other "sources" besides the Big Sur River is suspect, also calling into question the Applicant's claims that it accurately determined its maximum impact to the Big Sur River's surface level. The Applicant calculated its impact to the Big Sur River to be roughly 30% of its maximum diversion. Ex. ESR-2, p. V. Essentially, Applicant contends that its impact is limited to subterranean stream flow water bound for the surface flow of the Big Sur River that enters the Applicant's wells in response to a pumping-induced change in gradient. According to the Applicant, the remainder of the diversion is satisfied by a constant groundwater inflow entering the aquifer or by terrace deposits (very small amount of approximately 0.64 cfs). RT4:110, lines 6-23. To be clear, this "groundwater inflow" entering the aquifer is also water supplied by the Big Sur River, and also enters the Applicant's wells due to the pumping-induced change in gradient. RT4:31, lines 5-7. However, the Applicant claims that it does not "impact" this river water because it entered the aquifer upstream of its zone of influence. RT4:31, lines 8-10. Essentially, the Applicant claims that this river water enters the aquifer as part of a natural condition that occurs whether or not the Applicant is pumping. The record demonstrates that the amount of inflow into the aquifer is not constant, and therefore the Applicant's water balance model is flawed. Consequently, the Applicant has the potential to affect surface levels of the Big Sur River more than its impacts analysis suggests.

A review of ESR-49b, a graphic depiction of the Applicant's water balance model, provides further explanations of the shortcomings in the Applicant's water balance assumptions. The Applicant's experts contend that inflow into the aquifer from cross-section A-A' does not change (as evidenced by the $\Delta I = 0$ in ESR-49b). According to Mr. Horton 3 cfs, on average, always enters the aquifer between the USGS Gauge and VT1. RT4:32, line 15. However, the Applicant's own data shows a variation in this value. Exhibit DFG-C-16. Mr. Horton fails to explain how a variable number reconciles with the Applicant's water balance model that claims that the inflows do not change. In addition, the Applicant claims that 3.5 cfs always enter the aquifer between VT1 and the top of the zone of influence, otherwise referred to as cross-section A-A'. RT4:32, line 20. Again, the Applicant's own data contradicts this assumption by showing that the losses from the river to the aquifer in the stretch of river between VT1 and VT3 vary. Ex. DFG-C-16. In fact, Exhibit DFG-C-16 (DFG-C-59, Table 2[9]) demonstrates, using the Applicant's data, that losses from VT1 to VT3 increased during the pumping period in 2007 and were approximately 3 times greater by the end of the test period. This suggests that prolonged pumping influences river losses, and is not the static value promoted by the Applicant.[10] Therefore, the record shows that inflows into the aquifer are not constant and a key assumption of the water balance model is flawed.[11]

Another shortcoming in the Applicant's Water Balance is the failure to measure the groundwater discharge to the ocean. RT4:109, line 25. Instead, Applicant estimated

---

[9] Note for Table 2, VT2 in 2004 was near the upper ZOI boundary, so it's a better measure of river losses/gains from VT1 to the ZOI than during the 2007 study.

[10] Mr. Horton's testimony is inconsistent regarding whether the values are averages or static. He suggests that losses are average values (RT4:108, lines 18-21) but then argues that the values "all stay the same" (RT4:37, line 11) and "we're at a steady state of how much sub-flow approaches our area..." RT4:37, line 25. He fails to explain how changing inflow values above the zone of influence can result in a static amount of inflow entering the zone of influence.

[11] During rebuttal, Mr. Horton characterizes the water balance as an "average condition water balance" but fails to explain how such a water balance can be used to support a specific calculation regarding the loss to the river. RT4:109, line 10.

a number that represents the surface flow outflow of the Big Sur River combined with groundwater discharge. RT4:117, lines 1-4. The water balance analysis suggests that the Applicant will capture "inflow" entering the aquifer, resulting in less aquifer discharge to the ocean.[12] However, there is no evidence regarding whether or not the quantity of aquifer discharge to the ocean lessened with pumping, and if so, to what degree. RT4:109, lines 21-25. In effect, the Applicant has made it impossible to validate the estimation of groundwater discharging to the ocean.

Besides "inflow" and Big Sur River flow, the Applicant offers no other water source in its water balance model except for a minimal contribution from terrace deposits. RT4:110, lines 6-23. Therefore, if there is less inflow coming into the aquifer, the only source left to satisfy the Applicant's pumping demand is the Big Sur River.

In conclusion, the Applicant's impacts analysis has many technical flaws which has resulted in the Applicant understating its diversion's impact to the Big Sur River. Given that it is fundamentally flawed, the State Board should not rely on the Applicant's impacts analysis to determine if the Applicant's diversion has the potential to adversely impact public trust resources.

c. The State Board should reject the use of an impacts analysis in a water right adjudication involving a subterranean stream because it is unworkable.

The standard bypass flow term and condition where the total river flow must be allowed to seasonally pass the point of diversion is commonly applied to surface water diversions where protection of fisheries and other public trust resources is required. Studies to measure the flow in the Big Sur River adjacent to the Applicant's wells found that its pumping causes a decrease in flow. Ex. ESR-2, p. V. The same rules that

[12] Mr. Horton claims that groundwater almost continually discharged to the lagoon during the pump tests. RT4:36, line 9. He also suggests that pumping could remove the full amount of water groundwater discharging to ocean, but fails to analyze how this would affect the lagoon. RT4:121, lines 1-2.

govern water rights for surface streams also apply to subterranean streams, so the percentage of that surface flow that is diverted by a pumping well is irrelevant to setting permit conditions for minimum bypass flows. Instead, the critical factor is whether the subterranean stream is connected to the river. If the subterranean stream is connected to surface water, then both are part of one watercourse, and a diversion from any part of that watercourse should be considered a diversion from the whole watercourse.

If the State Board, however, requires that the impact from well pumping will be factored into the calculation of minimum bypass flows then a number of issues should be considered by the State Board before applying an "impact" test to the Applicant's water right permit. First, the State Board should consider the technical complexity of such a test. The evidence demonstrates that the Applicant was unable to accurately calculate its diversion's impact to the Big Sur River, and many of the technical problems that plagued the Applicant's analysis would be expected to thwart the efforts of future applicants (see (b) above.) Second, the State Board should consider the highly variable nature of river systems. The Big Sur River, as would be expected of other river systems, is dynamic in nature. Historic photographs dating back to 1929 show that the Big Sur River used to occupy a position closer to the wells of the Applicant. Ex. DFG-C-A, p. 47. A fundamental requirement to justify the use of the impacts test as representative of ongoing conditions at a point of diversion is stability of channel and that the data collected will be representative of future impacts from a subterranean stream diversion. If there is evidence that the channel has changed and will continue to change, then the impacts test should not be utilized (at least for a long-term solution) as it is certain that the impacts to the river from the diversion will change.

In the case of the Applicant's diversion, if the channel shifts back to its historic location closer to its wells, then the losses from pumping should increase because the distance between the wells and the river will have decreased. RT2:298, lines 5-15. This is because the impact of a well pumping on the flow in a hydraulically connected river is dependant on certain static assumptions including: the distance between the well and river, the hydraulic characteristics of the aquifer, storage coefficient and hydraulic conductivity, the permeability and thickness of any low hydraulic conductivity streambed layer, and the duration of pumping. The record demonstrates these factors are not static and can change (sometimes rapidly) especially during high runoff events.[13] The Applicant failed to produce any evidence to suggest that the Big Sur River system is static. In fact, the evidence submitted by DFG suggests that the Big Sur River is moving back to its historical position closer to the Applicant's wells. RT2:145, lines 145-147; Ex. DFG-C-60. The Applicant unsuccessfully attempted to refute this claim by presenting a witness that actually agreed that elements of the riverbed had changed since the pump test studies were conducted and was otherwise unable to conclusively establish that the river was not moving back to its historical position.[14] RT4:8, lines 13-20.

In conclusion, the State Board should seriously consider whether or not the impacts test can serve a useful function in subterranean stream water right adjudications. DFG believes that the State Board can better protect the public trust by recognizing the limitations of the impacts test and excluding or limiting its use in

---

[13] During such flood events, the upper portion of the riverbed mobilizes and becomes bedload, which transports and redistributes the bed material. Redistribution of bed material will change the hydraulic conductivity and the amount of change will depend on the size and depth of the material mobilized. This natural periodic movement of bed material invalidates any assumption that a fixed or maximum amount of river flow loss from the Applicant's well diversions can be established at the mouth of the Big Sur River because it is a dynamic river system. Ex. DFG-C-A, p. 48.

[14] Mr. Philip did establish that the Big Sur River has split into two channels at the PT4 location, a change since 2007. RT4:83, lines 2-16. One of the channels is in alignment with where the old channel used to be. RT4:93, line 25; RT4:94, lines 1-3. He concedes that flood flows can flow into the old channel and there is more vegetation near the old channel than in the past. RT4:8, lines 1-8. This suggests flood flows may favor the old channel as a more direct path to the ocean, which is behavior typically seen in a river looking to abandon its meander. RT2:145, lines 20-24.

subterranean stream water right adjudications. Changing river conditions render the impacts test ineffective for long-term use, as the results are subject to change. Given that the Applicant has not proposed any permit terms to account for potential changes to Big Sur River bed or channel location, DFG suggests that the impacts test not be used to set Applicant's permit conditions.

B. ADOPTION OF MINIMUM BYPASS FLOWS AND OTHER PROTECTIVE CONDTIONS ARE NECESSARY TO AVOID AND MITIGATE ADVERSE IMPACTS TO BIOLOGICAL RESOURCES

To avoid and mitigate potential adverse impacts to biological resources, DFG recommends the State Board include, as a condition of the Applicant's water right permit, interim minimum bypass flow requirements and other recommended protective conditions. DFG recommends that the State Board include a re-opener clause in the permit requiring that the conditions, including the minimum bypass flow, be revisited when the DFG completes its Physical Habitat Simulation Model (PHABSIM) study on the Big Sur River.[15]

1. The Department recommends an interim minimum bypass flow of 29 cfs for juvenile steelhead rearing.

DFG's minimum bypass flow recommendation for juvenile steelhead rearing is based on three different components. The first component represents the flows needed to protect the fisheries and other public trust resources. The second component represents the maximum historic flow losses downstream from the upper USGS gauge to the point of diversion. The third component represents the Applicant's maximum instantaneous diversion rate. DFG believes that the record demonstrates that all three

---

[15] The PHABSIM study is currently being conducted by DFG pursuant to Public Resources Code section 10002 and it is expected to yield useful information concerning the habitat needs of steelhead which will form the basis for instream flow recommendations to the State Board for adult steelhead upstream passage and juvenile steelhead rearing in the Big Sur River. RT2:68, lines 13-17.

components are needed to avoid and mitigate potential adverse impacts to biological resources in the Big Sur River.

DFG conducted a wetted perimeter analysis to develop the first component of the interim minimum flow recommendation. Ex. DFG-T-22. The wetted perimeter method is a scientifically accepted approach used to ascertain a flow that will protect aquatic life in food producing riffle habitats at a level sufficient to maintain an existing fish population at an acceptable level of production. Id. Utilizing the method, DFG determined that a flow of 17 cfs was sufficient to provide a minimal level of protection for aquatic resources dependent on the Big Sur River. Id.

The Applicant expended considerable effort criticizing DFG's wetted perimeter analysis. An explanation of why the criticisms are without merit is contained below. The Applicant did not prepare its own defensible flow recommendation, however, preferring instead to propose a flow number that has more to do with alleviating potential water costs than providing any benefit to biological resources in the Big Sur River. In fact, the Applicant did not propose any bypass flow recommendation until it amended its application on the first day of hearing. The amended application proposes a bypass flow of 10 cfs. Ex. ESR-40. The Applicant did not provide any evidence to justify that 10 cfs is an adequate minimum bypass flow to prevent adverse impacts to biological resources. Given that there is no biological rationale, the 10 cfs proposed minimum bypass requirement appears to have been chosen to minimize water costs to the Applicant. Consequently, the Applicant has placed itself in an awkward position. On the one hand, it argues that the State Board should not utilize DFG's minimum bypass flow because of various criticisms suggesting that the analysis could be more technically rigorous. On the other hand, the Applicant suggests that the State Board utilize its own recommendation that has no biological justification whatsoever. DFG suggests that the Applicant's own logic dictates that the State Board incorporate DFG's minimum flow recommendation into the Applicant's permit, as it is the most biologically defensible recommendation.

As noted above, the Applicant criticized various aspects of DFG's wetted perimeter analysis but the record reveals that the criticisms are without merit. First, the Applicant criticizes the fact that the data collected by DFG were not collected from the reach of river contained in the Applicant's estimated zone of influence. However, the data for DFG's initial wetted perimeter report were collected on the Big Sur River as near to approximately 2,000 feet from the top of the zone of influence. RT2:70, lines 18-19. The geomorphology of the stretch of the river where the data were collected is similar to the stretch of the river included in the zone of influence. RT4:181, lines 9-13. In addition, DFG collected data from six different sites, and five out of six sites produced extremely similar results. RT2:71, lines 2-5. Therefore, DFG concluded that data collected at the point of diversion would have yielded very similar results to those observed from the data collected upstream. The Applicant failed to produce any evidence that suggested otherwise. During rebuttal, DFG's explanation was proved correct. DFG submitted a follow-up wetted perimeter report that utilized the Applicant's own data collected near the point of diversion and found that it produced remarkably similar results to those reported from the original wetted perimeter report. Ex. DFG-T-25. RT4:180, lines 15-18.

The Applicant also criticized the wetted perimeter report because the data collected, both by the Applicant and DFG, were not collected for the purpose of a wetted perimeter analysis. The Applicant produced no evidence that substantiated the claim that the data would yield different results if the purpose for which they were collected changed. DFG submitted testimony that the data were collected in a scientifically rigorous manner, and therefore the results can be trusted regardless of the purpose for which the data were originally collected. RT4:178, lines 12-18.

Next, the Applicant criticized DFG's use of an incipient asymptote as opposed to a breakpoint asymptote. The Applicant correctly notes that generally the breakpoint asymptote is used identify a minimum flow using the wetted perimeter method. However, the stream flow associated with the breakpoint on the wetted perimeter graph protects approximately 50%-80% of the stream's maximum available wetted perimeter of the stream. Ex. DFG-T-22, p.3. Therefore, the breakpoint flow likely falls well short of a fully wetted channel. Id. Thus, using the incipient flow is more appropriate because it better protects and maintains habitat conditions that support a typical density of juvenile steelhead occupying a mosaic of feeding territories in a given habitat area. Id. In other words, use of the incipient asymptote is an adaptation of the wetted perimeter method intended to provide a higher level of protection to the biological resources in the Big Sur River, especially federally listed species such as steelhead.

Finally, the Applicant criticized DFG's use of replicate mesohabitat units for wetted perimeter data collection. DFG placed multiple transects in multiple habitat units and then averaged the transect results obtained for each habitat unit to yield one data value for each habitat unit. Ex. DFG-T-22, p. 4. The Applicant's criticism appears to be that DFG did not follow the standard protocol for the wetted perimeter method which involves using only one transect at single critical point in the stream. Although DFG did not follow the standard protocol, DFG's adaptation of the standard protocol produced a more universally applicable result at the river reach scale. RT4:180, lines 19-35. In effect, DFG refined the protocol by conducting more measurements and obtaining more data than is normally done. In short, DFG's method is more scientifically rigorous than the standard protocol.

The second component of the flow recommendation (8.9cfs) represents the maximum historic flow losses that have occurred from the USGS Gauge #11143000 to the point of diversion. RT2:78, lines 12-15. This calculation is necessary due to the diversion's location at the mouth of the river. Id. Tidal influences, changes in the condition of the beach bar and periodic shifts in the river course make measurement of bypass flows downstream of the point of diversion unsuitable for long-term monitoring. Id. Therefore, the point of monitoring for bypass flows must be located somewhere upstream of the Applicant's point of diversion. Id. Because the river loss that occurs between the gauge and the point of diversion varies, DFG recommended that the maximum historic flow loss be used. Using any other number, including an average, would leave the resources vulnerable because the flows would be less than necessary at least half of the time. RT2:79, lines 2-10.

The Applicant criticized DFG's use of the maximum recorded historic flow loss number on the basis that the number was an "outlier." The Applicant produced no evidence (such as a statistical analysis) to substantiate its claim that DFG's recommended loss number was an "outlier." In contrast, DFG submitted testimony that the loss number was not an outlier, including information from USGS gauge #111143010 showing higher flow losses occurred subsequent to submitting testimony. RT2:137, lines 10-24. Therefore, DFG continues to recommend that maximum historic flow loss from USGS Gauge #11143000 to the point of diversion (8.9 cfs) be included in the instream bypass flow calculation.[16]

The third component of DFG's flow recommendation is the maximum rate of diversion. This number is necessary to account for the losses to the Big Sur River that

---

[16] The new USGS gauge #111143010, downstream of USGS gauge #11143000, would more accurately determine downstream losses. Therefore, DFG recommends that the loss calculation be re-visited after DFG completes its PHABSIM study in 2013 and more flow data is available from the two gauges.

will result from the Applicant's diversion. RT2:80, lines 5-14. As explained in great detail earlier, the Applicant has failed to submit any reliable evidence to prove that its diversion has a minimal impact on the surface level of the Big Sur River. Therefore, the full rate of diversion should be added to the bypass number.

Combining the three flow components as described above, DFG's interim minimum bypass flow recommendation for juvenile steelhead rearing is 29 cfs.[17]

2. <u>DFG recommends an interim minimum bypass flow of 132 cfs for adult steelhead passage.</u>

DFG used the method presented in the State Board's North Coast Instream Flow Policy to develop its flow recommendation of 132 cfs from December to May to accommodate adult steelhead passage. RT2:68, lines 20-25. The method uses the mean annual unimpaired flow and watershed area to derive the passage flow. Using the equation in Table 2.1 of the policy, input values of 101 cfs for mean annual flow and 58 mi^2 for watershed area yields a minimum bypass flow of 132 cfs. RT2:69, lines 1-5.

2. <u>The Applicant's flow recommendations for juvenile steelhead passage and adult steelhead passage are not biologically defensible.</u>

The Applicant offered no evidence to legally or biologically justify its minimum instream flow recommendation of 10 cfs for juvenile steelhead passage[18] and 30 cfs for adult passage. The Applicant's bypass calculation would be measured at USGS Gauge #11143000. As noted earlier, the Applicant's water balance model assumes a constant 3 cfs of groundwater inflow from USGS Gauge #11143000 to VT-1, and a constant 3.5 cfs entering the aquifer in the stretch between VT1 and VT3. Ex. ESR-61. Therefore,

---

[17] Within that 29 cfs, the 17 cfs identified in the Department's wetted perimeter analysis includes minimum protection of aquatic resources under "average" upstream diversion conditions of the mid-1990s when the data for the analysis were collected.

[18] Dr. Hanson indicated that a bypass flow that provided a depth criterion of 0.3 feet over 25% of the stream channel would be sufficient. ESR-21, p. 15. The record demonstrates this is not sufficient because this only takes juvenile passage into consideration, and does not consider other habitat characteristics. RT4: 206-207. In addition, there is no precedent for 0.3 cfs being used to set minimum bypass flows for juvenile rearing. RT2:289, lines 15-18.

the Applicant alleges that a maximum of 4 cfs in surface flow will bypass the point of diversion if the Applicant has stopped pumping. Id. As discussed above, losses from the USGS Gauge and the point of diversion have been recorded as high as 8.9 cfs. Therefore, a bypass flow at the point of diversion could be as low as 1.1 cfs (possibly lower, as higher losses have been observed using the new gauge data). The Applicant has provided no evidence to suggest that 1.1 cfs or 4 cfs is sufficient flow at the point of diversion to maintain suitable conditions for juvenile steelhead rearing.

In addition, the record demonstrates that the Applicant's proposed bypass flow for adult passage is not sufficient because conditions for steelhead passage have changed following the basin complex fire, and the data collected to support the recommendation are no longer applicable. RT2:211, lines 3-25; RT2:306, lines 5-12. Therefore, a higher instream flow is necessary to accommodate adult passage.

IV. (KEY ISSUE 3)

A. THE WATER WILL NOT BE PUT TO REASONABLE AND BENEFICIAL USE AND THEREFORE THE PROPOSED APPROPRIATION IS NOT IN THE PUBLIC INTEREST

The total volume and instantaneous rate of diversion sought by the Applicant exceeds the amount of water that is considered to be a reasonable beneficial use by: Water Code section 1004 (2.5 acre-feet-per-acre-per-year) and Title 23, California Code of Regulations section 697(a)(1) (1 cfs per 80 irrigated acres), calculation of crop water requirements using standard methods, and guidance provided by case law.

1. Water Code section 1004 is applicable to the Applicant's diversion because its purpose of use is the irrigation of uncultivated land.

Water Code (WC) section 1004 precludes the State Board from finding that the Applicant's requested amount of water can constitute a beneficial use. The Applicant's amended application requests to divert an annual maximum of approximately 5.3 acre-feet of water per acre. Ex. ESR-40. WC section 1004 states that " '*useful or beneficial* *purposes' shall not be construed to mean the use in any one year of more than 2-1/2 acre-feet of water per acre in the irrigation of uncultivated areas of land not devoted to cultivated crops.*" As discussed more fully below, Applicant's requested diversion exceeds WC section 1004's limits and is therefore not beneficial.

Water Code section 1004 is applicable to this matter because the Applicant uses the water to irrigate uncultivated lands. Because there is no California statute or precedent defining "uncultivated" or "cultivated," DFG recommends the United States Department of Agriculture's (USDA) Natural Resources Conservation Service's definition be used. USDA definitions have been included in several pieces of legislation relating to key agricultural programs, such as the Williamson Act and Farmland Mapping and Monitoring Program.[19] Therefore, there is state law precedence for utilizing USDA definitions. The relevant USDA definition is as follows:

> **Cropland.** A *Land cover/use* category that includes areas used for the production of adapted crops for harvest. Two subcategories of cropland are recognized: cultivated and noncultivated. Cultivated cropland comprises land in *row crops* or *close-grown crops* and also other cultivated cropland, for example, hayland or pastureland that is in a rotation with row or close-grown crops. Noncultivated cropland includes permanent *hayland* and *horticultural cropland*.

Pursuant to the USDA definition, hayland and pastureland[20] are considered uncultivated unless grown in rotation with row or close-grown crops. It is important to note that pastureland, although managed with cultural treatments such as fertilizer, weed control, reseeding, or renovation, is not considered cultivated unless it is grown in rotation with row crops. The Applicant does very little to manage the pasture except

---

[19] *See* Gov. Code § 51201(c) that utilizes the National Resources Conservation Service (NRCS) definitions to define "prime agricultural lands;" *see also* Gov. Code §§ 512968.8, 65570(b)(1) that utilize the NRCS for "Important Farmland Series maps."

[20] USDA Definition: **Pastureland.** A *Land cover/use* category of land managed primarily for the production of introduced forage plants for livestock grazing. Pastureland cover may consist of a single species in a pure stand, a grass mixture, or a grass-legume mixture. *Management usually consists of cultural treatments: fertilization, weed control, reseeding or renovation, and control of grazing.* For the NRI, includes land that has a vegetative cover of grasses, legumes, and/or forbs, regardless of whether or not it is being grazed by livestock. (emphasis added.)

irrigate, fertilize, apply herbicide and reseed[21] on very rare occasion. RT1:144, lines 22-25. However, managed land is not necessarily cultivated land. Applicant's land is not grown in rotation with row or close-grown crops. Therefore, nothing in the record suggests that the Applicant's pasture land has any characteristics or is managed in any way that would allow it to be characterized as cultivated pursuant to the USDA definition. Therefore, the Applicant's diversion amount cannot by law constitute a beneficial use.

2. <u>The Applicant's diversion amount is not a reasonable use of water.</u> Even if a use is deemed to be beneficial, the State Board must also find that the use is reasonable.[22] The California Constitution requires that water resources of this State "be put to beneficial use to the fullest extent to which they are capable" and prevents the waste, unreasonable use and unreasonable method of use of water. (Cal. Const. Art. X, § 2. See also Water Code § 100.) The record reveals that the Applicant's requested amount of water does not constitute a reasonable use.

California Code of Regulations section 697(a)(1) determines "the amount of water considered reasonably necessary for certain uses when the appropriation will be by direct diversion." In the section related to irrigation, the relevant part of the regulation states:

> "In most portions of the central valley of California and elsewhere in the State where similar conditions prevail a duty of one cubic foot per second continuous flow to each 80 acres shall be considered a reasonable headgate duty for most crops. Where there is a greater abundance of water and a heavy transportation loss, or the land to be irrigated is of a porous, sandy or gravelly character a continuous flow allowance of one cubic foot per second to each 50 acres may be considered reasonable."

---

[21] It does not appear that the Applicant has ever had to reseed as Mr. Hill believes the last time it occurred was 1960, and it was minimal. RT1:312, lines 18-25.

[22] *See* Joslin v. Marin Municipal Water District, 67 Cal. 2d at 140-141 (a use otherwise beneficial can be unreasonable); *See also* People ex rel. State Water Resources Control Board v. Forni, 54 Cal. App. 3d 743.

The Applicant's diversion does not meet the conditions in CCR Title 23, section 697(a)(1) that apply to a diversion rate of 1 cfs for 50 acres. The majority of the soils, 86%, being irrigated in the pastures by the Applicant are a Santa Ynez series fine sandy loam and don't meet the porous, sandy or gravelly criteria of the CCR Title 23, section 697(a)(1). Ex. DFG-C-A, p. 28. The distribution of soil types in the pastures and the general physical characters of the soils are shown in Figure 3 of ESR-12. Even though the climatic conditions at the Applicant's place of use along the Central Coast of California adjacent to the Big Sur River are wetter than the Central Valley of California, water available for appropriation is not abundant throughout the year, especially during summer and fall months. Id. In addition, conveyance or transport losses at El Sur Ranch are minimal because water is delivered to the pastures by pipes. Id. The Applicant has offered no evidence to refute any of these facts or to establish that the 1 cfs per 50 acres criteria has been met. Therefore, a duty of 1 cfs per 80 acres as described in CCR Title 23 section 697(a)(1) is appropriate.[23]

The Applicant's use is also unreasonable based on the results of two different analyses conducted by DFG to estimate crop water and net irrigation requirements. The first method used was a simple single crop coefficient method as presented on the CIMIS web site. Ex. DFG-C-35, A. The second method used was an estimation of the pasture net irrigation requirement based on a series of reference maps developed by Pruitt and Snyder, 1985. Ex. DFG-C-37, A. Both methodologies indicate that during November to March, irrigation is on average not required. DFG-C-35, 37, A. The Applicant did not challenge the accuracy of DFG's calculations. Therefore, the

---

[23] Using this standard, DFG recommends that the State Board require a maximum diversion rate of 3.075 cfs (246 acres * (1 cfs / 80 acres) = 3.075 cfs). A higher diversion rate would, by law, not be considered reasonably necessary for irrigation uses.

evidence suggests that the Applicant would not be able to put its requested diversion amount to reasonable use.

V. Conclusion

Given the small amount of water available from the watershed during the summer-to-fall low-flow period, Applicant's proposed diversion would exacerbate already suboptimal habitat and passage conditions for steelhead. Therefore, to ensure that biological resources in the Big Sur River are sufficiently protected, the State Board should include in the Applicant's water right permit, all DFG recommended protective measures, including a minimum bypass flow requirement.

Dated this 15th day of September, 2011

Chandra Ferrari
Kevin Takei

Attorneys for
California Department of
Fish & Game