Wetland Notes

an e-newsletter by Zentner and Zentner

Volume 6, Issue 1 October 2011

Corps of Engineers expands jurisdictional boundaries on certain streams

by John Zentner

The Corps of Engineers (Corps) regulates wetlands and "other waters of the U.S." (OWUS) under Section 404 of the federal Clean Water Act. While the physical boundaries of wetlands are generally well understood[1] , the upland boundaries of OWUS have been less well defined.

Generally, OWUS consist of streams, channels, ditches or other water conveyance features that may or may not include wetlands. The upper boundary of these waters is delineated by their "Ordinary High Water Mark" (OHWM), which is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3).

OHWM is usually identified by "a natural line on the bank, wracking, leaf litter disturbed" etc. (Corps RGL 05-05 of 12/07/05 on defining OHWM). The practical difficulty of identifying this mark is that these features do not always correlate to one line. "Wracking" (wrack deposition), for example, can and does occur after most storms and at almost any level in a stream; thus one stream may have several wrack lines at differing or even intersecting lines. The 2005 RGL cited above provided scant guidance when it stated that,

> "districts should be careful to look at characteristics associated with ordinary high water events, which occur on a regular or frequent basis.....a litter or wrack line resulting from a 200-year flood event would ***in most cases*** not be considered evidence of an OHWM" (emphasis added).

In the past, the "bankfull channel" often provided the basis for defining the limits of the Corps' jurisdiction (see Figures 1 and 2a). The OHWM and bankfull channel were seen as equivalent due to the convergence between the channel-defining properties of the two terms. EPA, in its Watershed Assessment Manual, stated "[o]ften, the U.S. Army Corps of Engineers field interpretation of 'ordinary high water' and the bankfull stage are synonymous" (*http://water.epa.gov/scitech/datait/tools/warsss/bankfull.cfm.*)

Further, comparing Figures 1 and 2a, the OHWM, as it has been generally understood, provided for a relatively limited area of jurisdiction within many California streams.

Figure 1

Source:
Zentner and Zentner

[1]Of the 57 jurisdictional determinations appealed to the South Pacific Division from 2/01/00 through 1/04/2010, none involved a disagreement over the physical parameters (hydrology, soils, vegetation) that mark a wetland boundary (see http://www.spd.usace.army.mil/cwpm/public/ops/regulatory/adminAppeals/AppealsTable.html).

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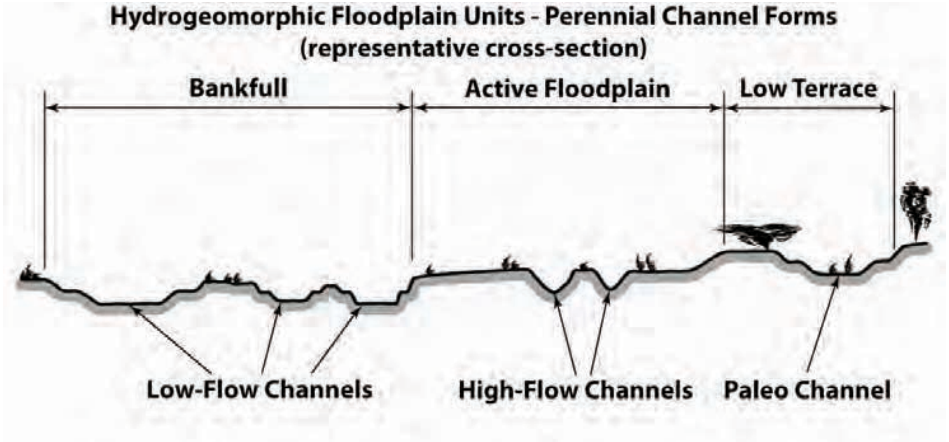

Figure 2A

Source:
Lichvar and McColley 2008

Zentner and Zentner has completed several hundred delineations in the past 25 years, many of which involved determinations as to OHWM, and generally found the mark relatively straightforward to define. As well, our experience tended to mirror the EPA statement above.

However, we and others have had significant problems defining the OHWM in "unconfined"[2] ephemeral and intermittent waterways, i.e. desert washes where one season's bankfull discharge or apparent OHWM might vary considerably from the previous year's—and the following years.

Over time, this led to efforts to better define the OHWM. In a 2005 summary report prepared for an ASWM meeting, for example, Bill Magdych and Matt Moore cite a number of attempts by agency staff to regulate areas well above the 10-yr flood line. Slightly more than a decade ago, the Corps began a series of investigations on OHWM (c.f. Brostoff et al 2001), which generally acknowledged the difficulty in using typical OHWM indicators in the field. Lichvar and Finnegan (2006) found that OHWM indicators were scattered throughout the unconfined channels studied without affinity to a specific discharge. However, the 5- to 10-yr discharge, which defined the active floodplain, tended to be the most consistent with their sense of ordinary high water as sediments were reworked, vegetation cleared, and a new hydraulic geometry established below that line (see *http://www.crrel.usace.army.mil/library/technicalreports/ERDC-CRREL-TR-07-16.pdf*). This was followed by Field and Lichvar (2007), which noted that OHWM is typically at the 5- to 8-yr flood discharge level in the arid west[3] (see *http://www.crrel.usace.army.mil/library/technical reports/TR06-5.pdf*).

These culminated in Lichvar and McColley (2008), which has become the Corps guidance on OHWM (*http://www.crrel.usace.army.mil/library/technicalreports/ERDC-CRREL-TR-08-12.pdf*). Lichvar and McColley begin by stating that the geomorphology of ephemeral/intermittent streams differs markedly from that of perennial streams. The former do not have a bankfull channel or that channel is essentially subsumed within the active floodplain. Figures 2a and 2b, both taken from Figure 2 of Lichvar and McColley) illustrate this difference. They also note that low-flow channels in

[2] By "unconfined", I mean relatively open channels without significant banks or other topography that constrain the movement of the bankfull channel and relatively permeable substrates throughout the active floodplain, e.g. gravels, sands, sandy loams or some combination thereof. The latter half of this definition is probably similar to Lichvar and McCooley's term "alluvial" but the first element of this proposition is not included in their work and the second is not a requirement, which it should be in my opinion. I acknowledge Dan Martel (Corps, SF District) for his use of the term in describing the channels under question.

[3]The authors do acknowledge OHWM is at the 1- to 2-yr level in "temperate" climates (and apparently equivalent to the bankfull channel therefore; see below for more on this issue).

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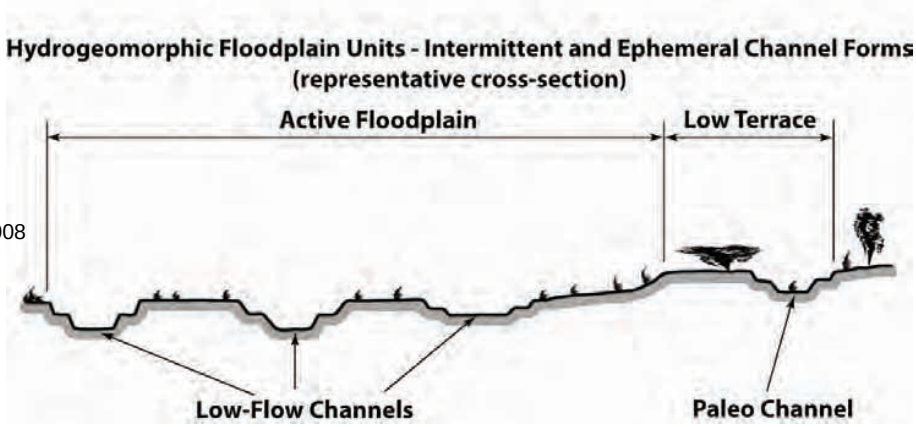

Figure 2B

Source:
Lichvar and McColley 2008

these ephemeral/intermittent streams tend to form and re-form due to the highly permeable sediments and lack of vegetation and that most OHWM indicators have no apparent fidelity to a specific discharge event. These factors support their conclusion that "…the active floodplain [is] the only repeatable feature that can reliably be used to delineate…. OHWM" (p. 31). Further, their data show that the active floodplain is typically set in arid systems by the 5- to 10-yr discharge.

Based on our experience, defining the active floodplain in unconfined, ephemeral/intermittent channels in desert conditions is a much simpler exercise than attempting to define the bankfull channel in these streams. In that regard, Lichvar and McColley have provided a service to consultants and Corps staff alike. Whether this new guidance provides a more accurate definition of OHWM is a separate issue. Magdych and Moore (ibid), for example, show that OHWM for several streams in southern California is below the 1-yr storm interval. Their conclusion is based at least partially on delineations approved prior to Lichvar and McColley and is, therefore, somewhat self-proving as is our conclusion regarding the delineation of OHWM in Figure 1.

Without commenting on the accuracy, the new guidance is sorely deficient in the ambiguity of its application, in my opinion. Lichvar and McColley state that their work applies to "low-gradient, alluvial ephemeral/intermittent channel forms" (p.2) in the Arid West", which covers most of lowland California, and many streams that are not unconfined desert washes. Consultants and Corps staff have been completing delineations on confined ephemeral/intermittent channels in this region for decades without significant difficulties. The lower reach of Laguna Creek in the City of Sacramento, for example, before it was enlarged was a low-gradient, alluvial ephemeral/intermittent channel and the Corps approved an OHWM delimiting a 4-ft wide channel. However, the active floodplain was 120 to 300 ft wide. The difference between a 4-ft wide and a 120 to 300-ft wide jurisdictional take is not inconsequential. Lichvar and McColley do not provide sufficient guidance on these systems, raising the specter of revised delineation practices and expectations throughout the Central Valley.

Further, this change comes with a distinct lack of public notice. Because discussion is the useful backbone of scientific inquiry, it would be constructive to hear from the larger community regarding this proposal. As noted above, Magdych and Moore have already published interesting evidence contrary to Lichvar and McColley and there may be more data in the field. This and other evidence could have been presented and debated as part of a process that would have informed and built a consensus around the new guidance.

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