EXECUTIVE SUMMARY

An ecological classification was applied to the upper Coeur d'Alene, upper Spokane, St. Joe and St. Regis River basins in northern Idaho, northwestern Montana and northeastern Washington. Results are used to evaluate a Natural Resource Damage Assessment (NRDA) of the Coeur d'Alene River basin. The focus of the ecological classification is stream and riparian habitats that may be impacted by mining, including the parts of the South Fork Coeur d'Alene, Coeur d'Alene and upper Spokane Rivers. Major tributaries in the North Fork Coeur d'Alene, St. Joe and St. Regis River basins were also evaluated to determine the degree of similarity with the target streams.

The project area is about 6,338 square miles (4,059,064 acres) and contains a stream network that is 13,304 linear miles, of which 4,692 miles (37.3 percent) is perennial. Also included are over 2,000 lakes and ponds with surface area of about 55,000 acres and 793 miles of shoreline and about 51 linear miles of canals.

The ecological classification is hierarchical and consists of seven levels, ranging from broad classes based on general landscape characteristics to very refined classes of valley-bottom landform and riparian vegetation types. Levels of the hierarchical classification are:

Ecoregion
Geologic District
Subsection
Valley-bottom Type
State
Valley-bottom Landform
Vegetation Type

Broad classes (ecoregion, geologic district and subsection) were applied to the entire project area. Valley-bottom type was applied only to target subbasins (upper Coeur d'Alene, South Fork Coeur d'Alene, North Fork Coeur d'Alene, lower St. Joe, upper St. Joe and St. Regis). The most refined classes (state, valley-bottom landform and vegetation type) were applied only to the valley-bottom of selected streams in target subbasins..

Ecoregions (Omernik 1987) are based on factors that cause regional variation in ecosystems or on factors that integrate the causes of regional factors. The project area includes parts of the *Northern Rockies* and the *Columbia Plateau Ecoregions*. Bailey (1994) identified the *Bitterroot Mountains* and *Okanogan Highlands Sections* of the *Northern Rocky Mountain Province* in the northern and eastern portion of the project area and the *Columbia Basin Section of the Intermountain Semi-Desert Province* and the *Palouse Prairie Section* of the *Great Plains-Palouse Dry Steppe Province* in the southwest part of the project area.

Geologic districts are areas of distinctive rock types or parent materials. Four (4) geologic districts were identified in the project area: 1) *Metasedimentary;* 2) *Volcanic*; 3) *Granitic;* 4) *Mixed (unconsolidated).*

Subsections are areas with distinctive geomorphic character that often correspond with geologic districts. Nine (9) subsections were identified in the project area: 1) *Metasedimentary alpine glacial lands;* 2) *Metasedimentary fluvial mountain land;* 3) *Metasedimentary continental glacial erosional land;* 4) *Metasedimentary lacustrine land*; 5) *Granitic fluvial mountain land;* 6)*Granitic continental glacial erosional land;* 7) *Volcanic continental glacial erosional land;* 8) *Volcanic fluvial plateau land;* and 9) *Mixed continental glacial depositional land.*

The valley-bottom landtype corresponds with the drainage network and includes alluvial, fluvial and lacustrine deposits. The valley-bottom of associated with order 3, 4, 5, 6 and 7 streams is about 157,510 acres (6.1 percent) of target subbasins.

The valley-bottom landtype within a subsection was further stratified as valley-bottom types, distinguished by the morphology of the valley-bottom. The valley-bottom in the *fluvial mountain land* was divided into: 1) *confined canyon*; 2) *semi-confined canyon*; and 3) *unconfined canyon. Lacustrine land*, all of which is valley-bottom, was divided into: 1) *lake bottom;* and 2) *delta.* The valley-bottom of *volcanic plateau land* was divided into: 1) *confined canyon;* 2) *semi-confined canyon;* and 3) *unconfined valley. Alpine glacial train* valley-bottom type was identified in *alpine glacial land*.

Target streams were further divided into states (i.e. condition classes). States were identified based on stream channel and floodplain morphology. Eight (8) major states were identified: 1) *stable;* 2) *unstable;* 3) *depositional;* 4) *scoured;* 5) *ponded;* 6) *channelized;* 7) *impounded;* and 8) *dredged. Stable, unstable, depositional and scoured* states were identified based on interpretation of the degree of equilibrium between erosion, transport and deposition of sediment. The *ponded* state is in response to beaver activity. Where one or both streambanks is confined by roads or other man-made features, the state is *channelized.* The lower Coeur d'Alene River is mostly *impounded,* with little apparent surface flow. The *dredged* state corresponds with valleys that have been overturned by dredge mining.

Valley-bottom landforms were mapped for selected streams in target subbasins. Landforms identified are: *channel, levee, floodplain, stream terrace, alluvial fan, lake basin, lake terrace* and *glacial moraine*. 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 floodplain.

Vegetation and miscellaneous types were mapped for the valley-bottom of selected streams in target subbasins. Thirteen (13) types were identified: 1) *water;* 2) *streambar;* 3) *wetland;* 4) *wet meadow;* 5) *dry meadow;* 6) *agricultural land;* 7) *riparian shrub;* 8) *cottonwood;* 9) *conifer;* 10) *urban/industrial;* 11) *tailing/dredge;* 12) *cut/fill;* and 13) *roads.*