

ATTACHMENT E
Instream gravel mining 2005 and 2006 seasons, Gualala River



Fig 1a



Fig 1b



Fig 1c.



Fig. 1d.

Figure 1. Gravel mining site at terminal bar, confluence of South Fork, Wheatfield Fork, Gualala River, Valley Crossing, Annapolis Road bridge, 2005-2006. Abrupt change in post-mining channel configuration. 1a. July 2005, confluence of South Fork, view upstream (south), showing perennial channel (steelhead present) at eastern end of bar, meander into alder riparian forest cover; typical channel configuration of prior years. 1b. October 24, 2005. Mining pit in center of degraded terminal bar. Bar elevation had not regenerated after previous mining episode; low flats provide little potential confinement of high flows. 1c. April 1, 2006. Terminal bar breaches across mined center of depleted terminal bar, guided by pit remnant that had eroded to low flats following New Years flood. Note remnants of channel switching and multiple terminal lobes, indicating instability during high flows. Channel thalweg shifts to new central channel; old channel aggrades. 1d. August 8, 2006. New thalweg fails to maintain low-flow channel and becomes below-bed flow on hot, exposed gravel; seeps into confluence. Old channel in riparian forest is completely infilled. Atypical configuration.

Friends of the Gualala River
October 26, 2006

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Fig 2. Mining of bar on South Fork, near Buckeye Creek.



2a.



2b.



2c.

Figure 2. In-stream gravel mining on South Fork near Buckeye Creek. A. pit and berm, view downstream; pit terminates. B. pit, berm view downstream, right bank. C. pit, view upstream.

Figure 3. Bar 62 mining, Wheatfield Fork.



3a.



3b.



Figure 3. Bar 62 mining site, Wheatfield Fork. A. View upstream from toe of road access point into wide, shallow pit. B. View upstream at head of bar located at outer bend of meander. This low berm is all that separates high flows from being captured by pit during high flows (channel switching to position of outer bend configuration, which lacks the dense shade and stable hillslope toe of the north-facing south bank shown). C. View downstream, showing low residual gravel levee relief formed by mining pit. Note proximity of gravel surface to low flow water surface (less than 1 meter). Flood debris in alder branches is approximately 3 meters above the gravel surface.

Questions for impact assessment:

- Does rate of extraction exceed rate of recharge in Valley Crossing terminal bar? Does mining degrade terminal bar elevations below thresholds confining channel to east end, causing bar breaching and channel realignment and loss of stable meander configuration with riparian-shaded low-flow channel?
- Does configuration of pit create risk of bar filling at downstream end, causing entrapment of steelhead during drawdown?
- Does mining near head of bar cause significant risk of channel switching (capture of thalweg by pit) during high flows and formation of unshaded low flow channel or below-bed summer flows?