



**Databases and Simplified Geology
for Mineralized Areas, Claims, Mines and Prospects in Wyoming**

Part A: Data Files and Formats

Part B: Figures and Maps

Part C: Metadata

by Anna B. Wilson¹, Terry L. Klein¹, and William D. Heran¹

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U.S. GEOLOGICAL SURVEY

¹ U.S. Geological Survey, Denver, Colorado

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FILES ON CD-ROM

Root Directory:

Introduction (text)	WY_text.wpd and .pdf
Information sources listed in MRDS mine and prospect database	WY_refs.wpd and .pdf
ArcExplorer instructions	ArcExplorer.pdf
ArcExplorer (Program installation file)	ae2setup.exe
Geology ArcExplorer project file	WY_geol.aep
Mines and prospects ArcExplorer project file	WY_mines.aep

Part A:

Data Files and Formats

Mine and Prospect Database	WY_MRDS.xls
MAS/MILS database	WY_MAS.xls
MapInfo (.tab, .dat, .id, .map, and ind. [if applicable] files and .wor workspaces) AND ArcView (.shp, .shx, .dbf files and .apr projects)	
MRDS Mines and prospects	WY_MRDS1 and WY_MRDS2
MAS/MILS Mines and prospects	WY_MAS
Mineralized areas	WY_mnarea
County boundaries	WY_county
250k Quadrangles	WY_250k
100k Quadrangles	WY_100k
24k Quadrangles	WY_024k
Claim density	WY_claims
Public Lands Survey System	WY_PLSS
Land Ownership	WY_lndown
Highways	WY_hwys
Towns	WY_town
National Parks and Recreation Areas	WY_nparks
Wyoming state	WY_state
Geology	
Water bodies	H2O
Quaternary unconsolidated sediments	Q
Quaternary intrusive rocks, basalt, rhyolite	QrQbQi
Quaternary to Tertiary sedimentary and volcanoclastic rocks	QT
Tertiary Sedimentary Rocks	Tsed
Tertiary Volcanic Rocks	Tvolc
Tertiary Plutonic Rocks	Tplut
Mesozoic and Paleozoic sedimentary rocks	MzPz
Precambrian metamorphic rocks	pCmet
Precambrian plutonic rocks	pCplut

Part B. Illustrations (.pdf)

Adobe Acrobat Reader (installation file to read .pdf files) ar505enu.exe

PDF (Figures 1-8, all in .pdf format)

Figure 1. Wyoming index map	WY_index
Figure 2. Mineralized areas	WY_mnarea
Figure 3. Distribution of metallic minerals	WY_metdep
Figure 4. Land ownership	WY_lndown
Figure 5. Simplified geologic map	WY_geol
Figure 6. Claim activity map	WY_minclm
Figure 7. Distribution of mineral deposits	WY_allmin
Figure 8. Placer claims and deposits	WY_placer

Part C: Metadata (all are ASCII text files, .txt)

Geology	WY_geol
Mineralized areas	WY_mnarea
MRDS data	WY_MRDS
MAS/MILS data	WY_MAS
County boundaries	WY_county
250,000 Quadrangles	WY_250k
100,000 Quadrangles	WY_100k
24,000 Quadrangles	WY_024k
Claims	WY_claims
State outline	WY_state
Public Lands Survey System	WY_PLSS
Land Ownership	WY_lndown

Files in Report

WY_MRDS1

WY_MRDS2

WY_MAS

WY_250k

WY_100k

WY_024k

WY_state

WY_county

WY_mnarea

WY_town

WY_hwys

WY_nparks

WY_claims

WY_PLSS

WY_lndown

GEOLOGY

H2O

Q

QrQbQi

QT

Tsed

Tvolc

Tplut

MzPz

pCmet

pCplut

INTRODUCTION

This data release contains mineral resource data for metallic and nonmetallic mineral sites in the State of Wyoming. Along with resource data is additional data, such as mineralized areas and mining districts; mine, prospect and commodity information; claim density by section; county boundaries; quadrangles; and simplified geology. All the data are provided in both spreadsheet format (Microsoft Excel) and in formats for two commonly used Geographic Information Systems (GIS) software packages (MapInfo and ESRI's ArcView). Not only does GIS software allow the data to be shown as layers in "map" views that can be displayed with various geographic and geologic data, but the data can be queried and analyzed relative to data in any of the layers. Free shareware, ArcExplorer, is provided with this report so users may display the data in "map" views and query the various datasets (Appendix A) without requiring a GIS program such as Arc/Info¹, ArcView¹, or MapInfo2¹.

Explanatory material is in the Introduction (and root directory on the CD). Part A includes all the data files with subdirectories for ArcView and MapInfo. Part B contains illustrations as .pdf maps (an installation file for Adobe Acrobat Reader for viewing the .pdf files is on the CD). Part C contains metadata, explanatory details on the structure and content of each data file.

MINE AND PROSPECT DATA

Mineral resource data for metallic and nonmetallic mineral sites in the State of Wyoming were initially extracted from the Mineral Resources Data System (MRDS) and the Minerals Availability System/Mineral Industry Location System (MAS/MILS) (McFaul and others, 2000; U.S. Geological Survey, 2001). For this report, many of the existing MRDS records for Wyoming were corrected, approximately 540 new records were added, and approximately 60 outdated, incorrect, or duplicate records were deleted. Many corrections and new records in the Medicine Bow National Forest (Laramie Range, Medicine Bow and Sierra Madre Mountain Ranges) were provided by the Wyoming State Geological Survey (WSGS) under contract to the

¹ Registered trademark of ESRI

² Registered trademark of MapInfo Corporation

USGS during 1999. This report uses the modified and revised WY_MRDS database. The changes have not yet been incorporated into the USGS's active MRDS database.

The U.S. Geological Survey (USGS) has two large worldwide mineral resource databases, MRDS and MAS/MILS (McFaul and others, 2000; U.S. Geological Survey, 2001). MRDS was constructed by the USGS and MAS/MILS was built by the U.S. Bureau of Mines (USBM). After the Bureau of Mines was abolished in 1996, custody of MAS/MILS was transferred to the USGS. The databases were originally compiled for different purposes and contain different information, although some information is common to both. MAS/MILS includes records for geothermal, coal, ash, nitrogen, oil, and sand and gravel, none of which are normally included in the MRDS database. The MRDS database is primarily descriptive and contains historical data about mineral deposit sites, including mines, prospects, and occurrences, deposit description, geologic characteristics, production, reserves, potential resources, and references. Most of the additions and corrections to the MRDS database in this report are limited to location information, commodities, geologic data, and deposit types. MAS/MILS contains less geologic information but more information regarding extraction and processing operations. Corrupted commodity information from McFaul and others (2000) has been revised in this report.

In each database, records are identified by a unique alphanumeric code and describe a site. A "site" may be a single mine, block of claims, group of mines or workings, mining district, or even a region. Each record contains the location (usually by latitude and longitude), name of the deposit, information about the mineral deposit, and commodities present. Locations for nearly all of the metallic mineral deposits in the MRDS database were verified by plotting locations given in the original references on 1:24,000 scale USGS topographic maps or digital raster graphics images, and digitizing them. Some of the location data was from unpublished field observations from the WSGS and USGS (Terry Klein, unpublished field notes). Some locations were established by Global Positioning System (GPS) data taken directly at mine sites. The source of location data is listed in the LOCATIONCOM field for each MRDS record. All the data from both databases were imported into GIS (MapInfo) and the locations of nearly 3 dozen mislocated deposits were adjusted so that they would plot in Wyoming. In addition, the locations of a large number of deposits were adjusted to plot within the correct county.

Corrupted data in the commodities columns discovered in the McFaul and others data (2000), have been replaced with data extracted from the archived MAS/MILS database (USGS, 2001).

No attempt has been made to coordinate or reconcile the difference between the locations in the MRDS and MAS/MILS databases. In general, the MRDS location records the approximate center of the deposit, whereas the MAS/MILS location is often the main access to the deposit. In some cases the two locations can be many miles apart. This version of the MRDS data does not contain a corresponding MAS/MILS record number although we were able to assign a corresponding MRDS record number to some MAS/MILS records. Where MRDS and MAS/MILS records clearly correlate, the locations were adjusted to plot at the same point.

MRDS data structure

The original MRDS database contains 226 (Boyce version has 231) variable-length fields. Many records exceed the approximately 254 characters per field and 4000 character limitation per record of most GIS programs. Due to this constraint, we have restructured the data to be compatible with MapInfo and ESRI's ArcView. Certain fields from the original database were extracted, based on the percentage of data population for each field and its importance related to mineral resource assessment. Many of these 1401 records have been newly created, others were revised in the course of preparing data for this publication. The 63 (41 in WY_MRDS1 and 25 in WY_MRDS2, 3 are duplicates) selected fields and their formats in WY_MRDS are listed in Appendix B.

MAS/MILS data structure

5219 deposits are included in the MAS/MILS database. This database contains many deposit types and mining-related sites that are not included in the MRDS database such as mills, tunnel sites, and non-metallic resources such as coal, sand and gravel, and geothermal energy. A couple of fields (labeled "ismi", "midi" in the original dataset) were deleted. Fields labeled "map" and "scale" have been deleted and replaced by WY_250k and WY_24k containing the

name of the 1:250,000 and 1:24,000 scale maps on which the deposit is located. The 71 fields and their formats in WY_MAS are listed in Appendix C.

MINERALIZED AREAS AND MINING DISTRICTS

Mining district boundaries were modified from an unpublished ArcInfo cover developed by the USBM from data presented on the Metallic and Industrial Mineral Map of Wyoming (Harris and others, 1985). Based on deposit types, commodities present, and mineral locations in WY_MRDS and WY_MAS overlain on geology, we modified the map to show mineralized areas. A mineralized area encloses a geographic area that is defined by the presence of mines, prospects, and/or mineralized occurrences that belong to one deposit-type or a group of genetically related deposit-types in a distinct geologic setting. A mineralized area may include an entire district or portions of several mining districts. Mineralized areas differ from mining districts because they are based on geology, and on similarity of deposits and related commodities. Districts are defined in geographical terms and may contain completely unrelated deposit types.

Thirty mineralized areas include metallic deposits exclusive of sedimentary uranium deposits. Sixteen areas primarily contain sedimentary uranium deposits and an additional three areas primarily contain bentonite. Not all mineralized areas contain mines that are included in the MRDS or MAS/MILS databases.

CLAIM DENSITY

Claim density data for Wyoming (Hyndman and Campbell, 1999) are combined with the Wyoming Public Land Survey grid (WY_PLSS) as a single file, WY_claims. Total counts of open and closed claims in each section between 1976 and 1996 are given in whole numbers for Lode, Placer, Mill site, and Tunnel site. Sections with no recorded claims in the same time period are not included. Complete description of these data can be found in Hyndman and Campbell's 1999 USGS Open-File Report 99-542.

SIMPLIFIED GEOLOGIC MAP

Simplified geology was constructed from Green and Drouillard's (1994) digital rendering of Love and Christiansen's (1985) geologic map of Wyoming. For this report, the ArcInfo covers were imported and converted to MapInfo where map units were combined to create a simplified map with only 9 combined rock units and another unit for water bodies. The 10 combined units include:

Q	Quaternary unconsolidated sediments
Qb, Qi, Qr	Quaternary igneous rocks
QT	Quaternary and Tertiary rocks, may include both sedimentary and volcanic rocks
Tplut	Tertiary plutonic rocks
Tvolc	Tertiary volcanic rocks
Tsed	Tertiary sedimentary rocks
MzPz	Mesozoic and Paleozoic sedimentary rocks
pCmet	Precambrian metamorphic rocks
pCplut	Precambrian plutonic rocks
H2O	Water bodies, lakes, reservoirs, rivers

Viewing mineral deposits by commodity or mineral deposit type relative to the host geology is valuable for determining the characteristics and distribution of the deposits. For additional detail, the user should retrieve the original maps (Green and Drouillard, 1994; or Love and Christiansen, 1985). Be aware, that due to the uncertainties in the location of the deposits in MRDS and MAS/MILS and the scale of the geologic map (1:500,000), mines may not plot within the host rock listed in the databases for the deposits.

REFERENCES CITED

- Green, G.N., and Drouillard, P.H., 1994, The digital geologic map of Wyoming in ARC/INFO format: U.S. Geological Survey Open-File Report 94-0425.
- Harris, R.E., Hausel, W.D., Meyer, J.E., compilers, 1985, Metallic and Industrial Minerals Map of Wyoming: Geological Survey of Wyoming, Map Series 14, scale 1:500,000.
- Hyndman, P.C., and Campbell, H.W., 1999, Digital Mining Claim Density Map for Federal Lands in Wyoming--1996: U.S. Geological Survey Open-File Report 99-542.
- Love, J.D., and Christiansen, A.C., 1985, Geologic Map of Wyoming: U.S. Geological Survey Special Geologic Map, scale 1:500,000.
- McFaul, E.J., Mason, G.T., Jr., Ferguson, W.B., and Lipin, B.R., 2000, U.S. Geological Survey mineral databases--MRDS and MAS/MILS: U.S. Geological Survey Digital Data Series DDS-52.
- U.S. Bureau of Mines, 1996, Minerals Availability System (MAS) database--Deposit information manual and data dictionary, U.S. Bureau of Mines.
- U.S. Geological Survey, 2001, Mineral Resource Data System [MRDS: active computer file; data available from U.S. Geological Survey, Mineral Resources Program, Mail Stop 913, National Center, Reston, VA 21092].
- U.S. Geological Survey, 2001, Minerals Availability System [MAS: active computer file; data available from U.S. Geological Survey, Minerals Information Team (formerly U.S. Bureau of Mines), Building 20, Denver Federal Center, Denver CO 80225].

Appendix A. Data files showing file names, formats, and projections.

[Three character file extensions throughout this report are as follows: .shp, ArcView shape file; .tab, MapInfo table file; .xls, Microsoft Excel spreadsheet; .met, metadata in text format; .aep, ArcExplorer Project file; pdf, Adobe Acrobat Reader portable document file; *, refers to any extension. All spatial data is recorded in latitude and longitude coordinates and is unprojected.]

DATA TYPE	FILE	.shp	.tab	.xls	.met	projection
MRDS	WY_MRDS1, WY_MRDS2	X	X	X	X	latlong
MAS/MILS	WY_MAS	X	X	X	X	latlong
250k quadrangles	WY_250k	X	X		X	latlong
100k quadrangles	WY_100k	X	X		X	latlong
24k quadrangles	WY_024k	X	X		X	latlong
claim density	WY_claims	X	X		X	latlong
county boundaries	WY_county	X	X		X	latlong
public land survey	WY_PLSS	X	X		X	latlong
land ownership	WY_lndown	X	X		X	latlong
mineral areas	WY_mnarea	X	X		X	latlong
towns	WY_towns	X	X		X	latlong
highways	WY_hwys	X	X		X	latlong
National Parks	WY_nparks	X	X		X	latlong
Wyoming state	Wy_state	X	X		X	latlong
Geology					X	
	H2O	X	X			latlong
	Q	X	X			latlong
	QrQbQi	X	X			latlong
	QT	X	X			latlong
	Tvolc	X	X			latlong
	Tsed	X	X			latlong
	Tplut	X	X			latlong
	MzPz	X	X			latlong
	pCmet	X	X			latlong
	pCplut	X	X			latlong

Appendix B. Structure of MRDS files WY_MRDS1 and WY_MRDS2 in MapInfo. (Any variation in Excel or ArcView is result of program translations.)

[TYPE: ch= character field, date=date field, float=floating point decimal. NO.: number of characters permitted in the field.]

TKMRDS1 (41 fields)

FIELD	FIELD DESCRIPTION	TYPE	NO.
STATENAME	state name	CH	7
RECNO	record number	CH	7
SITE	site name	CH	57
SYNONYMS	synonym name(s)	CH	219
DISTRICT	mining district or area	CH	53
COUNTY	county	CH	20
QUAD_250K	1:250,000 quadrangle(s)	CH	35
QUAD_24K	1:24,000 quadrangle(s)	CH	41
DLAT	latitude (decimal degrees)	FLOAT	float
DLONG	longitude (decimal degrees)	FLOAT	float
DRAIN	drainage basin	CH	1
LANDSTATUS	land status	CH	86
ELEV	elevation	CH	18
POSITION	position of located point	CH	254
TOWNSHIP	township	CH	19
RANGE	range	CH	19
SECTION	section	CH	60
SECTFRACT	section fraction	CH	93
LOCATIONCOM	location comments	CH	254
MAJORCOMMOD	major commodities	CH	63
MINORCOMMOD	minor commodities	CH	22

FIELD	FIELD DESCRIPTION	TYPE	NO.
TRACECOMMOD	trace commodities	CH	32
OREMAT	ore materials	CH	254
GAD	general analytical data	CH	254
PROD	production	CH	5
LOCALSTRUCT	significant local structures	CH	246
DEVSTATUS	development status	CH	10
OWNER	owner	CH	108
DEPTYPE	deposit type	CH	126
OREFORM	form of ore deposit	CH	62
DEPSIZE	deposit size	CH	1
ORESTRIKE	strike of orebody	CH	21
OREDIP	dip of orebody	CH	19
MINAGE	age of mineralization	CH	34
HRUAGE	age of host rock unit	CH	33
HRUNAME	name of host rock unit	CH	105
ARUAGE	age of associated rock unit	CH	12
ARUNAME	name of associated rock unit	CH	42
WORKTYPE	type of workings	CH	5
MODEL	USGS mineral deposit model	CH	51
MODELNUM	USGS model number	CH	10

TKMRDS2 (25 fields)

FIELD	FIELD DESCRIPTION	TYPE	NO.
RECNO	record number	CH	7
DLAT	latitude (decimal degrees)	FLOAT	float
DLONG	longitude (decimal degrees)	FLOAT	float
DEPDESCCOM	deposit description comment	CH	254
DESCWORKCOM	description of workings comment	CH	254
NONOREMINS	non-ore minerals	CH	100
ORECNTL	ore control	CH	254
REGSTRUCT	major regional structure or trends	CH	228
ALTER	significant alteration	CH	254
CONC	geological processes of concentration	CH	142
GEOLCOM	geology comment	CH	254
APCOM	annual production comment	CH	254
YRDISC	year of discovery	CH	28
YR1STPROD	year of 1 st production	CH	15
YRLASTPROD	year of last production	CH	10
APYEAR	annual production year	CH	35
HRTYPEMV	host rock type	CH	174
HRAGEMV	host rock age	CH	48
REPPATE	date of original record	DATE	date
REP	original record reporter	CH	42
REFAFF	original reporter's affiliation	CH	4
UPDATE	update date	CH	23
UPDATER	updater	CH	45
REF_2	references (published)	CH	254
OTHERREF	references (unpublished or unverifiable)	CH	254

Appendix C. Structure of MAS/MILS database

[TYPE: ch= character field, date=date field, float=floating point decimal. NO.: number of characters permitted in the field.]

country	country name	ch	13
state_code	state code	ch	2
county	county	ch	11
sequence_no	sequence number	ch	10
name	mine name	ch	35
type_op	type of operation	ch	11
current_status	current status	ch	21
latitude	latitude (decimal degrees)	ch	float
longitude	longitude (decimal degrees)	ch	float
pt_of_ref	point of reference	ch	8
precision	precision of point	ch	5
elev_m	elevation (in meters)	ch	float
elev_prec	elevation precision	ch	4
datum	datum of elevation	ch	1
yfc	year field checked	ch	4
zone	UTM zone	ch	2
hem	hemisphere	ch	1
northing	northing	ch	7
easting	easting	ch	6
quad_250k	1:250,000-scale quadrangle	ch	12
quad_24k	1:24,000-scale quadrangle	ch	25
fedland	federal land status	ch	3
fedscale	federal scale	ch	7
domain	domain	ch	14
river_basin	river basin name	ch	24

country	country name	ch	13
rbc	river basin code	ch	3
huc	hydrologic unit code	ch	8
hol1	1 st type of mineral holding	ch	13
hol2	2 nd type of mineral holding	ch	13
hol3	3 rd type of mineral holding	ch	13
USGS_MRDS	USGS MRDS record	ch	7
toe	type of evaluation**	ch	1
yoi	year of initial data entry	ch	4
plant	plant type [only 1 entry]	ch	5
plant_id	plant identifier [only 1 entry]	ch	5
meridian	meridian	ch	13
twm	township	ch	5
rng	range	ch	5
sec	section	ch	2
sub	subdivision	ch	6
sur	survey status	ch	6
yod	year of discovery	ch	4
yip	year of ititial significant production	ch	4
ylp	year of last production	ch	4
mining_district	mining district name	ch	15
company	principal owner/company name	ch	40
mine_method	mine method	ch	17
mill_method	mill method	ch	11
dln	date of last modification	ch	6
commodities	commodity name(s)	ch	17
com1	commodity 1	ch	3
moc1	modifier of commodity 1	ch	22

country	country name	ch	13
mar1	marketability of commodity 1*	ch	1
com2	commodity 2	ch	3
moc2	modifier of commodity 2	ch	22
mar2	marketability of commodity 2*	ch	1
com3	commodity 3	ch	3
moc3	modifier of commodity 3	ch	22
mar3	marketability of commodity 3*	ch	1
com4	commodity 4	ch	3
moc4	modifier of commodity 4	ch	22
mar4	marketability of commodity 4*	ch	1
com5	commodity 5	ch	3
moc5	modifier of commodity 5	ch	22
mar5	marketability of commodity 5*	ch	1
sic	standard industrial classification code	ch	4
name1	alternate name #1	ch	35
name2	alternate name #2	ch	35
name3	alternate name #3	ch	35
name4	alternate name #4	ch	26
name5	alternate name #5	ch	30
name6	alternate name #6	ch	14

*marX=marketability of commodity, where P=primary product, C=co-product, B=byproduct, R=recoverable, A=affecting marketability.

**toe=type of evaluation, where A=MILS default from ADIT database, M=location information from general sources; data may not be confirmed, L=location information with validity confirmed through investigation by an evaluator, R=resource data present, in addition to MILS information, C=complete deposit description.

All entries essentially from MILS p. A-MI-1 to A-MI-15 (USBM, 1996, v. 6.694)

Appendix D. ArcView shape (.shp) files used to construct ArcExplorer project (aep) and ArcView Project (.apr) files and MapInfo (.tab) files used to construct MapInfo workspace (.wor) files.

PROJECT/WORKSPACE	FILE
(.AEP, .APR, .WOR)	(.shp, .tab)
WY_MINES	WY_MRDS1
	WY_MRDS2
	WY_MAS
	WY_mnarea
	WY_state
	WY_county
	WY_024k
	WY_100k
	WY_250k
	WY_claims
	WY_lndown
	WY_PLSS
	WY_hwys
	WY_nparks
	WY_town
WY_GEOL	H2O
	Q
	QrQbQi
	QT
	Tsed
	Tplut
	Tvolc
	MzPz
	pCmet
	pCplut
	WY_MRDS1
	WY_MRDS2
	WY_MAS
	WY_mnarea
	WY_county
	WY_250k
	WY_024k

Appendix E. List of files included in Figures 1-8 (PartB\PDF\...).

FIGURE	CONTENT (.pdf filename)	FILES USED
1	Index map (WY_index.pdf)	WY_state WY_nparks WY_county WY_250k WY_hwys WY_towns
2	Mineralized areas (WY_mnarea.pdf)	WY_state WY_hwys WY_county WY_mnarea
3	Metallic mineral deposits (WY_metdep.pdf)	WY_MRDS1 (thematic) WY_MAS (thematic) WY_county WY_mnarea WY_250k
4	Land Ownership (WY_indown.pdf)	WY_indown (thematic)
5	Geologic map (WY_geol.pdf)	pCplut pCmet MzPz Tsed Tplut Tvolc QT QrQbQi Q H2O
6	Claim Activity (WY_minclm.pdf)	WY_claims (thematic) WY_state WY_mnarea WY_county
7	Mineral Deposits (WY_allmin.pdf)	WY_MRDS1 WY_MAS WY_mnarea WY_county WY_state

FIGURE	CONTENT (.pdf filename)	FILES USED
8	Placers	WY_MRDS1
	(WY_placer)	WY_MAS
		WY_mnarea
		WY_claims (thematic)
		(and geologic map)

FIGURES (.pdf)

1. Index map of Wyoming, showing location of mineralized areas, counties, major towns and highways, 1° x 2° quadrangles, National Parks and National Recreation Areas. (WY_index.pdf)
2. Map showing mineralized areas in Wyoming. (WY_mnarea.pdf)
3. Map showing distribution of selected metallic minerals in Wyoming. MRDS shown as squares, MAS/MILS locations as circles. Any deposit containing chromium, cobalt, or nickel shown in blue; tin or tungsten in lavender; molybdenum in pink; gold, silver, or platinum group elements in red; copper, lead, or zinc in green; and iron or titanium in brown. Because each successive layer masks underlying data, this should be viewed as a general distribution map only. For instance, a blue circle, indicating chromium, cobalt, or nickel, may cover a deposit containing any of the other elements as well. (WY_metdep.pdf).
4. Thematic map showing land ownership in Wyoming. (WY-landown.pdf)
5. Simplified geologic map of Wyoming (WY_geol.pdf).
6. Map showing mineralized areas and intensity of claim activity in Wyoming from 1976 to 1996. Intensity of lode claim activity shown in shades of gray, mill sites in blue, four tunnel claims (all closed) in magenta, and placer claims in shades of yellow to red. (WY_minclm.pdf)
7. Map showing distribution of mineral deposits in Wyoming. WY_MRDS shown as squares, WY_MAS locations as circles. Uranium shown in yellow, clay in gray. For WY_MAS only, sand and gravel deposits shown as gray arrows, coal as gray crosses. (WY_allmin.pdf)
8. Map showing location of placer claims and deposits in Wyoming. (WY_placer.pdf)