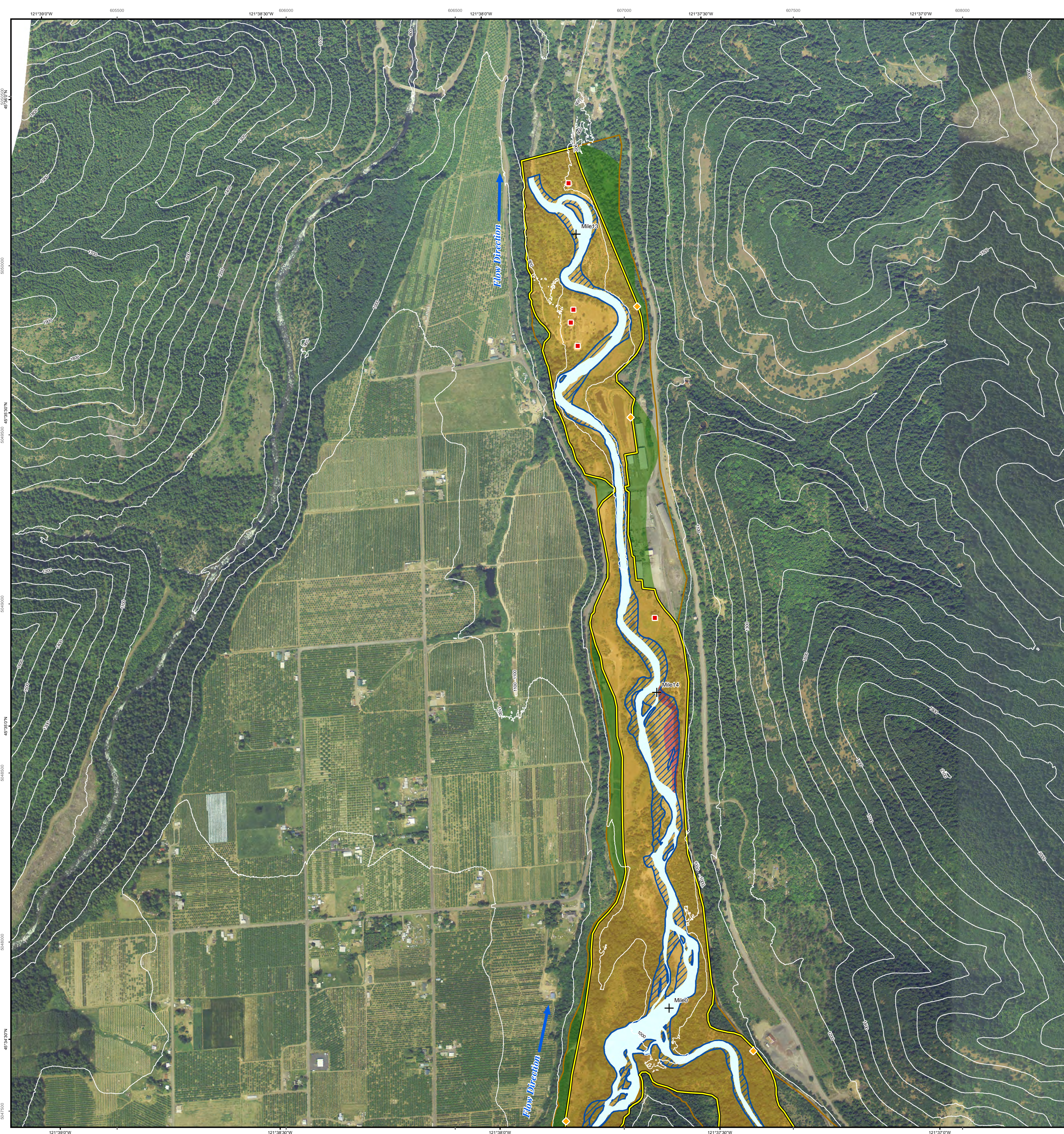


2011

Channel Migration Hazard Maps for the Hood River
Hood River County, Oregon

by John T. English, Daniel E. Coe, and Robert D. Chappel

PLATE 3



METHODS, COMPONENTS, AND LIMITATIONS OF INTERPRETATION

The resulting hazard zones are depicted on a lidar-derived basemap (left panel) and an orthophoto basemap (right panel) at a scale of 1:6,000. The channel hazard map should be used as a guide for local governments, land owners, and infrastructure managers to identify assets potentially at risk and to develop effective mitigation measures.

For more information on methodologies, see English and Coe (2011).

Software: Esri ArcGIS 10.0, Adobe Creative Suite 5.
Projection: North American Datum 1983, UTM zone 10 north. Grid ticks displayed in latitude and longitude as well as UTM coordinates.
Source data: Lidar data for publication from NOAA's Lidar Data Quadrangle (LDAQ-2010-65121P4-White Salmon, LDAQ-2010-65121P5-Hood River, LDAQ-2010-65121P6-Longview, LDAQ-2010-65121P7-Deer) Digital elevation model (DEM) outside of a 3-foot square elevation grid that was converted into color and shaded relief images. Orthophotos of Hood River County (1955, 1957, and 1975) are from University of Oregon Map Library and (2005 and 2009) National Agricultural Imagery Program (NAIP).

Disclaimer: This map depicts channel migration zones and associated hazards based on interpretation of aerial photography and lidar elevation data. Migration path/zones and hazard areas were created using methods and protocols defined by Rapp and Abbe (2003). This map cannot serve as a substitute for site-specific investigations by qualified practitioners. Site-specific data may yield results that differ from those shown on this map. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or survey purposes. Users of this information should review or consult the primary data and information

Avulsion is the natural process by which flow diverts out of an established river channel into a new permanent course on the adjacent floodplain (Slingerland and Smith, 2004). **Avulsion Hazard Zones (AHZ)** are derived by identifying areas susceptible to avulsion such as lateral channels and historical avulsion paths. Morphological evidence such as meander and erosive scarring are also used to define potential avulsion paths. Lidar-derived digital elevation models (DEMs), hillslopes, and slope models are used to identify morphologies characteristic of avulsions beneath vegetation.

The final **Channel Migration Zone (CMZ)** is the collective area of the HMZ, AHZ, and EHA (Figure 1). The DMA represents areas that would be within the CMZ had there not been infrastructure preventing channel migration.

Limitations of this study relate to the accuracy of the historical aerial photography and length of historical record. The rectification process used to co-register individual photos produced accuracies of 9-15 feet (95% confidence). Accuracies vary throughout individual photos and photo areas.

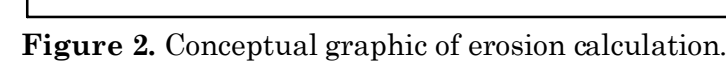
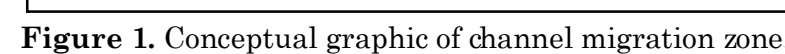


Figure 3. Regional hydrograph for the Hood River, Oregon.

This figure depicts historical peak flows (labels and line in red) and the average annual monthly flow (labels and line in blue). The historical flow line displays years in which major flows occurred (e.g., 1933 and 1945), and the annual average monthly flow line depicts seasonal variation in flow typical of a Cascades mountain stream. Flow units are in cubic feet per second (cfs). Although specific values describe flows only at this specific gauge, the shapes and peaks of lines describe the common hydrologic regime of the area.

and Coe, D. E., 2011, Channel migration hazard maps, Coos County, Oregon: Oregon Department of Geology and Mineral Industries, File Report O-11-09, 18 p.

Map of Hood River County showing the locations of the nine plates. The map includes the Hood River, Hood River County, and the locations of the plates. A scale bar shows 0 to 3 miles. An inset map shows the location of Hood River County within the state of Oregon.

Acknowledgments:

We thank Ian P. Madin, Chief Scientist, and William J. Burns, Engineering Geologist, Oregon Department of Geology and Mineral Industries, for their assistance in the review process of this publication.

