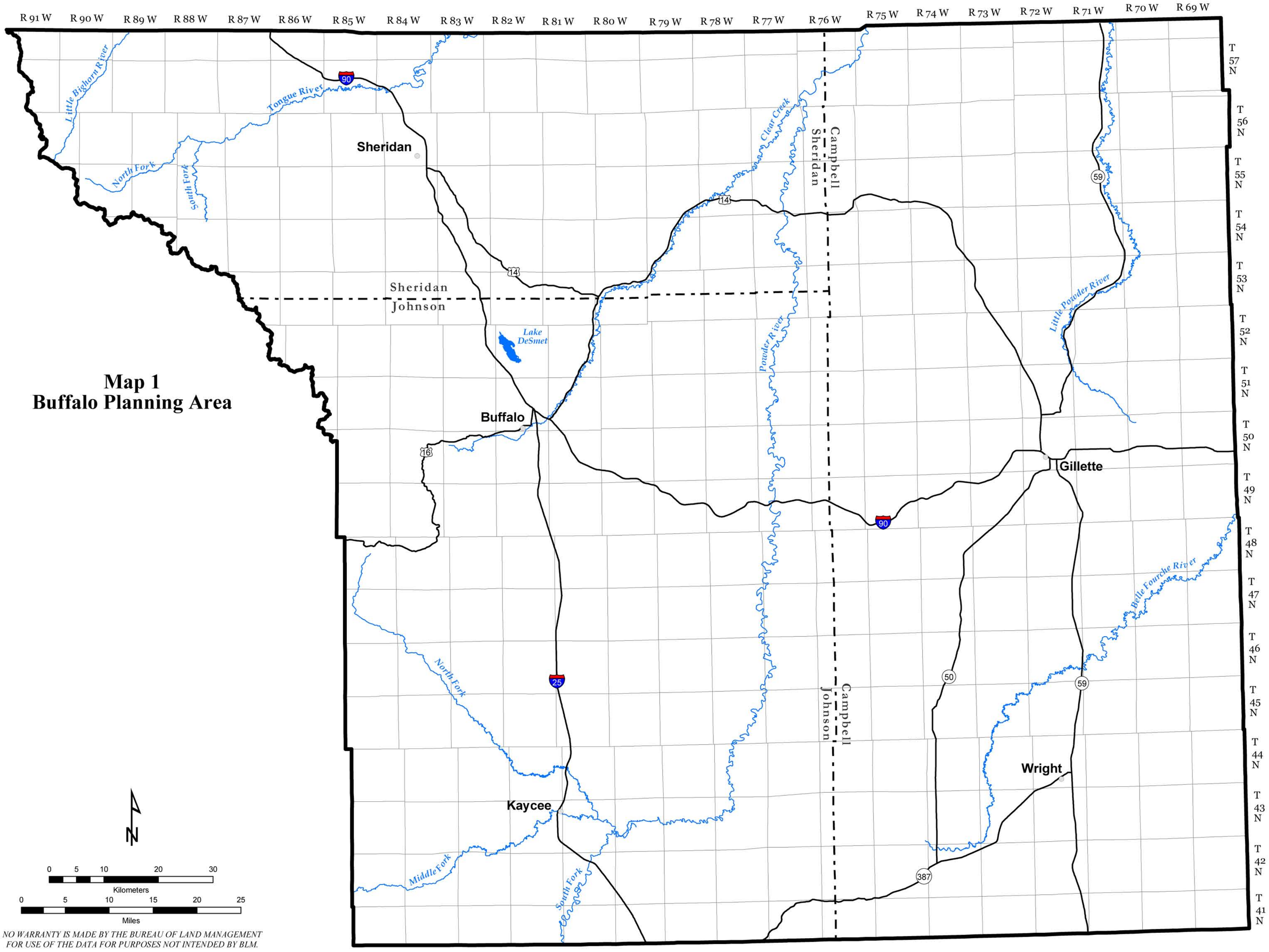
Final Buffalo Mineral Occurrence and Development Potential Report

Appendix A

Maps

Unless otherwise noted, the map data in Appendix A come from internal Bureau of Land Management geographic information system data.



Map 1
Buffalo Planning Area

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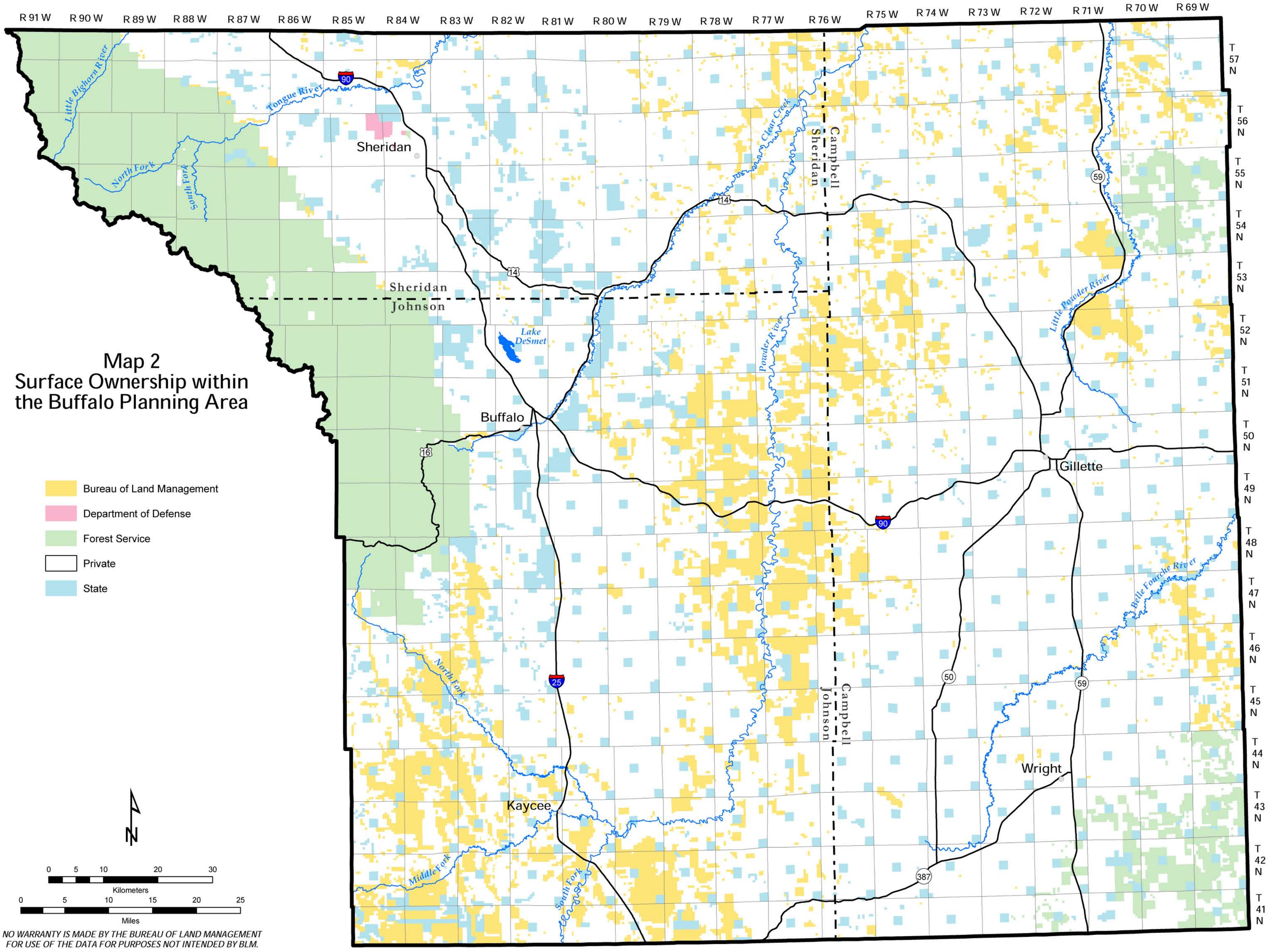

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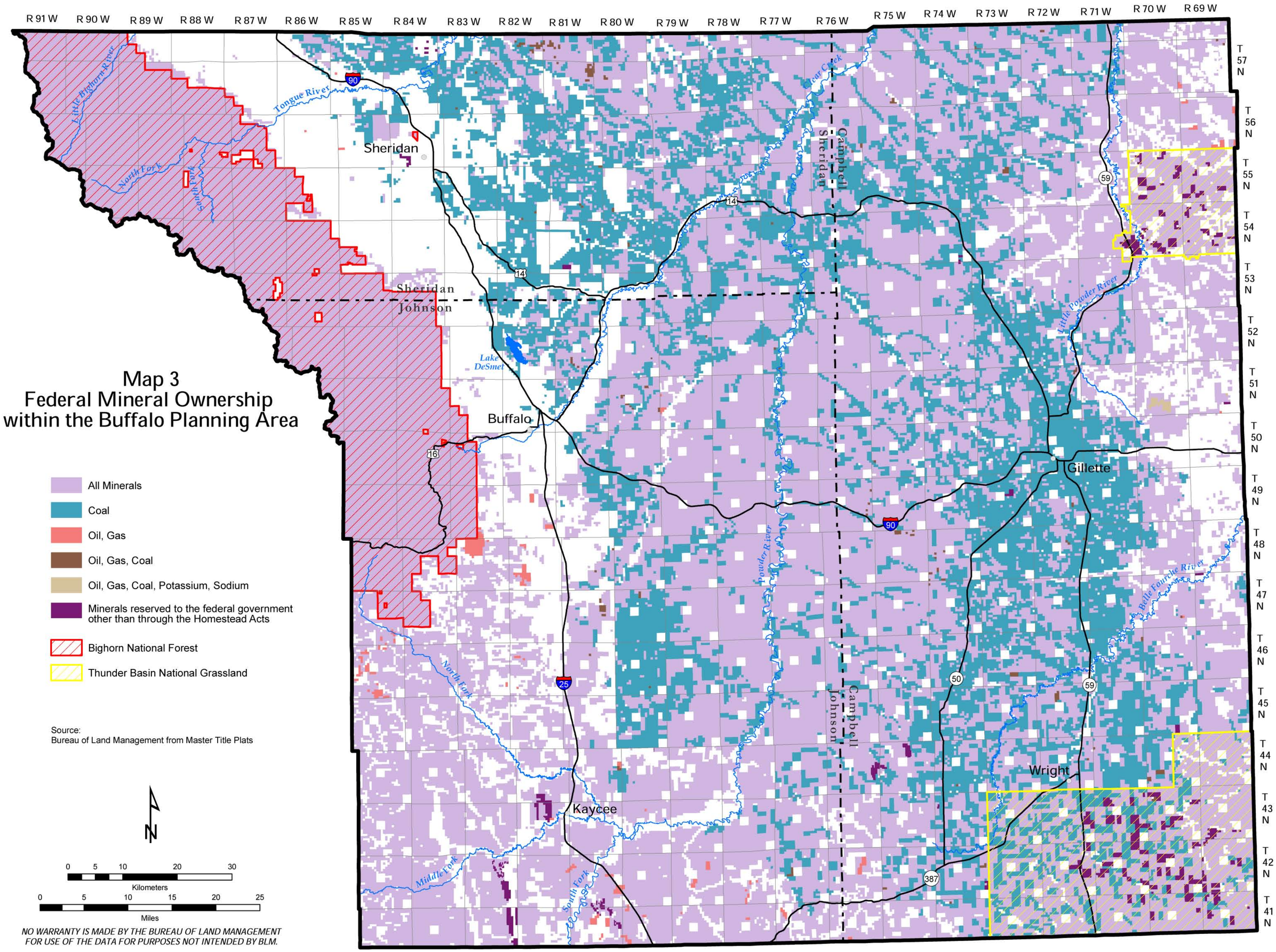

Map 3
Federal Mineral Ownership within the Buffalo Planning Area

- All Minerals
- Coal
- Oil, Gas
- Oil, Gas, Coal
- Oil, Gas, Coal, Potassium, Sodium
- Minerals reserved to the federal government other than through the Homestead Acts
- Bighorn National Forest
- Thunder Basin National Grassland

Source:
Bureau of Land Management from Master Title Plats

N

0 5 10 20 30
Kilometers

0 5 10 15 20 25
Miles

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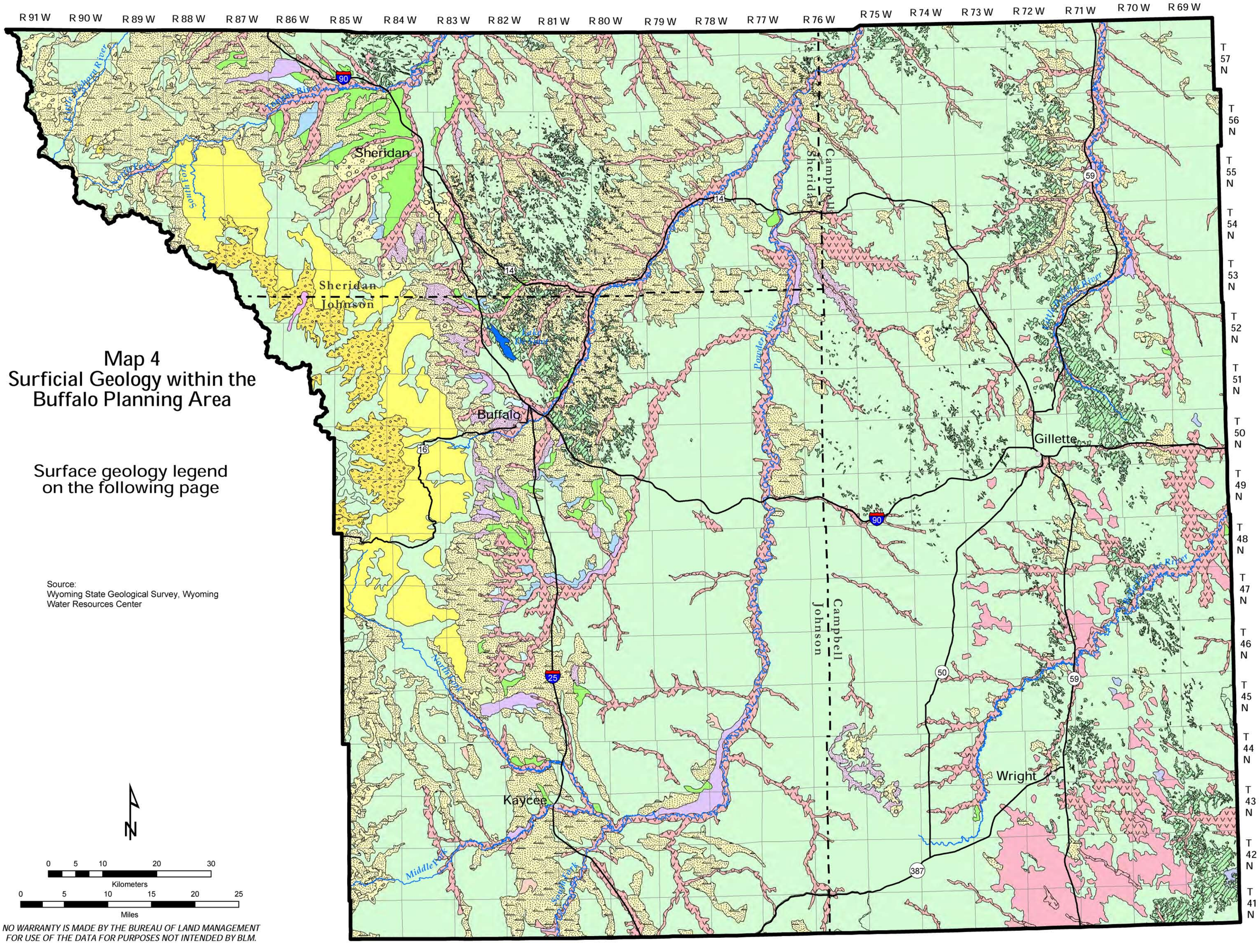

Map 4
Surficial Geology within the Buffalo Planning Area

Surface geology legend on the following page

Source:
Wyoming State Geological Survey, Wyoming Water Resources Center

N

0 5 10 20 30
Kilometers

0 5 10 15 20 25
Miles

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Alluvial/Colluvium Deposits

- Alluvium with scattered deposits of terrace, slopewash, eolian, residuum, grus and glacial
- Alluvial fan and gradational fan deposits mixed with scattered deposits of slopewash, residuum, and eolian
- Dissected alluvial fan and gradational fan deposits mixed with scattered deposits of slopewash and residuum
- Slopewash and colluvium mixed with scattered deposits of slopewash, residuum, grus, glacial, periglacial, alluvium, eolian, and/or bedrock outcrops

Bench

- Bench including eolian, slopewash, outwash,and bench and/or mesa
- Dissected bench with scattered deposits of residuum, slopewash, landslide, and eolian
- Glacial deposits mixed with scattered deposits of slopewash, residuum, grus, alluvium, colluvium, landslide, and/or bedrock

Glacial Deposits

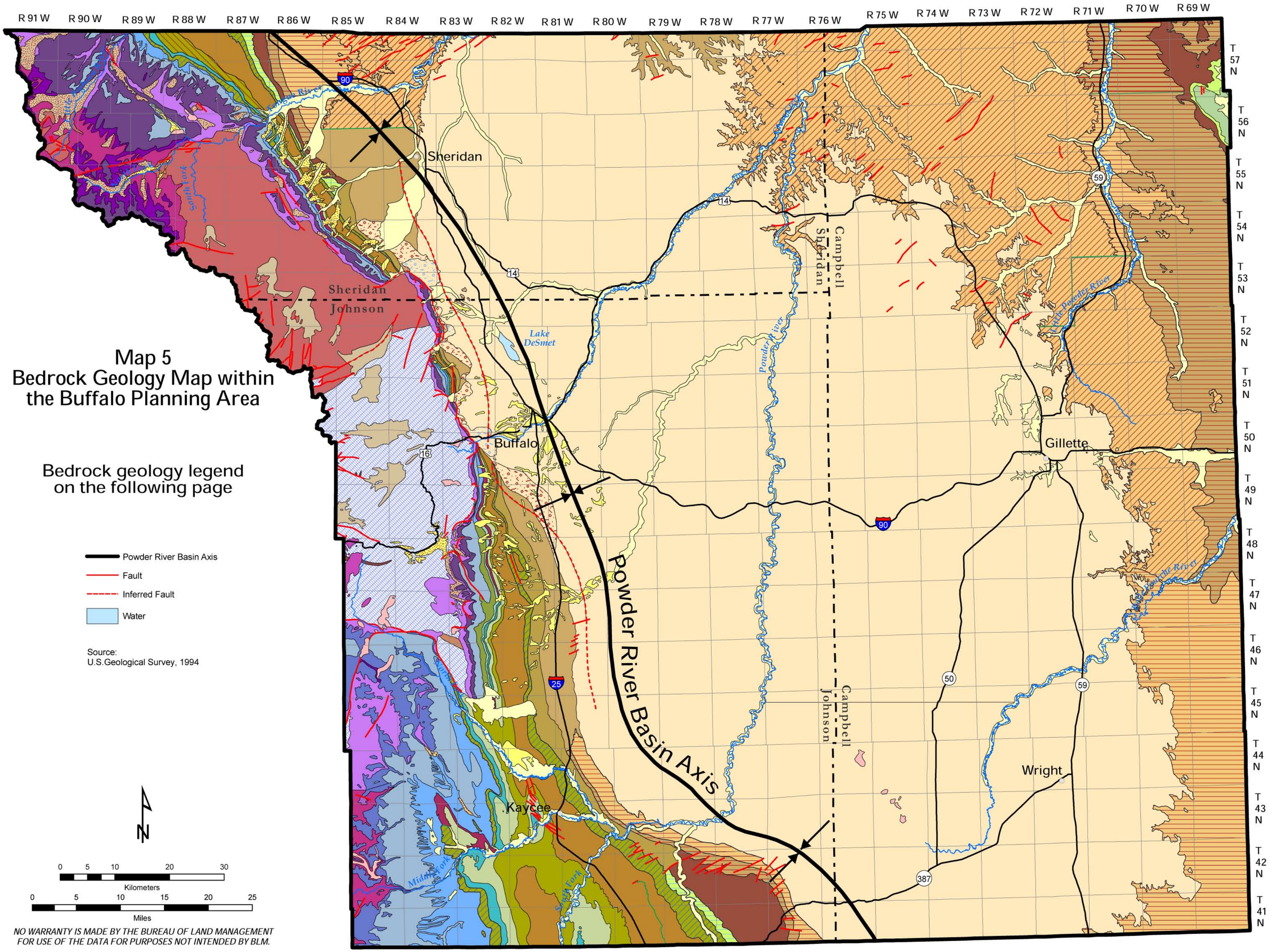
- Glacial outwash and alluvium mixed with scattered deposits of glacial, terrace, hot spring, bedrock outcrops, residuum, slopewash and grus

Terrace Deposits

- Terrace deposits mixed with scattered deposits of alluvium, residuum, eolian, slopewash, and outwash
- Shallow terrace deposits mixed with scattered deposits of eolian and residuum
- Dissected terrace deposits mixing with alluvium, residuum, eolian, and slopewash

Miscellaneous

- Clinker mixed with scattered deposits of residuum, slopewash, alluvium and/or bedrock outcrops
- Eolian mixed with scattered deposits of residuum, alluvium, and slopewash
- Grus mixed with alluvium, eolian, slopewash, grus, and/or bedrock outcrops
- Landslide mixed with scattered deposits of slopewash, residuum, Tertiary landslides, bedrock outcrops, and landslides too small and numerous to show separately
- Oligocene outcrops of the White River Formation
- Playa deposits mixed with scattered deposits of alluvium, eolian, and playa deposits too small to show separately
- Residuum mixed with alluvium, eolian, slopewash, grus, and/or bedrock outcrops
- Water



Map 5
Bedrock Geology Map within the Buffalo Planning Area

Bedrock geology legend on the following page

- Powder River Basin Axis
- Fault
- Inferred Fault
- Water

Source:
U.S.Geological Survey, 1994

N

0 5 10 20 30
Kilometers

0 5 10 15 20 25
Miles

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Quaternary:

- Alluvium and Colluvium
- Glacial Deposits
- Landslide Deposits
- Gravel, Pediment, and Fan Deposits
- Undivided Surficial Deposits
- Terrace Gravel (Pleistocene and/or Pliocene)

Cenozoic: Miocene

- Lower Miocene rocks, Bighorn Mountains

Cenozoic: Tertiary - Eocene - Oligocene

- White River Formation
- Wasatch Formation: Kingsbury Conglomerate Member
- Wasatch Formation: Main Body
- Wasatch Formation: Moncrief Member

Cenozoic: Tertiary - Paleocene

- Fort Union Formation
- Fort Union Formation: Tongue River and Lebo Members
- Fort Union Formation: Lebo Members
- Fort Union Formation: Lebo and Tullock Members
- Fort Union Formation: Tullock Member

Mesozoic: Cretaceous

- Lance Formation
- Lance Formation, Fox Hills Sandstone, Meteetse Formation, and Bearpaw and Lewis Shales
- Fox Hills Sandstone
- Fox Hills Sandstone, Bearpaw and Lewis Shale
- Mesaverde Group
- Pierre Shale
- Cody Shale

Mesozoic: Cretaceous Cont.

- Frontier Formation
- Frontier Formation and Mowry and Thermopolis Shales
- Mowry and Thermopolis Shales

Mesozoic: Jurassic

- Cloverly and Morrison formations
- Cloverly, Morrison, and Sundance Formations
- Cloverly, Morrison, Sundance and Gypsum Spring Formations
- Sundance and Gypsum Spring Formations

Mesozoic: Permian - Triassic

- Chugwater Formation or Group
- Chugwater and Goose Egg Formations
- Goose Egg Formation

Paleozoic: Pennsylvanian

- Tensleep Sandstone and Amsden Formations

Paleozoic: Mississippian

- Madison Limestone Group
- Madison Limestone and Darby Formation

Paleozoic: Ordovician

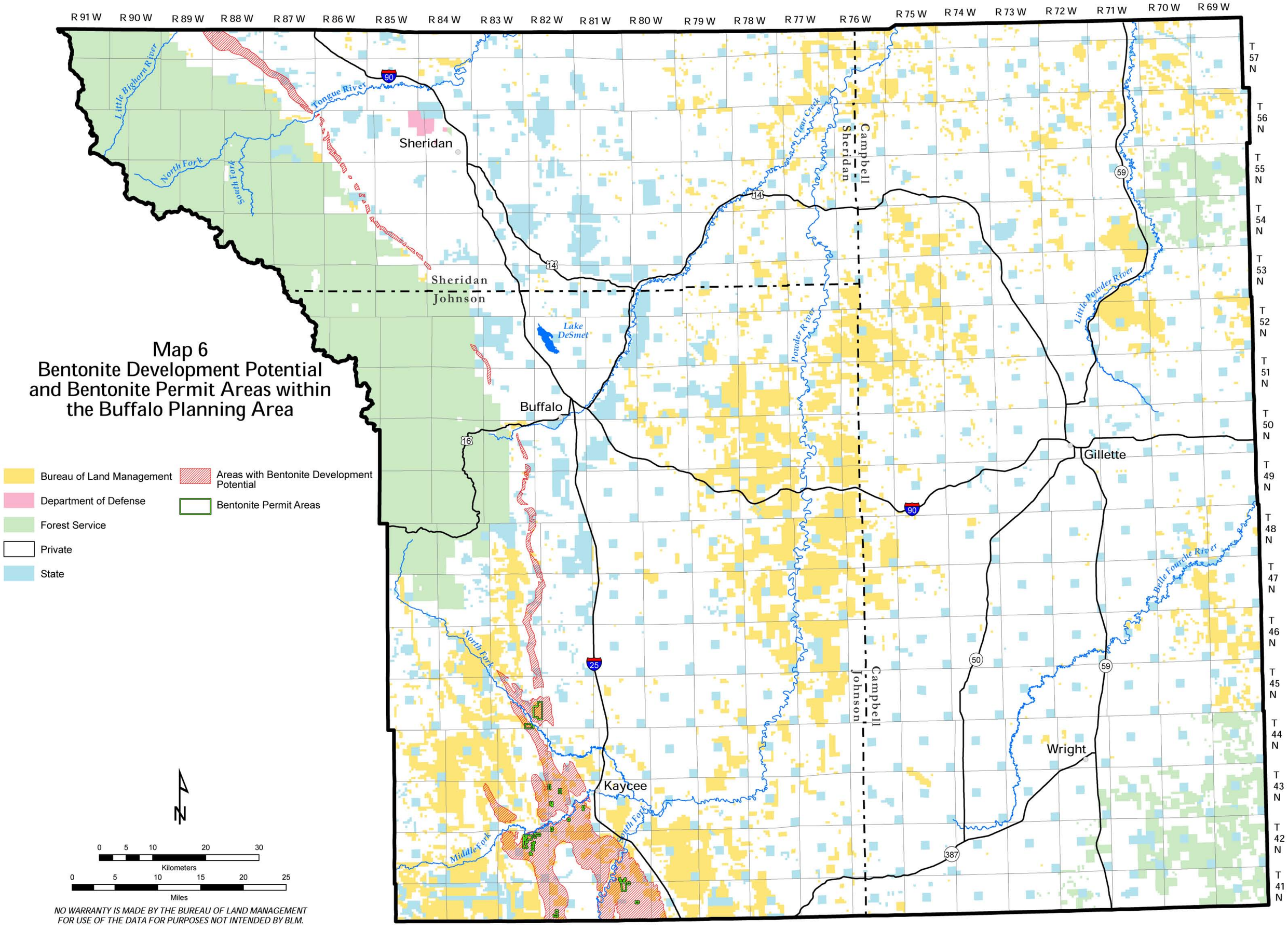
- Madison Limestone and Bighorn Dolomite
- Bighorn Dolomite

Paleozoic: Cambrian

- Bighorn Dolomite, Gallatin Limestone, Gros Ventre Formation, and Flathead Sandstone
- Gallatin Limestone, Gros Ventre Formation and Equivalents, and Flathead Sandstone

Pre-Cambrian:

- Plutonic Rocks
- Oldest Gneiss Complex
- Metamorphosed Mafic and Ultramafic Rocks
- Metasedimentary and Metavolcanic Rocks


Map 6
Bentonite Development Potential
and Bentonite Permit Areas within
the Buffalo Planning Area
Bureau of Land Management
Department of Defense
Forest Service
Private
State
Areas with Bentonite Development Potential
Bentonite Permit Areas
R 91 W
R 90 W
R 89 W
R 88 W
R 87 W
R 86 W
R 85 W
R 84 W
R 83 W
R 82 W
R 81 W
R 80 W
R 79 W
R 78 W
R 77 W
R 76 W
R 75 W
R 74 W
R 73 W
R 72 W
R 71 W
R 70 W
R 69 W
T 57 N
T 56 N
T 55 N
T 54 N
T 53 N
T 52 N
T 51 N
T 50 N
T 49 N
T 48 N
T 47 N
T 46 N
T 45 N
T 44 N
T 43 N
T 42 N
T 41 N
Little Bighorn River
Tongue River
North Fork
South Fork
Sheridan
Sheridan
Johnson
Lake DeSmet
Buffalo
Clear Creek
Campbell
Sheridan
Powder River
Little Powder River
Gillette
Belle Fourche River
Campbell
Johnson
Wright
Kaycee
North Fork
Middle Fork
South Fork
90
14
16
25
59
50
387
N
0 5 10 20 30
Kilometers
0 5 10 15 20 25
Miles
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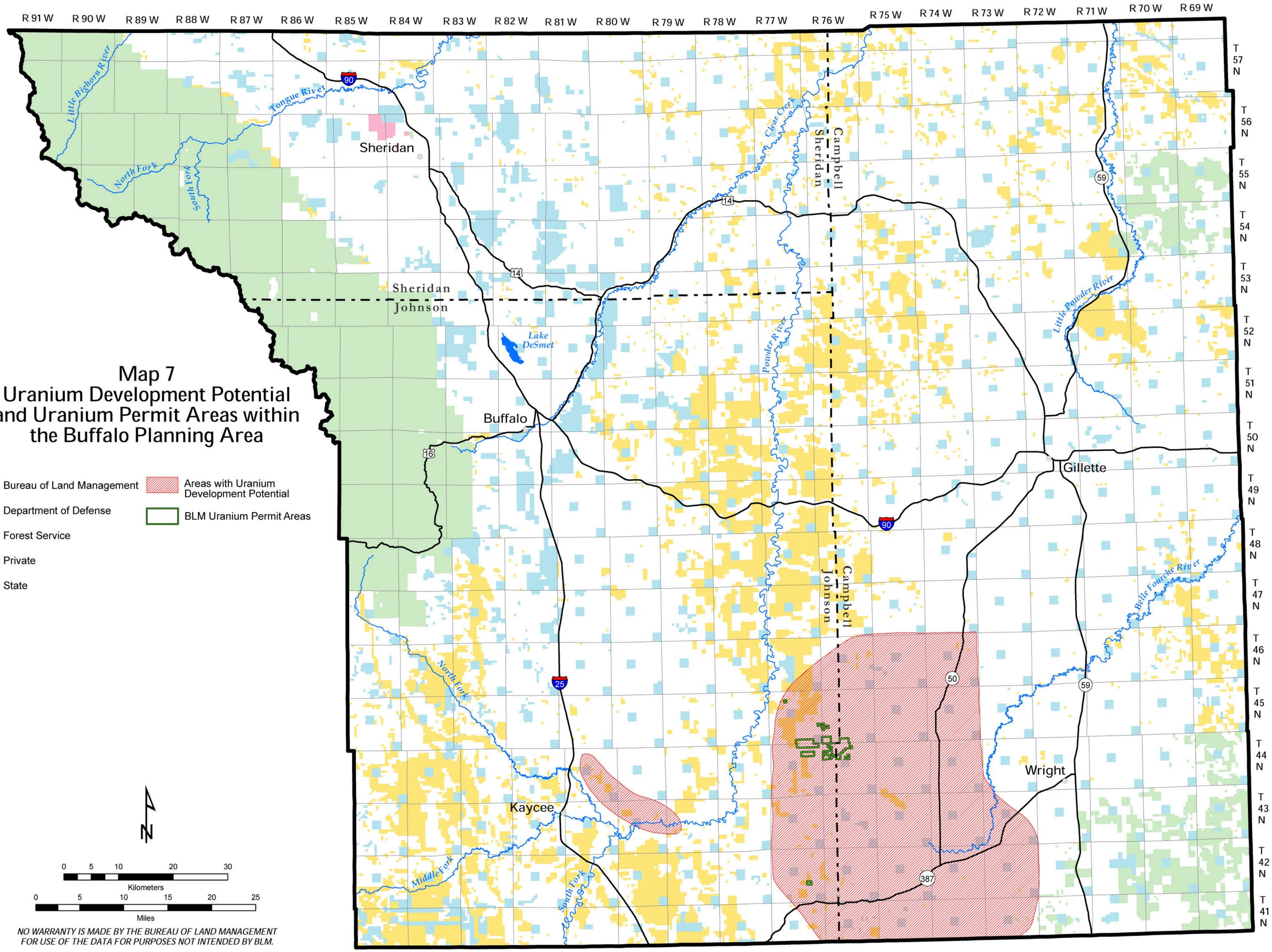

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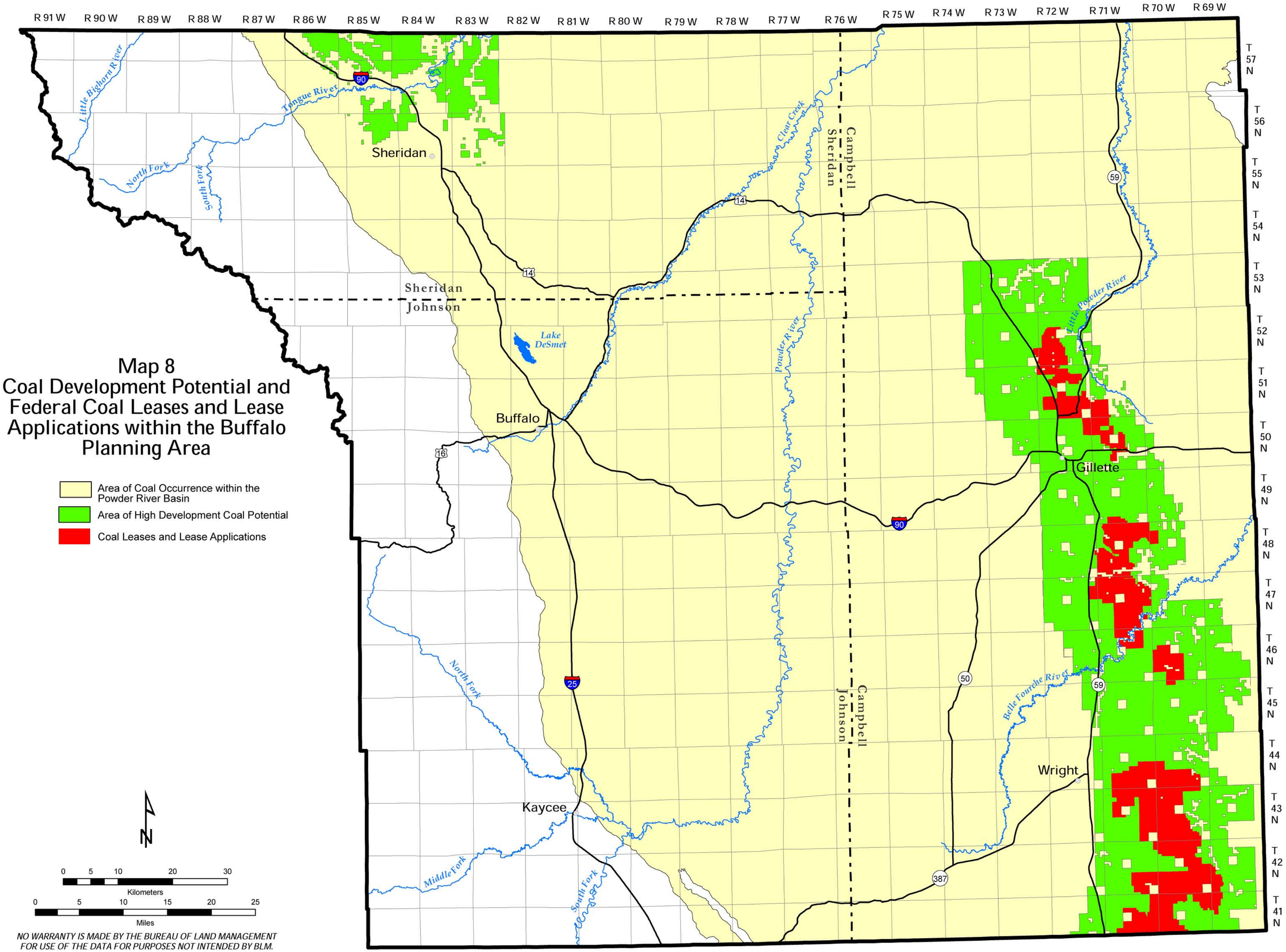

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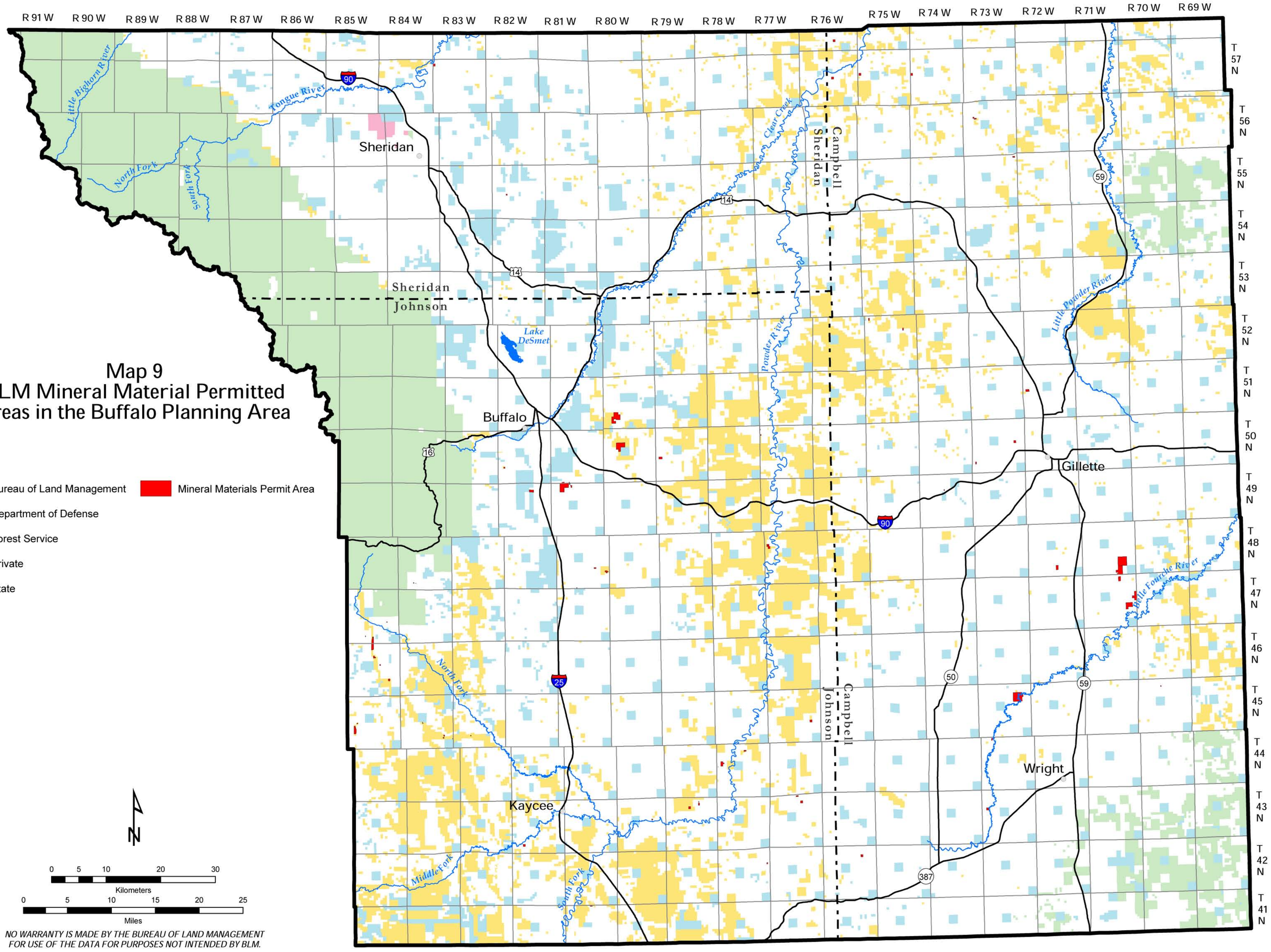

Map 9
BLM Mineral Material Permitted Areas in the Buffalo Planning Area

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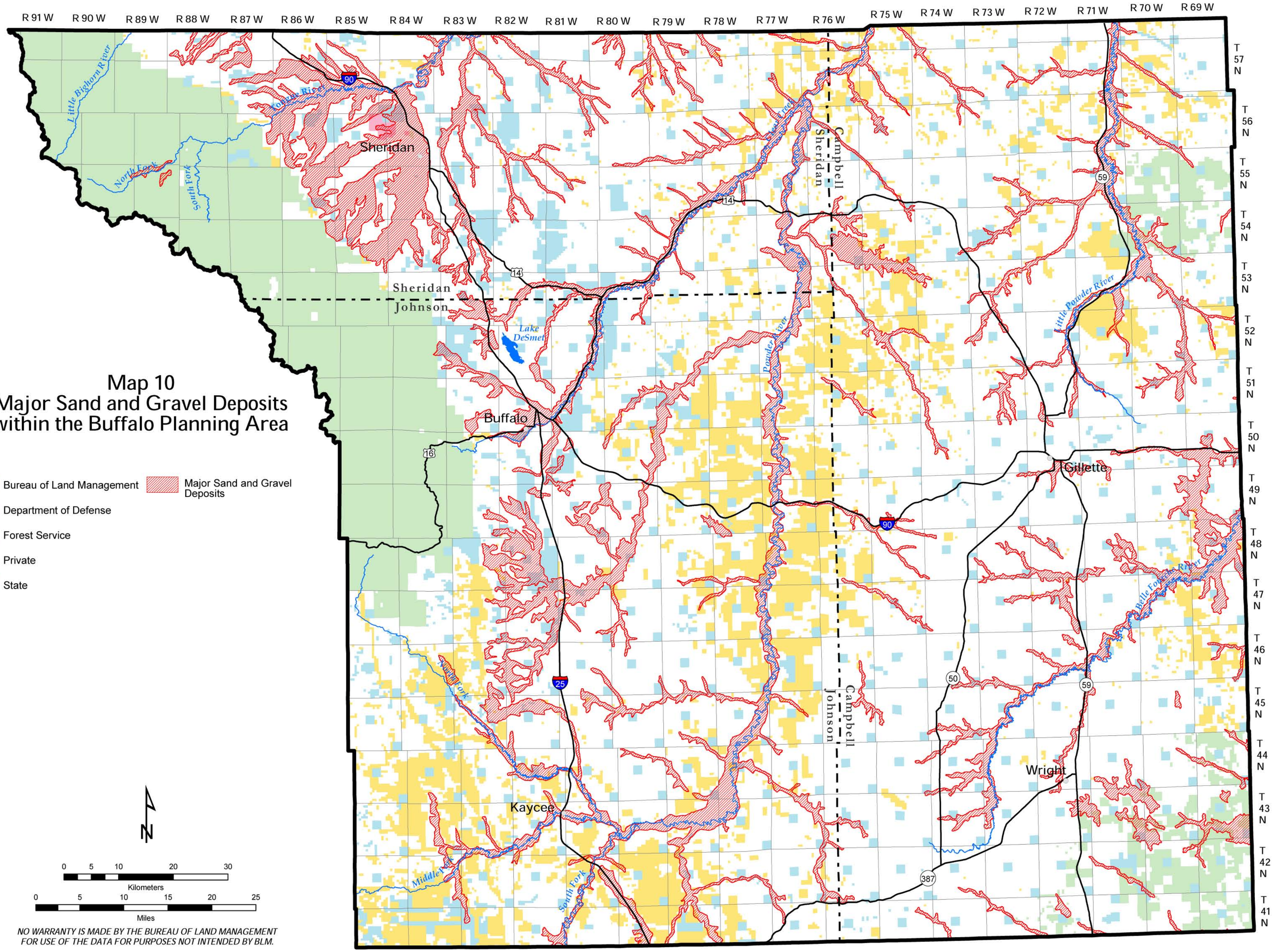

Map 10
Major Sand and Gravel Deposits within the Buffalo Planning Area

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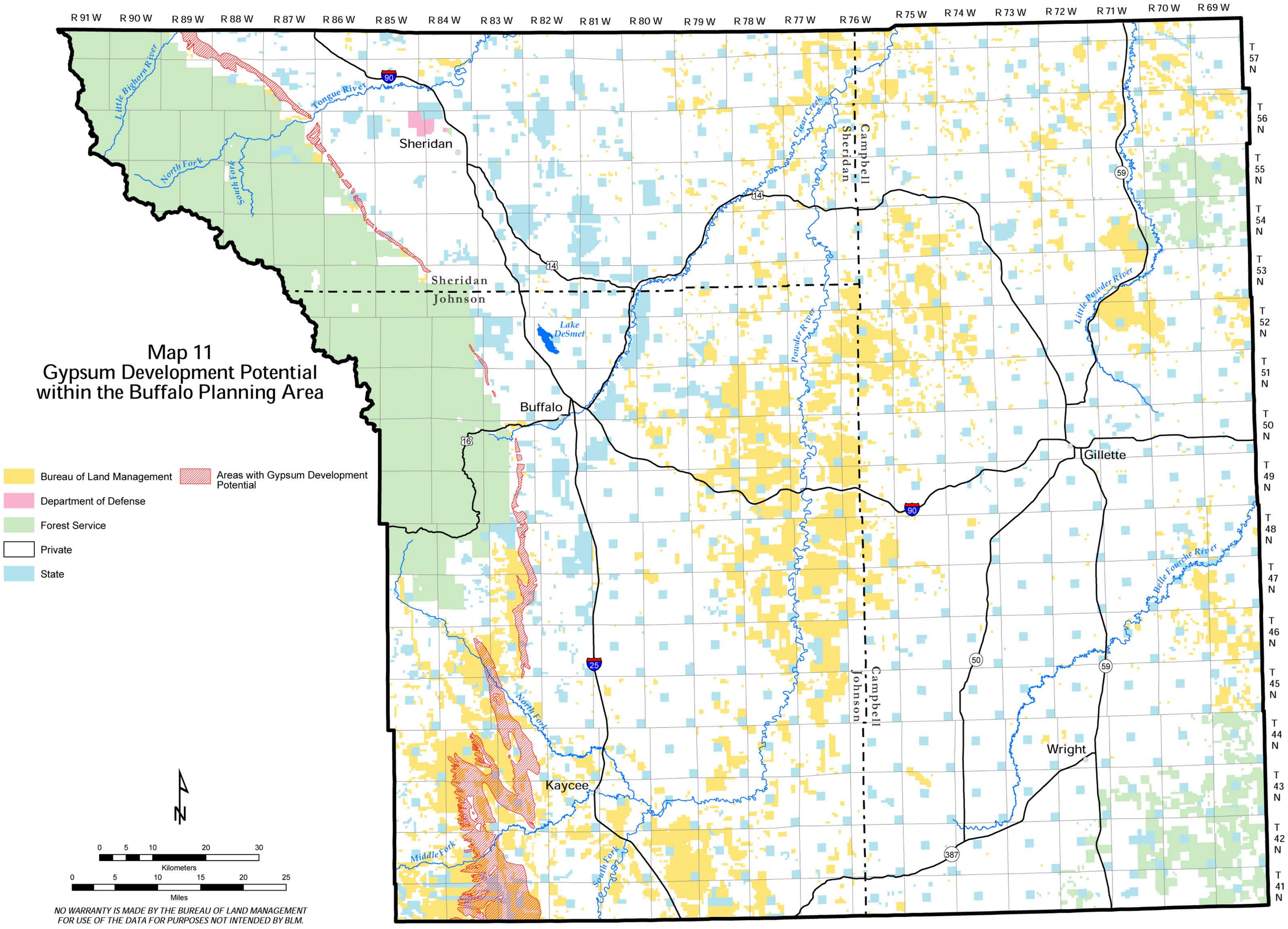
Map 11
Gypsum Development Potential
within the Buffalo Planning Area
Bureau of Land Management
Department of Defense
Forest Service
Private
State
Areas with Gypsum Development Potential
Sheridan
Buffalo
Gillette
Kaycee
Wright
Lake DeSmet
Sheridan
Johnson
Campbell
Sheridan
Campbell
Johnson
Little Bighorn River
Tongue River
North Fork
South Fork
Clear Creek
Powder River
Little Powder River
Belle Fourche River
Middle Fork
R 91 W
R 90 W
R 89 W
R 88 W
R 87 W
R 86 W
R 85 W
R 84 W
R 83 W
R 82 W
R 81 W
R 80 W
R 79 W
R 78 W
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R 74 W
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0 5 10 20 30
Kilometers
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Miles
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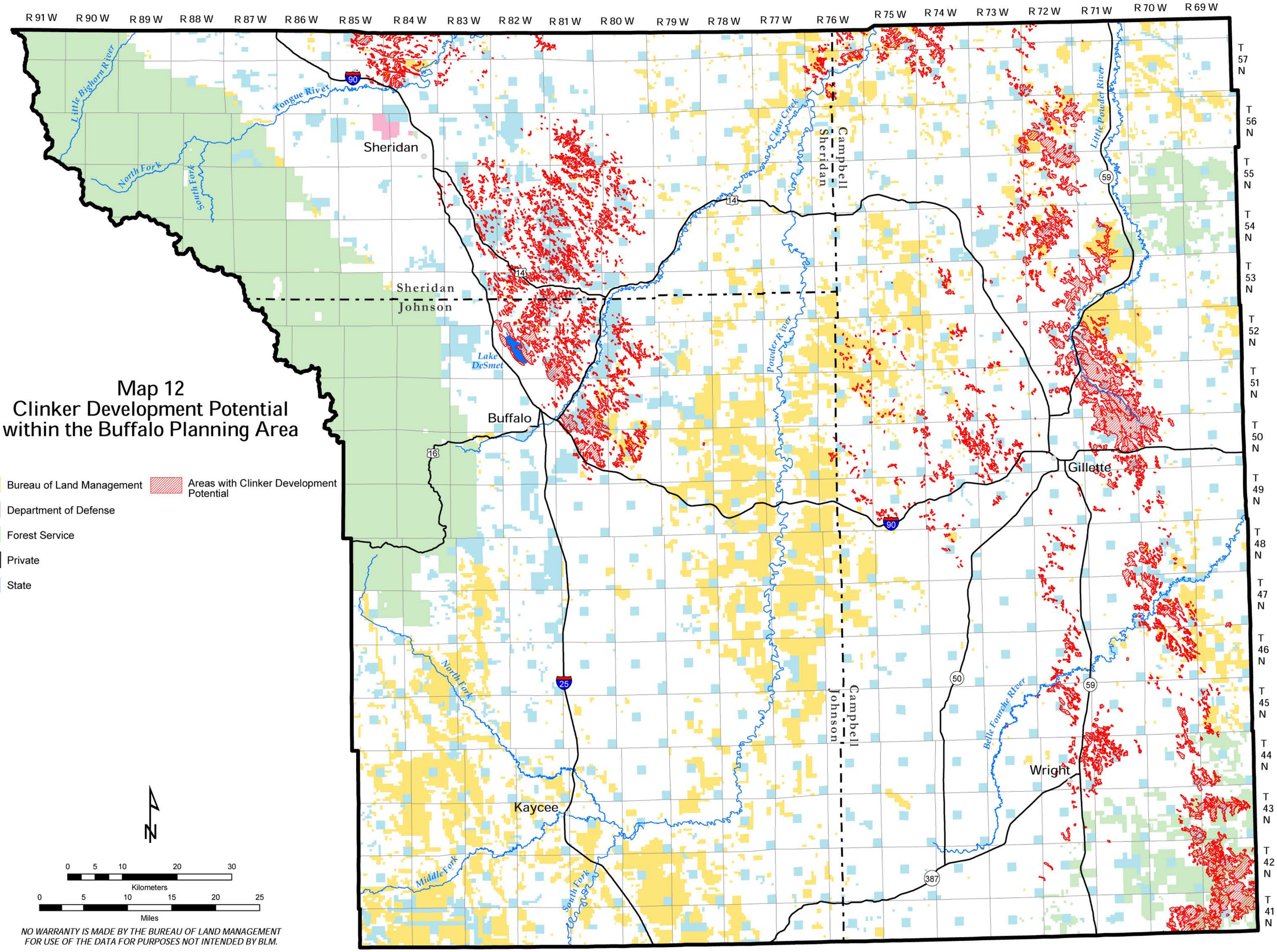

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