ARID WEST OHWM FIELD INDICATORS

	OHWM PHYSICAL FIELD INDICATORS RGL 05-05	OHWM GEOMORPHIC INDICATORS TR-08-12 Field Guide	OHWM VEGETATION INDICATORS TR-08-12 Field Guide	
ABOVE OHW			Hydroriparian Indicators Annual herbs, xeric ruderals Perennial herbs non-clonal Perennial herbs clonal and non-clonal co-dominant Mature pioneer trees, no young trees Mature pioneer trees w/upland species Late-succesional species Mesoriparian Indicators Xeroriparian species Annual herbs, xeric ruderals Perennial herbs, non-clonal Perennial herbs, clonal&non/clonal codominant Mature pioneer trees, no young trees Mature pioneer trees, xeric understory Mature pioneer trees w/upland species Late-successional species Xeroriparian Indicators Sparse, low vegetation Xeroriparian species Annual herbs, xeric ruderals	**ABOVE OHW**
AT OHW	Natural line impressed in bank Shelving Changes in the character of soil Destruction of terrestrial vegetation Presence of litter and debris Wracking Vegetation matted down, bent or missing Sediment sorting Leaf litter disturbed or washed away Scour Deposition Multiple observed flow events Bed and banks Water staining Change in plant community	Desert pavement -- Rock varnish Clast weathering Salt splitting Carbonate etching Depositional topography Caliche rubble - Soil development Surface color/tone Drainage development Surface relief Surface rounding Valley flat Active floodplain Benches: low, mid, most prominent Highest surface of channel bars Top of point bars Break in bank slope Upper limit of sand-sized particles Change in particle size distribution Staining of rocks Exposed root hairs below intact soil layer Silt deposits Litter (organic debris, small twigs and leaves) Drift (organic debris, larger than twigs)	Hydroriparian Indicators Annual herbs, hydromesic ruderals Perennial herbs, hydromesic clonals Pioneer tree seedlings Pioneer tree saplings Mesoriparian Indicators Sparse, low vegetation Annual herbs, hydromesic ruderals Perennial herbs, hydromesic clonals Pioneer tree seedlings Pioneer tree saplings Xeroriparian species Annual herbs, xeric ruderals Xeroriparian Indicators Sparse, low vegetation Xeroriparian species Annual herbs, xeric ruderals	**AT OHW**
BELOW OHW		In-stream dunes Crested ripples Flaser bedding Harrow marks Gravel sheets to rippled sands Meander bars Sand tongues Muddy point bars Long gravel bars Cobble bars behind obstructions Scour holes downstream of obstructions Obstacle marks Stepped-bed morphology in gravel Narrow berms and levees Streaming lineations Dessication/mud cracks Armored mud balls Knick points	Hydroriparian Indicators Herbaceous marsh species Pioneer tree seedlings Sparse, low vegetation Annual herbs, hydromesic ruderals Perennial herbs, hydromesic clonals Mesoriparian Indicators Pioneer tree seedlings Sparse, low vegetation Pioneer tree saplings Xeroriparian species Xeroriparian Indicators Sparse, low vegetation Xeroriparian species Annual herbs, xeric ruderals	**BELOW OHW**

WMVC OHWM FIELD INDICATORS

ERDC/CRREL TR-14-13 *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States*

Idenfify the Active Channel Signature

3 Primary Indicators	Topographic break in slope	Localized and distinct - outer limits may have a convex slope
	Change in vegetation characteristics	As system becomes arid vegetation shifts to active channel
	Change in sediment characteristics	Lateral changes perpendicular to principal direction of flow

SUPPORTING FEATURES & GENERALIZED INTERPRETATIONS

Feature	Description	Interpretations
Drift/wrack	Debris deposited as streamflow recedes (typically during/following flood events); commonly forms linear features or piles and often collects on the upstream side of inundated	May indicate the spatial extent of a recent flow event; a concentration of drift features may suggest relatively frequent inundation.
Erosion/scour	The removal of sediment or rock due to mechanical forces (e.g., water or wind)	Typically occurs within the active channel (i.e., below the OHWM) but can also result from extreme flood events or non-fluvial processes.
Bank undercutting	Exposure of previously buried roots due to erosion; common along active channel banks, particularly on the outside of bends (meanders)	Suggests the presence of active erosional processes; can also result from infrequent flood events.
Root exposure	Exposure of previously buried roots due to erosion; common along active channel banks, particularly on the outside of bends (meanders)	Suggests the presence of active erosional processes; can also result from infrequent flood events.
Point bars	Depositional features found on the inside of stream bends (meanders).	Suggests relatively frequent inundation; the tops of point bars typically occur below the OHWM.
Water staining	Staining or discoloring of natural (e.g., bedrock) or man-made (e.g., bridges) objects due to the frequent presence of water.	In bedrock or colluvial channels or confined reaches where primary indicators cannot develop, water stains are sometimes the best or only indicator of ordinary flow conditions. However, they may indicate the most frequently experienced flow level (e.g., mean flow) rather than the ordinary extent of high flows, or they may indicate the spatial extent of a recent flood.
Litter removal	The removal of leaves, needles, and other organic ground cover due to flowing water	May indicate the extent of recent flows (depending on the time of year) or may be useful for verifying streamflow in small or hard-to-detect streams.
Silt deposits	Deposition of fine sediments	Generally depositional features rather than erosional ones. Silt deposits found on a floodplain often stand in contrast to the relatively course substrate of the active channel.
Shelving	The presence multiple “benches” and breaks in slope along the margins of the active channel.	Suggests downcutting of the active channel. The lowest bench may represent an emerging floodplain.
Headcut/ knickpoint	An abrupt vertical drop in the stream bed that typically migrates upstream	Sometimes indicates the upper, longitudinal extent of a headwater stream and the OHWM (i.e., the point of stream initiation).
Macro-invertebrates	Invertebrates (animals lacking vertebral columns) that are visible to the naked eye (e.g., aquatic insect larvae, clams, crayfish, aquatic worms, etc.)	Certain aquatic species and aquatic life stages of macroinvertebrates have been found to be strongly tied to streamflow permanence (i.e., ephemeral vs. intermittent vs. perennial) in the Pacific Northwest (Mazzacano and Black 2008, Nadeau 2011, Blackburn and Mazzacano 2012).