

# **ECOLOGICAL CLASSIFICATION BRUNEAU RIVER BASIN IDAHO VOLUME 1**

*Prepared for:*

**IDHW, Division of Environmental Quality  
Twin Falls, Idaho**



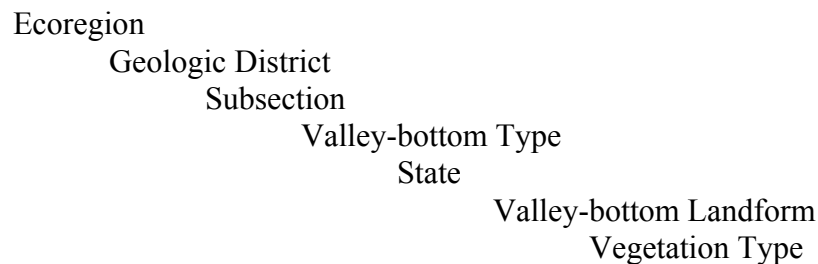
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## EXECUTIVE SUMMARY

An ecological classification was applied to the Bruneau River basin in southern Idaho to facilitate estimation of water quality interpretations. The Bruneau River basin in Idaho is 1.65 million acres with a 4,833 linear mile stream network, of which 540 miles is perennial. The ecological classification focuses upon stream and riparian habitat in eight target basins. These target basins are 522,019 acres and include 1,597 linear miles of stream, of which 210 miles is perennial. Target basins are the lower Bruneau River, Clover, Three, Hot, Jacks, Little Jacks, Big Jacks and Wickahoney Creeks. Hot, Jack, Little Jack, Big Jack, Wickahoney, Clover and Three Creeks.

The ecological classification is hierarchical and consists of seven levels (see below). Broad classes (Ecoregion, geologic district and subsection) were applied to the Bruneau River basin in Idaho. More refined classes (valley-bottom type, state, landform and vegetation type) were applied to the main courses of target streams.



Ecoregions (Omernik 1987) are based on factors that cause regional variation in ecosystems or on factors that integrate the causes of regional factors. The Bruneau River basin in Idaho is entirely within the *Snake River Basin/High Desert Ecoregion*. Geologic districts are areas of distinctive rock types or parent materials that are often associated with major structural features. The Bruneau River basin in Idaho is entirely within the *Volcanic Geologic District*. Subsections are areas of distinctive geomorphic character that often correspond with geologic districts. The Bruneau River basin in Idaho is entirely within the *Volcanic Plateau Lands Subsection*. These broad categories are intended to denote areas of successively more specific ecological potential.

The valley-bottom landtype within a subsection was further stratified as valley-bottom types. Valley-bottom types were distinguished by the mechanism and relative effectiveness of geomorphic processes in shaping the valley-bottom. Four (4) valley-bottom types were identified: 1) *valley*; 2) *confined canyon*; 3) *unconfined canyon*; and 4) *alluvial basin*. The form and hydrologic function inherent to valley-bottom types begat fundamental differences in the ecological potential of stream and riparian habitats.

Valley-bottom types for the main courses of target streams were further divided into states (i.e. condition classes) identified based on channel morphology. A progression of states that ranges from near natural to severely disturbed was identified. Key attributes for identifying states included: 1) channel elevation relative to that of historic floodplain (i.e. graded versus not graded); 2) bank stability and canopy cover; 3) extent of streambars; and 4) impoundment. Maps of states were prepared from aerial photos.

Valley-bottom landforms were mapped for the main courses of target stream. Landforms included: *channel, floodplain, stream terrace, alluvial fan* and *lake/reservoir basin*. Soils tend to correlate with landform and valley-bottom type/state. Where streambanks cut “higher-and-dryer” landforms, such as terrace and alluvial fan, they are inherently less stable than where streambanks are cut in “lower- and-wetter” landforms, such as levee and floodplain. Detailed maps of valley-bottom landforms were prepared from aerial photos.

Vegetation types were mapped for the valley-bottom of target stream reaches from the same aerial photos. Eleven (11) vegetation types and 8 miscellaneous types were identified. Community physiognomy (e.g. trees, shrub, herbaceous) and water regime (e.g. seasonally flooded) were key factors used to identify vegetation types. The distribution of vegetation types generally correlates with valley-bottom type, state and landform. Changes in state generally correspond with changes in vegetation types. The distribution of vegetation types reflects the existing condition of stream and riparian habitat.

Several condition ratings were calculated for each target stream. *Riparian condition ratings* were calculated for perennial, irrigated and dry conditions based on the areas of states. *Stream condition ratings* were calculated from the distribution of length of stream states. Riparian and stream condition ratings range from 0 (worst) to 100 (best). The *riparian condition rating* for perennial target streams varied from 53 to 85. The stream condition rating for perennial target streams ranged from 51 (fair) to 88 (good). The average riparian and stream ratings for all perennial target reaches were 60 and 65, respectively. The weighted average riparian and stream ratings for irrigated reaches was 48. Average riparian and stream ratings for dry reaches were 11 and 17, respectively. Average ratings for all reaches were 46 and 52, respectively.