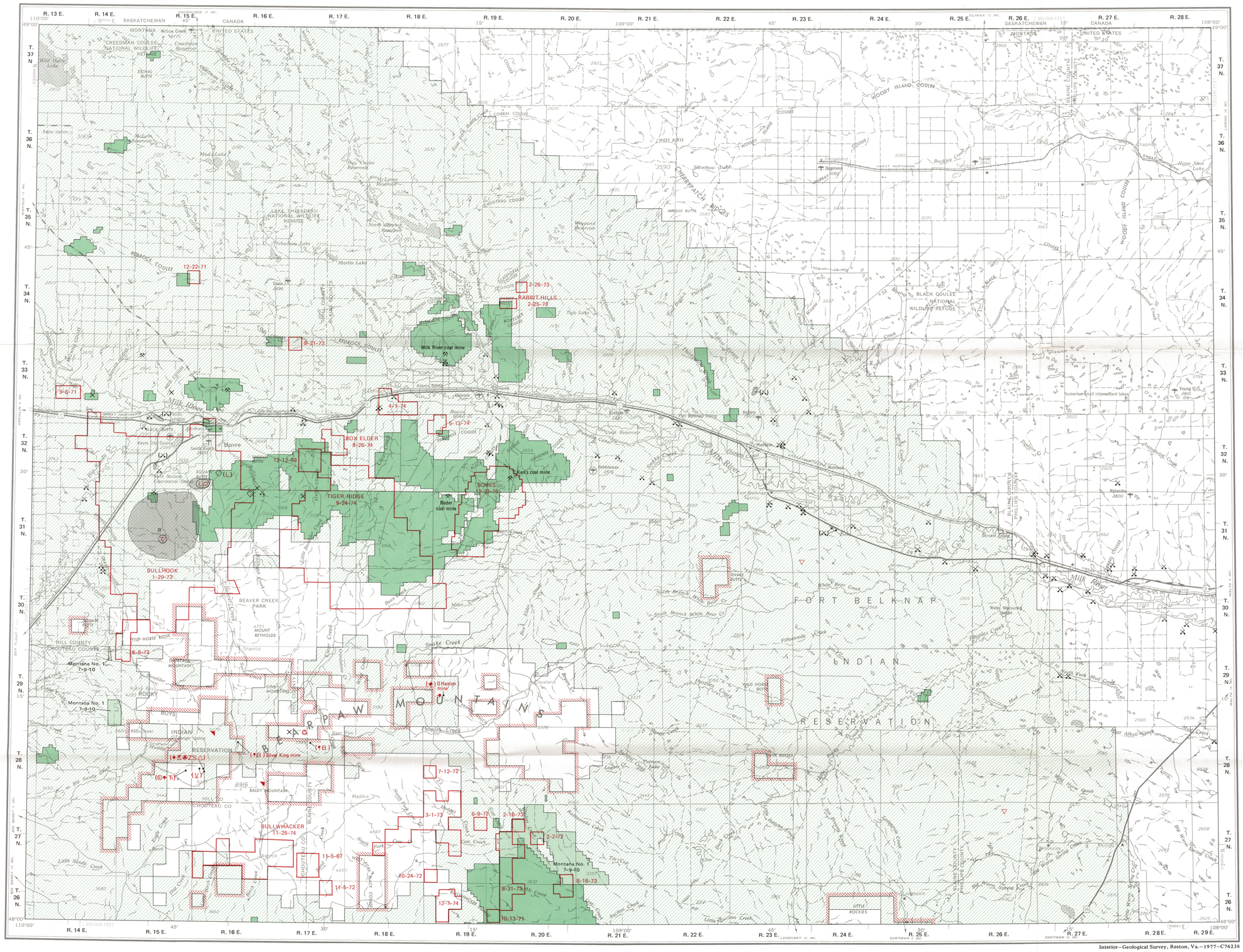
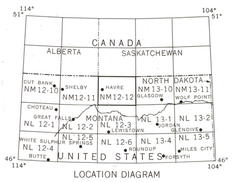
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I–1015



Base from U.S. Geological Survey, 1955-67
100,000-foot grid based on Montana coordinate system, north zone
10,000-meter Universal Transverse Mercator grid ticks, zone 12



LEASABLE MINERAL AND WATERPOWER LAND CLASSIFICATION MAP OF THE HAVRE 1° × 2° QUADRANGLE, MONTANA

Lands withdrawn, classified, and prospectively valuable for leasable minerals; occurrences of other selected minerals; and lands withdrawn or classified for waterpower and reservoir sites

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Data as of February 1, 1976

EXPLANATION

FOR MISCELLANEOUS INVESTIGATIONS MAPS I–1011–I–1018

Only the land classification categories present in the quadrangle are patterned or colored in the explanation and on the map; an asterisk (*) preceding a patterned classification category in the explanation indicates that the category includes all land in the quadrangle and so, to reduce clutter, the pattern is omitted from the map. Categories not patterned in the explanation are not present in the quadrangle. All withdrawn lands are prospectively valuable for the mineral for which they were withdrawn. Land classification applies only to public lands within category boundaries. Leasable minerals are coal, oil and gas, and oil shale; phosphates or phosphate rock; chlorides, sulfates, carbonates, borates, silicates, or nitrates of potassium and of sodium; sulfur in Louisiana and New Mexico; and native asphalt, solid and semisolid bitumen, and bituminous rock (including oil-impregnated rock or sands from which oil is recoverable only by special treatment after the deposit is mined or quarried). However, all minerals are leasable on Federal acquired lands and restricted allotted and tribal Indian lands. Leasable mineral outcrops are not shown. A symbol preceding a mineral name on the selected minerals list indicates that the mineral is present in the map area. Active mines are not differentiated from inactive mines, the size and grade of the mineral occurrence are not indicated, and names are given hereon for only a few of the mines.

MINERAL LAND CLASSIFICATION

WITHDRAWN LANDS
Showing withdrawal number and date (month-day-year)

- Coal
- Phosphate
- Oil shale

CLASSIFIED LANDS

- Coal
- Phosphate
- Oil shale
- Sodium

PROSPECTIVELY VALUABLE LANDS
Pattern on valuable side

- Asphaltic materials
- Coal
- Geothermal resources
- Oil and gas
- Oil shale
- Phosphate
- Potassium
- Sodium

KNOWN LEASING AREAS—Defined and undefined, showing name and effective date (month-day-year)
Note: Not all areas have been assigned names

- Known geologic structure of producing oil and gas field (KGS)
- Known geothermal resources area (KGRA)
- Known coal leasing area (KCLA)[1]
- Known oil shale leasing area
- Known phosphate leasing area
- Known potassium leasing area
- Known sodium leasing area

WATERPOWER LAND CLASSIFICATION

CLASSIFIED OR WITHDRAWN FOR WATERPOWER OR RESERVOIR SITES

DESCRIPTION OF MAP SYMBOLS

SELECTED MINERALS – Symbol shows location of mineral occurrence or mine to the nearest 40-acre tract; multiple occurrences of a mineral within a quarter section (160 acres; 64.75 hectares) are not differentiated from a single occurrence. For cartographic reasons, an occurrence may be shown by a black dot and a leader to the symbol in parentheses.

METALLICS

- Aluminum
- Antimony
- Arsenic
- Beryllium
- Bismuth
- Cadmium
- Cesium and rubidium
- Chromium
- Cobalt
- Columbium and tantalum
- Copper
- Germanium
- Gold
- Iron
- Lead
- Manganese
- Mercury
- Molybdenum
- Nickel
- Platinum group
- Rare earths
- Silver
- Selenium
- Tellurium
- Thorium
- Tin
- Titaniferous iron
- Titanium
- Tungsten
- Uranium
- Vanadium
- Zinc
- Zirconium and hafnium

NONMETALLICS

- Abrasives
- Alunite
- Asbestos
- B Barite
- Bentonite
- Borates
- Bromine
- Brucite
- Calcite, optical
- Calcium chloride
- Carbon dioxide
- Clay, refractory
- Diatomite
- Dumortierite
- Feldspar
- Fluorspar
- Fuller's earth
- Gem and ornamental stones
- Graphite
- Gypsum
- Helium
- Iodine
- Kaolin
- Kyanite group
- L Limestone
- Lithium minerals
- Magnesite
- Magnesium sulfate
- Meerschaum
- Mica
- Mineral pigments
- Nephelite
- Olivine
- Quartz
- Serpentine
- Silica sand
- Strontium minerals
- S Sulfur
- Talc, soapstone
- V Vermiculite
- Volcanic ash, pumice, perlite
- Wollastonite

SYMBOL COMBINATIONS – Certain symbols (such as silver, lead, and zinc, or uranium and vanadium) are combined into a single symbol to show several minerals at the same locality, as illustrated in the three examples below. Where cartographic reasons dictate or where individual symbols cannot be combined into a single symbol, occurrence of several minerals at the same locality is shown by a black dot at the locality and a leader to the composite symbol or series of symbols in parentheses.

- Copper, gold, lead, zinc
- Chromium, cobalt, nickel
- Uranium and vanadium
- Beryllium, tungsten, and feldspar at same location

MINE OR PROSPECT WHERE LOCATABLE MINERAL IS KNOWN – Mine or prospect is shown by a red symbol at the location or by a black dot at the location and a leader to the symbol or symbols in parentheses. Mine name shown in red.

- Carlile mine – Uranium mine at location of symbol
- (F) Eureka mine – Gold, silver, lead, zinc, and fluorspar mine at location of dot

WIDESPREAD MINERAL OCCURRENCES – Gray pattern indicates area of numerous or widespread occurrences of one or more minerals, identified by a red symbol circled in black. An occurrence of another mineral or minerals within such an area is shown by a red symbol at the locality or by a black dot at the locality and a leader to the symbol or symbols in parentheses. Dotted lines indicate where one widespread area of mineral occurrence overlaps another.

OTHER SYMBOLS

- Leasable mineral mine
- Gravel or sand pit
- Mine or prospect where mineral is not known
- Quarry
- Pit (bentonite or clay)

[1] Areas previously designated as Known Coal Leasing Areas (KCLA's) are now designated for coal leasing as Known Recoverable Coal Resource Areas (KRCRA's) (Federal Register, v. 41, no. 189, p. 42684, Sept. 28, 1976)

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