



**Peter R. Baye, Ph.D.**  
*Botanist, Coastal Plant Ecologist*  
P.O. Box 65  
Annapolis, California 95412



(415) 310-5109

[baye@earthlink.net](mailto:baye@earthlink.net)

Sonoma County Permit Resources and Management Department  
Attention: Paula Stamp  
2550 Ventura Avenue  
Santa Rosa, 95403

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**SUBJECT: Gualala River gravel mining (File No. UPE04-0040, Gualala Instream), Sonoma County; Draft Negative Declaration (California Environmental Quality Act) comments** regarding significant impacts of 2005 unauthorized gravel mining to channel stability and fish habitat quality at the confluence of the South Fork and Wheatfield Fork, Gualala River.

Dear Ms. Stamp:

The following comments focus on one issue within the scope of the Sonoma County Permit Resources and Management Department (PRMD) proposed draft Negative Declaration for reauthorization of gravel mining on the Gualala River.

I am a professional plant ecologist specializing in the conservation, restoration, and management of coastal vegetation, rare and endangered species, and their ecosystems. I have over 27 years of professional experience in this capacity, including extensive regulatory and environmental planning experience with the U.S. Fish and Wildlife Service (Sacramento Fish and Wildlife Office) and the U.S. Army Corps of Engineers, San Francisco District Regulatory Branch. My current independent work includes preparation of CEQA/NEPA (EIR/S) documents for the California Department of Water Resources and California Coastal Conservancy, and coastal streams and tidal wetlands restoration plans for the California State Parks, U.S. Fish and Wildlife Service, and nonprofit conservation organizations.

Gravel mining on the Gualala River continued in 2005 and 2006 with the knowledge and active assistance of PRMD after the previous PRMD permit expired, and without authorization from the U.S. Army Corps of Engineers or National Marine Fisheries Service. The impacts of unauthorized gravel mining must be considered within the scope of analysis of the current negative declaration if the County and other regulatory agencies with which it coordinates intend to use this CEQA document for after-the-fact authorization of 2005-2006 gravel mining. Otherwise, including the impacts of unauthorized gravel mining within the "existing conditions" environmental baseline (at the time of Negative Declaration notice) would impermissibly merge them with the environmental baseline. This would result in a deliberate omission and

understatement of significant direct, indirect, and cumulative impacts of gravel mining, and would fail to comply with CEQA and parallel federal environmental laws. Thus, the County must consider impacts of unauthorized gravel mining impacts during the interim “grace period” of 2005-2006. To my knowledge, the Gualala River is the only North Coast California river where unauthorized commercial gravel mining operations occur.

The focus of this set of comments is on the significant impacts of 2005 gravel mining on the stability of the terminal gravel/sand bar and channel configuration of the South Fork, Gualala River, above the confluence with the Wheatfield Fork, and its indirect significant impacts on habitat quality for federally listed steelhead (*Oncorhynchus mykiss*) and other aquatic organisms that rely on the cover provided by steep, root-bound vegetated channel banks beneath riparian woodland. I will submit additional comments on other aspects of the Negative Declaration separately.

The draft Negative Declaration fails to analyze the actual past impacts of unauthorized gravel mining Valley Crossing (versus predicted future impacts) during the period of 2006-2007. The draft Negative Declaration erroneously concludes that reauthorization of gravel mining, with mitigation, would result in no significant impacts. In rebuttal, I am providing **time-series photographic documentation of the apparently unprecedented breaching and bisecting of the degraded, exhausted terminal gravel/sand bar at the Valley Crossing confluence with the Wheatfield Fork, following unauthorized 2005 gravel mining. This bar failed to recharge sediment and regenerate its height and form in 2006. The failure of bar regeneration during high flood flows in January 2006 caused a persistent switch in channel configuration during only moderate high flows in March-April 2006.** The direct and indirect significant impacts of this event are not assessed or mitigated in the Negative Declaration, which focuses instead on general speculative assessments inconsistent with site-specific, identifiable, and pertinent actual consequences of gravel mining.

The persistent switch in channel configuration and bar form around the Valley Crossing gravel mining site resulted in abandonment of a long-stable shaded perennial channel segment (between the Annapolis Road bridge and the point of confluence, adjacent to the mined bar) formerly associated with maturing alder-willow riparian woodland and vegetated outer bend banks. The (unauthorized) **mined bar breached and allowed the channel thalweg to occupy a wide, shallow summer-dry (hyporhoic flow), warm solar reach of the South Fork channel across the center of the bar.** I have personally observed first and second-year steelhead in the channel reach from 2002 to 2005 in spring, summer, and winter months, when it was in its recurrent to stable previous configuration (from at least 1984 and later) and was associated with dense shaded and root-bound banks. In its current post-mining condition, the channel bed in this reach supports mostly Gualala roach, and supplies likely stranding (mortality; attractive nuisance) habitat for steelhead in its few small pools. The relict abandoned channel beneath the riparian woodland canopy has accreted with coarse sediment (mostly infilled with sand and gravel), and is segmented into discrete, disconnected pools.

The Negative Declaration fails to assess the cumulative impact of gravel mining in the context of geomorphically significant expansion, growth and sediment trapping of riparian woodland on the Gualala River since 2003. The failure of bar recharge after mining, even during high flow events of January 2006, is probably related to significant expansion and growth of riparian woodland on

floodplains and mid-channel bars upstream of this mined site since 2003. Expanded riparian woodland and traps and stabilizes significant volumes of gravel, sand, and silt upstream on the South Fork, and enhances aquatic and riparian habitat. The Negative Declaration relies principally on outdated environmental supporting documentation and interpretations (O'Connor 2003; data up to 2002), prepared during the previous period of PRMD authorization, prior to its expiration. No post-2005 supporting documentation for the Negative Declaration addresses the significant cumulative impact of gravel extraction during a period of riparian woodland regeneration, and its implications for bar regeneration and integrity of bar and channel form. I have direct, personal knowledge of Valley Crossing and reaches upstream, and I can attest that channel incision, channel continuity, vegetated bar accretion, and riparian woodland growth have all progressed dramatically since 2003.

The Negative Declaration provides an erroneous generalized impact assessment of gravel mining on channel stability and sediment size, riparian and fish (steelhead) habitat (pp. 14-20) that is inconsistent with the actual results of mining at Valley Crossing during and following the 2005-2007 period of unauthorized mining. The Negative Declaration arbitrarily relies on (cites only) 2003 environmental documents that do not account for the actual impacts from this "grace period" of mining documented in the attachment below. No historic time-series analysis of channel and bar changes are cited in the Negative Declaration to assess this impact or the failure of NMFS-endorsed "horseshoe" extraction methods (p. 17) in this specific setting.

The progressive increase in channel bar riparian vegetation in all reaches of the Gualala River except the affected mining sites also indicates that mining is interfering or precluding natural regeneration of riparian woodland along channel banks of the Wheatfield and South Forks, and is maintaining solar-heated barren gravel flats at their expense. This significant impact is incorrectly assessed and mitigated (pp. 19-20) in the negative declaration.

The sequence of gravel bar mining, bar exhaustion, channel capture and switching at the Valley Crossing location since 2005 was utterly ignored in the Negative Declaration. This event has resulted in significant and probably persistent adverse impacts to steelhead, channel habitat, and channel stability at this location. The sequence of changes here is documented in the following attachment.

Respectfully submitted,



Peter R. Baye, Ph.D.

Copies furnished:

Peter Straub, Regulatory Branch, U.S. Army Corps of Engineers, San Francisco District  
Richard Butler, National Marine Fisheries Service, Santa Rosa  
Regional Water Quality Control Board, Santa Rosa  
Prof. Matt Kondolf, University of California, Berkeley  
Stuart Siegel, Ph.D., Wetlands and Water Resources, San Rafael  
Friends of the Gualala River, Gualala (and interested parties)

**ATTACHMENT: Gualala River Valley Crossing,  
South Fork Gualala River – Wheatfield Fork confluence, 2005-2007**



08/15/07. View upstream at confluence with Wheatfield Fork; dry bed of South Fork thalweg above confluence, bisecting low bar flats, approximately 1 m above low-flow (drought year) water surface elevation of Wheatfield Fork. Note presence of white sun-bleached algal mat and absence of vascular vegetation on dry channel bed, *Chenopodium* and *Melilotus* (vascular annual vegetation) on gravel bar emergent in spring.



7/13/07. View downstream at confluence with Wheatfield Fork; diminished summer low flows descend below emerging bed of South Fork channel above confluence; shallow (<20 cm), warm (>24°C) surface flows support few Gualala Roach.





06/05/07. View downstream at confluence with Wheatfield Fork; bar bisected by channel; pre-2005 South Fork relict riparian woodland-edged channel remains infilled by gravel, reduced to off-channel pool segments below riparian woodland canopy. Channel condition: shallow, warm run, riffle at confluence. Gualala roach and juvenile steelhead present in channel (personal observation).



06/03/07. View upstream at confluence with Wheatfield Fork. Wheatfield temperature 17 °C, thalweg > 50 cm deep at confluence. South Fork descends into gravel at thalweg in sloping bar edge. Pre-2005 South Fork relict riparian woodland-edged channel is infilled by sand and gravel, reduced to off-channel pool segments below riparian woodland and scrub canopy.



04/22/07. View downstream at confluence with Wheatfield Fork; recent flows cut a small scarp in gravel bar channel bank; note turbidity pulse. Pre-2005 South Fork riparian channel is actively infilled by silty sand (brown-gray) and gravel (gray) during this moderate discharge event, reducing it to off-channel pool segments choked with fine sediment below riparian woodland canopy.



03/27/07. View upstream at confluence with Wheatfield Fork. South Fork channel bisects gravel bar flats; slight recent meandering to east is indicated by recent low (<0.5 m) scarp cut in bar at confluence with Wheatfield Fork. Pre-2005 South Fork riparian woodland-edged relict channel is infilled by sand and gravel, reducing it to off-channel pool segments below riparian woodland canopy. South Fork channel at confluence is reduced to shallow riffle.





03/01/07. View downstream at confluence with Wheatfield Fork. Shallow, wide south Fork channel bisects gravel bar flats; note braided pattern in gravel bar flats across former channel position at east (view right) end of bar, formed during high flows. Mouth at confluence with Wheatfield Fork curves (deflected by Wheatfield Fork gravel deposition) slightly west compared with relatively rectilinear January 2007 channel configuration established under peak winter flows. Pre-2005 South Fork riparian woodland-edged relict channel is infilled by sand and gravel, reducing it to off-channel pool segments below riparian woodland canopy.



1/06/07. View downstream at confluence with Wheatfield Fork; recently deposited sand and gravel surface of degraded bar flats, with South Fork channel again bisecting the wide, low terminal bar. Channel bed is less than 1 m below elevation of adjacent bar flats, with gently sloping sand/gravel gradient replacing pre-2005 slipface and scarp profile of former channel bank.



8/8/06. View upstream at confluence with Wheatfield Fork. Pre-2005 South Fork riparian woodland-edged relict channel is infilled by sand and gravel, reducing it to off-channel pool segments below riparian woodland canopy. Thalweg is reduced to emergent, dry gravel bed with hyporhoeic flows. Note low (<0.5 m) elevation difference between late summer low-flow water surface elevation of Wheatfield Fork and adjacent South Fork gravel flats near thalweg confluence, increasing to only approximately 1.0 m at the position of the aggraded, infilled relict channel position along riparian woodland edge.



a

(4/14/06)





b

(4/14/06)



c

4/14/06 **BAR BREACHING, CHANNEL SWITCHING EVENT.** Views downstream (a, b) and upstream (c) at confluence with Wheatfield Fork following recent bar-flooding discharge that bisected the low, degraded bar flats. Note recent spreading of branched high flow distributary channels across bar flats, actively depositing sand and gravel into the aggraded, infilled, segmented former channel (thalweg) along the riparian woodland edge (b), as mined, depleted gravel bar loses form. Note low topographic relief of diminished South Fork bar at confluence, failure of gravel/sand recharge within mined area during moderate high spring flows.



03/17/06. **INCIPIENT CHANNEL SWITCHING.** View upstream from Wheatfield Fork confluence. The terminal South Fork bar degrades along the bend, forming a set of branched channels across the east end of the 2005 mining area, which has failed to regenerate bar height and form during and following high winter flows. Note the widened, stepped channel profile (multiple scarps; compare 2/20/06)



02/20/06. **INCIPIENT CHANNEL SWITCHING, INFILLING OF THALWEG.** View upstream from Wheatfield Fork confluence, showing the last remaining post-mining position of the South Fork thalweg incised as a perennial channel beneath the riparian woodland canopy (alder-willow) at



the east end of the degraded South Fork terminal bar flats. Note the multiple slipface-edged lobes of gravel (sediment fans dissected by multiple high-flow branched shallow channels prograding towards the channel edge; incipient infilling of thalweg occurs while the top of the low, flat, degraded gravel bar conveys and dissipates high flows rather than confine them mostly within the previously channelized profile. Note low turbidity (lack of recent rainfall)



**01/02/06. INCIPIENT CHANNEL SWITCHING.** View downstream from Wheatfield Fork confluence following recent high flows (note high turbidity). Terminal South Fork bar is degraded to low sand/gravel flats within and above the 2005 mining pit, where sediment recharge is failing. Thalweg remains at traditional eastern edge of terminal South Fork bar, but the degraded bar is developing branched channels, gravel/sand lobes and fans across the 2005 mining pit, dissipating high flows, and initiating progradation of the bar edge across the thalweg.



a (12/31/05)





b



c

12/31/05. View downstream at confluence with Wheatfield Fork. Turbid discharge over submerged bar (a). New Years storm flood flows caused significant sediment accretion (silt, sand) in vegetated riparian floodplain and channel bars of the Wheatfield Fork (b) and South Fork (c) on bank opposite the confluence.



a

11/15/05



b



11/15/05. View upstream from Wheatfield Fork confluence, showing degraded post-mining condition of South Fork terminal bar. Note flattened, sloping, low bar crest elevation (less than 0.5 m above water surface in late fall low flow condition) along Wheatfield Fork and bank of South Fork channel. Note also the graded, mined bar edges (c; pushed into willows along edge of bar, towards South Fork thalweg; excavated area extends to within approximately 4-5 m from edge of South Fork channel at confluence point!) establishing topography for an efficient flow path during high flows that overtopped the terminal South Fork bar in January-April 2006. Note tire tracks persisting on gravel flats; no flows have yet overtopped the degraded bar.





10/24/05. View downstream at confluence with Wheatfield Fork; apparent active or very recent mining (compare with 11/15; not final post-mining condition). Large scraped pit is established at downstream end of terminal bar, within approximately 5 meters of the South Fork channel bank, and mining or grading operations are apparently not complete (see 11/15/06 photo). Extraction is cumulative with previous mining here.



07/07/05. Views upstream on South Fork (a) and Wheatfield Fork (b), showing pre-mining 2005 condition of terminal South Fork bar. Note perennial channel of South Fork within willow-alder riparian woodland or beneath its canopy. Note bar crest elevation relative to low-flow channel water surface elevation.





Google Earth aerial photo of South Fork at confluence with Wheatfield Fork (accessed 08/27/07; photo circa 2003), showing traditional, long-stable channel and bar configuration; perennial low-flow channel bend is located within or contiguous with alder-willow riparian woodland at eastern end of bar. Note deltaic gravel lobe constricting channel at confluence, mouth of South Fork low flow channel.

*Photos incorporated by reference:* North Coast Watershed Assessment Program (2003), Gualala River Watershed Assessment Appendices, March 2003, Appendix A, Selected time-series aerial photos for change detection; p. 68, The Confluence of the Wheatfield and South Forks of the Gualala River through Time. 1984 and 2000 photos exhibit the same stable (riparian-edge) eastern bend configuration as pre-2005 conditions, coincident with bar vegetation and channel incision following 1960s (tractor logging era).